

WJ. Listens...

Our High-performance HF-1000 will Help you Listen too!



For over 40 years, Watkins-Johnson has been the leading supplier of high-quality, high-performance receivers for government and military worldwide. WJ also offers the HF-1000 Digital Receiver to short-wave listeners and HAM stations.

Trade publications worldwide have given the HF-1000 high ratings. To let the HF-1000 listen for you, contact Universal Radio, Inc., today.

Visit www.wj.com



700 Quince Orchard Road, Gaithersburg, Maryland 20878-1794 Phone: (800) WJHELPS or +(301) 948-7550 FAX: (301) 921-9479 Email: WJ.HELPS@wj.com

FEATURES:

- Frequency range of 5 to 30 MHz in 1-Hz steps
- High dynamic range (+30 dBm IP3)
- 68 standard IF bandwidths with exceptional shape factors
- AM, FM, CW, USB, LSB, ISB and synchronous AM
- 3 fast, flexible scanning modes
- Tunable notch filter
- User-friendly, uncluttered front panel with large, readable LED
- Operator-selectable RS-232, RS-485 or RS-422 remote control
- World power: 97 to 253 VAC, 47 to 440 Hz, 35 Watts
- Optional suboctave preselector, digital data output and speech enhancement unit

ISO-9001 Certified © Corel Corporation and its licensors (Photo)

Yacht Boy 400PE The Best in Value!



in the dark. Comes with a form-fitting pouch, integral telescoping antenna and advanced external antenna on a compact reel, carry-strap, ac-adapter, earphones and complete instructions.

Made by Germany's Grundig.

World leader in shortwave radios, the 400PE measures just 7-3/4"L x 4-1/4"H x 1-1/4"W; weighs only 20 oz. It slips easily into your carry-on for travel and fits on a nightstand, office credenza, or yacht cabin console. One-year warranty.

Grundig's Yacht Boy 400PE Named Editor's Choice.

Passport To World Band Radio is regarded as the leading authority of the shortwave industry. Here's what their testing expert wrote about the Grundig Yacht Boy 400PE:

"Best performance for price size category, and among the choicest portables of any size, at any price."

"The 400's FM performance is right up there with the very best among world band radios."

Please call our shortwave hotline and talk to the experts: 800-872-2228.



Cool Radio.

Grundig, together with the E.A. Porsche Design Group, has developed a revolutionary new product in every sense. With an aluminum paint finish, leather cover, and stylish details, Grundig scores again with this amazingly compact and amazingly priced digital direct-frequency-entry radio!



Executive Traveller

AM, FM, SW Radio with Leather Travel Organizer

- Grundig G-4 AM/FM/SW radio
- High-Grade Leather with travel organizer
- Digital Clock and Alarm

Platinum Traveller

An AM/FM/SW Radio and Travel Alarm for People on the Go! The Grundig Platinum Traveller features AM, FM, and six shortwave bands, plus a precision digital display.

Carry the world with you—fits into your briefcase or purse! A compact radio with outstanding performance. It has a digital clock and alarm functions. The attractive aluminum finish is protected by a high-grade all leather travel case.





Radio rendering

Yacht Boy 300 PE

Grundig's high-tech, titanium-look AM/FM/SW YB300PE radio is its newest affordable portable! Its 24 memories and 13 international shortwave bands lets you enjoy broadcasts wherever you are! Features include direct frequency entry, clock and 90-minute sleep timer, antenna socket for improved SW and FM reception, DX/Local selector, digital tuning and display. Comes with AC adaptor, earphones and auxiliary antenna.



CLASSIC 960



MINI 100



WEATHER BAND



TR2PE

Grundig sets the standard for customer service.

Grundig supports the industry's only Toll-free Shortwave Hotline. Consumers and dealers can call 1-800-872-2228 in the United States or 1-800-637-1648 in Canada weekdays from 9am to 4pm Pacific Time. You can speak with a real live shortwave expert, not an automatic message machine. Grundig even answers questions for those who own other brands, for whom no such toll-free hotline service is available!

Grundig warranty service is the best.

Any problems? We fix them fast. Dealers know that customers will be taken care of! Dealer support service is first-rate, too. Remember, all we sell in North America are shortwave radios. We specialize! We do it best!

Grundig leads shortwave radio into the new millennium!

Watch this space for Grundig's biggest product announcement in years!

Shortwave enthusiasts and Grundig dealers will have an extra-special reason to celebrate the new millennium—the most important Grundig product announcement in years!



SANGEAN

"The World's Most Popular SHORTWAVE RECEIVERS"

The Incredible ATS-909



WRTH Radio Industry Award **Best Shortwave Portable** 1996/7

WRTH is a trademark of Weston-Guplill Publications and is used with express permission





- AM/FM STEREO/SHORT WAVE RECEPTION
- PLL DUAL CONVERSION RECEIVER
- 306 Memories Full RDS RECEPTION
- 28 SW PAGES FACTORY PROGRAMMED
- 42 WORLD CITIES FACTORY PROGRAMMED
- 5 TUNING METHODS AUTO—TUNE
- ATS AUTOMATIC MEMORY PRESET
- USB/LSB SINGLE SIDE BAND SELECT
- DUAL TIME SYSTEM ADJUSTABLE SLEEP TIMER
- RF GAIN CONTROL PRIORITY KEY
- WIDE/NARROW FILTER RESET SWITCH
- 3 SEPARATE TIMERS LOCK SWITCH

AND MUCH, MUCH, MUCH MORE!!!!

































The Last Shortwave Receiver You'll Ever Need To Buy

SANGEAN ATS-818CS

PLL Synthesized World Band Receiver With Programmable Cassette Recorder



- ALL SW BANDS
- BFO FOR SSB/CW
- 45 Memory Presets
- CONTINUOUS AM RECEIVER
- RADIO/CLOCK ALARM
- DUAL TIME DISPLAY
- 5 Tuning Methods
- ADJUSTABLE SLEEP TIMER
- WIDE/NARROW FILTER
- RF GAIN CONTROL

ATS-818 Identical To ATS-818CS Without Cassette Recorder

SANGEAN™ ATS-606A

World's Smallest Full Featured AM/FM/Stereo Shortwave Receiver

- ULTRA COMPACT SIZE
- ALL SW BANDS
- 1 KHZ FINE TUNING
- 5 TUNING METHODS
- ATS AUTO TUNE
- 54 MEMORY PRESETS
- DUAL TIME DISPLAY
- DX/LOCAL SWITCH ■ DUAL ALARM TIMER
- ADJUSTABLE SLEEP TIMER
- MEMORY SCAN/PLAY
- COUNT DOWN TIMER





2651 Troy Avenue, South El Monte, CA 91733 Tel: (626) 579-1600 Fax: (626) 579-6806 Shortwave "Hot Line", Toll Free 1-888-SANGEAN



Don't wait for "film at eleven"!

Introducing the award-winning FRG-100 Communications Receiver.

Why wait for someone else to tell you what's happening in the world when you can find out first hand?

Have all the hottest news – not just "bites". Listen to music pulsating through Europe. Monitor economic trends in industrialized nations. Eavesdrop on Third World country survival efforts. Track vital crisis developments during conventional communications breakdowns. Or "drop in" to your old neighborhood – even if it's 12 time zones away.

The FRG-100 is loaded with technical advancements like industry-exclusive adjustable SSB carrier offset and user selectable 10Hz, 100Hz or 1 KHz tuning steps. The exciting Broadcast Band mode with 16 pre-programmed international broadcast bands. 50 Memory Channels and twin 12/24 hour clocks to keep you tuned in where and when you like day or night!

Consistent with Yaesu's world-renown reputation for radio communications achievements, the FRG-100 won the prestigious World Radio TV Handbook award for "Best Communications Receiver" upon its introduction in December, 1992. But you're the real winner! Priced lower than receivers costing much more but with fewer features, the FRG-100 delivers extraordinary and affordable performance. Ask about the FRG-100 and it's remarkable low price at your Yaesu dealer today. Make up your own mind about world events. Find out first hand!

YAESU

Performance without compromise. SM



Introduction

INTRODUCTION TO UNIVERSAL

I am pleased to present you with this, the latest edition of our catalog. Even if you have one of our earlier catalogs, please be sure to examine this catalog carefully for new items and new information. This catalog has been designed to introduce you to the newest and best in communications equipment. As you get to know us, I think you will want to become one of our valued customers.

FACTORY DIRECT DISTRIBUTOR

Universal is the only company that is a direct authorized distributor for all the major communications lines (Kenwood, Grundig, Sony, Sangean, Panasonic, Alinco, Watkins-Johnson, Yaesu, Drake, Standard, Japan Radio Company, Icom, etc.). Since we are directly affiliated with all these fine companies, we can give you objective advice on all brands of equipment. We do not have to "push" any particular manufacturer.

ESTABLISHED OVER 50 YEARS

Universal has been serving the amateur and listening community since 1942. You can be assured that we will be here in the future for support and service.

SHOWROOM DISPLAY



Universal is one of only a few stores in the country with a fully stocked showroom. Our 10,000 square foot facility is open six days a week and features an exceptional selection of communications equipment for the ham and SWL. Every major piece of equipment is on display and operational! Stop in and listen to our excellent selection of receivers, or see one of our operational RTTY or FAX displays. We would be happy to demonstrate any item in our line. If you travel through Central Ohio, please do stop in. We are only 20 minutes from downtown Columbus or the airport.

LOW PRICES

You will find our prices very competitive and we do not add a surcharge to your order if you are using a credit card. Since we do buy direct from the manufacturers, we can offer you very favorable prices across the line. Rarely will you find an authorized dealer that can beat our discounted prices. Plus Universal is an authorized dealer for most major lines and offers knowledgeable help before and after the sale.

FULL INFORMATION

We at Universal think an informed customer is a satisfied customer. We want to provide you with all the information you need to make your next communications purchase. This catalog is a first step towards this goal, but we go further. We have specification sheets and brochures on most large items and will send them to you (usually for a self-addressed stamped envelope). We even offer service and owner's manuals for your review. Please see page 99 for prices on extra manuals. Note: Owner's manuals <u>are</u> included with each radio we sell. These references, along with our objective advice, will ensure your satisfaction.

INFORMATION PAMPHLETS

Universal is pleased to offer a special series of short informational pamphlets all available at no charge - send a self-addressed stamped envelope (SASE) for titles desired.

- · Antenna Safety Advisory
- Interested in Shortwave Radio?
- Interested in Amateur Radio?
- · Installing RF Connectors
- Introduction to ACARS
- · Listening to Radioteletype
- · Receiving FAX on Your Shortwave Radio

USED EQUIPMENT

Universal offers a fine selection of used equipment for the communications enthusiast. Every piece of used equipment that we take in is thoroughly tested before being released for re-sale. All our used equipment carries a sixty day parts and labor limited warranty (unless specifically stated otherwise). Whether you are a new hobbyist on a budget, or an advanced DXer looking for a "standby" set; check our inventory of used gear! We publish a complete list of used equipment every month! To get your copy send a self- addressed stamped envelope. Our used equipment list is also posted on our www home page:

www.universal-radio.com

TRADE-INS

Yes, we do take trade-ins! If you would like to trade your present gear in for a new unit or even another piece of used gear, let us know. Please write or email to us indicating what you wish to trade-in. Indicate the condition of the equipment and whether you have the box, manual, etc. We also buy clean used equipment. We will reply with our offer.

LAY-AWAY

Universal offers a convenient layaway plan. To place any <u>new</u> item in layaway for up to sixty days, a 33% deposit is required. 33% more is required at 30 days. The balance is required at 60 days (or sooner). The item will be shipped after full payment. There are no service or interest charges on layaway orders.

FOREIGN ORDERS

Universal is pleased to process overseas orders. We can prepare quotes or proforma invoices on request. To calculate UPS shipping for Canada, multiply the catalog amount by two. We can also ship postal to Canada. Our toll free order-line now serves all of Canada.

FULL SERVICE

Universal offers a selection of communications receivers second to none. We offer a wide range of accessories and modifications too. Upon request, we will inspect and test any radio prior to shipment at no extra charge. Our well equipped service center is **factory authorized** to handle your warranty service needs on most lines. We are interested in you whether you need an 89¢ plug or a \$5000.00 receiver.

CONTENTS Universal Radio

Introduction to Universal Radio1
Introduction to Shortwave4
Communications Receivers5
Commercial Receivers12
Wideband Receivers13
Scanners17
Portable Receivers18
Specialty Receivers23
Assistive Listening25
Vintage Radio Recreations26
Headphones28
Shortwave Antennas29
Specialty Antennas & Accessories 32
Cable, Wire & Coax33
Equipment Protection Devices34
Preamps & Tuners35
Audio and RF Filters36
Antenna Switches37
Clocks 38
Parts & Miscellaneous39
Introduction to Radioteletype42
Radioteletype & Facsimile Equipment 43
Monitors, Printers and ROMs45
Amateur Computer Interfaces 46
Flashlights46
Miscellaneous47
Scanner Antennas & Accessories48
Commercial Two-Way Radio49
Family Radio Service49
Introduction To Amateur Radio50
Amateur Transceivers - HF51
Amateur Power Supplies55
Amateur Transceivers - VHF/UHF Multi 58
VHF Marine Transceivers & Kits 58
Amateur Transceivers - VHF/UHF FM 59
Amateur Handi-Talkies62
Amateur SWR & Power Meters66
Amateur Antenna Tuners67
Amateur Antennas 68
Amateur Antenna Rotors71
Amateur Amplifiers74
Amateur Accessories75
Morse Code Accessories76
Amateur Study Materials77
Citizens Band Radios78
GPS and Specially Satellite Receivers 79
Computer CD's80
Videos & Tape Recorders81
Books: Listening 82
Books: Scanning88
Books: Amateur Radio89
Books: Radio History & Collecting 95
Logging Supplies & Manuals98
CB Books & Extended Warranties 99
Order Form100

UNIVERSAL FOUNDER



Universal was founded in 1942 by F.R. "Gibby" Gibb W8IJ. Universal Service, as it was then called, was located on North Third Street in downtown Columbus, Ohio, Universal carried all the major lines of the time including Millen, Drake, Collins, Hammarlund, Hallicrafters, Johnson and National. Most of the brands have changed, and so has our location. But the same dedication to customer service and satisfaction that our company was founded upon fifty years ago, still remains. As one of the oldest retail radio stores in the country, we are grateful for the support provided to us by the radio community over these many years. We will continue to offer the finest in new and used communications equipment at competitive prices.

HOW TO REACH UNIVERSAL RADIO

Mail:

Universal Radio Inc.

6830 Americana Parkway Reynoldsburg, OH 43068-4113

Phone: 800 431-3939 Orders & Prices

614 866-4267 Technical Info.

FAX: 614 866-2339

E-mail: dx@universal-radio.com

Web: www.universal-radio.com

RECEIVING THIS CATALOG

Universal prints a new catalog every 8 to 12 months. Printing and postage costs have recently risen. It is not economically possible, or ecologically prudent to automatically mail every catalog to every customer. Anytime you would like a new catalog, please request one. You may request your free catalog by phone, mail, FAX or email. (If you place an order a catalog will be sent with your order if our records indicate you do not have the latest edition).







©1999 Universal Radio Inc.

UNIVERSAL STAFF



Fred President Product & publication development. Owner. N8EKU



Dennis Sales General ham and shortwave sales. KC8IDM



Jim Sales General ham, low band, HTs and VHF. KC8XZ



Steve Service Mar. Service of amateur and shortwave lines. NISE



Trigg Sales General ham sales, packet and antennas. K8NIO



Steve "Morty" Sales General ham and shortwave sales. KC8HOW



David Sales Antennas, shortwave, CB, ATV and books.



Seeta Office



Debbie Shipping



Cathy **Payables**



Rick Webmaster



Linda Office

UNIVERSAL OFFICE CATS



Yes, I do resemble my brother Higgins, but I am much better looking. Harleigh





Thanks for warming this chair up for me. **Higgins**



Barbara Office Mgr.



COVER: Shortwave pennants from the I never met a box I didn't like. collection of William A. Matthews.



Hanna



I'll start the diet ... tomorrow. Howard

UNIVERSAL RADIO COMPANY POLICIES

- PAYMENT: We accept Visa, Mastercard, Discover, money orders, cashiers checks and personal checks. Phone order customers please be ready to provide card number, expiration, issuing bank, billing and shipping address plus home & work phone. We request this information for your protection. Personal checks may require time to clear from unestablished customers and/or large purchases.
- **MINIMUM ORDER:** We have no minimum. Your order is important to us whether it is for \$5 or \$500.
- SHIPPING: We ship most in-stock items within 48 hours (UPS Next Day and Second Day Air orders are shipped within 24 hours). Our normal method of shipment is UPS Surface for equipment and bookrate for books. We do not ship C.O.D. We ship Monday through Friday. You may request shipment by other means such as UPS Next Day Air, UPS Second Day Air or Air Freight for export orders. Equipment is packed very carefully and sent insured. Please provide us with a full shipping address. UPS cannot ship to a Post Office box. Shipping amounts indicated in this catalog are for the continental U.S.A. only. Canadian UPS shipping is approximately two times the U.S.A. amount shown. Foreign customers should include adequate shipping. We can provide shipping quotes.
- PRICES: Prices and specifications are subject to change! Prices shown are accurate at printing time. We are not responsible for typographical errors. We suggest you call to confirm prices on larger items. Please call toll free: 800 431-3939. For technical guestions please call: 614 866-4267.
- WARRANTY SERVICE: Our service department is authorized to perform warranty work on Kenwood, Icom, Yaesu, JRC and other major lines. However, we do not perform warranty repairs for all brands. If you are not sure please call us. Copy of receipt must accompany returns for warranty repair.
- ALL REPAIRS: When sending in a product for service, please "double" box it carefully and ship it insured for your protection. Please include a note clearly describing the problem, how you wish the item returned and how you wish to pay for the service. Package your radio properly. Universal is not responsible for merchandise damaged in shipment. Our service rate is \$40 per hour (½ hr. minimum).
- BACK ORDERS: Universal carries an extensive inventory to minimize "back ordered" items. Because of manufacturer shortages, backorders do occasionally occur. You may cancel any backordered item at any time for any reason and receive a prompt and full refund. On credit card orders we will not bill your card until we actually ship.
- RETURNS: Returned items must be received by us in original, as shipped, condition including the original box, manuals, accessories, copy of sales receipt and warranty card. Note: Do not send in the warranty card until after 10 days, and you are certain that the product will suit your needs. Returns must be within 14 days of purchase. Returned items are subject to a 15% restocking fee. Shipping is not refundable. Outdoor antennas, software and custom cables are not refundable.
- FOREIGN ORDERS: Foreign orders must be payable in U.S. dollars. You may use Visa, Mastercard, Discover card, postal money order or bank check drawn on a U.S. bank with transit numbers imprinted on the bottom of the check. Shipping amounts indicated in the catalog are for the U.S.A. only. Include adequate shipping to your location. We can provide shipping quotes. We do not ship large amateur antennas outside of the United States. Some manufacturer's warranties are not valid outside of the United States. Foreign book orders will be sent surface rate (slow!) unless air is specified.
- DAMAGED SHIPMENTS: If you receive a damaged parcel from UPS, note this with the driver and refuse the shipment. It will be returned to Universal and we will replace it for you at no additional cost.
- COUPONS: Many amateur manufacturers run coupon promotions. Universal will accept and can supply these discount coupons. Contact Universal to see what coupons are currently available.

TO PLACE AN ORDER:

Mail to:

Phone:

800 431-3939 Orders & Prices 614 866-4267 Technical Info.

Universal Radio
6830 Americana Pkwy.

Reynoldsburg, OH 43068-4113

E-mail:

We accept phone orders Monday through Friday from 9 A.M. to 6 P.M. Eastern Saturday from 9 A.M. to 3 P.M. Eastern **614 866-2339 24 Hour FAX**

dx@universal-radio.com

SHOWROOM HOURS: Sun Mon Tue Wed Thr Fri Sat Closed 10-5:30 10-5:30 10-5:30 10-6:30 10-5:30 10-3:00





USED LIST

To receive our latest monthly list of used equipment please send us one or more **self-addressed stamped envelopes**. Although our used inventory changes daily, we typically have a nice selection of transceivers, receivers, HT's, RTTY equipment and related accessories on hand. Our used equipment is checked in our service shop and carries a 60 day limited warranty. Our used list may also be viewed on our web site at:

www.universal-radio.com

PURCHASE

If you have equipment you are not using, why not turn it into cash? Universal will purchase good clean used equipment. Please write us, and let us know what you have to sell.

"DEMO" SALE

Universal will not sell returned or demonstrator units as new! From time to time we have such items and can usually offer them at 15 to 25% off our regular price. Please call to check availability.

TRADE-INS

For trade-in quotes, please call or write us listing the items you wish to trade including any optional accessories. Indicate condition and whether you still have the original box and manual. Unlike other dealers, Universal will accept trade-ins towards: new, used, higher or lower value equipment. We accept trade-ins from within the U.S.A. only.

SHIPPING TO UNIVERSAL

When you ship your equipment for trade-in or purchase it is important that it is packaged properly. Use the original box and packing material if possible. If you do not have the original box, wrap the equipment well with bubble wrap then place this in a box with adequate packing material. All equipment should then be placed in a **second box** with packing material to help ensure its safe arrival to us. Please be sure to insure your package for its value. Universal Radio will not be responsible for equipment that is damaged in shipment.

DEALERS

Are you an electronics retailer or bookstore looking to add Universal books to your product line? Universal offers many books at dealer pricing for resale. If you would like more details please write to us on your letterhead. Please include your vendor tax number.

AUTHORS

Universal Radio Research is a leading publisher of specialized books on radio communications. If you are seeking a publisher for your amateur or shortwave radio publication please **write** to: Universal Radio Research, Attn: F. Osterman, 6830 Americana Pkwy., Reynoldsburg, Ohio 43068. Briefly describe your proposed publication. Please do <u>not</u> send manuscripts.

GIFT CERTIFICATES

Gift certificates are available in any amount. When ordering a gift certificate indicate *your* name and address **plus** the recipients name & address.

INTRODUCTION TO SHORTWAVE

Listening to shortwave, or *world band*, radio is an exciting and educational form of entertainment. With a moderate investment, anyone can listen to a variety of broadcasts from around the world.

WHAT IS SHORTWAVE RADIO?

The standard AM broadcast radio band extends from 540 to 1700 kHz. Shortwave radio starts where the standard AM band ends and extends to 30000 kHz or 30 MHz (1000 kHz = 1 MHz). Unlike medium wave signals, shortwave signals will reflect (refract) off the invisible layer above the earth called the ionosphere. While worldwide shortwave reception can occur during the day, best reception is usually during the evening.

WHAT CAN I HEAR?

The shortwave spectrum is vast. There are potentially thousands of stations that can be heard. The major types of stations are:

International Broadcast Stations

Every major country in the world, as well as many small countries, have <u>English</u> transmissions that can be heard in North America. These English broadcasts can be anywhere from 1/2 hour to several hours in length. Many countries beam their transmissions directly to N. America to enhance reception for Canadian and American listeners. Some of the easier English broadcasts to hear come from:

Voice of Russia **BBC** London **RNE Madrid** Radio Sweden Radio Tirana **HCJB** Quito Radio Sofia Voice of America Radio Japan Radio Beijing Vatican Radio Swiss Radio Intl. Radio Canada Radio Netherlands Radio Prague Radio South Africa RAI Rome Radio Australia **DW** Cologne Radio Budapest Radio Austria Radio Havana Radio Vilnius Voice of Turkey

These and other stations design their programs for international audiences. There is an even greater number of regional and local shortwave stations that broadcast to their native populations. These lower powered stations typically transmit in the local language. A variety of interesting programming and music can be heard from these stations, especially from S.America, Africa and the Pacific.

Radio Amateur Stations (HAMS)

There are over 900,000 licensed amateur radio operators all over the world. Listening to hams can be interesting and a good way to learn more about ham radio. Hams are assigned to a different set of frequencies than the international broadcasters. If you want to listen to amateur stations, you will need a "general coverage" receiver. In order to transmit greater distances and efficiently use their allocated frequencies, hams transmit in a special voice mode called single sideband (SSB) and also Morse code. Again, it is important to select a radio capable of receiving these modes. Our staff will direct you to radios best suited for this.

Citizen Band (CB)

CB stations can be heard on most general coverage receivers. CB transmissions can be found between 26 and 28 MHz.

Utility Stations

If you subtract from the shortwave spectrum all the international broadcasters, HAM and CB stations, you will be left with a large number of stations loosely labeled "utility stations." These are commercial, government, military and research stations whose transmissions are not designed for general audiences. Some types of utility stations:

International Aeronautical

International commercial aircraft communicate with distant air centers using shortwave radio. It would not be surprising to hear an AirFrance jet talking to Santiago Control, or a JapanAir flight working Anchorage Control. We are fortunate that the international aeronautical language is English!

Maritime Stations

Shortwave radio remains a secondary link between ships at sea and land. There are hundreds of coastal stations and a nearly endless number of ships which can be monitored on a shortwave radio capable of SSB and Morse reception. Listening to ship-to-shore channels and distress frequencies can be particularly interesting.

Military Stations

While most "sensitive" military traffic is sent via satellites or encrypted, numerous military transmissions can be heard and identified. The following navies can easily be heard with a communications receiver: American, French, S. African, British, Argentine and New Zealand.

Time Stations

Many countries have stations which send out very precise time transmissions. Most include voice identifications and many can be heard in the USA.

Miscellaneous

There remain a number of stations that do not fall neatly into the previous categories. Illegal "bootleg" stations can be heard from time to time. Central America hosts several "clandestine" stations run by various rebel factions. They can be heard in the U.S. when they are not being jammed. There are a number of stations which transmit series of numbers without identification. While they are easy to hear, no one has conclusively determined their intent. Some Soviet and American satellites in low orbit can even be monitored.

WHAT KIND OF EQUIPMENT DO I NEED?

The answer depends on what you want to hear. If the international broadcast stations are your main interest, you may be satisfied with a modestly priced portable model covering these international broadcast bands. Portables are generally priced from \$50 to \$450. If you would like to listen to the various utility or amateur stations you will want to consider a radio with general coverage (full shortwave coverage from 1.6 to 30 MHz) and single sideband capability. These larger more advanced radios are called communications receivers and are priced from \$600 up. Used models are usually

in stock at Universal, and can afford a considerable savings. Contact us for a copy of our used list.

WHAT DO I USE FOR AN ANTENNA?

Good shortwave reception is possible with a very modest antenna. Portables include a whip antenna which will work guite well. Many portables and all communications receivers provide an external antenna jack (or terminal). Many listeners simply attach a 20 to 40 foot length of regular insulated wire to this jack and then stretch it across the room. This will yield surprisingly good results. However, if you can string the wire outdoors to a tree or pole, still better reception will result. Universal can provide the wire, insulators, Coax-Seal and lead-in cable for your antenna. Other more advanced or specialized antennas are also available. If improved reception is desired and an outdoor antenna is not possible, we suggest "active antennas". These compact antennas work amazingly well.

Caution: Avoid overhead utility lines when stringing outdoor antennas. Contact with overhead lines can cause electrocution. Outdoor antennas should be grounded to help prevent lightning damage. If you are new to antenna construction please request a free copy of our "Antenna Safety Advisory".

HOW DO I KNOW WHERE TO TUNE?

One of the most exciting aspects of shortwave listening is simply tuning the dial and discovering stations from all ends of the earth. However, there are times when you will want to tune a particular country, perhaps because of an important event occurring there. Two excellent books for the shortwave listener are the *Passport to Worldband Radio* and the *World Radio TV Handbook*. Both of these annual publications will guide you to the proper frequency. If you want to hear the exciting "utility" stations, the book *Guide to Utility Stations* is a "must." We also sell directories listing amateur stations and other specialized directories. There are a number of excellent monthly publications published on shortwave listening.

WHAT IS U.T.C. or G.M.T. TIME?

In order to avoid the confusion of many time zones, hams and international broadcasters always refer to time at the zero meridian (which runs through Greenwich, England). This time zone is five hours ahead of Eastern Standard Time (4 hours ahead of Eastern Daylight Time). This 24 hour format is referred to as Coordinated Universal Time (UTC). For example 4:00 P.M. EST = 21:00 UTC.

WHAT IS THIS I HEAR ABOUT "QSLs"?

Most international broadcast stations like to hear from their listeners. If you send a "reception report" to a foreign broadcast station they will send you a confirmation of your reception in the form of a postcard called a "QSL". They also will usually send you a program guide and information about their country. A reception report should include the date and time you heard the station (in UTC), the frequency heard, reception quality and 15 to 30 minutes of program content to validate reception. Also tell them how you liked the program!

Communications Receivers



R8B



The R.L. Drake Company has been a leading name in American electronic communications since 1943. The new Drake R8B is the latest offering in this proud tradition of excellent receivers. The R8B is a microprocessor-controlled, synthesized, all mode, world band receiver offering excellent sensitivity, high dynamic range and other features for the most demanding listener. It has been designed as a "complete package." You get many items as standard-equipment, that would be extra on other receivers. Multimode reception (AM, FM, USB, LSB, RTTY and CW) is featured throughout the range of the receiver (10 kHz to 30 MHz). A high-Q. 8-pole, electronically switched IF filter provides a range of five bandwidths. User selection of bandwidths is now available with one keystroke independent of mode (or automatic). The improved, easier to read, front panel display provides visual feedback to the operator of the current status of the receiver. In the AM mode, a selectable synchronous detector (SYNCHRO) allows for enhanced reception by eliminating or reducing distortion due to fading signals. A Passband Offset control also aids in reducing or eliminating interfering signals by electronically shifting the receiver's IF frequencies without disturbing the operating frequency. This action allows the operator to electronically move interfering signals out of the receiver's passband thus utilizing the degree of selectivity provided by the high-Q. 8-pole IF filter. The Passband Offset is also coupled to the selectable sideband, synchronous detector (SYNCHRO) allowing the passband to be altered while the detector is in use. Other reception aids include selectable AGC, wide/narrow noise blanker, RF preamplifier for enhancing weak signals, RF attenuator for further improvement of strong signal handling capabilities, tone control and an adjustable RF gain. A Notch filter is also supplied as an effective tool to eliminate offending tones (heterodynes). A muting control allows operation with a transmitter or transceiver. The R8B provides exceptional audio to the built-in speaker.

Two VFOs (tuners) called A and B, are provided on the R8B. Selection is made with the VFO function key. Frequencies can be directly entered through the keypad. A programmable memory area allows for 1000 nonvolatile alphanumeric memories. The following may be stored in any memory location: frequency, mode, bandwidth, AGC setting, RF setting, antenna, notch on/off, noise blanker setting and synchronous detector on/off. As a result of three scan methods and three scan modes; nine distinct scan functions are supported in the R-8B. The three methods are: Stop at carrier detect, Pause 5 seconds on carrier and Pause at carrier until carrier drops for 5 seconds, then resume scan. The three modes are: Scan all memories, all unlocked memories of user-selected list or Scan from VFO A to B. The memory scanning speed has been increased to 40 channels per second. The R8B has two 24 hour clock-timers to allow the R8B to turn on and off at preset times. In addition, the rear panel Timer connection (5 pin DIN) allows control of small recorders, etc. to record a favorite program. The R-8B rear panel provides a common DB-9 connector for standard RS-232C data communications with a terminal or personal computer. This interface provides complete control and programming capability of the R-8B including reports of frequency, mode, memory channel, name and signal strength. Only the analog controls such as volume, RF gain, etc. are not controllable. In terms of performance and features, the American-made R8B is the new state-of-the-art standard! Our best selling communications receiver. The R8B received the highest possible ★★★★★ rating and was selected as "Passport's Choice" in Passport To Worldband Radio 1999.

LIMITED WARRANTY

Standard Manufacturer Warranty: 1 Year

PRICING

Drake R8B List Price \$1199.00

Drake R8B Discount Price
Order #0082 \$1159.95

Shipping/Handling/Insurance \$16.00

OPTIONS AND MODIFICATIONS

- ERGO 3 Windows 95 Control Software Order #3725 \$99.95 (+\$5)
 This advanced control software also integrates with the Klingenfuss Super Frequency List CD.

FREE BONUS BOOK

Shortwave Listening Guidebook 2nd Ed. Learn the ins and outs of worldband radio. 321 pages! Free with your Drake R8B or \$19.95 separately (pg. 82).

IMPROVEMENTS OVER DRAKE R8

- ◆ Improved Ergonomics: Single key presses will select your mode and bandwidth.
- ◆ More Memories: 1000 memory positions.
- Faster Scanning: Even faster channel scan.
 Alphanumeric Display: Program names may be displayed on the front panel.
- Display & Entry Frequencies: User programmable in kHz or MHz.
- ◆ Cabinet Feet: Front panel tilt via a metal bail.
- Event Timers/Clocks: 2 Timers. The time may be programmed to remain on at all times.
- Improved AGC: The AGC has a smoother attack for improved SSB listening.
- Tone Control: Expanded control of high frequency range.
- ◆ FM Receive Mode: New highpass filter to reduce sub-audible tone squelch signals.
- ◆ Line Cord: New detachable power cord.
- Expanded RS-232 Control: Allows customized reports of frequency, mode, memory, channel, name, and signal strength.

SPECIFICATIONS

Frequency Range 10 - 30000 kHz AC Power 100/120/200/240 VAC 50 or 60 Hz 40 Watts	
DC Power 11 - 16 VDC @ 2A Antenna 1, Converter 50 ohms unbalanced	
Antenna 2 50 or 500 ohms unbal. Selectivity @ -6dB @ -60dB	
All modes except FM 6.0 kHz <12.0 kHz	
4.0 kHz <8.0 kHz 2.3 kHz <4.5 kHz	
1.8 kHz <3.6 kHz	
.5 kHz <1.5 kHz	
5 KHZ <1.3 KHZ FM mode only 12.0 kHz <25.0 kHz	
Ultimate Selectivity >95 dB	
Image Rejection >60 dB .1-1.5 MHz	
>80 dB 1.5-30 MHz	
I.F. Rejection>80 dB 45 MHz	
>100 dB 50 kHz	
Third Ord. Intercept > +20dBm	
Dynamic Range 100 dB	
Notch Filter Attn 40 dB min Depth	
(500-5000 Hz)	
Sensitivity	
SSB/CW <1.0μV .1-1.5 MHz	
SSB/CW <1.0μV .1-1.5 MHz <0.5μV 1.5-30 MHz <0.25μV 5-30 MHz¹	
<0.25μV 5-30 MHz ¹	
AM $< 3.0 \mu V$.1-1.5 MHz	
 <0.25μV 5-30 MHz¹ AM <3.0μV .1-1.5 MHz <1.5μV 1.5-30 MHz¹ <0.8μV 5-30 MHz¹ FM (12dB sinad) <0.5μV 1.5-30 MHz 	
<0.8μV 5-30 MHz ¹	
FM (12dB sinab) <0.5μV 1.5-30 MHz	
Freq. Stability ±5 ppm10° to 50° C.	
Freq. Accuracy ±100 Hz10° to 50° C.	
Intermediate Freqs 1st IF = 45 MHz 2nd IF = 50 kHz	
Ext. Speaker Output 2.5 Watts, 4 Ohms.	
<10% distortion	
Recorder Output 300 mV, 4.7K Ohms.	
Demodulator Output 300 mV, 4.7K Ohms.	
Operating Temp10° to 50° C.	
Dimensions	
Weight	

Orders: 800 431-3939

Information: 614 866-4267

Quality Equipment Since 1942



SW-8



The R.L. Drake Company has created another winner. The new SW-8 is a portable communications receiver offering the worldband listener an impressive array of features. Coverage from 100 to 30000 kHz is supported in AM, USB and LSB modes. Quality reception of the AM broadcast band and all of shortwave is assured. We were delighted to learn that Drake elected to include the FM broadcast band in the new SW-8. Finally, a quality communications receiver with FM broadcast band (87 -108 MHz) coverage. And it sounds great too! The extra heavy, forward facing speaker, along with a tone control, combine to offer pleasing fidelity. As a bonus, the VHF aeronautical band is also featured (118 - 137 MHz). Enjoy listening to commercial aircraft overhead, or even control tower transmissions if you live near an airport.

The impressive backlit LCD panel provides all the operational data you need to navigate this impressive receiver. Frequency display resolution is to 100 Hz on AM, shortwave and aircraft bands. The SW-8 is a full fledged communications receiver, but it is also a true portable. The full size front handle makes it easy to carry. Please note that this handle can be conveniently removed by the user for stationary operation. The SW-8 holds six D cells, and a pivot point 41 inch telescopic whip extends from the front for fully independent field operation. A 1/8th inch headphone jack is provided.

For the shortwave and medium wave broadcast bands, a selectable sideband synchronous detector (SYNC) improves reception by reducing distortion due to fading signals. Other aids include: slow or fast AGC, RF attenuator and tone controls. Three IF bandwidths are supplied (6, 4 and 2.3 kHz). Two independent clocks provide dual time zone selection and a 2-event timer turns the radio on at a prescribed time. Seventy nonvolatile memories store: frequency, mode, bandwidth, AGC setting, RF attenuator and synchronous detector on/off. Memory channels may be accessed manually or through "time scan" with each channel monitored for 5 seconds. Keypad entry provides instant access to any frequency. The back plane of the radio includes a PL259-type antenna jack or wire inputs for shortwave. Spring terminals are also provided for an external FM/AIR antenna. Record output, and external speaker (4 - 8 ohm) jacks are also featured. The SW-8 comes with a plug-in 120VAC power pack or may be run from six D cells (not provided). This proud member of the Drake family provides performance, flexibility and features at an affordable price. Made in the U.S.A.

LIMITED WARRANTY

Standard Manufacturer Warranty: 1 Year

Optional Extended Warranty To: 3 Years

Order #0564\$39.00

PRICING

Page 6

SPECIFICATIONS

Frequency Range 100 - 30000 kHz
87 - 108 MHz
118 - 137 MHz
AC Power 120 VAC 60 Hz adapter
or 6 internal D cells
Antenna 1 50 ohms unbalanced
Antenna 2 50 or 500 ohms unbal.
Antenna FM/AIR 300 ohms
A CONTRACTOR OF THE PARTY OF TH
Selectivity @ -6dB Mode
6.0 kHz AM
4.0 kHz AM
2.3 kHz LSB/USB
Ultimate Selectivity >95 dB
Image Rejection >60 dB .5-30 MHz
>50 dB 87-108 MHz
>60 dB 118-137 MHz
I.F. Rejection>80 dB 55.845 MHz >80 dB 455 kHz
>80 dB 455 kHz
IP3 Intercept Point >-20dBm 5 kHz spacing
>+10dBm 20 kHz "
Dynamic Range >95 dB .5-30 MHz SSB
Sensitivity 10 dB S+ N/N
SSB <0.5µV .5-30 MHz
0.0.1/
FM (20 dB S/N) <2.0μV .5-30 MHz <4.0μV 87-108 MHz
FM (20 dB S/N)
Freq. Stability±10 ppm. 0° to 50° C.
Freq. Accuracy±100 Hz. @50° C.
Ext. Speaker Output 2 Watts, 4 Ohms.
Line Output
Operating Temp 0° to 50° C.
Dimensions 11.5"W x 5.25"H x 13"D
Weight 10 Lbs. (13 Lbs. ship)

SW-8 CASE



This protective blue canvas carrying case is just right for transporting your SW-8 safely.

SW-8 Case Order #1342

\$48.95 (+\$4)

MS-8



Add this matching external speaker to your Drake R-8, R-8A, R-8B or SW-8 for improved fidelity and clarity. Black metal case with 4 inch, 4 ohm, 2.5 watt speaker. Includes 6 foot cord with plug.

MS-8 Order #2846 \$48.95 (+\$5)

DRAKE

SW-1



The Drake SW-1 sets the stage for worldwide shortwave listening with ease, simplicity and clarity. The SW-1 offers superb sensitivity, selectivity and full audio. Coverage from 100 through 30000 kHz provides solid coverage of longwave, medium wave and shortwave in the AM mode (no SSB). This makes it an ideal broadcast receiver for the desk or bed-stand. Tuning is a snap via the keypad, manual tuning knob, Up/Down buttons or 32 programmable memories. The LED display is positively huge for easy accurate frequency readout to 1 kHz. Antenna input is via a 50 ohm terminal or SO-239 jack. A 1/8" mini jack is provided for use with earplug or headphones (not supplied). Includes AC wall adapter for operation from 120 VAC 60 Hz. 10.875"x4.375"x7.625" 4.7 Lbs. One year limited warranty. List Price \$299.00 Order #1100 On sale for a limited time at ... \$199.99 (+\$8)

Universal Radio 6830 Americana Pkwy. Reynoldsburg, Ohio 43068

Communications Receivers



SW-2



Dollar for dollar, the new Drake SW-2 has to be the best value in shortwave radio today. Here is a table top receiver, with a truly impressive array of features and capabilities, at a price that everyone can afford. Never before have you been able to get so much radio for so little money. Of course the SW-2 covers all longwave, medium wave (AM) and shortwave frequencies. Single sideband is easily tuned with separate LSB and USB positions. Amplitude modulated signals sound great through the front firing speaker. When a shortwave signal does start to fade you can engage sideband selectable synchronous tuning to stabilize and improve the signal. The capable memory system is nonvolatile and stores 100 channels (storing frequency, mode and detection). Memory recall may be accomplished by either keypad entry or by rotating the main tuning knob while in memory mode. Other refinements include: RF Gain, Tuning Bar Graphs, 100 Hz readout and Dimmer. Dual antenna inputs accept either a PL-259 coaxial or wire feedline. A mini earphone and ¼" external speaker jack are provided. The optional remote lets you operate this radio from across the room. The oversized digital display is large enough that you can actually see the frequency from across the room. Universal is excited to offer this exceptional radio value. The reliable, American-made Drake SW-2 carries a limited one year warranty. \$489.95 (+\$9) Order #2222

OPTIONS

◆ Drake MS-8 This external speaker includes a 6 foot cord with plug.	#2846	\$ 48.95 (+\$5)
◆ Drake Carry-Tilt Handle This plastic handle snaps on in a jiffy.	#1317	4.50 (+\$3)
A Duning MARK & Mark III - Mark III - Duning Ind.	"0000	4405 (60)

◆ Drake MMK-1 Mobile Mounting BracketInverted or upright.#303214.95 (+⁵3)◆ Drake Infrared Remote Keypad#158948.95 (+⁵3)Operate your SW-2 from across the room!Tune the radio up and down, mute audio, enter

frequencies, change modes and even dim the display! (Does not control volume).

SPECIFICATIONS

Frequency Range	100 - 3000	0 kHz
Power	12 VDC 1.	5A
	120VAC P	.S. included
Antenna Impedance	50 ohm	
Selectivity (-6dB)	AM	6.0 kHz
	SSB/CW	2.3 kHz
Sensitivity	<.5 µV SSI	В
	(10 dB S+1	
Intermediate Freqs	1st IF = 55	.845 MHz
	2nd IF = 48	
Audio Output	1 Watts at	8 Ohms
Standard Steps	50Hz via T	uning Knob
	5kHz Up/D	own Buttons
Circuit Type		
Dimensions	10.875" x 4	4.4" x 7.62"
	276x111x1	94 mm
Weight	5.8 Lbs. ne	et (2.6 kg)

REMOTE



MS-8



ICOM

Just prior to going to press we received preliminary information on an exciting new receiver from ICOM called the R-75. With full coverage from 30 kHz to 60 MHz; all longwave, medium



wave and shortwave frequencies are supported plus extended coverage to include the 6 meter amateur band. Some of innovative features of the R-75 include: Synchronous AM Detection, FM Mode Detection, Dual Passband Tuning, Automatic Notch, Two Level Preamp, 99 Alphanumeric Memories, Noise Blanker, Selectable AGC (FAST/SLOW/OFF), Clock-Timer, Squelch, Lock, Attenuator and 1 Hz backlit LCD display. Two optional filter positions are available (one per IF). Other interesting options are shown below. We expect to have full technical information on this new receiver by Spring 1999. Please request a brochure and/or check our website at: www.universal-radio.com.

	10	
 \mathbf{r}	11	N .

0. 110110		
◆ CT-17 CI-V Level Converter for Remote Control from PC	#2771	\$119.95 (+\$5)
◆ CR-282 High Stability Crystal Unit	#2137	114.95 (+\$3)
◆ FL- 52A CW/RTTY Narrow 500 Hz Filter 455 kHz IF	#0903	169.95 (+\$3)
◆ FL- 53A CW Narrow 250 Hz Filter 455 kHz IF	#0909	169.95 (+\$3)
◆ FL- 96 SSB Wide 2.8 kHz Filter 455 kHz IF	#2387	Please Call
♦ FL-222 SSB Narrow 1.8 kHz Filter 455 kHz IF	#0327	169.95 (+\$3)
♦ FL-257 SSB Wide 3.3 kHz Filter 455 kHz IF	#3288	159.95 (+\$3)
◆ FL-100 CW/RTTY Narrow 500 Hz Filter 9 MHz IF	#2968	94.95 (+\$3)
→ FL-101 CW Narrow 500 Hz Filter 9 MHz IF	#2999	94.95 (+\$3)
◆ FL-223 SSB Narrow 1.9 kHz Filter 9 MHz IF	#2312	74.95 (+\$3)
◆ RS-R75 Remote Control Windows® 95/98 Control Software	#2514	Please Call
♦ UT-102 Voice Synthesizer	#3437	54.95 (+\$3)
→ UT-106 AF DSP Unit	#3097	139.95 (+\$4)

PRELIMINARY SPECIFICATIONS

Frequency Range 30 - 60000 kHz

F	Power	12 VDC 1.1A	
		120VAC P.S. include	b
A	Antenna Impedance	50 ohm & Terminals	
	Selectivity (-6dB)		
		SSB/CW 2.1 kHz	
		FM 12.0 kHz	
S	Sensitivity	<.14 µV CW/SSB	
		(10 dB SN) 1.8-30 M	Hz
S	Stability		
		1 PPM after 60 mins.	
Ir	ntermediate Fregs	1st IF = 69.0115 MH:	Z
		2nd IF = 9.0115 MHz	
		3rd IF = 455 kHz	
Ir	mage Rejection	>70 dB (<30 MHz).	
		99 Alpha and 2 bande	edge
A	Audio Output	2 Watts at 8 Ohms 1	0%
		Triple Conv. Superhe	
	Dimensions		
		241x94x229 mm	
V	Veight	6.6 Lbs. net (3 kg)	

PRICING

ICOM R-75 List Price	
ICOM R-75 Discount Price	
Order #0175	

Please call for pricing and availability!

NOTICE: The R-75 has not been approved by the Federal Communications Commission. These devices are not and may not be offered for sale or leased until the approval of the F.C.C. has been obtained.



JRC Japan Radio Co., Ltd.

NRD-545 DSP



If you had the opportunity to look into the radio room of most ocean going commercial ships, chances are the radio equipment you would see would be made by the Japan Radio Company (see page 10). This company founded in 1915, is clearly the leading manufacture of top quality professional radio communications equipment in the world. The JRC NRD-545 DSP is the latest receiver in this very long and very proud tradition. And the '545' may be the finest receiver they have ever offered to the hobby market. The substantial size, and ergonomic layout, make this receiver a pleasure to operate. Intuitive knob layout, a conventional keypad, and separate buttons means that this receiver is comfortable and straightforward to operate. You won't find a button on the NRD-545 with six different functions! The multicolored display, fashioned after the JST-245 transceiver series, is the clearest and most attractive in the industry.

Despite its outward good looks, the real power of this receiver is inside. The NRD-545 DSP is different from any receiver you have previously owned. Clear, distortion-free sound reproduction is possible through the magic of true digital signal processing at the IF level.

The receiving system employs a triple conversion circuit with IFs at 70.455 MHz, 455 kHz and 20.22 kHz. The NRD-545 uses a 40-bit extended floating point Digital Signal Processor with an 18-bit over-sampling system A/D converter and a 16-bit D/A converter. The DSP functions on 13 types of circuits after the IF, previously configured using analog circuits. DSP is used for all-mode detection including AM synchronous detection (ECSS). Incredible selectivity characteristics are achieved by the use of an Infinite Impulse, structure concurrent Chebyshev-type digital filter. In English this means, the NRD-545 gives you a continuously variable bandwidth from 10 Hz to 10 kHz in 10 Hz steps. You virtually have 990 different bandwidths, each with excellent adjacent channel rejection. DSP is also used to control Pass-Band Shift, another tool to reduce QRM. A 256 step DSP Noise reduction circuit and 256 step DSP Beat Canceller and DSP Auto-Track Notch are other new tools in your arsenal to dig out difficult DX signals. The DSP AGC works in all modes and is continuously variable from .04 to 5 seconds in SSB/CW/RTTY. 1000 Memories store: frequency, mode, bandwidth, ATT, AGC and step. Other refinements include: DSP Squelch, RS-232 port, ECSS, Dial Lock, Tone, RF Gain, Scan, Sweep, Mute, Dimmer, Clock-Timer, Adjustable Torque Dial, Attenuator, modular construction and two Noise Blankers. A basic Baudot RTTY demodulator, feeding the RS-232 port, is even included. The NRD-545, the 1999 WRTH Receiver Award Winner, is without question, the most sophisticated receiver ever developed for the hobby market.

PRICING

NRD-545 DSP List Price \$1999.00 NRD-545 DSP Discount Price Order #1545 \$1799.95 Shipping/Handling/Insurance \$18.00

SPECIFICATIONS

Selectivity (-6dB)	Antenna Impedance	100/120/220/240 VAC 12-16 VDC 30W or less 50/600 ohm	
and variable from 0.01 to 9.99 kHz Sensitivity	Selectivity (-6dB)	INTER 2.4 kHz	
(10 dB S+N/N) Stability		and variable from	
±2 ppm >60 mins. RS-232 Interface 4800 baud (1/8/N/1) Tuning Stepes		(10 dB S+N/N)	
Tuning Stepes	Stability	and the same of th	
Image Rejection	Tuning Stepes	1, 10, 100 Hz, 1, 5, 6.25 9, 10, 12.5, 20, 25, 30	
Notch Var. Range ±2.5 kHz Notch Auto Tracking ±10 kHz PBS Range ±2.3 kHz (50 Hz steps). Dynamic Range 106 dB (IF range 300 Hz) Audio Output 1 Watts at 4 Ohms Circuit Type Triple Conv. Superhet. IFs 70.455 MHz, 455 kHz, and 20.22 kHz. Temperature 0° to 50°C (32° to 122°F) Dimensions 13x5.63"x12.9"	Image Rejection	>70 dB	
Notch Auto Tracking ±10 kHz PBS Range			
Dynamic Range 106 dB (IF range 300 Hz) Audio Output	Notch Auto Tracking	±10 kHz	
IFs	Dynamic Range	106 dB (IF range 300 Hz)	
Dimensions 13x5.63"x12.9"	IFs	70.455 MHz, 455 kHz,	
	Dimensions	13x5.63"x12.9"	

LIMITED WARRANTY

Standard Manufacturer Warranty: 1 Year Optional Extended Warranty To: 3 Years Order #2602 \$59.00

DSP FUNCTIONS

DSP All-Mode Detection

DSP signal detection in all modes including LSB, USB, CW, RTTY, FM, AM and ECSS.

Superior selectivity is achieved by a simultaneoous Chebyshev type digital IF filter with an infinite impulse response configuration. The pass bandwidth is continuously adjustable from 10 Hz to 9.9 kHz in 10 Hz steps (BWC).

DSP Pass-Band Shift (PBS)

Radio interference is pushed out of the band by shift the center frequency of the digital IF filter upward or downward in the variable range of ±2.3 kHz (in 50 Hz steps).

DSP Noise Reduction (NR)

Signal processing is adjustable in 256 steps, allowing the most audible conditions to be set. The NR function is effective for such noise that the noise blanker cannot handle.

DSP Beat Canceller (BC)

Completely periodic signals such as beat sounds (hets) can be exalted and cancelled.

DSP Noise Blanker (NB)

NB-1 (narrow blanking width) and NB-2 (wide blanking width) can be switched over and the NB detection level is adjustable.

DSP Notch Filter (NOTCH)

Beat sounds are attenuated (>40dB) using the steep attenuation characteristic of the notch filter. Despite its steep characteristics, beat sounds are digitally processed and attenuated when the NOTCH is reset. It is adjustable within ±2.5 kHz (in 10 Hz steps). The Notch follows in the range of ±10 kHz even when the tuning dial is rotated.

DSP Notch Automatic Gain Control (AGC)

Digital AGC is applied to all modes (except WFM). The AGC is continuously adjustable between 0.04 and 5.1 seconds in 20 msec. steps in all modes except FM, AM and AMS.

DSP Beat Frequency Oscillator (BFO)

The BFO generates signals in the LSB, USB, CW and RTTY modes.

DSP RF Gain (RF)

The information transferred to the RF GAIN control via the A/D converter is entered into the DSP to adjust gain inside the DSP and the gain of the primary IF amplifier.

DSP Squelch (SQ)

The Squelch function is available in all modes.

DSP Tone Control (TONE)

The audio quality may be adjusted in all modes (except RTTY & WFM) in the range of 1 to 10 kHz.

DSP S-Meter

The signal level is determined in reference to the input signal to the DSP and the level is converted into an antenna input level, which activates the Smeter.

JRC Japan Radio Co., Ltd.

NRD-345



Famous for its top-gun receivers, Japan Radio Company once again pioneers with a brand new model. The NRD-345 offers J.R.C. performance and quality at a surprisingly affordable price. This incredibly attractive and compact radio delivers hour-after-hour of listening pleasure with high dynamic range and synchronous AM detection to help tame fading. Dual IF filters are supplied, with a third optional position available. Please see the chart below for JRC filters and options. Tuning the radio is smooth as silk via the large indented main tuning knob. Of course keypad entry in kHz or MHz is also available. The easy-to-read LCD type display shows you the precise frequency to 10 Hz! The variable Noise Blanker is effective against pulse and ignition interference. The sophisticated memory system stores 100 channels with frequency, mode, AGC, attenuator, VFO, bandwidth and NB status parameters all stored. The memories may be scanned with variable pause times. The Clock-Timer function enables the radio to turn on and off at a specific time and the clock can be set for UTC or local time. The Tone Control, AGC and 20 dB Attenuator let you refine the signal to your personal taste. Other refinements include an analog S-Meter, Tilt-Bar, Up/Down Tuning buttons, Dual VFOs and Dial Lock. Rear panel jacks include: External Speaker, Record Jack, FAX/RTTY Line Out and DB-25 RS-232C port. Switch selectable dual antenna inputs are featured to support both wire-type or coaxial-type lead ins. A builtin RS-232 port facilitates connecting a personal computer (4800 baud, 1 start bit, 8 data bits, no parity, 1 stop bit). All J.R.C. products are covered by a limited one year warranty. As JRC's largest North American dealer, and an authorized JRC service center, you can purchase your NRD-345 with complete \$799.95 (+\$10) Order #0345 confidence.

SPECIFICATIONS

Frequency Range	100 - 3000	0 kHz
Power	12 VDC .9	A
		S. included
Antenna Impedance	50/450 ohn	n
Selectivity (-6dB)	AM	4 kHz
	SSB/CW	
Sensitivity	<.3µV SSB	1.8-30 MHz
	(10 dB S+N	
Stability	±10 ppm 5	-60 mins.
	±2 ppm >6	
RS-232 Interface	4800 baud	(1/8/N/1)
IF Rejection	>70 dB	
Image Rejection		
Dynamic Range	100 dB (IF	range 500 Hz)
Audio Output	1 Watts at	8 Ohms
Standard Steps		
	10 kHz	
Circuit Type	Dual Conv.	Superhet.
Temperature	0° to 50°C	(32° to 122°F)
Dimensions		
	250x100x2	
Weight	7.7 Lbs. ne	et (3.5 kg)

LIMITED WARRANTY

Standard Manufacturer Warranty: 1 Year

Optional Extended Warranty To: 3 Years Order #1937 \$39.00

- S - C

NRD-345	NRD-515	NRD-525	NRD-535D	NRD545DS	Ş JR	C	Japan Radio Co., Ltd. OPTIONS
ă	ă	ď	ä	05			
Æ	Æ	Æ	Æ	E	C Order#	Price	Item
		+	+		0063	\$109.95	CMH-530 RTTY Demodulator Board permits reception of Baudot amateur RTTY at 45/50 baud at shifts of 85,
							200 and 425 Hz. Output is to a parallel printer port on the NRD-525 and to the RS-232C port on the NRD-535D.
		+			2308	\$34.98	6ZCJD00139 Printer Cable This preassembled cable connects the CMH-530 to a parallel printer.
+			+	+	0851	\$59.95	6ZCJD00350 Serial Cable Connects the NRD-535/545 to a DB25-type serial computer port. (6½ ft.)
		+	+		0667	\$69.98	NVA-88 Speaker Sized and finished to match the NRD-525. 4 ohms. 5"H x 7"W x 10"D. With cable.
					4 2096	\$149.95	NVA-92L Speaker With matching transformer. Gray. 5"H x 7"W x 10"D. With cable.
			+	+	0852	\$179.95	NVA-319 Speaker/Audio Filter Matches the NRD-535/545. With built-in audio filters. 4 ohms. With cable.
*	*	*	*		1225	\$139.95	CFL-218A Filter 1800 Hz -6dB Provides nice selectivity for SSB and for wide shifted (850 Hz) RTTY.
	*				0658	\$139.95	CFL-230 Filter 300 Hz -6dB Provides razor-sharp CW reception. Comes with NRD-515 filter PCB card.
*		*	*		♦ 0193	\$139.95	CFL-231 Filter 300 Hz -6dB This crystal filter provides razor-sharp CW reception.
*			*		0290	\$139.95	CFL-232 Filter 500 Hz -6dB Provides sharp selectivity for CW and for narrow shifted RTTY signals.
*		*	•		♦ 0294	\$139.95	CFL-233 Filter 1000 Hz -6dB This crystal filter is used for commercial RTTY and sharp SSB.
*			*		2455	\$139.95	CFL-251 Filter 2400 Hz -6dB This filter provides comfortable SSB listening and is a good for FAX.
			*		1223	\$79.95	CGD-135 High Stability Crystal Oscillator Reduces drift to an incredible ± 0.5 PPM.
				*	3727	\$99.95	CGD-197 High Stability Crystal Oscillator Reduces drift to an incredible ± 0.5 PPM.
			•		0677	\$369.95	CFL-243W Bandwidth Control Narrows the pass bandwidth enough to reduce disturbing signals.
			•		0714	\$239.95	CMF-78 ECSS Unit Reduces adjacent channel interference with little deterioration of tonal quality.
			*		1695	\$169.95	6ZPJD00070 B.W.C. Upgrade Kit Only for early NRD-535D's with serial numbers under BR56005.
*					2002	\$19.95	CFQ-8673 Filter Board This auxilliary board is required for adding an optional filter to the NRD-345.
				*	3728	\$369.95	CHE-199 VHF-UHF Converter This option extends coverage up to 1849 MHz (less cellular).
+	+	+	+	+	♦ 0682	\$69.95	ST-3 Communications Headphones Comfortable, great souding, quality headphones (see pg. 28).
	+				3746	\$99.98	NDH-518 96 Channel External Memory Stores frequency only. Plugs into the rear of the NRD-515.
					<i>♦</i> 3675	\$399.95	MPBX10832 Cabinet Very heavy-duty desk-top cabinet for NRD-301A. Light green.
					♦ 3769	\$19.95	MPKC01741 24 VDC Power Cable Approximately 3.9 foot long for NRD-301A.
			+		3725	\$99.95	ERGO 3 Windows 95 Control Pg. Supports databases, spectrum & signal analysis, propagation evaluation, etc.

SHIPPING: Include \$4 shipping per accessory except speakers, headphones and ERGO3 which are \$5. CHE-199 is \$8. There is FREE shipping on all accessory items (except speakers) at time of receiver purchase.

- **LEGEND:** ♦ User installable with no soldering.
 - Requires soldering and/or technical skill.
 - A supplied option with the NRD-535D.

Universal Radio 6830 Americana Pkwy. Reynoldsburg, Ohio 43068

Page 9

NRD-301A

JRC Japan Radio Co., Ltd.

What kind of receiver is designed for professional use, 24 hours per day? What kind of receiver is designed for intuitive, non-fatiguing monitoring by shipboard radio operators? Such a receiver is the Japan Radio Company's NRD-301A. The display is large. The knobs are large. Each mode has a separate button. Each bandwidth has a separate button. There are separate knobs for RF Gain, Volume, Pass Band Shift and Squelch. This receiver is a dream to operate and is arguably the most impressive looking radio we have ever offered. And performance, as you would expect, is second to none.

Coverage is 90.000 to 29999.999 kHz with 1 Hz display in LSB, USB,

AM, CW, DSB (AM), FSK (RTTY) and FAX modes. Supplied bandwidths include: 6, 3 and .5 kHz (.3 and 1 kHz optional - see page 9). The built in 300 channel memory stores: frequency, mode, bandwidth, AGC and ATT data. Scan and sweep are supported. Other refinements include: AF Filter, NB, Lock, Dimmer, Self-Test, AGC selection and front-firing built-in speaker. The NRD-301A is designed for mounting in a standard 19 inch commercial rack. It is shown here in its optional MPBX10832 desktop cabinet (see page 9). To learn the full story on this most interesting radio, please request the color brochure with full specifications.



PRICING

NRD-301A List Price	\$8600.00
NRD-301A Discount Price	
Order #3673	\$4499.95
Shipping/Handling/Insurance	\$26.00



AR-7030 & AR-7030 PLUS

The AOR AR7030 is the result of a combined project between the AOR Company of Japan and a designer group in England. The AR7030 represents the very latest and best design featuring exceptionally strong signal handling and is bristling with enhanced features. The AR7030 has been targeted to handle strong signals that are of prime concern to European listeners. It offers greater than -35dBM IP3 (Intercept point 3) and greater than 100 dbm dynamic range.



This coupled with excellent selectivity make the AR7030 a strong choice for the shortwave broadcast listener or DXer. Although performance is excellent, features have not been forgotten. You get: Synchronous AM, Passband Tuning, six levels of attenuation, dual VFOs and 24 hour clock-timer. The 100 scannable memories store frequency, bandwidth, PBS, Squelch and BFO settings. The mini headphone jack will accept a mono or stereo 3.5mm plug. The two line 48 character backlit LCD gives you the status of the receiver. The supplied full-featured 32 button infrared remote provides access to virtually all facilities including: volume, tone, numeric keypad, memories, PBT, filter selection, etc. A remote RS-232 level port (5 pin 240° DIN) is also provided for computer control. Made in England. Includes 120 VAC wall transformer.

9	ġ				
703				OPTIONS	
ABZ030	AR7030 +	Order#	Price \$189.95	Item LEGEND ◆ User installable	
4			44.95	AOR BP123 Internal Lead Acid Battery AOR CFJ455K8 Murata 1 kHz Filter AOR CFJ455K8 Murata 1 kHz Filter AOR CFJ455K8 Murata 1 kHz Filter AOR CFJ455K8 Murata 1 kHz Filter AOR CFJ455K8 Murata 1 kHz Filter AOR CFJ455K8 Murata 1 kHz Filter	
<	*	2371	44.95		
4	+	0749	239.95	AOR Data-Master Windows 95 Control Program	
<	*	2146	49.95	AOR FL124 Daughter Board	
<	>	3600	119.95	AOR FPU7030 CPU Upgrade (only) for AR7030	
<	*	2739	89.95	AOR MF4 Collins 4 kHz AM Filter	
<		1215	89.95	TOTAL OF COMMING OF REAL PRINTERS	
<	>	3601	299.95	of the second of the second of Allion	
4	+	3753	199.95	AOR LA320 Loop Aerial 1.6-15 MHz. Please see page 32.	
4	+	0174	79.95	AOR SM7030 Service Kit Includes PC diagnostic disk.	
4	+	2028	29.95	AOR TW7030 3 Foot Telescopic Whip Antenna	
	*	0889	239.95	AOR UPNB7030 NB and Notch Upgrade for AR7030+	
<	*	3480	139.95	AOR XTAL 2.4 2.4 kHz 8 Pole Filter	

SHIPPING: Include \$5 shipping per accessory except filters and FL124 which are \$4.

There is FREE shipping on all AOR accessory items at time of receiver purchase.

AR-7030 PLUS

The "Plus" version retains all of the regular AR7030 features and includes the following: Increase balance of the mixer, high tolerance, low noise components, 400 total memories, multitimers, alpha tagging, enhanced RF attenuator, higher spec. antenna input, ceramic metal cased 4 kHz filter. Typical bandwidths are: 9.5, 5.3, 4 and 2.2 kHz.

SPECIFICATIONS

Frequency Range 0 - 32000 kHz Circuit Type Dual Conv. Superhet. IF
Stability±2.5 PPM
Dynamic Range >100dB AM (7 kHz) >105dB SSB (2.2 kHz) >110dB CW (.5 kHz)
Audio Output 2W 8 ohms
Antenna Impedance 50 ohm or single wire
Power 12-15 VDC 500 ma
or with supplied AC PS
Dimensions 9.4"W x 3.55"H x 10" D
238x93x277mm (2.2 kg)
Weight 4.9 Lbs. (9 Lbs. ship)

PRICING

AR-7030 List Price \$1479.95
AR-7030 Discount Price
Order #0777 \$1149.95 (+\$12)
AR-7030 Plus List Price \$1699.95
AR-7030 Plus Discount Price
Order #3396 \$1299.95 (+\$14)

ERGO SOFTWARE

This Windows 95 based software allows PC control of your 7030, 7030+ and much more. This is not an AOR product.

Order #3725 \$99.95 (+\$5)

Communications Receivers

YAESU

FRG-100B



The Yaesu FRG-100B receiver provides the performance of a quality communications receiver at an affordable price. Solid coverage from 50 kHz to 30 MHz in CW, SSB and AM modes (FM mode with optional #0816) is featured. The FRG-100B incorporates features that both the casual and serious shortwave listeners will appreciate. Reception modes and most receiver functions are push-button selectable from the front panel. A crisp backlit LCD with adjustable brightness provides frequency readout and important operational status at a single glance. Selectable tuning steps of 10 Hz, 100 Hz and 1 kHz are standard, with other tuning steps programmable by the user. Fifty tunable memories store frequency, mode and filter information. Two additional memories provide band-edge information used for scanning. The FRG-100B has programmable 12/24 hour clocks and sleep timers to enable you to automatically switch the receiver on/off to record your favorite broadcasts. Multifunction scanning (memory, band, selectable group or priority) with carrier or time-delay is supported. A special broadcast band mode enables convenient selection of 16 pre-programmed international broadcast bands. The FRG-100B's adjustable SSB carrier offset permits you to custom tailor the receiver's audio response. CW enthusiasts will enjoy the reverse BFO offset and selectable CW sideband. Installation of the 250 or 500 Hz narrow filter further enhances CW reception and interference rejection. Other features include adjustable AGC, RF attenuator, noise blanker, all-mode squelch, and signal strength meter. The Yaesu CAT system provides a direct link to the CPU in the FRG-100B, allowing a personal computer with the optional Yaesu FIF CAT interface. This can provide computer controlled customized scanning and remote control of most receiver functions.

OPTIONS AND MODIFICATIONS

◆ Yaesu FM-100 FM Mode Permits FM-mode shortwave reception.	#0816 \$44.95 (+\$3)
◆ Yaesu TCXO-4. Improves stability from <± 10 p.p.m. to <± 2 p.p.m.	#3176 94.95 (+\$3)
◆ Yaesu YF-110C CW Filter 500 Hz for CW and 170 Hz RTTY	#3177 144.95 (+\$3)
◆ Yaesu YF-110CN CW Filter 250 Hz for CW and 170 Hz RTTY	#3178 144.95 (+\$4)
◆ Yaesu FIF-232C Interface Facilitates RS232 connection to PC	#0322 89.95 (+\$4)

♣ B.E.E.I. Wired Keypad #0398 59.95 (+^{\$}3) Enjoy the convenience of keypad entry! The B.E.E.I. wired keypad plugs into the "CAT" socket on the rear of the FRG-100. No battery is required. Functions include: frequency selection, recall memory, recall lower scan limit, recall upper scan limit, tune receiver up or down and turn the receiver on and off. Made in France.

SPECIFICATIONS

Frequency Range	50 - 30000 kHz
Antenna Impedance	
Selectivity (-6dB)	AM-W 6.0 kHz
	AM-N 4.0 kHz
	SSB/CW 2.4 kHz
	FM (opt.) 15.0 kHz
Sensitivity	<.25 µV 1.8-30 MHz SSE
	$<$ 1 μ V 1.8-30 MHz AM
Freq. Stability	<± 10 p.p.m. 0-50°C.
Intermediate Freqs	47.21 MHz, 455 kHz
Audio Output	1.4 Watts at 8 Ohms
Squelch Sensitivity	
	<.32 µV 28-30 MHz FM
IF Rejection	>70 dB (1.8-30 MHz)
Image Rejection	>60 dB (1.8-30 MHz)
Standard Steps	10Hz/100Hz CW/SSB
	100Hz/1kHz AM/FM
Circuit Type	Dual Conv. Superhet.
Dimensions	9"W x 3.6"H x 9.3D"
Weight	6.6 Lbs. (9 Lbs. ship)

PRICING

FRG-100B List Price ^{\$} 739.00 FRG-100B Discount Price	
Order #2786 \$599.95	
Shipping/Handling/Insurance \$11.00	



HF-150

SPECIFICATIONS

Frequency Range 30 kHz - 30 MHz
Modes AM, Sync, LSB and USB
Intermediate Freqs 45 MHz, 455 kHz
Tuning Increment 8 Hz, 60 Hz.
Sensitivity5 µV, .2 µV preamp on
Selectivity 7.0/2.5 kHz -6 dB
Stability< <± 30 Hz in 1 hour typical
Antenna Jack SO-239 50 Ohm & Clips
Spurious Response . >65 dB rejection
Distortion < 1% THD all modes
Output Power 1.6W 8 ohms 5% THD
Power Required 8 AA cells or 12 VDC
Dimensions 7.2"W x 3.2"H x 6.5"D
Weight 3 Lbs. (1.3 kg)

There has quite literally never before been a receiver like the Lowe HF-150, because only now have technology and engineering been combined in such an effective compact package. Coverage is from 30 kHz to 30 MHz with variable tuning rate according to speed rotation of the main tuning knob. Modes are AM, AM Synchronous, USB and LSB (also for CW/RTTY/FAX). The dual conversion design features selectable IF bandwidths of 2.5 and 7 kHz. Sixty memories store frequency and mode. The 1 kHz LCD frequency display can also show: memory number, mode, bandwidth and other functions. Despite its *full-size* performance, the HF-150 is housed in a 7.2" x 3.2" x 6.5" rugged "tank-like" all metal case. The HF-150 operates from 8 internal AA cells or 12 VDC (batteries and power supply are not provided).

Lowe HF-150

List \$639.95

Order #0150

HF-150 EUROPA

The new HF-150 Europa is similar to the HF-150, but features 6.5/2.6 kHz filters and a black case. List \$899.95 Order #3460 \$699.95 (+\$9)

HF-150 MARINE

The new HF-150 Marine is similar to the HF-150, but the main printed circuit board has been spraid with an anti-fungus lacquer. Black case.
List \$799.95 Order #1018 \$659.95 (+\$9)

OPTIONS

OPTIONS					
#	Model	Description	Price		
3348	AP-150	Audio Processor	389.95 (+\$6)		
2634	C-150	Nylon System Bag	69.95 (+\$4)		
1224	IF-150	PC Interface & Cbl.	79.95 (+\$3)		
0585	KPAD-2	Wired Keypad	79.95 (+\$3)		
2719	MB-150	Mobile Bracket	64.95 (+\$4)		
	RK-150	System Stack Rack	99.95 (+\$5)		
0626	RK-150E	Rack Extension Kit	39.95 (+\$4)		
	PR-150	Preselector	299.95 (+\$7)		
1150	WIN-150	PC Control Software	e 69.95 (+\$3)		
Free a	accessory s	hipping at time of rece	eiver purchase.		



WATKINS-JOHNSON

HF-1000A



The new Watkins-Johnson HF-1000A is a fully synthesized general coverage receiver that combines analog and digital signal processing (DSP) to achieve a level of performance not previously available to the shortwave listener. Covering 5 kHz to 30 MHz with 1 Hz tuning and display resolution, the HF-1000A now provides capability previously enjoyed only by military and commercial users. Functions such as a synchronous AM demodulation, noise blanking, I.F. filtering, AGC, demodulation, Beat Frequency Oscillator and passband tuning are accomplished through the use of DSP techniques. Filters with superior amplitude and group delay characteristics are achieved with digital stability and repeatability. An astounding array of 58 I.F. bandwidths are available to allow the operator to optimize selectivity under any signal environment. Filters range from 56 Hz, for monitoring CW with exceptional signal-to-noise ratios, all the way up to 8 kHz for monitoring AM signals with maximum fidelity. Available detection modes are synchronous AM, FM, CW, USB, LSB and ISB. A tunable BFO can be adjusted in 10 Hz steps over a ±8000 Hz range, and passband tuning is available to further enhance the reception of CW signals. Gain control can be accomplished manually or automatically, with fast and slow AGC modes available. The squelch threshold is adjustable from 0 to -135 dBm, or it can be disabled. A noise blanking feature can also be enabled to effectively eliminate the adverse effects of impulse noise. A tunable I.F. notch filter allows the operator to reject undesired signals with the IF passband. The HF-1000A has an internal switchable preamplifier and attenuator, and analog Smeter, plus a built-in diagnostic self-test capability.

In addition to fixed-frequency tuning, the HF-1000A provides fast, flexible scanning capability. Three scan modes are available: channel scan, F1-F2 scan and F1-F2 scan with lockouts. For all scan modes, the dwell time can be set from .5 to 20 seconds or infinite. In channel scan mode, 100 programmable memory channels are available. Sectors of memory can be specified for individual channel scans, allowing the available memory to be subdivided into multiple search scenarios. The operator can specify certain channels to be skipped without having to delete them from memory. Memory channels can also be single-stepped manually. In both F1-F2 scan modes, the step size is user-selectable from 1 Hz to 25 Hz. Up to 100 independent frequency lockouts can be stored.

The HF-1000A can be operated locally via the front panel or remotely via one of two selectable serial interfaces. Measuring 5.25 x 19 inches, the microprocessor-controlled front panel provides a user-friendly operator interface with dedicated, logically arranged controls and large, easy-to-read LED displays. A majority of the HF-1000A operator-selectable parameters are controllable and accessible via the RS-232 remote interface. A Carrier Sense Multiple Access (CSMA) with Collision Detection with a limited instruction set interface may be enabled, in lieu of RS-232, to allow the HF-1000A to be controlled using a command protocol similar to several popular consumer receivers. Selection of the active interface is via an internal switch setting or by front panel entry. All receiver inputs and outputs are available on the rear panel of the unit with the exception of the front-panel mounted headphone jack. The antenna and external reference inputs, as well as the signal monitor and predetected I.F. outputs are available on BNC connectors. Speaker and dual-balanced line audio outputs are available on a terminal strip along with DC-coupled audio, RSSI and squelch outputs and a mute control input. The RS-232 interface is available on a DB-25 and CSMA interface is provided via a miniature stereo phone jack. The HF-1000A can be used as a tabletop receiver or mounted in a standard 19 inch equipment rack occupying 5.25 inches of vertical space. Operates 97 to 253 VAC (47-63 Hz) automatically adjusting to the input line voltage. One year limited warranty. Made in U.S.A. *Passport To World Band Radio 1998* says, "The current version of the Watkins-Johnson is the ultimate in world band DX machines."

SPECIFICATIONS

I - O CONNECTORS

IF FILTERS

Frequency Range 5 - 30000 kHz
Display Resolution 1 Hz
Power 97 - 253 VAC (47-440 Hz)
Consumption 35W typical
Antenna Impedance 50 or 450 ohm
Selectivity (-3dB) see IF FILTERS chart
Sensitivity
<.56 µV .5-30 MHz SSB
< 1.58 µV .5-30 MHz AM
(S+N/N=10dB,no preamp) Ref. Freq. Stability <± 1 p.p.m.
I.F. Rejection 85 dB min (>90 typical)
3rd Order Intercept +30 dBm typical
2rd Order Intercept +30 dBm typical
AGC Attack Time 15 msec typical
AGC Decay Time Fast: 25 msec typical
Slow: 4 seconds typical
Audio Output
Antenna Input 50 ohms nominal, BNC
I.F. Output
Noise Figure
Remote Control RS-232 full dupl. DB25.
75, 150, 300, 600, 1200
2400, 4800 & 9600 baud
MTBF 10,000 hours
Dimensions 19.0"W x 5.25"H x 20.0"D

Weight 15 Lbs. (19 Lbs. ship)

Input	Antenna BNC
	External Reference . BNC
	Power IEC 3-pin
	Mute Terminal block
Output	Signal Monitor BNC
	I.F BNC
	Line Output A Terminal Block
	Line Output B Terminal Block
	Speaker Terminal Block
	DC coupled audio Terminal Block
	Squelch Terminal Block
	Signal Strength Terminal Block
	Headphone 1/4" stereo
Both	CSMA Remote Intfc. 1/8" mini stereo
	RS-232 DB 25 female

56	113	225	450	900	1800	3600	7200
63	125	250	500	1000	2000	4000	8000
69	138	275	550	1100	2200	4400	
75	150	300	600	1200	2400	4800	
81	163	325	650	1300	2600	5200	
88	175	350	700	1400	2800	5600	
94	188	375	750	1500	3000	6000	
100	200	400	800	1600	3200	6400	
	(Nominal 3-dB bandwidth in Hz)						

PRICING
HF-1000A List Price\$3995.00
HF-1000A Discount Price
Order #1500 \$3799.00
Shipping/Handling/Insurance \$24.00

DDICING

OPTIONS

OICOM

R-8500-02

SPECIFICATIONS

Frequency Range1-1999.99 MHz
Power 13.8 VDC 2 Amps
Antenna Impedance 50 ohm unbalanced
Selectivity (-6dB) FM-N 5.5 kHz
FM/AM 12 kHz
FM-W 150 kHz
SSB/CW 2.2 kHz
Sensitivity14 dB µ 2-30 MHz
-10 db μ 30-999.9 MHz
-10 db μ 1240-1300 MHz
SSB (10 dB S/N)
Spurious Rejection >60 dB 1.5-30 MHz
>50 dB 30-1000 MHz
IF Shift Range ± 1.2 kHz
Dynamic Range 107 dB
Frequency Stability ± 100 Hz <30 MHz
± 3 PPM >30 MHz
Circuit Type Triple Conversion except
Dual Conversion on WFM
Audio Output 2 Watts 4 - 8 Ohms.
Dimensions 11.3" x 4.4" x 12.16"
Weight
Specifications are subject to change.

The R-8500-02 produces performance, coverage and sophistication rarely seen outside the military commercial market. Covering 100 kHz to 1999.99 MHz (less cellular), this receiver does cover it all; and more importantly; it does it well throughout this extraordinary range. Most wideband receivers tend to perform only mod-



estly below 30 MHz. The R-8500 (and R-9000) are clear exceptions to this rule. Reception modes include AM, LSB, USB, CW, FM-N and FM-W. This receiver is equipped with IF Shift and Auto Peak Filter functions ... a first for receivers in this class. The IF shift effectively rejects nearby signals in the SSB modes. The APF can select between two bandwidths and serves as a tone control in the FM mode and can also selectivity boost signals in the CW mode. Triple conversion and advanced RF circuits achieve an improved dynamic range of 107 dB and an intercept point of 27.5 dBm. Separate band pass filters minimize cross modulation and provide high sensitivity in the .1 to 30 MHz range. The R-8500 employs a newly designed PLL circuit which provides tuning and readout resolution to an amazing 10 Hz. A host of tuning steps are featured: 10, 50, 100 Hz, 1, 2.5, 5, 9, 10, 12.5, 20, 25, 100 kHz and 1 MHz. In addition you can program your own tuning step (.5-199.5 kHz). And what a memory system! 1000 channels are available, organized in 20 banks of 40 channels, plus 100 skip channels and 100 Auto Write Memories. Other refinements include: Noise Blanker, S and Center Tune Meter, RF Attenuator, LCD Dimmer, Clock-Timer, Record Jack and Recorder Activation Jack, Selectable AGC, Main Dial Tension adjustment and 3 separate antenna connectors (covering 2 ranges: .1-30 and 30-2000 MHz). Supplied with AC adapter or may be run from 12 VDC. We are proud to offer this exceptional receiver!

The R-8500-03 govT model is the same as the R-8500-02, but without the 824-849 / 869-894 MHz. cellular gap and can be purchased via gov't. or qualifying commercial purchase order or for export only. Order #0663 \$1699.00 (+\$18)

PRICING

R-8500-02 List Price \$2156.00
R-8500-02 Discount Price
Order #1850 Please Call
Shipping/Handling/Insurance \$18.00

O ICOM

R-9000

SPECIFICATIONS

OI LOII	
Frequency Range	.1 - 1999.8 MHz 110 - 120 VAC 60 Hz
	Less than 110 VA
Antenna Impedance	50 ohm (400-500 ohm1)
Selectivity (-6dB)	AM 6 kHz
Selectivity (-6dB)	SSB 2.4 kHz
	CW .5 kHz
	FM-N 6/15/30 kHz
	FM-W 150 kHz
Sensitivity	.16 µV 1.6-30 MHz
Continuity	.32 µV 30-999 MHz
Frequency Stability	
Inter. Freqs.(MHz)	1st IF 48.8 (.1-30)
	1st IF 778.7 (30-500)
	1st IF 278.7 (500-1000)
	2nd IF 10.7
	3rd IF .455
	4th IF 10.7
Audio Output	2.5W at 10% distortion
	with an 8 ohm load
Antenna Jacks	.1-30 MHz SO-239
	.1-30 MHz RCA 1
	30-1000 MHz N
	1000-1999 MHz N
	¹ HF Antenna Two

Dimensions 16.7"W x 5.9"H x 14.4"D

Weight 44.1 Lbs. (61 Lbs. ship)



The R-9000 is a commercial grade, all-mode, super wideband receiver covering 100 kHz to 1999.8 MHz. The most visible of the radio's many advanced features is the built-in multifunction CRT display. Receive frequencies, modes and additional useful data are displayed for your operating convenience. The CRT functions as a spectrum scope to show you, at a glance, the relative signal strengths of nearby receive frequencies. The screen can also display the contents of 10 memories at once, and can be scrolled to display other memories. The R-9000 boasts a total of 1000 memories (ten banks of 100) store frequencies, mode, filter width and tuning step increments. Tuning steps: 10 Hz, 100 Hz, 1 kHz, 5 kHz, 9 kHz, 10 kHz, 12.5 kHz, 20 kHz, 25 kHz and 100 kHz. The R-9000 has seven different scan functions with adjust scan speeds up to 13 channels/sec. *Program Scan, Memory Scan, Selected Number Memory Scan, Priority Scan, Voice Scan, ΔF Scan* and *Auto Memory Write Scan*.

Superior interference rejection is achieved with both IF shift and notch filters. Control features include dual clocks with five independent daily timers. Noise is reduced with a wide-narrow noise blanker. The squelch can operate by meter or noise level. The output of the CRT can be routed to an external monitor, and the CRT can act as a monitor for an external or internal video source. See TV or your RTTY decoder on the CRT! Rack mounting handles are included. Rear jacks include: DC Out, Ext. Spkr., Record Remote, Speech Out, Line Out, IF Out, Video In & Out, Data In, Acc., plus four antenna jack.

The Icom R-9000 can be purchased via government or qualifying commercial purchase order only, or for export.

ICOM PCR100-12



SPECIFICATIONS

Frequency Range 10 kHz - 824 MHz 849 - 869 MHz 894 - 1300 MHz Modes AM, FM-N, FM-W Frequency Step 5, 6.25, 9, 10,12.5, 15, 20, 25, 30, 50 , 100, 500 kHz and 1 MHz Sensitivity AM 1.8 µV 1.8-50 MHz1 FM-N .32µV 50-700 MHz² FM-N .4µV 700-1300 MHz² Selectivity AM/FM-N 6 kHz -6 dB AM/FM/FM-W 50 kHz -6 dB FM-W 230 kHz -6 dB Antenna Jack BNC 50 ohm Power Required 13.8 VDC .7A or supplied PS Output Power 200 mW 8 ohms 10% Dist. 1(10 dB S/N) 2(12 dB SINAD)

The Icom IC-PCR100-12 wideband computer receiver is easy to set up and easy to use and lets you tap into the world of wireless communications. Two different receiver screens are available. The Multi-Function screen provides control of all functions. The Simple Function screen provides basic controls for listening to regular broadcast stations. With coverage from 10 kHz to 1300 MHz (less cellular) the amount of radio you can hear is astounding. Listen to regular AM, FM and TV audio plus all shortwave broadcast frequencies. You can even hear CB, public service, VHF aeronautical and VHF marine. Reception modes include AM, FM-N and FM-W (no SSB/CW). Available memories are only limited by free hard disk space. The bandscope function lets you visually find busy frequencies within a specified bandwidth (up to ±2 MHz). Several scanning functions are available: Program, Auto-Memory Write, Memory, Mode. Select and Skip scan. Other outstanding features include: bar-type S-Meter, built-in speaker, RF Attenuator, ANL, S-meter Squelch and stereo FM output to external speakers (not supplied). Requires: Windows® 95/98, i486 DX4 or Pentium CPU, 10 MB HD, 16 MB RAM, Serial port (38400 bps) and VGA monitor. Includes: software, wire type antenna, serial cable and AC adapter. List \$359.00 Order #3100 \$299.95 (+\$8)

The PCR100-08 govT model is the same as the PCR100-12, but without the 824-849/869-894 MHz cellular gap and can be purchased via government or qualifying commercial purchase order or for

Order #1482

export only.

WINRADIO WR1500i



This innovative wideband receiver plugs right into your Windows PC!



The WinRadio WR1500i integrates advanced radio receiver technology with the power of your computer. Coverage is from 150 kHz to 1500 MHz (less cellular) in AM, FM-W, FM-N, CW, LSB and USB modes. Selectivity is 2.5/6/17/230 kHz. Now with IF shift and spectrum display. System requirements: i486 or higher CPU, DOS 3.1 or higher or Windows® 3.1/95/98, 4 MB RAM and vacant 16-bit card slot. Audio output is to a mini stereo jack. Includes: software, RS-232 cable, start-up antenna and power supply.

List \$550.00 Order #3531 \$499.95 (+\$7)

The Digital Suite lets you decode: ACARS, Packet 300/1200, FAX, CTCSS and DTMF. Plus you get an audio scope and record capability. Requires Windows 95 or NT.

Order #1485 \$89.95 (+\$5)

ICOM PCR1000-02



The PCR1000 comes with the BC123A AC adapter, RS232 cable, telescopic antenna and software on two $3\frac{1}{2}$ " diskettes.

The new Icom PCR1000 wideband computer receiver connects externally to your PC. This provides compatibility with many computer models, even laptops. Incredible coverage is yours with reception from 10 kHz to 1300 MHz (less cellular). Modes of reception (and bandwidth) include AM (15/6 kHz), W-FM (230 kHz), N-FM (15/6), SSB (2.8 kHz) and CW (2.8 kHz). A triple conversion circuit ensures good performance over the entire range. Shortwave sensitivity (1.8-28 MHz) is 0.28µV. You can choose from three interface screes: Communications Receiver Screen, Component Receiver Screen or Radio Screen. Other refinements include: Unlimited Memories, Band Scope, IF Shift, NB, AFC, Voice Scan Control, CTCSS decode, six scan types and on-line help. A built-in speaker is provided. Jacks include: BNC antenna, mini stereo audio out, DB-9F RS-232C and mini Packet. System requirements: PC with 486x4, Pentium 100 or higher CPU, Windows 3.1 or higher, including Windows 95, 16 Mb RAM, 3.5" FD, 10 Mb HD space and VGA or SVGA display. The PCR1000 does come with an AC adapter, but can also be powered from 12 VDC at 0.7 Amps (with optional OPC-131 DC power cable). Only 5"x7.9"x1.2" 2 Lbs. 3 oz. Please call for latest pricing.

\$319.95 (+\$8)

The **PCR1000-**or **govt** model is the same as the PCR1000-02, but *without* the 824-849 / 869-894 MHz. cellular gap and can be purchased via gov't. or qualifying commercial purchase order or for export only. *Order #3687* \$509.95 (+\$8)

PRICING

PCR1000-02 List Price	\$629.00
PCR1000-02 Discount Price	10.10
Order #3628	\$499.95
Shipping/Handling/Insurance	\$8.00

PCR1000 R-7100 R-8500 Order# Item

*			3097	UT-106 DSP Option
	+		3002	UT-36 Voice Syntz.
+	+	+	0828	AH-7000 Antenna
	+		2771	CT-17 CI-V Level Conv
	+		1672	SP-20 Speaker & Filter
		+	1473	SP-21 Speaker
		+	0903	FL-52A CW Filter
		+	1479	CR-293 Hi Stability
	+	+	2841	TV-R7100 TV Adapter

3437 UT-102 Voice Syntz.

3765 RS-8500 Software

	Description	Price	
	This option announces the displayed frequency.	\$54.95	(+\$3)
	Adds auto notch in SSB/AM/FM and noise reduction in all modes.	139.95	(+\$4)
	This option announces the displayed frequency in English or Japanese.	54.95 ((+\$3)
	Outdoor omni-antenna with 50 ft. lead-in covering 25-1300 MHz. (See page 48)	149.95 ((+\$8)
	For controlling receiver with computer via RS-232C port. (Software not provided)	119.95 (+\$5)
r	External speaker with built-in audio filters. Includes audio cable.	214.95 (+\$6)
	External speaker. Includes audio cable.	. 99.95 (+\$7)
	This 500 Hz filter is great for CW or narrow shifted RTTY.	169.95 (+\$3)
	This high stability option virtually eliminates drift	269.95 (+\$4)
	Receive standard TV (NTSC format) amateur fast scan TV (ATV). B&W or color	299.95 (+\$6)
	composite video monitor is required. Also provides FM stereo. Output is RCA jacks		
	Windows software on two 3.5" disks and computer cable	. 69.95 (+\$4)

Universal Radio 6830 Americana Pkwy. Reynoldsburg, Ohio 43068

O ICOM

R-10-05



The R-10-15 GOVT model is the same as the R-10-05, but *without* the cellular gaps. The R-10-15 GOVT can be purchased via government or qualifying commercial purchase order or for export only.

Order #3551 \$449.95 (+\$7)

Tune in the world wherever you go. The R-10 has extremely wide coverage from .5 to 1300 MHz (less 824-849 & 869-894 MHz cellular). This radio performs. It is a triple conversion superheterodyne and utilizes newly designed, tunable bandpass filters for good image and intermodulation rejection. The internal speaker provides powerful clear audio. The R-10 also features a real-time bandscope function making it easy to find busy frequencies and also easy to observe the receiving frequency band conditions. The passband width of the bandscope is selectable from the radio of ±100 kHz (20 kHz channel spacing) and ±25 kHz (5 kHz channel spacing). A sophisticated 1000 channel memory system with 8-character alphanumeric channel names offers great convenience. Even the memory banks can be labeled with a 10 character name. Scan types include: programmed, memory, bank, mode and more. The new SIGNAV Signal Navigation scan function is also featured. Icom's special VSC Voice Scan Control stops only on voice signals. Other refinements include: NB, NL, Attenuator and AFC. The R-10 is very computer friendly! You can clone, download or control your R-10 using optional Icom CSR10 software and OPC-478 PC Cloning Cable. The R-10 comes with four AA NiCad cells, a wall charger, belt cllip, wrist strap and flexible antenna. You may also operate this radio from four alkaline AA cells. Never before could you hold so much sophistication and capability in your hand.

Icom R-10-05 List \$503.00 Order #3550 \$389.95 (+\$7)

OPTIONS

#	Model	Item Description	Price
1180	OPC-478	PC to R-10 Cloning Cable	\$ 39.95 (+\$3)
0918	OPC-474	R-10 to R-10 Cloning Cable	16.95 (+\$3)
2483	CS R10	PC Cloning Software	9.95 (+\$3)
0149	LC-140	Carrying Case	26.95 (+\$3)
2771	CT-17	Level Converter	119.95 (+\$5)
3150	CP-12L	Cigarette Plug With Filter	27.95 (+\$3)
1666	OPC-254L	Charging Cord	10.95 (+\$2)

◆ Shipping on accessories is free at time of receiver purchase.

O ICOM

R-100-11 & R-100-3 GOVT



The Icom R-100-11 is a compact multi-function receiver covering from 100 kHz to 800 MHZ and 900 to 1856 MHz (specifications guaranteed from 500 kHz to 800 and 900 to 1800 MHz). Reception modes include AM, FM and FM-wide. The R-100-11 is easy to operate. You can use either the keyboard or tuning control to access frequency and memory channels. Frequency Step: 1, 5, 8, 9, 10, 12.5, 15, 20, 25 kHz (12.5, 20, 25 kHz above 905 MHz). Of the 121 total memory channels, 100 store operating frequencies, modes, RF attenuator and preamplifier settings. 20 scan edge memory channels are used for specifying ten pairs of frequency ranges required for programmed scan. Auto-memory write automatically memorizes received frequencies (channels 80~99). One channel is used for priority scan. The built-in 24 hour clock-timer has lithium battery backup. A 15 dB preamp operates in the 50 to 800 MHz range. Three separate antenna jacks are utilized for .1 - 50 PL259, 50 - 800 (N) and 905 - 1856 MHz (N). A large backlit LCD ensures readability. Other supplied features include: AFC, ANL, mobile bracket and telescopic antenna. Requires 13.8 VDC @1 Amp. 5.9 x 2 x 7.1" 3.1 Lb. (1.4 kg)



The **Pyramid PS-3** 3 amp regulated 12 VDC power supply will run the R-100 from 120 VAC. With fuse, LED, surge and short protection.

Order #2184 \$22.95 (+\$4)

Icom R-100-11 List \$1008.00 Order #2103 \$819.95 (+\$9)

The R-100-3 GOVT model is the same as the R-100-11, but without the 800-900 MHz gap. The R-100-3 GOVT can be purchased via government or qualifying commercial purchase order or for export only.

Icom R-100-3 List \$1008.00 Order #0808 \$899.95 (+\$9)

SPECIFICATIONS

Dimensions	.5.1"H x 2.3"W x 1.2"D
	130 H x 58 W x 32 D mm
Weight	. 11 oz (310 g)
Frequency Range	. 500 kHz - 824 MHz
	849-869 MHz
	894-1300 MHz
Modes	. AM, FM-N, FM-W,
	CW, LSB and USB
Frequency Step	1, .5, 1, 5, 6.25, 8, 9,
	10,12.5, 15, 20, 25, 30,
	50 or 100 kHz & user def.
Sensitivity	. AM 1 μV 5-200 MHz ¹
,	CW .25 µV 5-200 MHz1
	FM-N .32µV 5-200 MHz ²
	FM-W 1µV 75-200 MHz ²
	FM-W 2.2µV 200-400 MHz ²
Selectivity	. AM, FM-N 15 kHz -6 dB
	FM-W >150 -6 dB
	SSB, CW >4 kHz -6dB
Antenna Jack	
	. 120 mW 8 ohms 10% Dist.
	1(10 dB S/N) 2(12 dB SINAD)



DJ-X10T



The Alinco DJ-X10T has been a popular wideband handheld receiver in many parts of the world for some time and is now available in the U.S.A. The DJ-X10T employs a triple conversion superheterodyne circuit and covers 100 kHz to 2000 MHz (less cellular). Modes of reception include AM/ CW/USB/LSB/NFM and WFM. A total of 1200 memory channels are available in 30 banks of 40 channels each. The large, illuminated three line LCD even boasts a 40 segment spectral display. Other features include: dual VFO's, clock, help message menu system, beginner-expert modes, multiple S-meter displays, automatic memory write, multiple scanning modes, battery save function, PC programmable and PC controllable and monitor key. The DJ-X10T comes ready to operate with: antenna, charger, battery and manual. Only 2.25"x6"x1.125" Order #3610 \$389.95 (+\$8) List \$549.00

CRTICUS

	OPTIONS	
#	Item Description	Price
1084	EBP-33N NiCad 4V 650 ma	\$ 54.95 (+\$3)
0731	EBP-34N NiCad 4V 1200ma	72.95 (+\$3)
3166	EBP-37N NiCad 4V 700ma	28.95 (+\$3)
3664	EDC-36 Cigar Filter Cord	19.95 (+\$3)

Universal Radio 6830 Americana Pkwy. Reynoldsburg, Ohio 43068

Wideband Receivers



AR5000

The AOR AR5000 offers exceptional spectrum coverage. Covering all the way from 10 kHz to 2.6 GHz (less cellular), this "DC to daylight" radio won't miss much! Modes of reception include: AM, FM-N, FM-W, LSB, USB and CW.



Six bandwidths are supplied (3, 6, 15, 40, 110 and 220 kHz.) and a slot for a .5 kHz filter is available. The triple conversion circuit and varactor tuned front-end provides excellent overload characteristics. One thousand memories in 10 banks of 100 are featured. Other features include: two antenna inputs, antenna attenuator, keypad entry, computer control, squelch, S-meter and scanning. May be run from 12 VDC (1 Amp) or via supplied AC adapter.

AOR AR5000 List \$2199.00 The AR5000+3 model adds Noise Blanker, AFC, AM Sync. Detection and 2000 total memories. AOR AR5000+3 List \$2895.00

Order #3464 Please Call Order #3662 Please Call

SPECIFICATIONS

Frequency Range 10 kHz - 2600 MHz^ Modes Received AM ^cellular blocked

FM-Narrow FM-Wide LSB/USB/CW

Intermediate Freq. ... 1st 622.2 MHz 2nd 10.7 MHz

3rd .455 MHz

Sensitivity AM 10dB S/N: .6 uV 1.5 -30 MHz

FM 12dB SINAD .3 -.2µV 40-2600 MHz

Freq. Stability ±1 PPM (0°-50°C)

Selectivity3, 6, 15, 40, 110, 220 kHz Frequency Steps 1 Hz to 999.999 kHz

Ant. Impedance 50 Ohm

Power 13.8 VDC ±15% at 1 amp Dimensions 8.5"W x 3.5"H x 10"D

Weight 10 Lbs.





The AOR AR3000A offers high performance and wide coverage: .1 - 2036 MHz (less cellular) in FM-N, FM-W, USB, LSB, CW and AM. 400 memory channels are provided in four banks of 100 channels each. Each memory channel can store mode, frequency, RF attenuator setting and lockout status. The first channel of each bank may also be used as a priority channel. The scan rate is 50 ch. per second and search rate of 50 steps per second. Includes signal strength indicator. Runs from 13.8 VDC or with supplied wall adapter. List \$1329.95 Order #3246 \$1069.95 (+\$10)



The Icom IC-R2 is a miracle of miniaturization. At only 2.3"x3.4"x1" is it packed with features. It is especially big on coverage, tuning from 500 kHz to 1310 MHz (less cellular) in AM/FM/FM-W. Its triple conversion circuit provides amazing performance for the size. It has 400 channels of memory (in 8 banks), scanning at 30 channels per second. Also features: tone squelch, attenuator, lock, ten tuning steps, auto power-off and backlit LCD. Includes two NiCad AA cells, NiCad charging tray, flexible antenna, wrist strap and belt clip. List \$244.00 Order #2488 \$229.95 (+\$6)



- (less cellular) Multi Mode
- 1500 Memories
- Alphanumeric Labels 8 Search Banks
- 8 Scan Banks
- Dual VFOs
- Manual Tuning Dial
- Programmable Step Sizes PAL/NTSC Video Output
- Spectrum Display
- Ocolor LCD



The new AOR AR7000B is an innovative wide range, triple conversion receiver employing a DSP front end. A unique color LCD display indicates the status of this capable radio. Complete coverage from 100 kHz to 2000 MHz (less cellular frequencies) is supported in AM, FM-N (FM narrow), FM-W (FM wide), USB (upper sideband), LSB (lower sideband) and CW (Morse code) modes. Several bandwidths are supplied for optimum reception in various modes: CW 50, 150, 250, 500 and 800 Hz. SSB 2, 2.5 and 3 kHz. AM 3, 6 and 8 kHz, FM-N 15 kHz. FM-W 150 kHz. Other performance enhancing features include: IF shift, AGC FAST/SLOW and Attenuator. Video display output in both NTSC and PAL format is available. There is a big 1500 channel memory plus 8 search banks and 8 scan banks. A nine pin RS-232C computer port is on the back panel. The AR7000B even comes with an infrared remote control for operation from across the room. Antenna input is one BNC 50 ohm. AOR AR7000B List \$1499.00

KW KW KW

D3

Please see pages 32 and 48 for optional AOR antennas: LA320, MA500, DA3000 or SA7000.

Order #2385 \$1199.95 (+\$15)

- 500 kHz 2040 MHz (less cellular)
- All Mode
- 1000 Memories
- 12 Characters per Memory
- 20 Search Banks Priority Channel
- Dual VFOs
- Thumbwheel Tuning Dial
- Programmable Step Sizes
- Signal Strength MeterBand Scope
- Backlit LCD & Keypad
- Battery Save Function Attenuator
- True Carrier Insertion SSB
- Removable MW Antenna
- Optional Slot-Cards Computer Control Port
- 12 VDC Input Jack



The AR8200 truly represents the next generation of compact wideband receivers. This sensitive handheld radio covers 500 kHz to 2040 MHz (less cellular) in: Wide FM, Narrow FM, Super Narrow FM, Wide AM, Standard AM, Narrow AM, USB, LSB and CW. The side keypad has 4 arrow keys presented as a single rocker. 1000 Alpha memories in 20 banks are supplied. The scan-search rate is 37 steps/second. The AR8200 includes: 4 NiCad AA cells, charger, belt-clip, MW antenna and flexible antenna. The state-of-the-art AR8200 even accepts plug-in slot card options (see below). This may be the best engineered and most capable handheld scanner ever! 2.4"x6"x1.5" List \$799.95 Order #2485 \$549.95 (+\$8)

OPTIONAL SLOT CARDS

	OF HOMAL SEOT CANDS	
#0898	VI8200 Voice Inverter	\$69.95
#1641	CT8200 CTCSS Squelch	\$79.95
	TE8200 Tone Eliminator	\$49.95
	RU8200 IC Sound Recorder	\$64.95
#1829	EM8200 External Memory	\$69.95

ACCESSORIES AND ANTENNAS

ı	#1023	CC8200	PC Cable & (CD	\$99.95
ı	#3755	SA7000	Base Ant. to	2 GHz	\$189.95
l			HF Loop Ante		page 32)
l	#0880	ABF125	VHF Airband	Filter	\$27.95

uniden

Bearcat

BC-3000XLT

- 25-550 MHz ● 760-1300 MHz
- (less cellular) • AM, WFM, NFM
- 400 Memories
- 10 Priority Channels
- Automatic Store
- Channel Lockout Key
- Data Skip
- Attenuator
- Frequency Transfer
- Automatic Sorting



The BC-3000XLT 400 channel scanner offers exceptional coverage with super fast TurboScan scanning up to 100 channels per second. Tuning step increments can be selected at 5, 12.5, 25, 50 kHz or auto. Automatic store searches and stores frequencies to an available channel. Automatic sorting optimizes memory scanning. The data skip function skips over unwanted data transmissions and reduces birdies. Comes with NiCad battery pack, AC adapter/charger, flex antenna, belt clip and earphone. 7.4" H x 2.7"W x 1.5"D. 13.0 oz. \$339.95 (+\$8) List \$699.95 Order #0970

Extra NiCad battery pack for BC2500 or 3000XLT. \$59.95 (+\$3) List \$64.95 Order #0654

Bearcat

BC-895XLT

• 216-400 UHF Air Band

Federal Gov't

UHF "T" Band

UHF Band

Ham Band 70 Cm

• 400-420

• 420-450



- 29 30 Ham Band-10 M
- 30 50 VHF Low 50 - 54 Ham Band-6 M
- 108-136 Aircraft
- **136-144** • 144-148 Ham Band-2 M
- 450-470 Federal Gov't • 470-512 ● 806-956
- 800 MHz Band • 148-174 VHF High Band

The BC-895XLT Trunk-Tracker™ is a 300 channel (ten bank) scanner. Since the introduction of trunked systems, tracking a conversation on a conventional scanner was virtually impossible. Now with the Trunk-Tracker™ System you can search, lock-on and track a conversation-even if the channel changes between replies. Trunk delay and Trunk lockout is featured. Scan at 100 channels per second. Features: LCD dimmer, Sindicator, channel lockout, count key, weather alert, autosort and ten priority channels. The BC-895XLT even has built-in CTCSS decode. Jacks for: antenna (BNC), ext. speaker, record, aux., 12 VDC power and RS-232 port (requires special plug and software not provided). With telescoping whip antenna and AC adapter. 10.5"x3.5"x7.375" Order #1300 \$249.95 (+\$8) List \$499.95

uniden

BC-235XLT

- 29 30
- 30 50 VHF Low
- 50 54
- 108-137 **137-144**
- 144-148
- 148-174
- 406-420 Federal Gov't **420-450**
- **450-470**
- 470-512 ● 806-956



The new BC-235XLT does something no other scanner has ever done before. It has the ability to track certain municipal trunking systems including Motorola's type I, II, IIi and hybrid systems. When the service you are listening to jumps frequency, the BC-235 has the ability to follow the signal. You won't miss any of the action. This scanner offers 12 bands of coverage and a 300 channel memory. Comes with NiCad battery pack, AC adapter/ charger, flex antenna, belt clip and earphone. \$199.95 (+\$7) List \$429.95 Order #0691

Bearcat

BC-760XLT



- 30 50 VHF Low
- 50 54 Ham Band-6 M 108-136 Aircraft
- Federal Gov't **136-144**
- 144-148 Ham Band-2 M
- 406-420 Federal Gov't Ham Band 70 Cm 420-450 450-470 **UHF Band**
- UHF "T" Band 470-512 ● 806-956 800 MHz Band (less cellular)

The BC-760XLT is a twelve band scanner with channel backing to separate the 100 memory channel into five 20 channel banks. The service scan allows you to automatically scan pole, fire, emergency services, marine and aircraft bands. Other features include: direct channel access, instant weather and scan delay. With AC adapter, telescopic whip, flip stand and mounting bracket. List \$299.95 Order #3829 \$219.95 (+\$7)



BCT-7

The BCT-7 BearTracker 100 channel, pre-programmed scanner covers VHF Low, Hi, Air, CB, UHF and 806-956 (less cellular). Has full digital display. Even helps detect nearby PD vehicles. \$169.95 (+\$6) Order #3414

Specifications and coverage subject to change.

uniden

Bearcat SC-150B

- Ham Band 10 M 29 - 30
- VHF Low 30 - 50
- 50 54 Ham Band 6 M
- 108-137 Aircraft
- Federal Gov't 137-144 • 144-148 Ham Band 2 M
- 148-174 VHF High Band
- 406-420 Federal Gov't
- Ham Band 70 Cm 420-450
- 450-470 **UHF** Band
- 470-512 UHF "T" Band ● 806-956
- 800 MHz Band (less cellular)



The SC-150 Sportcat is a powerful yet portable 100 channel, 12 band scanner. Ten channel banks and 10 priority channels allow you to customize your scanning. The Turbo Scan feature allows scanning at 100 channels per second. The SC-150 has: instant weather, band search, scan delay, full illuminated LCD display, keypad lock, channel lockout, a rechargeable battery pack, BNC type flex antenna, belt clip, earphone and AC adapter/charger. 63/4"H x 21/2"W x 13/4"D. .77 lbs. Order #3346 \$179.95 (+\$7) List \$249.95

SC-150 RACEPAK

The SC-150 Sportcat Racepak includes the SC-150 plus a great set of professional, full sized, padded headphones. Superb for scanner listening in noisy environments like sporting events. Order #2259 \$199.95 (+\$8) List \$269.95

Bearcat

BC-9000XLT



Similar to BC-890, but covers 25-550 & 760-1300 less cellular. 500 channels. Alphanumeric display. Order #1445 \$359.95 (+\$8) List \$769.95

BCT-12

The Uniden BCT-12 Bear-Track preprogrammed (by state) scanner looks like a radar detector and covers VHF Low, Hi, UHF

and 806-956 (less cellular).

Even helps detect nearby PD vehicles. Comes with antenna, 12 VDC cord, cigar lighter cord, and suction cup windshield mount. 3" x 1.3" x 5.5". List \$249.95 Order #2784 \$179.95 (+^{\$}6)

Also see page 20 for the new Sony scanners!

SONY

ICF-SW77



The Sony ICF-SW77 offers sophistication not previously seen in portable or table top receivers. On the performance side of the equation, this radio offers several useful circuits. A built-in programmable RF tuning unit allows the set to track a signal from the time the antenna first picks it up, while cutting out other signals and reducing interference. The SW77 incorporates a band pass filter that splits each band into five smaller bands, thus virtually eliminating interference from outside the band. Fifty Hertz tuning resolution permits precise signal tuning for maximum clarity (LCD resolution is 100 Hz). The advanced synchronous detection circuit effectively addresses the two biggest problems on shortwave: fading and interference from adjacent stations. The SW77 is also rich in features. Station Name Tuning is now a reality. 162 memories are available to store your favorite stations including: frequency, name (to six characters) and program times. Sony has preset 94 of these memory channels with the world's most popular SW stations. (You can over-write these factory-set memories). You select the station name and the radio will provide the best frequency based on the current time! The SW77 also includes all the expected features: excellent AM & FM bands, keypad entry, light, bass, treble, wide-narrow, LSB/USB, ext. antenna jack, dial lock, S-Meter, manual tuning knob, frequency scanning, dual clocks, five-event timer, etc. Despite its advanced and many features, the SW77 provides a friendly "interface" between the listener and radio. Requires four C cells (not supplied). Includes adapter for 120 VAC operation, stereo earphones, carrying belt and AN-71 wind-up antenna. With: Owner's Manual, How To Catch The Wave and Wave Handbook. 11" x 7" x 2" 3.25 Lbs. (51/4 Lbs. ship). One year limited warranty. Sony ICF-SW77 List \$649.95 Order #2493 \$469.95 (+\$8)

SONY

ICF-SW1000T



ICF-2010



The ICF-2010 is not a new model, however, Sony continues to supply this respected veteran for DXer's seeking top performance in a portable package. Passport To World Band Radio 1999 says, "Since its introduction, it has always been, and very much is, our unanimous favorite among portables." It also offers the VHF aeronautical band, seldom found in other portable receivers. Direct access tuning is provided along with a multifunction LCD digital readout for unsurpassed convenience and accuracy. 32 Memories can be accessed via just one keystroke. A conventional tuning knob is provided for manual tuning. Convenient scan and memory scan tuning modes are also available. Continuous coverage from 150 - 29999.9 kHz in AM/SSB/CW and 76-108 MHz in FM is provided plus VHF air (116-136 MHz). Dual PLL quartz frequency synthesis ensures exceptional accuracy and stability. The LCD readout on shortwave reads out to 100 Hz (e.g.: 13973.4)! A switchable 12/24 hour clock is featured as well as an advanced program timer that can be set to turn the receiver on and off up to four times per day, tuning in up to four different stations! Switchable wide or narrow IF bandwidth can be selected to minimize adjacent channel interference. Synchronous tuning locks in on weak stations. Record and earphone outputs are furnished. With built-in ferrite bar antenna for longwave and medium wave and a telescopic antenna for FM, SW and AIR reception plus external antenna jack. Supplied accessories: AC adapter, earphone, shoulder strap, wire antenna, shortwave guide book and owner's manual. Two AA cells are required for either DC or 120 VAC operation. Three D cells are required for DC operation. 11 3/8" x 6 1/4" x 2 1/8", 5 Lbs. One year limited warranty.

Sony ICF-2010

List \$449.95

Order #0841

The new Sony ICF-SW1000T combines a no-compromise portable worldband radio with a top-quality, feather-touch, auto-reverse stereo cassette recorder. Please note that the stereo cassette recorder is built into the back side of this radio. Coverage is from 150 to 30000 kHz to include all longwave, medium wave and shortwave frequencies. FM stereo coverage is from 76 to 108 MHz. Tuning and display resolution is down to 1 kHz on LW, MW and SW. Single sideband tuning resolution is .1 kHz. Selectable Synchronous Detection improves reception during periods of fading and interference. Recording can be made directly off-the-air or via the supplied stereo mike. The built-in 24 hour clock with alarm and sleep functions can make a tape recording while you sleep. Other features include: dial light, local-DX switch, frequency scanning, stereo-mono switch, tone button, 32 memories and external antenna jack. Includes: vinyl case, stereo earphones, stereo microphone, hand strap, wind-up antenna and Sony Wave Guide. Requires 3 VDC or three AA cells (not supplied). See optional AC-E30HG AC adapter listed below. 7" x 4.25" x 1.625" 1 Lb .4 oz. One year limited warranty. Sony ICF-SW1000T

List \$599.95

Order #1994

\$449.95 (+\$7)

Sony AC-E30HG

List \$22.99

Order #2013

\$19.95 (+\$3)

Please note: All AC adapters enjoy free shipping if ordered with a receiver.

Sony has put together a great "system" for you. The ICF-SW1000TS includes the ICF-SW1000T plus the Sony AN-LP1 Portable Folding Active Antenna and the Sony AC adapter. The Sony AN-LP1 antenna is described on page 32.

Sony ICF-SW1000TS

List \$649.95

Order #3688

\$**519.95** (+\$9)

Universal Radio 6830 Americana Pkwy. Reynoldsburg, Ohio 43068

Page 18

SONY

ICF-SW7600G

The Sony ICF-SW7600G is a compact, microprocessor-controlled, frequency synthesized general coverage portable receiver. Direct access tuning is provided along with a multifunction LCD

digital readout for unsurpassed convenience and accuracy (1 kHz step tuning on SW, MW and LW). Just press

the numbered keys to match the frequency you want to hear. Manual and automatic scan tuning are also provided. Twenty-two memories are provided for your favorite stations. The ICF-SW7600G tunes from 150 to 29995 kHz for solid coverage of longwave, medium wave and shortwave. Smooth SSB and Morse code reception is now provided through a switch with separate LSB and USB positions plus fine tuning thumb-wheel. A special Synchronous Detector circuit reduces fading and annoying "beat" frequency interference from adjacent stations as well as distortion due to fading shortwave reception. FM stereo (76 - 108 MHz) is provided to the mini stereo headphone jack. A record output jack is included for taping off the air. Advanced features include: dial light, LED tune indicator, tilt stand, keypad lock, 24 hour digital quartz clock with dual timer, Local-DX sensitivity switch, 9/10 kHz MW tuning switch, tone switch and external antenna jack. Supplied accessories include: vinyl case, wind-up antenna and Sony Wave Handbook. Requires 6 VDC or four AA cells (not supplied). 71/2" x 43/4" x 11/4" 22 oz. (3 Lbs. ship). One year limited

The optional AC-E60HG wall adapter is order #0713 \$19.95 (+\$3 UPS).

ICF-SW7600G

List \$229.95

Order #0760

\$169.95 (+\$7)

SONY

ICF-SW07

Sony changes the shape of worldband radio with the introduction of the ICF-SW07. Don't let the diminutive size and different shape fool you. The ICF-SW07 is packed with features and performance. Frequency

coverage is 150 to 29999 kHz to include all longwave, medium wave (AM) and shortwave frequencies. FM stereo is provided to the earphone and line out jacks. The dual conversion shortwave circuit supports 1 kHz readout for precise tuning via the up/down buttons, scanning or 100 user-defined alphanumeric memories. A new feature called SW Station Call Tuning (VOA/BBC/DW/Other) automatically chooses frequencies used in your time zone from the removable ROM data module. Other refinements include: synchronous detection, single sideband reception, tone switch, lock, 24 hour clock timer, sleep timer, variable attenuator, external antenna jack and backlit display. Supplied accessories include: carry case, AN-LP2 active loop antenna, Sony Wave Handbook, AC adapter and stereo earphones. Requires two AA cells (not supplied). Silver and gray case. 5.4x1.3x3.6" closed.

List \$529.95

ICF-SW30



This stylish dual conversion digital portable covers: AM (530-1710 kHz), FM and ten shortwave bands: 3700-4200, 4650-5150, 5800-6300, 6950-7450, 9375-10000, 11525-12150, 13375-14000, 14975-15600, 17475-18100 and 21320-21950 kHz. Tuning is accomplished via UP/DOWN buttons, 15 memory presets or automatic frequency scan. Shortwave display resolution is 1 kHz. The ICF-SW30 features a built-in local/world digital clock and 60 minute sleep timer. PLL quartz frequency synthesis and dual conversion superheterodyne circuitry combine to offer solid performance. The ICF-SW30 has: an LED tune indicator, sleep button, lock switch, 9 or 10 kHz MW tuning, tilt-stand bracket, Local/DX switch, tone switch and a 2.125" speaker plus a stereo earphone jack. Requires three AA cells (not supplied) or 4.5 VDC. 6.75" x 4.4" x 1.4". 16 oz. One year limited warranty.

ICF-SW30

\$89.95 (+\$5) Order #2230

Operate your ICF-SW30 or ICF-SW33 from 120 VAC house current. (All AC adapters enjoy free shipping if ordered with a receiver.)

AC-E45HG Order #1632 \$**19.95** (+\$3)

ICF-SW100S

ICF-SW07



features of a full-sized portable, but is small enough to fit into your shirt pocket (4.375x1x2.9", 8 oz). Coverage includes LW/MW/SW/SSB from 150-29999 kHz plus the FM band (76-108 MHz). The dual-conversion super heterodyne circuitry provides high sensitivity and interference rejection. A synchronous detector with selectable sideband is included to help reduce the effects of adjacent channel interference and fading. The world time clock feature provides local and 24-city name/time display. 50 memory station presets allow storage and recall of frequency and station name at a touch of a button. The auto scan feature allows scanning of available stations one at a time with a few seconds pause before resuming or can hold on a specific frequency. Other features include 1 kHz tuning, dual clock/alarm, LED tuning indicator, tone control and FM stereo via headphone jack. Requires two AA cells (not supplied). Comes with AC adapter, active antenna, stereo earpieces and carrying case.

ICF-SW100S

Order #0111

\$359.95 (+\$6)

ICF-SW40

\$419.95 (+\$8)



Order #0007

Sony ICF-SW40 is both an analog and digital portable covering LW, MW, FM and shortwave from 3850 to 26100 kHz. Features include: 20 memories, DX/Local LED tune indicator, clock with sleep and dial light. Includes cloth case. Requires three AA cells (not supplied) or 4.5VDC or optional AC-E45HG. 6.75" x4.25"x1.62" 15 oz.

ICF-SW40

Order #0140 \$119.95 (+\$5)

Operate your ICF-SW40 from 120 VAC house current. (Free shipping if ordered with a receiver.) \$19.95 (+\$3) Order #1632 AC-E45HG

CAR POWER ADAPTERS

These Sony power adapters plug into your vehicle's cigarette lighter. Saves on batteries.

For ICF-SW10 and ICF-SW100S.

Order #3463 DCC-E230

\$19.95 (+\$3)

For ICF-SW55, ICF-SW77 and ICF-SW7600G. DCC-E260HG Order #1652 \$19.95 (+\$3)

ICF-SC1PC

SONY

The Sony SW10 analog portable covers LW, MW (530-1600 kHz), FM and nine SW bands: 4750-5150, 5850-6300, 7050-7500, 9400-10010, 11550-12400, 13450-14100, 15050-16000, 17400-18150 and 21350-22150 kHz. Features: 21/4" speaker, LED tune indicator and stereo earphone jack.



ICF-SW10

Includes Sony Wave Guide. Requires two AA cells (not supplied) or 3VDC. 6 1/2" x 41/2" x 11/2" 12 oz. (1 Lb. ship). One year limited warranty. Sony ICF-SW10 List \$59.95 Order #0323 \$49.95 (+\$4)

Sony AC-E30HG

List \$22.99

Order #2013

\$19.95 (+\$3)

ICF-SW12

This AM, FM, shortwave analog clock radio was really designed with the traveller in mind. Worldband coverage: 4.75-5.06, 5.9-6.2, 7.1-7.35, 9.4-9.99, 11.6-12.1, 13.57-13.87, 15.1-15.8, 17.48-17.9 and 21.45-21.75 MHz. It has a sophisticated backlit LCD world clock display. It wakes you to the buzzer. Antennas include a built-in ferrite bar for AM and a convenient telescopic antenna for

FM and SW reception. Requires two AA cells (not supplied). 4.38" x 3.13" x 1.2" One year limited warranty. Sony ICF-SW12 List \$129.95 Order #2022

\$89.95 (+\$5)

SONY

The Sony ICF-SC1 scans all frequencies from 25 to 1300 MHz (less cellular) in AM, FM-W and FM-N modes. The ample 300 channel memories stores your favorite frequencies in 10 banks of 30 channels each. The "Intelligent Active Memory System" memorizes a frequency which has been received for five seconds or longer and scans all frequencies in the "Intelligent Memory Database". Other features include: skip function, key lock, backlit LCD. 2.7x7x1.75". Supplied with AC power adapter, earphone, belt holder, antenna and frequency guidebook. Requires 4 AA cells. List \$329.95 Order #1576



\$259.95 (+\$7)

The Sony ICF-SC1PC system is a scanner listener's dream come true. This new scanner has all the features of the ICF-SC1 plus everything you need to command and control the scanner from your Windows 95 computer. The ICF-SC1 PC features a bi-directional PC interface with search and control capabilities. Everything you need is supplied. A special RS-232 serial cable (DB9) is completely assembled and ready to plug into your PC and scanner. A special clamp filter to minimize RFI is thoughtfully supplied. The sophisticated Windows 95 program on CD puts you in complete control of the scanner. All major control functions are supported including: scanning options, direct tuning, skip function, unlimited memories, unlimited skip preference files and import/export capability. You can even search the nationwide frequency database of 3 million records supplied on the included CD-ROM. Here is simplicity and sophistication at an affordable price. Sony ICF-SC1PC List \$429.95 Order #1574 \$319.95 (+\$7)

GRUNDIG

G4 EXECUTIVE TRAVELLER





The Grundig G4 Executive Traveller is designed for the world traveller. The frequency coverage of this compact digital portable includes AM, FM and six SW bands: 5.85-6.5, 7-7.7, 9.38-10.1, 11.6-12.3, 14.99-15.85 and 17.3-18.35 MHz. A digital quartz clock wakes you to the radio. A tuning LED lets you accurately tune stations. The G4 displays to 1 kHz on MW and 10 kHz on shortwave. This radio fits in the middle of a luxurious black leather wallet with pockets for credit cards, cash, business cards and passport. The radio, which is the size of a pack of cigarettes, may also be removed from the leather wallet and used separately. Requires two AA cells (supplied). The G4 Executive Traveller features a built in speaker and earphones are also included for private listening. Radio size: 2.7x4.5x1". The radio is silver and black and the leather wallet is black.

Grundig G4 Black List \$149.95

Order #1613

\$119.95 (+\$5)

As above, but with a tan leather wallet. Grundig G4 Tan

List \$149.95

Order #1555

\$119.95 (+\$5)

GRUNDIG

YB-300PE



The recently announced Grundig YB-300 PE Professional Edition promises continued value in the Yacht Boy series tradition. This new model brings impressive features and performance to the under \$100 price category. Coverage includes: AM (520-1710 kHz) and FM plus shortwave from 2.3-7.3 and 9.5-26.1 MHz. FM is stereo to the earphone jack. Twenty-four memories store your favorite stations. Direct keypad entry, scanning plus Up and Down tuning provides rapid access to any frequency. The YB-300 PE features a large LCD display with display lamp for momentary illumination. A built in 24 hour clock keeps you on U.T.C. World Time. An adjustable 10 to 90 minute sleep timer turns the radio off even if your fall asleep. Other refinements include: DX-Local Switch, Scan, Lock and External Antenna Jack. Your YB-300PE includes a protective travel pouch, AC power adapter, Grundig Wave Guide, carrying strap and stereo earphones. The YB-300PE operates from three AA cells (supplied). Titanium colored case 5.9"x3.5"x1.2". All Grundig shortwave radios feature a one year limited

Grundig YB-300PE List \$129.95

Order #0300

\$99.95 (+\$7)

Universal Radio 6830 Americana Pkwy. Reynoldsburg, Ohio 43068

Page 20

GRUNDIG

YB-400PE

The legend of the famous Yacht Boy 400 lives on in this latest model the YB-400 Professional Edition. Larry Magne, Editor-in-Chief of Passport to Worldband Radio says the YB-400PE is " ... the best compact shortwave portable we have tested." Coverage is complete including long wave (144 - 353 kHz), AM band



to 1710 kHz and shortwave from 1711 to 30000 kHz. FM stereo is provided to the headphone jack. A thumb wheel knob on the side of the radio provides smooth single sideband (SSB) tuning. The illuminated digital display provides tuning resolution at 1 or 5 kHz on shortwave. Two bandwidths are featured. The narrow position affords maximum selectivity, or the wide position may be chosen for best audio fidelity. The keypad will quickly get you to any frequency or store up to 40 of your favorite stations in the presets. The presets may be accessed directly or you can scan through them by using the radio's second set of UP/DOWN buttons. The YB-400PE can also frequency search. The dual digital clock is visible while the radio is playing. Other refinements include: snooze and sleep buttons, lock, HI/LOW tone switch, LOCAL/DX switch, and 9/10 kHz MW scan selection. External jacks are provided to earphone (3.5 mm), antenna (3.5 mm) and 9 VDC input. The YB-400PE comes with: Grundig brand AC adapter, stereo ear plugs, windup antenna, Owners Manual, Grundig Shortwave Guide and vinyl carry case. Requires six AA cells (not supplied). The cabinet has a stunning titanium colored finish. 8"Wx5"Hx1.5"D. 1 Lb. 5 oz. One year limited warrantv. List \$249.95 Order #0400 \$199.95 (+\$8) Grundig YB-400PE

MINI WORLD 100

Put the world in your pocket. This affordable analog portable receives AM (530-1710 kHz), FM and six shortwave bands: 5.8-6.4, 6.9-7.5, 9.4-10, 11.65-12.15, 15-15.65 and 17.5-18.14 MHz. An LED tuning indicator is featured. The Mini World 100 includes a belt clip and earbuds. Requires two AA cells (not supplied). 2.7"x4.2"x.8". What a great value!

List \$59.95

Order #2240

\$39.95 (+\$5)

FREE

Receive these FREE items from Universal with your purchase of a Grundig YB-400PE:



Radio Stand (\$8.95 value).



"DX Tips for Beginners"

GRUND

TRAVELLER II

The Grundig Traveller **Analog** receiver covers AM, FM and five shortwave bands: 5.8-6.2, 7.1-7.5, 9.5-



9.9, 11.65-12.05 and 15.1-15.6 MHz. The Traveller II Analog features a 12/24 hour LCD world clock alarm-timer with sleep function. Under a special flip-cover, there is a 24 position rotary dial to select 24 major cities for quick indication of international times. Includes the Grundig Shortwave Guide. Requires three AA cells (not supplied) or 3 VDC. 5.5"W x 3.7"H x 1.4"D. The regular Traveller II is black and the IIPE is silver. Order #1293 \$49.95 (+\$6) Traveller II

Traveller II PE

Order #0200

\$49.95 (+\$6)

PLATINUM TRAVELLER

The Grundig G3 Platinum Traveller is an extremely stylish worldband digital portable designed for the listener on the go. Its clean lines and platinum colored finish, make this one of the sharpest portables we have ever offered. Coverage includes: AM (530-1710 kHz), FM broadcast and six shortwave bands: 5.9-6.3, 7.05-7.5, 9.5-10, 11.6-12.05, 15.1-15.6 and



17.5-18.10 MHz. The Platinum Traveller has an earphone output jack. The 12 hour clock doubles as an alarm. Includes protective travel cover. Requires two AA cells (not supplied). 4.5"x2.75"x.75"

Grundig G3 Platinum Traveller

Order #0703

\$79.95 (+\$7)

G2000A Porsche Design



This stunning AM, FM, SW radio was designed by F.A. Porsche of Germany. SW tunes 2.3-7.4 and 9.4-26.1 MHz via Up/Down buttons, auto search, direct keypad entry or via 20 memories. The digital quartz clock, with sleep timer, wakes you to a beep or radio. Features include: lock button, 9/ 10 kHz MW step and stereo/mono switch. With gorgeous, real leather, snap-on case, stereo earbuds and Grundig SW Guide. Requires three AA cells (not supplied) or 4.5 VDC. 5.5 x 3.5 x 1.3". Order #3685 \$148.95 (+\$6) List \$169.95 \$12.95 (+\$3) #1510 Grundig AC adapter

TRAVELLER II DIGITAL



The Traveller II Digital is a compact digital portable that covers AM, FM and SW from 2.3-7.4 and 9.4-26.1 MHz. Tuning is via Up/Down buttons, auto search or via the 20 memories. The dual-time quartz clock, with sleep timer, wakes you to buzzer or radio. A dial light, lock button, 9/10 kHz MW step and stereo/mono switch round out the features. Includes FM stereo to earjack. With carry case and Grundig SW Guide. Requires three AA cells (not supplied) or 4.5 VDC. 5.5"W x 3.3"H x 1.3"D. \$89.95 (+\$6) Order #0337 List \$109.95

Grundig AC adapter #1510 \$12.95 (+\$3)

TRAVELLER III DIGITAL



The Traveller III Digital is small on size, but big on features. Coverage includes AM, FM and SW from 2.3-7.4 and 9.4-26.1 MHz. Tuning is via Up/ Down buttons, auto search, direct keypad entry or via 20 memories. A digital quartz clock, with sleep timer, wakes you to a beep or radio. Also has lock button, 9/10 kHz MW step and stereo/mono switch. With carry case, stereo earbuds and Grundig SW Guide. Requires three AA cells (not supplied) or 4.5 VDC. 5.5"W x 3.5"H x 1.3"D. \$89.98 (+\$6)

List \$149.95 Order #3611 Grundig AC adapter #1510

\$12.95 (+\$3)

SANGEAN

ATS-808A



Smart styling, compact size and great performance combine to make the Sangean ATS-808A a favorite. Coverage includes LW, MW, all SW and FM (stereo to headphone jack). Five tuning methods: keypad entry, auto scan, manual scan, memory recall and manual two-speed rotary tuning knob. The attractive tricolored LCD display shows: frequency to 1 kHz, signal strength, memory status, dual UTC-local clock and band. A wide-narrow selectivity switch really helps in the crowded shortwave bands. Other features include: hi-low tone control, wide-narrow switch, local-DX switch. external antenna jack (mini), 54 memories (18 for SW) and dial lock. Includes stereo earphones and case. 73/4" x 41/2" x 11/2" 2 Lbs. Requires 6 AA cells (not supplied) or optional ADP-808 AC adapter. **ATS-808A** Order #0936 \$119.95 (+\$7)

Operate your Sangean ATS-808A or ATS-303 from 110 VAC wall current with the 6VDC adapter. (Free shipping if purchased with a radio).

ADP-808AC Order #1665 \$8.95 (+\$3)

ATS-303



If you want digital in a small and affordable package, consider the ATS-303. Coverage includes AM, FM and 13 SW bands, or in semi-continuous mode from 2.3-7.3 and 9.5-26.1 MHz. Tune via the Up-Down buttons, automatic tuning or from the 20 memories. The large LCD shows frequency or clock-timer information. Other features include: FM stereo to headphone jack, 9/10 kHz MW. low-battery indicator, stereo-mono switch, alarm by radio or buzzer, auto-scan, sleep-timer tune LED, dial lock and 6VDC jack. With: case and wave guide. Only 61/2" x 41/2" x 11/2" 10 oz. Requires four AA cells (not supplied) or optional #1665 ADP-808 AC adapter (see ATS-808A). Also see optional ANT-60 antenna on page 30. ATS-303 Order #0298 \$64.95 (+\$5)

ATS-818CS & ATS-818



You have been waiting for a quality digital world band radio with a built-in cassette recorder. Now you have it in the exciting Sangean ATS-818CS. This no-compromise receiver has full dual-conversion shortwave coverage (1.6 - 30 MHz) plus long wave, AM and FM (stereo to headphone jack). A BFO control is included for smooth SSB or CW reception. A big LCD display with dial lamp shows: frequency (1 kHz on SW), 24 hour time. battery indicator and signal strength. The receiver features an RF gain, AM, tone, wide-narrow selectivity, keypad entry, manual tuning knob, plus 45 memories (18 for shortwave). Includes AC adapter, external antenna adapter and wave guide. The recorder has a built-in mic and autoshutoff. Requires four D cells and three AA cells (not supplied). 111/4" x 7" x 21/2".

ATS-818CS Order #0367 \$189.99 (+\$7)

The Sangean ATS-818 is the same as above except with a slightly larger speaker, and no cassette recorder. Also includes AC adapter.

ATS-818 Order #2754 \$139.95 (+\$7)

ATS-404



The ATS-404 is one of most attractive and capable radios ever offered in the \$100 price range. Coverage includes AM, FM and 14 SW bands, or in continuous mode from 2.3-26.1 MHz. Tune via the Up-Down buttons, automatic tuning, keypad entry or from the 45 memories. The LCD shows frequency or the 12/24 hour clock. Other features include: FM stereo to headphone jack, low-battery indicator, dial lock, 9/10 kHz MW step, dial lamp, stereo-mono switch, alarm by radio or buzzer, auto-scan, sleep-timer tune LED, stereo-mono switch, tilt-stand and 6VDC jack. With: case, earphones and wave guide. Silver-gray matte finish. 61/2 "x4" x11/2" 10 oz. Requires four AA cells (not supplied) or optional #1665 ADP-808 AC adapter. ATS-404 Order #2181 \$99.95 (+\$6)

ATS-909



The ATS-909 is the flagship of the Sangean line. It packs features and performance into a very compact and stylish package. Coverage includes all long wave, medium wave and shortwave frequencies. FM and FM stereo to the headphone jack is also available. Shortwave performance is enhanced with a wide-narrow bandwidth switch and excellent single side band performance (SSB tuning to 40 Hz steps via fine tuning). Five tuning methods are featured: keypad entry, auto scan, manual up-down tuning, memory recall or manual knob tuning. The alphanumeric memory lets you store 306 presets (260 shortwave, 18 AM, 18 FM and 9 LW plus priority). The 3 event clock-timer displays even when the radio is tuning and has 42 world city zones stored. The large backlit LCD also features a signal strength and battery bar graph. The ATS-909 will display RDS on PL, PS and CT for station name and clock time in areas where this service is available. Also features a record iack and tone switch. Includes AC adapter, carry case, stereo ear buds, wave guide and Sangean ANT-60 roll-up antenna (shown on pg. 30). 81/2"x51/2"x11/2" 2 Lbs. Requires four AA cells. ATS-909 Order #1909 \$229.95 (+\$8)

ATS-606A/606AP/606P



The ATS-606A covers 153 - 29995 kHz plus FM stereo. It has digital readout, 1 kHz SW tuning, 54 memories & keypad entry. With *Auto Tune Scan* all memories are preset in order of station signal strength on FM/AM/LW. A dual digital clock-timer alarm shows local and UTC. With dial light, DX and lock switch. Requires 3 AA cells. 5¾" x 3½" x 1¼" 1 Lb. With: case, earbuds and SW guide. ATS-606A *Order #1916* \$139.95 (+\$6)

The ATS-606AP package also adds the ANT-60 antenna (see pg. 30) and multi-voltage AC adapter.

ATS-606AP Order #3319 \$169.95 (+\$6)

The ATS-606P is the same as the 606AP, but with only 45 memories & 5 kHz SW readout. *CLOSEOUT.* ATS-606P *Order #1020* \$99.98 (+\$6)

SONY ICF-M350V



credible value from Sony.

This four band **digital** portable receives AM (530 - 1710 kHz), FM, VHF TV audio (ch. 2-13) and the NOAA weather band! You can store five stations per band. The 3 inch speaker provides pleasant sound. Sony includes a lock button to freeze the radio's controls. The 12 hour digital clock-alarm continuously displays the time when the radio is off. This is the ultimate emergency radio for when the power fails. A great gift for that person who has everything! With mono earphone jack and hand strap. Requires 3 AA cells (not supplied). 4.5 VDC. 7.75" x 3.75" x 1.35" 16 oz. List \$59.95 Order #1056

Sony AC E-45HG AC wall adapter for above. (Free shipping if purchased with radio). List \$22.00 Order #1632 \$19.95 (+\$3)

FREE BONUS BOOK

Discover DX'ing! by J. Zondlo. Learn how to hear distant AM, FM and TV stations. **Free** with your GE Superadio III or \$5.95 separately.



The General Electric Superadio III was designed specifically for long range AM and FM reception. It features tuned RF on both AM and FM for excellent sensitivity. Optimum selectivity is provided by 4 IF tuned circuits on AM and 3 on FM. A wide/normal switch allows you to control selectivity. Excellent sound is achieved via a 61/2" woofer and 2" tweeter. Also includes: FM-AFC, bass and treble controls, mono mini earphone jack and folddown handle. A built-in 7 7/8" ferrite rod antenna brings in distant AM stations. Screw terminals are provided for external AM & FM antennas. Coverage: 530-1700 kHz and 88-108 MHz with analog tuning. This radio is a favorite among medium wave DX'ers, out performing multiband radios costing much more. Powered from 120 AC 60 Hz or six D cells (not supplied). 121/2"W x 101/2"H x 41/2"D. One year limited factory warranty.

List \$69.95 Order #0547 \$59.95 (+\$6)

ICF-C1100

This AM/FM analog clock radio was really designed with the traveller in mind. The ICF-C1100 is a compact 4" x 3" x 1.25" and weighs only 6.4 ounces. It has a sophisticated backlit

LCD world time clock display. It wakes you to the buzzer. A 59 minute sleep timer is also featured. Antennas include a built-in ferrite bar for AM, and a convenient telescopic antenna for FM reception. Requires two AAA cells (not supplied).

List \$49.95 Order #2644 \$44.95 (+\$5)

ICF-C203



tures include a dual alarm system permitting two separate wake-up times, 5

random station presets, sleep timer, wake-up station memory and one hour power backup.

List \$42.95 Order #3297 \$29.98 (+\$5)

ICF-C303



display and convenient dual alarms in the ICF-C303. Key features include: seven station presets, dual wake up, daily alarm canceller, 6 hour batteryless power backup, dream bar, sleep timer and large backlit LCD display.

List \$54.95 Order #3298 \$34.98 (+\$5)

ICF-C503



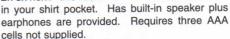
The Sony ICF-C503 is an advanced clock radio especially for the kitchen. All mounting hardware is included for easy installation. Convenient front controls let you tune in a wide choice of AM or FM radio stations, listen to Weather band stations and even VHF TV audio. Includes twenty presets and count down timer. 8.75x4.13x9.2"

List \$49.95 Order #3299 \$44.95 (+\$5)

GRUNDIG

G2 AM/FM/WX

Don't let the weather catch you by surprise! The compact Grundig G2 AM, FM, weather band radio keeps you informed. Enjoy full coverage of AM and FM and the three most popular weather frequencies: 162.4, 162.475 and 162.55 MHz. At only 2.75x4.5x1" this radio fits



List \$59.95 Order #0440 \$39.95 (+\$4)

CAUTION Speaker plus

HIDLAND 74-109



The Midland 74-109 is one of the best weather receivers we have ever seen. It receives seven NOAA channels and has a special alarm circuit activates when the National Weather Service issues a weather emergency alert. The alert mode can be set for: LED only, alarm & LED or voice modes. A convenient test button lets you test the alarm. It features a telescopic whip *plus* has an external antenna jack. There is also an accessory jack for keying external alert devices such as strobe lights or pillow vibrators. Install a 9V battery to ensure use during power outages. With AC power supply. 5.5" x 1.5" x 4.3"

List \$44.00 Order #3708 \$39.95 (+\$5)

SONY SRF-M32

The Sony SRF-M32
AM/FM digital
Walkman is just
right for anyone on
the go who enjoys
quality AM, FM
and FM stereo listening. Only 3 1/8"
x 2 7/8" x 1" and
weighing in at 4
ounces, this radio
won't slow you down!
Ten memories store
your favorite stations.

Even has a local/DX switch. Supplied with stereo headset and belt holder. A great gift for anyone. Requires two AAA cells (not supplied).

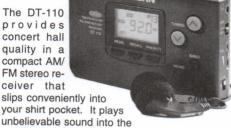
List \$34.95 Order #0

Order #0355 \$32.95 (+\$4)

SANGEAN

DT-110

The DT-110 provides concert hall quality in a compact AM/ FM stereo receiver that



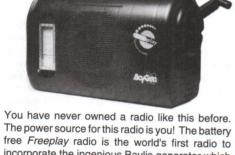
provided stereo ear buds. AM coverage includes the new extended band (520-1710 kHz). The digital display shows frequency and memory number. Other features include: Stereo-Mono Switch, Deep Bass Boost, 90 Minute Auto-Shut Off, Scanning and 9/10 kHz AM tuning steps. At only 3.54" x 2.24" x 0.78" and 3.15 oz. Requires two AAA cell (not supplied). Ninety day limited warranty.

List \$59.95

Order #2083

\$39.95 (+\$4)





incorporate the ingenious Baylis generator which combines the latest in radio technology with the centuries old clockwork spring. Winding the crank for only 20 seconds provides 30 minutes of listening. This has to be the most ecologically friendly radio ever produced. Weighing less than 7 pounds, it is the ultimate camping or emergency radio. Here is assured radio performance, day or night without the worry (and expense!) of batteries. Coverage includes AM from 520 to 1700. FM from 88 to 108 MHz and shortwave from 3000 to 12000 kHz. The built-in 3.5" speaker provides full sound. May also be operated from a 3 to 9VDC power source. 15.75" x 12.5" x 8" 6.75 Lbs. Six month limited warranty. Made in South Africa. List \$109.95 Order #3123 \$99.95 (+\$8)

The new Freeplay wind-up antenna attaches directly to the FPR1's telescopic whip antenna and really increases shortwave performance.

Antenna Order #1047 \$19.95 (+\$3)

Take a rest! Use this AC wall adapter for when AC power is available. Works on all FreePlay radios. **AC Adapter** Order #2299 \$10.95 (+\$3)

Please see page 28 for Freeplay headphones!

DT-300VW

Sangean has created a marvel of miniaturization in the DT-300VW. Imagine a pocket-sized digital receiver that receives AM, FM, FM stereo, VHF television audio and the weather band! You will use this radio at home, at work, while outdoors and as



an excellent source of information during bad weather. 36 presets are provided to store your favorite stations. Tuning on all bands is easy with an up and down button. Scan Tuning will search the bands for you and stop for 3-4 seconds on each active signal. Other features include: autoshutoff, LED tuning indicator, built-in speaker, clock, alarm and 1-180 min. timer, earphone jack and lightweight stereo earbuds. Requires two AAA cells (not supplied). Coverage: 520-1710 kHz, 87.5-108 MHz and TV channels 2-13 (VHF). Includes handy belt carry pouch. 3.9"H x 2.35"W x .75"D. 3.4 oz. Ninety day limited warranty. \$69.95 (+\$6)

List \$99.95 Order #3262

DT-200V

If you enjoy listening to AM, FM and TV audio while on the go, you will love this radio. About the size of a pack of cigarettes, it will fit in your shirt pocket and receives AM. FM and FM stereo, plus VHF television audio. 19 memories are provided to



store your favorite stations. Tuning on all bands is easy with an up and down button. Scan Tuning will search the bands for you and stop for 3-4 seconds on each active signal. Other features include auto-shutoff, lock switch, removable belt clip, built-in speaker, stereo-mono switch, earphone jack (3.5mm) and lightweight stereo earplugs. Ninety day limited warranty. Requires two AA cells (not supplied). Coverage: 520-1710 kHz. 87.5-108 MHz and TV channels 2-13 (VHF). Size: 43/8"H x 25/8"W x 3/4"D. 5 oz. without batteries. List \$79.95 Order #2605 \$59.95 (+\$5)

FPR2

Like the FPR1. the Freeplay FPR2 utilizes personally generated power to operate. anytime. anywhere. A bit



AM and FM bands; it makes a great outdoor companion or an excellent emergency radio. The new spring-saver circuit allows playtimes up to 60 minutes. At lower power demand, this device stores generated energy not required by the radio resulting in a lower unwind rate. AM coverage is from 500 to 1700 kHz. May also be operated from a 3 to 12 VDC power source or from 120 VAC using optional adapter #2299. 11.5" x 8" x 8" 5.3 Lbs. Six month ltd. warranty. Made in S. Africa. List \$79.95 Order #3667 \$69.95 (+\$7)

The FPR2SC is the same, but has a clear case and built-in solar cell for effortless daytime use. List \$89.95 Order #1441 \$79.95 (+\$7)

The FPR2SM is solid matte gray with solar cell. List \$89.95 Order #2413 \$79.95 (+\$7)

The FPR2SB is translucent blue with solar cell. List \$89.95 Order #3816 \$79.95 (+\$7)

The FPR2SG is translucent green with solar cell. List \$89.95 Order #3817 \$**79.95** (+\$7)

The FPR2SR is translucent red with solar cell. List \$89.95 Order #3818 \$79.95 (+\$7)



This AM/FM analog emergency radio will be your information source while on camping trips or during natural disasters. The ICF-B200 has a small builtin power generator. One minute of turning the generator, using the small built-in handle, will charge the internal batteries allowing the radio to used for up to 30 minutes. One hour of turning the generator allows a maximum of 15 hours of listening before the generator needs to again be used. The radio has a small audio beacon which can be used to signal for help. Other features include: water resistance, illuminated dial, headphone jack, wrist strap and LED charge indicator. Can also be operated using two AA cells (not supplied). Rugged, bright orange design. 6.5x3.675x2.25 List \$99.95 Order #3677 \$79.95 (+\$6)



You will never need batteries for the SunQuest AM/FM radio. It is powered by a built in solar cell or by the fold-away hand crank. It will also hold optional AA cells for conventional operation. With wrist strap. 6.6x3.6x1.7". Yellow case.

List \$39.95

Order #3784

\$34.95 (+\$4)

Kiwa

EARTH MONITOR

Kiwa Earth Monitor is an ELF/ VLF - Extremely Low / Very Low Frequency receiver that receives 10 Hz to 15 kHz. This receiver is ideal for listening Whistlers. to Tweeks, the Dawn Chorus and other natural radio signals from the planet Earth. These naturally occurring radio signals are due to lightning strikes and the sun as it affects the earth's magnetic field. Some of these signals sound very unusual, almost like birds chirping in the distance. The Earth Monitor features a remote field probe for optimum reception. It also includes a variable frequency bandpass filter that tunes 200 Hz to 8 kHz and a 300 Hz high

done at least one mile away from power lines. \$144.95 (+\$7) **Earth Monitor** Order #3252

pass filter for elimination of 60 Hz related interfer-

ence and noise. The Bandpass Filter has both

sharp and broad bandwidth settings. Headphone

and record outputs are included. Battery opera-

tion requires six AAA cells (not supplied). The

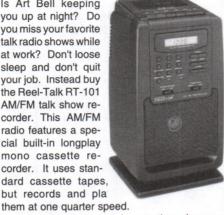
remote field probe comes with 20 feet of cable.

Please note that this type of monitoring must be

REE IL-talk

RT-101

Is Art Bell keeping you up at night? Do you miss your favorite talk radio shows while at work? Don't loose sleep and don't quit your job. Instead buy the Reel-Talk RT-101 AM/FM talk show recorder. This AM/FM radio features a special built-in longplay mono cassette recorder. It uses standard cassette tapes, but records and pla



You can therefore record up to three hours on each side of a 90 minute cassette tape. Once you have programmed the unit, it automatically turns on to record a program and turns off. If you record the same show every day, the timer will operate every 24 hours so you won't need to reprogram the unit. Other refinements include: digital readout, digital clock, bass boost, auto stop tape mechanism and built-in condenser mic. The tower design (6"x6"x12") fits anywhere. The unit operates from 120 VAC or six D cells. Three AA cells are required for memory backup. \$119.95 (+\$7)

Order #3706 List \$139.95

LUKE®



The Luke DP976 is an ideal emergency radio that can operate from four different power sources! This economy receiver has a built-in windup dynamo generator and a built-in solar cell. Conventional operation from two AA cells (not supplied) or external 3 VDC source is also supported. The Luke DP976 receives AM and FM plus these shortwave bands: 5.3-5.5, 5.9-6.2, 6.4-6.7, 7.1-7.5, 8.6-9, 9.5-10, 10.7-11.1, 11.5-12, 12.8-13.1, 13.4-13.9. 14.4-14.7. 15.1-15.6. 16.8-17.1 and 17.5-17.9 MHz. Other features include: power LED, mono earphones and wrist strap. 7.25x4.5x2.25" 1 Lb.

List \$79.95

Order #3779

\$69.95 (+\$5)

SANGEAN SR-1

The tonal quality and bass response of this tiny AM/FM/FM stereo radio will amaze you. It plays into stereo ear buds (provided) or the built-in speaker. At only 1.7x3.1x.7" it is a marvel. Requires one AAA cell. Order #2476 \$29.95 (+\$3)



Assistive Listening

The Americans with Disabilities Act requires public facilities to provide assistive listening systems in a public setting. Background noise can interfere with traditional audio systems, preventing the hearing impaired from fully participating. The F.C.C. has allocated a special assistive listening band from 72.1-72.9 and 75.5-75.9 MHz.

A complete assistive listening system would consist of a special FM assistive listening band transmitter (such as the ALT72) and one or more special FM receivers with assistive band coverage (such as the MR306). The system is simple to operate. Just set the desired frequency on the transmitter, program the receiver accordingly, and your message is heard by everyone.

Assistive listening applications include:

- Schools
- Stadiums
- Universities
- Tours

- Theaters
- Parks
- Houses of Worship
- Convention Centers
- Arenas
- Conference Rooms
- Auditoriums Audio Cueing

The R.L. Drake Company, of Franklin, Ohio provides quality assistive listening products at an affordable price.

ALT72



The Drake ALT72 transmits monaural FM audio in the special assistive listening band (72.1-72.9 and 75.5-75.9 MHz.) Eight selectable channels are available. The ALT72 features the maximum RF output allowed by the F.C.C. for a coverage potential of up to 700,000 square feet. The exact transmit range will depend on the nature of the building, and whether a supplementary antenna is used. XLR and RCA phono audio input jacks. \$399.95 (+\$9) List \$445.00 Order #3776

Save money with the ALT72 System package! Includes one ALT72 and two MR306's. List \$595.00 Order #0157 \$519.95 (+\$10)

ALT1000

The commercial grade, rack mountable ALT1000 assistive listening transmitter broadcasts in either mono or stereo FM. Operation is via front panel push buttons and features an LCD indication of the transmit frequency. 19x1.75x6.25' \$599.95 (+\$12) Order #3777 List \$699.00

MR306

Have you heard of assistive listening? Many theaters, auditoriums, stadiums, universities, tours and churches transmit their audio program on special FM frequencies for the hearing impaired. With a special receiver like the Drake



MR306, a person with hearing difficulty can hear every word. The MR306 tunes from 72-108.1 MHz to include the special assistive listening band (72-76 MHz) and the regular FM broadcast band. Listen via the built-in speaker or enjoy stereo reception via the supplied ear buds. Other refinements include: five memories, stereo-mono switch, lock feature, built-in speaker, belt clip and digital readout. Stereo earbuds are included. The MR306 operates approximately 30 hours from the two supplied AAA cells. 2.5x4.25x.5" 3.4 oz. \$89.95 (+\$5) Order #3778

1941 EMPIRE (CR18)



The limited edition 1941 Empire features hand crafted wood and veneer construction, high gloss cabinet finish, illuminated dial scale and authentic woven grill cloth. This model receives AM and FM plus has a cassette player discreetly mounted on the side. 10.25"x14"x7.25" 120 VAC.

Crosley CR18

Order #2593

\$89.95 (+\$7)

1932 CATHEDRAL (CR32)



The 1932 Cathedral Style features hand crafted wood and veneer construction, high gloss cabinet finish, illuminated dial scale and authentic woven grill cloth. This model receives AM and FM plus has a cassette player discreetly mounted on the side. It even has a tone control. 12"x12.5"x7.5" 120 VAC.

Crosley CR32

Order #1580

\$79.95 (+\$7)

1937 AERO (CR72)



The 1937 Aero is a faithful replica of the famous rounded corner tombstone radios of the 1930's. The Aero features a large aircraft style tuning dial accentuating its bold and dramatic formal art deco styling. With hand crafted wood and veneer construction, high gloss cabinet finish, illuminated dial scale and woven grill cloth. AM and FM plus cassette player. 10"x13.4"x7.25" 120 VAC.

Crosley CR72 Order#0000 Discontinued

1936 WOOD BLUEBIRD (CR36)



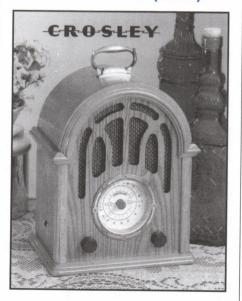
The 1936 Wood Bluebird features hand crafted wood and veneer construction, high gloss cabinet finish, illuminated dial scale and authentic woven grill cloth. This model receives AM and FM plus has a cassette player discreetly mounted on the side. 13x13.5"x7" 120 VAC.

Crosley CR36

Order #1928

\$89.95 (+\$7)

CROSLEY CUB (CR80)



The Crosley Cub was inspired by the classic cathedral design. The Crosley Cub captures the romance of this bygone era while replicating the first of the "midget" radios popularized in 1930. Midgets were scaled down versions of larger radios. This radio covers AM and FM and operates from four AA cells (not supplied) and has a handy carrying handle. 8.25"x5.75"

Crosley CR80

Order #2285 \$59.95 (+\$7)

CATHEDRAL CONSOLE (CR35)



Undoubtedly the most famous design in radio history is the Cathedral. The Crosley Cathedral Console combines an authentic radio design with a functional built-in table base. The impressive cabinet features an intricately carved grille highlighted by a large rund aircrcraft style tuning dial. A handy storage drawer and lower shelf are also featured. AM, FM and cassette. 12"x39.8"x10.5" Crosley CR35 Order #2292 \$139.95 (+\$10)

1950 SELECT-O-MATIC (CR10)

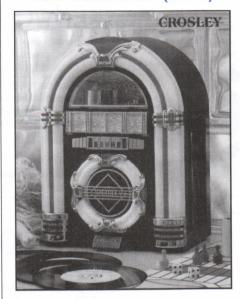


The 1950 Select-O-Matic features durable ABS plastic cabinet with chrome dipped finish. The movable song chart is illuminated and the selection buttons may be lowered to reveal the dialscale. The panel lights can be set on or off. This model receives AM and FM plus has a cassette player mounted on the side. 12"x13"x5.75" 120 VAC.

Order #1344 Crosley CR10

\$89.95 (+\$8)

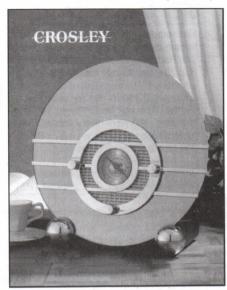
1947 JUKE BOX (CR11)



The 1947 Juke Box features hand crafted wood and veneer construction. The song chart lifts to reveal the dialscale and the front panel is illuminated. The panel light may be turned off. This model receives AM and FM and has a cassette player mounted on the side. The FM has an AFC feature on this and all Crosley models. 10.25"x14.25"x7.25" 120 VAC.

Crosley CR11 Order #1319 \$89.95 (+\$8)

1930'S BLUEBIRD (CR37)



Here is a perfect recreation of the world's most famous art deco radio. The 1930's Bluebird Replica is designed, engineered and crafted by hand. The hardwood case permits the ultimate resonance in AM or FM reception with AFC. The real cobalt blue mirror slants back dramatically as originally inspired in 1935. With illuminated dial scale and cassette player. 14"x14"x7.5" 120 VAC. \$109.95 (+\$9) Order #0412 **Crosley CR37**

1936 METRO (CR19)



The limited edition 1936 Metro features hand crafted wood and veneer construction, high gloss cabinet finish, illuminated dial scale and authentic woven grill cloth. This model receives AM and FM plus has a cassette player discreetly mounted on the side. 13.5"x8.5"x7" 120 VAC. Crosley CR19 Order #1801

\$89.95 (+\$8)

1937 RUBY (CR39)



The Crosley 1937 Ruby is a perfect recreation of an extremely rare wood radio first manufactured in 1937. This unique teardrop shaped radio features a high gloss wood cabinet and unmistakable illuminated ruby-red (simulated) tuning eye. AM and FM with FM AFC. 15.75"x7"x5.75" 120 VAC. Crosley CR39 Order #2484 \$79.95 (+\$8)

GRUNDIG CLASSIC 960



The Grundig Classic 960 Anniversary Edition receives AM, FM, FM Stereo and shortwave (2.8 to 22.2 MHz). The solid wood cabinet coupled with two 3" side speakers and one 4" center speaker yields rich sound. There is an Aux. Input to play a tape or CD deck through the Classic 960. Order #3684 \$219.95 (+\$9) Grundia 960

OLD TIME RADIO TAPES

Wouldn't it be great to actually hear old time radio programs through these beautiful sets? You can! Most of the Crosley recreations feature a cassette player on the side of the receiver. Imagine the fun of hearing these wonderful shows coming through these beautiful receivers.

A STATE OF THE PARTY OF THE PAR				_
Fibber McGee and Molly	Vol. #1	#3115	\$7.95	
	Vol. #1	#0235	\$7.95	
	Vol. #2	#0156	\$7.95	
		#1166	\$7.95	
	Vol. #1	#0065	\$7.95	
	Vol. #1	#2936	\$7.95	
	Vol. #2	#2489	\$7.95	
	Vol. #1	#0495	\$7.95	
	Vol. #1	#1890	\$7.95	
	Fibber McGee and Molly Abbott and Costello The Life of Riley War of the Worlds One Man's Family Old Time Radio Commercials The Lone Ranger Hopalong Cassidy The Lone Ranger	Abbott and Costello The Life of Riley War of the Worlds One Man's Family Old Time Radio Commercials The Lone Ranger Hopalong Cassidy Vol. #1 Vol. #2 Vol. #2 Vol. #1	Abbott and Costello Vol. #1 #0235 The Life of Riley Vol. #2 #0156 War of the Worlds One Man's Family Vol. #1 #0065 Old Time Radio Commercials The Lone Ranger Vol. #2 #2489 Hopalong Cassidy Vol. #1 #0495	Abbott and Costello Vol. #1 #0235 \$7.95 The Life of Riley Vol. #2 #0156 \$7.95 War of the Worlds One Man's Family Vol. #1 #0065 \$7.95 Old Time Radio Commercials The Lone Ranger Vol. #2 #2489 \$7.95 Hopalong Cassidy Vol. #1 #0495 \$7.95

BOOKS Universal carries a big selection of books on old

PHONES

Ask about our line of

Crosley telephones.

time radio history, collecting and restoration.

Shortwave Antennas



EAVESDROPPER DIPOLES

The Eavesdropper trapped dipole antenna is designed specifically for the shortwave broadcast listener. The Eavesdropper utilizes eight weather-sealed antenna traps so that it performs as though it were a number of separate antennas. Each trap is hand assembled and individually resonated to its proper design frequency. The Eavesdropper is fed at the center with 72 ohm balanced feedline (100 feet provided). The impedance to the receiver is 50-75 ohms balanced. Installing the Eavesdropper is simple ... merely unwind the elements and feedline, and suspend between two supports with the nylon rope provided. No cutting, measuring or soldering is required! Although the Eavesdropper is weatherized for outdoor use, it may be strung in an attic. The antenna utilizes heavy 14 gauge wire for maximum strength. The overall length is less than 43 feet. The Eavesdropper covers these major shortwave bands:

Rope (supplied)

60 Meters (4.75-5.06 MHz.)

49 Meters (5.95- 6.20 MHz.)

41 Meters (7.10-7.30 MHz.)

31 Meters (9.50-9.78 MHz.)

25 Meters (11.70-11.98 MHz.)

19 Meters (15.10-15.45 MHz.) 16 Meters (17.70-17.90 MHz.)

13 Meters (21.45-21.75 MHz.)

11 Meters (25.60-26.10 MHz.)

Lead-in (supplied with twin-lead model only)

The Eavesdropper is covered by a one year limited factory warranty. Made in the U.S.A. The Eavesdropper-C is identical to the regular Eavesdropper except that it includes a coax fitting (SO-239) and it does NOT include a lead-in cable. User must provide their own coax lead-in. Both models include an integrated lightning arrestor.

Eavesdropper Antenna With Arrestor

(Twinlead Type) Order #0680

\$74.95 (+\$6)

Eavesdropper-C Antenna With Arrestor

forms of longwires, T-forms or other types of wire

antennas, without the need for an antenna tuner.

A very low loss magnetic transfer of energy from

the antenna to the receiver is accomplished and

static noise is reduced. Your coax is much less susceptible to interference. For receive only: .1-

40 MHz 50 ohm SO-239. Ask for free spec. sheet.

MLB MARINE BALUN KIT

The RF Systems' MLB Marine balun kit is designed

to attach to an isolated stay or length of wire (18 to

90 feet) on a sailboat. The balun system consists

of a 3.5" inch stainless steel cylinder attached to 45

ft of RG-58 coax cable (which may be shortened).

This will result in an efficient, self matching antenna

system for receive only in the range of 100 kHz to

30 MHz. The MLB Marine is completely water-

proof. Please ask for a free specification sheet.

\$59.95 (+\$4)

\$89.95 (+\$6)

Order #1484

(Coax Type)

MLB

BALUN

The RF Systems'

MLB Marine

Magnetic Longwire Balun makes it possible

to efficiently use a co-

axial lead-in cable with all

Order #2864 \$74.95 (+\$6) **ANT-60**

The Sangean ANT-60 portable "roll-up" shortwave antenna will



improve the reception of any portable worldband receiver. The antenna wire may be extended up to 23 feet (7 m). The ANT-60 terminates with a mini-plug (3.5 mm). If your receiver does not have a mini external antenna jack, an adapter plug is provided to clip the ANT-60 to your radio's whip. **ANT-60** Order #3184 \$12.95 (+\$3)

DIPOLE INSULATOR

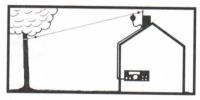


Constructing a dipole is easy with the HQ-1 center insulator. Attach each "arm" of your dipole to this device and then screw your PL-259 into the center! You get easy assembly, the best connection, the strongest support and the most weatherproof fit. \$6.95 (+\$2)

Budwig HQ-1 Order #1782

Matching end-insulators. (Package of two). Budwig HQ-2 Order #3412 \$1.89 (+\$1)

RF systems inc. MLB-MK1/MK2



This may look like a conventional wire antenna kit at first glance, but it is much more. It consists of a heavy duty 41 foot wire, nylon rope and a quality insulator. At the feed-line end the antenna is terminated with the RF systems' patented Magnetic Longwire Balun. This balun permits an exceptionally low loss transference of antenna energy to your coax feed line. The result is significantly reduced static noise on long, medium wave and the tropical SW bands (60 & 90 meters). We have tested this antenna at Universal, and we are impressed. It is for receive only .1 - 40 MHz. Requires 50 ohm lead-in cable not supplied. (See cables on page 33).

MLB-MK1

Order #1465

\$89.95 (+\$6)

66 ft. version (.1-30 MHz) for improved LW & MW. MLB-MK2 Order #0883 \$99.95 (+\$7)

T2FD

The RF systems tilted terminated folded dipole covers 3 to 35 MHz with only 45 feet of length. Designed to provide much lower background noise than similar antennas. This passive antenna is assembled and ready to install. Has SO-239 jack to accept PL-259. Lead in not provided. T2FD Order #0562 \$249.95 (+\$9)

Order #1511 DX ONE PRO

The RF Systems' DX-One Pro is an omni directional active vertical antenna covering 20 kHz to 54 MHz. It is popular with military and diplomatic users. Has outputs for two receivers and ON-OFF MW suppression. User must supply coax between antenna and control box. 47" high 110VAC. **DX One Pro** Order #2097 \$599.95 (+\$21)

Van Gorden **END INSULATOR**



The Van Gorden "dog-bone" end-insulators have high dielectric qualities, excellent strength and excellent weatherability. 2" long white.

VG Dog-Bone Order #2379 \$.89 (+50¢)

MINI-WINDOM

RF Systems Mini-Windom is a low coast passive broadband wire receiving antenna that can be used indoors or outdoors. It receives in an omnidirectional fashion from .5 to 30 MHz. It uses magnetic transfer technology to reduce interference from computers and other man-made noise sources. Only 16 ft. long and with 16 ft. of coax and PL-259. Made in Holland.

Mini-Windom Order #3575

\$79.95 (+\$5)

EMF

RF Systems' EMF Electro-Magnetic Field passive wire antenna is complete and ready to go covering .1-30 MHz. Only 16 ft long and with 16 ft of coax and PL-259. Made in Holland.

EMF

Order #0743

\$**89.95** (+\$5)

EMF-P

RF Systems' EMF-P passive wire antenna is designed for portable receivers with whip antennas. The EMF-P includes the AA-1 antenna adapter and covers .1-30 MHz. Only 16 feet long and with 16 feet of coax and alligator clip (to clip to the radio's whip antenna). Made in Holland. \$109.95 (+\$5)

Order #1913

Orders: 800 431-3939

Information: 614 866-4267 Quality Equipment Since 1942

Universal Radio 6830 Americana Pkwy. Reynoldsburg, Ohio 43068

McKay Dymek

The McKay Dymek DA-100E is a premium quality, general coverage active antenna. It provides excellent performance from .5 to 30 MHz. The DA-100E system consists of an outdoor preamp with 4'8" telescopic element, 50 foot of RG-58/U coax lead-in and control box (same configuration as MFJ-1024 shown below). The DA-100E can be run from 110-120 or 12 VDC (2.5 mm jack). A 110VAC wall-type power supply is provided. Output impedance is selectable at 50, 100 or 500 ohms. A three -position attenuator is also featured (0, 10 and 20 dB). The output jack to the receiver is an RCA phono jack. (For receivers accepting a PL-259 plug, we suggest the 3 foot RG-58 custome coax cable (PL-259 to RCA) Order #3043 as discussed on page 33).

McKay Dymek DA-100E

\$179.95 (+\$8) Order #0328

The model DA-100EM is also available. It is designed for marine use. It utilizes a four foot, one piece fiberglass element in place of the telescopic metal whip on the regular version. Both versions carry a ninety day limited warrant.

McKay Dymek DA-100EM

Order #0376

\$199.95 (+\$9)

DA-100E & DA-100EM

SONY. AN-1

The Sony AN-1 active antenna provides good reception over the range .15 to 30 MHz. The antenna amplifier module with 59 inch telescopic whip, can be connected anywhere outdoors or even inside a window or attic. The Sony AN-1 includes 39 foot coaxial feed-line which connects to the compact control box. Output from the control box is to two alligator plugs or a mini plug. Requires six AA cells or optional AC adapter #3672.

\$84.95 (+\$6) Order #2206

AC Adapter (Grundig 400ACA) \$14.95 (+\$3) Order #3672



MFJ-1020B



The MFJ-1020B indoor active antenna utilizes MOSFET technology for good performance from an extremely compact package. This antenna system can be set directly on your desk! The MFJ-1020B covers 300 kHz to 30 MHz in five bands. With built-in 21 inch telescopic antenna. An auxiliary antenna jack is provided. When it is used the MFJ-1020A functions as a preselector. Front controls include Gain, Band, Tune and Bypass. A LED indicates power on. Size: 5" x 2" x 6" with 21" whip. The auxiliary input and output jacks are RCA & SO-239. Requires 9 V battery or 9-18 VDC power supply (such as MFJ-1312B Order #2433). \$69.95 (+\$4) Order #1131

^Free shipping if ordered with the MFJ-1020B

MFJ-1020B

MFJ-1312 PS Order #1588 \$12.95 (+\$3)^ ^Free shipping if ordered with the MFJ-1024



The MFJ-1024 is a sensitive outdoor active antenna covering 50 kHz to 30 MHz. The outdoor unit consists of a 54" telescopic whip & amplifier module (3" x 4" x 4). It is connected to the indoor control unit (6" x 2" x 5") by a supplied 50 foot RG-58 coaxial cable. The control unit features a 20 dB attenuator and a gain control to prevent receiver overload. A built-in receiver switch selects between two receivers and an antenna switch selects an auxiliary antenna. A red LED indicates power-on. The auxiliary input and output jacks are RCA phono type. Requires 12 VDC power supply (such as MFJ-1312 Order #1588). \$129.95 (+\$6) Order #1132

MFJ-1024

AN-102

The Sony AN-102 is for radios that do not have external antenna jacks. Includes: module with 45" whip antenna, antenna controller box and two coupler cables. Requires 4 AA cells (not supplied). \$69.95 (+\$4) Order #0122 AN-102

RF systems inc. **DX-10**

The RF Systems is a low cost, high quality, active antenna for receiving long wave, medium wave and shortwave. It may be used indoors or outdoors. The DX-10 consists of a strong weatherproof white plastic pipe that is 36 inches long and 1.2 inches wide. Despite its compact size, it can be used for monitoring 100 kHz to 30 MHz (50 kHz to 50 MHz with reduced performance). The DX-10 uses a class "A" wideband amplifier with a power dissipation of 1.5 watts. Includes a mounting clamp for masts up to 2" in diameter. SO-239 jack at the antenna and power supply. The PL-259 to PL-259 coaxial lead-in is not supplied. 120 VAC power supply included.

\$229.95 (+\$11) Order #3498 RFS DX-10 Please see page 33 for preassembled PL-259 to PL-259 RG-8X coaxial lead-in cables. We suggest #0539, #0497 or #0512.

MFJ-1022

\$12.95 (+\$3)^



MFJ-1312B PS Order #2433

The compact MFJ-1022 wideband indoor active antenna boasts coverage from 300 KHz to 200 MHz. Includes detachable 20 inch antenna. The output jack is an SO-239. Requires a 9 V bat-

tery (not supplied) or 9-18 VDC power supply (such as MFJ-1312B Order #2433).

MFJ-1022

Order #3109

\$37.95 (+\$4)

Universal has recently added the Dutch made Radiomaster line of antennas and accessories.

The Radiomaster P-30 is an unobtrusive 15 foot passive wideband, indoor/outdoor LW/MW/SW wire antenna that terminates in a PL-259.

\$39.95 (+\$4) Radiom, P-30 Order #1331

How do you connect both a shortwave and VHF antenna to your wideband receiver? The answer is the Radiomaster AC-108 antenna combiner. Two BNC inputs to one BNC plug on coax jumper. \$64.95 (+\$4) Radiom. AC-108 Order #1497

A-108 A-50 P-30 AC-108

The Radiomaster A-108 weatherproof indoor/ outdoor active antenna that covers .03-108 MHz with up to 10 dB of gain. This 3.8 foot stainless steel vertical antenna features adjustable gain. The control box requires 12 VDC. Includes 33 feet of coax lead in to BNC.

Radiom, A-108 Order #1513 \$149.95 (+\$8)

The Radiomaster A-50 is similar to the A-108, but covers .03-50 MHz and does not have the adjustable gain. The control box requires 12 VDC. Includes 33 feet of coax lead in to a PL-259. \$139.95 (+\$8) Radiom. A-50 Order #1547

SONY, AN-LP1



The Sony AN-LP1 portable active antenna is just right for the traveller who wants maximum performance from their worldband radio. The flexible folding loop antenna is 19 inches (48 cm) when open, but folds down to a mere 7 inches (18cm) and neatly fits in the supplied soft carrying case. A mounting clip and suction cup on the end of the loop allows easy placement in a variety of situations. The suction cup is especially useful for mounting the antenna to a window where reception will often be the best. The AN-LP1 requires two AA cells (not supplied) for about 40 hrs of use. **Special Notes:**

- The AN-LP1 derives power from the radio when connected to models ICF-SW1000T or ICF-SW7600G.
- The AN-LP1 is not recommended for use with models ICF-SW10 or ICF-SW77.

Sony AN-LP1 Order #3676 \$79.95 (+\$4)



may be rotated to achieve maximum signal strength while minimizing unwanted signals and interference. The LA320 operates from a 9V battery and features a BNC to BNC coaxial jumper cable (if your radio accepts a PL259 then see BNC-PL259 adapter #2124 on page 40).

Shipping on one or more of above \$6.00

Kiwa MW LOOP



The Kiwa MW air core loop is a high performance antenna designed expressly for improved medium wave (AM band) reception and DXing. The Kiwa loop is designed with special features to improve reception under difficult conditions. These include a fully balanced design to improve nulling ability and to provide noise immunity. A regeneration control adjusts the antennas bandwidth, and a geared tilt control facilitates nulling signals. It's inherent narrow bandwidth is ideally suited for MW DX'ing. The Kiwa tunes from 530 to 1700 kHz and may be rotated and tilted for maximum signal pickup or precise nulling of local signals and interference. The -6dB antenna bandwidth may be adjusted from 15 kHz to less than 2 kHz for razor sharp selectivity. A Local/DX preamp switch is featured. Dual output amps provide drive for two receivers simultaneously. Supplied with low-noise AC supply or may be run from 12 VDC. Antenna coil: 12.75". Overall: 17"H x 18"W 14 Lbs. Beautifully made.

Kiwa MW Loop Order #1251 \$349.95 (+\$14)



The ANC-4 is an RF device designed to provide cancellation of locally generated noise from signals received by a primary antenna. The unit is employed right at the antenna connector of the receiver to cancel noise from power lines, computers, TVs or nearby equipment. Controls are provided to allow adjustment of both phase and magnitude of the local interference, providing extremely deep cancellation of the offending noise. May also be used with transceivers with RF power under 150 watts. Range: .1 - 30 MHz. Uses standard SO-239s. Requires 12 VDC. 1.7"H x 6"W x 4.3"D.

JPS ANC-4 Order #0094 \$179.95 (+\$6)

12 VDC power supply (^Free shipping with ANC4)

JPS PS Order #3085 \$15.95 (+\$3)^

Kiwa POCKET LOOP





The Kiwa Pocket Loop is a 13" aircore loop antenna that collapses to fit in your pocket. It is designed to enhance the reception of portable radios and no direct connection to the receiver is required. The supplied coupler slips over the whip antenna for SW reception and is simply placed next to the radio's internal antenna for AM reception. Operates effectively from .53 to >20 MHz in four bands. Requires 9V battery not supplied. 4" x 5" x 2".

Pocket Loop Order #2909 \$114.95 (+\$6)

The optional PRM - Pocket Regeneration Module is an accessory to the Pocket Loop providing regeneration from 530 kHz to >10 MHz.

PRM Order #3720 \$47.95 (+\$3)



The MFJ-1026 turns your antenna into a directional phased array. The 60 dB null whips out interference and noise, before it gets into your receiver. This device works on all modes including AM, CW, SSB, FM and RTTY. You can instantly change from nulling to peaking a signal at a push of a button and improve weak signal reception. You can dig out a weak station hidden under a powerful one on the same frequency. The MFJ-1026 plugs between your antenna and receiver (or transceiver). If used with a transceiver, the RF sense T/R switch bypasses during transmit (adjustable delay time). Operates from 12 VDC or optional MFJ-1312B. 6.5x1.5x6.25".

MFJ-1026 Order #3541 \$159.95 (+\$6)

The MFJ-1025 is like the MFJ-1026 less the builtin active antenna (must use external antenna). MFJ-1025 Order #3542 \$139.95 (+%6)

Antenna Wire

■ 14 GAUGE STRANDED COPPER

Excellent and very malleable. 7/22 construction. .072 nom. O.D.

Order #2588 18¢ per foot

■ 14 GAUGE COPPER-CLAD STEEL WIRE

Hard drawn non-stretch steel center for excellent strength and copper-clad for protection and conductivity. .064 nom. O.D.

Order #2637 10¢ per foot

■ 12 GAUGE COPPER-CLAD STEEL WIRE

Coaxial Cable

Coax cable is a key element in every receive system. It connects the radio to the antenna. All coax is not created equal! Our coax has a very tight (dense) braid to ensure maximum shielding. The jacket is of top quality vinyl to withstand the elements for many years of reliable service.

■ RG-58A/U 50 OHM

This is standard grade coax cable. .195 nom. O.D. -3.4 dB/100 ft.@100 MHz.

Order #2619 19¢ per foot

LMR-200

Order #360337¢ per foot

■ RG-8X 50 OHM

This cable has similar low loss properties of the bigger RG-8, but without its thickness. Easy to work with. .242 nom. O.D. 3.0 dB/100 ft. @ 100 MHz. With non-contaminating black jacket.

Order #224723¢ per foot

LMR-240 (solid center conductor)

Order #360443¢ per foot

LMR-240 Ultra (stranded center conductor)
Order #360559¢ per foot

■ RG-213 50 OHM

This is a thicker lower loss coax cable that has a special non-contaminating jacket which will provide longer life. .405 nom. O.D. -2.0 dB/100 ft.@100 MHz.

Order #2929 44¢ per foot

■ RG-8/U-TYPE LOW LOSS 50 OHM

Super low loss type RG-8 coax. For long VHF-UHF runs. .405 nom. O.D.

LMR-400

Order #360659¢ per foot

LMR-400 Ultra Flex

Order #360779¢ per foot

Belden 9913F

Order #3609**79¢ per foot**

Custom Coax Cables

As you add antenna accessories to your listening system, you will require coaxial "jumper" cables. If you add an antenna switch, a preamp or antenna tuner, you will need a jumper to connect the accessory to the antenna input of your radio. This is an important component of your antenna system. Don't let your jumper be the "weak link" in your monitoring installation. Universal offers a complete line of quality coaxial jumper cables. Here is why these custom cables are different:

- Each cable is made with high quality coax.
- * The coax cable has 95% or better shield.
- The connectors are soldered for best conductivity.
- ♦ Each cable uses high quality PL-259's.
- Each cable is individually tested twice.
- We offer 11 types of custom cables.

■ RG-8/X Custom Coax Cables

Moderate price, coupled with very low loss and good flexibility combine to make this a favorite among hams and SWL's. (.242" O.D.). Our biggest seller. With PL-259 connector at each end.

• RG-8/X 12"	PL-259 to PL-259 Custom Cable	Order #25// 4.49
• RG-8/X 18"	PL-259 to PL-259 Custom Cable	Order #2578 \$4.99
• RG-8/X 24"	PL-259 to PL-259 Custom Cable	Order #2579 \$5.49
• RG-8/X 36"	PL-259 to PL-259 Custom Cable	Order #2580 \$6.49
• RG-8/X 25'	PL-259 to PL-259 Custom Cable	Order #0539 \$14.95
• RG-8/X 50'	PL-259 to PL-259 Custom Cable	Order #0497 \$19.95
• RG-8/X 75'	PL-259 to PL-259 Custom Cable	Order #0512 \$24.95
• RG-8/X 100'	PL-259 to PL-259 Custom Cable	Order #0515 \$29.95

■ RG-8/U Custom Coax Cables

Although this cable is somewhat thick and inflexible it is very low loss; providing maximum efficiency. (.405" O.D.). With PL-259 connector at each end.

	1 L 200 to 1 L 200 0 determ	Order #1837 \$6.99
• RG-8/U 36"	PL-259 to PL-259 Custom Cable	Order #1839 \$7.49
• RG-8/U 48"	PL-259 to PL-259 Custom Cable	Order #1087 \$8.49

■ RG-58/U Custom Coax Cables

Economy with good flexibility (.195" O.D.). With PL-259 connector at one end and a male RCA phono plug at the other. Used for connecting tuners or active antennas with phono plug output.

• RG-58/U 36" PL-259 to RCA Custom Cable Order #3043 \$5.99

■ Special Order Custom Coax Cables

Universal will custom make coax cables to your specifications for the price of the cable and connectors plus \$5 per end for installation.

• Special Order Custom Cable

Order #0569

Ground Wire

Ground wire should be kept as short and as straight as possible and go to a ground rod (at least 5 ft.), or a cold water pipe (*not* a gas pipe!).

■ GROUND WIRE - 6 GAUGE SOLID COPPER

Solid copper ground wire.

Order #042433¢ per foot

■ EQUIPMENT GROUNDING STRAPS

Heavy braid with lugs. ¼" wide 18 inches long. Order #0036s3.49

SHIPPING WIRE & COAX

1-200 Feet Total \$6.00 201-400 Feet Total \$9.00 401-500 Feet Total \$11.00

SHIPPING CABLES (<51 FOOT)

1-2 Cables	 \$5.00
3-4 Cables	\$8.00

COAX-SEAL. SEALANT



If you have **any** type of outdoor antenna you should be using Coax-Seal®. This black rubber-based material especially designed to protect any outdoor connection or connector. Coax-Seal is made of a non-conductive, non-contaminating waterproof substance that remains flexible at any temperature (from -30 to 180°F). Coax connectors are not waterproof and exposed solder connections can deteriorate! Coax-Seal is superior to electrical tape or vinyl sealant for moisture protection. One box (60" x 1/2") will protect nine connectors. No charge for shipping on orders over \$20. **Coax-Seal** *Order #1194*

Orders: 800 431-3939 Information: 614 866-4267

Quality Equipment Since 1942

Equipment Protection Devices

ALPHA DELTA

Today's receivers utilize solid-state components and have very sensitive front ends. These radios are much more susceptible to lightning and static problems than their tube-type predecessors. Fortunately, protection technology has improved. Unlike the



old "air-gap" lightning arrestors, the Transi-Trap utilizes a hermetically sealed gas filled cylinder which has very reliable and predictable switching characteristics. In operation, the application of sufficient voltage across the element causes an arc to form between the sealed electrodes changing its impedance from greater than 10,000 megohms to a few milliohms in less than 100 nanoseconds! Unlike other suppressors, the Transi-Trap directs the discharged current to an isolated ground terminal versus the coaxial ground system. The Transi-Trap model LT has a replaceable plug. The LT is for receive and transmit up to 200 watts under 30 MHz. The LT must be connected to a proper earth ground.

Transitrap LT Order #1502 \$29.95 (+\$3)

Replacement cartridge for the LT.

Pill for LT Order #1503

LT Order #1503 \$16.95 (+\$3)

The RT is for up to 200 watts and up to 500 MHz. Transitrap RT2G Order #2296 \$37.95 (+\$4)

The HV is for up to 2000 watts and up to 500 MHz. **Transitrap HV2G** Order #2068 \$42.95 (+\$4)





Lightning and static are not the only enemies of modern receivers! Sensitive receiver "front-ends" can also be damaged by nearby high power radio signals (RF). The ham across the street running 2000 watts into a beam antenna can generate enough RF in your antenna system to damage or desensitize your receiver. Other potential sources of high power RF are high powered CB operators, commercial radio and TV broadcasters and public service broadcasters. Hams who have separate receivers are also very susceptible to this problem (... ask our service tech!). Design Electronics Ohio has developed a series of diode-activated switching devices which will switch your antenna automatically to ground in the presence of a high-power RF field. The Receiver Guard 2000 series offers protection with very low insertion loss. This device has a replaceable protection element and is covered by a one year limited factory warranty. (Note: Protection element not covered by warranty). Uses standard SO-239 connectors (mates with PL-259s). Made in U.S.A.

RG 2000-U Order #1305

*29.95 (+*4)

Note: The Receiver Guard 2000 series offers protection from high power RF through a very fast acting diode switching circuit. These devices do not change the performance of the set and do not offer lightning suppression (except CTT). Not for use with transceivers or transmitters!

Package of 3 replacement protection elements. **DEO Fuse**Order #0339

*6.95 (+*2)

RECEIVER GUARD 2000-CTT

The Receiver Guard 2000 model CTT combines the model "U" version with an Alpha Delta LT Transi-Trap device to offer <u>both</u> RF protection and lightning suppression. Shown above-right. This "combo" unit offers the maximum protection.

RG 2000-CTT Order #1303 \$59.95 (+\$5) Special - if ordered with a receiver \$49.95







RF systems inc. MT ISO

Here is one of the most effective protection devices you can get for your radio system plus it reduces noise. The weatherproof MT Isolator connects between your antenna and your radio with only 0.5 dB attenuation.



It operates from 50 kHz to 50 MHz. SO-239 input and output. Made in Holland.

MT Isolator Order #3576 \$99.95 (+\$5)

- Many of our incoming repairs are a result of static buildup in the antenna from nearby storms or as a result of "spikes" in the AC power lines from nearby strikes. Most of these radios would not have been damaged if proper protection devices had been installed. Antennas should have lightning suppressors, radios should be grounded, and power lines should be filtered. We encourage you to protect your investment, and also enjoy the improved performance that these items will afford.
- Please Note: All lightning suppressors must be connected to ground by appropriate wire to be effective. This wire should be heavy-duty ground wire (see wire section) and should not be too long or circuitous. The equipment should also be grounded. These devices are not designed to offer full protection in the event of a direct strike.

Most lightning damage doesn't come through the antenna, but through the AC line! A lightning strike even several miles away can cause a line transient (voltage spike) to flash through your AC line and damage your equipment. A fuse or circuit breaker will not act fast enough to stop the spike. Line filters contain circuitry to help protect valuable equipment from this common source of potential damage. We recommend line filters that clamp on all three lines (hot, neutral and ground). Note: these systems are designed to reduce the hazards of lightning induced surges and cannot prevent damage caused by a direct strike to an AC line or structure.



60022





This transient voltage surge protector plugs into a standard grounded two plug (duplex) wall outlet. It then provides six filtered grounded outlets. The filtering provides 340V spike protection with spike dissipation of 140 joules. Full line protection (H,N,G). For continuous duty up to 15A, 125 VAC. Surge response time: <10 nanoseconds. With pilot lamp indicator. Beige/ivory color. UL listed. Centerex 60022 Order #0653

As above, but with 3 outlets instead of 6.

Centerex 30022 Order #2800 \$8.95 (+\$3)

74222



This outlet AC strip features 7, right-angle grounded outlets with an illuminated master on-off switch. 15 amp capacity for 120 VAC. A built-in resetable 15 amp circuit breaker is provided. Spike dissipation: 70 joules. Clamping spike voltage: 500 volts. Surge response time: <8 nanoseconds. Has noise filtration. Light beige plastic. UL listed. Centerex 74222 Order #2041 \$11.95 (+\$3)

54163

This 5 outlet AC strip has a master on-off switch. It also features modular telephone jacks to protect a FAX or modem. 15 amp capacity for 120 VAC. Light ivory plastic. UL listed.

Centerex 54163 Order #0146 \$15.95 (+\$4)





This LW, MW and SW preselector tuner lets you boost your favorite stations while rejecting images, intermod and other phantom signals on your shortwave receiver. Operates from .15 to 30 MHz. Has bypass and ground positions. Uses standard SO-239 connectors. Size: 2" x 3" x 4".

MFJ-956

Order #2964

\$37.95 (+\$4)

MFJ-1040B



This preselector boosts signals from 1.8 - 54 MHz. It utilizes dual gate MOSFET, bipolar transistors for low noise and high gain. Push-button switches provide for two receivers, two antennas, 20 dB attenuator and ON/BYPASS. Controls for Delay, Gain, Band and Tune. It has a relay that automatically bypasses the amplifier when transmitting. Rear panel jacks provide for the use of either RCA phono plugs or PL-259 connectors. Size: 6" x 2" x 6". Requires 9-12 VDC (see MFJ-1312).

MFJ-1040B MFJ-1312 PS Order #1140 Order #1588

\$94.95 (+\$6) \$12.95 (+\$3)^

^Free shipping with MFJ-1040



This random wire tuner will match any wire antenna to any receiver or transceiver. This device will match the impedance of your radio to the impedance of the antenna. Standard SO-239 connectors are provided. Controls are: Inductance and Capacitance. Compact size: 2" x 3" x 4". \$44.95 +(\$4) MFJ-16010 Order #1329

MFJ-959B



The MFJ-959 antenna tuner covers 1.6 to 30 MHz and features a low noise 20 dB preamp to bring out weak stations. It also matches the antenna to the receiver for maximum signal strength. It accommodates up to two antennas and two receivers. You can select tuner, tuner with preamp, tuner with 20 dB attenuator or bypass. Rear panel jacks provide for the use of either RCA phono plugs or PL-259 connectors. Size: 9" x 2" x 6". Requires 9-12 VDC power supply (see MFJ-1312).

MFJ-959B MFJ-1312 PS Order #1643

\$89.95 (+\$6) \$12.95 (+\$3)^

Order #1588 ^Free shipping with MFJ-959B

MFJ-1046

The MFJ-1046 passive (non-amplified) preselector covers 1.6 to 33 MHz in five bands. With bypass position. 7.5x2.5x3.25". Order #3736

MFJ-1046

\$94.95 (+\$5)

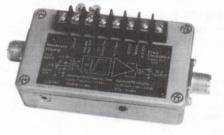
SHORTWAVE PREAMP

The new Kiwa shortwave preamp amplifies shortwave stations from 1.8 to 30 MHz and rejects interference from the AM band (MW). It has excellent overload immunity. Requires 12 VDC. 50 ohm In/Out SO239. 4.5"x2.5"x1.5"

SW Preamp

Order #3213

\$94.95 (+\$5)



There is also a broadband version covering 0.1-30 MHz (no BCB reject). Order #3693 \$87.95 (+\$5)

RF systems inc.



The RF Systems' WA-50 is a high quality broadband amplifier for Long-, Medium and shortwave frequencies with an operating from 50 kHz to 50 MHz. The gain is 10 dB (3 times), sufficient to compensate for low efficiency antennas, but not high enough to create serious overloading problems in most receivers. The WA-50 can handle antenna signals up to 1 Volt, so overloading the amplifier is unlikely. The second order intercept point of +60 dBm and the 3rd order intercept point of +40 dBm are higher than those of most modern receivers. The WA-50 is equipped with a PL-259 output and a standard 50 ohm SO-239 input. The WA-50 input has a galvanic path to ground which allows static charges to flow harmlessly to ground. Universal offers both the 120 VAC and 12 VDC versions. Made in Holland.

WA-50 120VAC Order #3574

\$199.95 (+\$8)

WA-50 12VDC Order #0980

\$194.95 (+\$8)

PALOMAR ENGINEERS

PA-360



The PA-360 "Amplifilter" is a combination of: Amplifier with 20 dB gain (.1-1000 MHz), • Highpass Filter @ 3 MHz, • Lowpass Filter at 30 MHz, and 20 dB Attenuator. Each of these four functions has its own panel switch and lamp, and may be switched in or out in any combination. Utilizes SO-239 connectors for input and output. Requires 12VDC power supply (such as Palomar PS-90). \$84.95 (+\$4) Palomar PA360 Order #0097

\$9.95 (+\$3)^ Palomar PS-90 Order #1774 ^Free shipping with PA-360





The Ameco TPA is a dual-function device. It is a sophisticated preamp covering .22 to 30 MHz with over 20 dB gain. The preamp features dual-gate FET circuitry and accepts input from a longwire, 300 ohm or random wire antennas. When an outdoor antenna is not available you can use the TPA as an indoor active antenna by extending the 30 inch built-in telescopic whip! Input from external antenna and output to the receiver is RCA phono jack. Runs on a standard 9V battery (not supplied) or with optional P-9T adapter.

Ameco P9T

Order #0474 \$9.50 (+\$3)^ ^Free shipping with TPA **Ameco TPA**

\$69.95 (+\$5) Order #1512





The Ameco PT-3 preamplifier employs a dual-gate FET providing a low noise figure, thereby improving the weak signal performance of most receivers. Image and spurious rejection are greatly improved. Gain is in excess of 20 dB. Covers 1.6 to 56 MHz. The PT-3 can be used with a receiver or a transceiver (under 350 watts). The input and output impedances are nominally 50 ohms to match most antennas. Operates on 12 VDC or with optional P12T adapter. Free shipping on Ameco adapters at time of purchase. Ameco PT-3

Ameco P12T

Order #0167 \$9.95 (+\$3)^ ^Free shipping with PT-3 Order #2158 \$109.95 (+\$5)

Preassembled cables to connect tuners and preamps are listed on page 33 of this catalog. Most commonly used are: #2579 or #3043.

> Orders: 800 431-3939 Information: 614 866-4267 Quality Equipment Since 1942

Universal Radio 6830 Americana Pkwv. Reynoldsburg, Ohio 43068

MFJ-107B MFJ-108B





The MFJ-107B LCD clock features bold 5/8" inch. numerals that display hour and minutes. Battery included. 2" x 1" x 2". The MFJ-108B features a dual display for both 24 hour UTC and 12 hour local time. 4" x 1" x 2".

MFJ-107B MFJ-108B

Order #0895 Order #0990

\$9.95 (+\$3)

\$19.95 (+\$4)

UNIVERSAL LCD



stant digital display of time, day and date in 27 time zones. Requires 2 AA cells (not supplied). Black. Universal LCD Order #2436 \$74.95 (+\$4)

MFJ-119

The MFJ-119 super jumbo LCD clock uses 2 inch, digits to simultaneously display 12/24 hour time, date.



day-of-week and temperature in either °C or °F. Measures 8.25x9x.6". Supplied with two AAA cells. White plastic cabinet may be hung

MFJ-119

Order #3081

\$47.95 (+\$6)

MFJ-118



The MFJ-118 jumbo LCD clock uses 1.25 inch, high-contrast digits to display time in 12 or 24 hour format. Can also display year, month, date and day of week. Measures 5.75x2.5x.5" Requires one AAA cell (not supplied).

MFJ-118

Order #3730

\$24.95 (+\$4)

The MFJ-112 DXer's 12/24 hour world map-clock not only shows you the time throughout the world, but it also indicates day-of-





week, month, date and year. Push buttons let you move the display to any time zone on the world map. Gold-tone brushed aluminum case. With 24 hour alarm. Requires lithium battery (included).

MFJ-112 Order #2704

\$24.95 (+\$4)

\$24.95 (+\$5)

MFJ-115

This 24 hour quartz clock indicates UTC time and helps you calculate other time zones too. Requires one AA cell (not supplied). 12 Inch with second hand.

MFJ-115 Order #3793



hour wall clock provides excellent visability, even from across the room. A single AA

cell (not supplied) provides one year of operation. MFJ-105C Order #3110 \$19.95 (+\$4)

MFJ-116

The new MFJ-116 economy

LED clockalarm can operate in 12 or

24 hour format. The four digit .6" red LED display is easy to read. Also has 10 min. ID timer. Even has a 9 volt battery backup feature (battery not included). 110 VAC 60 Hz. Black 4.5"x2"x4".

MFJ-116 Order #0727 \$14.95 (+\$4)

MFJ-114B



The huge MFJ-114B LED clock is over 13 inches wide. The 1.75 inch LED display can be seen from 25 feet away. This monster can be set for 12 or 24 hour format and comes with an AC adapter. Can be set on a desk or hung from the wall. Two AA batteries (not supplied) provide backup power during power outages. With seconds indication. MFJ-114B Order #3705 \$54.95 (+\$7)

GC24

The Azimuth clock is just right for the listener that wants a 24 hour digital LCD clock with really large numerals. The big seethru liquid crystal display is 3 1/8"W x 4 1/ 2"H and is mounted on a hi-tech brushed black metal stand. Requires a lithium battery (included).



GC24

Order #3063

20

\$16.98 (+\$3)

Benjamin Michael Industries

973A 962AD

The Benjamin Michael 12 inch 24 hour wall clock will add a professional touch to any listening post. It is quartz based with accuracy better than 15 seconds per month. With sweep second hand. Requires one AA cell (not supplied).

B-M 973A Order #3026

\$44.95 (+\$6)

As above, but 8 inch and 12 hour format with red secondary numerals for hours 13 through 24. **B-M 962AD** Order #1289 \$22.95 (+\$5)

MFJ-125

The 12 inch MFJ-125 quartz wall clock shows 24 hour and 12 hour time, day of week and day of monthy simultaniously! Requires one AA cell (not supplied) MFJ-125 Order #3794



\$29.95 (+\$5)

- In order to avoid the confusion of many time zones, hams, military, marine and international broadcasters always refer to time at the zero meridian which runs through Greenwich, England. This time zone is five hours ahead of Eastern Standard Time (4 hours ahead of Eastern Daylight Time). This 24 hour format may be to as Coordinated Universal Time (UTC) or GMT. For example 4:00 PM EST = 21:00 or 4:00 pm EDT = 20:00 UTC.
- Shortwave listeners can hear ultra accurate time signals by tuning station WWV in Boulder, Colorado at 2500, 5000, 10000 or 15000 kHz. Canadian listeners should try for CHU Ottawa on 3330, 7335 or 14670 kHz.

Universal Radio 6830 Americana Pkwy. Reynoldsburg, Ohio 43068

Page 38

PALOMAR ENGINEERS

VLF-A/S



If your receiver covers 3.51-4 MHz you can enjoy the world of VLF/LF reception with the Palomar VLF-A converter. This device will permit the reception of the 10 -500 kHz band which includes navigational beacons, standard frequency broadcasts, the 1750 meter ham band and the European LW broadcast band (propagation permitting). Utilizes standard SO-239 connectors. Requires a 9 V battery (not supplied). Note: you will need a short coaxial jumper cable to connect the VLF converter to your receiver's antenna jack see page 33. 4.25"x 5" x 2".

VLF-A

Order #0438

\$79.95 (+\$5)

Same as above but converts to 4.01-4.5 MHz. \$79.95 (+\$5) Order #2717 VLF-S

XANTEK, INC. DX EDGE



The DX Edge is an invaluable aid to the serious DXer who wants to understand and utilize dark path propagation and gray line effect. The DX Edge is a slide-rule device allowing you to determine quickly and easily those areas of the world that are in daylight and those in darkness at any time of day, any month of the year. It will help you: determine: from what direction DX signals are coming, what parts of the globe are in darkness, sunrise/sunset times, gray line path - all without tables, charts or calculations! The DX Edge consists of a full color carrier and a set of 12 transparent slides (one for each month). A holder and full directions are also provided. Plastic carrier is 12"W x 4"H. Slides are 6"W x 4"H.

DX-Edge

Order #0059

\$19.95 (+\$3)

MFJ-1116



Organize your 12 VDC power leads (up to 15 amps total) with the MFJ-1116. With meter, switch and 15 amp fuse. (Note: The MFJ-1116 has insufficient capacity for HF transceivers). \$39.95 (+\$4) Order #0171 List \$44.95

MFJ-1118

This deluxe MFJ-1118 features two fused heavy duty binding posts plus six switched light duty posts. Handles 35 amps total. Meter and switch. \$64.95 (+\$5) Order #1763 List \$69.95

Power-To-Go PC300HS

The Power-To-Go PC300HS power inverter provides 300 watts of continuous power (600 W peak) from a 12 VDC source. Input is via a 12 volt cigarette lighter plug or battery clamps (both provided). Output is to two 3 prong AC jacks. Has Overload/Low Battery LED, fuse and On-Off.

PC300HS

Order #1284

\$79.95 (+\$7)

PATRICK TECHNOLOGIES INC.

F9150

Use the sun to power or recharge your radio! Each Patrick Technologies SolarVerter comes with a cord and six different adapter tips to fit many types of radios. A DC jack adapter cable is provided for radios that do not have a DC input jack. Each panel may be used indoors or outdoors.



RF sustems inc. **DPX-30**

This receive coupler combines a PL259 SW antenna and BNC VHF-UHF antenna to BNC male output. Great for wideband handheld receivers! \$99.95 (+\$5) Order #3578 **DPX-30**

SOLAR 11-in-1 Charger



answer is the Solar 11-in-1 charger.

With solar power, you can charge regular D, C, AA and AAA cells. You can also charge seven different types of GUM (prismatic) batteries. Charging time varies from 1 to 18 hours depending on sun light, battery size and battery condition. The meter indicates charging time.

Order #3786

\$29.95 (+\$5)

To operate any of the Baygen Freeplay radios we suggest either the F4150 (direct sunlight) or the F9150. The Sangean SG-789A may be operated using either the F4150 (direct sunlight) or the F6220. The Grundig YB-400 or YB-400PE may be operated in full sunlight with the F9600.

Model Output Size (") **Price** Order F4150 4V 150 ma 4.5x3.7 \$24.95 (+\$4) #0404 F6220 5V 220 ma 5.0x5.0 44.95 (+\$5) 39.95 (+\$5) #2079 **F9150** 8V 150 ma 5.0x5.0 98.95 (+\$6) #0946 **F9600** 8V 600 ma 13x6.5 4.99 (+\$2) 12' Ext. Cord #1948 Ext.

Please see page 46 for the Patrick Solar Flashlight.

RF systems inc. SP-2



A growing number of DX'ers have two receivers. but only one antenna. The RF Systems SP-2 is a two-way antenna splitter for 50 kHz to 50 MHz. Unlike other units, the SP-2 offers a high degree of isolation between the two receivers (< 30 dB) to ensure independent tuning of each radio without interaction. A constant impedance attenuator offers six steps: 0, -6, -10, -20, -30 and -40 dB. This allows you to reduce the level of strong signals which can cause overloading, often allowing weak stations to be heard above the background noise. An effective MW suppression filter is also built-in. This is useful if you are troubled on SW by a nearby AM station. The unused antenna is grounded. Utilizes SO-239 jacks for both inputs and both outputs.

SP-2

Order #2564

\$169.95 (+\$6)



The RF Systems DA-4 distribution amplifier permits using up to four receivers from one antenna without signal loss and with full isolation. For signals from 10 kHz to 30 MHz. Utilizes SO-239 jacks. Requires 100-130 VAC 50/60 Hz. \$299.95 (+\$7) Order #0601

The similar DA-8 feeds up to eight receivers.

DA-8

\$499.95 (+\$8) Order #3577

SP-1



The SP-1 allows two shortwave receivers to be connected to one antenna without interaction and with minimal signal loss. Operational from .05 to 30 MHz. Uses three SO-239 jacks. Passive.

SP-1

Order #1420

\$89.95 (+\$4)

SP-3



The SP-3 allows two scanners to be connected to one antenna without interaction and with minimal signal loss. Operational from 10 to 2500 MHz. Uses three BNC jacks. Passive.

SP-3

Order #0973

\$99.95 (+\$5)



PL-259

UHF connector, Silver plated tip & Teflon Order #2111...\$1.99



UG-175

Reducer RG58/U Order #2117...\$.49



UG-176

Reducer RG59/8X Order #2115...\$.49



PL-258

Barrel connector Order #2791...\$1.99



UG-363

Bulk head adapter Order #2795...\$3.49



Male-Male

UHF coupler Order #2503...\$2.49



SO-239

UHF chassis. Teflon Order #1426 \$2.49



UHF connector Order #1142...\$3.95



90°

UHF connector Order #1121...\$3.49



UG-255

SO-239 - BNC Order #2122...\$5.89



SO 239-RCA

Adapter Order #2118...\$1.99



SO 239-Mini

Adapter Order #1619...\$3.49



RCA-PL259

Adapter Order #2690...\$1.99



"N" Chassis

N Chassis Jack Order #3379..\$4.95



"N"

RG-59/RG-8X Order #1853...\$4.95



"N"

For RG-8, 213 & 9913 Order #0823...\$4.95



UG-23

"N" female RG-8 Order #1852...\$4.95



"N" Female

RG-59/RG-8X Order #2946...\$4.95



UG-594

90° "N" connector Order #0405...\$4.95



UG-57

"N" male-male Order #0037 \$4.95



UG-83

"N" female - PL-259 Order #1384...\$4.95



UG-146

SO-239 to "N" male Order #3076...\$4.95



UG-29

"N" barrel connector Order #2760...\$3.95



BNC

RG-58 Order #2376...\$5.95



BNC

RG-59/8X Order #2364...\$4.95



SMA-BNC

SMA Male to BNC Fem Order #0531...\$5.89



BNC-PL259

Adapter Order #2124...\$4.95



BNC 90°

Right Angle Adapter Order #0335...\$4.95



MOTOR-BNC

Adapter Order #1455...\$3.95



SMA-UHF

SMA Male to UHF Fem Order #2976...\$4.95

■ Shipping on all plugs and adapters is free if your total order (not including books, plugs or adapters) exceeds \$20. If your order does not exceed this amount shipping is

Qty. 1-8 parts \$2.00 Qty. 9-20 parts \$3.00



2 Pin

Mic. connector

Order #1874...\$2.79



4 Pin

Mic. connector

Order #2400...\$2.99



5 Pin

Mic. connector

Order #2401...\$2.99



6 Pin

Mic. connector

Order #1919...\$3.19



8 Pin

Mic. connector
Order #2112...\$3.99



5 Pin

DIN plug Order #1828...\$1.99



7 Pin

DIN plug Order #2851...\$2.99



8 Pin

DIN plug Order #1395...\$3.29



8 Pin

DIN plug-Kenwood Order #2089...\$3.99



13 Pin

DIN plug-Kenwood Order #0954...\$4.99



Phone 1/4"

Mono 1/4" phone plug Order #1855...\$1.49



Phone 1/4"

Stereo 1/4" phone plug Order #0878...\$1.59



Phone 3/16"

Drake/Collins mic.plug Order #2888...\$2.95



Mini 1/8"

Mono mini plug
Order #0707...\$.69



Mini 1/8"

Stereo mini plug
Order #2310...\$.99



Sub Mini

Mono 3/32" plug Order #1947...\$.**79**



Phono Plug

RCA phono plug
Order #2389...\$.89



Motorola

Antenna connector Order #0305...\$.79



Banana Plug

Specify red or black

Order #1821...\$.79



RCA to 1/4"

RCA to 1/4" mono. Order #1418...\$1.69



1/4" to RCA

1/4" mono to RCA. Order #1427...\$1.99



Mini to 1/4"

Mini mono to 1/4" Order #1434...\$**1.99**



Mini to RCA

Mini mono to RCA Order #1428...\$1.99



RCA to Mini

RCA to mini mono Order #1558...\$1.99



KOK1

Grundig antenna plug Order #0199...\$4.95



204

.051 I.D. power plug Order #0910...\$.99



210

.085 I.D. power plug Order #0821...\$.99



250

.097 I.D. power plug Order #0963...\$.99



TC-777

Fused cigar-plug

Order #0402...\$1.99



DC Plug

Kenwood / Icom
Order #1451...\$4.95

Qty. 1-8 parts \$2.00 Qty. 9-20 parts \$3.00

Radioteletype & Facsimile Equipment

INTRODUCTION TO RADIOTELETYPE

Shortwave radio is filled with many exotic voices, but the excitement doesn't end here! There are many interesting stations that transmit text. Universal can help you upgrade your monitoring station to copy these "non-voice" modes.

MORSE CODE (CW)

One common non-voice mode is called Morse code (CW). Morse code is still used extensively by amateurs, coastal stations and the military. A few maritime coastal stations you may hear include:

	VHP4	Canberra, Australia	
	UKA	Vladivostok, Russia	
	VPS60	Cape D'Aguilar, Hong Kong	
	JOU	Nagasaki, Japan	
	UMV	Murmansk, Russia	
	D4A6	Sao Vincente, Cape Verde	
	TIM	Limon, Costa Rica	
	SUH3	Alexandria, Egypt	
	LZW42	Varna, Bulgaria	
	A9M	Manama, Bahrain	
	LFB2	Rogaland, Norway	
_			

Many countries continue to utilize CW for unclassified military traffic. Stations you might log:

FUX	rr. Navy	St. Denis, Reunion
GYU		Gibraltar
CTU2	Port. Navy	Monsanto, Portugal
NAM	US Navy	Norfolk, USA
ZSJ4	S.Afr.Navy	Silvermine, S. Africa
FUV	Fr.Navy	Djibouti, Jibuti
4XZ	Israeli Navy	Haifa, Israel
EBA	Span.Navy	Madrid, Spain

Morse is also used by some aeronautical, commercial, and diplomatic stations as well as by amateur radio operators.

RADIOTELETYPE (RTTY)

Another mode by which text is transmitted is called radioteletype (RTTY). Most RTTY transmissions heard on shortwave use a RTTY format called "Baudot". The Baudot format represents each character with a series of 5 bits. Each bit is either a MARK (1) or a SPACE (Ø). Your radio will receive the MARK tone and the SPACE tone. The distance between the two frequencies is called the "shift". Common shifts on shortwave include 170, 425 and 850 Hz. There are hundreds of regular (Baudot) RTTY stations that can be heard, even on a modest shortwave receiver. The major types include:

Press Stations

Many commercial and government press agencies transmit "press" on RTTY... often in English. There is no faster way to get the news... it's like having a free wire service in your home! Press stations transmitting English include:

3MA33	China News Agency - Taiwan
VNA30	Vietnamese News Ag Vietnam
BZR66	Xinhua News Agency - China
LRO2	Telam Press - Argentina
SUA289	Middle East News Ag Egypt
YIX70	Iraqi News Agency - Iraq
HML60	KCNA News Agency - N.Korea
9BC22	Iranian News Agency - Iran
6VK317	PANA News Agency - Senegal
YZJ5	TANJUG Press- Serbia

Weather Stations

RTTY is used by aeronautical and weather stations worldwide. While some stations transmit "plain text", most transmit weather data using special "synoptic" codes. We offer the Radio Data Code Manual to help you decode, identify and understand these transmissions. Some RTTY weather stations you can expect to hear include:

UGE2	South Shetland Islands
FJY4	St. Paul & Amsterdam Islands
RUZU	Antarctica
TZH	Mali
TNL77	Congo
3BT4	Mauritius
LOK	South Orkney Islands
GHH	St. Helena Island

Military Stations

Many military stations use uncoded RTTY to pass non-sensitive traffic. Transmissions pertaining to weather, maneuvers and some clerical matters can be monitored. A sampling of military stations you may hear include:

NBA	US Navy	Balboa, Panama
MKD	Royal AF	Akrotiri, Cyprus
OBC	Peru Navy	Callao, Peru
ZRH	S.African Navy	Capetown, RSA
MKG	Royal Navy	London, England
NKW	US Navy	Diego Garcia

Other Services

Other services using radioteletype on shortwave include: diplomatic, research, commercial and maritime concerns. Radio amateurs also utilize several teletype modes.

SPECIAL RTTY MODES

Most RTTY stations transmit in the standard Baudot format previously discussed, but there are many other formats (protocols) used on SW. Another less popular format is ASCII in which each character is sent as a series of 7 bits. Most RTTY equipment can decode ASCII. Another more prevalent protocol is called TOR (Telex-Over-Radio). This is often referred to as Sitor A/ B, ARQ, FEC or AMTOR. This mode is in wide use by maritime users and is also gaining popularity among the diplomatic and amateur services. This mode allows the sender and receiver to enjoy nearly error-free communication. The Info-Tech, M-6000 and the Universal M-900, M-7000 and M-8000 do a superlative job decoding this type of transmission. Other more exotic modes such as ARQ-M2, ARQ-E/E3, FEC-A, FEC-S, SWED-ARQ, ARQ-S, Piccolo, and Frequency Division Multiplex (VFT) are available to listeners utilizing our more advanced multimode demodulators.

EQUIPMENT

A good communications receiver is required for successful RTTY listening. Examples of acceptable receivers would be: Yaesu FRG-7/100/7000/ 7700/8800, Lowe HF-150/225, Kenwood R-1000/ 2000, Icom R-70/71A/72A and Drake R7/7A, SW8. Optimum receivers for RTTY would include the W-J HF1000, Japan Radio NRD-301A/345/ 515/525/535/535D/545, Drake R-8/A/B, Kenwood R-5000 and Icom R-75/8500/9000.

There are three methods used to copy radioteletype. All methods require receiver audio.

RTTY Readers

RTTY/CW readers are self-contained devices that decode and display the text on a 10 (or greater) character LED "billboard" display. AD-VANTAGES: • Low price and • Compact size. DISADVANTAGES: • "Copy" is clearly not as good as on a "dedicated" unit, . Small displays, . Usually decode only basic modes, . Usually lack desirable features or controls, . Not suitable for advanced listening applications. CONCLUSION: An easy inexpensive way to break into RTTY, but not suitable for serious RTTY work. NOTE: The Universal M-400/450 overcomes most of the usual reader disadvantages with: a two line display, printer port and wide variety of reception modes.

Computer Interfaces

Many personal computers can be made to copy RTTY with the addition of two things: 1. A computer interface 2. Special software. ADVAN-TAGES: • Low cost if you already own a computer. • Displays to screen of computer, • Many units will also transmit (for HAM use). DISADVANTAGES: Overall performance is usually superior to a reader, but dramatically inferior to dedicated units, Many computers emit serious RFI (interference) thus destroying the signal you are trying to copy. CONCLUSION: • If you already own a computer, this will be an inexpensive way to try RTTY. The computer-interface route will be adequate for the casual RTTY listener, but may fall short for the serious RTTY DXer. NOTE: The Universal M-1200 Decoder Card offers performance and features usually found only in dedicated units.

Dedicated Units

A dedicated unit is a self-contained free standing device designed expressly for the accurate reception of CW and RTTY modes. Examples would include: Info-Tech M-200F, M-600A, M-6000, Universal M-900, M-7000 and M-8000. DISAD-VANTAGES: • Dedicated units cost more. AD-VANTAGES: • Clearly superior performance over readers or computer interfaces, • Full video display (video monitor not included), • Often include desirable extra features and controls including scope output, automatic threshold control, unshift on space, multiple scroll inhibit, screen dump, loop keying, RS232C output, selective calling, autostart, etc. • Work well for advanced applications including reception of Arabic, Russian thirdshift Cyrillic and exotic modes. • Usually better equipped for satellite RTTY reception. • Do not suffer from potentially serious RFI problems usually associated with computer based systems. CONCLUSION: Although a dedicated unit costs more, this is certainly the preferred route for the serious RTTY listener. Universal Radio stocks used models at considerable savings. Please send a self-addressed stamped envelope to receive our Used List or view it on our web page.

REFERENCE MATERIAL

Quality equipment alone is not enough to be a successful radioteletype monitor. Knowledge, patience and experience are required. A good reference library of radioteletype books and lists is essential. Tuning RTTY without references is simply unproductive. We offer the finest and largest selection of books on RTTY to be found anywhere.

Radioteletype & Facsimile Equipment



UNIVERSAL M-450v1.5



The self contained Universal M-450v1.5 reader operates from 12 VDC making it a natural for hobby, auto or boat installations. The two line liquid crystal display provides a forty character readout. This super-twist LCD can be read from any angle and the front of the M-450 is sloped to provide the optimum in viewing and operating convenience. An 8000 character scrollable buffer stores incoming text for your review. LED indicators for Mark, Space, Input and Data are provided. A gray, all metal cabinet provides a solid look of quality. For the shortwave listener, the M-450 provides all the standard reception modes: Baudot RTTY is all five speeds (45, 50, 57, 75 and 100 baud), SITOR A/B for extensive marine traffic, FEC-A and SWED-ARQ European diplomatic modes plus ASCII at 75, 110 and 150 baud. The reception of FAX (at 120 LPM, 576 IOC) is even supported to the parallel printer port. For the scanner listener, the M-450 decodes the ACARS VHF aviation teletype mode, DTMF, CTCSS (41 tones) and DCS (104 codes). **SPECIFICATIONS**

The M-450 can even be programmed to only activate an external speaker (not supplied) when it receives a CTCSS, DCS or DTMF code of your choosing. The M-450 comes with an instructive Owner's Manual and a 12 VDC wall adapter. Although a computer is not required for the operation of this device, an RS-232 serial port and DOS based control program are provided (3.5" disk). Note: For optimal DCS and CTCSS reception. direct connection to the receiver's detector may be required. One year limited warranty. Made in America by Digital Electronic Systems. The Universal M-450 is the affordable accessory for every SWL or scanner enthusiast. Only 8.75"W x 2.5"H x 8"D 2 Lbs.

M-450v1.5

Order #0450

\$399.95 (+\$8)

Display LCD two line 40 char. total Filter Tones Low tone (mark = 1275 Hz) Fixed: 170, 425 and 850 Hz Variable: 100 - 1000 Hz Power 11-16 VDC @ 250 ma AC wall adapter included. Speaker Input 4-16 Ohms 100 MW max Mono mini jack (1/8") Discriminator Input 10K Ohms .25V max Mono mini jack (1/8") Speaker Output Mono mini jack (1/8") Parallel I/O Parallel ASCII 8 bit Centr. Serial I/O RS-232 EIA Output DB-9

(4800/8/N/1)

program on a 31/2" disk.

Control Program A DOS based control



ACT-1

UNIVERSAL



Much of the routine traffic once heard on VHF aeronautical voice channels has been replaced with a text transmission

format called ACARS. ACARS stands for Aircraft Communications Addressing and Reporting System. This VHF teletype mode is used to transmit data and messages between commercial aircraft and airport ground stations. These transmissions at 131.55 MHz, can be heard on any scanner with the VHF aircraft band. Now you can combine your scanner and PC with our ACT-1 to decode this information that is on the air every day. The ACT-1 simply plugs into your PC's serial port. The user friendly DOS software includes mouse support. You can view, filter, print and save this interesting aeronautical text traffic. You can also view, search and print previously logged data files. Minimum system requirements: serial port and hard drive. Includes a free copy of Understanding ACARS. Order #0032 \$99.95 (+\$6) ACT-1



ARD-2

The new AOR ARD-2 is the "go anywhere" decoder for ACARS and NAVTEX. It provides portable operation from 4 internal AA cells (not supplied) or

external 12 VDC, and a computer is not required. ACARS is the VHF teletype mode audible on most scanners. NAVTEX stands for Navigational Telex, sent predominantly on the longwave frequencies of 518 and 424 kHz, audible on most shortwave communications receivers. The ARD-2 has two NAVTEX modes: NAVTEX-E for English and NAVTEX-J for the Japanese character set, used in coastal waters around Japan. Incoming text is displayed on the 16 character by 2 line LCD display. A built-in speaker with volume control allows you to monitor activity. A separate level control provides threshold adjustment to achieve the optimum input level. A 9600 baud DB9 serial port is provided for optional use with a personal computer.

\$399.95 (+\$7) Order #3763



UNIVERSAL M-1200



The Universal M-1200 Card requires just one fullsize slot in a PC. This board contains three separate demodulators (FAX, Morse and RTTY) to ensure legible reception even under adverse reception conditions. Variable and standard shifts are supported. Reception modes include: Morse Code, Baudot RTTY, SITOR, FEC-A, ARQ-M2, ARQ-E, ARQ-E3, ARQ-6-90, ASCII and Packet. The VHF-UHF user has capability to monitor the ACARS aviation teletype mode, plus POCSAG (512 baud) and GOLAY modes. Decoding of CTCSS and DCS is also supported. Many user features are available to enhance your radioteletype listening. Multiple Scroll Inhibit (MSI) removes blank lines, Automatic Threshold Control (ATC) provides reception during markonly or space-only reception. Over Print Inhibit (OPI) prevents overprinting on your printer. Advanced RTTY enthusiasts will appreciate the Databit and Literal modes, helpful in protocol identification. The video quality of your FAX intercepts will amaze you. FAX images as well as text traffic can be saved on to disk for later retrieval or analysis. Operation is easy through on-screen menus, status indicators and help windows. A datascope feature operates in both RTTY and FAX modes. Audio input for a single receiver is via a DB9F I/O jack or an RCA phono jack. Scope output is also available (DB9F). Note: For some non-HF modes, direct connection to the receiver's detector may be required. The M-1200 comes with an informative manual and 31/2" diskette. One year limited warranty. Made in the U.S.A. Universal M-1200 Order #1200 \$399.95 (+\$7)

NOTICE

The sale of this device is currently restricted to qualifying commercial, government or export customers.

UNDERSTANDING ACARS



To learn more about the ACARS, we suggest the book Understanding ACARS by Ed Flynn. Please see page 88 of this catalog.

Radioteletype & Facsimile Equipment



UNIVERSAL M-8000v7



The Universal M-8000v7 features capabilities not available in other decoders. The M-8000v7 offers tremendous power to let you listen to the exciting world of radioteletype and FAX on shortwave, VHF and satellite! The VGA color output permits the presentation of more information than ever before. The incoming text is displayed in a 26 line, 80 character format. A detailed double status line indicates all current demodulator and decoder settings. The lower left corner displays five bar-graph type tuning bars. A horizontal window at the bottom of the screen shows a continuously updated, spectral display. A square window in the lower right corner features a simulated X-Y tuning scope. The M-8000 decodes all the "standard modes" plus ARQ-M2/4 (TDM), ARQ6-90, FEC-A, FEC-S, ARQ-E, ARQ-E3, ARQ-S, SWED-ARQ, POL-ARQ and Piccolo used by diplomatic, military and aeronautical concerns worldwide. The M-8000 has calibrated variable Baudot speeds with calibrated variable shifts. The new GMDSS or Global Marine Distress and Safety System mode has recently been added. The M-8000 has five user programmable sel-cals. Program in one, two or three words (or codes) which will automatically activate your printer when they are received. Think of the potential for this feature! The M-8000 can be completely controlled by a terminal or computer permitting full automation. The M-8000 itself is automated, utilizing a microprocessor to control shift tune and selection. Press a key and the M-8000 tunes the mark, finds the space, and displays the approximate shift. The M-8000 offers a user selectable initialization format and ten multifunction memories to store your most frequently used operating parameters. Manual tuning is facilitated by on-screen bargraph tuning indicators for level, mark and space plus a simulated tuning scope. Other features include: printer & video squelch, High-Low Tone select, 60, 85 and 1200 Hz shifts, six ASCII shifts, parity select and three position AGC. Instructive LEDs for: Mark, Space, Buffer, CW Lock, Squelch, Idle, Sync., Sel-Cal, Data, Tuning Error and Data Error (helpful in determining correct speed, protocol and sync.). Other refinements you have come to expect include: ATC, UOS, built-in diagnostics, speed readout, external scope output plus serial and parallel printer ports. 16.4"W x 3.5"H x 12.5"D. Gray metal cabinet. Can be mounted in standard 19 inch rack with optional mounting kit #0292 (see page 45). The M-8000 requires a VGA or SVGA analog color monitor. 115/230 VAC, 50/60 Hz. 9 Lbs. (15 Lbs. ship). Manufactured in the U.S.A. by Digital Electronic Systems. With complete owner's manual. (Please see page 98 for optional service manual).

- Standard Baudot Shifts 170/425/850
- Extended Baudot Shifts 60/85/1200
- ASCII Shifts 85/170/425/850/1200
- Diversity Reception
- ARQ Multi-channel watch.
- Speed Readout: Indicates the incoming RTTY transmission rate.
- Auto Baud: Automatic Baud rate selection
- Auto Shift: Automatic Shift Selection
- Auto Tune: Automatic Baud, Shift, Sense
- Beep At: 1-Keypress 2-SelCal 3-Bel char.
- OPI Over Print Inhibit feature.
- Direct Entry of Baud and Shift
- Sel-Cals: 5 programmable sel-cals for automatic printer start-stop on receipt of keywords
- External Scope Output
- On-Screen Simulated Tuning Scope
- Screen Print and Screen Saver
- Spectral Display

- User adjustable filtering control
- VGA Color display (user selectable colors)
- Support for laser printer (HPII compatible)
- High Res. FAX with false color feature.
- MSI Multiple Scroll Inhibit: Eliminates blank space on screen and/or printer.
- ATC Automatic Threshold Control for improved copy during fading.
- AGC Automatic Gain Control
- UOS Unshift On Space auto shift to letters case after blank received.
- Self Test: Built-in diagnostics
- Squelch selectable for screen and/or printer.
- Input Gain Control
- Status Line with five on-screen tuning bars.
- Four Alphabets: ITA2, MIL, TELEX, Cyrillic
- Remote Terminal Operation
- Real-Time Clock/Calendar
- Quality shielded metal cabinet.

LIMITED WARRANTY

Standard Manufacturer Warranty: 1 Year

Optional Extended Warranty To: 3 Years Order #2718 \$59.00

PRICING

M-8000v7 List Price \$1599.00 M-8000v7 Discount Price

Order #0087 \$1399.00 Shipping/Handling/Insurance \$15.00

The Universal M-8000v7 is currently restricted to qualifying commercial, government or export customers.

RECEPTION MODES

- Morse Code with auto speed ranging. 5 to 120 W.P.M.
- RTTY Baudot Standard Speeds: 45, 50, 57, 75 and 100 baud.
- RTTY Baudot Non-Standard Speeds: 20 to 250 baud.
- RTTY ASCII

75, 110, 150, 300, 600, 1050, 1200, 1800 baud.

- Sitor A (Amtor A)
- Sitor B (Amtor B, Collective & Selective) Collective and Selective
- VFT (Frequency Division Multiplex) 8, 12, 16 or 24 channel
- Piccolo

Multi-tone teleprinter code.

ARQ-M2 (TDM)

Two Channel 86, 96 and 100 baud.

■ ARQ-M4 (TDM)

Four Channel 172, 192 and 200 baud.

ARQ-E

48, 64, 72, 86, 96, 144 and 192 baud.

■ ARQ-E3

48, 64, 72, 86, 96, 100, 192 and 200 baud.

4, 5, 6 or 7 character groups. ■ ARQ6-90

200 baud

■ SWED-ARQ

3, 9 or 22 character groups.

FEC-A

96, 144 and 192 baud.

FEC-S

96, 100, 144, 192 and 200 baud.

■ POL-ARQ

100 baud.

■ Packet

300 and 1200 baud (AX.25 Protocol)

■ PACTOR

100 and 200 baud

■ GMDSS

100 baud.

ACARS

VHF aviation mode.

- POCSAG 512 and Golay
- Facsimile (FAX) AM & FM 60, 90, 120 and 240 LPM.
- Russian Third Shift Cyrillic

Cyrillic Characters Displayed to Video.

■ Literal Mode

This feature uses special symbols to represent normally non-printing characters. (To Video Port only)

Databit Mode

This feature converts the incoming data stream into zeros and ones.

UNIVERSAL M-8000v7.5

The Universal M-8000v7.5 is identical to the M-8000v7 but without the Pocsag and Golay paging modes. It is available for general sales to anyone.

M-8000v7.5 List Price \$1599.00 M-8000v7.5 Discount Price Order #0775 \$1399.00 Shipping/Handling/Insurance \$15.00

Universal Radio 6830 Americana Pkwy. Reynoldsburg, Ohio 43068

EPSON

LX-300



The Epson LX-300 is a low cost full-featured nine pin dot matrix printer. It uses standard tractor or friction feed paper to 9" wide. It works very well with the M-400, M-900 and M-8000. Now you can "hardcopy" those interesting RTTY-CW receptions. Also prints excellent shortwave FAX pictures. Uses standard parallel interface and is IBM compatible so you can use it with most computers too. Advanced features include: auto-switching serial and parallel interfaces, bidirectional printing and four type styles. Continuous paper can be fed by the supplied push-tractor or single sheets can be friction fed. This is a very quiet printer. 264 CPS draft or 53 CPS NLQ mode. 120 VAC 30W 60 Hz only. 14.4"W x 5.2"H x 10.8"D. One year manufacturer's limited warranty. UL listed.

LX-300

Order #2665

\$219.95 (+\$9)

Extra ribbon for Epson LX-300. Black. Order #2374 \$7.95 (+\$3) Ribbon

SPECTRUM 4VLR



The AOC Spectrum 4VLR is an ideal monitor for the M-8000. This 14" VGA analog color monitor provides .28 mm dot pitch and up to 1024 x 768 resolution (including 640 x 480) with unlimited colors. Convenient front controls for: Power, H. Center, V. Size, Brightness and Contrast. Complete with tilt swivel base and DB-15 video cable; ready to plug into the Universal M-8000. Size: 10"W x 14.8"D x 14" H. (Reminder: the M-8000 will not work with composite or EGA monitors). \$299.95 (+\$11) Order #0778 4VLR



The ProVideo VM-901B monitor is just right for those requiring a high-quality, small metal cased composite monitor. This 9 inch diagonal video monitor provides > 800 lines resolution. Front controls include: Power, Contrast, Brightness, Horizontal Hold and Vertical Hold. Rear composite input .5-2V p-p sync. neg. with BNC jack. Input impedance is High or 75 Ohm switchable. Black metal case 8.6"W x 9.5"H x 10"D 13 Lbs. 120 VAC 60 Hz. (Not for use with M-8000).

VM-901B

Order #3309

\$159.95 (+\$9)

The ProVideo VM-1201B is the same as the VM-901B, but it has a 12 inch rather than a 9 inch tube (measured diagonally). Resolution > 800 lines. Metal case: 12"W x 11.5"H x 12.5"D 20 Lbs. 120 VAC 60 Hz 32W. (Not for use with M-8000). \$199.95 (+\$10) Order #3310 VM-1201B

Klingenfuss Publications

 Noted author Joerg Klingenfuss has produced two different sets of audio CDs with emission types. See page 85 of this catalog for full details.

HOOKUP CABLES

- Audio Cable RCA Phono to ¼" 2 Conductor Connects M-800, M-6000, M-7000 or M-8000 to receivers with RCA phono output such as NRD-525/535/545 and the R-8A/B. Six foot shielded. \$2.99 (+\$2) Order #1112
- Audio Cable Mini to ¼" 2 Conductor Plug Connects M-800, M-6000, M-7000 or M-8000 to receivers with mini plug output such as R-2000/ 5000, R-71A and FRG-8800. Six foot shielded. \$2.99 (+\$2) Order #1553
- Video Cable BNC to RCA Connects M-900 or M-7000 to monitors with BNC input such as ProVideo or Koyo. Three foot RG-59 shielded. \$5.99 (+\$3)

Order #2543

■ Audio Cable Mini to RCA Phono Plug Connects M-1000/1200 to most portables. Shielded six foot.

Order #1408

\$2.99 (+\$2)

■ Parallel Printer Cable Connects M-400/M-900/M-6000/M-7000/M-8000 to your parallel printer. Six ft. RFI shielded. \$14.95 (+\$3) Order #2437

FOTTECH ELECTRONIC

ROM UPGRADES

Universal products are designed for future expansion. Whenever possible, Info-Tech offers an upgrade to bring prior models up to date. When ordering upgrades you must indicate: the serial number (stamped on back of item), the complete version number (appears on the video monitor at power up), and whether your unit has any options (such as video FAX, clock etc.). Most upgrades require simple plug-in installation. Some ROMs must be custom made, allow 6 weeks for delivery.

■ Info-Tech M-6000 Version 2 ROM Upgrade For M-6000v1 owners. Will add: •Packet Mode 300/1200 baud, •Autor, •Ten User Memories, ·Status Line Dump. With new manual. Order #2317 \$69.95 (+\$4)

■ Info-Tech M-6000 Version 6 ROM Upgrade For M-6000v5 owners. Will add: •Literal Mode, •Databit Mode, •Russian Cyrillic •ARQ-E •ARQ-E3 and •OPI. With new manual. (2 ICs). Order #2378 \$69.95 (+\$4)

■ Info-Tech M-6000 Version 9 ROM Upgrade For M-6000v8 owners. Will add: •ARQ-E •ARQ-E3 and OPI. With new manual. \$69.95 (+\$4) Order #2971

■ Info-Tech M-7000 Version 3 ROM Upgrade For M-7000v1 & 2 owners. Will add: •ARQ-E/ E3 •ARQ-S •FEC-S •FEC-A and •SWED-ARQ. \$69.95 (+\$4) Order #1003

■ Info-Tech M-7000 Version 6 ROM Upgrade For M-7000v5 owners. Will add: •ARQ-S •FEC-S •FEC-A and •SWED-ARQ.

\$69.95 (+\$4) Order #0343

■ Info-Tech M-8000 Version 2 ROM Upgrade For M-8000v1 owners. Will add: •PACTOR, ARQ6-90 and ACARS. ACARS (only) requires the installation of two resistors.

Order #2613 \$69.95 (+\$4)

■ Info-Tech M-8000 Version 7 ROM Upgrade For M-8000v5 owners. Will add: •GMDSS and POL-ARQ.

\$69.95 (+\$4) Order #1102

■ Info-Tech M-1200 Version 2 ROM Upgrade For M-1200v1 owners. Will add: •FEC-S •PACTOR •SWED-ARQ •POCSAG •POLARQ. \$69.95 (+\$4) Order #0143



RACK MOUNTING KITS

■ Info-Tech Rack Mounting Ears - Large Two gray "L" brackets for mounting the M-600, M-6000, M-7000 or M-8000 into a standard 19" rack. User must supply mounting screws.

\$22.95 (+\$4) Order #0292

Kantronics

KPC-3 PLUS



The KPC-3+ is a small full-featured packet TNC. It comes standard with 128K Ram expandable to 512K. Like all Kantronics TNC's, the KPC-3 comes with PBBS, KA-Node, Host Mode, Kiss and WEFAX capabilities. The new "Plus" version features: 2 A/D inputs, 2 digital output control lines, digital pots so audio drive can be set from the PC, APRS commands and an informative 250 page manual.

Kantronics KPC-3+ TNC 128K

List \$159.95

Order #1908 \$144.95 (+\$6)

SUPER FAX II

WEFAX reception program for KAM or KPC series using ver. 2.8 or later firmware. Requires HF radio. Kantronics SuperFax II IBM-PC

List \$49.95

Order #0144 \$47.95 (+\$4)

KAM PLUS



The Kantronics KAM Plus all-mode computer interface has RTTY, ASCII, AMTOR, Packet 300/ 1200. Pactor, CW and FAX capability. Two radio ports are supplied for simultaneous HF and VHF packet. A unique MYGATE callsign allows packets received on one port to be digipeated on to the other port. Designed primarily for the amateur radio market, considerable technical knowledge is required to connect and operate this device. Includes: manual, RS-232 cable, radio cable (minus mic plug) and Pacterm terminal prgm. Requires 12 VDC 300 ma.

Kantronics KAM PLUS Multi-Mode

List \$359.95 Order #2535 \$329.95 (+\$7)

Kantronics Hostmaster II+ Program. IBM-PC List \$89.95 Order #2861 \$84.95 (+\$3)^ ^Free shipping with interface.

KAM 98



The KAM-98 is single port unit for either HF or VHF. Features include: Pactor, Packet 300/1200, GTOR, Amtor, RTTY, NAVTEX, ASCII, WeFax. CW, EMWIN, GPS NMEA-0183 compatibility, HOST mode and KISS.

Kantronics KAM-98

List \$449.95 Order #2151 \$399.95 (+\$8)

KPC-9612 PLUS



The KPC-9612+ has dual-speeds and dual ports. Monitor 9600 and 1200 baud packets at the same time. With two radios, it can provide simultaneous 9600 & 1200 baud operation and mailbox access. Kantronics KPC-9612+ Dual Port TNC 128K

List \$329.95 Order #3517 \$299.95 (+\$7)



MFJ-1278B MFJ-1278BT MFJ-1278B/DSP



The MFJ-1278B ten mode computer interface has RTTY, PACTOR, Packet 300/1200, Amtor, SSTV, Navtex, CW and FAX capability. You must supply the computer, a terminal program and appropriate wiring. A power supply is provided. This device is designed primarily for the amateur radio market. Considerable technical knowledge is required to connect and operate this device. The MFJ-1278TB (Turbo) is identical but also features built-in 2400 baud Packet capability. MFJ offers optimized terminal programs for IBM users called the MFJ-1284M and MFJ-1289M. They come on a 3½" diskette.

MFJ-1278B Multi-Mode Controller

List \$299.95 Order #0109 \$269.95 (+\$6) MFJ-1278BT Multi-Mode Controller 2400

List \$369.95 Order #0503 \$349.95 (+\$7) MFJ-1278B/DSP Multi-Mode Controller +DSP List \$379.95

Order #2858 \$349.95 (+\$7)

MFJ-1284M Starter Kit Terminal Pgm. (PC) List \$24.95 Order #3128 \$20.95 (+\$3)^ MFJ-1289M MultiCom Software (PC) List \$59.95

Order #3215 \$49.95 (+\$3)^ ^Free shipping with MFJ-1278



The MFJ-1270C makes packet radio communications affordable. With Kiss, easy mail and WeFax. MFJ-1270C Tapr Clone

List \$119.95 Order #1135 \$114.95 (+\$5)

DYN-O-LITE

Continuous squeezing is all you need to op-

erate the Dyn-O-Lite flashlight. Red with wrist strap. Dyn-O-Lite

Order #3661

\$7.95 (+\$3)



FLASHLIGHT



The Freeplay self-powered flashlight never needs batteries! You charge it by winding the crank or plugging in the supplied AC adapter. When fully charged, the lantern will operate for up to two hours. The light can operate in either normal or flasher mode. This new version also has two lamp intensities. 5.5x10x7" Yellow. This quality device is Made in South Africa. **FPSL** Order #3751

Package of two extra xenon lamps for above. FPA12

Order #3819 \$7.95 (+\$2)

\$69.95 (+\$6)

Patrick SOLAR FLASH LIGHT



Recharge this solar flashlight during the day for up to three hours of use at night. The two-way power system allows you to run this light by the charged internal NiCads (supplied) or two normal AA cells (not supplied). This light is water resistant and will float. It also features three large red flashing LEDs that can selectively be turned on for signaling purposes. A free bicycle mounting bracket is also suppled. The ultimate emergency flashlight. Includes wrist strap and spare lamp.

Patrick GM708 Order #3013

\$16.95 (+\$4)

SUNBURST



Be prepared with this handy AM/FM radio and flashlight combination. This amazing device is powered by solar cells or a hand cranked dynamo that recharges the internal cells. The Sunburst may also be powered from 6VDC or optional ordinary AA cells. Attractive yellow all weather case. With siren function and earphone jack. 8.5x4x3.9". List \$59.95 Order #3783 \$49.95 (+\$4)

> Orders: 800 431-3939 Information: 614 866-4267 Quality Equipment Since 1942

Universal Radio 6830 Americana Pkwy. Reynoldsburg, Ohio 43068



COFFEE MUG

This blue English ironstone mug features the Universal Shortwave globe logo and lettering in white and red.



Holds 10 ounces.

\$5.95 (+\$2) Universal Mug Order #0417 Limited edition 55th Anniversary mug. Cobalt blue with gold lettering. Not for use in microwaves. \$6.95 (+\$3)

Order #3516 Anniv. Mug

HICAGO **Electric Power Tools**

The Chicago Electric float charger was designed to store and preserve your battery for cars, motorcycles, boats, farm machinery, RVs, generators, etc. An accurately controlled voltage will prevent the battery from self-discharge. The float charger will not overcharge the battery. It will retain a battery charge for 5 - 125 amp

hours and is safe for gel-cell batteries and flooded batteries. Input is 120 VAC 14 watts. Output is 14.4 VDC to two supplied 40 inch cables with battery clamps. Ninety day limited mfg's warranty.

\$19.95 (+\$4) 37137 Order #2458





The MFJ-701 Snap-On-Choke kit allows you to easily eliminate or minimize radio frequency interference (RFI). Just wind your AC cord through the choke. Package of four.

MFJ-701

Order#1778

\$14.95 (+\$3)

MISCELLANEOUS CABLES ■ Audio 6 Foot RCA Phono to 1/4" 2 Conductor

- \$2.99 (+\$2) Order#1112
- Audio 6 Foot Mini Plug to ¼" 2 Conductor \$2.99 (+\$2) Order #1553
- Audio 6 Foot Mini Plug to RCA Phono Plug \$2.99 (+\$2) Order #1408
- Audio 6 Foot Mini Plug to Mini Plug \$2.49 (+\$2) Order #1411
- Audio 10 Foot RCA Plug to RCA Plug Order #0668 \$2.99 (+\$2)
- Audio 6 Foot Mini Plug to Mini with Atten. \$3.69 (+\$2) Order #3374
- Free shipping on misc. cables on orders over \$20.

RADIO STANDS



This handy clear plastic stand supports your portable shortwave at the optimum viewing angle. Size: 6.75"W x 4.5"H x 4.75"D (5.2" on slant). \$8.95 (+\$3) Order#0022 Clear Stand

Similar to above, but colored, not clear.

\$7.95 (+\$3) Colored Stand Order #2638

OHA DELTA VRC



Alpha Delta has introduced an exciting new innovation for every radio listener called the Alpha Delta Variable Response Console. This advanced audio processing speaker system will enhance the reception capability of any receiver, transceiver or scanner. The ducted port bass reflex speaker is designed as an integral part of the system. A low distortion, low harmonic, push-pull audio amplifier outperforms the single-ended type and provides clean, crisp audio. A continuously adjustable 12 dB bass boost/cut circuit enhances bass response for high-fidelity music and reduces low frequency rumble for sharper voice clarity. The continuously adjustable sharp cutoff Sampled Data Switch Capacitor Audio Filter can be set for optimum interference reduction for AM, CW, SSB or DATA. The calibrated LED light bar shows the cutoff frequency. The Peaking circuit allows CW/DATA signals to pop-out of the noise. A fully adjustable 40 dB deep Notch circuit removes interfering heterodynes. A special circuit allows the Peak and Notch to exactly track each other. Output jacks for recorders and headphones are provided. Supplied with 12V wall transformer. 8.25"Wx8.25"Hx6"D. \$229.95 (+\$9) Order #2450 VRC

The VRC-2 is the enclosure and speaker only. The VRC-2 makes a great external speaker for any communications receiver or amateur transceiver. Order#2282 \$99.95 (+\$6) VRC2



S W 5 5 / SW77, ATS-818, Satellit 500/700, etc.). With shoulder strap and zippered side pocket. Approximate size is 12" x 8" x 4". Black with Universal Radio globe logo.

Universal Case Order #0395

\$29.95 (+\$4)



The MFJ-306 mobile world band explorer lets you visit the world while you drive. It will convert your car radio into a shortwave radio at the push of a button. You will be able to monitor the 19, 25, 31 and 49 meter bands. It is easy to install. Just unplug your car radio antenna, and plug it into the MFJ-306. Then insert the MFJ-306 cable into your car radio antenna jack and connect 12 VDC. The MFJ-306 works with all car radios including digital ones. Please note the actual world band frequencies will not be displayed. Just 5" x 1.5" x 3.5". \$74.95 (+\$4) Order #1328 MFJ-306



The Nitelogger II provides a means to activate a cassette recorder from any receiver with a squelched audio. Modification of the radio is not necessary. The Nitelogger works with any tape recorder equipped with an external microphone and remote control capabilities. Visual indication of proper audio level is supplied as is delay time and monitor volume, which can be controlled from the front panel. With AC powers supply. Order #1595 \$69.95 (+\$4) Nitelogger II

Batteries

We stock fresh, top quality alkaline batteries made by Duracell. There is no additional charge for shipping if ordered at time of receiver purchase.

Duracell Alkaline AA Cells (Pkg. of 4) \$3.99 (+\$2) Order #2043

Duracell Alkaline AAA Cells (Pkg. of 4) Order #2501 \$3.99 (+\$2)

Duracell Alkaline D Cells (Pkg. of 4)

\$4.99 (+\$2) Order #1786



SCAN BEAM

The Grove Scanner Beam works on a wide range of frequencies including: 30-50 MHz low-band VHF, 108-136 MHz aircraft band, 136-174 VHF high band, 225-400 MHz military aircraft and satellite band, 406-512 MHz UHF, and 806-960 MHz microwave mobile band. The Scanner Beam may be used with a TV antenna rotator or fixed in one position for a distant station while local stations still come in clear from all directions. Balun transformer, offset pipe and mounting hardware are included. No lead-in cable is provided. Approximately 8'H x 5' L. (Requires F-type connector on your coax).

SCAN BEAM

Order #0688

\$59.95 (+\$11)

The AH-7000 receives from 25 to 1300 MHz solid! It can also be used for transmit on 50, 144, 430, 900 and 1200 MHz ham bands. The discone construction offers the best performance possible in an omni-directional antenna. This antenna is 51/2 ft. high and attaches to any standard mast (not supplied) with two supplied U-bolts. The AH-7000 comes with a preassembled 50 foot cable with an N connector at each end. Connects directly to the Icom R-100/7000/7100/8500.

AH-7000

Icom AH-7000 Antenna

Order #0828 \$149.95 (+\$8)

Universal 25 Foot N Extension Cable RG8x Order #2542 \$29.95 (+\$5) Universal 50 Foot N Extension Cable RG8x

Order #1633 \$34.95 (+\$6)



WM SLBNC

Valor has developed a marvelous antenna accessory for everyone who uses a handheld scanner or HT in the car. The slim line kit mounts easily to any car window. Now mount your "duck" antenna outside the car window to maximize performance and range. With 7 foot RG188 cable with BNC connector.

WMSLBNC

Order #2066

\$28.95 (+\$3)

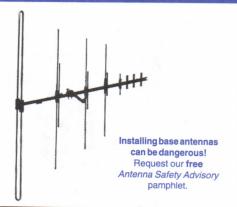
TGS

This attractive black 23" through-the-glass mobile scanner antenna looks just like a cellular car antenna. It covers 30 - 1200 MHz and is complete with cable, connectors and all mounting hardware. Motorola plug.

Valor TGS

Order #0876

\$34.95 (+\$4)





The Hustler DCX is a discone base antenna that provides good omni-directional coverage from 40 to 700 MHz. It is easily mounted to any mast (not supplied) with supplied

hardware. Has SO-239 fitting to accept PL-259 plug. No lead-in cable is provided.

Hustler DCX

Order #1205

\$23.95 (+\$5)



SA7000

The AOR SA7000 super wide range receiving antenna covers from 30 kHz to 2 GHz. This 6 foot passive antenna has two vertical elements with built-in duplexer. It includes 50 feet of RG-58 coax lead-in to a BNC plug. The SA7000 is a strong choice for the AOR AR5000 or AR8200

AOR SA7000

Order #3755

\$189.95 (+\$9)

DA3000

The AOR DA3000 is a 16 element, omnidirectional discone receiving antenna covering 25 to 2000 MHz. It includes 50 feet of RG-58 coax leadin to a BNC plug. Great for wideband scanners. **AOR DA3000** Order #2924 \$109.95 (+\$8)

MA500

The MA500 is a 29 inch magnet mount mobile antenna covering 25-1300 MHz. 13 ft coax to BNC. AOR MA500 Order #2616 \$69.95 (+\$6)

antennacraft **SA-1-75KT**

You can significantly improve the performance of your scanner with this affordable antenna system. This omni-directional, vertically polarized antenna utilizes three elements on a 20 inch boom. Frequency coverage: 27-54, 108-175 and 430-612 MHz. It even comes with 50 feet of RG-59 coax with an F connector (for the antenna) and a Motorola plug for the radio.

\$29.95 (+\$6)



MON R-51

The Antenna Specialist MON R-51 is a magnetic mount scanner antenna that covers 25-1000 MHz. This provides full scanner coverage in an easy-to-transfer system allowing you to move the antenna to another vehicle or remove antenna when it is not in use or when you do not wish to advertise the fact that you have a radio. The antenna is about 4 feet tall and comes with 12 foot of coax cable to a Motorola plug.

MON R-51 Order #1875 \$44.95 (+\$6)



MON-52

The Antenna Specialist MON-52 is a trunk lid mounted scanner antenna that covers 25 to 1000 MHz. Provides enhanced 800 MHz reception. Includes coax cable with installed Motorola plug. A-S MON-52 Order #0401 \$49.95 (+\$5)

MON-63

The MON-63 antenna coupler allows your scanner to share a standard AM/FM car antenna. Your auto antenna plugs into this coupler. The coupler then feeds your AM/FM auto radio and your scanner radio independently. Uses Motorola plugs. A-S MON-63 Order #0748 \$19.95 (+\$3)



D-130J

The D-130J super discone antenna is an ultra-wideband omni-directional antenna that offers solid coverage from 25 to 1300 MHz. This lightweight antenna (2.2 lbs) is made of precision tooled stainless steel. It has an SO-239 jack to accept a PL-259. Cable and mast not supplied.

Diamond D-130J Order #2405



\$89.95 (+\$7)



CLP5130-1 CLP5130-2

These high gain, directional VHF/UHF antennas can be used for receive or transmit (500 watts). 25 Elements covers 50 - 1300 MHz. 6' 8" boom. CLP5130-1 Order #3352 \$379.95 (+\$13)

20 Elements covers 105 - 1300 MHz. 4' 7" boom. CLP5130-2 Order #3353 \$289.95 (+\$13)



SE1300

This British made discone covers 25 - 1300 MHz. Uses N connectors. 5' 6". Cable not supplied. SE1300 Order #3362 \$89.95 (+\$7)

> Orders: 800 431-3939 Information: 614 866-4267 Quality Equipment Since 1942

Universal Radio 6830 Americana Pkwy. Reynoldsburg, Ohio 43068

IC-4008



- UHF FM FRS
- 14 Channels
- Privacy Codes
- Low Battery Indicator
- Automatic Squelch
- Call Ring Function
- Smart Ring Function
- Easy 5 Button Operation
- Auto Power Save
- Fold-Down Antenna

Family Radio Service (FRS) radios require no user license fees. The F.C.C. has set aside these frequencies for individual or group communications. Great for hunting, hiking, biking, boating or shopping. The IC-4008 covers all 14 FRS channels and uses the maximum legal power (500 mW ERP). Operates from 3 AA cells (not supplied).

Model IC-4008 Black Case List \$160.00

Order #2849

\$99.95 (+\$5)

Model IC-4008 Yellow Case List \$160.00

Order #3020

\$99.95 (+\$5)

Optional HM-46 Speaker Mic Order #1165 List \$45.00

\$32.95 (+\$3)

CHEROKEE



FR-460

- UHF FM FRS
- 14 Channels
- 47 Privacy Codes
- Backlit LCD
- Rx/Tx LED
- Tiny
- Scanning
- Keypad Lock
- Privacy Talk
- Mic/Spkr Jack

The Cherokee FR-460 is the world's smallest family radio service radio. All 14 UHF FRS channels are featured with 38 talk groups. Range is up to two miles, line of sight. The FR-460 has a backlit display and includes a wrist strap and a beltclip. Requires three AAA cells, not supplied. Only 2" x 3.2" x .6". One year limited warranty.

Model FR-460 with Blue Case List \$119.95

Order#0154

\$99.95 (+\$5)

Model FR-460 with Yellow Case

Order #3827 List \$119.95

\$99.95 (+\$5)

EX H-460 Headset with Push-to-talk mic Order #0226 List \$34.95

\$31.95 (+\$3)

MOTOROLA **SPIRIT PRO+** SV22CDT

- VHF 2 Watt
- Dual Channel
- Removable Belt Clip
- Transmit/Battery LED
- Rechargeable Battery
- Desktop Drop in Charger Supplied Coded Squelch
- Compact Size
- American Made

The Motorola SV22CDT VHF Commercial Band Radio provides 2 watt of power and two operating channels for increased flexiblility. The SV22CDT features a 10 hour drop-in desk charger tray. Other supplied items include: flexible antenna, NiCad battery pack, removable belt clip, operator's guide and FCC license application. The SV22CDT can operate in both OPEN and CODED (PL) squelch modes. (The PL tone can be user programmed). The SV22CDT comes with VHF Red O 151.625 MHz and Green ○ 154.600 MHz channels unless specified differently. Range is up to 2 miles. This commercial band radio requires a license. One year limited warranty. Order #1226

List \$349.00

\$269.98 (+\$6)

IDLAND



75-510

- UHF FM FRS
- 14 Channels
- Privacy Codes Backlit LCD
- Automatic Squelch
- NiCad Battery
- Wall Charger
- Flexible Antenna
- Auto Power Save
- Auto Time-out Timer

The Midland 75-510 operates in the new Family Radio Service band (462-476 MHz). The range can be up to two miles (line of sight). Absolutely no license is required and there are no fees of any kind. Unlike CB walkie talkies, the compact Midland 75-510 provides clear, crisp interference-free FM communications. 14 UHF radio channels are featured. 38 user selectable CTCSS privacy codes per channel ensure uncluttered communications. This radio is ready to go and includes a non-removable flexible antenna, rechargeable nickel cadmium batteries, wall charger and belt clip. 4¾" x 2½" x1¼". One vear limited warranty.

List \$149.95

List \$159.95

Order #0072

still includes the NiCad batteries, charger, etc.

Order #3826

The new model 75510XLB is slightly smaller and

\$98.98 (+\$5)

\$99.95 (+\$5)

Order #0624

\$99.95 (+\$5)

\$**99.95** (+\$5)

The SMC-34 is a speaker mic with volume control. \$29.95 (+\$4)



UBZ-LF14BK UBZ-LF14YK

- UHF FM FRS
- 14 Channels
- Privacy Codes
- Backlit LCD
- Key Lock
- Battery Saver
- Rugged
- Swivel Antenna
- Privacy Talk
- Auto Time-out Timer

Kenwood's UBZ-LF14 FreeTalk™ is ideal for staying in touch with family and friends. All 14 UHF FRS channels are featured with 38 talk groups. Range is up to two miles, line of sight. Includes beltclip. Requires three AA cells, not supplied. Only 4" x 2.2" 1.1". One year limited warranty.

Model UBZ-LF14BK Black Case Order #1239 List \$159.95

Model UBZ-LF14YK Yellow Case List \$159.95

For hands-free operation use the HMC-3 headset. \$42.95 (+\$3) Order #1061 List \$59.95

List \$39.95 Order #1172





T101-Y UHF FM FRS

- 14 Channels
- 38 Privacy Codes
- Backlit LCD Voice Announce
- Battery Indicator
- Time-Out Timer
- Indicator Light
- Privacy Talk
- Accessory Jack

Communicate in style with Motorola TalkAbout™ FRS Family Radio Service radios. Requires three AA cells, not supplied. One year limited warranty.

Model T101-B TalkAbout™ Cobalt Blue Case \$119.95 (+\$5) Order #1030 List \$139.95

Model T101-P TalkAbout™ Pewter-Gray Case \$119.95 (+\$5) List \$139.95 Order #0763

Model T101-Y TalkAbout™ Yellow Case \$119.95 (+\$5) Order #0673 List \$139.95

Motorola 50225 remote speaker mic. Order #0548 \$24.95 (+\$3) List \$26.99

Motorola 50226 headset with mic. Order #0518 List \$14.99

> Orders: 800 431-3939 Information: 614 866-4267 Quality Equipment Since 1942

\$14.95 (+\$3)

Universal Radio 6830 Americana Pkwy. Reynoldsburg, Ohio 43068

INTRODUCTION TO AMATEUR RADIO

Amateur radio is one of the most exciting and popular pastimes in the world. There are over one million "HAMS" operating from every end of the globe. You can "meet" a coal miner in Germany, a housewife in Australia, a missionary in India, or a research scientist in Antarctica ... all without leaving your living room.

The first Ham band starts at 1800 kHz; not far from the top end of the "AM" band. There are eight additional bands available to hams throughout the shortwave (H.F.) portion of the radio spectrum. Unlike "AM" broadcast signals, shortwave signals have the ability to consistently travel great distances. Shortwave ham signals will reflect (refract) off the invisible layer above the earth called the ionosphere. Hams operating on the amateur shortwave bands have the ability to talk all over the world. Beyond the shortwave ham bands lies an area of the radio spectrum called VHF (Very High Frequency). Hams also have special bands that they can talk on in the VHF region, UHF region and even above!

While long distance communications does occasionally take place on the VHF ham bands, these bands are usually used for local communications. Many hams have portable ("walkie-talkie") or mobile VHF radios to talk to other hams in their local area. Above the VHF portion of the radio spectrum lies still higher frequencies. Hams have additional bands in this region. Hams use UHF for local contacts, transmission of TV signals, satellite communications and experimentation.

Hams use several methods to communicate with each other. When ham radio began over 60 years ago, all hams utilized Morse code. Morse remains a popular mode among amateur radio operators. Transmission by Morse code is an efficient, reliable and fun way to contact distant stations. Morse code operators use a set of standard abbreviations and procedures that virtually eliminates the language barrier. TNX FOR QSO OM ES 73 means "thank you for the contact and best wishes" in any language! Hams also operate "phone" (voice). On the shortwave bands, hams use a special transmission mode called "single side band" or SSB to transmit greater distances and effectively use their allocated frequencies. A third method that hams use to communicate is called radioteletype (RTTY). This mode requires extra equipment. In order to communicate by RTTY, each operator must have RTTY equipment which roughly resembles a typewriter. In this mode the hams simply type their messages back and forth. A new mode called Packet permits the high speed interchange of messages, data and programs between hams. Many RTTY operators are using specially equipped personal computers to accomplish this. Hams can even send pictures back and forth to each other over great distances! These modes are referred to as slow-scan TV (SSTV) and facsimile (FAX). But this is only the beginning! There are several special (US, Japanese and Russian) satellites circling the earth that hams can use. Hams transmit their signal into the

satellite, then the satellite retransmits the signal back to earth, thus extending the "range" by a factor of 1000+! Some hams even use the moon to bounce their signals to a distant ham! Occasionally the *Space Shuttle* carries a crew member who is a ham. NASA lets astronaut hams take time out to communicate with their earth-bound fellow hams! Imagine the excitement of talking to the *Space Shuttle* as it passes overhead!

There are many aspects of amateur radio ... truly something for everyone! Many amateurs like to experiment (or just tinker!) with various antennas or circuits, others enjoy talking to distant stations (called working "DX"). Still others prefer to communicate with other local hams or experiment with the transmission of text or pictures.

Amateurs do more than communicate for pleasure and relaxation. In any civil emergency, where communications are disrupted, amateur radio operators are the first on the scene with trained people and reliable communications channels both locally and to remote locations. They work with the Red Cross, Disaster Services, and the Federal Emergency Management Agency as well as local health, welfare and safety agencies. Examples of recent events where hams have provided important services are: the California earthquake and hurricane Hugo. Hams also provide communications for marathons, road rallies, charity drives and similar civic activities.

There are over a million hams worldwide, operating from nearly every country on earth. In the U.S.A. alone there are over 400,000 amateurs. Amateur radio operators are required to obtain a license from the government before talking on the air. Getting your first amateur radio license is not difficult. Many start with an entry level license called the Novice license.

NOVICE LICENSE

In order to encourage people to participate in amateur radio, the government requirements for this first license are minimal. To get your novice "ticket", you must pass a 30 question multiple choice test on radio fundamentals and regulations, and demonstrate the ability to receive Morse code at the rate of 5 WPM. The questions on the "written" exam are easy. You can pass the exam after just a few evenings of study. Learning the code may take slightly longer, but getting to 5 WPM is not difficult. An hour or two of practice every night for two or three weeks is usually adequate. When you get your Novice ticket you can operate on 4 of the 8 shortwave (HF) bands using Morse code. You can also operate voice mode on one shortwave band (10 meters). Two bands above shortwave are now available to Novices. You can operate voice or data on 220 MHz and 1296 MHz. The world of global communications is now yours!

TECHNICIAN LICENSE

The new *codeless* Technician Class offers great privileges and requires passing a 55 question written test. <u>No</u> code proficiency is required! This test is administered by qualified amateur radio

clubs several times a year. When you pass this test you will be granted full use of all the VHF (and higher) ham bands in any mode ... including voice! A technician license will permit operation on the popular 144 MHz band, called 2 meters. A variety of inexpensive mobile and hand-held 2 meter radios are available. Most cities have 2 meter "repeaters". The repeater antenna is usually on a tall building or tower. A repeater takes an input signal and then rebroadcasts it, substantially increasing the effective range of your radio! Many repeaters also have "auto-patch" capability to make phone calls from your car or walking down the street. The technician license will even allow you to operate through the new generation of ham satellites (which act like repeaters!) giving you worldwide range on VHF!

GENERAL LICENSE

The general class "ticket" is the most popular class of license. If you already have your technician class license, a 25 question written test and a 13 word per minute code test is required. Chances are that if you have been using Morse code (with your novice or technician license), your speed will automatically grow to 13 wpm after a few months of operating. The general "ticket" dramatically expands your operating privileges! You now can operate all modes on all ham bands including voice on all the shortwave (HF) phone bands for global communications. Many hams find the privileges of the general class adequate and do not seek to upgrade to higher licenses.

ADVANCED & EXTRA LICENSE

There are special band segments reserved for holders of the advanced and extra class licensees. Another written exam is required for the advanced class. The extra class requires another written and another code exam (20 wpm).

GETTING STARTED

There are several ways to get your first license. Universal has a variety of books to help you learn the "theory" of ham radio. Good code tapes are available to help you learn the code.

Many prospective hams buy a communications receiver (or transceiver) while they are studying for their "ticket". Universal has a nice selection of new and used receivers. A good receiver may be helpful for several reasons. There is a radio station (W1AW) which transmits code practice sessions every night for those learning the code. Copying these code drills is good preparation for your code test. You will also be able to listen to other amateurs, and start to learn the "language" and "buzz-words" of ham radio. Getting your first station on the air doesn't have to be expensive! Universal has a nice selection of inexpensive used equipment. Amateur radio equipment does not require any special wiring in your home. Antennas can be large, expensive and elaborate, or simple, unobtrusive and inexpensive. Most new hams string up a "dipole" antenna which we can supply for about \$25.00. You are now ready to begin the lifetime adventure of amateur radio.

JRC Japan Radio Co., Ltd.

JST-145/245



Japan Radio's newest amateur transceiver is the JST-245. This extraordinary rig provides complete 160 to 10 meter coverage *plus 6 meters* in all modes (AM/FM/SSB/CW/RTTY). The built-in automatic antenna tuner is provided as standard equipment. Tuner settings are automatically stored in memory for fast QSY. Three antenna connections are user selectable from the front panel and can be stored in memory. The general coverage receiver tunes from 100 kHz to 30 MHz plus 48 to 54 MHz. Electronically tuned front-end filtering, quad FET mixer and quadruple conversion (triple on FM) ensures excellent dynamic range (>100 dB) and third order ICP of -20 dBm. Excellent I.F. bandwidth flexibility is assured with the variable Bandwidth Control. This permits the standard 2.4 kHz filter to be narrowed continuously to 800 Hz. Narrow SSB and CW filters for the second and third I.F. are available optionally. Other interference rejection features include Passband Shift (PBS), dual noise blanker, three step attenuation, I.F. notch, selectable AGC and all-mode squelch. Notch tracking is automatic. Once tuned, the I.F. notch filter will track the offending heterodyne (± 10 kHz) if the VFO frequency is changed. Very low phase noise is achieved through a single crystal Direct Digital Synthesis system. The serious CW operator will appreciate the full break-in, variable CW pitch, and built-in electronic keyer. Two separate VFOs are featured for split frequency operation. Memory registers store most recent VFO frequency, mode, bandwidth and other important parameters for each band. Each of the 200 memories stores frequency, mode, AGC and bandwidth. A built-in RS-232C interface facilitates computer control. The heavy duty, built-in power supply insures reliable and continuous use. The ergonomic layout, colored LCD display and thoughtful placement of controls ensure ease of operation. For a complete technical review of this product please see the September 1995 issue of QST magazine. Mic not included.

SPECIFICATIONS

♦ SPECIAL NOTE:

Universal Radio is a factory authorized service and sales center for Japan Radio Company products.

PRICING

JST-245 List Price \$2990.00
JST-245 Discount Price
Order #0550 \$2499.00
Shipping/Handling/Insurance \$21.00

JRL-2000F



The Japan Radio Company JRL-2000F is the world's first MOSFET HF linear amplifier, designed using the same high technology found in Japan Radio Company's professional high-powered radio transmitters. The power amp incorporates 48 RF power MOSFETs to ensure low distortion and clean output, plus a high-speed automatic antenna tuner with a 1820 channel memory. In addition, a high efficiency switching power supply with a PFC to suppress AC line currents, an automatic antenna selector and a wireless remote control are among the JRL-2000F's many user-friendly features. 100 watt drive for 1 kW. We urge you to contact us to receive a color brochure on this most impressive device. All JRC amateur and shortwave radio products carry a one year limited warranty.

List \$4899.00 Order #0866 \$4499.00 (+ship)

The **Japan Radio JST-145** transceiver is virtually identical to the JST-245, but does **not** include: 6 meters, the Bandwidth Control feature, the 2.7 kHz filter or the built-in automatic antenna tuner.

	PRICING
١	JST-145 List Price \$2490.00
ı	JST-145 Discount Price
	Order #0145 \$1499.00
	Shipping/Handling/Insurance \$19.00

OPTIONS AND ACCESSORIES

Order #0667 \$69.95 (+\$5) Order #0215 99.95 (+\$5)
Order#0044 39.95 (+\$4) Order#0829 299.95 (+\$5) Order#0905 499.95 (+\$9) Order#1225 139.95 (+\$4) Order#0193 139.95 (+\$4) Order#0290 139.95 (+\$4) Order#2455 139.95 (+\$4) Order#0294 139.95 (+\$4) Order#0750 139.95 (+\$4) Order#0950 139.95 (+\$4) Order#0947 139.95 (+\$4) Order#0732 119.95 (+\$4) Order#1334 109.95 (+\$4) Order#1223 79.95 (+\$4)
Order#1334 109.95 (+\$4) Order#1223 79.95 (+\$4) ¹ Standard on JST-245.

KENWOOD

TS-870S



- 160-10 Meters
- Digital Filtering
- Beat Canceller
- 100 Memories
- Xmit Equalizer
- 100W Output
- K1 Logic Keyer
- RX Ant Input
- Windows Pgm.
- Dual VFOs
- RIT/XIT
- Opt. Voice Syn. Opt. Record Unit

- IF Stage D.S.P.
- Dual Noise Reduction
- Auto Notch Filter
- Variable AGC
- Voice Equalizer
- RS-232C Port Auto Tuner RX/TX
- FM Tone Encoder
- Hi Speed Control
- Dual VFO Display
- Quick Memory

Digital signal processing at the IF stage is now a reality with Kenwood's TS-870S HF transceiver. DSP technology uses a dedicated computer chip to convert analog waveforms into digital information in realtime, providing the opportunity to filter and enhance the quality of the signal before it is reconverted into analog form for the human ear. This new design uses two state-of-the-art 24-bit 20 MIPS DSP chips that provide for receiving enhancements to bring signals out of the noise. Imagine over 100 dB out of pass band attenuation with virtually no signal loss by the DSP filter! Imagine CW bandwidth adjustable to 50 Hz. Advanced speech processing with transmit equalization that will make you the first in pileups! Plus complete computer operation and control of the TS-870S is possible with supplied MS Windows® software and a built-in RS-232C port. The built-in automatic antenna tuner works on all bands in both transmit and receive modes. Enjoy future technology now with the TS-870S. Supplied with hand mic. The TS-870S requires 13.8 VDC at 20.5 amps.

> Kenwood TS-870S 160-10 Meters 12 VDC List \$3199.95 Order #0870 Please Call

TS-50S 142000.

- Dual VFO's
- 100 Memories
- Scanning
- TF-Set
- CW Reverse
- AGC (slow/fast)
 All Mode Squelch
- Kenwood AIP
- 12VDC 20A operation

• 100/50/10 Watts

Menu Programming

• G.C. Rx (.5-30 MHz)

DDS with "Fuzzy" logic

Full or Semi Break-In

Despite its compact size, the TS-50S has fullsized features and power. Output is adjustable to 10, 50 or 100 watts. Naturally it supports LSB, USB, CW AM and FM. Dual VFOs, 100 memories. AIP, RIT, IF shift, AGC and TF-set round out the features. Supplied with multifunction hand mic. 7 1/16" x 2 3/8" x 9 3/16" (6.4 Lbs.).

IF Shift

Kenwood TS-50S 160-10 Meters 12 VDC List \$1169.95 Order #0868 Please Call

TS-950SDX



- DDS (1 Hz.)
- IF Notch Filter
- Built-In DSP
- 100 Memories
- AF Digital Filter
- SSB Slope Tuning
- Memory Kever
- CW AF Tuning
- The improved TS-950SDX has been redesigned and enhanced for the serious contester and DX'er. Its outstanding general coverage receiver is capable of receiving two frequencies simultaneously. This dual receiver function features independent: IF circuits, frequency selector with frequency step size, noise blanker with level control, AF control and frequency displays. Built-in digital signal processing provides unsurpassed receiver and transmitter performance that is not possible with analog processing. The built-in microprocessorcontrolled automatic antenna tuner is pre-programmed to quickly tune for minimum SWR. The RM-1 remote function keypad is now supplied as standard. With MOS FET final, keyer, hand mic and more!

Kenwood TS-950SDX 160-10 Meters 120 VAC List \$5299.95 Order #2949 Please Call

TS-570DG/SG



- 160-10 Meters
- 16 Bit DSP
- Electronic Keyer

 CW Auto Tune
- 100 Memories
 Full and Semi Break-In
- 5~100W Output 10 Hz Tuning

The Kenwood TS-570 G series provides 16-bit DSP technology for superb audio, noise reduction, equalization and slope tuning. Power output can be set from 5 ~ 100 watts. A preset auto antenna tuner and electronic keyer are built in. The menu system offers 46 types of functions for novice through extra. You also get: Full and semi break-in, dedicated packet port, PC control, keypad entry, 100 memories, IF shift and CW Auto Tune. The "G" Series adds: TX sound monitor. new DSP CW filters, dual beat cancel, NR reconfiguration and CW manual weight adjustment and more!

Kenwood TS-570DG 160-10 Meters 12 VDC List \$1749.95 Order #1862 Please Call

The TS-570SG includes coverage of 6 meters. Kenwood TS-570SG 160-6 Meters 12 VDC List \$2069.95 Order #2519 Please Call

VC-H1



- 1.8" TFT Monitor
 - .25 CCD Camera
- Built-in speaker
- Built-in mic
- Ten Image Memory
- Call superimpose
- Auto power-off
- AF Mute
- Works with most transceivers.
- Under \$500
- For HT/Mobile/Base

Kenwood's new VC-H1 visual communicator combines an image-scan converter, CCD camera and LCD monitor in a compact battery operated unit. Simply hook it up to your Kenwood (or most other) transceiver to start sending and receiving color images over the air. It is compact and operates from four AA cells, so you can take it anywhere. It offers full compatibility will all of the standard SSTV formats. It features a detachable .25" CCD camera and a 1.8 inch color TFT display. Up to ten pictures can be stored in memory.

Kenwood VC-H1 Visual Communicator List \$584.95 Order #3318 Please Call

The optional VC-1S software kit lets you save the images in JPEG format to your Windows 95 PC. Kenwood VC-1S Software Kit With PC Cable List \$40.00 Order #3240 \$38.95 (+\$3)

Model TS-950S Rx Range .1-30 MHz Conversion Quadruple HF Sensitivity < .20 μV	> 45dB 1.5 W 10 > 40dB 1.5 W 10 N/A 1.5 W 10	Transmit Power 100 150 watts PEP output 100 100 watts PEP output 100 watts PEP output 100 watts PEP output 100 watts PEP output	12 VDC 12 VDC	Current 850W 20.5 A 20.5 A 20.5 A
---	--	---	------------------	---

KENWOOD

3197 AT-50 1904

2195

0357

0358

1105

3196 1724

0212

0387

0230

0368

1026

1870 0369

0391

3268

1698

2816

1597

0692

0694

0890

1349

1653

0228

2982

2702

1282

0734

2877

0570

1154

1957

DRU-2 DRU-3A

HS-5

HS-6

IF-232C

IF-10D

LF-30A **MB-13**

MB-430

MC-43S

MC-60A

MC-80

MC-90

PC-1A

PG-2Z

PS-40

PS-52

PS-53

SO-2

SP-23

SP-31

SP-41

SP-50B

SP-950

TU-8

VS-2

VS-3

YG-455C1

YK-88CN1

YK-88SN1

YK-107C

YK-88C1

YK-88S1

Ontinual Assessment

Optional A	TS-570	TS-950	TS-870	TS-508			
Item Description Li	ist Price	Your Price	Z	Z	13	S	
Ext. Automatic Antenna Tuner	\$379.95	\$329.95 (+\$7)					
Digital Recorder	149.95	139.95 (+\$3)					
Digital Recorder	139.95	129.95 (+\$4)					
Deluxe Headphones	79.95	69.95 (+\$4)					
Lightweight Headphones	59.95	52.95 (+\$4)					
Translator-Control Unit	129.95	109.95 (+\$4)					
Computer Interface Unit	89.95	76.95 (+\$3)					
Low Pass Filter 1KW	64.95	57.95 (+\$3)					
Mobile Mounting Bracket	55.95	49.95 (+\$3)					
Mobile Mounting Bracket	49.95	44.95 (+\$3)					
Hand Mic With Up/Down 8 Pin	59.95	54.95 (+\$3)					
Deluxe Desktop Mic With Preamp	159.95	139.95 (+\$5)					
Desktop Mic. With Preamp	119.95	99.95 (+\$5)	\$3 ·				
DSP Compatible Desktop Mic	269.95	239.95 (+\$6)					
Phone Patch	139.95	129.95 (+\$5)		15			
DC Power Cable	37.95	34.95 (+\$3)					
Power Supply 13V at 20 A	229.95	199.95 (+\$9)					
HD Power Supply 13V at 20 A	309.95	269.95 (+\$9)					
HD Power Supply 13V at 20 A	289.95	259.95 (+\$9)					
High Stability TCXO	189.95	169.95 (+\$3)					
External Speaker	89.95	79.95 (+\$4)					
External Speaker	99.95	89.95 (+\$4)			172		
Compact Mobile Speaker	49.95	44.95 (+\$4)					
Mobile Speaker	55.95	48.95 (+\$4)					
External Speaker With Filters	159.95	139.95 (+\$6)					
CTCSS Encoder Unit	54.95	46.95 (+\$3)					
Voice Synthesizer	69.95	59.95 (+\$3)					
Voice Synthesizer	39.95	36.95 (+\$3)					
500 Hz CW Filter for 455 kHz IF	169.95	149.95 (+\$3)					
500 Hz CW Filter for 8.83 MHz IF	139.95	124.95 (+\$3)					
270 Hz CW Filter for 8.83 MHz IF	139.95	124.95 (+\$3)					
2.4 kHz SSB Filter for 8.83 MHz IF	139.95	124.95 (+\$3)					
1.8 kHz SSB Filter for 8.83 MHz IF	139.95	124.95 (+\$3)					
500 Hz CW Filter	139.95	124.95 (+\$3)					

99.98 (+\$3) YK-455C1 500 Hz CW Filter For 455 kHz IF 114.95 2288 Prices & specifications are subject to change. Universal is not responsible for typographical errors.



The SG-230 Smartuner™ is a microprocessor controlled automatic antenna tuner operating in the range of 1.6 to 30 MHz with 3 to 150 watts of input power. It has a 500 address nonvolatile memory and tunes antennas from 8 to 80 feet. In compact weatherproof case. 12"x16"x3" \$479.95 (+\$9) SG-230 Order #2834

SG-230 PRO

The SG-230 SmartPro® is an even more sophisticated version of the SG-230. Has: RX preamp, A to D Sensing, PC tuning and SmartLock. Order #3554 \$799.00 (+\$10) SG-230 Pro

The SG-231 HF-VHF Smartuner™ provides complete frequency agility with no operator intervention and is continuous coverage from 1 to 60 MHz with nearly any antenna. compact, The weatherproof design fits even the most restrictive installa-

tions. It handles from 3 to 100 watts and requires only 12 VDC and RF connections. 9.5"x11.5"1.7" \$549.95 (+\$9) Order #3637 SG-231

SG-231

HF-VHF Smartune

SG-235

The SG-235 Smartuner™ operates in the range of 1.8 to 30 MHz with 3 to 500 watts of input power. It has a 500 address nonvolatile memory and tunes antennas from 23 feet at full power. In compact weatherproof ABS case. 12"x16"x3". \$1299.00 (+\$12) Order #3638 SG-235

SG-2020



- 160-10 Meters
- RIT/XIT
- Backlit LCD
- LED S/RF Bargraph
- USB/LSB/CW
- AF Bandpass

0-20W Output

2 Hz Tuning

The fixed, mobile, portable or aviation "multimission" SG-2020 covers 160-10 meters in CW/ SSB at 0 to 20 watts. This radio also has CW/SSB general coverage receive from 1.8-30 MHz. The SG-2020 is unbeatable for preparedness, search and rescue, border patrol and DX-peditions. Here is a reliable and compact high performance radio designed for long range communications. Features include: backlit LCD digital display, 160 to 10 meter amateur band coverage, 2 Hz VFO, RIT, XIT. RF Gain, full break-in, 20 memories, VOGAD baseband speech processing, electronic iambic keyer plus S/RF bargraph. The AF bandpass is variable from 100 Hz to 2700 Hz. The 12 VDC SG-2020 draws only 400 mA during receive and a maximum of 3 amps on transmit. Includes hand mic. Only 6"x2.75"x7.25" 4.5 Lbs.

SG-2020 QRP 160-10M Ham Transceiver \$669.95 (+\$11) Order #3595



SG-2000



- 644 ITU Chan.
- 100 User Channels
- 150 W PEP
- Receive .5-30 MHz
- Huge LCD Scanning
- Transmit 1.6-30 MHz
- Remotable Head

The SG-2000 1.6 to 30 MHz synthesized SSB radiotelephone transceiver may be the most technically advanced, competitively priced HF-SSB radio in the world. It is designed to meet the needs of industrial, aviation, maritime and paramilitary customers worldwide. A variety of heads and special accessories are available to tailor this versatile transceiver to virtually any application. Requires 12 VDC 16 Amps. 4.7" x 10" x 15" 12 Lbs. Built to commercial specifications in America

SG-2000 HF Transceiver

List \$1695.00 Order #0352 \$1499.00 (+\$15)



A total communications masterpiece is the only way to describe the worlds most advanced HF transceiver. The built-in multifunction five inch CRT display, spectrum scope, dual watch receive, standard wide and narrow filters for both SSB and CW, iambic keyer, 99 tunable memories, 105 dB dynamic range, 150 Watts of RF output power, fully adjustable noise blanker and AGC circuits, all mode operation plus many more features combine to make the Icom IC-781 the highest performing HF transceiver available on the market today, truly an amateur's dream rig.

- 5" CRT Display 105 dB Dyn. Range
- Dual Watch
- 150 Watts Output
- Spectrum Scope 100% Duty Cycle
- .10-30 MHz Rec. Full Break-in CW
- 99 Memories
- CW Pitch Control
- Adjustable AGC
 Terminal Monitor
- Adjustable NB
- CI-V Interface
- Adjustable Notch
 Twin PBT
- 10 dB Preamp
- Direct Digital Syns.

Icom 781 160-10 Meters 120VAC

List \$8000.00 Order #2435 Call for price.

IC-746



The IC-746 is now available. It covers 160-10 meters and 6 meters and 2 meters with 100 watts in all bands (40W in AM mode). It has 100 alphanumeric memories, spectrum display, PBT, CTCSS encode/decode, APF, two stage preamp, automatic antenna tuner and electronic keyer. It also features a DSP Noise Canceller and DSP Notch. The digital bar graph meter displays ALC, power output and SWR simultaneously! The radio automatically selects from the three separate antenna inputs (HF, 6M, 2M). 11.3x4.8x12.5" 20 Lbs. With hand mic.

- Spectrum Scope
 Built-in Auto Ant Tuner
- 102 Memories
- RIT/XIT Noise Blanker
- VOX Function
- Selectable APF
- Squelch
- Dual Display
- 100 W Output
- Full Break-in CW
- Twin PBT
- 100% Duty Cycle
- Rx Antenna Jack
- DSP Notch
- 1 Hz Readout
- Memory Keyer
- RF Atten. 6/12/18 dB

Icom 746 160-10 Meters +6M +2M 12 VDC List \$1919.00 Order #0657 Call for price.

IC-756



The model 756 covers all nine HF ham bands plus 6 meters (Rx from 30 kHz - 60 MHz). The high resolution 4.9" dot matrix LCD display provides more operating information than you've ever had before, including a spectrum scope (±12.5, ±25, ±50 or ±100 kHz). The newly designed DSP digitally transposes transmit and receive audio components to produce desired AF frequency characteristics at the IF stage and, in addition, performs: noise reduction, automatic notch, PSN modulation/demodulation and selectable APF. Twin PBT really knocks out QRM. With hand mic.

- Spectrum Scope
 Built-in Auto Ant Tuner
- 101 Memories
- RIT/XIT
- Noise Blanker
- VOX Function
- Squelch
- Dual Watch
- 100 W Output
- - Full Break-in CW
 - Twin PBT
 - 100% Duty Cycle
 - Rx Antenna Jack
- Selectable APFDSP Notch
 - 1 Hz Readout

 - Memory Keyer

RF Atten. 6/12/18 dB

Call for price.

Icom 756 160-6 Meters 12 VDC List \$3056.00 Order #0095

IC-706 Mark II / Mark II G



NOTICE: The 706 Mark II G has not been approved by the Federal Communications Commission. This device is not and may not be offered for sale or leased until the approval of the F.C.C. has been obtained.

The IC-706 Mark II represents Icom's most versatile Next Generation rig. This incredibly small allmode transceiver provides 100 watts on HF and 6 meters and 20 watts on 2 meters. It receives from 30 kHz to 150 MHz (to 200 MHz with modification). It features a removable, remoteable, front panel that allows control of all features. The large LCD display features alphanumeric memory names and soft key descriptions. Despite its compact size (6.56" x 2.28" x 7.88"), it has big, easy to use control dials. Nothing else like it! With hand mic. The 706 Mark II/G require 12 VDC at 20 amps.

The new 706 Mark II G also adds the 440 MHz band with 20 watts RF output on this band.

- 3-150 MHz Rx.
 100 W HF+6M
- Alpha memories20 W 2M
- RIT/SHIFT
- Preamp/ATT
- VFO A/B
- 1 Hz Display
- IF Shift
- Scanning S/RF Meter
- 100 Memories All band Multimode
- Removable head
- Preamp/RF Atten.
- Mini Spectrum Scope
- Electronic Kever
- SSB Carrier Point

Icom 706 Mk II-15 160-10 Meters +6M +2M List \$1356.00 Order #0393 Call for price.

Icom 706 Mk IIG 160-10 Meters +6M +2M +440 Order #3450 Call for price.

	IC-781 IC-775DSP IC-746 IC-756	Rx Freq Range .1-30 MHz .1-30 MHz .3-60 & 108-174 .3-30 MHz & 6m .5-30 & 2 & 6m	Quadruple Quadruple Quadruple	< .16 μV < .15 μV < .16 μV < .15 μV	6 / 2.4 /.5 /.25 kHz ¹ 6 / 2.4 /.5 kHz ¹ 9 / 2.1 kHz ² 6 / 2.1 kHz ²	Notch Att. > 45 dB > 45 dB Auto Auto	2.6 W 2.6 W 2.0 W 2.0 W	99 101 102 101	150 watts output 200 watts output 100 watts output 100 watts output	Required P.S. 110 / 240 VAC 110 / 240 VAC 12 VDC 12 VDC	760 VA
L	10 7 00 WIKII	.5-00 a 2 a oiii	Double/ Triple	<.16 μν	6 / 2.3 kHz ¹		2.0 W	100	100 watts (20W 2M)	12 VDC	20 A

1(15 kHz FM) 2(12 kHz FM)

O ICOM

Optional Accessories

Order #	Model	Item Description	List Price	Your Price	IC-781	IC-775	IC-738	IC-756	IC-746	IC-706	
3702	AH-4	Mobile HF+6M Automatic Antenna Tuner	\$348.95	\$319.95 (+\$9)							
3438	AT-180	HF+6M Automatic Antenna Tuner	749.00	499.95 (+\$7)							
2137	CR-282	High Stability Crystal Unit	168.00	114.95 (+\$3)							
3439	CR-502	High Stability Crystal Unit	95.00	69.95 (+\$3)							
0785	CT-16	Satellite Interface Unit	160.00	109.95 (+\$5)							
2771	CT-17	CI-V Level Converter	169.00	119.95 (+\$5)							
0903	FL-52A	500 Hz CW Filter 455 kHz	245.00	169.95 (+\$3)							
0909	FL-53A	250 Hz CW Filter 455 kHz	245.00	169.95 (+\$3)							
2968	FL-100	500 Hz CW Filter 9 MHz	133.00	94.95 (+\$3)							
2999	FL-101	250 Hz CW Filter 9 MHz	133.00	94.95 (+\$3)							
1776	FL-102	6 kHz AM Filter 9 MHz	94.00	64.95 (+\$3)							
1433	FL-103	2.8 kHz SSB Filter 9 MHz	123.00	84.95 (+\$3)							
0327	FL-222	1.9 kHz SSB Filter 455 kHz	249.00	169.95 (+\$3)							
2312	FL-223	1.9 kHz SSB Filter 9 MHz	105.00	74.95 (+\$3)							
2712	FL-232	350 Hz CW Filter 9 MHz	113.00	79.95 (+\$3)							
1295	HM-12	Hand Microphone	74.00	52.95 (+\$3)							
1951	HM-36	Hand Microphone With Up / Down	74.00	52.95 (+\$3)							
3431	MB-62	Mobile Mounting Bracket	25.00	18.95 (+\$3)							
3432	MB-63	Mobile Mounting Bracket for Head Only	18.00	12.95 (+\$3)							
3434	OPC-581	Separation Cable 11.5 Ft. (3.5M)	60.00	43.95 (+\$3)							
3435	OPC-587	Separation Cable 16.4 Ft. (5.0M)	79.00	58.95 (+\$3)							
1120	OPC-589	Adapter Cable (8 pin to modular mic)	35.00	25.95 (+\$3)							
3436	OPC-599	Adapter Cable (7+8 pin acc. to 13 pin acc)	60.00	44.95 (+\$3)							
1189	PS-55	Heavy Duty Power Supply 13.8V At 20A	265.00	229.95 (+\$9)							
1453	PS-85	Heavy Duty Power Supply 13.8V At 20A	406.00	279.95 (+\$8)							
2925	PW-1	Linear Amp HF+6M 1000W	5995.00	Please Call							
2470	SM-6	Desk Microphone	128.00	89.95 (+\$3)							
0964	SM-8	Desk Microphone With Up / Down	200.00	139.95 (+\$5)	200					1	
2561	SM-20	Desk Microphone With Up / Down	259.00	179.95 (+\$5)						1	
0107	SP-3	External Speaker Base	140.00	99.95 (+\$6)							
0172	SP-7	External Speaker Base	94.00	64.95 (+\$5)							
1866	SP-10	External Speaker Mobile	69.00	47.95 (+\$4)							
2524	SP-12	External Speaker Mobile Slimline	44.00	28.95 (+\$4)							
1672	SP-20	External Speaker With Audio Filters	310.00	214.95 (+\$7)							
1473	SP-21	External Speaker Base	138.00	99.95 (+\$6)							
1399	UT-30	Programmable CTCSS Tone Unit	55.00	38.95 (+\$3)					117		
3437	UT-102	Voice Synthesizer Unit	74.00	54.95 (+\$3)							
3097	UT-106	AF D.S.P. Unit	166.00	139.95 (+\$4)						2	
1Require	es ontional O	PC-589									

¹Requires optional OPC-589

²Included as standard in the IC-706MkII-15 version #0393

ASTRON

VS-50M



Astron power supplies feature solid-state electronic regulation, fold back current limiting for protection from excessive current and shorted output. Crowbar over voltage protection is also provided on all models except the RS-4A. These high-quality power supplies are manufactured in the U.S. and carry a full one year limited warranty. Models ending in "M" feature a meter or meters. Models starting with "VS" are variable 2 to 15 volts. ¹Amp ratings for variable supplies are rated at 13.8 VDC. Models starting with RM are for 19" rack mounting.

Order #	Model	Duty Amps	Amps	HxWxD	Weight (Lbs.)	Price	Price	Ship
2461	RM-35M	25	35	5 x 11 x 11	27	\$249.95	\$229.95	\$16
2505	RS- 4A	3	4	3¾ x 6½ x 9	7	59.95	49.95	8
2506	RS- 7A	5	7	33/4 x 61/2 x 9	9	69.95	59.95	8
2507	RS-12A	9	12	4½ x 8 x 9	13	99.95	84.95	9
2508	RS-20A	16	20	5 x 9 x 10½	18	121.95	99.95	10
2510	RS-20M	16	20	5 x 9 x 10½	18	144.95	129.95	11
2509	RS-35A	25	35	5 x 11 x 11	27	197.95	159.95	15
2511	RS-35M	25	35	5 x 11 x 11	27	223.95	179.95	16
1815	RS-50A	37	50	6 x 13¾ x 11	46	285.95	229.95	24
1045	RS-50M	37	50	6 x 13¾ x 11	46	314.95	249.95	24
2528	RS-70M	57	70	6 x 13¾ x 12¼	53	372.95	279.95	28
2369	SL-11A	9	11	3 x 7¾ x 9¾	16	90.95	74.95	9
1043	SS-25	20	25	3 x 7 x 9½	5	161.95	139.95	7
0541	SS-25M	20	25	3 x 7 x 9½	5	170.95	159.95	7
1419	SS-30	25	30	3¾ x 7 x 9¾	6	186.95	169.95	
0502	SS-30M	25	30	3¾ x 7 x 9¾	6	233.95	179.95	8
0039	VS-20M	16 ¹	20 1	5 x 9 x 10½	20	170.95	139.95	11
0756	VS-35M	25 ¹	35 1	5 x 11 x 11	29	238.95	199.95	16
2994	VS-50M	37 ¹	50 ¹	6 x 13¾ x 11	46	330.95	269.95	24
			THE RESERVE THE PERSON NAMED IN	the Assert Manager and Manager	THE RESERVE OF THE PARTY OF THE	CONTRACTOR OF THE PARTY OF THE	CONTRACTOR OF STREET	A CONTRACTOR OF THE PARTY OF TH

Size(in)

Shipping

List

Your

Orders: 800 431-3939 Information: 614 866-4267 Quality Equipment Since 1942

Continuous

ICS

YAESU

FT-1000



- Dual Receive
- Dual Display
- IF Shift
- IF Notch
- 99 Memories
- Headphone Mixing
- Var. Bandwidth Tuning
- Rx. Antenna Selector
- RX Preamp
- Electronic Keyer
- CW LED Tuning 150 W. Output SSB
- CW Audio Filter
 200 W. Output CW
- Squelch
- Optional Voice Syn.

The Yaesu FT-1000 addresses the needs of world class DX'ers and contesters. It has advanced features such as dual general coverage receive with separate tuning controls, separate audio balance, separate frequency displays and independent filter selection for each receive channel. A mixing switch allows for dual receive reception while using headphones (stereo headphones required). Standard filter bandwidths of 6.0, 2.4, 2.0, .5 and .24 kHz, offer the selectivity needed for today's crowded band conditions. A front panel mounted antenna switch provides instant access to the optimum antenna for the moment. The optional DVS-2 Digital voice system makes phone contests a breeze with "CQ Contest" messages. The all new direct digital synthesizer and narrow range PLL provide low phase noise operation. CW operators will like the CW LED tuning indicator, audio peak filter, variable CW TX offset and the 200+ watts of output power. All of this and more, make this offering from Yaesu a high performing HF transceiver for the most demanding operator. With hand mic. 16.8x6x15".

Yaesu FT-1000 160-10 Meters 120 VAC List \$4399.00 Order #1841 Call for price. Yaesu FT-1000D Deluxe Version

List \$5459.00

Order #0275

Call for price.

FT-1000MP



- Dual Receive
- AM Synchronous Tune
- Dual Blankers
- Collins Filters
- Shuttle-jog Tune
 Enhanced DSP

Adjustable NB
 13 tuning steps

Yaesu's introduction of Enhanced Digital Signal Processing gives you an impressive array of competitive tools including: EDSP IF demod., EDSP Noise Reduction, EDSP Contour Selections, EDSP Automatic Multiple Notch Filter, EDSP Audio Equalization, EDSP Tx Modulation Equalization and EDSP TX Bandpass Filtering. An outstanding receiver, with Collins filters and tuning resolution down to .625 Hz are featured. An ergonomic dream to operate. With hand mic.

Yaesu FT-1000MP 160-10 Meters 120 VAC List \$3699.00 Order #0320 Call for price. Yaesu FT-1000MPDC 160-10 M. 12 VDC (20A). List \$3399.00

Order #2279 Call for price.

FT-920

- 160-6M 100 W. All-Mode DSP
- MOSFET PA
- Dual Watch • 127 Memories
- Notch Filter

- Twin VFO Displays
- Twin VFO Knobs
- Digital Voice Recorder

The FT-920 is packed with really high tech features such as: a high performance 33 MIPS DSP circuit for razor-sharp selectivity, increased average power output and voice pattern contour choice, automatic seeking DSP notch and noise reduction, built-in antenna tuner for RX and TX, DSP bandwidth controls and shuttle jog tuning controls. For contesters, this transceiver even features a digital voice recorder and electronic memory message keyer. With MH-31B8 hand mic. 16.4x5.4x12.7". All Yaesu amateur products carry a 1 year limited warranty.

Yaesu FT-920 160-6 M. 12 VDC.

List \$2299.00

Order #1955

Call for price.

FT-847



- Automatic AT

- HF, 6M, 2M & 430 MHz
- CTCSS/DCS Decode
- CTCSS/DCS Encode
- Dual Display 0.1 Hz Tuning 1200/9600 Ready
- DSP Notch

HF/VHF/UHF

DSP Filters

Cross-band Full Dup.

The FT-847 changes base operation forever. Now you get three radios in one -- HF, VHF/UHF and satellite. You get 100 watt output on HF and 6 Meters, plus 50 watts on both 2 Meters and 430 MHz bands. Additional features include: Crossband Full Duplex operation, Normal/Reverse Tracking, CTCSS/DCS Encode and Decode, 0.1 Hz tuning steps, DSP Notch, DSP NR and DSP BPF, Shuttle Jog Tuning Dial and Keypad Entry. The FT-847 is also 1200/9600 bps Packet ready. 10.2x3.4x10.6". With hand mic.

Yaesu FT-847 160-10, 6, 2 Meters & 430 12 VDC List \$2399.00 Order #1467 Call for price. FT-840



- .1-30 MHz Rec. Adjustable RF Power
- 100 Memories
- LCD Display
- IF Shift
- Noise Blanker
- 100 Watts Output
- Attenuator
- Dual VFO's
- Squelch

The compact FT-840 has two direct digital synthesizers and rotary encoder that provide silkysmooth tuning. The excellent general coverage receiver tunes .1-30 MHz in 10 Hz steps. The FT-840 uses a die-cast RF power amp with thermally switched fan to ensure full power output (up to 100 watts). The digitally synthesized local signals ensure clean, low-noise transmitter output on all HF amateur bands. Other features include IF shift, reverse CW, dual VFOs, 100 memories. attenuator, noise blanker, meter, scan modes and speech processor. 9.5x3.7x9.7". With hand mic. Yaesu FT-840 160-10 Meters 12 VDC

List \$1099.00 Order #2319 Call for price.

FT-1000	Rx Freq Range .10-30 MHz IP.10-30 MHz .10-30, 48-56 MHz .10-30, 36-76, 1 .10-30 MHz	Quadruple Quadruple Triple 10-174, 450-512	< .25 μV < .25 μV < .20 μV < .25 μV	Selectivity -6dB 6 / 2.2/ 1.8 / .5 / .24 4 / 2.2/ 2 / .5 / .25 5/2.4 9 / 2.2 kHz 6 / 2.2 kHz	Notch Att. >30 dB >30 dB >35 dB DSP N / A	Audio 2.0 W 1.5 W 1.5 W 1.5 W	99 99		Required P.S. 110 / 240 VAC 110 / 240 VAC 12 VDC 12 VDC 12 VDC 12 VDC		
---------	--	---	--	---	--	---	----------	--	---	--	--

YAESU

Item Description

Order # Model

3199

0322 0582

0240

3597 3640

0844

2006 0274

0287

0258

1918

1515

0273

2730

2599

1789

0247

3176

0588

3596

2641

1229

1921

3356

3354

2537

3178

0758 2869

1681

1551

2194

1799

3599

3598

1587

1616 ATAS-100

DVS-2 FIF-232C

FC-20

FC-800 FM-1

FP-1030A

MD-100A8X

FRB-757 FVS-1A

MH-1B8

MH-36D8

MMB-66

SP-5

SP-6

SP-7

SP-8

TCXO-1

TCXO-4

TCXO-6

TCXO-7

TCXO-8

XF-110C

XF-110CN

XF-117C

XF-117CN

XF-455MC

YF-110CN

YF-110SN

YF-114CN

YF-114SN

YF-112A

YF-115C

YF-116A

YF-116C

YF-155C

YF-155S-02

LL-5

Optional Accessories

List Price Your Price

YAESU

Mobile Antenna	349.00	319.95 (+\$9)			
Digital Voice Recorder	238.00	209.95 (+\$3) ■	194		
RS-232C Interface Unit	95.00	89.95 (+ ^{\$} 4)			
Auto Antenna Tuner	299.00	269.95 (+\$8)			
Ext. Remote Ant. Tuner	525.00	489.95 (+\$6)		7	
FM Mode Unit	62.00	54.95 (+\$3)			
Power Supply 25A Meters	269.00	249.95 (+\$9)			
Relay Box	31.00	29.95 (+\$3)			
Voice Synthesizer	43.00	38.95 (+\$3)			
Phone Patch (ref. SP-5/6)	143.00	139.95 (+ ^{\$} 4) ■			
Desk Top Microphone	138.00	119.95 (+\$5)	100		
Hand Held Microphone	30.00	28.95 (+ ^{\$} 4) ■			
Hand Held Microphone	60.00	54.95 (+\$4)			
Mobile Mounting Bracket	39.00	36.95 (+\$4)			
Speaker With Audio Filter	157.00	149.95 (+\$6) ■			
Speaker With Audio Filter	157.00	149.95 (+\$6)			
Mobile Speaker	40.00	34.95 (+\$3)			
Speaker With Audio Filter	173.00	159.95 (+\$5)			
High Stab. Osc. <±.5 ppm	190.00	179.95 (+\$3) ■			
High Stab. Osc. <±2 ppm	99.00	94.95 (+\$3)			
High Stab. Osc. <±.5 ppm	190.00	179.95 (+\$3)			
High Stab. Osc. <+2 ppm	99.00	89.95 (+\$3)			

99.00

157.00

157.00

157.00

157.00

157.00

157.00

157.00

157.00

157.00

127.00

173.00

173.00

127.00

127.00

173.00

51.00

89.95 (+\$3)

144.95 (+\$3) **II**

144.95 (+\$3) ■

144.95 (+\$4) **I**

144.95 (+\$3)

144.95 (+\$3)

144.95 (+\$4)

144.95 (+\$4)

144.95 (+\$4) 144.95 (+\$4)

119.95 (+\$4)

159.95 (+\$4)

159.95 (+\$4)

109.95 (+\$3)

109.95 (+\$3)

159.95 (+\$4)

47.95 (+\$4) ■

(200	FT-100
Colonia	
The state of the s	
2 (29500	

- 160-2 M + 440 100 W HF Output
- Electronic Kever
 50 W 2M Output
- 300 Memories20 W 440 MHz Output
- DSP BP, Notch IF Shift, IF NB

The Yaesu FT-100 Field Commander is the first miniature mobile transceiver to provide coverage of the 160 to 6 meter bands plus the 144 MHz and 430 MHz bands! The ultra-compact FT-100 combines a unique, user-friendly front panel with hightech features like DSP to provide performance well above many base stations. And look at the receive coverage: .1-76, 108-174 and 420-512 MHz. Refinements include: IF shift, IF NB, dual VFOs, keyer, 300 memories, CTCSS. Plus you get DSP bandpass filter, notch filter, noise reduction and equalizer. Includes MH36B6JS DTMF hand mic. Only 6.3x2.1x8.1"

Yaesu FT-100 160-6 Meters +2M +440 MHz List \$1689.00 Order #2491 Call for price.



DX-70T/TH

Stereo Headphones (p. 28)

High Stab. Osc. <±1 ppm

500 Hz CW filter

250 Hz CW filter

500 Hz CW filter

300 Hz CW filter

600 Hz Filter (Sub Rx)

250 Hz Filter (3rd IF)

2.0 kHz Filter (3rd IF)

250 Hz Filter (2nd IF)

2.0 kHz Filter (2nd IF)

6.0 kHz AM Filter

500 Hz CW Filter

2.4 kHz SSB Filter

6.0 kHz AM Filter

500 Hz CW Filter

500 Hz CW Filter



- .15-30, 50-54 Rx. 160-6 meters
- 100 Memories
- 100 Watts HF Out
- LCD Display
- 10 Watts 6M Out
- IF Shift
- Dual VFO's
- Noise Blanker
- Built-In Preamp

Optional Accessories

EDX-1 Manual Antenna Tuner \$259.95 (+\$7) Order #3401

EDS-4 Front Control Remote Cable \$28.95 (+\$5) Order #3402

EDS-5 Microphone Extension Cable Order #3403 \$26.95 (+\$4) The DX-70T covers 160 to 6 meters in SSB, CW, AM and FM. The receiver tunes .15-30 MHz and 50-54 MHz. The transmitter delivers a powerful 100 watts (50W switchable) in SSB, CW and FM (10 watts on 6M). The detachable control head offers remote operation and flexibility not seen on other rigs of the same size. Powerful CW operation offers selectable upper/lower BFO, selectable sidetone, high speed full QSK and semi break-in with automatic timing set. A built-in narrow band filter and preamp is standard. Other features include: IF shift, dual VFOs, 100 memories, built-in CTCSS encode, attenuator and NB. Alinco DX-70T 160-6 Meters 12 VDC

Call for price. List \$957.00 Order #1662 Alinco DX-70TH As above, but with 100W on 6M. Call for price. List \$1074.00 Order #0033

SPECIFICATIONS

Power 13.8 VDC 20 Amps Selectivity (-6dB) 6, 2.4, 1, .5 kHz [9 FM] Sensitivity (-10 dBµ) .. 0.25µV 1.8-54 MHz SSB/CW (S/N=10dB) Operating Modes USB/LSB/CW/AM/FM Output CW/SSB/FM .. 50/100W (10W on 6M) Output AM 40W (4W on 6M) Physical 7" x 2.25" x 9.2" 6 Lbs.



- 160-10 Meters100 Hz Display
- Electronic Keyer
 CTCSS Tone Access ● 100 Memories ● Full and Semi Break-In
- 10/100W Output IF Shift

The Alinco DX-77T was designed from the beginning to be a quality amateur radio transceiver with full features, but at a price everyone can afford. The DX-77T covers 160 to 10 meters in SSB, CW, AM. DATA and FM. The transmitter delivers a powerful 100 watts in SSB, CW and FM (40 watts on AM). The receiver tunes from 150 kHz to 30 MHz. Other features include: IF shift, dual VFOs, 100 memories, attenuator, RIT, dial lock, CW audio filter and NB. Rear panel connectors for external amplifier, antenna, power, computer control/cloning. Supplied with EMS-42 hand mic. Requires 12 VDC at 20 amps. Computer control is available via the optional Alinco ERW-4 (#3718). One year limited warranty.

Alinco DX-77T 160-10 Meters 12 VDC Call for price. List \$1059.00 Order #3689

VHF-UHF All Mode Transceivers, VHF Marine Transceivers & Kits

IC-821H



- All Mode
- 160 Memories
- Memory Scan
- Call Channel
- Noise Blanker

AG-25

CT-17

MB-5

PS-85

SM-20

SP-3

SP-20

UT-36

UT-84

UT-50

UT-102

- Hand Mic
- Dual Digital VFO's
- Sub Band Receive Sub Band Transmit
- Satellite Functions
- IF Shift/RIT on Sub
- 9600 Compatible

144-148 MHz Preamplifier

Mobile Mounting Bracket

Power Supply 12 VDC 20A

External Speaker With Filters

Item Description

Desk Microphone

External Speaker

Voice Synthesizer

Tone Squelch Unit

Tone Squelch Unit

Voice Synthesizer

CI-V Level Converter

The Icom IC-821H 2M/440 all mode transceiver has just been announced. It was designed from the start for superior satellite and digital communications. Output power is continuously adjustable. Sub Band Receive and Sub Band Transmit are both featured. It is 9600 baud compatible right out of the box. A built-in electronic keyer is also supplied. In the satellite mode, the Sub band is set to transmitter (uplink) frequency and the Main band is set to the receiver (downlink) frequency. In this way, the analog S-meter, IF shift, noise blanker and RIT functions can be used for receiving. This is convenient for fine tuning the transceiver's operation to your needs. The 821H is PACSAT compatible and includes a hand mic.

Icom 821H 144/440 MHz All Mode

List \$1695.00 Order #2558 Please Call

IKENWOOD

TS-60S



CW Reverse

Advanced Intercept P.

20 dB Attenuator

- All Mode
- 100 Memories
- Auto Mode
- All Mode Squelch Full & Semi Break-in
- Auto power off3 Levels of Power
- Switchable AGC
 DDS with Fuzzy Logic
- Multifunction Mic. Relay & ATC terminals

In the tradition of the popular TS-50S, comes the Kenwood TS-60S. This compact high powered transceiver is just right for multi-mode six meter

operation. Output is 90 Watts on SSB, CW and FM. 23 watts is available for AM transmit. Many features are available in this compact configuration including 100 memories, CW reverse, full and semi break-in, 3 position RF power control, switchable AGC, all mode squelch, auto power off and CW reverse. The TS-60S uses Kenwood's advanced Direct Digital Synthesizer with fuzzy logic. With hand mic.

Kenwood TS-60S 50-54 Mhz. All Mode.

List \$1199.95 Order #3245

Please Call

Order # Model

1848

2771

1896

1453

2561

0107

1672

3002

3295

0213

3437

Optional Accessories

List Price Your Price Ship. \$159.95 \$220.00 \$4.00 169.00 119.95 5.00 59.00 44.95 4.00 406.00 279.95 8.00 259.00 179.95 5.00 140.00 99.95 6.00 310.00 214.95 7.00 74.00 54.95 3.00 110.00 77.95 4.00

54.95

54.95

YAESU VXM-100B



- 10 Wx Chan.
- 156.05-163.275 MHz
- Dual-Watch
- All US, Int'l, Can Chan.
- Large LCD ● 25W. 1W

The VXM-100 VHF marine transceiver fulfills all U.S. Coast Guard requirements. Important features include: 25 watts of full power for the expansive needs of open water; low, 1 watt power for limited in-harbor use. The Dual-Watch function monitors VHF Marine Channel 16 while you're using another channel. All USA, International and Canadian channels are accessible as well as 10 weather channels. The large, bright LCD display allows you to select either amber or green for safe and accurate viewing under any light condition. The built-in Time-Out timer automatically turns transmit off after 5 minutes (a requirement for marine use to conserve the vessel's battery). MIL-STD-810E rated for durability and efficiency.

Yaesu VXM-100B VHF Marine Transceiver List \$359.00 Order #0896 \$219.95 (+\$7)

74.00

74.00

MH-C777

Description

820H



Order # Item

3.00

3.00

The Maha MH-C777 Universal Charger Conditioner will charge nearly all of your amateur radio battery packs. The MH-C777 will also discharge and condition your batteries to extend their cycle life. It utilizes the latest -dV and dT detections. A free car adapter is included so you can also use this handy device in your car. You can charge 4.8-9.6 volt batteries in the car or 4.8-12 volt batteries while at home. On board microprocessor and temperature sensor avoids over charging your battery pack. The LEDs show you the progress and completion of charge. This is a clever and versatile device.

List \$49.95

Order #3734 \$44.95 (+\$4)

Price

14.95 (+\$3)

Ramsey Kits

These kits require some knowledge of electronics and basic soldering skills. All kits are warranted strictly by the manufacturer. Universal Radio is not responsible for the warranty on kit products.

			FIICE
1269	HR-20	20M Ham Receiver SSB, CW and RTTY	\$29.95 (+\$3)
0842	HR-30	30M Rcvr (any 250 kHz between 9-13 MHz.)	29.95 (+\$3)
0888	HR-40	40M Ham Receiver tunes AM, CW and SSB	29.95 (+\$3)
2255	HR-80	80M Ham Receiver tunes AM, CW and SSB	29.95 (+\$3)
2582		20M QRP Transmitter 1 Watt Output	29.95 (+\$3)
0104	QRP-30	30M QRP Transmitter 1 Watt Output	29.95 (+\$3)
1703	QRP-40	40M QRP Transmitter 1 Watt Output	29.95 (+\$3)
2650	QRP-80	80M QRP Transmitter 1 Watt Output	29.95 (+\$3)
1590	AR-1	VHF Aircraft Receiver (110 to 136 MHz.)	29.95 (+\$3)
2188	SR-1	Shortwave Receiver (any 2 MHz 4-11 MHz.)	29.95 (+\$3)
2264	FX-146K	2M FM Transceiver 4-6 watts, 6 channel	149.95 (+\$4)
2874	CW-7	Electronic CW Keyer uses CMOS IC chips	24.95 (+\$3)
1599	P-IBM	Packet Radio TNC for use with IBM type PCs.	59.95 (+\$3)
2906	CHR	Case for Ham Receivers	14.95 (+\$3)
2479	CQRP	Case for QRP Transmitters	14.95 (+\$3)

Case for Shortwave Receiver

Universal Radio 6830 Americana Pkwy. Reynoldsburg, Ohio 43068

Page 58

0961

CSR

Orders: 800 431-3939 Information: 614 866-4267

Quality Equipment Since 1942

VHF-UHF FM Transceivers

KENWOOD

TM-742AD



Construct your very own custom triple-band mobile transceiver. Modular construction allows you to add your choice of a 28, 50, 220 or 1200 MHz band. This deluxe radio comes standard with 144 and 440 MHz. The improved detachable front panel allows the radio to be mounted elsewhere in your vehicle (with optional DFK-3/4/7). This newest "D" version features the MC-53DM backlit mic.

- 100 Memories
- Scanning
- CTCSS Encode Auto Rpt. Offset 2 Mtr

- ◆ Date/Time Disp.
 ◆ DTSS Pager Function

Cross Band Repeat

DTMF Memory

Auto Power Off
 Backlit MC-53DM mic.

Kenwood TM-742AD Multi-band, 50/35/ watts List \$959.95 Order #0912 Please Call



From the extra-large control panel — with the welcoming glow of its amber-colored LCD - to Kenwood's new Easy Operation mode, the TM-G707A is extraordinarily user-friendly ... an important consideration for a mobile rig. The TM-G707A offers features such as: memory name function, S-meter squelch, time-out timer, encode/decode, dimmer, auto power-off and supplied MC-53DM backlit DTMF mic. Non-simultaneous cross-band repeater access is supported.

- 180 Memories
- Multi-Scan
- DTMF Hand Mic CTCSS Rx Display
- Auto Power Off
 Time-Out Timer
- Adv. Intercept Pt. PL Decode/Encode
- Dimmer
- Amber LCD
- Memory Names
- Priority Scan

- Packet 1200/9600 Din
- Hi/Med/Lo RF Out

Kenwood TM-G707A 144/440 MHz 50/35W List \$519.95 Order #1621 Please Call



The new look in high-performance mobile communications is here. The distinctive TM-V7A has an easy to operate control panel and a cool-blue reversible LCD. There is a lot more inside including the five-in-one programmable memory, DTSS and pager functions, 280 memory channels plus the ability to receive two frequencies on the same band. Other advanced features include: S-meter squelch, time-out timer, dimmer, auto power-off and supplied MC-53DM backlit DTMF mic.

- 280 Memories
- Dual Display

- Auto Rep. Offset DTSS Selective Call
- Dimmer
- Reversible LCD Hi/Med/Lo RF Out
- Visual Scan
- Dual Rx on same band
- DTMF Hand Mic Auto Simplex Checker
- Guide Function
 PL Decode/Encode.
 - Packet 1200/9600 Din

Kenwood TM-V7A 144/440 MHz 50/35W List \$719.95 Order #3565 Please Call

TM-261A TM-461A Mobile communications is easier thanks to Kenwood's TM-261A and TM-461A single banders. Both are fully equipped, sturdily built and supremely user-friendly. The TM-261A and TM-461A put out 50 and 35 watts respectively. Both models also have mid and low power settings. All 61 memory channels can be identified alphanumerically. The TM-261A includes airband receive, autopower off and auto repeater offset.

- 61 Memories
- Mil-Std 810C/D
- Multi Scanning DTMF Memory
- DTSS Selective Call
- CTCSS Tone Encode

Kenwood TM-261A 144 MHz. 50 watts Please Call List \$379.95 Order #2164

Kenwood TM-461A 440 MHz. 35 watts List \$509.95 Order #1397

KENWOOD

Optional Accessories

Order #	Model	Item Description	List Price	Your Price	\geq	F	F	F
0105	DFK-3	9 Ft. Remote Kit (1 cable: head)	\$26.95	\$24.95 (+\$4)				
3071	DFK-4	13 Ft. Remote Kit (2 cbls: head/mic)	59.95	51.95 (+\$4)				
3033	DFK-7	22 Ft. Remote Kit (4 cbls: "+audio/DC	89.95	79.95 (+\$4)				
1658	DFK-3C	9 Ft. Remote Kit (1 cable: head)	44.95	41.95 (+\$4)			(0)	
2215	DFK-4C	13 Ft. Detachable Front Panel Kit	64.95	59.95 (+\$4)				
2432	DFK-7C	23 Ft. Detachable Front Panel Kit	99.95	89.95 (+\$4)				
0214	MB-201	Mobile Mount	25.95	22.95 (+\$3)				
3027	MC-53DM	Lit Hand Mic With DTMF. Modular	79.95	69.95 (+\$3)				
0368	MC-60A	Deluxe Desk Mic. 8 Pin With Preamp	159.95	139.95 (+\$5)				
1026	MC-80	Desk Mic. Gooseneck With Preamp	119.95	99.95 (+\$5)				
1539	MJ-88	Mic Plug Adapter (Modular to 8-pin)	30.95	26.95 (+\$4)				
0272	MJ-89	Modular Mic Switch	69.95	64.95 (+\$3)				
2882	PG-2N	DC Power Cable	17.95	14.95 (+\$3)				
0303	PG-3B	DC Line Noise Filter	29.95	26.95 (+\$3)				
0720	PG-3G	DC Line Noise Filter	51.95	44.95 (+\$4)			18	
0769	PG-5A	TNC Data Cable	15.95	14.95 (+\$3)				
0890	SP-41	Compact Mobile Speaker	49.95	44.95 (+\$4)	10			
1349	SP-50B	Mobile Speaker	55.95	48.95 (+\$4)				
1796	TSU-7	Programmable CTCSS Tone Unit	59.95	49.95 (+\$3)				
2957	TSU-8	Programmable CTCSS Tone Unit	59.95	49.95 (+\$4)				
1609	UT-50S	Module 50 MHz 50 Watts	379.95	339.95 (+\$7)				
2702	VS-3	Voice Synthesizer	39.95	36.95 (+\$3)				

TR270

Please Call



- DTMF Encode
- 1/10/25W Output
- 15/40 kHz BW
- RS-232 Interface
- 400 Memories PL Decode/Encode

The TR270 is a base 2M transceiver with an extended dual-band FM receiver (136-174 and 420-470 MHz). Great for mode J satellite operation. You can customize your TR270 with over 60 user defined parameters. Includes a built-in 115/ 230 VAC supply or operate from 13.8 VDC. The optional DEMOD270 card can be installed to receive weather fax data. The optional TNC270 provides 1200/9600 packet. Made in America! Drake TR270 144 MHz (with 440 MHz Rx)

Order #0270 \$599.00 (+\$9) Orders: 800 431-3939 Information: 614 866-4267

Quality Equipment Since 1942

VHF-UHF FM Transceivers





The IC-2710H comes with the advanced HM-98 DTMF mic for complete control. The front panel is detachable with the optional OPC-600 or 601 separation cable. Independent tuning, volume and squelch knobs are featured. Independent VHF and UHF circuits are designed for both the left and right displays so V/V and U/U combinations are possible without sensitivity loss.

Cross Band Rep. ● Three Output Levels

220 Memories

Auto Repeater Func.

■ Built-In Duplexer
 ■ Pager Function

Code Squelch
 PC Programmable

Time-Out Timer
 ■ Backlit Hand Mic

Icom IC-2710H 144 & 440 MHz 50/35 watts List \$560.00 Order #3188 Please Call

The IC-207H 2M/440 dual bander is priced like a single bander, but it still has all the features you want. You get: detachable front panel, wideband receive, 45/35 watts, 4 power settings, built-in CTCSS decode/encode, PC compatibility and 162 memory channels. It is 9600 BPS packet ready too (6 pin DIN). The 207H also features a built-in duplexer and the full function HM-98 mic.

● Encode/Decode ● Simultaneous Receive

 9600 Ready • 162 Memories Four Output Levels Detachable Head

Duplexer Tone Encode

Rx 118-174 MHz

Full Function Mic

Icom IC-207H 144 & 440 MHz 50/35 watts List \$453.00 Order #1610 Please Call

IC-2100H









- Full Duplex
- Coded Squelch
- 40 Memories
- Built-In Duplexer
- CTCSS Enc/Dec ■ Extend Receive
 ■ Backlit Keypad/Display
 - Remote Microphone

The C5718DA dual bander offers the ultimate in operating and installation convenience. It may be operated from the optional front panel controls or mounted out of the way and be completely controlled from its microphone. Dual display shows both bands simultaneously as well as memory information and signal strength. Dual frequency receive allows two VHF, two UHF for VHF/UHF. It is 9600 Packet ready out of the box. Output is 50 watts on 2M and 40 watts on 440 MHz.

Standard C5718DA Dual Band 144 & 440 MHz. List \$849.00 Order #0439 Please Call The Icom IC-2100H 2 meter FM mobile features a rugged design and an easy-to-read display. The receiver covers 136-174 MHz and the transmitter delivers 5, 10 or 50 watts of output. Other features include: 113 memories, alphanumeric notes, 3way priority watch and independently programmable Rx/Tx. MIL SPEC 810C/D/E Shock-Vib. 5.5x1.6x7.1" Includes HM-98S DTMF mic.

DTMF Mic.

- 113 Memories
- Scanning
- Call Channel
- Tone Scan
- Large LCD Display
- Extend Receive
- 55/10/5 Output
- Remote Control Mic Encode/Decode

Icom IC-2100H 144-148 MHz 50 watts List \$324.00 Order #1256 Please Call

You have never seen a dual band mobile that looks like this before! It has a stunning 3 inch (diag). multifunction color LCD display. There is even a external video input jack. Independent tuning knobs for each band are featured. There are plenty of memories. For each band you get: 99 regular, 6 scan edge, 5 log and repeater and 1 call channel. The IC-2800H supports V/U, U/V crossband and VHF air receive.

NOTICE: The IC-2800H has not been approved by the Federal Communications Commission. These devices are not and may not be offered for sale or leased until the approval of the F.C.C. has been obtained.

- 99 Mems./Band 6 Scan Edge Mem
- Color LCD
- 4 RF Levels
- DTMF Mic. Tone Scan
- External Video Input
- 9600 Packet Port
- PC Programmable
- Encode/Decode

Icom IC-2800H 144 & 440 MHz 50/35 watts Order#1153 Please Call

Optional Accessories

Order #	Model	Item Description	List Price	Your Price	2710	2350	207	2100	
3292	HM-90A	Wireless Microphone	\$209.00	\$39.99 (+\$4)					
3167	EX-1759	Infrared Rx for HM-90A	110.00	79.95 (+\$4)					
2145	MB-17A	Mobile Bracket	49.00	34.95 (+\$3)					
0382	OPC-346	DC Cord 9 Ft.	28.00	19.95 (+\$3)					
3236	OPC-347	DC Cord 23 Ft.	46.00	32.95 (+\$4)					
2329	OPC-600	Separation Cable 11.5 Ft.	45.00	32.95 (+\$4)					
0595	OPC-601	Separation Cable 23.0 Ft.	60.00	44.95 (+\$4)					
0172	SP-7	External Speaker	94.00	64.95 (+\$5)					
1866	SP-10	Mobile Speaker	69.00	47.95 (+\$4)					
2985	UT-49	DTMF Decoder Unit	74.00	51.95 (+\$3)					
2482	UT-85	Tone Squelch Unit	76.00	52.95 (+\$3)					
0985	UT-89	Tone Squelch Unit	110.00	89.95 (+\$3)					
0306	UT-104	Tone Squelch Unit	59.95	29.95 (+\$3)					



Optional Accessories

Order #	Model	Item Description	List Price	Your Price	
3233		Split Mic Cable	63.00	54.95 (+\$3)	
1461	CAW-591	LCD Extension Cable 9'	40.00	36.95 (+\$4)	
0916	CAW-592	Mic/Speaker Ext. Cable 15'	57.00	52.95 (+\$4)	
2086	CMU-182	200 Memory Channel Unit	48.00	39.95 (+\$3)	
0068	CRC-5700	Removable Control Head	239.00	199.95 (+\$5)	

Page 60

Orders: 800 431-3939 Information: 614 866-4267 Quality Equipment Since 1942

C5718DA C5900DA

Universal Radio 6830 Americana Pkwv. Reynoldsburg, Ohio 43068



DR-610T



- 120 Memories
- CTCSS Encoder
 Cross Band Repeat
- DSQ

List \$674.95

- Bell Function
- TOT and APO
- Airband Receive
- 5 Channel Auto Dialer
- Remote Front Panel
- 9600 bps I/O Jack
- The DR-610T dual-band FM transceiver (144/440 MHz.) combines a "Hi-Tech" rugged design with exceptional user friendliness. The front panel can be separated from the main body for custom installation. Full duplex cross-band operation and cross-band repeater function are standard. Two

Please Call

VFOs, 120 memories plus split channel, call channel and program scan mem. Plus aircraft receive. Alinco DR-610T 144 & 440 MHz. 50/35 watts Order #0034

DR-150TQ



- 100 Memories
- LITZ Capable
- Memory Skip
- Odd Offsets
- DSQ Functions
- 440 Receive
- Aircraft Receive
- Channel Scope
- Time Out Timer
- DTMF Microphone

The DR-150TQ is loaded! Full 50 watts out on 2M plus 440 and aircraft receive. The channel scope display functions in both VFO and memory mode. Two VFOs and 100 memories are featured. Comes standard with CTCSS tone encoder and tone decoder, 9600 bps/phone patch interface jack. The DTMF mic also permits direct frequency entry.

Alinco DR-150TQ 144-148 MHz. 50 watts List \$327.95 Order #3620 Please Call

DR-140TQ



- 51 Memories
- VFO Scanning
- Odd Offsets
- Reverse Key
- Air Band Rx.
- Large LCD Display Memory Scanning
- Encode/Decode
- Timer Out Timer
- DTMF Microphone

The Alinco DR-140TQ is a full-featured 2 Meter 50 watt FM transceiver with an alphanumeric display (up to seven characters), 51 memory channels aircraft (AM) plus extended receive. Other extras include CTCSS plus European tone bursts, MARS/CAP capability, 1200 baud Packet ready clean design, scanning and cloning features. This "Q" version includes CTCSS decode as standard. Alinco DR-140TQ 144-148 MHz. 50 watts

Order #3619 Please Call List \$290.00

DR-605TQ

The Alinco DR-605TQ features: 100 Memories, true 9600 packet port, built in CTCSS encode/ decode, cross-band repeat, internal antenna duplexer and more. All at a price that will really surprise you.

Alinco DR-605TQ 144 & 440 MHz. 50/35 watts Please Call List \$537.00 Order #3621

Optional Accessories

Order #	Model	Item Description	List Price	Your Price	140TQ 150T	600T	610T
2469	EDC-19	Remote Cable 9 Ft.	\$40.00	\$36.95 (+\$3)			
2891	EDC-20	Remote Cable 16 Ft.	46.00	39.95 (+\$3)			
3419	EDS-2	Remote Cable 9 Ft.	23.00	21.95 (+\$3)			
3420	EDS-3	Remote Cable 16 Ft.	39.00	34.95 (+\$3)			
3422	EJ-23U	Additional 120 Memories	35.00	29.95 (+\$3)			
3423	EJ-24U	CTCSS Decode	85.00	74.95 (+\$3)			



- 81 Memories
- DCS
- ARTS Odd Offsets
- Memory Scanning
- RF Output 10,25,50,70
- Smart-Search

MIL-STD 810

The FT-3000M is the only amateur 2M FM mobile with 70 full watts of power. Other highlights: 81 memories, twin cooling fans, menu programming, 4 power levels. Wideband receive covers 110-180, 300-520 and 800-900 (less cellular). The sub receiver allows split and full-duplex cross band. Yaesu FT-3000M 144-148 MHz. 70 watts

List \$542.00 Order #3774

Please Call

FT-2500M



- 31 Memories
- CTCSS Encode Scanning
- LCD Display
- Backlit DTMF Mic.

- DTMF Calling
- 3 Power Levels 5,25,50

Mil-Std. 810D Rating

This rugged "mil-spec" 2 meter mobile transceiver features the largest LCD display readout available. The selectable alpha-numeric display allows you to store frequencies, call signs or names in its 31 tunable memories. Also features: backlit DTMF microphone and CTCSS encode built-in.

Yaesu FT-2500M 144-148 MHz 50 watts List \$409.00 Order #3307

Please Call

FT-8100R



- 310 Memories
- Six Scan Modes
 DTMF Mic.

- Dual LCD
- Built-in Duplexer CTCSS Encode
- Dual Receive Packet Ready

The Yaesu FT-8100R combines high power and a versatile memory system along with easy installation. This dual bander provides V+U, V+V or U+U operation. The easy-to-read dual band LCD display even has a DC voltage indication. With programmable DTMF mic.

Yaesu FT-8100R 144 & 440 MHz. 50/35 watts Order#3527 Please Call List \$699.00

MFJ-1116



Organize your 12 VDC power leads (up to 15 amps total) with the MFJ-1116. With meter, switch and 15 amp fuse. (Note: insufficient capacity for HF rigs). List \$44.95 Order #0171 \$39.95 (+\$4)

Optional Accessories

Order#	Model	Item Description	List Price	Your Price	FT3000M	FT2500M	FT8100R
3713	ADMS-2D	Windows Prg. & Cable	\$39.00	\$36.95 (+\$4)			
0560	DVS-4	Digital Voice Record Modu	le 47.00	44.95 (+\$3)			
3631		DC Power Supply 23 Amp		159.95 (+\$9)			
1163	FTS-17A	CTCSS Decode Unit	47.00	44.95 (+\$3)			
0245	FTS-22	CTCSS Decode Unit	68.00	62.95 (+\$3)			
0194	MMB-60	Quick Mobile Bracket	169.00	28.95 (+\$3)			

KENWOOD



TH-79AKSS

- LCD Dot Matrix Display
- 82 Memories (2 Call)
- Alphanumeric Memory
- Message Paging
- Menu System
- Auto Dial
- Double Band Scan
- Dual Freq. Receive

The TH-79ADH features an alphanumeric dot matrix display which can be entered into memory allowing you to name repeaters instead of actual frequencies. The unique guide function provides simple operating instructions that appear in the display at a touch of a button. Dual frequency receive functions include full duplex cross-band operation and the ability to receive two frequencies on the same band (V/V or U/U). Encode and decode are standard. Includes auto power off, 3 output levels and battery save function. The TH-79AKSS additionally features Kenwood's new Sky Command capability.

Kenwood TH-79AKSS 144 & 440 MHz. 5W Please Call

List \$579.95

Order #1784



TH-D7A

- LCD Dot Matrix Display
- 200 Memories
- Alphanumeric Memory
- APRS
- Built-in TNC
- Auto Dial
- Versatile Messaging
- Dual Freq. Receive

Kenwood's new TH-D7A Data Communicator is equipped with a built-in TNC (1200/9600) and provides A.P.R.S. (Automatic Packet/Position Reporting System). A.P.R.S. lets you transmit your coordinates to a friend who can then pinpoint your position using a map on a computer. You can input your lat./long. manually or connect a NMEA-0183 compatible GPS (not supplied) for automatic operation (Tx interval .5, 1, 2, 3, 5, 10, 20 or 30 mins). Other features include: CTCSS, 200 8character memories, 10 DTMF memories, dual receive on the same band V+V (VHF only) and backlit keys. RF output is 2.5/2W with the supplied PB-38 battery, 5/5W with the optional PB-39 battery or 6/5.5W from 13.8 VDC

Kenwood TH-D7A 144 & 440 MHz. 2.5/2.2 W List \$519.95 Order #3553 Please Call



TH-22ATH

- 40 Memories
- Dual Scan CO/TO
- Priority Channel
- Multi Scanning Modes
- Built-in CTCSS encode
- Easy to use Menu
- Battery Saver Circuit
- Frequency Lock

The Kenwood TH-22ATH will fit in your shirt pocket yet deliver impressive performance thanks to the MOS FET power module. Features include DTMF keypad, easy-to-use menu systems, multiple scan functions (with dual scan stop modes (CO & TO) and 40 memories. Three power levels are supported (5W, 1/2 W or 30 mW) with the standard PB-34 battery. Includes auto batterysaver and auto power off functions plus a selectable squelch configuration. Built in CTCSS encoder and optional decoder. Easy-to-read backlit display. The TH-22ATH extended receive covers 136-173.995 MHz. 2.2x4.9x1" One year limited warranty.

Kenwood TH-22ATH 144 MHz. 5W

List \$324.95

Order #1575

Please Call

KENWOOD

Optional Accessories

CENWOOD Optional Accessories						TH-G71A	TH-22AT	TH-D7A
#	Model	Item Description	List Price	Your Price	TH-79A	Ŧ	Ŧ	Ξ
3700	BC-19	Rapid Charger For PB-38/39	\$64.95	\$56.95 (+\$4)		-	-	-
3212	BT- 9	Battery Case 4x Alkaline AA Cells	29.95	24.95 (+\$3)		_		_
3701	BT-11	Battery Case 4x Alkaline AA Cells	17.95	15.95 (+\$3)				
1474	EMC-1	Clip Microphone with Earphone	43.95	36.95 (+\$3)				_
1061	HMC-3	Boom Headset with VOX/PTT	59.95	42.95 (+\$3)				
3211	KSC-14	Rapid Desk Charger	87.95	74.95 (+\$3)				
1868	ME-1	Memory Expansion Unit	39.95	28.98 (+\$3)				
2023	PB-14	Battery 12VDC 300 mAh	90.95	68.99 (+\$4)				
3208	PB-32	Battery 6VDC 600 mAh	66.95	59.95 (+\$3)				
3209	PB-33	Battery 6VDC 1200 mAh	89.95	79.95 (+\$3)				
3210	PB-34	Battery 9.6VDC 600 mAh	89.95	79.95 (+\$3)				
3696	PB-38	Battery 6VDC 650 mAh	44.95	39.95 (+\$3)				
3697	PB-39	Battery 9.6VDC 600 mAh	57.95	51.95 (+\$3)				
1798	PG-2W	DC Cable	17.95	15.95 (+\$3)				
1280	PG-3J	Filtered Cigar Lighter Cord	36.95	31.95 (+\$3)				
3263	PG-4R	Sky Command Adapter		Please Call				
3810	PG-4V	Cable to VC-H1		Please Call				
3811	PG-4W	PC Cable & Software		Please Call				
2191	SC-43	Soft Case TH-79 with PB-33/34	24.95	20.95 (+\$3)				
3698	SC-45	Soft Case TH-79 with PB-38/39	15.95	14.95 (+\$3)				
2459	SMC-32	Mini Speaker Microphone	52.95	46.95 (+\$4)				
2737	SMC-33	Speaker Mic with Remote	65.95	57.95 (+\$4)				
1172	SMC-34	Speaker Mic with Remote	39.95	29.95 (+\$4)				
	TSU-8	Tone Decoder	59.95	49.95 (+\$4)				
3318	VC-H1	Interactive Video Communication	584.95	489.95 (+\$5)				
Note:	Accessor	ies enjoy FREE shipping when purcha	ased with the	e radio.				

VC-H₁



Please see page 52 of this catalog for information on the revolutionary Kenwood VC-H1 Interactive Video Communicator.



- TH-G71A
- 200 Alpha Memories Dual Scan CO/TO
- Key Illumination
- Multi Scanning Modes
- Built-in encode/decode
- Easy to use Menu
- 3 RF Out Levels
- MIL-STD 810E

Here is a compact dual bander with all the right features. The ergonomic design, illuminated keys and backlit display all combine to makes operation a breeze. The menu mode allows you to customize the TH-G71A by adjusting all major settings to your choice. Besides being easy to use, it also boasts extraordinary power - up to 6 watts (VHF) or 5.5 (UHF) with external power. There are 200 memory channels, with six alphanumeric characters, allowing you to store and transmit and receive frequencies independently. Multiple scan functions are available including programmable band scan, memory scan with memory channel lockout, MHz scan and call scan. For each band there are TO (time-operated), CO (carrier-operated) and seek scan resume modes. This radio includes the PB-39 high powered battery.

Kenwood TH-G71A 144 & 440 MHz. 5W. List \$429.95 Order #3699 Please Call

O ICOM



IC-T8A

- Triband Operation
- Extended Receive
- Two RF Levels
- Guide Function
- DTMF Keypad
- Battery Saver DTMF Encoder
- Simple Operation
- 123 Memories

Imagine getting three bands of operation in a unit no larger than a single bander. The T-8A switchable tribander covers 50, 144 and 430 (440) MHz. The T-8A even picks up the FM broadcast band with WFM mode. Other refinements include: Auto Repeater Function, Water resistant construction allows safe operation in wet conditions. Also meets MIL-STD 810 for shock and vibration. A flexible antenna, belt clip, wrist strap, Ni-MH BP-200 battery pack and BC-110A battery charger are all included. The T-8A is even PC programmable with optional cloning software and cable. Only 2.3x4.2x1.3". All Icom amateur products carry a one year limited warranty.

Icom IC-T8A 6Meter/2 Meter/440 MHz. HT List \$419.00 Order #0687 Please Call



IC-T7H

- Band & Mem Scan
- Extended Receive
- Two RF Levels
- Auto Repeater
- DTMF Keypad
- Battery Saver
- 9 DTMF Memories
- Simple Operation
- Encode/Decode

The Icom T7H is a dual band HT sized and priced like a single band radio. Only 2.25" x 4.82" x 1.13" it fits in the palm of your hand. The T7H features a streamlined function set. A separate CTCSS tone encoder and CTCSS tone encoder/decoder are standard. Full/programmable band scans and all/band select memory scans provide versatile signal searching. Other refinements include: backlit LCD, 70 memories, auto power off, auto repeater function and tone scan. Power output is 6 or 0.5 watts. Receive coverage: 118-174 and 400-470 MHz. A flexible BNC antenna, belt clip, wrist strap, battery pack and battery charger are all included. 2.25x4.9x1.2" (57x122x29mm).

Icom IC-T7H Dual Band HT 144 & 440 MHz. Please Call List \$330.00 Order #3052



IC-W32A

- 200 Alpha Memories
- Extended Receive
- Three RF Levels
- Auto Repeater
- DTMF Keypad
- Battery Saver DTMF Memories
- CTCSS Encode
- PC Programmable

The Icom W32A dual bander has alphanumeric and memory display. Independent tuning knobs and backlit display and keypad are also featured. The transceiver's two dials are used for independent tuning of the VHF and UHF band. Other features include: impressive audio, 50 frequency PL encode, V/V, U/U or V/U main/sub band operation (no decrease in sensitivity), full crossband duplex operation and 2 power levels. The W32A comes with: flexible antenna, belt clip, wrist strap, BP-173 battery pack and battery charger. This handheld lives up to the phrase that "Good things come in small packages". 2.2x4.9x1.2"

Icom IC-W32A Dual Band HT 144 & 440 MHz. Please Call List \$365.00 Order #0838

IC-Q7A

- Power Save Function
- Auto Repeater
- Backlit LCD
- Drip Resistant
- 200 Memories
- Ten Tuning Steps Six Scanning Modes
- Encode & Decode
- 350/300 mW Output

The very compact IC-Q7A covers both the 2 Meter and 440 MHz amateur bands. It also provides exceptional triple conversion receive coverage from 30 to 1300 MHz (less cellular) in AM, FM-N and FM-W. Ten different tuning steps from 5 kHz to 100 kHz are supported along with six types of scanning. Advanced features include: 200 memories, CTCSS encode/decode, backlit LCD, RIT. Power Save and Lock. Output is 350 mW on 2 Meters and 300 mW on 440 MHz. The latest version of this radio (version Q7A-05) includes: belt clip, antenna wrist strap and the required two AA NiCad cells with BC-127A wall charger. The antenna connector is low loss SMA. The amazing Q7A is only 2.3"x3.3"x1.2" (86x58x27mm) and weighs just 6 ounces (170 g).

Icom IC-Q7A Dual Band HT 144 & 440 MHz. Please Call List \$239.00 Order #2481



IC-T81A

- Four Band Coverage!
- 124 Alpha Memories



the palm of your hand? It is true. The newly announced Icom T81A transceives on six meters. two meters, the 440 MHz band and the 1.2 GHz band! Receive coverage is: 50-54, 118-174, 400-470, 1240-1300 MHz plus 76-107.995 MHz WFM. CTCSS encode and decode are both included as standard. 124 Memories provide ample storage. The T-81A features a joystick style multifunction switch for operating settings. Power output is up to 5W except 1W on 1.2 GHz. Contact Universal for further specifications, pricing and availability. Icom IC-T81A Quad Band HT

Order #3795

Please Call

NOTICE: The T-81A has not been approved by the Federal Communications Commission. These devices are not and may not be offered for sale or leased until the approval of the F.C.C. has been obtained.



IC-T2H

- Extended Receive
- Power Save Function
- Auto Repeater
- DTMF Kevpad
- Battery Saver
- 40 Memories
- PC Programmable
- Encode & Decode
- 6 W Output Standard

The Icom T2H is a single band, easy to use, 2 meter H.T. designed for everyone's budget. Innovative features such as cloning capability and a guide function are housed in a no-nonsense solid body. Tone squelch operation (encode and decode) is standard for quiet standby. Pocket beep provides a method of keeping track of calls even when you are away from the transceiver. Tone scan allows you to detect subaudible tone frequencies such as those used to open a repeater. Eight front panel keys may be customized allowing you to assign their function to your operating style. Five DTMF memory channels store up to 32 digits each. A full 6 watts of power will hit those distant repeaters. Includes BP-194 battery case, 8 AA NiCads, BC-110A wall charger and antenna. Icom IC-T2H 144 MHz. HT

List \$194.00

Order #3088

Please Call



DJ-S11T DJ-S41T



- Illuminated LCD
- Scan
- Hi/Lo Power
- 21 Memories
- CTCSS Encode
- S-Meter
- Reverse Monitor
- Auto Power Off

Alinco's pocket sized DJ-S11T fits in pocket or purse for communications on the go. At only 4"x2.17"x1.1" it is a little radio with big features. 21 memories store, frequency, offset and CTCSS tone. The pivot antenna swings down for easy storage. The DJ-S11T requires 3 AA alkaline batteries (not supplied). Operation from the optional EDH-18 cigar lighter power cable increases TX power to 450 mW. Other refinements include: battery saver, S-meter, alarm function, 6 tuning steps, and key-lock function. Includes belt clip and carry strap. Alinco radios all have a one year limited warranty.

Alinco DJ-S11T 144 MHz HT 0.34 W

List \$149.00

Order #3500 Please Call

Alinco DJ-S41T 440 MHz HT 0.34 W List \$149.00

Order #1692 Please Call



DJ-191T DJ-191TH

- LCD Display
- Redial Function
- 40 Memories
- Battery Saver
- PL Encoder
- Scanning
- DTMF Squelch
- 9 Autodial Mems.



DJ-G5TH

- V/V,U/U,U/V,V/U
- CTCSS Enc/Dec
- Dual VFO's
- 80 Memories
- Cross Band Repeat
- Auto Dialer
- Airband Rx
- Tone Burst

The Alinco DJ-G5TH is engineered with the most advanced electronic technology available. The large easy-to-read LCD display, easy-to-operate keyboard and 80 independent memory channels are just a few of its many features. Other features include: dual VFO's, channel scope, memory channel skip, independent VHF/UHF TX/RX LED. RF attenuator and cross band repeater function. Airband and extended UHF receive are standard. CTCSS encode/decode are standard. Frequency selection is possible directly from the keypad. A big 5 watt output is provided with the supplied EBP-36N battery pack. The DJ-G5TH also includes the charger tray, flexible antenna, wrist strap and belt clip. 2.25"x5.5"x1.2".

Alinco DJ-G5TH 144 & 440 MHz HT Hi Pwr 5W List \$481.00 Order #0729 Please Call

The simple operation, slim line design and large display make the DJ-191T a favorite among hams worldwide. At only 2.25" x 6" x 1.1" it is among the slimmest full-featured HTs. The small size does not mean small features. The DJ-191T boasts 1.5W output (up to 5W with optional EBP-36N), 40 memories plus call channel, 9 autodialer memories, battery saver function, cable cloning function, auto power off with Morse alert, independent TX and RX lamps, direct keypad frequency entry. monitor and low power transmit keys and time out timer. The DJ-191T also has extended receive from 135 to 174 MHz.

Alinco DJ-191T 144 MHz HT 1.5W

List \$264.00

Order #0813

Please Call

Alinco DJ-191TH 144 MHz HT 5W High Power List \$289.00 Order #3207 Please Call

Optional Accessories

optional Accessories				7	Ģ	ဟု	Ö		
	Order	#Model	Item Description	List Price	Your Price	DJ-1	5	DJ-S	D-G
	3181	EBP-30N	Battery 7.2 VDC 700 mAh	\$50.00	\$42.98 (+\$3)				_
	3089	EBP-31N	Battery 7.2 VDC 1200 mAh	79.00	49.98 (+\$3)				
	3060	EBP-32N	Battery 12 VDC 700 mAh	95.00	84.95 (+\$3)				
	1084	EBP-33N	Battery 4.8 VDC 650 mAh	63.00	54.95 (+\$3)				
	0731	EBP-34N	Battery 4.8 VDC 650 mAh	82.00	72.95 (+\$3)				
	2060	EBP-35N	Battery 7.2 VDC 650 mAh	97.00	84.95 (+\$3)				
	2983	EBP-36N	Battery 9 VDC 650 mAh	67.00	56.95 (+\$3)				
	3166	EBP-37N	Battery 4.8 VDC 700 mAh	34.00	28.95 (+\$3)				
	3664	EDC-36	Mobile Charger	22.00	19.95 (+\$3)				
	0708	EDC-37	DC Power Cable	7.00	6.95 (+\$2)				
	0103	EDC-43	Mobile DC Power Cable	8.00	7.95 (+\$2)				
	2607	EDC-60	AC Quick Charger	78.95	69.95 (+\$5)				
	2284	EDH-11	Battery Case (6 x AA)	10.00	9.95 (+\$2)				
	0590	EDH-16	Battery Case (4 x AA)	10.00	9.95 (+\$2)				
	2625	EDH-18	Cigar Cord Voltage Adapter	33.00	29.95 (+\$3)				
	3663	EDS-7	Adapter for Speaker Mics	10.00	9.95 (+\$3)				
	1945	EJ-28U	CTCSS Decode	42.00	37.95 (+\$3)				
	1221	EME- 4	Earphone Mic	34.00	27.98 (+\$3)		•		
	0465	EME-12	VOX/PTT Headset	70.00	62.95 (+\$4)				
	2827	EME-13	VOX Mic & Earphone	70.00	62.95 (+\$4)				
	3147	EME-17	Headphone Earphone Mic	25.00	24.95 (+\$4)		•		
	0742	EMS-8Z	Speaker Mic	48.00	44.95 (+\$3)				
	2262	EMS-9	Speaker Mic	44.00	39.95 (+\$3)		•		
	2709	EMS-9Z	Speaker Mic	44.00	39.95 (+\$3)				
	0534	EMS-47	Speaker Mic	24.00	22.95 (+\$3)		•		
	0370	ESC-28	Case For EBP-33N	10.00	9.95 (+\$3)				10
	0252	ESC-29	Case For EBP-37N	10.00	9.95 (+\$3)				
	2107	ESC-30	Case For EBP-34/35/36	10.00	9.95 (+\$3)				
		Needs E	DS-7 adapter						

DJ-C5T





- Auto Power Off
- Only 2.2x3.7x.42"
- Mic/Ear Jack
- 50 Memories
- 300 mW RF Out
- Lithium Ion Battery CTCSS Encode
- CTCSS Decode
- Built-in Speaker

Alinco advances the state of the art once again with the new DJ-C5T dual-band "credit card" HT. The supplied snap-in charger brings the lithium ion battery to fully capability in only two hours. The DJ-C5T is ready to travel the would with CTCSS encode, CTCSS decode and European tone bursts built-in! Both standard and nonstandard repeater offsets are supported. The full featured DJ-C5T provides over 300 mW of efficient output to reach local repeaters or meet your local simplex needs. Features built-in speaker and wide band receive, including VHF air (AM). Each DJ-C5T comes standard with: charger, built-in rechargeable Lithium-ion battery and removable antenna. Only 2.2x3.7x.42" 3 oz.

Alinco DJ-C5T 144 & 440 MHz HT 0.3W List \$239.00 Order #0058 Please Call

YAESU

FT-50RD

- 112 Memories
- 12 VDC Direct In
- DTMF Keypad
- Alpha Display
- Dual Watch PL Encode/Decode
- DCS Encode/Decode
- DVRS & Page Squelch

The FT-50RD is manufactured to rigid commercial grade standards, and is the first dual band handheld amateur radio to achieve the prestigious MIL-STD-810 rating. The water-resistant construction uses weatherproof gaskets to seal major internal components against the corrosive action of dust and moisture. The FT-50RD dual band HT includes: Digital Coded Squelch, super loud audio and the widest band receive allowable. The FT-50RD is rugged, reasonably priced, simple to operate and has all the features you want and is packed into an incredible 2.2"w x 3.9"H x 1.2"D.

Yaesu FT-50RD/40 144 & 440 MHz. HT 2W Batt. Please Call List \$439.00 Order #3540 Yaesu FT-50RD/41 144 & 440 MHz. HT 5W Batt. Order #3070 Please Call List \$449.00



FT-51R

- 120 Memories
- DTMF Paging
- Backlit Keypad
- Auto Tone Search
- Cross Band Repeat
- Power Saver

 Alpha Display Spectrascope The FT-51R introduces many first-time features! The LCD display not only provides dual frequency readouts and indicators for most functions, but also includes Spectrascope display. This unique feature displays real time, continuous scanning of activity on adjacent frequencies in VFO mode or 8 of your favorite memories. In addition, the new cloning feature can duplicate your favorite channels to any other FT-51R. Other standard features include a scrolling menu guide, tone search, builtin PL encode/decode, 5 selectable power levels, auto repeater shift, AM aircraft receive and multiple scan modes. 5/5W out with 12VDC or FNB38.

Yaesu FT-51R/31 144 & 440 MHz. HT Order #0979 Please Call List \$619.00 Yaesu FT-51R/38 144 & 440 MHz. HT 5W Batt. List \$639.00 Order #1113 Please Call

Optional Accessories



VX1R

- 6 Char. Alpha,
- 290 Memories
- Tone Search
- Encode/Decode
- DTMF Paging Wideband Receive
- Dual Receive
- Backlit Keypad & LCD

The VX-1R is a microminiature 2 meter/440 MHz handheld with extensive receive frequency coverage, providing local-area two-way amateur communications along with unmatched monitoring capability. Its incredible size allows you to take it anywhere. Receive range is: .5-1.7, 76-108, 108-999 MHz (less cellular). This means you can hear the AM and FM broadcast bands, TV audio, aircraft and public service channels. Power output is 0.5 watts with battery or 1 watt with external power adapter. Includes lithium ion battery and 80 minute rapid charger, antenna, belt clip, plus a wrist strap. You can buy the optional FBA-20 Cell Holder to operate this radio from a single AA alkaline cell. This fine HT is only 3 3/16x1 7/8 x 1" Yaesu VX-1R 144 & 440 MHz. HT 0.5W

Order #3652 Please Call List \$349.00

YAESU

List Price Your Price VX1R VX5R FT-51 FT-50 Item Description Order # Model \$12.98 (+\$2) 2777 CA-10 NC-50 Charger Adapter \$14.00 24.95 (+\$3) NC-50 Charger Adapter 26.00 1170 **CA-14** 18.95 (+\$2) 19.00 2916 CSC-71 Soft Case 23.95 (+\$3) Filtered Cigar Lighter Cord 26.00 1693 E-DC5B Filtered Cigar Lighter Cord 38.00 34.95 (+\$3) E-DC15 3646 17.95 (+\$2) Battery Holder (4 x AA) 19.00 FBA-14 0.344 19 00 17.95 (+\$2) Battery Holder (4 x AA) FBA-15 3152 22.00 19.95 (+\$2) Cell Holder (1 x AA) FBA-20 3654 23.95 (+\$3) Cell Holder (2 x AA) 25.00 FBA-23 3173 51.95 (+\$3) 55.00 **FNB-31** Battery 5 VDC 600 mAh 0360 75.00 69.95 (+\$3) Battery 5 VDC 1200 mAh **FNB-33** 1081 69.95 (+\$3) FNB-38 Battery 9 VDC 600 mAh 75.00 1568 48.00 43.95 (+\$3) **FNB-40** Battery 6 VDC 650 mAh 2699 Battery 9 VDC 600 mAh 58.00 52.95 (+\$3) 2823 **FNB-41 57.95** (+\$3) 62.00 Battery 9 VDC 1100 mAh 3024 FNB-42 51.95 (+\$3) Battery 9 VDC 1100 mAh 55.00 FNB-V47 3490 69.00 64.95 (+\$3) FNB-58LI Battery 7 VDC 1100 mAh 0549 30.00 27.95 (+\$3) MH-19A2B Mini Earpiece/Microphone 1583 106.00 99.95 (+\$3) MH-29A2B LCD Display Speaker Mic. 3112 MH-32A2B Compact Speaker Mic. 30.00 27.95 (+\$3) 2035 28.95 (+\$3) MH-34B4B Compact Speaker Mic. 30.00 2631 14.95 (+\$2) 15.00 Wall Charger FNB-26/33 NC-34B 1151 13.95 (+\$2) Wall Charger FNB-38 14.00 NC-38B 2566 99.95 (+\$5) 109.00 Desktop Quick Charger 2412 NC-50 Wall Charger FNB-31 14.95 (+\$3) 15.00 3274 NC-55B 33.95 (+\$3) Barometric Sensor Unit 35.00

■ Also requires CA-10 ▲ Also requires CA-14 * Also requires NC-72B Note: There is FREE shipping on all accessory items at time of HT purchase.

62.00

62.00



VX5R

- 8 Char. Alpha,
- 220 Memories
- AM/FM BCB
- SW to 16 MHz
- CTCSS/DCS Wideband Receive
- Dual Watch
- Backlit Keypad & LCD

The VX-5R is a triple band (6M, 2M & 440 MHz) HT with extensive receive coverage, and leadingedge features. It receives the AM and FM broadcast bands, shortwave (AM) to 16 MHz, VHF and UHF TV audio, VHF Air and public service frequencies. The supplied 7.2 V 1100 mAh Lithiumion battery provides 5W out on 6M and 2M and 4.5W on 440 MHz. Robustly constructed to strict MIL-STD 810 rating. Features include: 16 digit 9 memory DTMF autodialer, CTCSS/DCS, 220 memories, aluminum die-cast case and 8 character alphanumeric display. Hikers and mountain climbers may connect the optional SU-1 Baromateric Sensor for direct air pressure read-

Yaesu VX-5R 6M, 2M & 440 MHz. HT 5/5/4.5W Order #1795 Please Call List \$429.00

> Orders: 800 431-3939 Information: 614 866-4267 Quality Equipment Since 1942

VOX Headset

VOX Headset

SU-1

VC-22

0669

0926

0443

56.95 (+\$3)

56.95 (+\$3)

DIAMOND

SX-100



The SX-100 precision SWR/Power meter covers 1.8 - 60 MHz with power ranges of 30, 300 and 3000 watts. Power measurement accuracy is ±10% with an insertion loss of less than 0.1 dB. List \$144.95 Order #1673 \$139.95 (+\$6)



SX-200

The SX-200 covers 1.8 - 200 MHz in power ranges of 5, 20 and 200 watts. Measurement accuracy is better than ±10%. Insertion loss is < 0.15 dB. List \$104.95 Order #2315 \$99.95 (+\$5)

SX-400

The SX-400 VHF/UHF SWR/Power meter covers 140 - 525 MHz in ranges of 5, 20 and 200 watts. Measurement accuracy is better than ±10%. List \$124.95 Order #2785 \$119.95 (+\$6)



SX-600

The SX-600 dual-sensor HF/VHF, SWR/Power meter covers the frequency range of 1.8 -160 and 140 - 525 MHz in power ranges of 5, 20 and 200 watts. The power measurement accuracy is ±10%. Insertion loss is less than 0.1 dB. List \$179.95 Order #2698 \$169.95 (+\$7)



SX-1000

The SX-1000 dual-sensor SWR/Power meter covers 1.8 - 160 and 430 - 1300 MHz with power ranges of 5, 20 and 200 watts. Power measurement accuracy is ±10% with an insertion loss of less than 0.2 dB for sensor one (1.8 - 160 MHz) and less than 0.15 dB for sensor two (430 - 1300 MHz). List \$234.95 Order #1053 \$219.95 (+\$7)

YAESU

YS-60



The Yaesu YS-60 is a compact peak-reading SWR/Power meter covering the frequency range of 1.6 to 60 MHz in power ranges of 20, 200 and 2000 watts. Power measurement accuracy is ±10% with an insertion loss of less than 0.1 dB. List \$139.00 Order #0672 \$124.95 (+\$5)

YS-500



The Yaesu YS-500 VHF/UHF peak-reading SWR Power meter covers 140 to 525 MHz in power ranges of 4, 20 and 200 watts. Power measurement accuracy is better than ±10% with an insertion loss of less than 0.1 dB at 140 - 250 MHz and less than 0.2 dB at 400 - 470 MHz.

List \$114.00 Order #0988 \$99.95 (+\$5)

DAIWA CN-410M/460M/465M



The Daiwa CN-460M compact cross-needle meter displays both forward and reflected power over a frequency range of 140 - 450 MHz in ranges of 15/150 watts forward and 5/50 watts reflected. Accuracy is ±15% at full scale. SO-239 jacks. List \$119.95 Order #1800 \$89.95 (+\$4)

The Daiwa CN-410M cross-needle meter reads forward and reflected power in ranges of 15/150 watts forward and 5/50 watts reflected simultaneously. Frequency coverage is 3.5 - 150 MHz. Accuracy is ±15% at full scale. SO-239 jacks. List \$119.95 Order #0984 \$99.95 (+\$4)

The Daiwa CN-465 cross-needle meter reads forward and reflected power in ranges of 15/75 watts forward and 5/25 watts reflected simultaneously. Frequency coverage is 140 - 450 MHz. Accuracy is ±15% at full scale. SO-239 jacks. List \$119.95 Order #3096 \$89.95 (+\$4)





The PM30 measures and displays forward power, reflected power and SWR simultaneously on its dual movement meter system in the range of 1.8 - 60 MHz with 300 and 3000 watt settings

List \$79.95

Order #3393

\$69.95 (+\$5)

PM30UVB

The PM30UV measures and displays forward power, reflected power and SWR simultaneously in the range of 100 - 500 MHz with 30 and 300 watt settings. It utilizes BNC jacks for low loss. List \$89.95 Order #3394 \$79.95 (+\$5)

PM30UV

The PM30UV is the same as the PM30UVB above, but utilizes SO-239 jacks instead of BNC jacks.

List \$89.95

Order #3581

\$79.95 (+\$5)





The MFJ-815 cross-needle peak-reading power meter allows you to monitor both forward and reflected power simultaneously. Frequency coverage is 1.8 to 30 MHz with a measurement accuracy of ±10%. Power ranges are 200/2000 watts forward and 50 / 500 watts reflected. ◆ List \$69.95 Order #1338 \$63.95 (+\$5)

MFJ-816

The MFJ-816 HF wattmeter lets you read forward and reflected power from 1.8 to 30 MHz in ranges of 30 watts and 300 watts.

List \$34.95

Order #1214

\$31.95 (+\$4)



The Bird Model 43 thruline directional wattmeter is a portable insertion-type instrument for measuring forward and reflected power in coaxial transmission lines. It will accurately measure RF power under any load condition. Plug-in elements are available to fit your frequency and power needs. Bird 43 UHF Order #1739 \$263.00 (+\$8)

Bird 43 N

Order #1738

\$263.00 (+\$8)

25C Element 25 watt 100 - 200 MHz.

Order #1736

\$**71.00** (+\$3) 50C Element 50 watt 100 - 200 MHz.

Order #1741 \$71.00 (+\$3)

250H Element 250 watt 2 - 30 MHz.

\$88.00 (+\$3) Order #1749

1000H Element 1000 watt 2 - 30 MHz.

Order #1750 \$88.00 (+\$3)

Please call for elements not listed.

MFJ-989C



113

MFJ-986



This world-famous 3 KW HF antenna tuner from MFJ features two massive transmitting capacitors and a roller inductor with a three digit counter to let you get the SWR down to the absolute minimum. Frequency range is 1.8 to 30 MHz. The peak reading cross-needle SWR/power meter has forward power ranges of 200 and 2,000 watts. Outputs for two coaxial cables, one wire or balanced line and dummy load are provided. A 300 watt, 50 ohm dummy load is built-in, making exciter tuning fast and easy. 10¾" x 4½" x 15". ◆

List \$359.95 Order #1332 \$329.95 (+\$11)

MFJ-969

The MFJ-969 is the world's only 300 watt AirCore roller inductor tuner covering 160 through 6 meters. You get a cross-needle SWR/wattmeter, 8 position antenna switch, built-in 50 ohm dummy load and a heavy duty 4:1 balun. 31/2 x 101/2 x 91/2". Order #3538 \$174.95 (+\$8) List \$189.95

MFJ-941E

This 300 watt PEP antenna tuner from MFJ features continuous frequency coverage from 1.8 to 30 MHz, outputs for two coaxial cables and one random wire or balanced line. The SWR/power meter reads forward and reflected power in ranges of 30 and 300 watts. 11" x 3" x 7". • \$109.95 (+\$7) Order #1130 List \$119.95

MFJ-945E

This compact 300 watt tuner with illuminated crossneedle display, is ideal for mobile operation. The convenient placement of controls makes tuning fast and easy while driving. The SWR/power meter reads in 30 & 300Wscales. 1.8-60 MHz. 8 x 2 x 6".◆ \$99.95 (+\$5) Order #1541 List \$109.95

MFJ-949E



MFJ's deluxe 300 watt Versa Tuner II gives you full coverage from 1.8 to 30 MHz, a peak and average reading cross-needle SWR/power meter and a built-in 300 watt dummy load. Outputs are provided for two coaxial cables and one random wire or balanced line. 10" x 3" x 7".

\$136.95 (+\$6) List \$149.95 Order #1146

MFJ-948

This deluxe tuner from MFJ offers most of the features of the popular MFJ-949E without the dummy load. •

\$119.95 (+\$6) Order #0648 List \$129.95

This new and innovative Differential-T™ 3 KW roller inductor tuner from MFJ covers 1.8 to 30 MHz continuously. The lighted cross-needle meter not only shows you both forward and reflected power at a glance, but also has a peak reading function. Outputs are provided for two coaxial cables, one balanced line and a dummy load. • Order #0706 \$299.95 (+\$11) List \$329.95

MFJ-962D

The MFJ 1.5 KW Versa Tuner III features two continuously variable capacitors to minimize your SWR. The peak and average reading crossneedle SWR/power meter makes tuning a snap. Outputs for two coax cables, one random wire and one balanced line. 10¾" x 4½" x 15". ◆ List \$269.95 Order #1330 \$249.95 (+\$11)

NOTE: MFJ tuners marked with a ◆ feature illuminated meters. For these meters to light you must provide 12VDC or the correct MFJ power supply.

AMERITRON

ATR-15



The Ameritron ATR-15 "T" network HF antenna tuner will handle a full 1500 watts of RF output over its entire frequency range of 1.8 to 30 MHz. Five outputs are provided, three for coaxial cable, one for single wire hook-up and one for balanced line. A peak reading wattmeter/SWR bridge accurately reads envelope power up to 2 kilo-watts.

List \$399.00 Order #0462 \$359.95 (+\$9)

MB-V-A



This rugged 3 kilo-watt HF antenna tuner from Nye Viking features a heavy-duty silver-plated variable inductor with a 25:1 vernier dial, 7,000 volt variable capacitor and 15,000 volt switch selected capacitors. Dual-metering provides for hands free SWR monitoring. Outputs are provided for two coaxial cables, one single wire and one balanced line

\$779.95 (+\$14) Order #1900 List \$879.00

VC300D



The VC300D is Vectronics' top-of-the line antenna tuner. This model provides the user the capability of reading peak output power via the digital bargraph display. Covers 1.8-30 MHz, 300 watts max. \$169.95 (+\$6) List \$199.95 Order #3384

VC300DLP



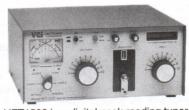
The VC300DLP tuner has a built-in dummy load, a peak or average reading meter and is easy to operate. Compatible with almost any antenna. Operating range is 1.8-30 MHz with max. power rated at 300 watts continuous. 10.2"x9.4"x3.5" \$139.95 (+\$5) Order #3398 List \$159.95

VC300M



The VC300M tuner is compact, lightweight, easy to operate and perfect for mobile operation. Features a dual movement, backlit meter for viewing power and SWR at the same time. Covers 1.8-30 MHz and is rated at 300 watts max. power. \$99.95 (+\$5) Order #3383 List \$109.95

HFT1500



The HFT1500 is a digital peak reading tuner with roller inductors. Features dual movement power and SWR backlit meter and LED bargraph display for peak reading. Frequency coverage is from 1.8-30 MHz, rated at 2kW PEP SSB max. power. \$399.95 (+\$9) Order #3385

List \$459.95



Please see page 53 for SGC antenna tuners.



HF Antennas

A3S

When space is at a premium and you want the performance of a full-size tribander, the A3S is the right choice. Frequency: 14, 21, 28 MHz Forward gain: 8 dB. Boom length: 14 ft. Weight: 27 lbs. Wind load: 4.36 sq. ft.

List \$497.00 Order #2779 \$339.95 (+\$20)

A3SDX

New DX version of A3S.

List \$566.50 Order #0261 \$419.95 (+\$20)

A743 40 and 30 meter add-on kit for the A3S/DX. List \$159.00 \$119.95 (+\$5) Order #0609

A4S

A high-performance tribander, the A4S is a good choice for the DX'er or contester. Frequency: 14, 21, 28 MHz. Forward gain: 8.9 dB. Boom length: 18 ft. Weight: 37 lbs. Wind load: 5.5 sq. ft. List \$597.00 Order #0333 \$439.95 (+\$21)

A744 40 and 30 meter add-on kit for the A4S. List \$159.0 Order #0610 \$119.95 (+\$5)

10-4CD

For maximum gain and performance, select this four element model. Frequency: 28 MHz. Forward gain: 10 dB. Boom length: 16 ft. Weight: 18 lbs. Wind load: 3.1 sq. ft. List \$349.00

Order #0620 **X7**

\$259.95 (+\$10)

The X7 "Big Thunder Series" tribander covers 10, 15 and 20 meters. It features 100 MPH construction for best reliability and long life. Forward gain: 12.5-13 dB. Boom length: 18 ft. Longest element: 37.2 ft. Weight: 60 lbs. Wind load: 7.9 sq. ft. List \$675.00 Order #1793 \$599.95 (+ship)

Get virtual monoband performance from a triband antenna. Forward gain: 13-14 dB. Boom length: 28 ft. Weight: 85 lbs. Wind load: 9.9 sq. ft. List \$995.00 Order #1878 \$899.95 (+ship)

R6000

The new R6000 is a 6 through 20 meter vertical antenna with no ground radials. Gain: 3 dB. Height: 19 ft. Weight: 12.5 lbs. Wind load: 1.5 sq. ft. Power rating is 1500W.

Order #0869 \$269.95 (+\$15)

R7000

In the proud tradition of the R7, the R7000 vertical covers 10, 12, 15, 17, 20, 30 and 40 meters. Gain: 3 dB. Height: 24 ft. Weight: 18 lbs. Wind load: 2 sq. ft. Power rating is 1500W.

List \$510.00 Order #1358 \$379.95 (+\$17)

VHF/UHF Antennas

17B2

17 element 2 meter SSB/CW Yagi. Frequency: 144-145 MHz. Forward gain: 18 dB. Boom length: 31 ft. Weight: 15.75 lbs. Wind load: 3.9 sq. ft. List \$246.00 Order #1668 \$179.95 (+\$9)

26B2

26 element 2 meter FM Yagi. Frequency: 144-148 MHz. Forward gain: 18.8dB. Boom length: 15 ft. Weight: 21.5 lbs. Wind load: 4.84 sq. ft. List \$406.00 Order #0836 \$299.95 (+\$10)

13B2

13 element wideband 2 meter Yagi. Frequency: 144-148 MHz. Forward gain: 15.8 dB. Boom length: 15 ft. Weight: 7 lbs. Wind load: 1.8 sq. ft. List \$142.00 Order #1357 \$109.95 (+\$8)

124WB

4 element wideband 2 meter Yagi. Frequency: 144-148 MHz. Forward gain: 10.2 dB. Boom length: 4 ft. Weight: 3 lbs. Wind load: 0.34 sq. ft. List \$73.00 Order #2905 \$54.95 (+\$7)

A148-3S

3 element 2 meter Yagi. Frequency: 144-148 MHz. Forward gain: 7.8 dB. Weight: 1.5 lbs. Wind load: 0.27 sq. ft. List \$47.50 Order #0685 \$34.95 (+\$7)

A148-10S

10 element 2 meter FM Yagi. Frequency: 144 -148 MHz. Forward gain: 13.2 dB. Boom length: 12 ft. Weight: 6 lbs. Wind load: 1.21 sq. ft. List \$85.00 Order #1961 \$64.95 (+\$7)

A449-11S

11 element 70 cm FM Yagi. Frequency: 440-450 MHz. Forward gain: 13.2 dB. Boom length: 4.2 ft. Weight: 4 lbs. Wind load: 0.39 sq. ft. List \$69.00 Order #0629 \$54.95 (+\$6)

A449-6S

6 element 70 cm FM Yagi. Frequency: 440-450 MHz. Forward gain: 10.5 dB. Boom length: 2.9 ft. Weight: 3 lbs. Wind load: 0.3 sq. ft. List \$45.00 Order #0628 \$35.95 (+\$5)

A270-10S

10 element dual band Yagi. Frequency: 144-148, 430-450 MHz. Forward gain: 10 dB. Weight: 1.8 lbs. Wind load: 0.725 sq. ft. List \$99.00 \$74.95 (+\$7) Order #2402

A270-6S

6 element dual band Yagi. Frequency: 144-148, 430-450 MHz. Forward gain: 7.8 dB. Boom length: 2.8 ft. List \$75.00 Order #0158 \$54.95 (+\$6)

◆ For Cushcraft antennas not listed, please call.

The RINGO line of Cushcraft verticals feature: compact size, easy assembly, wide bandwidth, low angle of radiation and direct DC ground for improved static protection.

AR-6

Frequency: 50-54 MHz. Forward Gain: 3.75 dB. Height: 10.1 ft. Wind load: 0.37 sq. ft. List \$71.00 Order #0634 \$49.95 (+\$8)

AR-10

Frequency: 28-29.7 MHz. Forward Gain: 3.75 dB. Height: 17.6 ft. Wind load: 1.68 sq. ft. List \$85.00 Order #0635 \$62.95 (+\$8)

AR-2

Frequency: 135-160MHz. Forward Gain: 3.75 dB. Height: 3.9 ft. Wind load: 0.21 sq. ft. List \$50.00 Order #0633 \$39.95 (+\$4)

ARX-2B

Frequency: 135-160 MHz. Forward Gain: 7.0dB. Height: 14 ft. Wind load: 0.5 sq. ft. List \$73.00

Order #0642 \$**54.95** (+\$5)

AR-450

Frequency: 440-460 MHz. Forward Gain: 3.75 dB. Height: 1.4 ft. Wind load: 0.1 sq. ft. List \$35.00 Order #0637 \$29.95 (+\$4)

ARX-450B

Frequency: 435-450 MHz. Forward Gain: 7.0 dB. Height: 4.9 ft. Wind load: 0.2 sq. ft. List \$73.00 Order #0645 \$54.95 (+\$4)

AR-270

Frequency: 144-148 & 435-450 MHz. Forward Gain: 3.7dB. 2 meters, 5.5dB 70 cm. Height: 3.75 ft. Wind load: 0.27 sq. ft. List \$88.00 \$74.95 (+\$5) Order #0583

AR-270B

Frequency: 144-148 & 430-450 MHz. Forward Gain: 5.5dB. 2 meters, 7.5dB 70 cm. Height: 7.7 ft. Wind load: 0.47 sq. ft. List \$128.00 Order #1960 \$99.95 (+\$6)

ARX-270U

Freq.: 144-148, 430-450 MHz. For. Gain: 9, 12 dB. Ht.: 16.5 ft. Wind load: .95 sq. ft. UHF connection. List \$310.00 Order #1065 \$229.95 (+\$8)

ARX-270N

Same as ARX-270U, but with an N connection. List \$310.00 Order #3315 \$229.95 (+\$8)

R80

The R-80 add-on kit allows the R7000 H.F. vertical to also operate on the 80 meter band List \$155.00 Order #1318 \$119.95 (+\$7)

DIAMOND

VHF/UHF Base Antennas

F-23A

High-performance 5/8 wave 2 meter vertical antenna. Gain: 7.8 dB. Power rating: 200 watts Length: 178.3" Weight: 3.5 lbs. Connector: UHF. List \$137.00 Order #2235 \$129.95 (+\$8)

X-50A

Compact dual-band vertical antenna. Frequency: 2 meter and 70cm. Gain: 4.5 dB (2m), 7.2 dB (70cm) Power rating: 200 watts Length: 67" Weight: 2.3 lbs. Connector: UHF.

Order #2553 \$99.95 (+\$9) List \$109.95

X-200A

High-performance dual-band vertical antenna for fixed station or repeater operation. Frequency: 2 meter and 70cm. Gain: 6.0 dB (2m), 8.0 dB. (70cm) Power rating: 200 watts Length: 98.4" Weight: 2.6 lbs. Connector: UHF.

\$139.95 (+\$9) List \$149.95 Order #2341

X-510NA

This high-gain dual-band vertical antenna is ideal for high-performance base station or repeater operation. Frequency: 2 meter and 70cm. Gain: 8.3 dB. (2m), 11.7 dB. (70cm) Power rating: 200 watts Length: 204.7" Weight: 5.3 lbs. Connector: N. Wind Survival: 90 MPH.

\$189.95 (+\$10) Order #2448 List \$209.95

X-500HNA

The X500H combines the same performance specifications as the X500A with commercial quality construction for 130 MPH wind survival. A good choice for high tower installations. Connector: N List \$259.95 Order #0178 \$229.95 (+\$8)

X-700HA

This maximum performance dual-band vertical antenna features the highest gain available. Frequency: 2 meter and 70cm. Gain: 9.3dB. (2m), 13.0 dB. (70cm) Power rating: 200 watts Length: 24' Weight: 12 lbs. Connector: UHF. Wind Survival: 90 MPH.

\$389.95 (+\$13) List \$439.95 Order #2609

V-2000A

A true high-performance 2 meter, 6 meter and 70cm triband vertical antenna. Frequency: 2 meter, 6 meter and 70cm. Gain: 6.2 dB. (2m), 2.15 dB. (6m), 8.4 dB. (70cm) Power rating: 150 watts Length: 98.4" Weight: 2.65 lbs. Connector: UHF. Order #0153 \$149.95 (+\$8) List \$172.95

- Base antennas are constructed with a rugged fiberglass sheath and stainless steel hardware.
- For Diamond antennas and accessories not listed, please call for pricing and availability.
- Installing all base antennas can be dangerous! Request our free Antenna Safety pamphlet.

VHF/UHF Mobile Antennas

NR-770RA

High-performance 2 meter/70cm dual-band mobile antenna. Gain: 3.0 dB.(2m), 5.5dB.(70cm). Power rating: 200 watts Length: 39" Weight: .46 lbs. Mount: PO (SO-239).

Order #2783 List \$52.95

\$47.95 (+\$5)

NR-770HA

Same as NR-770RA but with an open-air coil. \$49.95 (+\$5) List \$56.95 Order #2568

NR-72BNMO

A great, compact dual-band mobile antenna. Gain: 2.15 dB.-2m, 2.15 dB.-70cm. Power rating: 100 watts. Length: 14" Color: Black. Mount: NMO. List \$41.95 Order #1578 \$39.95 (+\$6)

NR-790A

Maximum performance dual-band mobile antenna. Gain: 4.5 dB. (2m), 7.2 dB. (70cm). Power rating: 120 watts Length: 57" Weight: .8 lbs. Mount: PO (SO-239).

List \$82.95

Order #2711

\$74.95 (+\$5)

SG-2000

High-performance 7/8 wave 2 meter mobile antenna. Gain: 5.2 dB. Power rating: 150 watts Length: 62.6" Weight: .88 lbs. Mount: PO (SO-239). Order #2095 \$72.95 (+\$5) List \$75.95

SG-7500A

High-performance dual-band mobile antenna. Gain: 3.5 dB. (2m), 6.0 dB. (70cm). Power: 150 W. Length: 38" Wt: .8 lbs. Mount: PO (SO-239). List \$86.95 Order #2366 \$79.95 (+\$5)

SG-7900

Maximum performance dual-band mobile antenna. Gain: 5.0 dB. (2m), 7.6 dB. (70cm). Power rating: 150 watts Length: 62" Weight: .8 lbs. Mount: PO (SO-239).

Order #0142 List \$124.95

\$109.95 (+\$6)

Dual-Band HT Antenna

DIAMOND

RH-77CA

This Diamond flexible H.T. gain antenna provides 1/4 wave on 2 meters and 1/2 wave on 70 cm. \$22.95 (+\$4) List \$24.95 Order #2368

HS-702S

The Maldol HS-702S is similar to Diam. RH-77CA. \$18.95 (+\$4) Order #2559 List \$19.99

AH-209S

A 2M/440 duck that is less than 3 inches long! List \$18.99 \$17.95 (+\$3) Order #3417

DIAMOND

MX Series Duplexers

Passband width: LPF: 1.6-30 MHz, 140-150 MHz. HPF: 400-460 MHz, BPF: 110-170 MHz. Power-rating: LPF-150 watts, HPF-100 watts, BPF-800 watts. Insertion loss: LPF <0.1 dB.. HPF <0.2 dB. Input isolation: > 60 dB.

MX-72D

Connectors: Mixer-UHF female, LPF-UHF male, HPF-UHF male.

List \$43.95

Order #2573 \$39.95 (+\$3)

MX-72H

Connectors: Mixer-UHF female, LPF-12" coax with UHF male, HPF-12" coax with UHF male. Order #2571 \$49.95 (+\$3) List \$58.95

MX-72N

Connectors: Mixer-UHF female, LPF-12" coax with UHF male, HPF-12" coax with N male. \$45.95 (+\$3) List \$49.95 Order #2563

MX-2000 TRIPLEXER

Connectors: Mixer-UHF female, LPF-12" coax with UHF male, HPF-12" coax with UHF male, BPF-12" coax with UHF male.

List \$84.95

Order #2681

\$79.95 (+\$4)

Mobile Mounting Brackets

K-300

Deluxe folding-type rain gutter mount with NO connector or cable. Order #2034

List \$39.95

\$36.95 (+\$4)

K-300C

Deluxe folding-type rain gutter mount with 6 feet of low-loss coaxial cable and connector. \$64.95 (+\$5)

List \$69.95

Order #1810

K-400

Deluxe adjustable hatchback-trunklid mount with NO connector or cable.

List \$39.95

Order #0978

\$36.95 (+\$4)

K-400C

Deluxe adjustable hatchback-trunklid mount with 6 feet of low-loss cable and connector.

List \$69.95

Order #2072

\$64.95 (+\$5)

K-540

Black swival mirror mount. No cable. \$34.95 (+\$4) List \$35.95 Order #0573

GLP-58

UHF base adapter with 90° coax entry for K-300 and K-400 mounts.

Order #2210 List \$10.45

\$9.95 (+\$4)



MFJ-259B

This MFJ-259B SWR analyzer features a built-in 10 digit high-contrast LCD frequency counter. Reading your antennas SWR and finding its resonance has never been easier. All you do is connect your antenna, set your SWR analyzer to the frequency you want and read your SWR. Frequency coverage is from 1.8 to 170 MHz. Find



your antennas resonant frequency at your feedline, monitor your SWR as you adjust your beam or vertical. Shorten or lengthen your dipole to see the effect immediately. Includes a built-in RF Resistance Meter. Uses 6 AA cells (not supplied) or MFJ-1312B.

List \$239.95

Order #1611

\$199.95 (+\$6)

MFJ-224

Use the MFJ-224 2 Meter FM Analyzer to tune any signal between 143.5-148.5 MHz to monitor field strength in dBm and FM deviation in kHz. List \$159.95 Order #2636 \$149.95 (+\$6)

MFJ-207

See the resonant frequency of your antenna without using a transmitter. SWR meter or any other equipment. A frequency counter output is provided for precise digital readout. Coverage is 10 - 160 meters. Requires 9V battery (not supplied) or MFJ-1312B.



List \$79.95

Order #2679

\$74.95 (+\$4)

MFJ-208

The same features of the MFJ-207, but over the frequency range of 138 to 156 MHz.

List \$79.95

Order #0244

\$74.95 (+\$4)

MFJ-209

The same features of the MFJ-207 over the frequency range of 1.8 to 170 MHz.

List \$129.95 Order #3122

\$119.95 (+\$5)

\$199.95 (+\$5)

MFJ-249

All the features of the MFJ-259 without a built-in RF Resistance Meter.

List \$219.95 Order #3101

ALPHA DELTA

This 40, 80 and 160 meter twin sloper is broadbanded and easy to tune. Overall length is approximately 115 feet.

List \$59.95

Order #0378

\$54.95 (+\$6)

DX-B

This sloper is designed for the ham and operates on 160 - 30 meters. Only 60 foot long.

List \$69.95

Order #1041

\$67.95 (+\$6)

DX-CC

This "No Trap" dipole for 10, 15, 20, 40 and 80 meters is only 82 feet long.

List \$119.95

Order #1031

\$109.95 (+\$7)

DX-DD

For limited space installations this no trap shortened dipole for 40 and 80 meters does it in 82 ft. List \$89.95 Order #0675 \$79.95 (+\$6)

DX-EE

This shortened "No Trap" dipole for 10, 15, 20 and 40 meters is only 40 feet long.

List \$99.95 Order #1905 \$89.95 (+\$6)



HF Antennas

6-BTV

Constructed of 11/4" heavy wall aluminum this six band trap vertical will handle the full legal limit of power on SSB or CW. Frequency: 10, 15, 20, 30, 40 and 75/80 meters. Height: 24 ft. Weight: 16.5 lhs

List \$246.95

Order #2012

\$179.95 (+\$18)

5-BTV

You will have full-band coverage on 10-40 meters (1.6:1 at band edges typical) with this five band trap vertical. Frequency: 10, 15, 20, 40 and 75/ 80 meters. Height: 24.5 ft. Weight: 17 lbs. List \$211.95 Order #2011 \$149.95 (+\$17)

4-BTV

This four band trap vertical features exceptional mechanical construction and full-band coverage (typical SWR 1.6:1 at band edges). Frequency: 10, 15, 20 and 40 meters. Height: 21.5 ft. Weight: 15 lbs.

List \$166.95

Order #2010

\$119.95 (+\$17)

30-MTK

30 meter add-on kit for the 4-BTV and 5-BTV. List \$41.95 Order #2021 \$39.95 (+\$5)

Mobile HF Antennas

Standard Resonators (400W)

Order #	wodei	Item Description	Approx. Bandwidth	List Price	Your Price	Ship.
1984	RM-10	10 Meter Resonator	150-250 kHz	\$15.95	\$13.95	(+\$4)
1987	RM-15	15 Meter Resonator	100-150 kHz	15.95	13.95	(+\$4)
1989	RM-20	20 Meter Resonator	80-100 kHz	21.95	18.95	(+\$5)
1991	RM-30	30 Meter Resonator	50-60 kHz	24.95	19.95	(+\$5)
1992	RM-40	40 Meter Resonator	40-50 kHz	24.95	19.95	(+\$5)
2696	RM-75	75 Meter Resonator	25-30 kHz	26.95	20.95	(+\$5)
2825	RM-80	80 Meter Resonator	25-30 kHz	26.95	20.95	(+\$5)
						(. 0)

Super Resonators (1KW)

				/		
Order #	Model	Item Description	Approx. Bandwidth	List Price	Your Price	Ship.
1985	RM-10-S	10 Meter Resonator	250-400 kHz	\$23.95	\$19.95	(+\$5)
1988	RM-15-S	15 Meter Resonator	150-200 kHz	24.95	19.95	(+\$5)
1990	RM-20-S	20 Meter Resonator	100-150 kHz	28.95	23.95	(+\$6)
2463	RM-40-S	40 Meter Resonator	50-80 kHz	35.95	28.95	(+\$6)
1697	RM-75-S	75 Meter Resonator	50-60 kHz	49.95	39.95	(+\$6)
2411		80 Meter Resonator	50-60 kHz	49.95	39.95	(+ ^{\$} 6)

Accessories

Accessories						
Order #	Model	Item Description	List Price	Your Price	Ship.	
1963	BM-1	Bumper Mount	\$21.95	\$19.95	(+\$3)	
1964	C-29	Stainless Steel Spring 3/8" 24	17.95	15.95	(+\$3)	
1944	C-30	Chrome Plated Spring 3/8" 24	11.95	10.95	(+\$3)	
1965	C-32	Chrome Plated Ball Mount	11.95	10.95	(+\$3)	
1981	MO-1	Mobile Mast 15" Fold Point	31.95	24.95	(+\$5)	
1982	MO-2	Mobile Mast 27" Fold Point	31.95	24.95	(+\$5)	
1206	MO-3	54" Mobile Mast	23.95	19.95	(+\$4)	
2120	MO-4	22" Mobile Mast	19.95	16.95	(+\$3)	
0696	QD-2	Quick Disconnect 3/8" 24	19.95	16.95	(+\$2)	
2306	RSS-2	Resonator Spring 3/8" 24	9.95	8.95	(+ ^{\$} 2)	
2003	SSM-1	Ball Mount and Spring	46.95	39.95	(+\$4)	
2004	SSM-2	Ball Mount	26.95	20.95	(+\$4)	
2005	SSM-3	Stainless Steel Spring 3/8" 24	24.95	19.95	(+\$4)	

Orders: 800 431-3939

Information: 614 866-4267 Quality Equipment Since 1942



VHF/UHF Antennas

G7-144

A high-performance 2 meter vertical for fixed station or repeater operation. Frequency: 2 meters. 600 Watts. N-fitting. Gain: 7 dB. Height: 15.3 ft. Weight: 10 lbs.

List \$209.95 Order #1972

G6-144B

Solid construction and dependable performance make this antenna popular for repeater applications. Frequency: 2 meters. 600 Watts. SO-239. Gain: 6 dB. Height: 9.9 ft. Weight: 6.8 lbs. Order #1971 \$109.95 (+\$13) List \$149.95

G6-270R

Experience superior fixed station or repeater performance with this VHF/UHF fiberglass vertical antenna. Frequency: 144-148/430-450 MHz 100 Watts. Gain: 6 dB. Height: 102 inches. Weight: 6 lbs.

List \$208.95

Order #2918

\$149.95 (+\$17)

\$149.95 (+\$13)

CGT-144

2 meter collinear trunk lip mount mobile antenna. Gain: 5.2 dB. Length: 7.1 ft.

List \$51.95 Order #1967 \$45.95 (+\$4)

CG-144

2 meter collinear antenna only.

\$28.95 (+\$4) List \$31.95 Order #1966

CGT-220

220 MHz collinear trunk lip mount mobile antenna. Gain: 5.2 dB. Length: 4.9 ft.

Order #1968 \$45.95 (+\$4) List \$51.95

CG-220

220 MHz collinear antenna only.

\$28.95 (+\$4) List \$31.95 Order #0768

RX-2

2 meter 5/8 wave magnetic mount mobile antenna. Gain: 3.4 dB. Height: 50 inches. Order #0528

List \$24.95

SF-2

\$19.95 (+\$4)

2 meter 5/8 wave "Buckbuster" mobile antenna. Gain: 3.4 dB. Height: 50 inches.

List \$14.95 Order #1999 \$12.95 (+\$4)

SF-220

220 MHz 5/8 wave mobile antenna. Gain: 3.4 dB. Height: 31 inches.

List \$14.95 Order #0834 \$12.95 (+\$4)

MKR-2

Radial Kit to convert mobile antennas to fixed station operation.

List \$20.95 Order #1977 \$17.95 (+\$3)

Accessories

These mounts accept a 3/8" 24 thread antenna.

Order #	Model	Item Description	List Price	Your Price	
2067	GCM-1	Gutter Clip Mount with 180° Swival	\$12.95	\$12.95	(+\$2)
1975	HLM	Adjustable Trunk Lip Mount & 17' coax	22.95	19.95	(+\$3)
1976	HOT	Quick Disconnect Trunk Mount & 17' coax	23.95	20.95	(+\$3)
1980	MM-3	Universal Mount with 180° Swival & 17' coax	21.95	19.95	(+\$3)
0187	RVM	RV Mount with 180° Swival & 17' coax	20.95	17.95	(+\$3)
2007	TLM	Trunk Lip Mount & 17' coax	21.95	17.95	(+\$3)

YAESU

ROTORS

G-800SDX G-2800SDX





Yaesu rotators are precision-designed for a wide variety of antenna installations. Smooth and quiet in operation, these rotators are housed in weatherproof, die-cast aluminum enclosures and are permanently lubricated.

G-800S Medium Duty. Wind load: 16 sq. ft. List \$389.00 Order #1860 \$329.95 (+\$9)

G-800SDX Medium Duty. Wind load: 17 sq. ft. \$399.95 (+\$11) List \$499.00 Order #0863

G-1000SDX Heavy Duty. Wind load: 23 sq. ft. Order #0865 \$499.95 (+\$12) List \$599.00

G-2800SDX Extra Heavy Duty. Wind: 34 sq. ft. List \$1329.00 Order #0266 \$1099.00 (+\$14)

G-5500 Azimuth-Elevation

\$619.95 (+\$13) Order #0180 List \$719.00

TELEX. hy-gain

ROTORS

AR-40 Light Duty. Wind load: 3 sq. ft. \$229.95 (+\$8) List \$262.95 Order #2394

CD45 II Light Duty. Wind load: 8.5 sq. ft. List \$369.95 Order #2393 \$319.95 (+\$9)

HAM IV Medium Duty. Wind load: 15 sq. ft. List \$529.95 Order #2392 \$449.95 (+\$9)

HAM V with DCU Wind load: 15 sq. ft. \$729.95 (+\$12) List \$899.95 Order #0721

T2X Heavy Duty. Wind load: 20 sq. ft. List \$619.95 Order #2391 \$529.95 (+\$11)



TH7DXS

This seven element broadbanded tri-bander uses stainless steel hardware for all electrical and most mechanical connections. Frequency: 14, 21, 28 MHz. Gain: 9.6 dB. Boom length: 24 ft. Wt.: 82 lbs. Wind load: 9.4 sq. ft. Order #2475 \$749.95 (+ship) List \$811.95

TH5Mk2

The TH5Mk2 features five elements on a 19' boom with four active elements on 10, 15 and 20 meters. Gain: 9.0 dB. Wt.: 77 lbs. Wind load: 7.4 sq. ft. Order #2472 \$649.95 (+ship) List \$696.43



Antenna Specialists unique line of "On-Glass"® antennas transmit and receive through glass. These efficient antennas mount high on the vehicle for maximum operating range.

HM 151.3G

2 meter "On-Glass"® antenna. Frequency: 144-174 MHz tunable. Gain: 3.0 dB. Whip Length: 33" \$46.95 (+\$5) Order #1605 List \$51.75

ASC-191

This double-chain bumper mount will hold the heaviest of mobile antennas securely. \$44.95 (+\$5) Order #1630 List \$53.00

KAU 382

Reinstallation mounting kit for the "On Glass"® series of antennas. (Formerly HM 382) Order #1887 \$7.95 (+\$3) List \$8.50

TH3JRS

This tri-bander delivers top performance in a limited space. Freq: 14, 21, 28 MHz. Gain: 8 dB. Boom length: 12 ft. Wt.: 20 lbs. Wind: 3.4 sq. ft. \$319.95 (+ship) List \$324.95 Order #2382

Explorer 14

Enjoy tunerless edge-to-edge bandwidth on 10, 15 and 20 meters. Gain: 7.5 dB. Boom length: 14.1 ft. Wt.: 50 lbs. Wind load: 7.5 sq. ft. \$499.95 (+ship) List \$538.95 Order #2009



G5RV-E

This 80 to 10 meter dipole is fully assembled and ready to install with installation instructions. The antenna is constructed of 102 feet of heavy #14 (7/ 22) stranded hard drawn copper antenna wire and is center fed with 31 feet of 450 ohm balanced feedline. It includes a center insulator with eye hook. The feedline is terminated with a SO-239 connector for convenient hookup to coaxial cable. List \$28.95 Order #0341 \$27.95 (+\$5)

G5RV-JR

The G5RV-JR is similar to the G5RV-E above but covers only 40 to 10 meters, is only 52 feet long and has 17 feet of feedline.

List \$24.95

Order #2518

\$22.95 (+\$4)

G5RV-M

The G5RV-M is similar to the G5RV-E above but covers 160 to 10 meters, is 204 feet long and has 65 feet of feedline.

List \$49.95

Order #0835

\$47.95 (+\$6)



MFJ-931

Poor RF grounding can cause "hot spots", TVI/ RFI, RF feedback and weak signal reports. The MFJ artificial RF ground is designed to resonate a random length of wire thrown along the floor and produce a tuned counterpoise for your antenna. This artificial ground effectively provides your HF rig with near earth ground potential, improving performance and eliminating RF problems.

List \$79.95

Order #2176

\$74.95 (+\$5)

MFJ-1621

Operating on 10, 12, 15, 17, 20, 30 and 40 meters from virtually any location is made possible with this compact portable antenna. Housed in a small cabinet measuring only 6"x3"x6" with a 54" telescopic antenna, this unit is ideal for apartment or portable operations. Maximum performance can be achieved with a good counterpoise system such as the MFJ-931 Artificial Ground.

List \$79.95

Order #0561

\$**74.95** (+\$5)



AT-55

Only 55 feet long, this trap dipole provides efficient operation on four bands. Frequency: 10, 15, 20 and 40 meters. SO-239 feed.

List \$99.50

Order #1679

\$89.95 (+\$6)

AT-110

This popular five band trap dipole is only 110 feet long. Frequency: 10, 15, 20, 40 and 80 meters. List \$99.50 Order #1677 \$89.95 (+\$56

AS-40

Only 40 feet in length, this trap dipole gives good coverage on 10, 15, 20 and 40 meters. SO-239. List \$164.50 Order #0131 \$139.95 (+\$5)

AP-10

Designed for those who cannot erect a permanent antenna, the AP-10 attaches quickly to a window and with the aid of a counterpoise wire provides good performance on 2, 6, 10, 12, 15, 18, 20, 30 and 40 meters.

List \$69.95

Order #1676

\$**59.95** (+\$5)

AS-160

Nearly half the length of a full-size dipole, this efficient antenna gives excellent results on 20, 40. 80 and 160 meters. Length: 137 ft.. SO-239 feed. List \$164.50 Order #2444 \$139.95 (+\$6)

AS-80

For limited space installations this three-band dipole offers good performance on 20, 40 and 80 meters. Length: 78 ft. SQ-239 feed.

List \$127.50

Order #2443

\$109.95 (+\$5)

Antenna Safety

Installing base antennas can be dangerous! If you are unfamiliar with outdoor antenna installations request our free pamphlet titled Antenna Safety Advisory.

NI8F

Model	Item Description	List Price	Your Price	Ship.
301P	Medium Magnetic Mount 3/8"x24	\$25.40	\$19.95	(+\$3)
401P	Large Magnetic Mount 3/8"x24	31.70	24.95	(+\$3)
CX-144	5/8 Wave 2 Meter Base-loaded Mobile Ant.	17.90	14.95	(+\$3)
CX-5814	2 Meter Combo 1/4 & 5/8 Wave Mobile Ant.	45.90	34.95	(+ ^{\$4})
GM270	2m/ 70cm On the Glass Mobile Ant.	59.95	34.95	(+\$4)
MM144B	2m Mobile Mag-mount Ant. With BNC	42.60	29.95	(+\$4)
MM270B	2m/ 70cm Mobile Mag-mount Ant. With BNO	56.60	39.95	(+\$4)
PAM	Medium Mag-Mount Motorola Style	28.50	24.95	(+\$3)
PAQ-M	Compact 2 Meter Mag-Mount With BNC	22.90	19.95	(+\$3)
PAS	3/4" Hole Mount Motorola Style	19.90	12.95	(+\$3)
VAA-002	1/4 Wave 2 Meter Mobile Ant. With PL-259	23.90	18.95	(+\$4)
VAA-002BN	1/4 Wave 2 Meter Mobile Ant. With BNC	27.90	21.95	(+\$4)
	301P 401P CX-144 CX-5814 GM270 MM144B MM270B PAM PAQ-M PAS VAA-002	301P Medium Magnetic Mount 3/8"x24 401P Large Magnetic Mount 3/8"x24 CX-144 5/8 Wave 2 Meter Base-loaded Mobile Ant. CX-5814 2 Meter Combo 1/4 & 5/8 Wave Mobile Ant. CX-5814 2 Meter Combo 1/4 & 5/8 Wave Mobile Ant. CX-5814 2 Meter Combo 1/4 & 5/8 Wave Mobile Ant. CX-5814 2 Meter Combo 1/4 & 5/8 Wave Mobile Ant. CX-5814 2 Meter Combo 1/4 & 5/8 Wave Mobile Ant. CX-5814 2 Meter Mobile Ant. With BNC DXM MM144B 2 Medium Mag-mount Ant. With BNC DXM Medium Mag-Mount Motorola Style Compact 2 Meter Mag-Mount With BNC DXA-002 1/4 Wave 2 Meter Mobile Ant. With PL-259	301P Medium Magnetic Mount 3/8"x24 \$25.40 401P Large Magnetic Mount 3/8"x24 31.70 CX-144 5/8 Wave 2 Meter Base-loaded Mobile Ant. 17.90 CX-5814 2 Meter Combo 1/4 & 5/8 Wave Mobile Ant. 45.90 GM270 2m/70cm On the Glass Mobile Ant. 59.95 MM144B 2m Mobile Mag-mount Ant. With BNC 42.60 MM270B 2m/70cm Mobile Mag-mount Ant. With BNC 56.60 PAM Medium Mag-Mount Motorola Style 28.50 PAQ-M Compact 2 Meter Mag-Mount With BNC 22.90 PAS 3/4" Hole Mount Motorola Style 19.90 VAA-002 1/4 Wave 2 Meter Mobile Ant. With PL-259 23.90	301P Medium Magnetic Mount 3/8"x24 \$25.40 \$19.95 401P Large Magnetic Mount 3/8"x24 31.70 24.95 CX-144 5/8 Wave 2 Meter Base-loaded Mobile Ant. 17.90 14.95 CX-5814 2 Meter Combo 1/4 & 5/8 Wave Mobile Ant. 45.90 34.95 GM270 2m/ 70cm On the Glass Mobile Ant. 59.95 34.95 MM144B 2m Mobile Mag-mount Ant. With BNC 42.60 29.95 MM270B 2m/ 70cm Mobile Mag-mount Ant. With BNC 56.60 39.95 PAM Medium Mag-Mount Motorola Style 28.50 24.95 PAQ-M Compact 2 Meter Mag-Mount With BNC 22.90 19.95 PAS 3/4" Hole Mount Motorola Style 19.90 12.95 VAA-002 1/4 Wave 2 Meter Mobile Ant. With PL-259 23.90 18.95



A99

The Solarcon A99 is a half wave over a quarter wave variable mutual inductance antenna for 10 to 17 meters. It features the Solarcon twin ring Adjust-A-Match system to obtain the optimum SWR. Simply raise the rings to the raise the frequency or lower the lower rings to lower the resonant frequency. The rugged three-piece white fiberglass construction features triple plated brass fittings. 17.75 feet high. 3 dBi gain, power limit is 2000W Accepts PL-259 and mounts on a 1.5" mast (not supplied).

Order #1001

\$59.95 (+\$8)

SWR in the portion of the band you wish to operate. 10 Meters Order #3062 \$24.95 (+\$4) 15 Meters Order #0891 25.95 (+\$4) 20 Meters Order #0793 26.95 (+\$4) 40 Meters Order #0724 27.95 (+\$4)

Order #0643

NI8F dipoles are constructed with 14 gauge

stranded copper clad wire combined with Budwig

Hye-Que center and end insulators for strength and

durability. These quality dipoles are pre-assembled

for ease of installation (with your coax and PL-259

connectors). They are easily adjustable for low



80 Meters

FD3 **FD4 & FD4 2KW**

HF DIPOLES

This high-quality, German made, coax-feed dipole covers: 40, 20 and 10 meters. The FD3/4 series are coax fed Windom antennas.

FD3 (500w)

\$79.95 (+\$6)

29.95 (+\$5)

Order #3443 These high-quality, German made, coax-feed dipoles cover: 80, 40, 20, 17, 12 and 10 meters.

FD4 (500w) FD4 2K (2000w)

Order #3357

\$ 99.95 (+\$6) Order #3358 \$ 139.95 (+\$8)

SEALANT



If you have any type of outdoor antenna you should be using Coax-Seal® to protect any outdoor connection or connector. Coax-Seal is made of a non-conductive, non-contaminating waterproof substance that remains flexible at any temperature from -30° to 180°F. Coax connectors are not waterproof and exposed solder connections can deteriorate! Coax-Seal is superior to electrical tape or vinyl sealant for moisture protection. One box (60" x 1/2") will protect nine connectors. No charge for shipping on non-book orders over \$20.

Coax-Seal

Order #1194

\$2.49 (+\$2)

Universal Radio 6830 Americana Pkwv. Reynoldsburg, Ohio 43068



NMO-150

5/8 wave 2 meter mobile antenna. Frequency: 144 to 148 MHz Gain: 3.0 dB. Mount: Motorola. List \$30.70 Order #0850 \$27.95 (+\$4)

NMO-150B

Same as above but with black coil and whip. Order #1792 \$29.95 (+\$4) List \$33.20

NMO-2/70

Dual-band mobile antenna. Frequency: 144 to 148 and 440 to 450 MHz Gain: 2.4 dB (2 meters) 4.0 dB. (70cm). Mount: Motorola style. List \$48.50 Order #2852 \$39.95 (+\$4)

NMO-220

5/8 wave 220 MHz mobile antenna. Gain: 3.0 dB. Mount: Motorola style.

Order #1266 \$24.95 (+\$4) List \$30.00

NMO-440

Collinear 5/8 over 1/2 wave UHF mobile antenna. Gain: 5.0 dB. Mount: Motorola style. \$26.95 (+\$4) List \$29.30 Order #1270

NMO-Q

1/4 wave 2 meter mobile antenna.

List \$13.70 Order #1067 \$11.95 (+\$3)

NMO-QB

Black 1/4 wave 2 meter mobile antenna. Order #0764 \$14.95 (+\$3) List \$17.00

High-power Low Pass filter. Frequency: 1.8 to 29.7 MHz. Power Rating:

1500 watts continuous, 5000 watts peak. Attenuation: >80 dB at 54 MHz. \$**54.95** (+\$5) Order #1231 List \$70.00

ZA-1A

1: 1 ratio balun for dipole antennas. Matches 50-75 ohm coax lines to 50-75 ohm load. Frequency: 3.5 to 30 MHz Power Rating: 5000 watts peak. \$34.95 (+\$3) Order #0461 List \$40.00



020-001



Low-Pass filter. Power Rating: 2000 watts continuous, 5000 SSB. Attenuation: >65 dB. \$44.95 (+\$4) Order #2018 List \$56.00

KD4-136ST

Compact 2 meter Kulduckie® for Icom handhelds. \$15.95 (+\$3) List \$17.30 Order #1341

KD4-146

2 meter Kulduckie® antenna. \$15.95 (+\$3) List \$17.30 Order #1343

KD4-146HQ

Helical ¼ wave Kulduckie® for 2 meter HT's. Order #1075 \$19.95 (+\$3) List \$21.50

KD4-445

UHF Kulduckie® antenna for 440-450 MHz HT's. List \$17.30 Order #1765 \$**13.95** (+\$3)

KD4-2/70

Dual-band Kulduckie® antenna. Frequency: 144 to 148 and 440 to 450 MHz.

List \$27.70 Order #1569 \$21.95 (+\$3)

KD14-2MHW

High-performance telescopic ½ wave Kulduckie® antenna for 2 meter HT's.

List \$33.80 Order #2212 \$29.95 (+\$3)

KD14-440HW

UHF 1/2 wave Kulduckie® antenna for 440 to 450 MHz HT's

List \$33.80 Order #2213 \$29.95 (+\$3)

W2AU-AN

Order #0913

W2AU-1:1

1: 1 ratio balun for dipole antennas. Matches 50-75

Ohm coax lines to 50-75 Ohm load. Frequency:

1.8 to 40 MHz. Power Rating: 2000 watts PEP.

Order #2076

W2AU-4:1

Order #1888

W2DU HF

Maxi-Balun 1:1 ratio for dipole antennas. Fre-

quency: 1.8 to 30 MHz Power Rating: 5000 watts.

Order #2452

KW-40

40 meter traps for constructing multi-band dipole

antennas. Frequency: 7.150 MHz. Power Rat-

As above, but with 4:1 ratio.

\$8.95 (+\$3)

\$20.95 (+\$3)

\$20.95 (+\$3)

\$23.95 (+\$3)

Center insulator for wire dipole antennas.

Mounts & Accessories

Order #	Model	Item Description	List Price	Your Price	Ship.
2903	AD 2/70	Duplexer for 2 Meter and 70 cm	\$69.20	\$52.95	$(+^{\$}4)$
2182	BNC-MM	Mag-mount With BNC Connectors Both Ends	39.00	29.95	$(+^{\$}4)$
1039	NMO-CAP	Rain Cap for NMO Type Mounts	3.30	2.99	(+\$2)
1274	NMO-K	3/4" Hole NMO Style Mount	13.50	11.95	(+\$3)
0467	NMO-MMR	Round Mag-Mount for NMO Antennas	32.50	24.95	(+\$4)
1277	NMO-TLP	Trunk Lip Mount for NMO Antennas	26.50	21.95	(+\$4)
0598	РО-К	3/4" Hole Mount for PO (SO-239) Ant.RG-58	24.00	19.95	(+\$3)
2685	PO-MM-R	Mag-Mount for PO (SO-239) Ant.RG-58	40.70	29.95	(+\$4)
2686	PO-TLM	Trunklip Mount for PO Style Antennas	27.30	19.95	(+\$3)
1077	TMB-34	Stainless Steel "L" Mount With 3/4" Hole	4.70	3.95	(+\$2)

Van Gorden

HI-Q BALUN 1:1

1:1 ratio for dipole antennas. Frequency: 3 to 40 MHz. Power Rating: 1500 watts.

Order #1019

\$14.95 (+\$3)

List \$9.00

List \$24.00

List \$24.00

List \$26.00

HI-Q BALUN 4:1

4:1 ratio for dipole antennas. Frequency: 3 to 40 MHz. Power Rating: 1500 watts.

Order #0064

\$14.95 (+\$3)

HI-Q Center Insulator

Compact center insulator for dipole antennas. \$6.95 (+\$3) Order #2362

HI-Q Large End Insulators

These big 6.375" end insulators are great for longer dipoles and other antenna projects. (Pkg. of 2) \$4.95 (+\$3) Order #2873



Order #

3472 3473

3474

3475 3476

3477

3478

Valor now offers a new line of premium amateur antennas.

-yn	List \$42.00	Order #051	7 \$38.	95 (+\$3)
Model	Item Description	,	our Price	Ship.
PR2000	2M Non-Radial High-Gain Mobile Antenna		\$29.95	(+\$6)
PR2000C	2M Non-Radial High-Gain Mobile Antenna		39.95	$(+^{\$}7)$
PR7000	440 Non-Radial High-Gain Mobile Antenna		28.95	$(+^{\$}6)$
PR7000C	440 Non-Radial High-Gain Mobile Antenna		37.95	(+\$6)
PR2070	2M/440 High-Gain Mobile Antenna		29.95	(+\$6)
PR2070R	2M/440 Non-Radial High-Gain Mobile Anter	nna	39.95	(+\$7)
PR2070H	2M/440 Non-Radial High-Gain Mobile Anter	nna	39.95	(+\$7)

ing: 2000 watts. (Pair).

Orders: 800 431-3939 Information: 614 866-4267 Quality Equipment Since 1942

Universal Radio 6830 Americana Pkwy. Reynoldsburg, Ohio 43068



The new Icom IC-PW1 is a 1000 watt linear amplifier with built-in power supply. This state-of-the-art, heavy duty amp covers HF plus 6 meters. It features auto band changing, four antenna connectors and three cooling fans. The control head is removable and remoteable.

List \$5995.00 Order #2925 Please Call



JRL-2000F

The Japan Radio Company JRL-2000F amplifier is shown and described on page 51 of this catalog.



SG-500

The SG-500 Smart Power Cube™ is a linear amp for fixed, mobile or marine operation. It provides up to 500 watts output from 1.6-24 MHz. Requires 12 VDC at 40-90A. 11.4"x6"x12.3"



\$999.95 (+\$12)

VECTRONICS HF600B-QSK

List \$1195.00



The Vectronics LP-30 is a one stage class AB2 linear amp using an Amperex 8802 power triode tube. It operates from 1.8-24 MHz with 1000 watts PEP output, designed to provide reliable, stable, RF output power. It is equipped with a pressurized plenum cooling system to ensure optimum operation during extended periods of continuous use. List \$1595.00 Order #3386 \$1449.00 (+ship)

Order #3552

YAESU VL1000

Yaesu now offers the new Quadra System VL-1000 high performance linear amplifier covering 160 through 15 and 6 meter amateur bands. Combined with its matching VP-1000 power supply unit, the VL-1000 is a compact desktop design utilizing rugged MRF150 MOSFETs in a four-unit, push-pull configuration to provide 1000 watts output (500 watts on 6 meters). Automatic bandswitching is provided when used with such Yaesu transceivers as the FT-1000/D, FT1000MP, FT-900/920, etc. Three year limited warranty! List \$5990.00 Order #3641 \$3899.00 (+ship)

The MR-1000 mounting rack provides a convenient means of stacking the VL-1000 amp and the VP-1000 power supply.

List \$299.00 Order #3717 \$279.95 (+ship)

AMERITRON

AL-1200

AL-80B



Enjoy 1500 watts in all modes on: 15, 20, 40, 80 and 160 meters. 100 watts drive for full output. Requires: 240VAC 15A. Weight: 77 Lbs. (88 Lbs ship in 3 boxes).

List \$2295.00 Order #1063 \$1969.95 (+ship)

AL-1500

The AL-1500 uses a 3CX1500 tube to deliver 1500 watts CW with as little as 65 watts drive on 15, 20, 40, 80 and 160 meters. Requires 240VAC 15A. Weight: 77 Lbs. (88 Lbs. ship in 3 boxes). List \$2795.00 Order #3037 \$2399.95 (+ship)

AL-811A

This amp uses three tough 811A tubes to give you 600 watts of PEP output. 13.75"W x 8.65"H x 16"D. Weight: 31 Lbs. (40 Lbs. ship). List \$649.00 Order #1883 \$599.95 (+ship)

AL-811H

Like the AL-811A, but with four fully neutralized tubes for 800 watts.

List \$795.00 Order #2902 \$729.95 (+ship)

Universal will modify the Ameritron HF linear amplifiers for 10 meter operation at the time of purchase, with proof of your Amateur radio license, for \$20.



The AL-80B combines a single *Eimac 3-500* power tube with a heavy-duty tank circuit for up to 70% plate efficiency. Frequency: 15, 20, 40, 80 and 160 meters. Drive power: 85 watts for full output. RF Input power: SSB-1000 watts PEP, CW-850 watts. Power requirements: 120VAC 15A, 240VAC 7.5A. Weight: 48 Lbs. (58 Lbs. ship). List \$1295.00 *Order #0575* \$1199.95 (+ship)

AL-82

This new HF linear amplifier from Ameritron uses a pair of *Eimac 3-500* power tubes for full legal output power. Frequency: 15, 20, 40, 80 and 160 meters. Drive Power: 100 watts for full output. Requires: 240VAC 15A. Weight: 77 Lbs. (91 Lbs. ship in 3 boxes).

List \$2295.00 Order #2889 \$1999.95 (+ship)

ALS-600

This revolutionary amp is amateur radio's *only* linear amplifier that uses four rugged TMOS RF power FETs yielding unequaled no tune solid state performance. Output power is 700 watts PEP with continuous coverage from 1.5 to 22 MHz. Includes amplifier and 120/220 VAC power supply.

List \$1299.00 Order #1760 \$1129.95 (+ship)

MIRAGE

Mirage VHF/UHF amplifiers are designed for rugged reliable all-mode operation. There is a model offered for any portable or fixed station installation.

Ant connector types: B=BNC, U=UHF, N=N.

Order # Model Band In W Out W Mode Pre Ant Required Power List Yo	ur Price
2671 BD35 2 M/440 4 45/35 FM No U 12VDC at 6A \$159.00 \$14	9.95 (+\$6)
3469 B34 2 Meter 2 35 FM No U 12VDC at 5A 69.95 5	4.95 (+\$5)
3468 B34G 2 Meter 2 35 MM Yes U 12VDC at 5A 89.00 7 9	9.95 (+\$5)
1481 B310G 2 Meter 8 100 MM Yes U 12VDC at 15A 199.00 179	9.95 (+\$6)
2173 B215G 2 Meter 2 150 MM Yes U 12VDC at 25A 379.00 329	9.95 (+\$6)
0427 B1016G 2 Meter 10 160 MM Yes U 12VDC at 25A 379.00 329	9.95 (+\$6)
0428 B2516G 2 Meter 25 160 MM Yes U 12VDC at 22A 299.00 279	9.95 (+\$6)
0433 D26N 70 cm 2 40 MM Yes N 12VDC at 5A 269.00 249	9.95 (+\$7)
040F D4040N 70 40 400 NM N	9.95 (+\$7)
07FC D0040N 70 00 100 1111	9.95 (+\$7)

aconcept/



If you are looking for powerful, rugged VHF/ UHF all-mode amplifiers check out this new line from RF Concepts. Most of these amps feature GaAs-Fet receive preamps and high-SWR shutdown protection.

1	Oldel #	Model	Dana I	n w	Out w	Preamp	Ant	Required Power	List	Your Price
	2804	2/70G	2 M/440	5	30	Yes	В	12VDC at 4A	\$289.95	\$249.95 (+\$6)
ı	2714	Mini 144	2 Meter	3	30	No	U	12VDC at 5A	119.95	109.95 (+\$5)
I	1624	Mini 144P	2 Meter	3	30	Yes	U	12VDC at 5A	139.95	129.95 (+\$5)
ı	0264	Mini 440	70 cm	2	20	No	U	12VDC at 5A	129.95	119.95 (+\$5)
ı	3064	Mini 440P	70 cm	2	20	Yes	U	12VDC at 5A	169.95	149.95 (+\$5)
I	3083	4-110	70 cm	10	100	Yes	N	12VDC at 22A	399.95	369.95 (+\$7)
	2660	4-310	70 cm	30	100	Yes	N	12VDC at 20A	369.95	349.95 (+\$7)
										- 10.00 (1 /)

Amateur Accessories



HIGH PASS FILTERS



These high-pass filters connect to your TV or VCR to help reduce radio interference from CB or ham radios. Each filter has 9 shielded sections, a sharp cut-off at 52 MHz and over 80 dB attenuation below 50 MHz. (These items are not returnable).

The HP-300T version is for 300 ohm twin-lead installations. With screw terminals and 300 ohm lead. (Shown at the top above).

Ameco HP-300T Order #2915

\$12.95 (+\$3)

The HP-75T version is for coax feedline and is ideal for cable TV systems. With connector and short coax jumper cable (F to F).

Ameco HP-75T Order #2914

\$12.95 (+\$3) The Pouch

Constructed of resilient neoprene and nylon, the Pouch offers excellent protection for your HT. Pouch Super Small SS (6" High 6.375" Girth)

For: 2SAT/P2AT, TH27/45A, FT415 Order #3034 \$14.95 (+\$2)

Pouch Short S1 (6" High 7.375" Girth)

For: µ2AT/2GAT, TH21AT, FT23/33/411E For: TH28/48/77, DJ580 with small battery

Order #1591 \$14.95 (+\$2)

Pouch Short S2 (7" High 7.375" Girth)

For: C188/288/488/558, FT530, W2, 24AT

For: DJ180/580 with big battery

Order #1016 \$14.95 (+\$2)

Pouch Slim X (9" High)

For: 24AT/W2A/4SRA with long batteries \$14.95 (+\$2) Order #0129

Pouch Generic G (7.75" High 7.75" Girth) For: 460/560T, 2AT/02AT/32, TH215/225

\$14.95 (+\$2)

Order #0747

INTERMOD **FILTERS**



The good news is that most new amateur 2 Meter transceivers have wideband receive. The bad news is that they are very susceptible to intermod from 152-154 MHz pagers. The Par VHFDN152 notches out these frequencies while introducing only 0.3 dB insertion loss in the 2M band. May be left in-line for 2M/440 rigs too. SO-239 I/O.

Order #1898 \$59.95 (+\$4) VHFDN152

This version for HTs uses M/F BNCs.

\$64.95 (+\$4) VHFDN152HT Order #3491

DL-300M



The Vectronics DL-300M dry dummy load simulates an accurate 50 ohm antenna up to 150 MHz at 300 watts (ten seconds). 5"x2"x3"

\$32.95 (+\$3) List \$34.95 Order #3390

DL-650M

The DL-650M dry dummy load is rated at 1500 watts up to 650 MHz (VSWR 1.3: 1 at 500 MHz). List \$69.95 Order #3391 \$54.95 (+\$4)

LP-30 & LP-2500

The Vectronics LP-30 low pass filter is used between your transmitter and antenna, or tuner. Power capacity is 1500 watts continuous. Passband is 0 - 30 MHz. Cutoff is 35 MHz. 52 Ohms. List \$69.95 Order #3388 \$59.95 (+\$5)

The model LP-2500 is similar to the above, but with 2500 watts capacity.

List \$139.95 Order #3389 \$119.95 (+\$6)





This dry dummy load will handle 1500 watts for ten seconds or 100 watts for ten minutes. SWR is better than 1.3: 1 up to 650 MHz.

List \$59.95

Order #2256

\$54.95 (+\$4)

260C

This 50 ohm air-cooled 300 watt dry dummy load will handle a full load for thirty seconds to 30 MHz at 1.1:1 or 150 MHz at 1.5:1.

List \$29.95

Order #1314

\$27.95 (+\$4)

QSL CARD HOLDERS

These heavy-weight clear vinyl holders are perfect for protecting and displaying those prized QSL cards on your wall. The two card holders per package will each display twenty cards.

QSL Holder

Order #0719

\$6.95 (+\$2)

Please see page 73 for more ham accessories.



Break through the DX pileups! For the DX and contest operators the HC-4 mic element is the proven performer. Cables or adapters (such as CC-1) for microphones and head sets are not included.

When ordering a Heil microphone you must specify the radio type and mic element type.

This element is ideal for DX and contest work. List \$29.95 Order #2775 \$26.95 (+\$3)

HC-5

This element improves speech clarity for Icom. Order #2585 List \$29.95 \$26.95 (+\$3)

HM-10

Studio quality microphone (specify HC-4 or HC-5). Requires CC-1 cable #3249 \$22.95 specify brand. List \$89.95 Order #1893 \$79.95 (+\$3)

HM-10 DUAL

HM-10 mic with both the HC-4 and HC-5 elements. Requires CC-1 cable #3249 \$22.95 specify brand. List \$112.96 Order #2109 \$99.95 (+\$6)

FS-1

Footswitch with 7 foot cable and 1/4" phone plug. Order #0740 List \$26.95 \$24.95 (+\$3)



PRO SET

The Heil boomset is a favorite with DXers and contesters. The comfortable headband is fully adjustable and the mic boom is flexible. Requires AD-1

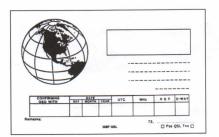
adapter cable #0083 \$13.95. Specify radio brand. List \$131.00 Order #2406 \$119.95 (+\$6)

PRO MICRO

Similar to the Proset, but smaller. Requires AD-1. \$89.95 (+\$5) List \$105.00 Order #1771

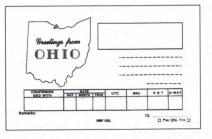
PRO-5

Like Proset, but only one earpiece. Needs AD-1. List \$120.00 Order #0331 \$109.95 (+\$5)



QSL CARDS

Ohio QSL Order #2350 \$3.95 (+\$2) Order #1116 \$3.95 (+\$2) Globe QSL



These high-quality blank QSL cards are printed on heavy 65# parchment stock and are offered in an assortment of colors. Provisions for all pertinent information is provided on the front side for your convenience. Pkg. of 100 QSLs.



330-001



Nye Viking offers the CW enthusiast an extensive line of quality straight keys, all featuring gold-plated heavy silver contacts, adjustable key action and heavy die-cast bases.

Ordord	Labal A	Ham Danadation			
Order #	# Model	Item Description	List	Your Price	Ship.
1365	300-002	Black painted heavy steel base only (no key).	\$17.00	\$13.95	(+\$2)
0797	310-001	Nickel plated key on black oval base.	40.00	32.95	(+\$3)
1368	310-003	Nickel plated key on black oval base with Switch.	45.20	34.95	(+\$3)
2266	312-001	Brass plated key on black oval base.	32.00	24.95	(+\$3)
0188	312-003	Brass plated key on black oval base with Switch.	39.00	32.95	(+\$3)
2302	320-001	Nickel plated key on black rectangular base.	44.00	34.95	(+\$3)
1369	320-003	Nickel plated key on black rectangular base with Switch.	51.20	42.95	(+\$3)
1370	322-001	Brass plated key on black rectangular base.	35.20	27.95	(+\$3)
0522	322-003	Brass plated key on black rectangular base with Switch.	44.00	34.95	(+\$3)
1371	330-001	Black "Master Key" with cable and heavy steel base.	72.00	54.95	(+\$4)
2831	404-001	Code Practice Set (without key).	37.00	34.95	(+\$3)
1378	404-002	Code Practice Set with 310-001 key.	67.00	54.95	(+\$4)

SCHURR



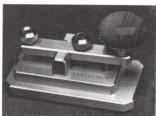
This solid brass iambic key is handmade in Germany. It comes complete with a dust cover and three conductor cable. A true collector's piece. Schurr 01 Profi Order #3231 \$229.95 (+\$6)



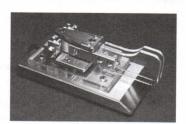
This small solid brass straight key is a marvel of machining. The wood knob may be cherry or mahogany. Handmade in Germany.

Schurr 40 MMK Order #3244

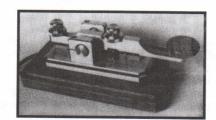
\$199.95 (+\$5)



This mini solid brass straight is made in Germany. Schurr 45 Mini Order #3366 \$169.95 (+\$5)



A beautiful mini iambic. The Portable Wabbler is great for the travelling ham. About 25% smaller than the Profi. Shown without supplied dust cover. Schurr P.Wabl. Order #3365 \$219.95 (+\$6)



A gorgeous brass full size straight key on a solid mahogany wood base. For the discriminating operator or collector. Handmade in Germany.

Schurr 50 MSK Order #3232

\$279.95 (+\$7)

AMECO

OCM-2W



The Ameco OCM2W is a combination code practice oscillator and CW monitor. It has a built-in speaker plus terminal connectors for headphones. A 9 volt battery and code key are required.

Order #0545 \$24.95 (+\$3)

BBENCHER, INC.

BY-2



Bencher paddles include gold-plated solid silver contact points. Order# Model Item Description List Price Your Price 0458 BY-1 lambic Black \$100.00 \$79.95 (+\$4) BY-2 lambic Chrome Plated 115.00 99.95 (+\$4) 0459 0460 BY-3 lambic Gold Plated 325.00 **259.95** (+\$6) 3258 BY-4 lambic Black & Gold 170.00 149.95 (+\$5) 3218 RJ-1 Hand Key Black 95.00 79.95 (+\$4) RJ-2 Hand Key Chrome Plate 110.00 89.95 (+\$4) 3219 0006 ST-1 Straight Black 100.00 79.95 (+\$4) 0559 ST-2 Straight Chrome Plated 115.00 99.95 (+\$4)

422D



This deluxe keyer fits directly over the supplied Bencher BY-1 paddle for a compact configuration. It has adjustable weight, tone, speed and volume. Requires 9V battery or MFJ-1312B #2433 \$12.95. List \$144.95 Order #0804 \$124.95 (+\$5)

422CX

401C & 407D

The MFJ-401C Econo Keyer II is for iambic, automatic, semi-automatic or manual keying with your favorite paddles. Requires 9V battery List \$49.95 Order #0325 \$46.95 (+\$4)

The MFJ-407D has the same features as above with front-panel mounted controls for speed, weight, tone and volume. Requires 9V battery. List \$69.95 Order #1324 \$64.95 (+\$4)





The **Ameco TK-1** is an economical practice code key with a black plastic base.

Order #3021

\$10.95 (+\$2)

The **Ameco TK-4** key has an oval brass-plated base, ball-bearing movement and shorting bar.

Order #3022

\$16.95 (+\$3)

Amateur Study Materials

W5YI Group NO-CODE EDUC. SOFTWARE





Study for your *No-Code Technician* license right at your *Windows 3.1/95 PC*. Review all questions, print out sample tests or take exams administered at your keyboard. Works with any printer. Easy to learn and use. Just follow the menu and you are on your way to earning your No-Code license. Includes Novice & Tech Class theory manuals. On 3½" PC disk. Requires Windows 3.1 or 95.

NCSW

Order #2135

\$29.95 (+\$3)

HAM OP. EDUC. SOFTWARE

This comprehensive educational software covers both the code and written tests for every amateur radio license Novice through Extra including the No-Code Tech. Review all 2000 actual questions, take practice exams, etc. Contains both 3½" and 5½" PC compatible disks. Includes Part 97 Rules. HOS

Order #1593

*34.95 (+*3)

HAM RADIO VIDEO COURSE

This easy-to-follow 88 minute VHS video seminar teaches what you need to know to get your FCC No-Code Technician ticket. The video covers: FCC regulations, operating procedures, radio propagation, electronic principles, station equipment, radio propagation, practical circuits, antennas and feedlines. Produced by W5YI and FMV Video Productions.

NCV Video

Order #2848 \$19.95 (+\$3)

NEW NO CODE PLUS

This book, written by the world famous author and teacher Gordon West, prepares you to quickly and painlessly earn your no-code Technician license. **GWTM Book**Order #0347 \$12.95 (+\$2)

HAM LICENSE MANUALS

These excellent license manuals by West can help you get your first ticket or upgrade quickly.

 General Class
 Order #3369
 \$11.95 (+\$2)

 Advanced Class
 Order #0062
 \$11.95 (+\$2)

 Extra Class
 Order #3256
 \$11.95 (+\$2)



HAM LICENSE MANUALS

See the exact questions and multiple-choice answers (correct answers provided) that are on the FCC amateur VEC tests:

 Codeless Tech.
 Order #0049
 \$12.95 (+\$2)

 Advanced Class
 Order #2056
 \$9.95 (+\$2)

 Extra Class
 Order #2057
 \$9.95 (+\$2)

CODEMASTER TAPES

Novice CM-1 Order
General CM-1½ Order
Extra CM-2 Order

Order #2126 2 Order #2127 Order #2128 \$12.95 (+\$2) \$12.95 (+\$2) \$12.95 (+\$2)

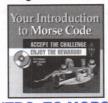
\$**12.95** (+^{\$}2) wрм, а

The shortwave spectrum is filled with Morse code signals (CW). Many DXers have found it desirable to attain at least a minimal working knowledge of Morse Code in order to identify these signals. We sell a variety of Morse tutorial tapes at Universal, and feel that the CodeMaster series is the best. This two cassette package is well narrated and easy to understand (includes transcript). It uses five letter groups to quickly take the listener to 8 WPM proficiency. Also great for those working towards the Novice amateur license! The Novice CM-1 covers 5-9 WPM. The CM-1½ covers 11-17 WPM, and the CM-2 covers 20-30 WPM.



Now You're Talking! is published by the American Radio Relay League and covers everything you need to

know to earn your first amateur radio license. More than a study guide; it will help you select equipment for your ham station and explain how to set it up - everything you'll need to know to get on the air! This book is a complete introduction to the exciting world of ham radio. Third Ed. ©1997 448 p. ARRL. Now You'reTalking Order #3657 \$18.95 (+\$2)



YOUR INTRO. TO MORSE CODE

Learn to copy Morse code so you can pass the 5 wpm code exam for either novice or technician+class. The Morse code characters are recorded at 18 wpm, but the spacing is increased to slow overall code speed to 5 wpm. With practice exams. ARRL. On two 74 minute cassette tapes or CDs. Intro Tapes Order #1082 \$12.00 (+\$2) Intro CDs Order #2930 \$14.00 (+\$3)

CODE PRACTICE TAPES

The ARRL code practice cassettes provide 3 hours of practice with words, sentences, random code groups, text and practice QSO's. Each set consists of two 90 minute cassette tapes.

 Set 1 (5-10 WPM)
 Order #0477
 \$12.00 (+\$2)

 Set 2 (10-15 WPM)
 Order #0678
 \$12.00 (+\$2)

 Set 3 (15-22 WPM)
 Order #2683
 \$12.00 (+\$2)

 Set 4 (13-14 WPM)
 Order #2997
 \$9.95 (+\$2)

HAM LICENSE MANUALS

The ARRL License Manuals provide the appropriate amateur examination question pool, complete with answer key.

 Technician Class
 Order #1184
 \$12.95 (+\$2)

 General Class
 Order #1926
 \$14.00 (+\$2)

 Advanced Class
 Order #1759
 \$12.00 (+\$2)

 Extra Class
 Order #1182
 \$12.00 (+\$2)





Learn Morse code anywhere, any time with the MFJ Pocket Morse Code Tutor. The LCD lets you see the code as it is generated. Adjustable from 3 to 55 WPM with normal or Farnsworth spacing. Only 3.75x2.25x1". Requires a 9V battery.

MFJ-418 Order #3537 \$72.95 (+\$5)

The **MFJ-414** is the *Cadillac* of all Morse code trainers. It is designed for ham clubs, schools and VE examiners. Includes: LCD readout, printer port, tape output and powerful audio.

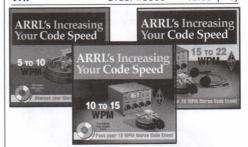
MFJ-414 Order #3087 \$189.95 (+\$7)





The folks at *CQ* magazine have created an exciting series of video tapes. Each topic is professionally presented in a simple but informative fashion. Each 50 minute VHS tape will educate and entertain you. A great way to learn ham radio!

Start Ham Radio Order #3137 \$19.95 (+\$3) \$19.95 (+\$3) DX'ina Order #3135 \$19.95 (+\$3) **Packet Radio** Order #3134 Amateur Satellites Order #3136 \$19.95 (+\$3) \$19.95 (+\$3) Contesting Order #2642 VHF Order #3303 \$19.95 (+\$3)



CODE PRACTICE CD SETS

Each ARRL CD set provides 2½ hours of Morse code practice on two audio CDs.

& Cobra®

2010GTLWX



The Cobra 2010GTLWX may just be the ultimate base station transceiver. The five digit digital frequency counter measures both AM and SSB operations. Two multi-function analog meters monitor power, SWR, modulation and signal strength. Also includes ANL, NB, RF gain, clock, voice lock, and cophase controls. Includes new dynamic base station mic.

Order #1825

\$399.95 (+\$9)



The Cobra 29LTDST Classic features: NB. ANL. illuminated S/RF/SWR/MOD meter. Also includes SoundTracker™, RF gain, and LEDs for RX, TX, and antenna warning. Cobra's SoundTracker™ technology significantly reduces the amount of static on all incoming CB signals. It is further optimized when two SoundTracker™ CB's are communicating.

Order #3682

\$129.95 (+\$8)

148GTLST



The Cobra 148FGTL Professional Series 40 channel SSB CB transceiver features a digital channel display and a full digital frequency readout. Other features include: SoundTracker™, ANL, NB, Hi/Low Dimmer, PA, Tone Hi/Low, Squelch and RF gain plus Dynamike and voice lock controls. Order #1626 \$239.95 (+\$8)

29LTDWX



No compromise SSB operation is yours with the Cobra 148GTLST. Combat noise with the SoundTracker[™] noise reducer. Other controls for CB/PA, Dim/Bright and Tone High/Low. With RF gain plus Dynamike and voice lock controls. Illuminated analog meter for S/RF/Cal/SWR. 8x2.5x9.6" Order #2019 \$199.95 (+\$8)

WASHINGTON



This respected single sideband base station from Uniden includes digital channel indicator, meter for RF, Signal strength and modulation. Instant channel 9, NB, ANL, headphone jack, RF Gain, and Mic Gain round out the features. 13.5"x11x5"

Order #3124

\$239.95 (+\$8)



The Uniden Grant mobile SSB 40 channel CB is full featured. Channel readout is by LED. Includes an integrated illuminated meter for SWR, Signal Strength, RF Output and modulation. With dimmer and clarifier controls. 7.78"Wx2.4"Hx9.5D"

Order #1188

\$159.95 (+\$8)



The Cobra 25 LTDWXST Classic has digital channel display, SoundTracker™, analog meter, Dimmer, CB/PA plus Dynamike and RF Gain plus switches for Ch. 9 and weather. 6.5Wx2.2Hx8.5D" Order #1997 \$119.95 (+\$8)



High-performance single sideband is yours at a very affordable price with this Uniden CB. Also features an LED signal strength indicator. With RF gain, clarifier, NL and NB. 6.2Wx2.2Hx8.25D" Order #3126 \$129.95 (+\$7)



The Uniden PC76XLW features ANL, NB, lit analog S/RF/SWR/Modulation meter & RF gain. With weather & instant chan. 9. 7.25Wx2.25Hx8.7D" Order #3125 \$129.95 (+\$7)

Order #1996 **19LTDII**

The Cobra 29LTDWX Classic has 7 built in weath-

er channels, NB, ANL, illuminated S/RF/SWR/

MOD meter. Also includes SoundTracker™, RF

gain, and LEDs for RX, TX, WX and antenna

\$139.95 (+\$8)



This classic style 40 channel CB features ANL. digital channel readout, illuminated S/RF meter and instant channel 9. 4.56"Wx1.785"Hx6.7D" Order #3068 \$54.95 (+\$7)



The Cobra 19DX contemporary styled 40 channel compact CB has an LED Signal Strength meter, TX LED and instant ch. 9. 4.6Wx1.76Hx6.7D" Order #2738 \$49.95 (+\$7)

warning.

Information: 614 866-4267 Quality Equipment Since 1942

Orders: 800 431-3939

G.P.S. and Specialty Satellite Receivers



On the heels of the revolutionary Garmin GPS II comes the Garmin GPS II Plus. It features a twelve parallel channel receiver for quick satellite acquisition and enhanced reception even in dense foliage. The GPS II Plus features a stateof-the-art two-way screen display for vertical or horizontal orientation. Like the GPS II, the II Plus features an external antenna for impressive reception, dedicated zoom keys, diagonal panning, auto start/stop trip timer, and average and maximum speed recordings. Four AA cells (optional) will provide up to 22 hours of accurate tracking and precise navigation. A total of 500 waypoints (9 nearest) are featured. 2.32"x5"x1.62" 9 oz. Order #2695 \$249.95 (+\$6) List \$386.35



With the Garmin GPS III, you can plan and watch your every move right on a moving map display. The high resolution maps show cities, roads, rivers, railroads and other land-based features. Screens for satellite status, position and compass are alos available. You can assign unique graphic symbols to waypoints, making them readily identifiable on the map. Four AA cells (optional) will provide up to 22 hours use. A total of 500 waypoints are featured. 2.32"x5"x1.62" 9 oz. List \$442.35 Order #3719 \$319.95 (+\$6)

The Garmin GPSIII+ is similar but can accept downloads from Garmin MapSource CDs. \$389.95 (+\$6) List \$571.80 Order #3719



The Garmin GPS 12 Personal Navigator is a trim 12 channel GPS that is just right for the camper or hiker. Its built-in antenna is effective even in dense forest and obstructed geographical areas. Quick and accurate positioning is in the palm of your hand. The large backlit display has six display formats: satellite status, position, moving map, navigation, compass and menu. Other key features include: 500 waypoints, 1024 trackpoints, 20 reversible routes, selectable graphic waypoint symbols, user-selectable data fields with maximum and average speed, trip timer and more. The TracBack features lets you retrace your path without marking waypoints. Needs 4xAA. 2.1x5.8x1.2" List \$231.80 \$169.95 (+\$5) Order #2655



You may never use a paper map again. Simply enter your destination and StreetPilot finds it on the map and shows you how to get there. This high performance 12 channel GPS features an adjustable high resolution LCD display. The builtin maps show interstates, US and state highways, country roads and rivers plus larger streets in metro areas. Optional metro map cartridges show street-level detail including hotels, airports and points of interest. Call Universal for optional metro map cartridges. Includes dashboard mounting bracket. Includes six AA cells.

List \$636.35

Order #1755

Please Call



GPS CAR ANTENNA

Does your GPS works great outside, but poorly in your car? The Lowe GPS magnetic mount auto antenna is the solution. This tiny 2" x 2" antenna mounts in seconds. With a 15 ft. mini-coax leadin and BNC plug, it works with virtually any GPS unit having an external BNC antenna jack.

Order #3766 \$69.95 (+\$3)

ı			Optional Accesso	71100		ď	ď	ď	ď	1
I	Order #	Model	Item Description Li	st Price	Your Price	ত	<u>5</u>	GP	5	ST
I	2601	1008200	Power-Data Cable	\$27.96	\$26.95 (+\$3)	7		1		25
l	2557	1008500	Cigarette Adapter	23.30	21.95 (+\$3)					
I	2635	1011100	Mounting Bracket	31.80	29.95 (+\$3)					
l	2370	1014100	P.C. Interface	38.09	34.95 (+\$3)					
١	2144	1016500	Cigarette Adapter & PC Interface	45.00	42.95 (+\$3)					
1	1287	CD R&R	MapSource CD Roads & Recreation	99.00	89.95 (+\$3)					
I	1263	CD World	MapSource CD World Map	99.00	89.95 (+\$3)					

Optional Accessories

UNIVERSAL ELECTRONICS, INC. SCPC-200



Attention C & Ku home satellite band dish owners! You can now receive hundreds of great SCPC (Single Channel Per Carrier) audio channels and services on your C or Ku band system. The SCPC-200 takes only minutes to hookup. Receive the full range of audio programming on 950-1450 MHz from your satellite system. Enter the frequency and you are there. The SCPC-200 does not disable your video when in use. Includes direct frequency readout, automatic LNB drift compensation, digital frequency lock and service name on LCD. 50 channel nonvolatile memory stores your favorite programming. AC wall adapter and full programming list included. May also be operated from 12 VDC. Output is to an 8 ohm speaker (not provided). 12"W x 1.75"H x 8"D 8 Lbs. Both the SCPC-200 and SC-50 are made in the U.S.A. \$399.95 (+\$8)

SCPC-200

Order #2039

UNIVERSAL ELECTRONICS, INC. **SC-50**



The SC-50 receiver will provide full-featured audio subcarrier services, music, sports, talk shows, news, religious programming, major radio stations, variety, public radio plus many other services and with no subscriber fees. The SC-50 will work with all C-Band and Ku-Band home satellite systems (not DBS systems). It takes only minutes to install and is simple and quick to tune. It features a 16-character display with direct frequency readout and a 50 channel memory for storing your favorite radio services. The SC-50 covers all FM² and audio subcarrier channels from 100 kHz to 9 MHz, an area filled with hundreds of free channels and programming. No need to change your IRD satellite receiver to tune all of the audio subcarrier and FM2 services. AC wall adapter and programming list included. Output is to an 8 ohm speaker (not provided). SC-50

\$374.95 (+\$8) Order #3590



HAM RADIO 2000 VOLUME 2

This may be the ultimate ham radio software collection. Over 7,000 files in 300 directories are included. All files are uncompressed and most can run right off the CD. Search for text in title or description through the entire CD! From Antennas to Yaqi. For: Win3.x/95. ©1997

Order #1757 \$14.95



PC ELECTRONICS PLUS **VOLUME 1**

This CD will assist anyone currently working in or pursuing the field of electronics. Includes: A-Filter, Circuit CAD, DC Circuit Analysis, EEDRAW. ELE-CALC, Circuit Designer, Electronic Tool Box, Micro-CAD, PC-Schematic, PC-Trace, RF Amp and more. For: DOS

Order #1273 \$14.95



PC ELECTRONICS PLUS VOLUME 2

This program selection for 1997 includes: ASP Amp Simulation, Meter Challenge, LECAD Circuit CAD. LoKon for Windows. Oscilloscope Tutor, Proto CAD 3D, Resolve Schema CAD, Panel for Windows and many more programs for Windows. For: Win3.x/Win95/DOS.

Order #0846 \$14.95



PC ELECTRONICS PLUS **VOLUME 3**

This new program selection includes tutorial circuit analysis, circuit design, schematics, CAD and many more great electronic programs. This CD has the ability to assist anyone currently working in or pursuing the field of electronics. For: Win3.x/Win95/ DOS

Order #3695 \$14.95



RADIO AMATEUR CALLBOOK CD

This CD of more than 1,490,000 licensed hams includes International and North American listings. Data display by callsign, name. street, zip, license class, issue and expiration, etc. Powerful search and label features plus 54,000 QSL managers. For: Windows/DOS.

Order #1769 \$49.95



QST VIEW

Back issues of QST are now available in CD-ROM format. Each page has been scanned to provide a black and white image that can be read on your computer screen or printed. Search by titles and authors too. For: Win3.x/95. Requires 14 Mb of HD. ARRL.

- QST View CD 1915-1929 Order #1101 \$39.95
- QST View CD 1930-1939 Order #2156 \$39.95
- QST View CD 1940-1949 Order #2167 \$39.95
- QST View CD 1950-1959 Order #2168 \$39.95
- QST View CD 1960-1964 Order #2170 \$39.95
- QST View CD 1965-1969 Order #2171 \$39.95
- QST View CD 1970-1974 Order #3563 \$39.95
- QST View CD 1975-1979 Order #3562 \$39.95
- QST View CD 1980-1984 Order #3561 \$39.95
- QST View CD 1985-1989 Order #3560 \$39.95
- QST View CD 1990-1994 Order #3559 \$39.95





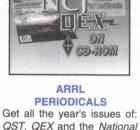






QST, QEX and the National Contest Journal on one CD-ROM. Includes a powerful search engine. Win.3.1/95 and 10 Mb of HD. ARRL.

- ARRL Periodicals 1995 Order #3144 \$19.95
- ARRL Periodicals 1996 Order #3165 \$19.95
- ARRL Periodicals 1997 Order #0324 \$19.95
- ARRL Periodicals 1998 Order #3775 \$19.95





ANTENNAS AND PROPAGATION

A collection of antenna design and propagation programs for hams and shortwave listeners. Most can be run under Win.3.1

Order #3812 \$14.95



GUIDE TO UTILITY STATIONS 1999

This popular guide by Klingenfuss is now on CD. 11,600 shortwave utility frequencies, updated as of 12/98 are featured, plus 1100 abbreviations. You also get 11,000 entries with SW broadcast schedules. Browse and search for frequencies, stations, callsigns, languages & countries. For: Win3.x/95/98. Order #2863 \$34.95



MR. SCANNER'S FCC FREQUENCY DATABASE

Includes: PD, FD, RR, Marine, Wx, Space, Air, Utilities and more. Ver. 2. Requires no setup. For: Win3.x/95.

CD SHIPPING

U.S.A. Add \$3 per CD for U.P.S. shipping.

Order #3376 \$29.95



ARRL HANDBOOK CD **VERSION 3**

The famous ARRL Handbook 1999 is now available in convenient, CD-ROM format, All text and illustrations are included plus a powerful search engine, audio clips, zooming controls and Windows printing and Clipboard support. For: Win3.x/95. Requires 486 CPU, 6 Mb of HD, sound card, VGA/SVGA and a mouse.

Order #2790 \$49.95



HARDWARE TECH 2000

The ultimate computer hardware reference collection of over 7000 uncompressed files and 680 directories. For: Win3.x/Win95.

Order #3694 \$14.95

CD SHIPPING

Outside U.S.A. Add \$5 per CD for surface shipping.



QRZ! HAM RADIO CALLSIGN DATA BASE

The QRZ callsign database has over 1.000.000 callsigns from American and foreign stations. Full databases for: USA, Australia, Austria, Brazil, Canada, Cuba, Israel, Italy, Mexico, Portugal, Taiwan and the U.K. Hundreds of amateur radio programs & mods. also included. For: Win3.11/95/98/ DOS/UNIX. Walnut Creek.

Order #0524 \$19.95



RADIO MODS 1998

2400 files covering 35 brands and 430 models. Alinco, AOR, Icom, Kenwood, R.S., Standard, Ten-Tec, Uniden. Yaesu, etc. For: Win3.x/95. Order #1470 \$14.95

PC REQUIREMENTS

Most CDs need: 8 Mb RAM. hard-drive & Win. 3.1x or 95.

Computer C.D.'s, Videos, Tape Recorders



HAM RADIO CLIPART

Here is a collection of 800 pieces of ham radio and electronics related clipart in either GIF, JPG, PCX or TIF format. Includes radios and accessories, logos and even 45 ham radio icons for Windows.

Order #3772 \$14.95



ASTRONOMY 2000

Here is the ultimate astronomy graphics and software collection. Over 200 programs, 1500 graphics and 4700 uncompressed files. Requires 486CPU or better. Order #3544 \$14.95

CD SHIPPING

U.P.S. shipping.



SCANNER FREQUENCY DATABASE #2

cies. Complete search capability on all data. Search by state, city or county on 100 different FCC radio codes. Now with Trunk Tracker codes. May 1998.

Order #2077 \$14.95



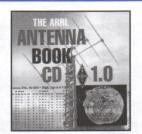
WEATHER 2000

Here is the ultimate weather software collection. You will get over 230 programs and 4100 uncompressed files. Please note that this CD reguires a 486CPU or better.

Order #3399 \$14.95

CD SHIPPING

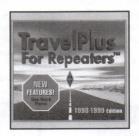
U.S.A. Add \$3 per CD for Outside U.S.A. Add \$5 per CD for surface shipping.



ARRL ANTENNA BOOK CD 1.0

Over 3 million radio frequen- A wealth of information on antennas, feed lines and propagation is provided in the ARRL Antenna Book. Now it is available on CD-ROM, plus you get over 70,000 pages of propagation tables.

Order #1768 \$39.95



ARRL - TRAVELLER PLUS FOR REPEATERS

Here is a great resources for any travelling ham. Choose your route and see which VHF/ UHF repeaters are in range. Includes color maps with major highways of USA & Canada.

Order #3608 \$39.95

PC REQUIREMENTS

Most CDs need: 8 Mb RAM, hard-drive & Win. 3.1x or 95.

HI - RES COMMUNICATIONS VIDEOS

Do you own any of the classic radios listed below? Would you like to look over the shoulder of an expert as he repairs and restores the radio? These professional VHS videos let you learn firsthand the proper way to service these classics!

Collins 75A-4

This VHS video is 4 hours of information on how to repair, maintain and restore this classic receiver. Butch Schartau, KØBS, guides you through all aspects of keeping your own 75A-4 running like a top!

4 Hours

Order #3791

\$89.95 (+\$4)

Collins R-390A

Here it is! Long awaited by serious "boat anchor" enthusiasts! The ultimate receiver now has the ultimate video to go along with it! R-390A expert Chuck Rippel, WA4HHG, covers an absolutely incredible array of information in this "heavy duty" video! This video looks at operation, its modules circuit description, front and rear panel details, complete mechanical and electrical alignment, PTOs, performance evaluation, modifications, troubleshooting and restoration.

7 Hours

\$109.95 (+\$4) Order #2500

Collins KWM-2

Highly detailed video on operation, rebuilding, alignment, troubleshooting and neutralizing of this classic! A must for anyone who owns and operates a KWM-2/2A. Printed documentation included. (2 VHS tapes).

4 Hours

Order #2106

\$89.95 (+\$4)

Collins 75S-3/32S-3

An in-depth examination of the most popular version of the S/Line. Operation, modification, alignment, neutralizing and more! Much of this information applies to all versions of the S/Line!

3.5 Hours

Order #3741

\$74.95 (+\$4)

Collins 30S-1

Finally, the one everybody has wanted! This extraordinary video describes operation and user safety, maintenance and modifications of this classic Collins amplifier. Very informative - truly a must for all 30S-1 owners. Printed documentation included.

1 Hour

Order #0632

\$39.95 (+\$4)

Collins 30L-1

A complete guide to the 30L-1 amplifier. Operation and safety, updates and a discussion of the 811A triode. Learn the secrets to greater performance.

1 Hour

Order #3501

\$39.95 (+\$4)

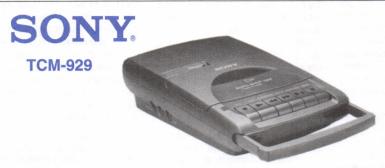
Hammarlund SP-600-JX

The Hammarlund SP-600-JX Video is another high quality video produced for the vintage radio enthusiast. Chuck Rippel, WA4HHG, of R-390A Video fame, covers the tools, equipment and techniques required to properly work on this receiver. He then takes you step by step through the proper operation, modification, restoration and alignment of this classic. One of the most important sections of this video, however, is when Chuck shows you how to replace every one of the old outdated capacitors which are found in most of the SP-600-JX receivers including the capacitors in the turret and RF strip! This is an area that many mortals have feared to tread! Chuck takes the mystery out of this very important part of any restoration! The benefits are immediately apparent when you listen to the improved audio coming out of the speaker. This video is a must for any SP-600-JX owner that wants to be able to maintain their own radio for many more years to come!

\$89.95 (+\$4) Order #0432 4 Hours

Orders: 800 431-3939

Information: 614 866-4267 Quality Equipment Since 1942



Are you looking for an economical way to record from your shortwave radio? The Sony TCM-929 may be the answer. It features a built-in mic, auto shut-off, a pause control, digital counter and cue-review. It operates from a supplied AC adapter or may be operated from four AA cells (not supplied). It is just right for making off-the-air tapes. The mic jack allows direct connection to most receiver's record output jack. Receivers with a high record-out level may require an attenuating patch cord (#3374).

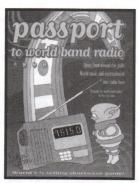
Sony TCM-929

Order #0449 \$24.95 (+\$6)

Mini plug to mini plug 6 foot attenuating patch cord. **Patch Cord**

Order #3374 \$3.69

Universal Radio



PASSPORT TO WORLD BAND RADIO 1999

By L. Magne. A <u>must have</u> book for every worldband listener. Provides complete visual data on all SWBC stations from 2.3 to 26 MHz. See at a glance: station name, location, frequency, time, language and power. Plus candid hard-hitting reviews on SW radios. World's #1 selling SW guide. Indispensable! *IBS*. 528 p.

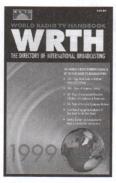
Order #1000\$19.95



PASSPORT TO WEB RADIO

By D. Walcutt. Learn how you can hear the world on your PC! Find the ultimate in sports coverage, along with every kind of music from AM, FM and SW stations throughout the world that broadcast on the Web. 1550 stations in 101 countries are listed. Very up-to-date. ©June 1998 IBS. Second Edition. 144 p.

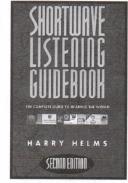
Order #2152 \$19.95



WORLD RADIO TV HANDBOOK 1999

Considered the SWL's *Bible* with schedules, frequencies and addresses of shortwave broadcast stations. Organized primarily by country. Also includes a by-frequency listing of shortwave broadcast stations, plus receiver reviews A publication for every shortwave listener. *WRTH Pub.* New 1999 Ed. 640 p.

Order #2000 \$24.95



SHORTWAVE LISTENING GUIDEBOOK

By Harry Helms. This noted author shares understandable information on: selecting and operating a shortwave receiver, antennas, time stations, pirates and much more. With tables and diagrams. Provides the reader with a solid understanding of shortwave radio. ©1993 Second Edition. Hightext. 323 p.

Order #2984 \$19.95



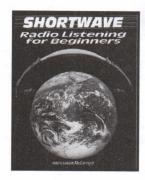
PIRATE RADIO (+ Audio CD!) Underground Illegal Broadcasting

RADIO RECEIVER - CHANCE OR

CHOICE ... and "MORE" By R. Lichte. This book reviews

major shortwave receivers made prior to 1985. We also include a second book; *More Receivers Chance or Choice* covering 14 more radios. ©1985 & 1987. *Gilfer*. Get **both** books at a great savings over the original publisher's price of \$31.45! This is a limited-supply closeout.

Order #0198 \$11.98



SHORTWAVE RADIO LISTENING FOR BEGINNERS

By Anita L. McCormick. The author makes it easy for beginners to learn how shortwave radio works, what equipment is available and where to find it. This book also generally discusses what stations can be heard and when. A very readable and interesting treatment. ©1993 *Tab* 173 p.

Order #0394 \$19.95

RADIO SCIENCE OBSERVING. VOL. 1

By J. Carr. Read about the hottest topics in radio: radio astronomy, propagation studies, whistlers and spheric hunting, using VLF, serching for solar flares, etc. This new book also includes an audio CD ROM containing examples of radio phenomina. First Edition. ©1998 Sams 413 p.

Order #0608 \$34.95



SHORTWAVE RECEIVERS PAST & PRESENT

By F. Osterman. Your comprehensive guide to over 770 shortwave, amateur and commercial communications receivers manufactured in the last 55 years. With photos and information including: coverage, circuit type, display, features, performance, new & used value, reviews, etc. Third Edition. 473 p ©1998.

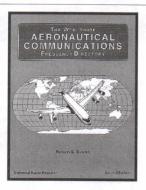
Order #0003\$24.95

"This book is a celebration of all the technology we shortwave folks hold dear. It is the ultimate resource for the shortwave radio lover. There were pages in this book that made my eyes damp."

N.A.S.W.A.

"If names like Hallicrafters, Collins and Eddystone make you pine for the glow of vacuum tubes and staticky voices from afar, this stylish compendium will keep you turning pages and sighing nostalgically."

U.S. News & World Report



WORLDWIDE AERONAUTICAL COMMUNICATIONS FREQ. DIR.

By R. E. Evans. The most complete and up-to-date aeronautical communications frequency directory ever! Over 2350 discrete frequencies with full commercial and military coverage, encompassing both voice and digital modes in the HF, VHF & UHF bands. *The* definitive aero reference. Second Ed. ©1994 *U.R.R.* 260 p.

Order #0042 \$19.95

"Quite simply the best and most authoritative book on aircraft communications." Short Wave Magazine

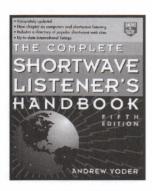
"The uncontested best book in the field. An invaluable source book."

Monitoring Times

"Comprehensive and fully informative. Applicable to the novice as well as to the advanced monitor. A book second to none. I could go all night with superlatives."

New Zealand DX Times

U.S.A. CUSTOMERS: NON-U.S.A. CUSTOMERS: Please add \$2 per title for bookrate 4th Class shipping (or \$3 per title for faster U.P.S.). Please add \$5 per title for bookrate surface shipping. Request a quote for airmail.



COMPLETE SHORTWAVE LISTENER'S HANDBOOK

By A. Yoder. Here is an A-to-Z guide for everyone from the beginner worldband listener to the advanced DX'er. Up-to-date information on equipment, worldwide stations, clubs, satellites and more. Also includes simple ways to improve reception plus dealer addresses. Fifth Ed. ©1997 Tab McGraw Hill 409 p.

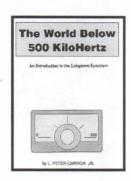




THE WRTH SATELLITE & TV HANDBOOK

in the world of satellite radio, satellite TV and terrestrial TV. It includes: satellite related subjects, 180 satellite coverage maps, worldwide TV channel information, transponder loading, and names & addresses of TV and satellite operators. ©1997 Billboard. Fourth Edition 366 p.

YOU CAN BUILD



THE WORLD BELOW **500 KILOHERTZ**

By Peter Carron Jr. A handy introduction to the world of longwave listening. Covers VLF, GWEN, Loran, Omega, ELF, Lowfers, frequency use, receiver and antenna information, tuning tips and much more. Not a beacon directory. @1985 Universal Radio Research 64 p.

Order #0289 \$4.95



THE HOW-TO GUIDE

By T.J. "Skip" Arey. Here is a very readable guide to listening to MW. SW VHF and above. ANARC says, Never has so much useful information about getting started in so many aspects of radio monitoring been packed into one book ... should grace the shelf of anyone in the radio hobby. ©1997 Index 337 p.

Order #3462 \$19.95



INSIDE THE MISSION CONTROL CENTER

By R. H. Nicholson. This book is your personal tour of the orignal Mission Control Center at the Johnson Space Center. A technical and comprehensive examination of NASA's nerve center prior to 1994. A great book for the space or communications enthusiast. ©1991 Universal Radio Research 96 p.

Order #0030 \$9.98



Here is a book for anyone interested

Order #2540\$24.95

The **Hidden Signals** on Satellite TV

THE HIDDEN SIGNALS ON SATELLITE TV

By Thomas P. Harrington. Read about the secret signals and hidden services on the C-Band 4 GHz satellites. Covers stereo subcarriers, telephone channels, news services, financial channels, SCPC, VBI, multiplex data channels and more. Third Edition ©1991 Universal Electronics 238 p.

Order #2770 \$19.95



TUNE SATELLITE RADIO ON YOUR SATELLITE SYSTEM

By Thomas P. Harrington. This unique book tells you how to receive all audio programing on the satellites, all sports, news services, music, talk shows, SCPC channels, FM2 services, weather and press photos and more. Includes latest Satellite Radio Guide. @1993 Universal Electronics 102 p.

Order #2465 \$16.95

SATELLITES TODAY

By Frank Baylin. Here is a complete and understandable guide to satellite television technology. Round out your knowledge of communications with this interesting and well illustrated title. This is an informative and readable book. Second Edition. ©1986 Universal Electronics 166 p. Close-out price.

Order#1325 \$3.98

RADIO RECEIVER PROJECTS

By H. Davidson. How to build 33 radio receiver projects from scratch - no experience necessary. Construct simple crystal sets, AM radios, two tube regen. radio, one tube shortwave radio, an IC speaker radio, a solar powered radio plus a direct-conversion SW receiver using the TDA7000 IC. ©1993 TAB 352 p.

Order #1846\$21.95

HOBBYIST'S GUIDE TO COMINT COLLECTION AND ANALYSIS

By T. Roach. Engaging in the esoteric art of secret and sensitive government communications intelligence may not be as difficult as you think. Here is a professional perspective on such monitoring. The extensive Russian maritime RTTY network is used as an example in this very informative book. ©1994 96 p.

Order #1311 \$19.95

GUIDE TO EMBASSY AND ESPIONAGE COMMUNICATIONS

By T. Kneitel. A candid and probing examination of worldwide embassy and (alleged) espionage communications systems and networks. An extensive nation-by-nation embassy station directory including callsigns, locations and frequencies is provided. Also covers UN, Red Cross and INTERPOL. ©1986 CRB 96 p.

Order #0480 \$10.95

BEVERAGE AND LONGWIRE ANTENNA DESIGN & THEORY

By N.R.C. The ultimate antenna for the medium wave DXer is examined in this booklet. ©1991 NRC. 67 p. Order #0533 \$7.95

VIEWING EARTH FROM SPACE By R.Buchanan. A guide to public domain radio-based imagery and weather services. ©1996 Woodhs.

Order #2724 \$23.95

U.S.A. CUSTOMERS:

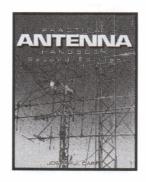
Please add \$2 per title for bookrate 4th Class shipping (or \$3 per title for faster U.P.S.). NON-U.S.A. CUSTOMERS: Please add \$5 per title for bookrate surface shipping. Request a quote for airmail.



DISCOVER DXING! HOW TO HEAR DISTANT AM, FM & TV STATIONS

By J. Zondlo. A great intro to DXing the AM, FM and TV bands. Topics include: propagation, seasonal conditions, equipment, antennas and reference materials. Chapters on: best bets for hearing 50 states on AM, clear channel AM stations and VHF TV stations by channel. Second Ed. ©1997 Univ. Radio. 90 p.

Order #0019\$5.95



THE PRACTICAL ANTENNA HANDBOOK

By J. Carr. This noted author provides a broad and understandable course on all types of antennas. Categories include: dipoles, verticals, multi-band wire, long-wire directional, hidden, phased verticals, beams, shortwave, VHF/UHF, marine, microwave, mobile antennas, and grounding. ©1994 TAB 439 p.

Order #0825 \$29.95



PIRATE RADIO OPERATIONS

By A. Yoder & E. Gray. If you yearn to learn the ins and outs of pirate radio this book is for you. This well illustrated book includes how to build equipment and antennas, outfitting a studio, when and how to broadcast, the F.C.C., unobtrusiveness, safety issues and much more. ©1997 Loompanics 364 p.

Order #1073 \$19.95



EMERGENCY SURVIVAL COMMUNICATIONS

By D. Ingram. Be prepared. Learn how to build home communications systems. Covers shortwave, ham, CB, scanners, weather, alternative news, equipment sources. Also how to build and use alternate emergency power sources: solar power, generators, backup batteries, Y2K, etc. ©1997 Universal Elect. 200 p.

Order #3691 \$19.95



THE EASY WIRE ANTENNA HANDBOOK

By Dave Ingram K4TW. The author gives you all the needed instructions and dimensions for a full range of easy to build amateur and shortwave antennas. No complicated formulas! Plus information on tuners, trans-matches and transmission lines. ©1992 Universal Electronics. 105 p.

Order #0296 \$9.95

TRANSMITTER HUNTING-

RADIO DIRECTION FINDING

By Moell & Curlee Learn how to use

transmitter hunting for both practical

purposes and for fun. Covers tech-

niques, inexpensive equipment,

dealing with weak signals, fox-hunt-

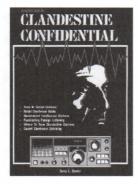
ing, triangulations, etc. Also covers

latest military DF technologies. For

hams, SWLs, scanner buffs, pilots

Order #0848 \$24.95

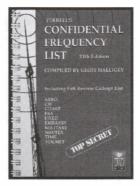
and boaters. ©1987 Tab 315 p.



SHORTWAVE CLANDESTINE CONFIDENTIAL

By Gerry Dexter. Here is the definitive guide to clandestine radio; past and present. Read about the well known clandestines of yesteryear like Radio Swan and Radio Euzkadi and about the clandestine broadcasters of today. Interesting historical and informative reading. ©1984 Universal Electronics. 84 p.

Order #0766\$4.95



THE CONFIDENTIAL FREQUENCY LIST

By Geoff Halligey. This long respected utility directory is bigger than ever with coverage of aero, CW, FAX, military, time, RTTY and maritime entries. Covers 1605-30000 kHz organized by frequency plus a new call sign cross reference. Spiral-bound 11th Edition. ©1998 PW Publishing. 450 p.

Order #1458 \$24.95

Older, Ninth Edition at a great closeout price! ©1994 *Gilfer* 386 p.

Order #3339 \$5.98

DX TIPS FOR BEGINNERS

By C. Mann. The author shares valuable insights in the areas of receivers, antennas, propagation, logging, QSL'ing and DX clubs in this concise "road map" for those getting started in world band listening. A very handy little beginner's reference. ©1992 32 p.

Order #0346 \$2.95

RADIO PROPAGATION FOR BEGINNERS

By C. Mann. An informative, nontechnical and readable introductory pamphlet covering the various modes of shortwave propagation. ©1994 16 p.

Order #0027 \$1.95



THE RTTY LISTENER RL 1-25

By Fred Osterman. This specialized book contains hard-to-find information on advanced RTTY and FAX monitoring techniques and frequencies. An interesting secondary reference for the advanced radioteletype listener. Compiles Newsletters 1 to 25. ©1991 *Univ. Radio Res.* 222 pages 8½" x 11".

Order #0943 \$19.95

THE RTTY LISTENER RL 26-30

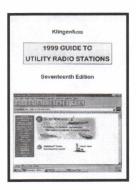
Compiles *RTTY Listener* Newsletters 26 to 30. ©1992 *U.R.R.* 103 p. *Order #2951*\$6.95

THE RTTY LISTENER RL 31-33

Compiles RTTY Listener Newsletters 31 to 33. ©1993 U.R.R. 48 p. Order #0377 \$4.95

U.S.A. CUSTOMERS: NON-U.S.A. CUSTOMERS:

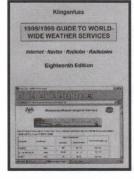
Please add \$2 per title for bookrate 4th Class shipping (or \$3 per title for faster U.P.S.). Please add \$5 per title for bookrate surface shipping. Request a quote for airmail.



1999 GUIDE TO UTILITY **STATIONS**

By J. Klingenfuss. The world's biggest and best guide to non-broadcast stations in the range of 0 - 30 MHz. Aero, maritime, military, diplomatic, time stations and more. Covers SSB, CW, AM and exhaustive RTTY. Thousands of changes since the last edition. Highly recommended. 17th Ed. ©1998 564 p.

Order #2940\$39.95



GUIDE TO WORLDWIDE WEATHER SERVICES

By J. Klingenfuss. Learn how you can get world wide weather information from: Internet locations, radiofax stations, radiotelex stations and satellites. Includes hundreds of sample charts, images and webpages. Very comprehensive and up-to-date. New 1998/1999 18th Ed. ©1998 Klingenfuss, 416 p.

Order #1754 \$34.95



RADIO DATA CODE MANUAL

By J. Klingenfuss. Combines the former: RTTY Code & Air and Meteo Code Manuals. More than 10,000 meteo station numbers and 11, 000 aero location identifiers, plus technical details on most HF RTTY teleprinter protocols and national Morse and teletype alphabets. Huge new 16th Edition @1998 784 p.

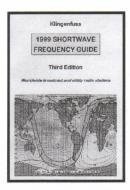
Order #3320 \$39.95



RADIOTELEX MESSAGES

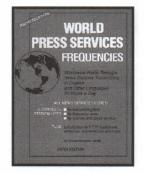
By J. Klingenfuss. Here you will see the actual results of 25 years of monitoring global teleprinter, fax and data communications by this noted author. Over 1004 actual sample messages and screenshots are provided with full technical details. Also includes: Q, Z and Telex codes. 1ST Edition @1998 568 p.

Order #1241 \$37.95



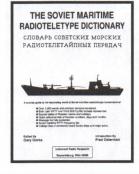
1999 SHORTWAVE **FREQUENCY GUIDE**

By J. Klingenfuss. This up to date guide has the latest 1999 shortwave broadcast schedules plus it includes abbreviated frequency entries from Guide to Utility Stations 1999. 568 p. Order #2859 \$39.95



WORLD PRESS SERVICES FREQUENCIES

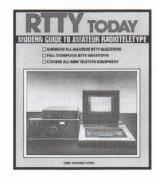
By T. Harrington. This book lists RTTY press stations by time, by frequency, by country and by service. Also reviews antennas, receivers and gear. Fifth Ed. @ 1991 UE. 84 p. Order #0989 \$8.95



THE SOVIET MARITIME RTTY DICTIONARY

By Gorka & Osterman. The single largest user of RTTY is the vast Russian maritime fleet. Learn how to find, decode and understand this traffic. @1988 U.R.R. 102 p.

Order #1635 \$9.95



RTTY TODAY

By D. Ingram. An older title, but still a great way to understand how radioteletype works. Covers the theory and equipment of HAM & SWL radioteletype. With photos, diagrams and setups. @1984 U.E. 112 p.

Order #0826 \$8.95

U.S.A. CUSTOMERS: Please add \$2 per title for bookrate 4th Class shipping (or \$3 per title for faster U.P.S.). NON-U.S.A. CUSTOMERS: Please add \$5 per title for bookrate surface shipping. Request a quote for airmail.

Klingenfuss Publications FREQUENCY LIST CD



The best selling 1999 GUIDE TO UTILITY STATIONS by Joerg Klingenfuss is now available on CD format. 11.600 shortwave frequencies. updated as of late 1998 are featured, plus 1160 abbreviations. As a bonus you also get 11,000 entries with the latest schedules of all international shortwave broadcast services. All this on one compact disk for PC's with Windows3.1™ or Windows95/98™. You can instantly browse all this information and search for specific frequencies, station names, call signs, languages and countries.

Order #2863 \$34.95 (+\$3)

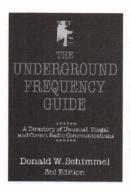
Klingenfuss Publications **AUDIO MODE CD SET**



Noted author Joerg Klingenfuss has produced an audio CD set of 71 emission types. This 21/2 hour, two audio CD set allows rapid access to the typical sound of all conventional and exotic shortwave transmission modes. Connect your audio CD player to your teletype decoder to practice tuning these modes. Synchronization is perfect as a result of digital recording techniques. Part 1.

Order #0220 \$69.95 (+\$3)

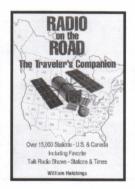
The new Part 2 contains 120 new recordings, again on two audio CDs. Order #0035 \$69.95 (+\$3)



THE UNDERGROUND **FREQUENCY GUIDE**

By D. Schimmel. A fascinating directory of unusual, illegal and covert radio communications. Anyone with a shortwave radio can eavesdrop on espionage-shadowy individuals and organizations- if they know where to tune. With hundreds of frequencies and informative commentary. Third Edition. ©1994 HighText 209 p.

Order #1713 \$14.95



RADIO ON THE ROAD -THE TRAVELER'S COMPANION

By W. Hutchings. This handy reference is designed for listeners on the go. It lists over 15,000 AM, FM and TV stations in the U.S. and Canada. It is organized by State, City and Station Format. Find the type of programming you want anywhere. Includes AK, HI and PR. Third Edition. ©1998 Arrowhead 339 p.

Order #3227 \$14.95

THE DX'PEDITION **HANDBOOK**

By S. Axelrod. This book will be of keen interest to MW DXer's. It details the preparation, execution and amazing results of the '91 & '93 Newfoundland AM-band DX'Peditions. Rare, exotic AM DX is possible! Informative and entertaining. (Does not deal with ham DX'Peditions) ©1994. National Radio Club 80 p.

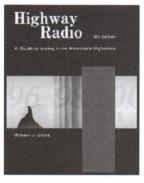
Order #3373 \$12.95



JOE CARR'S RECEIVING **ANTENNA HANDBOOK**

By J. Carr. This guide to high performance antennas is written in Joe's clear, easy to understand, friendly style. Arguably the best book devoted to receiving antennas for longwave through shortwave. An excellent book for the shortwave listener who likes to experiment with different antennas. ©1993 Hightext 189 p.

Order #3113 \$19.95



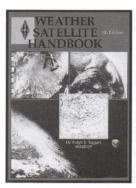
HIGHWAY RADIO

By W. J. Stank. Primarily for the traveller, this book shows you with maps for each state; cities with radio stations (AM and FM). On the adjoining page is shown the callsign, frequency, power and format. Also of interest to AM-FM DXers! Even includes TV stations listed by location. Fourth Ed. ©1994 ArcTrek 116 p. Order #0491 \$12.95

LOOP ANTENNAS -**DESIGN & THEORY**

By the National Radio Club. Every serious mediumwave DXer will eventually want a loop antenna. This compendium of studious articles by Gordon P. Nelson, Dallas Lankford and others, covers most aspects of medium wave loop design. Hard to find info for the MW DXer. ©1995 NRC 79 p.

Order #1254 \$12.95



THE WEATHER SATELLITE **HANDBOOK**

By Dr. Ralph Taggart. Dr. Taggart is the definitive authority on weather satellite reception. This new edition has been expanded and revised to reflect today's weather-fax satellite technology. It covers receivers, antennas, converters, formats, tracking and digital display projects. Fifth Edition. ©1994 ARRL 201 p.

Order #2853 \$19.95



NATIONAL RADIO CLUB AM RADIO LOG

By the National Radio Club. The most accurate and comprehensive guide to American and Canadian medium wave (AM) stations available. Organized by frequency, with callsign cross reference. Includes addresses for all stations! A must for every medium wave DX'er. 19th Edition. National Radio Club 310 p.

Order #1638 \$22.95

NATIONAL RADIO CLUB **NIGHT PATTERN BOOK**

By the National Radio Club. This book is a must for every serious MW DXer. This atlas type book contains 208 pages of maps and indices. Each AM frequency (except for six local channels) has its own map showing the night pattern of the AM stations (USA/Canada). @1996 4th Ed. National Radio Club 208 p.

Order #0981\$22.95



LATIN AMERICA **BY RADIO**

By Klemetz. This book covers the finer points of Latin American DXing. Topics include: how to identify stations, catchwords, slogans, regional speech patterns, addresses, music formats, brand names, sign-on/off announcements, time checks, anthems, PSAs plus numerous tips and tricks on QSL'ing. @1989 167 p.

Order #1010 \$23.95



FM ATLAS AND STATION DIRECTORY

By Bruce Elving. This unique book covers FM broadcast stations in North America. Maps are included for each state (and Canadian province) showing station call and location. It also includes station listings by location and frequency. @1999 Eighteenth Edition. FM Atlas Publishing approx. 220 p.

Order#1797 \$16.95

Buy the older Sixteenth Edition at a great close-out price! @1995

Order #0983 \$5.98

NATIONAL RADIO CLUB STATION MAP BOOK

By the N.R.C. This book is an aid and companion to the NRC AM Radio Log. It has a map for each MW channel and geographical coordinates for each station. 4th Ed. 11/97.

Order #2911 \$15.95

U.S.A. CUSTOMERS:

Please add \$2 per title for bookrate 4th Class shipping (or \$3 per title for faster U.P.S.). NON-U.S.A. CUSTOMERS: Please add \$5 per title for bookrate surface shipping. Request a quote for airmail.



BUYING A USED SHORTWAVE RECEIVER



ACCESS TO THE AIRWAVES MY FIGHT FOR FREE RADIO

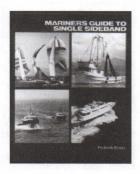
By A. H. Weiner. This biographical account of Allan Weiner, as told by Anita McCormick, is a powerful rendention of the trials and tribulation of an unconventional broadcaster. Interesting reading on some conventional and unconventional ways to get a broadcast station on the air. ©1997 248 p.

Order #0334 \$17.95

RADIO STATION TREASURY 1900 - 1946

By Tom Kneitel. This book, using faithfully reproduced rare and historic radio directory reprints, provides an overview of wireless as it evolved from the early years through the so-called *Golden Years* of broadcasting up to 1946 - the beginnings of the TV era. ©1986 *CRB* 176 p.

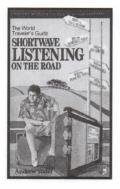
Order #0183 \$12.95



MARINER'S GUIDE TO SINGLE SIDEBAND

By F. Graves. Although this book is directed towards the ocean-going boater, it will be of keen interest to any maritime DX'er. It carefully reviews propagation, operating procedures, frequencies, antennas and call letters. Interesting! Third Edition. ©1992 SEA Inc. 136 p.

Order #1046 \$14.95



SHORTWAVE LISTENING ON THE ROAD

By A. Yoder. Don't leave your short-wave behind when you travel. Here is the specific frequency and programming information you need when traveling to: Africa, Europe, Asia, North America, South America and Oceania. Plus tips on how to build and install effective portable SW antennas. ©1996 TAB. 183 p.

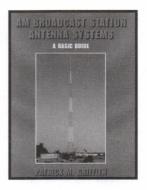
Order #0361 \$17.95

JOE CARR'S LOOP ANTENNA HANDBOOK

By Joe Carr. Chapters include: Loop Theory and Construction, Loop Projects, Quad Loop Beams, Small Loop Theory and Projects, Special Loops for Shortwave Bands, Loopstick Antennas, Radio Direction Finding, Small Loop Preamplifiers and Commercial Products. ©1999. Expected June 1999.

Order #0016 \$19.95

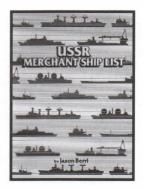
U.S. Customers please add \$2 per title for bookrate shipping. Non-U.S. Customers please add \$5 per title for bookrate shipping.



AM BROADCAST STATION ANTENNA SYSTEMS

By P.M. Griffith. This book is written for the AM radio hobbyists in easy to understand terms. This well illustrated guide answers your questions on AM propagation, classes of AM stations, the AM antenna, directional AM antennas plus definitions and resources. © 1998 Morris Publishing 65 p.

Order #3813 \$15.95



THE U.S.S.R. MERCHANT SHIP LIST

By J. Berri. This book lists hundreds of monitored Soviet ships by callsign and name and provides information on decoding the header information. An excellent secondary reference for the Russian RTTY enthusiast. ©1991 U.R.R. 72 p.

Order #3012 \$9.95

POPULAR COMMUNICATIONS YEAR SETS

Receive all 12 back-issues for 1992.

Order #3259 \$12.95 (+\$3)

Receive all 12 back-issues for 1993.

Order #3260 \$12.95 (+\$3)

Receive all 12 back-issues for 1994.

Order #2896 \$12.95 (+\$3)

Receive all 12 back-issues for 1995.

Order #3161 \$12.95 (+\$3)

Receive all 12 back-issues for 1996.

Order #0780 \$12.95 (+\$3)

Receive all 12 back-issues for 1997.

Order #3306 \$12.95 (+\$3)

Receive all 12 back-issues for 1998.

Order #2560 \$12.95 (+\$3)



THE COMPREHENSIVE GUIDE TO MILITARY MONITORING

By S. Douglass. Provides the information you need to effectively monitor all types of military communications on shortwave, VHF and UHF frequencies. Reviews equipment, systems, major military bases, monitoring play books and even black projects. ©1994 *Universal Electronics*. 280 p.

Order #3301\$19.95

LANGUAGE LAB

R.D.I. WHITEPAPER REVIEWS

By Larry Magne. These exhaustive reports (usually 12 to 20 pages) offer complete and unbiased evaluations and ratings on major receivers and topics. Magne pulls no punches as he meticulously analyzes and reports his findings. RDI. The following reports are available at \$5.95 each:

#2513

#3723

#2271

♦ AOR AR-3030

❖ Drake R-8B

 ♦ Drake SW-8
 #0411

 ♦ Icom R-71A
 #1612

 ♦ Icom R-9000
 #0702

 ♦ Japan Radio NRD-535
 #0772

 ♦ Kenwood R-5000
 #1869

 ♦ Lowe HF-150
 #0574

 ♦ Lowe HF-225
 #1803

 ♦ Sony ICF-2010
 #0586

 ♦ Sony CRF-V21
 #1012

 ♦ Yaesu FRG-100
 #2648

 ♦ Outdoor Wire Antennas
 #2937

♦ Outdoor Wire Antennas #2937
 ♦ How To Interpret and

Understand Specs.

Please add \$2 shipping per title.

CLOSE OUT TITLES

Please check the Universal Radio website under "USED EQUIPMENT" for close-out titles.

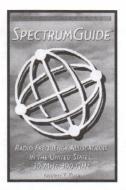
www.universal-radio.com



UNDERSTANDING ACARS

By E. Flynn. ACARS (Aircraft Communications Addressing and Reporting System) is a teletype mode is used for messages between commercial aircraft and airport ground stations. These transmissions at 131.55 MHz, can be heard on most scanners. This book will help you understand this interesting traffic. Third Ed. ©1995 U.R.R. 92 p.

Order #0012\$9.95



SPECTRUM GUIDE - RF ALLOC. IN THE U.S. 30 MHz - 300 GHz

By B. Z. Kobb. Here is a comprehensive professional reference to government, commercial and scientific radio services VHF to EHF. This book will tell you who uses what frequency ranges for all frequencies above 30 MHz. Third Edition @1996 New Signals Press. 375 p.

Order #1648 \$29.95

AIR SCAN

By T. Kneitel. A comprehensive guide to monitoring VHF aeronautical communications in the US & Can. Sixth Ed. @1995 CRB 143 p. Order #2960 \$18.95

NATL. SPORTS & REC. FREQ. DIR.

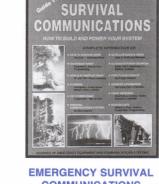
By R. Barnett. Get the frequencies for sports and recreational events. 3½"x6½" ©1994 ScanMast. 155 p. Order #1233 \$13.95



MONITOR AMERICA

By R. Barnett. Clearly the most comprehensive and accurate national scanner guide available. More than just a frequency directory; this impressive volume is full of maps, charts and tables to really help you understand what you hear. This huge Third Ed. is 21/4" thick and was printed in December of 1995. @1995 SMB 1108 p.

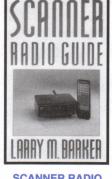
Order #2414\$29.95



COMMUNICATIONS

By D. Ingram. Be prepared. Learn how to build home communications systems. Covers shortwave, ham, CB, scanners, weather, alternative news, equipment sources. Also how to build and use alternate emergency power sources: solar power, generators, backup batteries, Y2K, etc. ©1997 U.E. 200 p.

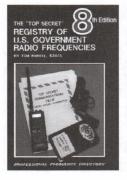
Order #3691 \$19.95



SCANNER RADIO GUIDE

By L. Barker. Get the most out of your scanner. Learn what scanner specifications and features really mean and how to select a scanner that is right for you. Provides hundreds of frequencies now in use. A very readable introduction. @1993 HighText 148 p.

Order #1956 \$14.95



TOP SECRET REGISTRY OF U.S. **GOV'T. RADIO FREQUENCIES**

By T. Kneitel. Thousands of Federal fregs. 25 to 470 MHz. covering: FBI, Secret Service, Immigration, Border Patrol, DEA, Customs, Indian Affairs, prisons, CIA, Treasury, NSA, FEMA, Coast Guard, NASA, FCC, military, NSF, NBS, CAP, Canadian listings and much more. Eighth Edition. ©1993 CRB 268 p.

Order #2192 \$22.95

SCANNER MODIFICATION

HANDBOOK

By B.Cheek. Step-by-step instruc-

tions to increase memory & scan

rates, improve performance, etc.

Primarily for: PRO-34/2004/2005/

2006/2021 and BC-200/205/760/

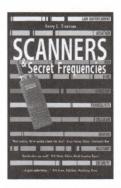
Order #1147 \$18.95

Order #0117 \$18.95

Vol. 2 More modifications.

950. ©1990 CRB.

Vol. 1



SCANNERS & SECRET FREQUENCIES

By H. Eisenson. Here is A to Z information about the scanning hobby. Discusses scanner design and modifications, computer aided scanning, monitoring telephone conversations, the FCC, military, aviation, law enforcement, federal and state laws plus much more. ©1993 Index Publishing 318 p.

Order #2950 \$24.95

THE ULTIMATE SCANNER CHEEK31

By B. Cheek. Bill's latest scanner modification book provides generic information for improviing many scanners. He then really zeros in on: PRO-34/37/39/43/2004/2005/2006/ 2035 and also covers other Realistic models plus Uniden: BC100/590/ 760/800/855/890/2500XLT and Icom R1. @1995 Index. 250 p.

Order #2817 \$29.95



RAILROAD RADIO

By V. Reh. Here is your ticket to railroad radio communications and systems. Includes: railroad radio history, modern comm. systems and systems use plus in depth coverage of scanners and accessories. ©1996 Byron Hill 198 p.

Order #3326 \$19.95



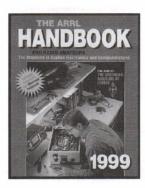
COMPENDIUM OF AMERICAN RAILROAD FREQUENCIES

By Sturm & Landgraf. An absolutely comprehensive and interesting railroad directory. Some maps too. 14th Edition @1996 Sturm 200 p.

Order #2782 \$16.95

U.S.A. CUSTOMERS: NON-U.S.A. CUSTOMERS:

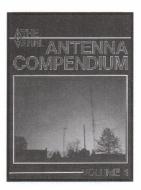
Please add \$2 per title for bookrate 4th Class shipping (or \$3 per title for faster U.P.S.). Please add \$5 per title for bookrate surface shipping. Request a quote for airmail.



ARRL AMATEUR RADIO HANDBOOK

By ARRL. All aspects of ham radio are covered in this massive volume. Nearly two inches thick! Considered the ultimate reference book for the radio amateur hobbyist. Also contains many practical, easy-to-build projects. Over 2100 tables, figures and charts. Softcover. 76th 1999 Edition. ARRL. 1200 p.

Order #3234\$32.00



ANTENNA COMPENDIUM

New material on verticals, quads, loops, yagis, reduced-size antennas, baluns, Smith charts and other subjects. Interesting & studious articles from 31 contributors. *ARRL*. **Volume I**. ©1985 175 p.

Order #0535 \$10.00

Volume II. @1989 208 p.
Order #1856 \$14.00

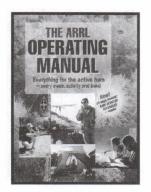
Volume III. @1992 236 p.
Order #3058 \$14.00

Volume IV. With software. @1995
Order #2333 \$20.00

Volume V. With software. @1995
Order #3564 \$20.00

NOW YOU'RE TALKING!

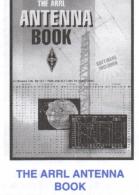
Everything you need to know to pass your novice or new *codeless* tech. exam. See page 77 of this catalog. *Order #3657* \$18.95



ARRL OPERATING MANUAL

The ARRL Operating Manual was written for hams by hams. It is packed with tips on basic operating, repeaters, packet, DX, traffic, emergencies, VHF/UHF, satellites, beam headings, contests, RTTY, QSL'ing and awards. Learn how to become a top operator! Sixth Edition. ©1997 ARRL.

Order #3626 \$25.00



By A.R.R.L. The classic reference on antennas for ham radio operators. A big favorite with shortwave listeners, too. Thoroughly covers all types of shortwave, VHF and UHF antennas. Very technical and comprehensive. Bundled with antenna related software on 3.5" PC disk. 18th Edition. ©1997 ARRL. 728 p.

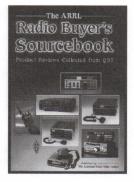
Order #1712 \$30.00



ANTENNAS & TECHNIQUES FOR LOW BAND DXING

By J. Devoldere ON4UN. Here is your ticket to low band success. Learn to master 160, 80 and 40 meters. The noted author shares the tips and techniques that can make your station a contest winner. Heavy focus on antenna systems from dipoles to vertical arrays. Second Edition. ©1994 ARRL.

Order #1483\$20.00



THE ARRL RADIO BUYER'S SOURCEBOOK Vol. 1

This book brings together in one easy-to-use volume, *QST* reviews on HF, VHF and UHF amateur radios and accessories prior to 1990. You will also find a history of ham gear, a glossary of features, performance charts and references. A valuable book whether you are buying your first or your eighth rig. ©1991 *ARRL*.

Order #2546 \$15.00

THE ARRL RADIO BUYER'S

SOURCEBOOK Vol. 2

Covers QST equipment reviews

from 1990 to 1991. @1993 ARRL.

Order #0190 \$15.00

1996 AMATEUR R. MAILORDER

CATALOG & RESOURCE DIR.

One-stop sourcebook for parts.

books, software & equipment. Over

2000 listings. ©1995 ARRL 250 p.

Order #3458 \$15.95



RF EXPOSURE AND YOU

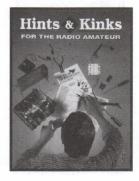
By E. Hare. Beginning Jan. 1, 1998 hams must comply with new FCC RF exposure requirements. This books tells you how to meet these requirements. You may not have to change anything. On the other hand, you just may have to change your antenna, your power or how often your transmit. ©1998 ARRL

Order #1071 \$15.00

W1FB's ANTENNA NOTEBOOK

By Doug DeMaw W1FB. This book tells you how to get the best performance out of unobtrusive wire antennas and dipoles. Also reviews simple vertical antennas. Learn how to build tuners and SWR bridges. A complete chapter on simple antenna measurements is also featured. ©1987 ARRL 122 p.

Order #0767 \$10.00



ARRL HINTS & KINKS

A compilation of ham radio knowhow gleaned from the pages of *QST* magazine from January 1992 through December 1996. Chapters include: Equipment Tips & Modifications, Batteries, Portable Stations, Construction, Test Gear, Antennas, Operating Techniques and RFI. 14th Edition. ©1997 *ARRL*.

Order #3650 \$12.00

W1FB's QRP NOTEBOOK

By D. DeMaw. You can work the world with 5 watts. Learn the excitement of low-power operating. Chapters include: Essentials of Receiving, QRP Transmitters, Accessories, the QRP Workshop and Operating QRP. Packed with many new circuits. ©1991 Second Edition. ARRL.

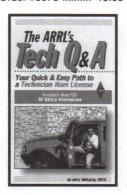
Order #2741 \$10.00

U.S.A. CUSTOMERS: NON-U.S.A. CUSTOMERS: Please add \$2 per title for bookrate 4th Class shipping (or \$3 per title for faster U.P.S.). Please add \$5 per title for bookrate surface shipping. Request a quote for airmail.



THE ARRL ELECTRONICS **DATA BOOK**

By D. DeMaw. Back by popular demand! This handy reference for the RF design engineer, technician. radio amateur or experimenter, has been fully revised and expanded. It is your one source for all those regularly used tables, charts and formulas. Also features hundreds of popular circuits. ©1988 ARRL 232 p. Order #3078 \$15.00



THE ARRL's TECH Q & A

By L. Wolfgang. If you want to get your technician ham radio license now, here is your book. It is a quick and easy study guide in the question and answer format. Brief explanations help you understand the correct answer to each question. For exams given until July 1, 2001. With new FCC safety info. @1997 ARRL 349 p. Order #1184 \$12.95

PRACTICAL WIRE ANTENNAS

By J. Heys. Wire antennas remain one of the most cost-effective means to put out a good signal on HF. This book covers everything from simple dipole antennas to multiwire systems including details on feeding and matching. An excellent book for the budget-minded amateur. ©1989 RSGB-ARRL 100 p.

Order #1138 \$14.00

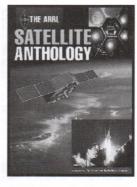


THE ARRL R.F.I. BOOK -PRACTICAL CURES FOR R.F.I.

By Ed Hare W1RFI. The author and a team of RFI experts have compiled the best advice available on every type of interference from automotive to TVI, from computers to lamps, from VCRs to stereos, from intermod to telephones. Here are the practical cures you need to effectively combat this problem. @1998 First Ed. ARRL.

Order #3378\$20.00

UNDERSTANDING **ELECTRONICS**



THE ARRL SATELLITE **ANTHOLOGY**

The best of the Amateur Satellite News column and articles from QST. You will find the latest information on Oscars 9 to 13, the RS satellites and Phase 3 satellites plus the Pacsats and Russian Easysats. Digital modes, tracking and antennas are discussed, too. ©1996 ARRL Fourth Edition. 150 p.

Order #1037 \$12.00



THE RADIO AMATEUR'S SATELLITE HANDBOOK

By M. Davidoff. Here is your ticket to the unique thrill of tracking and communicating through the ham satellites. Includes: History of Amateur Radio Satellites, Beginner's Guide, Operating, Tracking, Antennas, Orbits, Radio Links, Receiving & Transmitting and Onboard Systems. First Edition. ©1998 ARRL.

Order #1993 \$22.00

UNDERSTANDING BASIC ELECTRONICS

By L. Wolfgang. Here is the book that will teach you electronics without all the engineering terms and heavy math. Beginners will benefit from the clear concise explanations that come alive with drawings, cartoons and other illustrations. This is the fun and easy way to learn electronics. ©1992 ARRL 282 p.

Order #3163 \$20.00 **W6SAI HF ANTENNA**

HANDBOOK

By W. Orr. One of amateur radio's

most respected authors shares his

many years of knowledge and expe-

rience. This book is jammed packed

with dozens of inexpensive, practical

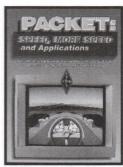
antenna projects that work. Includes

multi-band dipoles, 160M antennas,

yagi beams, G5RV antenna, baluns

Order #1881 \$19.95

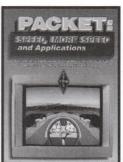
and more. ©1996 CQ 190 p.



PACKET: SPEED, MORE SPEED AND APPLICATIONS

If you are an experienced packet operator this new title will have you gearing up for high-speed chases and advanced packet techniques in no time flat. This book brings together a wide range of articles from QST. QEX, ARRL Computer Network Conference Proceedings and ARRL H.B. ©1997 ARRL Second Ed.

Order #1048\$15.00



YOUR ANTENNA COMPANION

By P. Danzer. A basic, readable, guide to understanding and building amateur antennas. ©1995 ARRL. Order #3459 \$12.00

NOVICE NOTES

By D. DeMaw. 22 QST articles for the novice on: awards, QSLs, logging, contests, 10 meter skip, antennas, filters, etc. ©1989 ARRL 68 p. Order #1044 \$6.00

The ARRI's

FCC RULE BOOK

Contains all the new Part 97 amateur rules. With full explanations. 11th Edition. ©1998 ARRL 314 p. Order #2409 \$12.00

YOUR PACKET COMPANION

Written for the beginner in an easyto-understand language. ARRL. Order #3174\$10.00

YOUR HF DIGITAL COMPANION By S. Ford. An intro. to the chang-

ing world of HF RTTY. ©1995 ARRL. Order #1375 \$10.00

YOUR VHF COMPANION

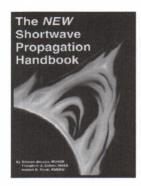
Explore the VHF bands; packet, satellites, ATV and more. ©1992 ARRL. Order #1447\$8.00

SECRET OF LEARNING MORSE

By M. Francis . A British book about learning CW. ©1997 Spa. 84 p. Order #3633\$7.95

U.S.A. CUSTOMERS: NON-U.S.A. CUSTOMERS:

Please add \$2 per title for bookrate 4th Class shipping (or \$3 per title for faster U.P.S.). Please add \$5 per title for bookrate surface shipping. Request a quote for airmail.



SHORTWAVE PROPAGATION **HANDBOOK**

By Jacobs & Cohen. A comprehensive review of the principles and theories of shortwave propagation prediction. Reviews: ionosphere, sunspot cycles, forecasting, unusual HF & VHF propagation, etc. Generous use of charts and diagrams makes it understandable for hams & SWLs. Second Ed. ©1995 CQ 150 p.

Order #2053 \$19.95



ALL ABOUT HAM RADIO

By Harry Helms. Here is an exciting new intro to ham radio written for the 90's. It is written in a direct, humorous way without a lot of math and technobabble. Perfect for the potential ham without a technical background. Geared towards those seeking a codeless tech. ticket. Very readable. ©1992 HighText 291 p.

Order #1109 \$19.95

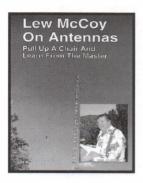
HAM RADIO HORIZONS: THE BOOK

By O'Dell. This introductory book covers what ham radio is all about and how to get started. ©1993 CQ. Order #3164 \$10.98

BEVERAGE ANTENNA HANDBK.

By V. Misek. An introduction to one of the most popular receiving antennas ever. ©1987 81 p.

Order #1691\$19.95



LEW McCOY ON **ANTENNAS**

By Lew McCov W1ICP. Pull up a chair and learn about antennas from the master. Here are just a few of the topics covered: Antenna Matching & SWR, Understanding Decibels. Transmatches & Antenna Tuning, Feedline Radio Problems, Wire Antennas, Rotary Dipoles, & Multimode Mobile Ants. ©1994 CQ 107 p.



UHF/MICROWAVE PROJECTS MANUAL Vol. 1

This book contains dozens of construction articles for transverters, preamplifiers, power amplifiers, antennas and test & measurement equipment. Some articles are previously unpublished, others are reprinted from QST, QSX and conference proceedings. First Edition. ©1994-96 ARRL 352 p.

Order #1845\$20.00

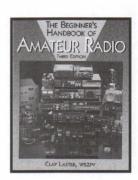
UHF/MICROWAVE PROJECTS MANUAL Vol. 2

19 more articles and papers reprinted from QST, QSX and conference proceedings. First Ed. @1997 ARRL

Order #3710 \$15.00

HAMSAT HANDBOOK

By Curtis. A complete history and frequency guide to the world of ham radio satellites. ©1993 Tiare 152 p. Order #2726 \$13.98



THE BEGINNER'S HANDBOOK OF AMATEUR RADIO

By C. Lester. Here in one easy-toread source, is all the information you need to pass the FCC Novice and No-Code technician license on your first try. More than a helpful test preparation guide, this book tunes you in to all aspects of radio communications. ©1994 Tab Third Edition. 395 p.

Order #0739 \$24.95



UHF/MICROWAVE EXPERIMENTER'S MANUAL

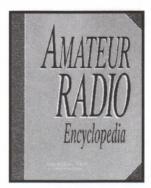
This book is written for amateurs with an interest above 420 MHz. It contains information on design and fabrication techniques, propagation, antennas and feed lines, transmission media, earth-moon-earth communications, microwave measurements and much more. First Edition. ©1990 ARRL 448 p.

Order #3247\$20.00

THE ARRL VHF/UHF RADIO **BUYER'S SOURCEBOOK**

Here is a compilation of nearly 100 highly regarded product reviews brought together in a single source. The reviews cover all types of VHF/ UHF gear including: amps, antenna, handhelds, single band, dual band and multimode transceivers. All reviews appeared in QST between 1990 and 1997. ©1997 ARRL.

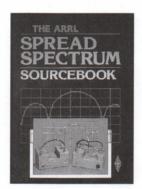
Order #3651 \$12.00



AMATEUR RADIO ENCYCLOPEDIA

By S. Gibilisco. The ultimate, fully illustrated A-to-Z reference packed with nearly 600 pages of alphabetically arranged articles on more than 1000 topics. This huge book gives you fast, easy access to virtually all aspects of the amateur radio hobby. ©1994 Tab 593 p.

Order #1164\$29.95



THE ARRL SPREAD SPECTRUM SOURCEBOOK

This new book contains reprints from nearly all spread spectrum articles from QST and QEX as well as many articles from the AMRAD Newsletter. It also includes reprints of official FCC documents showing how spread spectrum became legal on the amateur bands. First Edition. ©1991 ARRL 380 p.

Order #2207 \$20.00

LOW POWER COMMUNICATIONS

By R. Arland. An intro. to the challenging and fun world of low power (QRP) ham radio. @1992-1995. Tiare .

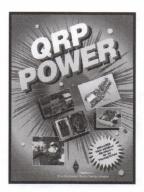
Vol. I - Basic QRP Operating

Vol. II - Advanced QRP Operating Order #2733 \$19.95

U.S.A. CUSTOMERS: Please add \$2 per title for bookrate 4th Class shipping (or \$3 per title for faster U.P.S.). NON-U.S.A. CUSTOMERS: Please add \$5 per title for bookrate surface shipping. Request a quote for airmail.

Orders: 800 431-3939 Information: 614 866-4267 Quality Equipment Since 1942

Order #1181\$14.95



QRP **POWER**

Are you ready for the QRP challenge? If you like operating with 5 watts or less, this is the book for you. It is crammed with projects you can build and resource information you can use. Includes the best recent QRP-related articles from QST, QEX and the ARRL Handbook. ©1996 ARRL.

Order #0307 \$12.00



VERTICAL ANTENNA CLASSICS

By R. Schetgen. A wide ranging compilation of previously published articles on the art and science of the vertical antenna. Chapters cover: theory, VHF/UHF, directional arrays, reduced size, radials and ground systems. Includes a handy antenna products supplier list. ©1995 ARRL. 123 p.

Order #2748 \$12.00

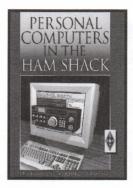
THE CQ AMATEUR RADIO **BUYER'S GUIDE**

Here is your reliable, unbiased guide to over 2100 ham radio products and 475 dealers and mfgs. ©1997 CQ. Order #1876 \$15.95

RADIO AURORAS

By Newton. What causes auroras. how they're forecast & how to best use them for DX. @1991 RSGB 94 p. Order #0879 \$17.95

at the intense and exciting challenge of contesting. ©1992 Tiare 73 p.



PERSONAL COMPUTERS IN THE HAM SHACK

By P. Danzer & R. Roznoy. This book explores the many ways you can enhance your enjoyment of the radio hobby by combining it with your computer hobby. It helps you choose equipment, operate digital modes, log and contest, design a circuit, test a new antenna and even use the Internet. ©1997 ARRL. 283 p.

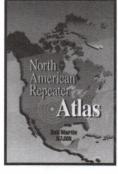
Order #0968 \$15.95



THE DXCC COMPANION

By J. Keearman KE1S. This book spells out in simple, straightforward terms, what you need to work your first 100 countries and be a successful DX'er. Includes the right and wrong ways to QSL. An inside guide to achieving the most coveted amateur award. ARRL 124 p.

Order #1057 \$8.00



THE NORTH AMERICAN REPEATER ATLAS

By B. Martin N7JXN. Every traveling ham needs this book. You will find: repeater maps for every US state and Canadian province plus Mexico. Central America and the Caribbean. Even street maps with repeater frequency for top twenty USA metro areas. Covers repeaters operating 10 meters to 1.2 GHz. ARRL 184 p.

Order #2615 \$12.00



PRACTICAL PACKET **RADIO**

By S. Horzepa. This book covers everything; whether you're setting up your first packet station or exploring TCP/IP, APRS or other advanced techniques. It reviews DX packet clusters, satellites, bulletin boards and more. Includes glossary of terms and the AX.25 protocol. ©1995 ARRL. 219 p.

> Order #2647 \$15.95 **ANTENNA IMPEDANCE**

> > **MATCHING**

By W. Caron. A technical discus-

sion of matching networks. ©1989

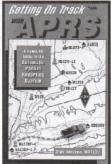
Order #3073\$20.00

HAM RADIO CONTESTING

By Halprin. A thorough how-to look

Order #2304 \$14.95

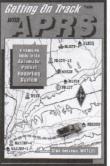
ARRL 204 p.



GETTING ON TRACK WITH APRS

By S. Horzepa. Here is a hands-on guide to the automatic packet reporting system. Anyone with a computer and a packet station can join the fun. APRS provides a real-time map display of participating stations. It is ideal for tracking moving stations when used with GPS. ©1996 ARRL. 166 p.

Order #2130 \$14.95



MORSE CODE - THE

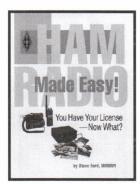
By Carron. A History of Telegraphy. Learning to Receive and Send, High Speed Ops., Distress Calls, etc.

ESSENTIAL LANGUAGE

Order #2291 \$6.00

BEYOND LINE OF SIGHT

By E. Pocock. A history and analysis of VHF propagation from the pages of QST. @1992 ARRL. 234 p. Order #3162 \$12.00



HAM RADIO MADE EASY!

By S. Ford WB8IMY. With a sprinkling of wit and opinion this book will get you on the air quickly and painlessly. You'll enjoy it and learn about repeaters, packet, satellites, the HF band and more. No jargon, no mindnumbing mathematics, just practical advice you can use right away. ©1995 ARRL. 202 p.

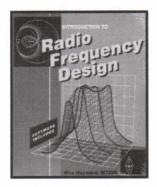
Order #0133 \$15.95

QRP NOW!

By Dave Ingram. This new book describes what is happening in QRP today. It includes: secrets of QRP success, QRP clubs, easy brew circuits and antennas plus power supply ideas. This is a very readable book about one the fastest growing areas of amateur radio. ©1998 Ingram. 96 p.

Order #3808 \$15.95

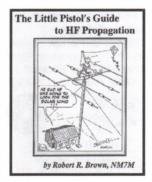
U.S.A. CUSTOMERS: NON-U.S.A. CUSTOMERS: Please add \$2 per title for bookrate 4th Class shipping (or \$3 per title for faster U.P.S.). Please add \$5 per title for bookrate surface shipping. Request a quote for airmail.



INTRODUCTION TO RADIO FREQUENCY DESIGN

By Wes Hayward W7ZOI. The author uses simple circuit models whenever possible and prepares the reader to actually design HF, VHF and UHF equipment. Includes related software on a 3½" PC disk. ©1994 ARRL. 400 p.

Order #0674 \$30.00



THE LITTLE PISTOL'S GUIDE TO HF PROPAGATION

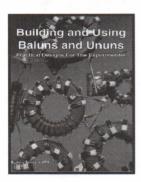
By Robert R. Brown. This book succeeds where most other propagation books fail. It covers the topic in an understandable manner without reliance on heavy math. This very readable guide will be a big help to any shortwave listener, "Big Gun" ham or "Little Pistol" ham. ©1996 Worldradio. 124 p.

Order #3519 \$10.00

DXING ON THE EDGE - THE THRILL OF 160 METERS

By J. Briggs. The unique excitement and thrill of operating the *Topband* is expressed in this excellent volume. Helpful information on antennas and operating techniques are included to help you snag the rare ones. Includes an audio CD of memorable long-haul 160 meter QSOs. ©1997 *ARRL*.

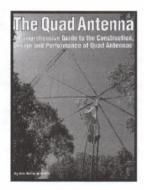
Order #3716 \$29.95



BUILDING AND USING BALUNS AND UNUNS

By Jerry Sevick. Dr. Sevick W2FMI is *the* authority on transmission line transformer theory. This book provides a unique opportunity to learn about the application of baluns and ununs for dipoles, yagis, log periodics, beverages, antenna tuners and countless other examples. ©1994 *CQ* 125 p.

Order #2538 \$19.95



THE QUAD ANTENNA

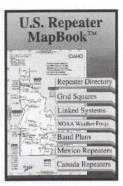
By B. Haviland. Here is your comprehensive guide to the construction, design and performance of quads. Includes circular, octagonal, rectangular and square loops, two element arrays, delta loops, multiband quad feed systems and more. ©1993 *CQ*. 159 p.

Order #0849 \$15.95

RADIO / TECH MODIFICATIONS

Useful modifications, alignments and adjustments for Kenwood and lcom transceivers plus some Uniden & Radio Shack scanners. Published for authorized licensed technicians only. ©1998 Artsci. Volume 11A.

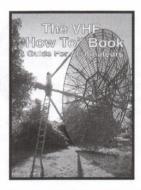
Order #0425 \$19.95 As above, but for Alinco, Yaesu, Stand. & some CBs. Volume 11B. Order #0279 \$19.95



U.S. REPEATER MAP BOOK

A "must" for every ham who is on the road. Includes maps for each state indicating popular repeaters and their frequencies. This covers repeaters operating from 10 meters through 1.2 GHz. Even lists linked repeater systems. Eighth Edition. 1998-1999 ©1998 Artsci. 208 p.

Order #0751 \$9.95



THE VHF "HOW TO" BOOK A GUIDE FOR ALL AMATEURS

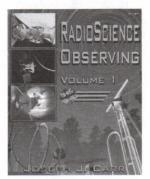
By J. Lynch N6CL. This book covers it all: designing your VHF station, antennas, repeater and simplex operation, satellite and packet operation, ATV, VHF propagation, contesting, Earth-Moon-Earth communications and DXing. ©1994 *CQ*. 124 p.

Order #3304 \$15.95

EVERYTHING YOU FORGOT TO ASK ABOUT HF MOBILEERING

By D.K. Johnson. This book is packed with tips from amateurs allover the country who have found a better way to adapt their mobile antenna installation to their specific needs. Much information, not available elsewhere is in this book. Many photos and figures. ©1997 Worldradio. 64 p.

Order #1439 \$8.00



RADIO SCIENCE OBSERVING. VOL. 1

By Joe Carr. Read about the hottest topics in radio: radio astronomy, propagation studies, whistlers and spheric hunting, using VLF, searching for solar flares, etc. Also includes an audio CD ROM containing examples of radio phenomena. First Edition. ©1998 Sams 413 p.

Order #0608 \$34.95



THE PACKET RADIO OPERATOR'S MANUAL

By Buck Rogers. An excellent reference written by a pioneer in Packet radio. ©1993 *CQ* 166 p.

Order #2622 \$15.95

SIX METERS - A GUIDE TO THE MAGIC BAND

By K. Neubeck. Insights into a truly unique band. ©1998 Worldrad. 95 p. Order #3381 \$11.95

AMATEUR RADIO MOBILE COMMUNICATIONS GUIDE

By R. Krautkremer KØYY. A wealth of information and experience shared on: mobile equipment selection, vehicle installations, vehicle grounding, mobile antennas, vehicle noise and RFI, RV and traffic nets, mobile Internet email access, special operating modes and more! ©1998 FMS. 96 p.

Order #3201 \$14.95

U.S.A. CUSTOMERS: NON-U.S.A. CUSTOMERS:

Please add \$2 per title for bookrate 4th Class shipping (or \$3 per title for faster U.P.S.). Please add \$5 per title for bookrate surface shipping. Request a quote for airmail.



VHF AMATEUR RADIO

By W. Orr. Covers VHF propagation and DX, repeaters, moonbounce and ham satellites. Also reviews vertical and horizontal mobile antennas, homebrew VHF beams and extensive coverage of coaxial cable type. ©1988 Published in 1993 Radio Amateur Callbook 172 p.

Order #1867 \$13.95



BEAM ANTENNA HANDBOOK

THE AMATEUR RADIO VERTICAL HANDBOOK

By P. Lee. For simplicity, versatility, economy and compactness, the vertical is hard to beat. Includes: design principals, impedance, directional verticals, stacking, 4-band verticals, the folded unipole & more. Second Ed. ©1984 *CQ* 132 p.

Order #0043\$9.95

THE COMPLETE DX'ER



INTERFERENCE HANDBOOK

By W. Orr & W. Nelson. This informative book covers the field of RFI from A to Z. How to locate and cure interference from CB, ham radio and power lines. It covers mobile, telephone, cable TV and computer problems as well. Second Edition ©1981 Radio Amateur Callbook. 192 p.

Order #0998 \$13.95

ARRL CIRCULAR CHART

This full-color 9½ inch circular frequency chart also



has: Q-Signals, UTC time conversion, USA call area map and phonetic alphabet. ARRL.

Order #1443\$7.95

RADIO AMATEUR ANTENNA HANDBOOK

By W. Orr & S. Cowan. This classic introduction to ham antennas covers both HF and VHF antennas. ©1978 Published 1993 Radio Amateur Callbook 187 p.

Order #0996 \$13.95

ALL ABOUT VERTICAL ANTENNAS

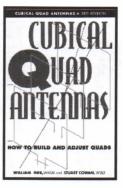
By W. Orr & S. Cowan. This well illustrated book covers the design, construction, installation and operation of 52 amateur vertical antennas. ©1986 Published 1993 Radio Amateur Callbook 192 p.

Order #2410 \$13.95

BEST OF THE NEW HAM COMPANION

An interesting and readable compilation of articles from *QST's* new ham section. ©1997 *ARRL*.

Order #1958 \$12.00



CUBICAL QUAD ANTENNAS HOW TO BUILD & ADJ. QUADS

By W. Orr & S. Cowan. This updated classic includes: Quad designs, dimension charts for quads from 6 - 80 meters, additional gain figures, quads versus yagis, etc. All abut delta quads, Swiss quads and birdcage quads. Third Ed. ©1972 Published in 1993 Radio Amateur Callbook 109 p.

Order #0991 \$13.95

ARRL REPEATER DIRECTORY

This famous 3¼" by 5¼" pocket sized guide has over 19,000 listings for repeaters operating from 10 meters

to over 1.2 GHz. Current Edition.

Order #3726\$8.00

THE ARRL REPEATER DIRECTORY THE AUTHORITATIVE SOURCE OF VHF-UHF REPEATER LISTINGS

ARRL RADIO NOVELS

The ARRL offers a series of short novels with amateur radio themes. Suspenseful, exciting and fun fiction!

Grand Canyon QSO

\$5.00
\$5.00
\$6.00
\$6.00
\$5.00
3
\$6.00
\$5.00
\$5.00



SIMPLE, LOW-COST WIRE ANTENNAS FOR AMATEURS

By W. Orr & S. Cowan. Provides instructions for building wire antennas from 2 to 160 meters; horizontal, vertical, multiband traps and beams, etc. Also covers "invisible" antennas. Exact dimensions are given in both feet and meters. ©1990 *Callbook.* 188 p.

Order #0997 \$13.95

NEAR VERTICAL INCIDENCE SKYWAVE COMMUNICATIONS



Both U.S.A. and International callbooks on one CD. See page 81.

Order #1769 \$49.95 (+\$3)

RADIO MAGAZINES

We carry the current month's edition of the following magazines:

- Popular Communications Emphasis: SWL & Scan Order #1220\$3.99
- QST

Emphasis: HAM

Order #0784\$4.95

■ 73 Amateur Radio Emphasis: HAM Order #1355\$3.95

■ CQ Amateur Radio

Emphasis: HAM Order #1216\$3.99

Please add \$2 shipping per title.

U.S.A. CUSTOMERS: NON-U.S.A. CUSTOMERS: Please add \$2 per title for bookrate 4th Class shipping (or \$3 per title for faster U.P.S.). Please add \$5 per title for bookrate surface shipping. Request a quote for airmail.

Order #1806\$6.00



SHORTWAVE RECEIVERS **PAST & PRESENT**

By F. Osterman. Your comprehensive guide to over 770 shortwave, amateur and commercial communications receivers manufactured in the last 55 years. With photos and information including: coverage, circuit type, display, features, performance, new & used value, reviews. etc. Third Edition. @1998 473 p.

Order #0003\$24.95



HALLICRAFTERS

By C. Dachis. A marvelous book with over 1000 big, sharp photos of radio receivers, transmitters, speakers, early TV sets and accessories from the famous Hallicrafters label. Technical descriptions of every known model including dates, new and current prices. Expanded Second Edition. @1999 Schiffer. 225 p.

Order #3809\$29.95



COMMUNICATIONS RECEIVERS THE VACUUM TUBE ERA

By R.S. Moore. This book reviews and reflects on the golden years of the vacuum tube receivers; 1932 to 1981. Key facts, features and photos of: Breting, Collins, Ecophone, Gonset, Hallicrafters, Howard, National, Hammarlund, McMurdo S., Drake, Sargent, RME, etc. Fourth Edition. ©1997 RSM 141 p.

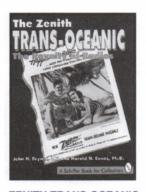
Order #2945 \$19.95



TRANSMITTERS EXCITERS & POWER AMPS 1930-1980

By R.S. Moore. Over 550 transmitters from 118 companies are featured in this excellent reference with 470 photos. Includes: B&W, Collins, Drake, Eldico, ETO, Galaxy, Gonset, Gross, Hallicrafters, Hammarlund, Harvey, Heath, Henry, Johnson, TMC, WRL, and more, ©1996 RSM 144 p.

Order #0338\$21.95



ZENITH TRANS-OCEANIC THE ROYALTY OF RADIOS

By J. Bryant & H. Cones. Here is the untold story of the world's most romantic and expensive series of portable radios. With a wealth of photographs, ads and documents. the authors tell the engrossing story of the 40 year history of this famous line of radios. A beautifully produced book. @1995 Schiffer. 128 p.

Order #0396 \$24.95



ZENITH RADIO: THE EARLY **YEARS 1919-1935**

By H. Cones & J. Bryant. Here is the documented story of the Zenith Radio Company from 1919 to 1935. A scholarly and comprehensive history with a wealth of never before published photographs, documents and information. Zenith & CRL radios produced in this period are illustrated. ©1997 Schiffer 224 p.

Order #3656 \$29.95 **200 METERS**

AND DOWN

By Clinton DeSoto. This book

chronicles the exciting evolution of

amateur radio from the wireless pio-

neers through the technical advanc-

es of the mid-1930's. It tells how the

ARRL came about and how the

League saved amateur radio from

oblivion during the early years.

©1936 reprinted 1981 ARRL 184 p.

Order #2269 \$8.00



ZENITH TRANSISTOR RADIOS - EVOLUTION OF A CLASSIC

By N. Smith. A complete guide to the wonderful Zenith transistor radio models made during the Magic Years 1955-1965. 226 Outstanding color photos document this exciting period. There is even a chapter describing popular models copied by other manufacturer Includes current values. ©1998 Schiffer 160 p.

Order #2860 \$29.95



THE HAMMARLUND **SHORTWAVE MANUAL 1937**

A short Hammarlund company reprint from 1937. Complete construction details on how to build the Skyscraper, the Dragnet receiver, the Doerle two-tube receiver, the Boy Scout receiver, the Argonaut receiver and the Ray Five-Meter set plus more! Third Edition. Lindsay 32 p.

Order #2837 \$4.95



RADIO MANUFACTURERS OF THE 1920'S

By Alan Douglas. A gorgeous "coffee-table" quality book covering early radio manufacturers. Stories, reprints and diagrams beautifully presented for the radio historian or collector. Sonoran Publishing 225p. Volume I, AC Dayton-J.B. Ferguson.

Order #2065 \$24.95 Volume II. Freed-Eismann to Priess. Order #0055 \$29.95 Volume III. RCA - Zenith.

Order #0934 \$29.95

HIRAM PERCY MAXIM

By Alice Clink Schumacher. This important book is a well written biography of the Father of amateur radio. His life and legendary contributions to ham radio are chronicled in this interesting publication. ©1998 Electric Radio. 216 p.

Order #1840 \$19.95

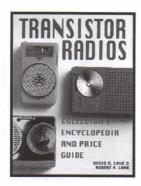
RADIO COLLECTOR'S DIRECT-ORY & PRICE GUIDE 1921-65

By R. Grinder. A comprehensive working directory of 20,000 vintage radio broadcast receivers made in the U.S. from 1921 to 1965. With manufacturer, model, year produced, features and current market value. Also includes trade-name to manufacturer cross reference. Second Edition @1995 Sonoran 500 p.

Order #0134\$29.95

U.S.A. CUSTOMERS: NON-U.S.A. CUSTOMERS:

Please add \$2 per title for bookrate 4th Class shipping (or \$3 per title for faster U.P.S.). Please add \$5 per title for bookrate surface shipping. Request a quote for airmail.



TRANSISTOR RADIOS: A COLLECTOR'S ENCYLP.

By D.&R. Lane. A definitive identification guide to 2,500 transistor radios with info. on where to find radios and how to determine value. Includes: model names and numbers, description, date and price. Plus glossary, mfg. list & clubs. @1994 W-H 176 p.

Order #2938 \$19.95 With slightly blemished binding. Order #3345\$9.98



RADIO-CRAFT 50 YEARS OF RADIO

By H. Gernsback. In March of 1938 Radio Craft magazine published a 50th jubilee anniversary issue. It's look back at five decades of radio is priceless. This quality reprint preserves the fervor and enthusiasm which characterized radio's Golden years. Over 100 radio ads plus landmark articles. Sonoran 143 p.

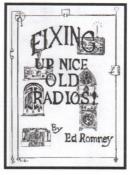
Order #2610 \$15.95



PHILCO RADIOS 1928 - 1942

By R. Ramirez and M. Prosise. Here is a superb reference book on Philco, the leading radio manufacturer during radio's Golden age. A year by year look at Philco's radio line from 1928 to 1942. Beautifully illustrated with 464 color and 87 B&W photos. Includes current values. ©1994 Schiffer. 160 p.

Order #2746 \$29.95



FIXING UP NICE **OLD RADIOS!**

By E. Romney. Learn old-time radio repair. Simple language and no higher math, this book will have you fixing those old Scott, Hallicrafters and Zenith radios in no time. Written in an understandable manner by an old radio instructor. Over 300 drawings and photos! 81/2" by 11" spiral bound. ©1990 Romney 185 p.

Order #2244\$28.95



KEYS. KEYS. **KEYS**

By D. Ingram. The popularity of collecting and using classic keys and bugs is increasing daily. This book contains views and information on all types of keys, sounders, paddles, finger pieces, spy keys, pump keys and many rare keys. Plus numerous hints on collecting and refurbishing keys. Many photos. ©1991 CQ 96 p. Order #0086\$9.95

KEYS II: THE EMPORIUM

By D. Ingram. See the world's most famous, exotic and glamorous keys. Each is shown and described in detail with side notes on production dates and price values. Includes telegraphy's first keys, all Vibroplexes from beginning to 1995, QRP keys, vertical bugs, a wind-up bug, 3-lever bug, cricket paddle and much more. ©1995 Ingram. 77 p.

Order #3409 \$15.95

U.S.A. CUSTOMERS:



OLD TIME RADIOS! RESTORATION & REPAIR

By J.Carr. Here you'll find the history, theory and practical operation behind old-time radio sets, and the schematics needed to repair and rebuild them. Also includes valuable information on power supplies, components, test equipment and repairing water damaged radios. Loaded with diagrams. ©1991 Tab 251p.

Order #2815 \$19.95

VIBROPLEX

COLLECTOR'S GUIDE

By T. French. This book traces the

rich history of the famous Vibroplex

"bug". This newly expanded Second

Edition features many patent and ad

reprints. Find tips on dating bugs,

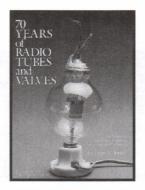
methods of adjustment, variations in

models including how to distinguish

the seven look-alike models and

more. ©1996 Artifax Books 126 p.

Order #3546 \$19.95



70 YEARS OF RADIO **TUBES AND VALVES**

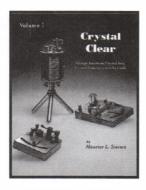
By J. Stokes. Here is the complete story of the thermionic vacuum tube from 1880 to 1960, tracing technical developments in Britain, Holland, Germany, Canada and America. Includes tube company histories. An excellent identification guide with 700 different tubes pictured. ©1982 Sonoran 247 p.

Order #2045 \$29.95 PERERA'S TELEGRAPH

COLLECTOR'S GUIDE

By Tom Perera. This small, but valuable book is packed with information, 250 black & white photos and values for hundreds of keys, sounders, relays, etc. Particularly good coverage of American and foreign military keys. A great reference for new or experienced key collectors. @1998 Artifax Books 80 p.

Order #0818 \$10.00



CRYSTAL CLEAR VOLUME 1

Bv M. Sievers. An excellent identification guide for collectors and an enjoyable way to relive the days when building a crystal radio and searching for a sensitive spot on the galena was a standard experience. Hundreds of photos and magazine ads identify almost 1000 models of crystal radios. Sonoran 282 p.

Order #0581 \$29.95

CRYSTAL CLEAR **VOLUME 2**

By M. Sievers. This new publication picks up where Volume 1 left off. It identifies an additional 172 vintage crystal sets, 91 crystal detectors and 26 crystals. It features over 350 photographs and 160 reproduced advertisements of crystal radio products made between 1910 and 1960. ©1995 Sonoran 252 p.

Order #0664\$29.95

NON-U.S.A. CUSTOMERS:

Please add \$2 per title for bookrate 4th Class shipping (or \$3 per title for faster U.P.S.). Please add \$5 per title for bookrate surface shipping. Request a quote for airmail.

Books - Radio History & Collecting



TRANSISTOR RADIOS 1954-1968

By Norman Smith. Get ready for a nostalgic trip back to the heyday of portable music. Over 1000 American and Japanese models are featured with 469 absolutely gorgeous color photos on quality glossy paper. This very complete guide includes current values. ©1998 Schiffer 160 p.



ANTIQUE RADIO RESTORATION GUIDE

By David Johnson. This book provides basic and straight forward techniques on repair and refinishing to guide you in bringing back the magic of that charming old radio. Includes hundreds of photos and diagrams plus an informative glossary. Expanded Second Edition. ©1992 W-H 160 p.

Order #1217 \$14.95





COLLECTOR'S GUIDE TO TRANSISTOR RADIOS

By Marty & Sue Bunis. These famous authors have produced an acclaimed directory of 2500 collectable transistor radios illustrated with over 400 full color photos. Key information of model, description, size, year and current value range is provided. Second Edition. @1996 Collector Books. 320 p.

Order #0676 \$16.95



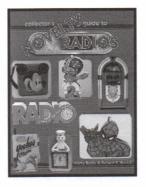
RADIOS REDUX LISTENING IN STYLE

By Philips Collins. Here is a dazzling collection of vintage radios that were created in a remarkable era of product design marked by unparalleled ingenuity and innovation. Full-color photographs depict every detail of these classic radios from the popular Bakelite models and Kadette Classics to whimsical Detrola "Pee Wees" and sleek Silvertones. ©1991 Chronicle 119

Order #1762 \$17.95

FROM SPARK TO SPACE -**75 YEARS OF AMATEUR RADIO**

By the A.R.R.L. This profusely illustrated hardbound book traces the historical path of amateur radio and the American Radio Relay League from 1914 to 1989. From spark gap generators to "Oscar I" and more, this diamond anniversary, special publication belongs in every ham radio operator's library. ARRL. 95 p. Sale! Order #0464\$9.98



COLLECTOR'S GUIDE TO **NOVELTY RADIOS Vol. 1**

By M. Bunis & R. Breed. You can't imagine how many shapes novelty radios have been made into. Oil cans, car batteries, beer cans, washing machines, animals, cameras, cars, footballs. This beautiful full color book will entertain and inform anyone who collects radios. With values. Collector Books. 223 p.

Order #0587 \$18.95



HEATH NOSTALGIA

By T. Perdue. While you read this book you will recall the thrill of opening the box, upacking and sorting parts and chekcing off the steps in anticipatoin of applying power to the finished product. And you will learn more about the company's heritage and the people who made in possible. ©1992 Perdue 123 p.

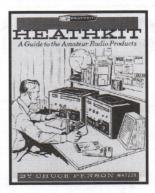
Order #1494 \$13.95



COLLECTOR'S GUIDE TO NOVELTY RADIOS Vol. 2

By M. Bunis & R. Breed. Still more amazing advertising and novelty radios. Interesting chapters on automotive and food related models plus media star and hero radios. There is even a collection of paint can radios. Over 600 stunning color photos. With current values. ©1999 Collector Books. 200 p.

Order #3785 \$19.95



HEATHKIT - A GUIDE TO AMATEUR RADIO PRODUCTS

By C. Penson. A complete survey of every amateur and shortwave related product produced by Heathkit. This well-produced book features unusually large and sharp photos. Even includes accessory items. If you ever built a Heathkit, you will enjoy this fine book. @1996 Electric Radio. 248 p.

Order #0454 \$24.95



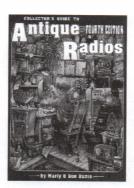
GENUINE PLASTIC RADIOS OF THE MID-CENTURY

By Jupp & Piña. Table radios made primarily of brightly colored plastics represent a relatively new area of collector interest. This pioneering book is a must for anyone interested in radios, mid-century industrial design or popular culture. A beautiful hardcover book with 439 color photos and values. ©1998 Schiffer 219 p.

Order #3086\$39.95

U.S.A. CUSTOMERS: NON-U.S.A. CUSTOMERS:

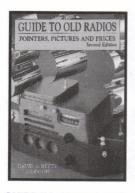
Please add \$2 per title for bookrate 4th Class shipping (or \$3 per title for faster U.P.S.). Please add \$5 per title for bookrate surface shipping. Request a quote for airmail.



COLLECTOR'S GUIDE TO ANTIQUE RADIOS

By Marty & Sue Bunis. This beautifully printed, four color book is considered by many to be the best directory and price guide of antique AM and AM/FM radios. Basic descriptions and values are given for hundreds of collectable radios through the early 60's. Fourth Edition. ©1996 Collector Books. 248 p.

Order #0792 \$18.95



GUIDE TO OLD RADIOS - POINTERS, PICTURES & PRICES

By David & Betty Johnson. Descriptions and price ranges for over 3,300 radios. The history of radio, both the broadcast medium and the instrument itself. Speakers and cabinets from the earliest days. Over 350 photos and illustrations, some in color. Second Edition. ©1995 W-H 277 p.

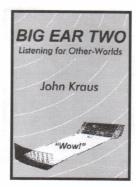
Order #1252 \$19.95



THE 1934 OFFICIAL SHORTWAVE RADIO MANUAL

By Hugo Gernsback & H.W. Secor. A reprint of the 1934 publication. Provides complete directory of all 1934 SW receivers with schematics. Loaded with projects and amazing articles: Human Beings as Antennas, Ills Treated by Shortwave, Can We Radio the Planets? Fun radio history! ©1934-1987 Lindsay. 260 p.

Order #0576 \$15.95



BIG EAR II - LISTENING FOR OTHER WORLDS

By J. Kraus. Here is the exciting history of Ohio State's *Big Ear* radio telescope. A fascinating story of one of the world's largest cosmic listening posts and how it now searches for signals from extraterrestrial civilizations. A *real life*, *real DX'ing* adventure! Second Edition. ©1995 *Cygnus* 370 p.

Order #2051 \$14.95



UNIVERSAL S.W.L. LOGGING SHEETS



If you are not keeping a record of the stations you are hearing, you should be. Start keeping a "log" now! You will be glad you did. Universal is pleased to offer a specially designed logging form to help you keep a permanent record of your DXing activities. This form has been carefully designed to include all the required information you will want to retain. Headings include DATE, TIME, FREQUENCY, CALL, STATION ID, LOCATION, SINPO, MODE, REMARKS, QSL SENT, QSL RECEIVED. There is also a blank field that you may define. These logging sheets are printed on an extra heavy 70 Lb stock. You get 40 sheets (1000 loggings) for only \$2.95. Less than 8¢ per sheet!

SWL LOG PAGES

Order #2886

\$2.95 (+\$2)

UNIVERSAL AMATEUR RADIO STATION LOG

This 8½" x 11" log is spiral-bound. The log headings are: Date, Time Start, Time End, Frequency, Mode, Station Worked, Signal Report (His-Mine), QTH, Comments, QSL Sent, QSL Received and Zone. ©1989 Universal Radio Research.

Order #2845 \$2.95 (+\$2)

A.R.R.L. AMATEUR RADIO STATION LOG

This popular 8½" x 11" log is bound with a metal spiral. The log headings are: Date, Frequency, Mode, Power, Time, Station Worked, Report Sent, Report Received, Time Off, Comments, QSL Sent and QSL Received. ©1989 ARRL.

Order #0773 \$4.00 (+\$2)

OWNER'S MANUALS & SERVICE MANUALS

Owner's	Owner's Manual		Service Manual	
Item Order# I	Price	Order#	Price	
Drake R-8 2908	10.00	0329	39.95	
Drake R-8A 0349	10.00	0242	39.95	
Drake R-8B 3711	10.00	0532	39.95	
Drake SW-8 2323	10.00	NOT AVA	ILABLE	
Icom (most models) 0000	28.00	0000	46.00	
Info-Tech (most models) 0000	10.00	NOT AVA	ILABLE	
Japan Radio NRD-345 3712	20.00	3593	30.00	
Japan Radio NRD-515 2030	20.00	0955	30.00	
Japan Radio NRD-525 0165	20.00	1162	30.00	
Japan Radio NRD-535D 2761	20.00	3040	30.00	
Universal M-450 3395	10.00	NOT AVA	ILABLE	
Universal M-900 2047	10.00	NOT AVA	ILABLE	
	10.00	NOT AVA	ILABLE	
Universal M-7000v1 2921	19.95	NOT AVA	ILABLE	
Universal M-7000v2 2149	19.95	NOT AVA	LABLE	
Universal M-7000v5 1920	19.95	NOT AVA	LABLE	
	19.95	NOT AVA	LABLE	
Universal M-8000v1 0871	19.95	3254	45.00	
Universal M-8000v5 3251	19.95	3254	45.00	
Universal M-8000v7 3483	20.00	3254	45.00	
Yaesu (most models) 0000	15.00	0000	25.00	

Each piece of equipment we sell comes with an original owner's manual. Owner's manuals are listed above for those who require replacement or review copies. U.S. customers please add \$2 per title for bookrate shipping or \$3 for UPS shipping. Please contact Universal Radio for owner's and service manuals not listed.



QSL ALBUM

Protect, preserve and present your prized QSL's in a professional manner with an Azimuth DXCC QSL album. Each comes with 20 clear pages holding six 4" x 6" QSL's for a total of 120 cards per album. Each page is made of heavy-duty, abrasion-resistant PVC vinyl for easy viewing.

Order #2805 \$19.95 (+\$3)

SONY.



Tune Into The World

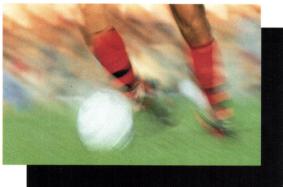






World Band Receiver™ Radios











as the world gets smaller.

Imagine listening to world events that shape our lives…as they occur. Sony World Band Receiver™ Radios combine high performance and advanced technology to open up an ever increasing variety of listening options and bring them home to you. Stay on top of late breaking news events, keep abreast of international financial developments, or become immersed in the excitement of a major sporting event. It's all at your fingertips! Whether you're listening for travel and weather updates, international music, or just news from home when you're on the road…we bring you the world with the latest in receiver technology.

It wasn't so long ago that short wave radio belonged to the realm of radio buffs...but things have changed. Technology has enhanced the performance and user friendly functions such as built-in clocks, easy tuning methods, and preset stations have enlisted a whole new audience. Today's enthusiasts may be business travelers, exchange students, or simply people brushing up on foreign languages.

Simply put, a world band radio can tune into stations throughout the world and receive all types of broadcasts. Shortwave broadcasts are very similar to the AM broadcasts we're familiar with. Shortwave actually defines the type of radio wave. AM Radio waves are classified by their length (or frequency) into three categories: long waves, medium waves and short waves. Generally, the shorter the wave the further it travels. Short waves have higher frequencies and are not absorbed by the Earth's ionosphere. Rather, they reflect off of the ionosphere and bounce back to Earth in a repetitive pattern, thus traveling greater distances. This is why a single station may cover an entire country, or stations originating on one continent can be heard halfway around the world.

However, because the condition of the ionosphere varies, shortwave programs are not always heard clearly on the same frequency. For this reason, shortwave stations often broadcast programs at various times and/or on various frequencies.

The true measure of the receiver's capacity can be defined by three important functions: sensitivity, selectivity, and stability. The primary factor, sensitivity, is the ability to capture low powered or weak transmissions. But regardless of how sensitive the receiver, it's worthless without good selectivity, or the ability to choose only desired signals and "tune out" interference. The third function, stability, means the unit will stay tuned to a specific frequency without constant readjustment.

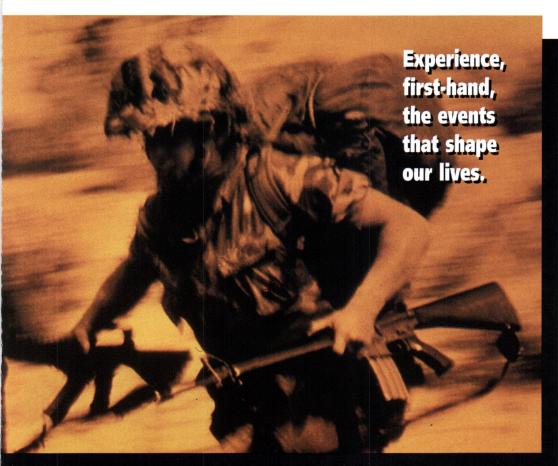
Sony has designed its World Band Receiver Radios with the highest degrees of sensitivity, selectivity and stability in mind. Our advanced features such as Synchronous Detection, PLL Quartz Synthesis Tuning, Direct Access™ tuning and Single Side Band reception ensure the ultimate in clear reception with less fading, interference elimination, and easy tuning. Whether you're a novice or a radio buff, Sony has a receiver for you!

ICF-SW1000T

With the ICF-SW1000T, you can witness world events while they're happening, or record them for posterity with the built-in stereo cassette recorder. Afraid of missing a favorite program? The timer function lets you record direct from radio to cassette at a preset time. The ICF-SW1000T even has a built-in clock with alarm function to wake you up by your favorite station.

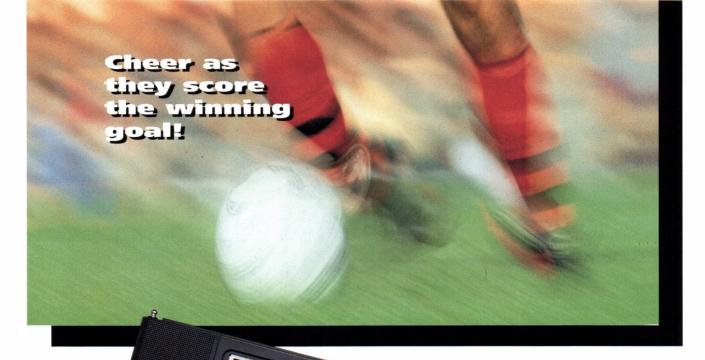
Enjoy smooth stereo sound from around the world! The synchronous detection circuitry ensures the clearest reception. Three memory pages give quick access to those stations you have saved and 10-key Direct Access™ tuning lets you easily capture even the most distant stations.

- * LW/MW/SW/FM Stereo Reception over a wide range of frequencies.
- * SSB (single side band) for reception of SSB broadcasts. SSB can also help reception of weak signals.



ICF-SW1000T

- PLL Quartz Digital Synthesized Tuner provides optimum stability and reduces station drift.
- * 3 Page Random Memory preset tuning to save your favorite stations.
- * 1 KHZ Step Tuning to lock in on precise station reception.
- * Stereo Cassette
 Recorder (play/record)
 with auto reverse and
 tape select to record
 directly from the radio or
 play your own cassettes.
- * Timer Record Function to record directly from the radio at a preset time.
- * Built-in Clock with alarm function, dual stand by and sleep timer.
- Dimensions (WHD):
 7" x 4 1/8" x 1 5/8"



ICF-SW77

ICF-SW77

Imagine the thrill of actually hearing the winning goal, the fans cheering and the final score.

The ICF-SW77 will make you think that you're on the field! And, to make sure you never miss that important match, there's a 5 event programmable timer to remind you of a favorite program or to allow unattended recording. Keep track of your most frequently listened to programs with up to 162 memorized frequencies. In fact, many popular stations are preset into memory right at the factory for your ultimate convenience, and Station Name Tuning allows convenient direct tuning by the name of the broadcaster.

- * AM (LW/MW/SW) FM Stereo Reception over a wide range of frequencies.
- * PLL Quartz Frequency Synthesis Tuning for optimum stability.
- * SSB reception for a wider range of listening options and improved reception of weak signals.
- * Station Name Tuning (with editable labels)
- * Synchronous Detection Circuitry to reduce fading and interference.
- * Backlit LCD display with contrast adjustment.
- ***** 10-key Direct Access[™] tuning.
- * Universal Time Coordinator with world time scale.
- * Manual or Automatic Scan tuning with 50Hz step tuning.
- * Electronic Rotary Tuning Dial for convenient manual tuning.
- * 5" x 3" Speaker for excellent reception of voice or music broadcasts.
- * Dimensions (WHD): 10 7/8" x 6 7/8" x 1 7/8".

ICF-SW100S

As lightweight and compact as a pocket calculator, the ICF-SW100S delivers performance and clarity worthy of radios twice its size. At less than 8 oz. (including batteries), and only slightly larger than an audio cassette tape it's ideal to slip into your briefcase or jacket pocket and carry it with you regardless of where in the world you go! For your convenience, it has a World Time Clock (to calculate the current time of any city in another time zone) and a 24-city name/time display.

- * AM (LW/MW/SW) FM Stereo Reception.
- * PLL Quartz Frequency Digital Synthesized Tuning for accurate tuning.
- * Dual Conversion Super Heterodyne Tuner circuitry for high sensitivity.
- ★ 50 Station Memory presets.
- ★ Editable Station Labels
- ★ Auto Scan, manual and 10 key Direct Access[™] Tuning.
- * Built-in Clock with sleep timer and dual standby function.

* 1 KHZ step tuning. Dimensions

(WHD): 4 3/8" x 15/16" x 2 7/8".





ICF-2010

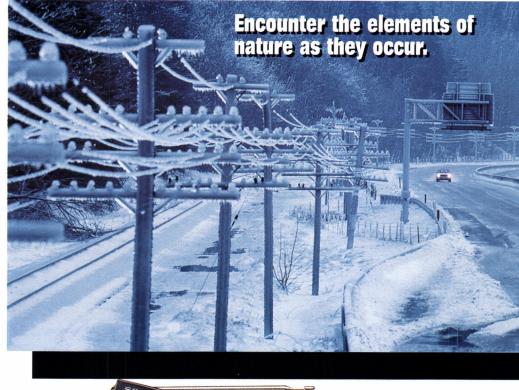
This world class radio has earned recognition for both its performance and convenience features. A travel weight portable, the ICF-2010 offers the world's most accurate tuning system along with fast Direct Access™ Tuning to key in station frequencies directly and 32 station memory to give immediate recall at the touch of a button.

- Full AM Band coverage (LW/MW/SW) plus FM and Air Band reception.
- * SSB reception for a wider-range of listening options and improved reception of weak signals.
- Dual PLL Quartz Frequency Synthesis Tuning for superb reception.
- * Synchronous Detection Circuitry reduces fading and interference.
- * Switchable "IF" Band width.
- * Manual, Automatic and Memory Scan tuning.
- * Programmable timer.
- * Built-in Clock with sleep timer.
- * Dimensions (WHD): 11 3/8" x 6 3/8" x 2 1/8".

ICF-SW7600G

Homesick for news from abroad? The ICF-SW7600G offers superb AM and FM stereo reception. With 10-key Direct Access tuning, you can key in stations with the ease of a pocket calculator. And 22 station memory presets always bring your favorite stations to you with the touch of a button.

- * AM (LW/MW/SW) FM stereo reception.
- PLL Quartz Frequency Synthesized Tuner for optimum stability and better reception.
- * Synchronous Detection Circuitry reduces fading.
- Dual Conversion Superheterodyne Circuitry for increased sensitivity.
- * SBB reception for a wider range of listening options and improved reception of weak signals.
- * Manual and Auto Scan Tuning.
- * 1 KHZ Step Tuning.
- * Built-in Clock with sleep timer and dual standby functions.
- * Large 3" Speaker.
- Dimensions (WHD):
 7 5/8" x 4 3/4" x 1 5/16".





ICF-SW7600G

ICF-SW40

Testing your own language skills? The ICF-SW40 lets you listen to a 14 band range of frequencies both at home and abroad. This user friendly receiver offers easy dial tuning with digital accuracy and 20 random presets to quickly tune into your favorite station.

- * AM (LW/MW/SWI-II) FM stereo reception.
- * PLL Quartz Digital Synthesized Tuner for driftfree tuning.
- * 20 Station Memory Presets.
- * 1 KHZ Step Tuning with digital readout.
- * Built-in Clock with dual standby function.
- * Dimensions (WHD): 6 3/4" x 4 1/4" x 1 7/16".



Business travelers, exchange students, or anyone interested in world events can stay up-to-date with this sophisticated 12-band receiver. Its compact size and LCD display makes it ideal for travel or home use. And, its news/music tone switch offers maximum clarity whether you're listening to voice or music!

- 12-Band Receiver including FM Stereo, AM and SW Bands 1–10.
- Dual Conversion Tuner Circuitry for high sensitivity.
- * 15 Station Memory Presets.
- Digital Synthesized Tuning to simplify tuning into the desired station.
- * Auto Scan Tuning.
- * 1 KHZ step tuning for exact station.
- * Clock/Alarm.
- * Dimensions (WHD): 6 3/4" x 4 3/8" x 1 7/16".









Only Sony can turn your PC into a watchdog of the airwaves with the Sony Radio Frequency Scanner and CD-ROM frequency database.

Use the Sony Radio Frequency Scanner with PC Interface and be forewarned about approaching weather systems, traffic conditions and emergency situations. You can even get inside information at some of your favorite sporting events. The Sony CD-ROM gives you easy access to listings of 3 million U.S. frequencies. It makes scanning fast—and easy.

A unique bi-directional PC interface lets you use your PC to control all the Sony Radio Frequency Scanner's standard functions, as well as its special features, including:

- 20 programmable Scanning Ranges.
- Virtually unlimited Memory and Skip Preference Files.
- Data Import and Export between Scanner and PC.
- A searchable CD-ROM database of over 3 million U.S. frequencies.

Performance you can rely on

The Sony Radio Frequency Scanner with PC Interface is a powerful hand-held scanner with the latest scanning circuitry for top performance. It features the full range of functions and features scanner enthusiasts want:

- 25MHz to 1,300MHz Frequency Scanning.
- 300-Channel Memory for personal customization.
- Public Service Scan of 9 pre-programmed bands, including police, air, fire/emergency, weather, marine, FM, and TV.
- Intelligent Active Memory that saves the 10 most recently received frequencies for convenient recall.
- AM and Narrow and Wide FM Reception.
- Back-lit Display.
- Compatible with Windows® 95.

The Sony Radio Scanner with PC interface. . . watchdog of the airwaves.

www.sony.com/scanner

©1998 Sony Electronics Inc. Reproduction in whole or in part without written permission is prohibited. All rights reserved. Sony is a trademark of Sony. Windows is a trademark of Microsoft Corp.



SONY

ICOM brings you the BEST in wide band receivers...



NEW IC-R75"HF RECEIVER

Cutting edge technology for today's serious DX'er, yet easy & affordable enough for a casual listener.

Hear MORE of what's out there. Pick up more amateur, marine and shortwave broadcasts. The new 'R75" covers from 0.03 – 60.0 MHz – wider than most other HF receivers.

Pull out the weak signals. The IC-R75 sports a remarkable arsenal of signal detection weapons, ready for your command: A triple conversion receive system rejects image and

spurious signals. An automatic notch filter reduces interference by minimizing "beat" and "howl" signals. Use Twin Passband Tuning (PBT) to zero in on signals by shaping the IF passband. ICOM's all new Synchronous AM detection (S-AM) technology reduces signal fading in AM broadcasts. Optional Digital Signal Processing (DSP) noise reduction in the AF stage converts analog

SSB, AM and FM signals to crisp, clear audio output (you'll hear the difference on the 'R75's large front mounted speaker). Further tailor the 'R75 to meet your listening needs by installing up to two additional filters^{†1}.

There's much more. Plan to test drive a surprisingly affordable new IC-R75 at **Universal Radio** soon.

†1 additional filters are optional.

(Left) IC-R10 Advanced performance, advanced features. 0.5 – 1300 MHz*; all mode; alphanumeric backlit display; 1000 memory channels; real time band scope; 7 different scan types; attenuator; beginner's mode; PC programmable; includes AA Ni-Cds and charger.



(Right) IC-R2 Excellent audio in a tiny package. Take-anywhere size! 0.5 – 1300 MHz*; AM, FM, WFM; 100 mA audio output; quick, easy band switching; tone squelch (CTCSS decode); 400 memory channels; attenuator; backlit LCD with timer; priority watch; MIL SPEC 810 C/D/E (shock/vibration); weather resistant; PC programmable; includes 2 AA Ni-Cds and charger.





IC-R8500 The expert's choice. 0.5 – 2000 MHz*; commercial grade; all mode; IF shift; noise blanker; audio peak filter (APF); 1000 memory channels; built-in CI-V command control and RS-232C port for easy PC remote control with ICOM software for Windows®.

"If you want a receiver that is both a superior world band radio and a solid scanner, the new Icom IC-R8500 is the best choice."

-Passport to World Band Radio, 1998



Legendary Quality. Digital Signal Processing. Awesome Performance.



With the introduction of the NRD-545, Japan Radio raises the standard by which high performance receivers are judged.

Starting with JRC's legendary quality of construction, the NRD-545 offers superb ergonomics, virtually infinite filter bandwidth selection, steep filter shape factors, a large color liquid crystal display, 1,000 memory channels, scan and sweep functions, and both double sideband and sideband selectable synchronous detection. With high sensitivity, wide dynamic range, computer control capability, a built-in RTTY demodulator, tracking notch filter, and sophisticated DSP noise control circuitry, the NRD-545 redefines what a high-performance receiver should be.

JRC Japan Radio Co., Ltd.

Japan Radio Co. Ltd., Seattle Branch — 1011 Klickitat Way #B-100 Seattle, WA 98134 Voice: 206 654-5644 Fax: 206 264-1168

Japan Radio Company, Ltd. — Akasaka Twin Tower (main), 17-22, Akasaka 2-chome, Minato-ku, Tokyo 107, Japan Fax: (03) 3584-8878

- LSB, USB, CW, RTTY, FM, AM, AMS, and ECSS (Exalted Carrier Selectable Sideband) modes.
- Continuously adjustable bandwidth from 10 Hz to 9.99 kHz in 10 Hz steps.
- Pass-band shift adjustable in 50 Hz steps up or down within a ±2.3 kHz range.
- Noise reduction signal processing adjustable in 256 steps.
- Tracking notch filter, adjustable within ±2.5 kHz in 10 Hz steps, follows in a ±10 kHz range even when the tuning dial is rotated.
- Continuously adjustable AGC between 0.04 sec and 5.1 sec in LSB, USB, CW, RTTY, and ECSS modes.
- 1,000 memory channels that store frequency, mode, bandwidth, AGC, ATT, and (for channels 0-19) timer on/off.
- Built-in RTTY demodulator reads ITU-T No. 2 codes for 170, 425, and 850 Hz shifts at 37 to 75 baud rates. Demodulated output can be displayed on a PC monitor through the built-in RS-232C interface.
- High sensitivity and wide dynamic range achieved through four junction-type FETs with low noise and superior cross modulation characteristics.
- Computer control capability.
- Optional wideband converter unit enables reception of 30 MHz to 2,000 MHz frequencies (less cellular) in all modes.

Books from Universal we think you will like!



- New Third Edition
- 108 Chapters
- 473 Pages
- 840 Photos
- Printed March 1998
- Covers 1942 to 1997
- 770 Receivers
- 660 Variants
- New & used values
- Value ratings
- Includes 98 American and international manufacturers
- Over 120 new pages added since the previous edition
- Only \$24.95 (+\$3 UPS)

"Shortwave Receivers Past & Present"

is your comprehensive guide to over 770 shortwave and amateur communications receivers made from 1942 to 1997. This huge 473 page guide includes 108 chapters, representing every major receiver manufacturer. Here is everything you need to know as a radio collector or informed receiver buyer. Entry information includes: receiver type, date sold, photograph, size & weight, features, reviews, specifications, new & used values, variants, value rating and availability. Become an instant receiver expert!

"This book is a celebration of all the technology we shortwave folks hold dear. It is the ultimate resource for the shortwave radio lover. There were pages in this book that made my eyes damp."

North American Shortwave Association

Chapter Titles:

Introduction, Buying A Used Receiver, Using This Book, More Information, Repair & Restoration, Allied, Ameco. Anritsu, AOR, Atlas, AWA. Bearcat, Bharat, Cardwell. Collins, ComFocus, CPC. Cubic, Dansk Radio, Davco, Debeg, Delmar, Drake, Echophone, Eddystone, Eldico Elta, Eska, Fairhaven, Galaxy, Geloso, General Dynamics. Globe, Gonset, Hagenuk, Hallicrafters, Hammarlund. Harvey-Wells, Heathkit, Howard, Icom, J.R.C., Kenwood-Trio, Kingsley, Knight Kit KW, Lafavette, Lowe, LTV Temco, Mackay, Marconi. McKay Dymek, Midland. Morrow, Mosley, Multi-Elmac. Murphy, National, Nera, Norlin, Panasonic, PhaseTrack, Philips, Philmore, Pierson Elec., Pierson-Holt, Plessey, Quality U.S. Tech., Racal. R.C.A, Raytheon, Realistic, Redifon, RF Comm., Rees Mace, RFT, RME, Rohde & Schwarz, Rosetta Labs. S.A.I.T., E.H. Scott, Sears. Siemens, Skanti, Sony, S.P. Radio, Squires-Sanders. Standard, STC, Sunair, Svenska, Swan, Taivo. Technical Material, Telefunken. TEN-TEC, Thomson-CSF. Transworld, Videoton-Mechlabor, Vigilant, Watkins-Johnson, Yaesu, Briefly Mentioned. Receivers That Never Were. Additional Information and Model Number Index.

"If names like Hallicrafters, Collins and Eddystone make you pine for the glow of vacuum tubes and staticky voices from afar, this stylish compendium will keep you turning pages and sighing nostalgically."

U.S. News & World Report

Discover DXing! Row To Hear Distant AM, FM & TV Stations. WAPE KFYR Robo Davino KOTE WHOT WHOT KWYO Second Edition By John Zondio

Discover DXing! How To Hear Distant AM, FM & TV Stations

By J. Zondlo. Learn the secrets to hearing more AM, FM and TV stations. Chapters include: propagation, seasonal conditions, equipment, antennas and reference materials. Read the "best bets" for hearing all fifty states and ten countries on AM. Other topics include: obtaining QSLs, keeping a log and radio clubs. Also includes a list of AM clear channel stations and a list of VHF TV stations. 90 Pages. ©1998.

New Second Edition! #0019 *5.95 (+\$2 Ship)

Universal Radio Inc.

6830 Americana Pkwy. Reynoldsburg, Ohio 43068-4113

Change Service Requested

CAT. **99-02**

BULK RATE U.S. Postage PAID

Reynoldsburg, Ohio Permit No. 77