

HAM RADIO OUTLET[®]

COMMUNICATIONS CATALOG

FALL/WINTER 2022

EXPLORE YOUR HORIZONS

WORLDWIDE DISTRIBUTION



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YAESU

FT-710 AESS

HF/50MHz Transceiver

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DJ-500T



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HANDHELD TRANSCIVER

DJ-G7T

With a wide selection of easy-to-operate, multi-band desktop, handheld and mobile radios, Alinco delivers maximum value for your amateur radio enjoyment.



144/222/440MHz DMR/ANALOG
MOBILE TRANSCIVER

DR-MD520T



144MHz FM MOBILE TRANSCIVER

DR-135TMkIII

50MHz FM MOBILE TRANSCIVER

DR-06TA

29MHz FM MOBILE TRANSCIVER

DR-03T



VHF/UHF DUAL BAND,
DMR/ANALOG
MOBILE TRANSCIVER

DR-MD500

Part 90 certified LAND MOBILE



30A SWITCHING POWER SUPPLY
DM-330MVT

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Explore Your Horizons



As humans, we are natural explorers. The first humans did not stay put, they ventured out discovering all that they could. Transportation progressed and so did our desire to explore. We sailed the oceans, discovered new continents, launched into space, and walked on the moon. Not because we had to, because we wanted to. That exploratory spirit is in each of us and it is important we do not let it become stagnant.

I ask you to tap into that 'exploratory-spirit' and apply it to your radio skills. There is a saying, "No matter how much you know about radio, there's always something new to learn!" It could not be truer of a saying and

something we should all take heed of and act upon.

When was the last time you left your comfort zone and tried something new? Expand your horizon! I am not just talking about trying a different HF band, using that spare HT, or switching to a different repeater pair. I am truly asking you when is the last time you explored something new in amateur radio. Because right now there has never been a better, easier, and more affordable time to do so. This entire catalog is full of gear, accessories, and ideas that can serve as the starting point for you to experience many wonderful things that are amateur radio.

So, I urge you to explore your horizons. Indulge in that feeling you will get when you conquer a new mode, make a digital contact, build a new kit, put up a new antenna, or operate portable. In doing so you are following in the footsteps of our ancestors... discovering all they could. All you have to do is take the first step.

Robert Ferrero, W6KR
President, Ham Radio Outlet

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**NOBODY BEATS
AN HRO DEAL!**

MOBILE RADIOS/RECEIVERS



Dual Band

2 m/70 cm Dual Band Remote Head Unit DR-735T



Building on Alinco's reputation for simple operating commands and straight-forward key design, the DR-735 is a radio you can start enjoying from the moment you power up.

- 144 MHz / 440 MHz FM transceiver.
- TX 144-148 MHz / 430-450 MHz.
- RX 108-174 MHz (AM/FM) 400-480 MHz (FM).
- Receiver double conversion.
- Civil aviation and utility receive.
- 1000 channel programmable memory.
- Full duplex / X-band repeat.
- 50 / 20 / 5 W power output on both bands.
- Huge alphanumeric LCD display.
- RGB backlight with choice of eight colors.
- Set different display color for different functions and store in memory.
- Independent 2 meter / 70 cm dials / volume / squelch knobs.
- Removable front control head. Mount remotely or inverted for optimal speaker placement.
- Wide variety of scanning features.
- Computer programmable. Software available on line.



EXTENDED WARRANTY INFORMATION ON PAGE 54!

Mobile Specifications

Model	Frequency Range	Power In	Current Drain TX	Current Drain RX	Power Out	Memory Channels	Sensitivity	Height Inches	Width Inches	Depth Inches	Weight Pounds
DR-135TMKIII*	144-148Mhz	13.8 VDC	11 A	400 mA	5/10/50 W	100	< .16uv	1.57	5.58	6.83	2.2
DR-06TA	50-53.995Mhz	13.8 VDC	11 A	600 mA	50 W	100	< .25uv	1.57	5.58	6.83	2.2
DR-735T	2M/70CM	13.8 VDC	12 A		5/20/50 W	1000		2.3	5.6	7.4	2.6
DR-MD500T	2M/70CM	13.8 VDC	10 A	500 mA	55W/40W	4000		1.7	5.5	7.4	2.2

*TCXO with ± 2.5 ppm frequency stability

Dual Band

Dual Band High Power Output DR-MD500T



- DMR Tier I and Tier II
- MAX output power 55W(VHF) / 40W(UHF)
- 4000 channels, 250 zones, 250 scan lists
- 300,000 Digital contact list
- Large 1.77 LCD Display
- Automatic Repeater Roaming
- Single or Dual Channel selectable
- Displays DMR ID, Call sign, Name.

The DR-MD500T has features such as Color LCD Display, 55W Output Power on VHF and 40W on UHF as well as up to 4000 Memory Channels, 10,000 TalkGroup and up to 300,000 Contact lists. Capable of operating in Digital and Analog with mixed mode in VFO or Memory mode.

- X-band repeat, Analog uplink/Digital downlink or vice versa
- FM Broadcasting receiver with 100 memory channels and VFO
- AES 256bit Encryption (Digital mode)
- SMS (Digital mode)
- Communication recording (Digital mode)
- Individual/Group/All call (Digital mode)
- CTCSS/DCS/DTMF/2Tone/5Tone encode and decode (Analog mode)
- Allows CSV export/import of setting parameters
- Programmable Auto Repeater Shift in VFO mode
- Kill & Stun functions
- VFO/MR Switch
- FCC Part 90 Certified



2 Meters & 50 watts DR-135TMKIII

Features a unique multifunction backlit microphone with direct frequency input, and accepts optional EJ-47U digital voice module. The MKIII TCXO supports a specification of ± 2.5 ppm frequency stability.



6 Meters & 50 watts DR-06TA

Catch the exciting world of the 6m band with the DR-06TA. Covering 50-53.995 MHz with an output of 50 W, it has convenient scan features, a variety of selective calling tones, theft alarm, ignition key on/off, direct frequency input, and controls from the EMS57 key pad microphone.

Handheld Receiver



Wide Band Receiver | DJ-X11T

Get the power of a desktop receiver in a handheld! Features: Two (2) VFO simultaneous receive; covers 0.05 to 1299.995 MHz* in all modes; 1200 memories; sub-band coverage VHF 118-171 MHz and 336 to 470 MHz in AM / NFM; IQ signal can be used with 3rd party software and discriminator output; easy-to-use twin dials; selectable tuning steps; 3 selectable scan speeds; firmware to operate as a software defined radio. *Cell band blocked.

HANDHELDS/WEATHER STATIONS

Dual Band

Dual Band 2m / 70 cm DJ-VX50T

The DJ-VX50T has a compact IP67 dust/water proof body. CTCSS, DTMF, DCS are standard, along with a variety of tone bursts for repeater access or selective calling. Convenience features include direct frequency input, alphanumeric channel labels and 200 memory channels that can each store operating parameters. In addition, DJ-VX50T sports VHF AM aircraft, FM broadcast and NOAA Weather Channel receiver. A Li-ion battery pack and a stand charger are included.



Tri-Band

2 m / 70 cm / 1.2 GHz DJ-G7T

The DJ-G7T tunes 0.531-1300 MHz* continuously. Full duplex receive with 144 / 430 / 1200 MHz bands. AM and WFM modes allow you to hear aviation and broadcast bands. Scan modes and options include 50 pairs of programmable scan memories. Timing adjustable priority scanning and Alinco's

Channel-Scope – visualize the presence of radio signals on the display. Output power up to 5 watts on 2 meters.

*Cell band blocked.



DAVIS

Weather Stations

Vantage Vue® HRO Price: \$389.95

This wireless weather station provides accurate, reliable weather monitoring in a self-contained, easy-to-install system. Includes outdoor sensor array and LCD console.

- Vantage Vue radio-compatible with our flagship Vantage Pro2 professional stations so you can mix-and-match most components.
- Station includes temperature, wind, humidity, and rain sensors, console, and mounting hardware (mounting pole sold separately).
- Console shows: time and date, moon phase, forecast icons, temperature, humidity, barometric trends, heat index, and wind chill.
- Rain totals and rain rate are updated every 20 seconds for the last 25 hours, days, months.
- Domed buttons are easy to sense and press. They glow-in-the-dark.
- Set 22 simultaneous, different alarms to warn of high winds, freezing temperatures, rain rate, flood warning, and more.
- Track daily highs and lows, temperature and barometric changes by the hour.
- Graph the last 25 hours, days or months. View up to 50 graphs including temperature, rain, rain rate, wind and barometric pressure all on the console.
- Windspeed updates every 2.5 seconds. Displays in miles per hour, meters per second, kilometers per hour and knots. Measures wind direction in compass points or degrees.
- Frequency-hopping spread spectrum radio ensures consistent transmission up to 1,000 ft. (300 m) from integrated sensor suite to console.



Vantage Pro2™ HRO Price: \$599.95



The Vantage Pro2™ weather station has a versatile sensor suite that combines our rain collector, temperature and humidity sensors, and anemometer into one package. Customize by adding consoles or special purpose options. Available in both wireless and cabled versions.

This is the first and only weather station in its class to use frequency hopping spread spectrum radio technology to transmit weather data wirelessly up to 1,000 ft (300 m) outdoors, line of sight. Typical range through walls under most conditions is 200 to 400 feet (60m to 120 m). Add wireless repeaters for distances up to 1.7 miles (2.7 km).

- Large, backlit 3.5" x 6" (9 x 15 cm) LCD screen.
- Updates every 2.5 seconds.
- Options are available for UV/solar, soil moisture, short and long-range repeaters, and much more.
- Optional WeatherLink data logger and software offer additional analyses.
- Electronic components are housed in a weather-resistant shelter.
- Power the console with the included power adapter or with three C batteries (not included).

Comes with basic mounting hardware. Optional #07717 Mounting Pole. Optional #07716 Mounting Tripod.

Handheld Specifications

Model	Frequency Range	Power In	Current Drain TX	Current Drain RX	Power Out*	Memory Channels	Sensitivity	Height Inches	Width Inches	Depth Inches	Weight Pounds
DJ-VX50T	2M/70CM	7.4 VDC	1.5 A	80 mA	5 W/4 W	200	< .12uv	4.65	2.32	1.5	.5
DJ-A11T	2M	7.4 VDC	1.4 A	300 mA	.5/2/5 W	128	< .25uv	3.9	2.32	1.4	.5
DJ-G7T	2M/70CM/1.2Ghz	7.VDC	1.6 A	200 mA	5 W†	1000	< .15uv	4.53	2.36	1.18	.6

*Power output is determined by choice of battery pack. †At 13.8VDC



HF/6M Transceivers



Dual VFO Software Defined Radio IC-7610

The IC-7610 uses an innovative RF direct sampling system to convert a received analog signal to digital. Then it applies sophisticated processing to produce extraordinarily clear audio with high signal-to-noise

ratio. The ultra-low noise master clock oscillator yields superior TX and RX performance including an incredible 110 dB of RMDR (reciprocal mixing dynamic range) at 2 kHz frequency separation!

Independent dual receivers allow simultaneous reception of two bands and two modes. Independent RF/AF gain controls are provided, and the optional RC-28 USB remote encoder knob can provide a second tuning dial for greater operating flexibility (optional RS-BA1 remote control software is NOT required).

High performance features include 100 watts of power on 160-6 meters on SSB / CW / FM / RTTY / PSK, built-in high-speed automatic antenna tuner, and digital IF filtering with digital twin passband tuning for outstanding interference rejection.

- Receives 0.30 – 60 MHz.
- DIGI-SEL digital receiver preselector provides tight RF filtering for both main and sub receiver front ends.
- Dual high-speed, high-resolution, real-time spectrum scopes and waterfall displays.
- High-resolution 7" touch-screen color display for quick, intuitive operation and effortless control of functions.
- Ethernet port for IP remote operation (optional RS-BA1 software required).
- Compatible with SM-50 dynamic mic and AH-4 remote automatic antenna tuner options.
- Superior sound quality speaker.
- SD card saves settings and recorded communications. (Card not included).
- External monitor via a DVI-D port.



The Software Defined Radio Everybody Wants! IC-7300

This HF transceiver has innovative features like the RF direct sampling used in many software defined radios. The real-time spectrum scope with waterfall function gives top-level performance in resolution, sweep speed, and dynamic range.

- SSB, CW, RTTY, AM and FM modes.
- Transmits on amateur HF + 6m frequencies.
- Use the TFT LCD as a touch screen to set various functions and edit memory contents.
- 100 W output HF / 50 MHz bands.
- Built-in high-speed automatic tuner.
- Multi-dial knob for smooth operation. Push to see menu items. Select with a touch of the screen and adjust levels by turning the multi-dial knob.
- Phase noise characteristics are improved about 15 dB (at 1 kHz frequency offset) when compared to other transceivers.
- 101 memory channels: 99 regular and 2 scan edge channels.
- Remote control operation for RS-BA1.
- Memory keyer functions for CW and RTTY.
- USB for CI-V and audio input / output.
- Voice memory function.
- RTTY decode log function.
- Screen capture & SD card slot.
- Large cooling fan system.
- Multi-function meter.
- Multiple CW functions & digital noise reduction.

Speakers



Speaker SP-39AD

External Speaker for the IC-R8600 with built in 15 Volt, 2 Amp supply and correct plug for the IC-R8600. Rated 8 ohms at 4 watts.



Speaker SP-33

Base station mono speaker. Rated 8 ohms @ 4 watts. Includes a 6 ft cable that terminates in a 3.5 mm male mono plug.



Speaker SP-38

You will get great sound with this high quality speaker. It is perfect for the IC-7300. Rated 5 watts @ 8 ohms. Max input power is 7 watts. Includes 5.9 ft (approx) of audio cable. Weight: 2.54 lb.



Speaker SP-41

Designed to match the IC-7610. Two input lines. Has tone switches, input jack selector switch, 1/4" head-phone jack and On/Off Switch. Rated 5 watts & 8 ohms. Max input power is 7 watts.

SWR/PWR Meter



MC-7610 Designed For The Icom IC-7610

- Dual 3.5" Analog Meters
- Displays: S-Meter, RF power, SWR, etc.
- Color/Brightness adjustment for each Meter
- Voltage: 13.8 VDC +/-15%
- Current Draw: 500 mA Max
- Size: 8.0"x7.0"x1.5", 200x175x40mm
- Weight: 1.5 pounds, 680 grams
- HRO Price: \$179.95**

MC-7800 also available. Designed for the Icom IC-7851. **HRO Price: \$179.95**



All-Band HF | IC-718

- Compact design.
- RX .03~29.995 Mhz.
- 101 mem channels.
- Modes: USB, LSB, CW, RTTY, & AM.
- IF shift interference rejection.
- Output power: SSB / CW / RTTY 5W~100W variable, AM: 2~40W variable.
- Transmits amateur HF except 60m.
- AF DSP built-in.
- Built-in keyer.
- VOX operation, mic compressor, RF gain control.
- 10-key pad for frequency and memory selection.

HF/6M Transceiver



High Performance HF | IC-7851

The IC-7851 perfects HF and 6m operation with features such as a 1.2kHz optimized roofing filter to improve in-band adjacent signal performance. This design outperforms competitors' similar models in the 2 kHz to 10 kHz separation tests.

Unlike HF rigs with a conventional voltage controlled oscillator for the 1st LO, the IC-7851 uses a direct digital synthesizer (DDS) with a voltage controlled SAW oscillator (VCSO). This new 1st LO design sets a benchmark for phase noise with -150 dBc / Hz at 10 kHz offset (and -140 dBc /

Hz at 1 kHz offset). The IC-7851 also has the spectrum waterfall function found in the IC-7700. The high-resolution waterfall screen shows the changing amplitude of frequencies over time. An enhanced spectrum scope promotes fast and accurate scan and can be operated with PC mouse via USB port.

The dual scope function shows simultaneous activity in both bands to help search a sub-band while maintaining a run frequency on the main band.

RemoteTuner

Automatic Antenna Tuner AH-4



The AH-4 auto-tuner covers all amateur bands from 80 to 6 meters when used with a minimum 23' long wire antenna. With the optional AH-2b antenna element, tune 40m through 6m for mobile operation. It has automatic band changes and tunes usually in less than 2.5 seconds. The 45 memories store SWR minimum and tuning combinations. Requires only 300 mW to tune and handles up to 120 watts. **HRO Price: \$294.95**

Dust Covers

Prism Embroidery DUST COVERS



Custom designed and elegantly manufactured dust covers for a variety of Icom HF radios and amplifiers. Crafted out of leatherette that is cut to the designated size via templates that are designed using the manufacturer's specifications. Includes a soft felt lining. The perfect way to protect your investment when not operating. **Contact HRO for more info.**

Microphones



Desk Mic IC-SM30

This goose-neck style desktop microphone features an 8-pin metal connector, PTT / PTT lock switches and low-cut filter. It also has an adjustable microphone output level and the voice characteristics have been especially designed for SSB and FM. IC-OPC589 required for use with radios with modular jack [IC-703, IC-706series, IC-7000, IC-7100].



Desk Mic IC-SM50

This unidirectional, dynamic microphone is designed for select Icom base station transceivers. (It cannot be used with non-Icom transceivers since the power is supplied from the connected transceiver). The SM-50 features Up-Down tuning (on compatible Icom transceivers). There is a switch for PTT and also a lock feature. A low cut switch on the top of the base cuts out the low frequency components on input voice signals. IC-OPC589 required for use with radios with modular jack such as the IC-703, IC-706 series, IC-7000, & IC-7100.

Software



IP Remote Control RS-BA1v2

Remotely control your Icom transceivers via an IP network with the RS-BA1v2. It allows you to install the radio in another room using your home network or a remote location over the Internet. The low voice latency caused by the RS-BA1v2 provides the same operational experience as using an actual radio. Most functions and modes of your transceiver can be controlled.

The RS-BA1v2 has two component applications: System configuration to set up the IP address and other settings, and Remote Control allows you to control the radio. The display on the RS-BA1v2 is similar to the radio's front panel. Supports the IC-7100, 7200, 7410, 7300, 7600, 7610, 9700, 705, or 9100 with USB connection to a PC. Also the IC-7800, 7851 or 7700 connected to a PC with an RS-232C cable plus S/P DIF or ACC cable.



Remote USB Encoder IC-RC-28

The optional RC-28 utilizes the same tuning knob and encoder used on Icom HF radios, providing a tactile option for the RS-BA1 software. The IC-RC-28 is not a standalone control for Icom radios and may only be used with the RS-BA1 software.

Model	Receive Freq Range	Power	TX Amp	AM	FM	SSB	CW	FSK	Mike Z	Sensitivity 1.8-30 MHz	Notch	Audio
IC-705	Medium wave to 70cm	13.8 VDC		.5-10 W	.5-10 W	.5-10 W	.5-10 W		600			
IC-718	0.03-29.995 MHz	13.8 VDC	20A	2-40 W		5-100 W	5-100 W	5-100 W	600	< .16 dBu at 10 dB		> 2.0 W
IC-7100	30 kHz-199.9999 MHz 400-470 MHz	13.8 VDC	22A	1-40 W	**	**	**	**	600	< .18 dBu at 10 dB	Man + auto	> 2.0 W
IC-7300	30 kHz-60 MHz	13.8 VDC	21A	1-25 W	100 W	100 W	100 W	100 W	600	< .16 dBu at 10 dB	Man + auto	> 2.0 W
IC-7610	30 kHz-60 MHz	13.8 VDC	23A	1-25 W	1-100 W	1-100 W	1-100 W	1-100 W	600	< .15 dBu at 10 dB	Man + auto	> 2.0 W
IC-7851	30 kHz-60 MHz	85-265 VAC	5.6A	50W†	200 W†	200 W†	200 W†	200 W†	600	< .16 dBu at 10 dB	Man + auto	> 2.0 W

† Output is continuously adjustable from 5 to full power. * 50 W on 2 meters, 20 W 70cm. ## 2-100 W HF / 50 MHz, 2-50 W VHF, 2-35 W UHF.

MOBILES/HANDHELDS

ICOM® Dual Band

Practical Dual Bander

IC-2730A

With Optional
Bluetooth
Headset



This high performance mobile radio is a classic 2m/70cm performer.

- Wideband receiver 118- 174 / 375-550 MHz.
- Large backlit LCD screen.
- V/V & U/U simultaneous receive.
- Hands-free capable with optional UT-133.
- Optional VS-3 Bluetooth® headset.
- Cross band repeater capability.
- CS-2730 free downloadable PC programming software.
- 50 watts output on VHF and UHF.
- Squelch delay and squelch attenuator.
- Built-in 50 CTCSS and 104 DTCS tones with split tone function.
- Controller attachment to the main unit with optional MBA-4.
- 1052 memory channels including 50 scan edges and 2 call.
- Weather channel receive with weather alert (USA version only).
- HM-207 remote control mic is standard.
- 16 DTMF autodial memories.
- CI-V remote control capability (through the optional OPC-478UC).

ACCESSORIES		52A	V86	HRO Price
Battery Packs	BP-264		•	\$30.95
	BP-298		•	\$61.95
	BP-271	•		\$79.95
	BP-272	•		\$119.95
Battery Cases	BP-263		•	\$28.95
	BP-273	•		\$57.95
Cases	LC-193	•		\$34.95
Other	SP-27		•	\$33.95
	AD-92SMA	•	•	\$25.95
	MB-124		•	\$11.95

Icom Handhelds

Model	Frequency Range	Power In	Current Drain TX	Current Drain RX	Power Out (Std Battery Pack)	Sensitivity	Height Inches	Width Inches	Depth Inches	Weight Oz
IC-T10	2M / 70CM	--	< 2.5 A	< 600 mA	5.0 W	< .18uv	4.4	2.1	1.2	9.8
IC-V86	2M	7.5 W	1.6 A	450 mA	7.0 W	< .18uv	4.4	2.3	1.2	10
IC-V80	2M	6.5 W	1.5 A	450 mA	5.5 W	< .18uv	4.4	2.3	1.2	10
ID-52A	2M / 70CM	7.4 W	2.5 A	450 mA	5.0/2.5/1.0/0.5 W	< .18uv	4.1	2.28	1.0	9.0

Single Band

2 m Mobile Solution IC-2300H



The IC-2300 2m mobile transceiver boasts a powerful 65 W output, simple to use user interface, and built-in CTCSS.

- Simple operation with a large tuning dial.
- 207 alphanumeric memories.
- Dynamic memory scan allows scanning of selected memory banks.
- Pocket beep function for incoming calls.
- DTMF autodial.
- Select yellow, green or amber display.
- PC to XCVR and XCVR to XCVR cloning (optional software and cable required).
- Automatic repeater function and weather channel (USA only).
- Power supply voltage display, time-out timer, repeater lock out, auto power off.
- Selectable squelch delay and squelch attenuator.
- Wide / narrow channel setting.
- Passed MIL-STD 810G specifications.

2 m Mobile Solution IC-V3500



The IC-V3500 is a 2m mobile transceiver with modern elegance, rugged design and enhanced features.

- 65W(max) 2m analog FM mobile, commercial radio for some markets.
- Similar functionality as the 2300H.
- Modern design: Easy to use radio, better readability with the new white LCD backlight.
- Louder, clear speaker output.
- New emergency functions, requirements for commercial users in some markets, adding a new dimension in user operational safety.
- Instant mute.
- Audio Volume Boost - new functions in this product category.
- CS-V3500 programming software will be available for download.
- Supplied Accessories: HM-133V, DC Power Cord.

ACCESSORIES		52A	V86	HRO Price
Cables	CP-12L	•		\$39.95
	CP-23L		•	\$37.95
	OPC-254L	•		\$28.95
	OPC-478		•	\$40.95
	OPC-478UC		•	\$61.95
	OPC-515L		•	\$23.95
	OPC-2004	•	•	\$30.95
	OPC-2144	•		\$33.95
	OPC-2144	•		\$110.95
Speaker Mics	HM-153LS		•	\$48.95
	HM-158LA		•	\$74.95
	HM-159LA		•	\$84.95
	HM-166LS	•		\$56.95
	HM-186LS	•	•	\$25.95
Headsets	HS-94	•	•	\$159.95
	HS-95	•	•	\$38.95
	HS-97	•	•	

*Cable only to be used with HS-94, 95, or 97.

AA Alkaline Battery Packs

BP-208N
BP-263
BP-273
BP-293

Use standard "AA" batteries to power your handheld. Great for emergency use or as a quick, backup battery.



**EXTENDED WARRANTY
INFORMATION ON PAGE 54!**

HANDHELDS/RECEIVERS

Dual Band

2 m/ 70 cm

IC-T10

The IC-T10 is a direct conversion VHF/UHF portable transceiver with advanced features.

- 2m/70cm analog only FM handheld portable.
- 5W RF output.
- 1500mA AF output.
- Based on the commercial IC-F1000T series.
- 2.5ppm stability.
- FM- Wide and Narrow.
- CTCSS / DTCS /DTMF encoding.
- Priority Scan.
- Internal VOX function.
- Direct conversion design.
- 200 channels.
- FM broadcast RX (88-108MHz).
- MIL-810-G / IP67 environmental protection.



Supplied Accessories: BP-280 (2280mAh Li-Ion battery pack), single rapid charger BC-213, AC-Plug changeable AC adapter BC-242, FA-S270C antenna and belt clip.

Desktop Receiver



Wideband Receiver IC-R8600

- Ultra-wide frequency coverage (10 kHz-3 GHz) with RSSI (received signal strength indication) function.
- Fast moving, real-time spectrum scope and waterfall.
- Decodes multiple digital protocols, including D-STAR®, NXDN™, dPMR™ and APCO P25.
- Large 4.3 inch TFT color touch screen display.
- Clear audio quality using FPGA / DSP base architecture with superheterodyne circuitry.
- Optional IC-CSR8600 PC remote control software allows control of all receiver functions.
- I/Q signal output for use with third-party SDR software and/or external decoding.
- SD card slot for logs and voice recording.

Desktop Receiver



Professional Communications Receiver IC-R9500

- +40 dBm IP3 / 109 dB wide dynamic range.
- Measuring class accuracy.
- Superior BPF unit and dual IF filter.
- Dual DSP and 10 VFOs.
- 7" wide color TFT LCD.
- High resolution spectrum scope.
- 1000 memories.
- 2 channel noise blanker.
- 5 roofing filters & 2 point manual notch filter.
- 0.005-3335 MHz. Cellular blocked.
- All bands: SSB, CW, FSK, AM.
- Some Frequencies: FM, WFM.
- Digital voice recorder.
- 4 antenna connectors.

Single Band

2 m Analog Radio IC-V80-SPORT

The Icom V80 Sport version comes with a battery case to put your own AA batteries in. Does not include the rechargeable battery or charger!

- Solid structure meets IP54 and MIL-STD 810G standards.
- Built-in CTCSS and DTCS enc/dec features.



- Range USA:144-148 MHz, EXP: 136-174 MHz.
- 1500 mW powerful and crystal clear audio provides clear communication even in noisy environments.
- Optional BP-298, 2250 mAh (typical) large capacity Li-ion battery pack.
- Optional BP-299, 3150 mAh (typical) extra large capacity Li-ion battery pack.
- Supplied BC-240, battery charger with the charging control function which reduces degradation of battery.

Single Band

2 m Analog Radio IC-V86

Class leading 7 watt output power and new antenna design increase efficiency and communication overall coverage.

- Solid structure meets IP54 and MIL-STD 810G standards.
- Built-in CTCSS and DTCS enc/dec features.



- Frequency coverage TX / RX guaranteed useable range USA:144-148 MHz, EXP: 136-174 MHz.
- 1500 mW powerful and crystal clear audio provides clear communication even in noisy environments.
- Supplied BP-298, 2250 mAh (typical) large capacity Li-ion battery pack.
- Optional BP-299, 3150 mAh (typical) extra large capacity Li-ion battery pack.
- Supplied BC-240, battery charger with the charging control function which reduces degradation of battery.

Handheld Receiver

Portable IC-R6 SPORT

The IC-R6 is a signal search machine, covering 100 kHz to 1309.995 MHz (cellular blocked and receives analog TV only), it can search 100 channels a second. The receiver is energy-efficient and designed to provide up to 15 hours of listening on a single charge.



With 1300 alphanumeric memory channels, 50 scan edges, and 200 auto-write memories, there are many scanning opportunities. The bank link feature allows connecting any of the 22 memory banks. The Voice Squelch Control opens the squelch only when a modulated signal is detected.

IC-R6 Accessories

Model	Description	Price
OPC-478	Cloning Cable RS-232C	\$40.95
OPC-478UC	USB PC to Radio Cable	\$61.95
SP-27	Tube Earphone	\$33.95
AD-92SMA	BNC Antenna Adaptor	\$25.95



Multi-Band

HF/VHF/UHF + D-STAR® IC-7100



- Intuitive touch screen interface.
- Easy-to-see, easy-to-use slant top controller.
- Built-in high efficiency oval speaker on the controller.
- D-STAR® DV mode digital voice and low speed data communications.
- 505 memory channels.
- SWR graphic display.
- Optional MBF-1 mounting base.
- Built-in SD card slot for voice storage and data cloning.
- Built-in RTTY functions.
- Easy vehicle mounting with the optional MBF-1 kit.
- IF DSP controlled digital features. The 32-bit floating point DSP supports many digital processing features such as digital IF filter, twin PBT and manual notch filters.
- Remote Control Software (optional RS-BA1 IP).
- CW full break-in.
- CW auto tuning.
- USB Audio/Control.
- IF-DSP.

Tri-Band



VHF/UHF/SHF D-STAR® Transceiver IC-9700

Designed for the VHF / UHF weak signal operator, the IC-9700 is an RF direct sampling receiver for 2 m and 70 cm, with a single down conversion for 23 cm with an IF sampled receiver between 311 – 371 MHz. This design provides a quiet receiver with the power of Icom's DSP technology along with a robust PA providing 100 W on 2 m, 75 W on 70 cm, and 10 W on 23 cm.

- All mode, tri-band transceiver covers 144, 430 / 440 and 1200 MHz.
- Supports CW / AM / SSB / FM / RTTY and D-STAR® DV and DD modes.
- Digital Data (DD) mode provides 128 kbps data communication.
- PA has a powerful 100 W (144 MHz), 75W (430 / 440 MHz) and 10W (1200 MHz) output.
- 4.3" touch screen color TFT LCD.
- Smooth satellite operation with normal / reverse tracking and 99 satellite channels.
- Real-time, high-speed spectrum scope and waterfall display.

Dual Band HT

VHF/UHF D-STAR® Digital Transceiver ID-52A



The ID-52A is equipped with a color display. To provide more 'on-screen' information and increase readability the display size is increased to 2.3 inches (1.7 inches for the ID-51A/E), and a transfective display is used to achieve excellent visibility, even in bright sunlight. The transceiver also supports Bluetooth® communication as standard. Wirelessly connect to Android™ devices with ST-4001A/ST-4001I Picture Utility Software and RS-MS1A Remote Control Software installed. The optional VS-3 Bluetooth® headset is also available, for hands-free operation.

- 2.3" large transfective color display that is easy to see outdoors.
- Bluetooth® communication as standard.
- Simultaneous reception in V/V, U/U, V/U and DV/DV.
- Enriched D-STAR® features including the terminal mode/access point mode.
- UHF Air Band reception (225~374.995 MHz).
- Significantly increased audio output power to 750 mW (400 mW for ID-51 series).
- Accessories for the ID-51A/E such as battery packs and microphones can be used.
- IPX7 - 1 m depth of water for 30 minutes.

Dual Band

Dual Band D-STAR® & GPS Mobile ID-5100A DELUXE



Designed from user input, the ID-5100A offers an intuitive user interface experience with an industry leading touch screen display. Additionally, the ID-5100A interfaces with Android™ devices and Bluetooth® headsets via the optional Bluetooth® module. The ID-5100A is one of the most advanced dualband mobiles on the market today!

- Wideband receive (118-137 MHz (AM), 137-174 / 375-550 MHz only).
- Antenna RX diversity (second antenna connector).
- DTMF decode / DV / FM repeater list.
- Optional UT-133 Bluetooth® unit enables audio accessory connection and Android™ connection (CI-V via Bluetooth® SPP profile).
- Optional VS-3 Bluetooth® pendant earpiece mic.
- 1,000 memory channels.
- Built-in GPS engine.
- Includes MBA-2 bracket.
- RS-MS1A Android™ application (free-to-use download).
- Independent VHF and UHF band units (VV / UU capable) for 50 W output.
- D-Plus reflector usability.
- DV dual watch for simultaneously waiting in two DV voice streams (decodes one only).
- HM-207 control microphone is supplied as standard.

Ultra-Portable QRP



1-30/ 50/ 144/ 430 MHz All-Mode QRP Transceiver IC-705

The new IC-705 puts the power of a "Base Station" in the palm of your hand. And because of its ultra-portable size you can literally take this small wonder just about anywhere. Perfectly suited for backyards, parks, mobile, and mountain tops.

RF Direct Sampling

The IC-705 converts RF signals directly to digital data. A FPGA (Field Programmable Gate Array) processes the digital data into audio. The result is a reduction of internal noise that can hide weak signals. You will hear those distant signals that other radios mask.

Real Time Spectrum Scope And Waterfall Display

Easily see band activity, find a clear frequency, monitor receive and transmit conditions in real time. No more need for expensive add-on options.

Multiple Power Options

Included is a high capacity Li-ion battery, the same used in the ID-51A and ID-31A. For extended operation you can supply your own power from any 13.8V DC external source.

- 10 W output (13.8 VDC) and 5 W with BP-272 battery.
- D-STAR®, SSB, CW, AM, FM modes.
- Receives continuously from medium wave broadcast band to 144MHz.
- RF Direct Sampling System with real-time spectrum scope and waterfall display.
- Includes BP-272 battery.
- A speaker-microphone come standard. The speaker-microphone HM-243 is equipped with programmable buttons assignable to various functions, such as frequency adjustment and volume control. GPS antenna is built-in.
- Bluetooth® and wireless LAN

HF/50/144/440 MHz Multimode

Don't be limited to a few bands. Enjoy the freedom of operation from HF to UHF and in FM, AM, SSB, RTTY, and D-STAR DV. You'll also get FM broadcast and Airband reception.

Large, Color Touchscreen

At 4.3" the color TFT touch LCD allows you to clearly see and operate with ease. You can navigate through menus and adjust operating parameters with a simple touch of your finger. And the bright display means no worries when operating outdoors.

Compact and Lightweight

Even with all the impressive features this radio is a rugged, compact, and lightweight unit. At only 2.5 lb you will quickly discover that taking this radio with you is easier than ever!

built-in for smart phone linking and remote control and for use with Bluetooth® headsets.

- MicroSD card slot for firmware updates programming, voice recording, and saving GPS log data.

Field Ops Backpack LC-192



NEW

VHF/UHF/SHF



VHF/UHF/SHF All-Mode Transceiver IC-905*

Aim higher and enter the world of SHF. The IC-905 is an industry-first all-mode transceiver with 144/440/1200/2400/5600 MHz coverage. Add 10 GHz with the optional CX-10G transverter.

Two separate units (controller and RF module) allow you to mount the RF module as close as possible to the antenna.

The LAN cable connection between the controller and the RF module significantly reduces power loss.

PoE (Power over Ethernet) technology improves the location of the RF module installation.

Main Features

- Output power is 10 W on 144 / 430 / 1200 MHz, 2 W on 2400 / 5600 MHz and 0.5 W on 10 GHz
- 4.3 inch large color LCD touch display
- A high-performance real-time spectrum scope and waterfall display
- The real-time spectrum scope can be adjusted for various band spans
- Easy digital mode settings
- SD card slot
- High-performance GPS antenna supplied
- GPS 1 pps signal frequency management
- Full D-STAR functions (DV/DD Mode)
- ATV (Amateur TV) in the FM Mode
- USB connection for PC and mobile
- CX-10G, 10 GHz Transverter, available as an optional item.

*This device has not been approved by the Federal Communications Commission. This device may not be sold or leased, or be offered for sale or lease, until approval of the FCC has been obtained.



(Remote RF Unit)

Loop Antenna AL-705



Bluetooth® Headset VS-3



KENWOOD

Single Band

2 m Simplicity TH-K20A

This 2-meter handheld is a solid, value-packed radio. Simple controls make it easy to use.



- Tone alert (bell).
- Cross tone.
- 5.5 W RF output.
- Weather channel scan.
- VOX included (optional headset required).
- Battery capacity indicator.
- Auto repeater offset.
- Direct function key.
- Firmware upgradable.
- Built-in CTCSS, DCS and 1750 Hz tone burst.
- Direct frequency entry.
- Auto offset.
- Time-out timer.
- Beat shift.
- Frequency shift.
- Key lock type select.

Accessories

External Speaker SP-890W



a headphone jack on the front.

Designed to match Kenwood's TS-890S, this external speaker features dual inputs and high cut and low cut filters as well as

External Speaker SP-990M



Designed to match Kenwood's TS-990S, this external speaker features dual inputs and high cut and low cut filters as well as a headphone jack on the front.

Switching Power Supply KPS-15



surge. Housed in a heavy metal case with an internal cooling fan, this small supply weighs just over 3 lbs.

Provides 13.8 V at 23 A continuous or 25 A

Desk Microphone MC-90



at around 3 kHz. The base is die-cast and the microphone is removable from the base. 250 ohms impedance.

A high-quality DSP-compatible desk top microphone with UP / DOWN, PTT / PTT lock functions, wired with an 8-pin round plug. It is supplied with two interchangeable baffled wind-screens which offer either a wide range frequency response or a "DX" response with peak response

Desk Microphone MC-60A



A great, unidirectional, dynamic moving-coil type desk microphone with PTT / PTT lock and swivel capability that also includes a switchable preamp.

Batteries are included and must be installed for preamp operation. Dual impedance 500 ohm / 50 K-ohm slide switch selectable. Comes with 8-pin round connector but can be used with Kenwood RJ-45 equipped radios using optional MJ-88 adapter.

Prism Embroidery DUST-COVER



Leatherette dust cover custom crafted to fit each HF radio or amplifier. Available for most Kenwood HF radios. Contact HRO for a cover for your specific model.

Kenwood Battery Packs

Model	VDC	mAH Rating	Desk Charger	Radio Series	HRO Price
PB-45L	7.4	1800	KSC-32	TH-D72A	\$79.95
KNB-65L	7.4	1520	KSC-35S	TH-K20A	\$52.95
KNB-74LW	7.4	1100	KSC-25LSK	TH-D74A	\$79.95
KNB-75LW	7.4	1800	KSC-25LSK	TH-D74A	\$94.95



EXTENDED WARRANTY
WARRANTY INFORMATION
ON PAGE 54!

Kenwood Handheld Specifications

Model	Frequency Range	Power Supply	Max Power Out	Sensitivity	Height Inches	Width Inches	Depth Inches	Weight Ounces
TH-K20A	2M	6-9 VDC	5.5 watts	< .16uv	4.4	2.13	1.0	7.4

KENWOOD

HF / 50 MHz Transceiver



Extreme Performance HF / 50 MHz TS-990S

The TS-990S raises the bar on HF performance and DX operating ease. Dual display and dual watch gives you the edge in DX contesting.

- Frequency range HF + 50 MHz.
- Output power: 5 - 200 watts.
- Built-in antenna tuner.
- Mode: SSB, CW, FSK, PSK, FM, & AM.
- Built-in switching power supply.
- Comm ports: USB A / B and LAN.
- Dual TFT display and dual receiver. Main display monitors target signal vicinity and sub display monitors actual target signal.
- Down conversion for all amateur radio bands on the main receiver.
- IP3 + 40 dBm mixer performance.
- Narrow-band high-IP roofing filters.
- TCXO ±0.1 ppm for high stability receive.
- Dedicated triple DSP for main and sub-receivers plus band scope.
- Remote PC operation.
- Data mode facilitates switching between external terminals.
- Advanced AGC – digital and analog.
- 2-step split frequency configuration for quick setup.
- Maximum of 120 memory channels.
- Dual channel memory allows access while receiving two frequencies simultaneously.
- Memory accessible during split/sub receiver operation.
- Two USB sockets on the front panel.
- Firmware updates via USB stick or cable.
- VCO division-type first oscillator divides high frequencies to ensure high C/N.
- Dedicated triple 32-bit floating point DSPs for main & sub receivers plus band scope, audio scope and S-meter.
- Cooling system capable of providing ample airflow to each unit to ensure a stable 200 W output.

HF / 50 MHz Transceiver

Hi-Performance HF / 50 MHz TS-890S



The Kenwood TS-890S transceiver features a full down conversion receiver with H-mode mixer and high C/N 1st LO with four built in roofing filters: 500 Hz, 2.7 kHz, 6 kHz and 15 kHz (optional 270 Hz). This transceiver has a 7 inch color TFT display and includes roofing frequency sampling band scope, auto scroll mode and multi information screen. Heavy-duty construction and a high-speed 100 W antenna tuner come standard. The configuration of the band scope receiver has changed from the superheterodyne system used in the TS-990S to 1st IF sampling using an A/D converter (14bit/39MHz), and FPGA digital down conversion. This means a change in scanning method from step FFT to FFT, achieving high-speed updates to the display irrespective of scan settings.

- Cross tone.
- IF filter shape, AF filter.
- Audio peak filter, AGC quick recovery.
- Notch filter, noise blanker.
- Highly reliable 100 W final-stage amplifier circuit for HF and 50 MHz.

HF / 50 MHz Transceiver

Class Leading Performance TS-590SG



The TS-590SG features a narrow-band roofing filter to significantly reduce interference from unwanted signals.

The resulting excellent RX performance reveals signals that would be hidden to lesser rigs. With IF AGC based on advanced DSP technology, Kenwood has essentially redefined HF transceiver performance.

- Has sharp 500 Hz / 2.7 kHz roofing filter and dedicated first mixer.
- Built-in electronic memory keyer.
- Programmable keys, 110 memory channels, memory scroll function, multiple scan functions.
- Advanced AGC through digital signal processing from the IF stage onward, digital IF filters, detection and demodulation, noise reduction and IF auto notch, IF AGC, AF digital signal processing, two types of noise reduction, and TX audio shaping.
- Morse code decoder function.
- Direct frequency entry, USB connectivity for PC control, remote control using a computer, optional voice guide and storage unit.
- Split function enabling quick setting.
- Transmitter features: 100 watt heavy-duty design, built-in automatic antenna tuner, optional TCXO, drive output, speech processor (SSB / AM / FM), adjustable TX filter (SSB / AM), TX equalizer, TX monitor, VOX, adjustable TX power output and CAR level.

External Speaker SP-23



The SP-23 speaker matches several Kenwood radios including the TS-590SG, TS-450S, TS-570S/D and the TS-690.

Kenwood HF Specifications

Model	RX Frequency Range	Power Supply			Power Out Watts					Mic Z	RX Type	SENS Level	RIT/XIT Range	Notch Filter	Audio Output
		Volt	XMIT	REC	AM	FM	SSB	CW	FSK						
TS-590SG	0.13 - 60 MHz	13.8 VDC	20.5 A	1.5 A	25	100	100	100	100	600	#	<.2 μV	±9.99 kHz	>70 dB	1.5 W
TS-890S	1.81 - 29.7 MHz 50 - 52 MHz	13.8 VDC	22.5 A	1.5 A	50	100	100	100	100	600	Double Superhet	<.2 μV	±9.99 kHz	>70 dB	1.5 W
TS-990S	0.13 - 30 MHz 50 - 54 MHz	110/220 VAC Inc.	720 VAC	120 VAC	50	200	200	200	200	600	Double Superhet	<.2 μV	±9.99 kHz	>70 dB	1.5 W

SOFTWARE DEFINED RECEIVERS



Single SMA Input RSP1A

HRO Price: \$124.95

The RSP1A is a powerful wideband full-featured 14-bit SDR which covers the entire RF spectrum from 1 kHz to 2 GHz. All it needs is a PC and an antenna to provide excellent communications receiver functionality. Combined with the power of readily available SDR software, such as SDRuno, you can monitor up to 10 MHz of spectrum at a time. Other SDR software is available for most OS platforms (including Linux, Mac, Raspberry Pi). Third party software is also available to allow reception of various digital modes or to implement panadapter functionality for any CAT controllable rig.

- Continuous coverage from 1 kHz to 2 GHz.
- Up to 10 MHz visible bandwidth.
- Powers over the USB cable with a simple type B socket.
- 14-bit ADC silicon technology (not another 8 bit dongle!).
- 11 high-selectivity, built in front-end pre-selection filters.
- Software selectable AM/FM and DAB broadcast band notch filters.
- Software selectable multi-level low noise preamplifier.
- Bias-T power supply for powering antenna-mounted LNA.
- RF shielding layer inside case.
- SDRuno: world class Windows SDR software available as FREE download.
- Documented API for new apps development.
- Single SMA antenna socket covering entire frequency range.



Three Antenna Ports RSPdx

HRO Price: \$249.95

The RSPdx is a major upgrade to the popular RSP2 and RSP2pro multi-antenna receiver design. It's a wideband full-featured 14-bit SDR which covers the entire RF spectrum from 1 kHz to 2 GHz. Combined with the power of readily available SDR receiver software (including SDRuno supplied by SDRplay) you can monitor up to 10 MHz spectrum at a time. The RSPdx provides three software-selectable antenna inputs, and an external clock input.

You get all the benefits of the RSP1A plus...

- Additional design optimization for demanding reception conditions below 2 MHz.
- Software selectable choice of 3 antenna ports (2 x SMA and 1 x BNC).
- Enhanced ability to cope with extremely strong signals.
- External clock input for synchronization purposes, or connection to GPS reference clock for extra frequency accuracy.
- Excellent dynamic range for challenging reception conditions.
- Calibrated S meter/ RF power and SNR measurement with SDRuno.
- Enclosed in a rugged black painted steel case.

SDRuno Software

Windows-based SDRuno is provided free of charge and includes:

- Highly integrated, native support for the RSP family.
- Diversity tuning with the RSPduo.
- A fully integrated frequency scanner for all RSPs.
- Calibrated S-meter including support for IARU S-meter standard for all RSPs.
- Calibrated RF power meter with excess of 100 db of usable range for all RSPs.



3 Ports & Dual Tuners SDRduo

HRO Price: \$289.95

The SDRplay RSPduo is a dual-tuner wideband full-featured 14-bit SDR which covers the entire RF spectrum from 1 kHz to 2 GHz, giving 10 MHz of spectrum visibility. Combined with SDRuno software for Windows, you can simultaneously monitor two completely separate 2 MHz bands of spectrum anywhere between 1 kHz and 2 GHz. The RSPduo provides three software selectable antenna inputs and clocking features ideally suited to industrial, scientific and educational applications. All it needs is a PC and an antenna to provide excellent communications receiver functionality. A documented API allows developers to create new demodulators or applications around the platform.

- Dual tuners provide independent coverage 1 kHz to 2 Hz using 2 antenna ports simultaneously.
- 14-bit ADC silicon technology (not another 8 bit dongle!).
- Up to 10 MHz visible bandwidth (single tuner mode) or 2 slices of 2 MHz spectrum (dual tuner mode).
- 3 software-selectable antenna ports (2 x 50 ohms and 1 x 1k ohms high impedance balanced/unbalanced input).
- High impedance antenna port (1 kHz to 30 MHz) with selectable MW notch filter and choice of 2 pre-selection filters.
- Software selectable AM / FM and DAB broadcast band notch filters for the two SMA antenna (1 kHz to 2 GHz) ports.
- External clock input and output enables easy synchronization to multiple RSPs or external reference clock.
- Powers over the USB cable with a type B socket.
- 11 high-selectivity, built in front-end preselection.
- Filters on both the 2 SMA antenna ports.
- Software selectable multi-level low noise preamplifier.
- Bias -T power supply for powering antenna-mounted LNA.
- Enclosed in a rugged black painted steel case.
- SDRuno: World class SDR Windows software FREE to download.
- Open API for new apps development.

Latest SDRuno Version 1.4 Now Available

The latest SDRuno software (Version 1.4) includes a plugin system and a range of plugins are now available, including a DX cluster plugin which displays DX cluster callsigns on the SDRuno spectrum display. A DX cluster is a network of computers, each running a software package dedicated to gathering, and disseminating, information on amateur radio DX activities. With this plugin you can overlay the DX cluster callsigns as they pop up. There's a choice of how long you let them display and you can control the way in which they appear. Get the latest news on SDRuno plugins by going to:

<https://www.sdrplay.com/plugins/>



**HOW-TO VIDEOS,
SOFTWARE, AND MORE
ALL AVAILABLE FROM**

<https://sdrplay.com/apps-catalogue>

YAESU
The radio

High Performance HF Transceivers



HF/50 MHz - 100 W FTdx101D

HF/50 MHz - 200 W FTdx101MP

The new FTdx101 series is an impressive achievement from Yaesu's elite "FTdx" design team, utilizing the very latest SDR technology and brilliantly executed firmware to yield a high-end transceiver that exudes quality and high performance. Building on the legacy of the legendary best-selling FT-101 line, the new FTdx101 series stands to create its own legacy as one of the best performers ever available to the elite-class operator.

- Superb, class-leading close-in dynamic range.
- FTdx101D: 5-100 watts all modes except AM (25 W).
- FTdx101MP: 5-200 watts all modes except AM (50 W).
- 9 MHz IF roofing filter for excellent close-in IMD immunity.
- 400 MHz HRDDS (high resolution direct digital synthesizer).
- Hybrid SDR: direct sampling & NBW (narrow bandwidth) SDR technology.

- Completely independent dual receivers.
- High-Q VC-tuning front-end with general coverage RX.
- Yaesu renowned interference reduction system with 32-bit IF DSP and digital noise reduction and DSP auto notch.
- Large touch-panel precision color display and external display output.
- Rich, sparkling audio quality on both transmit and receive.
- Active band indicator with LED illumination

- of the operating band: facilitates rapid, mistake-free band changes.
- MPVD (multi-purpose VFO outer dial) provides sub VFO tuning, clarifier operation, VC-TUNE adjustment, VFO fine tuning, or a CS (custom selection) function.
- MP 200-watt version includes larger heatsink and fan, and uses external speaker/power supply.
- Superb, class-leading close-in dynamic range.

100 W Transceiver with 3DSS FTDX10

Hybrid SDR Configuration

Like the FTDX101 series, the new FTDX10 utilizes the Yaesu Hybrid SDR configuration - Narrow Band SDR and Direct Sampling SDR. The Narrow band SDR receiver emphasizes excellent receiver performance, while the Direct Sampling SDR provides a Digital Processing Real-Time Spectrum Scope.

Narrow Band SDR with 3 types of Roofing Filters and Phenomenal Multi-signal receiving Characteristics

Like the FTDX101 series, the Down Conversion type receiver configuration with the first IF at 9MHz has been adopted. It makes it possible to incorporate excellent narrow bandwidth crystal roofing filters that have the desired sharp "cliff edge" shape factor. Thanks to the Narrow Band SDR with the latest circuit configuration including 500Hz, 3kHz and 12kHz roofing filters and low-noise oscillator, the RMDR (Reciprocal Mixing Dynamic Range) reaches 116dB or more, the close-in BDR (Blocking Dynamic Range) reaches 141dB or more and 3rd IMDR (third-order Intermodulation Dynamic Range) reaches 109dB or more in the 14MHz band at 2kHz separation.

250MHz HRDDS (High Resolution Direct Digital Synthesizer) Affords Quiet and Clear Reception

The local circuit of the new FTDX10 uses 250MHz HRDDS method same as the FTDX101 series. Thanks to its characteristics that improve the C/N (carrier to noise) ratio and the careful selection of components in the design, the phase noise characteristic of the local signal achieves an excellent value of -145dB or less in 14MHz at 2kHz separation.



- HF/50MHz band 100W Transceiver.
- Hybrid SDR configuration utilizing a Narrow Bandwidth SDR and a Direct Sampling SDR.
- Narrow Band SDR enables phenomenal multi-signal receiving characteristics (2kHz RMDR 116dB+, 2kHz BDR 141dB+, 2kHz 3rd IMDR 109dB+).
- 15 separate powerful Band Pass Filters (BPF).
- 5-inch full color touch panel and 3DSS (3-Dimensional Spectrum Stream) display.
- MPVD (Multi-Purpose VFO Outer Dial) enables

- outstanding RF operating performance.
- Quick Memory Bank (QMB).
- Supports CW operation with multiple functions such as: CW zero-in, CW auto zero-in, CW reverse, CW decode, CW keying signal form shaping by FPGA and others.
- RTTY (FSK)/ PSK Encode/ Decode function.
- Other practical features such as optional RF gain selection by IPO. Automatic Gain Control, quick split function.
- SD card slot.
- Remote operation via internet with optional LAN-Unit (SCU-LAN10).

HF DESKTOP/PORTABLE

YAESU
The radio

NEW

HF/50Mhz Transceiver

**100 W Transceiver with AESS
FT-710 AESS**



The new FT-710 AESS is packaged in a sleek new compact design while providing 100W output. It also utilizes the advanced digital RF technology introduced in the FTDX101 and FTDX10 series.

Includes Yaesu SP-40 External Speaker with every unit.

A few of the new incredible features of the FT-710 AESS are:

- Unmatched SDR technology emphasizes the Receiving Performance.
- Band Pass Filters dedicated for the Amateur Bands that specialize in eliminating out-of-band unwanted signals.
- RF Front-End design with the 250MHz HRDDS (High Resolution Direct Digital Synthesizer) enables Phenomenal Multi-Signal Receiving Characteristics.
- QRM rejection by the dual core 32-bit high speed floating decimal point DSP for SHIFT/ WIDTH/ NOTCH/ CONTOUR/APF (Audio Peak Filter)/ DNR (Digital Noise Reduction)/ NB (Noise Blanker) and 3-Stage Parametric Equalizer.
- High Resolution 4.3-inch TFT Color Touch Panel Display.
- 3DSS (3-Dimensional Spectrum Stream).
- VMI LED (VFO Mode Indicator) placed around the VFO dial shows the current operating mode (VFO-A, VFO-B, Memory Mode and Clarifier/Split Operation).
- PRESET Mode Function most suitable for FT8 Operation
- AESS: Acoustic Enhanced Speaker System with SP-40 creates the high-fidelity audio output.
- External Display Connection Terminal (DVI-D).
- Built-in High Speed Automatic Antenna Tuner with 100 channel memory.
- Support the FC-40 Auto Antenna Tuner.
- SD Memory Card can be used to save the communication record, transceiver setting, the memory contents, screen capture images, and to update the firmware.
- Two (2) USB Ports (Type-A and Type-B).
- Other essential features such as CW ZIN and SPOT, IPO (Intercept Point Optimization), and Remote Operation with Network Remote Control System to name a few.

External Display Ready

Like the FTdx101 and FTDX10 the FT-710 AESS has a rear DVI-D port that allows the connection of an external monitor.



AM/FM/CW/SSB + C4FM Digital



HF/50/144/440 MHz PORTABLE FT-991A

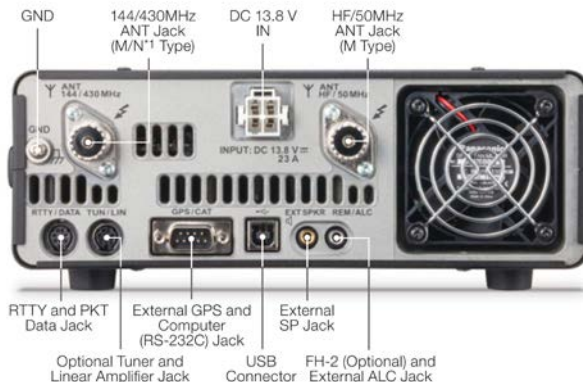
The FT-991A is the next generation in all mode, all band MF/HF/VHF/UHF transceiver with C4FM (System Fusion) Digital capability. The FT-991A includes multi-mode operation on CW, AM, FM, SSB, and Digital Modes (Packet, PSK31, RTTY and C4FM), with 100 Watts of HF/50mhz Capability (50 Watts VHF/UHF).

The New FT-991A now includes a high-resolution full color 3.5" TFT Touch panel for superior operability and visibility, incorporating a High Speed Spectrum and High Resolution real-time scope with ASC (Automatic Spectrum-scope control) built right in.

The FT-991A is designed for the most competitive operating situations, with a suite of new features to enhance the experience. Whether you primarily operate at home, mobile or in the field, the FT-991 will provide outstanding fundamental performance plus give you easy access to the full range of exciting modes available on the ham bands today.

- Receive coverage 160m through 70cm.
- Transmits 100 W (HF), 50 W (2 m), 50 W (70 cm).
- 3.5 inch TFT full-color touch panel operation.
- High speed spectrum scope with automatic control built-in.
- Roofing filter 3 kHz and 15 kHz.
- Triple conversion with 1st IF frequency of 69.450 MHz on all bands.
- High accuracy TCXO ± 0.5 ppm.
- Separate RF amps for best characteristic on each band.
- High resolution DDS and PLL local oscillator.
- 32 bit high speed floating point IF DSP.
- IF width and IF shift.
- Contour, DNR, IF Notch.
- APF for CW only.
- 160-6m, high speed automatic antenna tuner.
- Full color TFT / LCD display. Four user defined function keys.
- Electronic keying with break-in support, electronic keyer weight control.
- Message memory function.
- 50 tone CTCSS encoder / decoder for FM operation.
- Compatible with optional ATAS-120 Active Antenna System.

Rear Panel



Mobile HF Transceiver

HF/50 MHz Compact Mobile FT-891



A great mobile transceiver in a compact package providing uncompromised performance for both the mobile and stationary amateur operator. High end 32-bit floating point DSP enhances the operating experience providing a cleaner, clearer signal and reducing overall operator fatigue creating a more enjoyable environment for any amateur operator.

- Frequency Range: Tx: 1.8 – 54 MHz (Amateur Bands Only)
Rx: 30 KHz – 56 MHz
- Channel Step: 2/5/10 Hz (SSB, CW), 10/100 Hz (AM,FM)
- Frequency Stability: +/- 0.5 ppm 14 °F to + 122 °F (-10 °C to +50 °C)
- Modes of Emission: A1A (CW), A3E (AM), J3E (LSB, USB), F3E (FM)
- Impedance: 50 ohms, unbalanced
- Supply Voltage: 13.8VDC +/- 15%, negative ground
- Current Consumption: Rx: 2.0 A (Signal Present) Tx: 23 A
- Operating Temperature Range: 14 °F to +122 °F (-10 °C to +50 °C)
- Case Size (WxHxD): 6.1" x 2.0" x 8.6" (155 x 52 x 218 mm) w/o Knobs
- Weight (Approx.): 4.18 lb (1.9 kg)
- Output Power: 100W SSB/CW/FM (AM: 25W)
- Circuit Type: SSB/CW/AM: Triple-conversion super-heterodyne FM: Double conversion super-heterodyne
- Intermediate Frequencies: 1st: 69.450 MHz / 2nd: 450 KHz
- Maximum AF Output: 2.5 W 4 ohms with 10% THD
- Audio output Impedance: 4 to 16 Ohms (8 Ohms nominal)
- Sensitivity: SSB/CW (S/N 10dB) 0.158uV (1.8 - 30 MHz), 0.125uV (50 -54 MHz)
- AM (S/N 10 dB) 4 uV (0.5 – 1.8 MHz), 1.6uV (1.8 – 30 MHz), 1.2uV (50 – 54 MHz)
- FM (12 dB SINAD) 0.35uV (29, 50 – 54 MHz)

Matching Auto Tuner FC-50



Compact HF/VHF/UHF Transceiver

All-Mode QRP Portable FT-818ND



The ultimate 'shack-in-a-box'. All-mode and coverage from HF all the way through the UHF bands. Ultra compact and with its own SBR-32 1900 mAh NiMH battery you can take it anywhere. Carrying strap included.

- Fully self-contained battery-powered low-power amateur transceiver for portable, camping, or mountain use.
- 6 W SSB/CW/FM, 1 W AM.
- Operates on 160-10m, HF, 6m, 2m, and 70cm bands.
- Operating modes: USB, LSB, CW, AM, FM, WFM, and digital (AFSK), packet (1200 / 9600 FM).
- 208 memory channels / 10 memory groups.
- Improved frequency stability ±0.5 ppm: built-in TCXO-9.
- IF shift, IF noise blanker, IPO, & ATT.
- CW "semi-break-in," CW reverse, CW pitch control.
- Built-in electronic keyer.
- ARS auto repeater shift.
- Dual VFOs, split-frequency operation, IF shift, clarifier "RIT", IF noise blanker; RF gain and squelch control, IPO (Intercept Point Optimization).
- Built-in CTCSS encoder/decoders.

Waterproof External Speaker MLS-200

Perfect for boats, off-road vehicles, and installations that are exposed to dust and water. Bracket included. Cord ends in a 3.5mm stereo plug.



Portable HF Antenna ATAS-25

The Yaesu ATAS-25 is just the ticket for temporary FT-818, FT-891 or FT-991A Field Operations. It covers these amateur bands: 7, 14, 21, 28, 50, 144 and 430 MHz. The bands are covered by manually changing the supplied elements and hand adjusting the coils. Very compact.



Yaesu HF Specifications

Model	Bands	Volts AC	Volts DC	TX Amps	RX Amps	AM	FM	SSB	CW	MIC Z	RX Type	Sens	RIT/XIT Range	Audio Power
FTDX10	HF/50Mhz		13.8	23 A	2.1 A	25 W	100 W	100 W	100 W	200-10K	Double	< .16 dBu	±9.99 kHz	2.5 W
FTDX101D	HF/50Mhz		13.8	23 A	3.5 A	25 W	100 W	100 W	100 W	200-10K	Double	< .16 dBu	±9.99 kHz	2.5 W
FTDX101MP	HF/50Mhz	100-201		720 VA	100 VA	50 W	200 W	200 W	200 W	200-10K	Double	< .16 dBu	±9.99 kHz	2.5 W
FT-818	HF/50Mhz 144Mhz 440Mhz		8 to 16	2.7 A	450 mA	2 W	6 W	6 W	6 W	200-10K	Double	< .25 dBu	±9.99 kHz	1 W
FT-891	HF/50Mhz		13.8	23 A	2.0 A	25 W	100 W	100 W	100 W	200-10K	Triple	< .158 dBu HF < 125 dBu 6m	±9.99 kHz	2.5 W
FT-991A	HF 50MHz 144Mhz 440MHz		13.8	23 A	2.2 A	2-25 W	100 W 50 W 2M 50 W 70CM	100 W 50 W 2M 50 W 70CM	100 W 50 W 2M 50 W 70CM	200-10K	Triple	< .158 dBu HF < 125 dBu 6m < .111 dBu VHF/UHF	±9.99 kHz	2.5 W

YAESU

The radio

Desk Microphone



DUAL ELEMENT M-1

Revolutionary dual microphone configuration has both a dynamic element for depth and warmth and a condenser element for crisp highs. The M-1 lets you adjust the balance of the two microphone sources to create a sound that is just right for your voice. The nine-band graphic equalizer applies to each microphone element independently. A clip-on cowling enhances the response of both elements by minimizing aural interference. The solid aluminum die cast mic stand prevents sympathetic vibration. The central recessed control panel has been configured for ease of use. Check your voice in the headphones with the built-in record and playback feature. The built-in memory can store two different groups of settings for each microphone.

Desk Microphone

Single Element M-70



The M-70 utilizes a directional condenser microphone element which has precisely tuned the frequency response to obtain clear and crisp audio quality. The PTT uses three Air-Cylinder tubes similar to the Reference Microphone M-1 to provide a solid and smooth extended operation. A simple one-touch PTT key lock button is placed just above the PTT key for those long rag chews. The M-70 is compatible with all YAESU HF transceivers equipped with round 8-pin microphone connector or 8-pin modular microphone connector.

Single Element M-90D



The M-90D utilizes a Dynamic Microphone Element that is finely tuned to deliver rich low to mid frequency response desirable for a clear and concise conversation. Using a windscreens cover and a directional microphone element, the structure of the microphone of the M-90D and M-90MS is designed to concentrate voice input from the front while reducing ambient noise from the side. Built-in Low-Cut filter creates clear and crisp audio characteristics by shaping the low frequency response (cut off at 340Hz, -6dB/octave). The M-90D is compatible with all YAESU HF transceivers equipped with the round 8-pin microphone connector or the 8-pin modular microphone connector.

Programming Kits

HF Radios:

YPS-818-USB..... FT-818ND
 ADMS-4BU FT-857/897
 ADMS-891-USB FT-891
 ADMS-991-USB FT-991
 YPS-DX10-USB..... FTdx10
 YPS-DX101-USB..... FTdx101

Mobiles Radios:

ADMS-M3100.....FTM-3100R
 YPS-M200-USB..... FTM-200DR
 ADMS-2900 FT-2980
 YPS-7250-USB..... FTM-7250
 YPS-M6000-USB.....FTM-6000R
 YPS-M300-U FTM-300DR
 ADMS-M400-UFTM-400XDR

Handhelds:

ADMS-1J FT-60R
 ADMS-FT2D-USB FT-2DR
 ADMS-FT25-USB FT-25R
 ADMS-FT65-USB FT-65R
 ADMS-70D-USB FT-70DR
 ADMS-VX6 VX-6R
 YPS-FT3D-USB..... FT-3DR
 YPS-FT5D-USB..... FT5DR



External Speaker MLS-100

This high-performance, external communications speaker matches the impedance and output requirements of most Yaesu transceivers. It mounts on a swivel stand that is supplied along with mounting screws and bolts. A 6.5 foot (2m) audio cable that terminates in a 3.5 mm mono mini plug is also supplied. **HRO Price: \$46.95**

Automatic Antenna Tuner

All-Band Auto Tuner FC-40



The FC-40 is a microprocessor-controlled antenna impedance matching network designed to provide all-amateur-band transmitting capability with the FT-450D/891 transceivers when used with an end-fed random wire or long whip antenna. The FC-40 mounts near the antenna feedpoint and makes use of the control circuitry built into the transceiver, allowing the operator to control and monitor automatic operation of the tuner **HRO Price: \$274.95**

- Operating Frequency Range: 1.8 - 54 MHz with 20+ m end-fed wire, 7 - 54 MHz with YA-007 HF 2.5 m mobile whip antenna.
- Maximum power: 100 W.
- Tune-up power: 4 W ~ 60 W.
- Tune-up time: 10 sec max.
- Impedance matching memories: 100 channels.
- Power supply: 13.8 V DC \pm 15%
- Case Size (WHD): 9.4" x 7" x 2.1" (236 x 175 x 53 mm.)
- Unit Weight: 2.6 lbs. (1.2 kg.)

Power Supplies

25 Amp | FP-1030A

The FP-1030A is a regulated linear supply at 25 amps and includes meters. **HRO Price: \$229.95**



23 Amp | FP-1023A

The FP-1023A has 23 amps continuous and 25 intermittent. This low-profile switching power supply operates on 110 or 220 VAC. **HRO Price: \$149.95**



YAESU 3-YEAR WARRANTY

All current Yaesu amateur radios come with a three (3) Year Manufacturer's Warranty! The move to a three (3) Year Warranty is a firm commitment from Yaesu to continue to supply top quality products for many years to come.

Dual Band



2 m/ 70 cm Analog & Digital GPS & APRS FTM-200DR

The new FTM-200DR is a C4FM Digital multi-functional transceiver with a single receiver. The FTM-200DR delivers reliable and stable 50W transmit performance. The heavy-duty heat sink is equipped with FACC (Funnel Air Convection Conductor). The speaker delivers 3W of clear and crisp receive audio which has been specifically tuned for radio communication. 2-inch full-color display provides high visibility and highlights the frequency of the operating band with selectable color – White, Blue or Red. Front panel of the FTM-200DR is detachable and can be mounted at the most desirable operating position. The new FTM-200DR supports optional Bluetooth® wireless operation using the SSM-BT10 Headset or a commercially available Bluetooth® headset.

- 1104 Memory channels.
- Wide-range 108MHz to 999.995MHz receive coverage
- High speed Band Scope (displays the receive status of up to 61 channels centered on the current VFO frequency or up to 21 channels in Memory Mode)
- VFO Band Skip Function
- High-precision 66 channel GPS Receiver
- 1200/9600bps APRS® Data Communication
- VOX function
- Recording Function
- Snapshot Feature (with MH-85A11U)
- microSD Card Slot.

Dual Band

2 m/ 70 cm Analog & Digital GPS & APRS FTM-400XR



Operate on 2m and 70cm with this mobile transceiver. Select power of 50, 20, or 5 watts on either band. Enjoy wideband receive from 108-470 and 800-999 MHz (less cellular).

Four scan modes: VFO, memory, programmable memory, or selected memory. Each memory can store frequency, mode, tag, repeater information, tone, DCS, antenna squelch information, memory skip information, and transmission output. Set the screen background to any of 5 colors (green, blue, orange, purple or gray). Capture images and video by connecting a USB camera (not supplied) and transmit and receive them. There is a port for a microSD card.

- Transmit bands - 2m / 70cm.
- Wideband RX
- Double conversion receiver with twin RX.
- Large, vibrant color display.
- 500 memories per band.
- Internal clock / calendar.
- Image receive / transmit.
- Enhanced GPS / APRS®.
- 1000 memories in 2 banks; four scan modes.
- Band scope & spectrum scope.
- ARTS™ and optional Bluetooth®.
- Optional voice guide speaks operating frequency and records received signals.

Dual Band



2 m/ 70 cm Analog & Digital GPS & APRS FTM-300DR

The FTM-300DR provides stable and reliable 50W of clean output power. It is equipped with a big,

heavy-duty heatsink that includes our exclusive FACC (Funnel Air-Convection-Conductor Wind Tunnel) to cool the radio while operating.

Real Dual Band Operation (V+V, U+U, V+U, U+V) is available with two independent receivers, and the FTM-300DR supports simultaneous C4FM digital monitoring for both the A and B bands. It has a 2-inch high-resolution QVGA full-color TFT display.

- 50 W Stable High-Power.
- Dual Band Operation (V+V, U+U, V+U, U+V) and Simultaneous C4FM monitoring.
- Large-capacity 1104 channel memory.
- Receiver for Analog node station as well as Digital node station with FTM-400D.
- 2-inch High-Resolution QVGA Full-Color TFT Display and Detachable Front Panel Controller.
- Memory Channel Band Auto
- Grouping Function (AIR, VHF, UHF, GEN).
- High-Speed & High-Resolution Band Scope.
- 3 W audio power speaker with two individual terminals for the external speakers.
- Built-in Bluetooth® unit for hands-free operation with the SSM-BT10 (optional).
- Micro SD Slot (up to 32GB).
- Built-in 66ch high precision GPS receiver and external GPS device connectivity.

Internet Linking Kit

Wires-X Connection Kit HRI-200



WIRES-X supports both analog and the new C4FM digital radio communications modes. Yaesu's System Fusion II, already the fastest growing Amateur Radio Digital System, is certain to see yet another peak in interest thanks to WIRES-X!

- WIRES-X allows communications between both C4FM digital and conventional FM stations.
 - High quality C4FM voice.
 - WIRES ID: Adopted a simple user ID system using alphanumeric characters.
 - Smart Access: WIRES-X automatically connects to nodes and rooms by utilizing the Smart Access function. (Digital node station only).
 - Preset Search: User can find local node station and receive their frequency setting data for automatic setup. (Digital node station only).
 - Activity Monitor: IDs of active nodes and rooms can be searched from the C4FM transceiver via a local node. (Digital node station only).
 - News Station: Stores and reads digital data such as text, images and audio data. (Digital node station only).
 - Supports analog FM mobile transceiver for analog node station as well as digital node station with FTM-400XR.
- ** Each HRI-200 must be registered with Yaesu before operation.

YAESU The radio

Dual Band Analog

2 m / 70 cm Analog Mobile FTM-6000R



The FTM-6000R is the latest dual band, analog mobile from Yaesu. Designed with a slim size and detachable front panel, this powerful radio can easily be installed in most any vehicle.

- New User Operating Interface E20-III (Easy to Operate-III).
- PMG (Primary Memory Group) Function allows instant recall of the frequently used frequencies registered in the PMG.
- MAG (Memory Auto Grouping) Function allows memory channels to be automatically categorized in each band, and quickly recalled by band groups.
- 1,100 Memory channels with character alphanumeric tags (Maximum 6 characters).
- 3W Powerful & Clear Audio.
- Wide-range receive coverage from 108MHz to 999.995MHz.
- Easy wireless operation Bluetooth® connection capability (Requires Bluetooth Unit BU-4 and Bluetooth Headset SSM-BT10).
- Frequency range:
 - Transmit: 144 - 148 MHz,
 - Receive: 108 - 999 MHz (some frequencies are blocked).
- Double conversion superheterodyne.
- 1100 alphanumeric memory channels.
- CTCSS and DCS encode/decode.
- VFO Band Skip function.
- DTMF microphone.
- Output power: 50 / 25 / 5 W.
- Radio Unit 5.47" x 1.66" x 5.2" (139 x 42 x 132 mm)w/o fan.
- Controller 5.51" x 1.6" x 1.38" (140 x 40.5 x 35 mm)w/o knob.

Single Band Analog

Ultra-Rugged 2 m Mobile FT-2980R



This 144 MHz 80 watt FM mobile transceiver has 3 watts of RX audio, and an MH-48A6JA DTMF microphone. The FT-2980R arrives with the solid feature configuration and mechanical toughness of the ever popular FT-2900R, with output power now at 80 watts!

The FT-2980R four output power settings: 80 W, 30 W, 10 W and 5 W are selectable, allowing each user to choose the power they want for their operating style and situations. A massive heatsink guarantees a solid 80 watts of RF power with no cooling fan needed. Thanks to a loud 3 watts of audio output, the operator can enjoy CLEAR reception, even in noisy environments. Also included are: alphanumeric channel display, 200 memory channels, CTCSS and DCS encode/decode built-in, versatile scanning capability, wide/narrow deviation selection, plus an interactive programming menu.

Single Band Analog

Simple 2 m FTM-3100R



The FTM-3100R is a ruggedly built yet compact VHF-FM mobile transceiver, providing high output power of up to 65 watts. One of the distinguishing features of this mobile transceiver is the front panel speaker delivering 3 watts of loud and crystal clear audio.

- Frequency range:
 - Transmit: 144 - 148 MHz,
 - Receive: 136 - 174 MHz.
- Double conversion superheterodyne.
- 220 alphanumeric memory channels.
- CTCSS and DCS encode/decode.
- High stability TCXO ±2.5 ppm).
- Severe weather alert.
- DTMF microphone
- Output power: 65 / 30 / 5 W.
- Loud front-firing speaker.

Yaesu Handhelds

Model	Frequency	Mode	Power Supply	Watts Out	TX Amps	RX Amps	Sens	Height in (cm)	Width in (cm)	Depth in (cm)	Weight oz (g)
FT-60R	2m / 70cm	FM	7.2 VDC	5	1.5	125 mA	.16 dBu / 12 dB	4.3 (10.9)	2.3 (5.8)	1.2 (3.0)	13.5 (370)
FT-65R	2m / 70cm	FM	7.4 VDC	5/2.5/0.5	1.5/1.7	205 mA	.2 dBu / 12 dB	4.1 (10.4)	2.5 (5.2)	1.2 (3.0)	9.17 (260)
FT5DR	2m / 70cm	FM	7.4 VDC	5/2.5/1/3	1.9	170mA	.2 dBu / 12 dB	3.94 (10)	2.44 (6.2)	1.34 (3.2)	9.95 (282)
FT-4XR	2m / 70cm	FM	7.4 VDC	5/2.5/0.5	1.5/1.7	190 mA	.2 dBu / 12 dB	3.5 (9)	2.1 (5.2)	1.2 (3.0)	8.82 (250)
VX-6R	2m / 70cm **†	FM	7.4 VDC	5	1.5 1.6/1.8	150 mA	.16 dBu / 12 dB	3.4 (8.7)	2.3 (5.8)	1.1 (2.8)	9.5 (270)
FT-70DR	2m / 70cm †	FM	7.4 VDC	5/2/0.5	1.6	180 mA	.16 dBu / 12 dB	2.36 (6.0)	3.86 (9.8)	1.3 (3.3)	8.99 (255)

Power output can be increased depending on the battery pack. †Extended range.

HANDHELD ACCESSORIES

Yaesu Handheld Accessories

Accessory	Model	FT 60R	25R 65R	FT 4XR	VX 6R	FT 70DR	FT 3DR	FT 5DR	HRO PRICE
Mic Adapter	CT-44	•				•	•	•	\$16.95
Mic Adapter	CT-91				•				\$17.95
Bluetooth® Headset	SSM-BT10						•	•	\$34.95
VOX Headset	SSM-64A				•				\$59.95
VOX Headset	SSM-63A	•				•	•	•	\$69.95
VOX Earpiece Mic	SSM-512B		•						\$29.95
Speaker/Mic	SSM-17A	•				•	•	•	\$39.95
Speaker/Mic	SSM-17H				•		•	•	\$27.95
Speaker/Mic	MH-73A4B				•				\$47.95
Compact Speaker/Mic	SSM-17B		•	•					\$24.95
Camera/Mic	MH-85A11U						•	•	\$134.95
Ear Piece Mic	SSM-55A				•				\$39.95
Ear Piece Mic	SSM-57A	•				•	•	•	\$34.95
DC/DC Cigar Adapter	SDD-13	•			•	•	•	•	\$27.95
DC/DC Adapter	EDC-6	•			•	•	•	•	\$8.95
Wall Charger	SAD-24B	•			•				\$28.95
Wall Charger	SAD-25B					•	•	•	\$29.95
AC Adapter	SAD-26B		•						\$19.95
Rapid Charger	CD-15A				•				\$39.95
Charger Cradle	SBH-13	•							\$23.95
Rapid Charger	SBH-22		•	•					\$19.95
Charger Cradle	SBH-28					•			\$29.95
Charger Cradle	CD-26								\$25.95
Charger Cradle	CD-41						•	•	\$37.95
Battery 1400 mAh	FNB-80LI				•				\$74.95
Battery 1300 mAh 7.4 V	FNB-83	•							\$35.95
Battery 1100 mAh 7.4 V	FNB-101LI						•	•	\$52.95
Li-ion 2200 mAh	SBR-14LI						•	•	\$79.95
Li-ion 1800 mAh	SBR-24LI					•			\$39.95
Li-ion 1950 mAh	SBR-25LI		•						\$34.95
Li-ion 1950 mAh	SBR-26LI		•						\$44.95
Li-ion 1750 mAh 7.4 V	SBR-28LI			•					\$35.95
Battery Case AA	FBA-23				•				\$29.95
Battery Case AA	FBA-25	•							\$18.95
Battery Case AA	FBA-39						•	•	\$31.95
Cloning Cable	CT-27	•				•			\$14.95
Cloning Cable	CT-168						•	•	\$24.95
Cloning Cable	SCU-36		•	•					\$19.95
Programming Cable	SCU-35		•	•					\$19.95
Programming System	YPS-FT3D						•	•	\$48.95
Data Cable (Dsub>9pin)	CT-169						•	•	\$36.95
Data Cable (11pin>2.5)	CT-170						•	•	\$29.95
Data Cable (2.5>2.5)	CT-176						•	•	\$24.95
WiresX Cable	SCU-39						•	•	\$29.95
Ant Adapter SMA-BNC	CN-3	•			•		•	•	\$8.95
Soft Carry Case	CSC-91				•				\$16.95
Soft Carry Case	SHC-27					•			\$19.95
Soft Carry Case	SHC-34						•	•	\$24.95

Contact your local HRO for a complete list of accessories available.

Simplified User Manuals

Nifty Mini-Manuals

Fully laminated, spiral bound booklets, 4.25 x 8 inches, providing simplified step-by-step instructions for all your radio's features. These short-form manuals are smaller, more durable, and easier to use than manuals normally supplied with a radio.

Model	Description	HRO Price
NIFTY-FT2DR	Mini-Manual	\$15.95
NIFTY-FT3DR	Mini-Manual	\$26.95
NIFTY-FT5DR	Mini-Manual	\$26.95
NIFTY-FT60R	Reference Card	\$6.95
NIFTY-VX6R	Mini-Manual + Card	\$24.95
NIFTY-FT65R	Reference Card	\$6.95
NIFTY-FT70DR	Mini-Manual	\$21.95
NIFTY-FT4XR/VR	Mini-Manual	\$18.95

Programming Software



RADIO PROGRAMMING MADE EASY

For over 23 years, RT Systems has produced the most up-to-date amateur radio software for all the top radio manufacturers. Along with the most reliable software, RT Systems makes the best cables for programming and/or control. RT Systems removes the worry over programming or managing your radio memories.

Model	RT Software	HRO Price
FT-2DR	ADMS-FT2D-USB	\$48.95
FT-3DR	YPS-FT3D-USB	\$48.95
FT-5DR	YPS-FT5D-USB	\$48.95
FT-60R	ADMS-1J	\$38.95
FTM-6000	YPS-M6000-USB	\$48.95
VX-6R	ADMS-VX6	\$38.95
FT-65R	ADMS-65-USB	\$48.95
FT-70DR	ADMS-70D-USB	\$48.95
FTM-400XDR	ADMS-M400-U	\$24.95

MARS/CAP Modifications

MARS is the Military Auxiliary Radio Service. CAP is Civil Air Patrol. They use frequencies near ham bands.

Ham Radio Outlet is able to modify most radios to operate in the MARS/CAP service frequencies. Contact HRO for details.

*MARS/CAP modification are for those authorized with one or the other organization, and the frequencies are for official use only.

YAESU
The radio

Dual Band

FM & C4FM GPS & APRS FT5DR

The FT5DR is 5 W of RF power output in a light weight, compact design. Battery power saving settings are available for each frequency band with TX output power levels (5 W / 2.5 W / 1 W / 0.3 W) individually selectable. Enjoy loud, clear C4FM voice quality from 1 watt of audio power. Real dual band operations (V+V, U+U, V+U, U+V) are available with two independent receivers, and the FT5DR supports simultaneous C4FM digital monitoring for both the A and B bands (C4FM & C4FM standby).

Color Touchscreen



- C4FM digital V/D mode, voice FR mode, data FR mode, and conventional FM mode in one unit.
- Built-in Bluetooth® for hands-free.
- Color selectable high-resolution display (white, red, or blue).
- Simultaneous AM/FM Broadcast reception and 2-channel monitoring.

- Band scope function for monitoring up to 79 channels centered around the current VFO frequency with high-speed.
- System Fusion II compatible AMS (automatic mode select), DG-ID (digital group ID), and smart navigation functions.
- WiRES-X portable digital mode compatible.
- Built-in 66 channel high-sensitivity GPS receiver.
- New Touch & Go operation from Primary Memory Group.
- Voice recording function for the received and transmitted audio.
- Built-in On/Off timer, automatic power off (APO) and time-out timer (TOT).
- Micro SD card slot (up to 32GB).
- IPX7 rating water protection.
- 7.2V 2,200 mAh Lithium Ion battery pack (SBR-14LI) included.
- Standard SMA antenna connector
- Belt clip & quick-release holster included.

Dual Band

2 m / 70 cm Analog FT-60R

One of the most popular radios ever produced! The FT-60R is a staple in most amateur operators arsenal of radios. Great as a 1st radio or as an addition to many. Rugged and built to last. With 5 watts of power plus strong, crisp, clear audio output from a large speaker, and an easy to read display you'll soon understand what makes the FT-60R a must-have standard.

Extended Frequency Receive Coverage



- Receives 108-520 MHz and 700-999 MHz (cellular blocked) for monitoring amateur, public safety, business, marine, aircraft, government communications.
- Tough die-cast, water resistant construction. Built to endure years of use and abuse.
- 1000 memories w/alphanumeric labels.
- 5 watt output.
- CTCSS and DCS (encode/ decode) with split tone; DCS encode only capable.
- ARTS™.
- One-touch to NOAA.
- Nine DTMF auto-dial memories.
- WiRES™ Internet linking.
- Huge LCD display.
- Two front panel programmable keys.
- Automatic repeater shift.

Dual Band

2 m / 70 cm Analog + C4FM Digital FT-70DR

The new FT-70DR is the compact and very attractively priced Yaesu System Fusion transceiver with both conventional FM operation and the advanced C4FM digital mode. The FT-70DR provides up to 5 W of reliable RF power, and its large front speaker delivers 700 mW loud audio output. AMS (automatic mode select) detects the operating mode of the received signal and automatically and instantly switches the receiver to the appropriate mode. Multi-colored LED mode indicator on its front case also assists an operator to enable hassle-free operation.

DG-ID (Digital Group Identification) and DP-ID (Digital Personal Identification) are the useful features

newly included in the FT-70DR to simplify the GM operation. Very simply, the transceivers selecting the same DG-ID or DP-ID can communicate, but not others. Between 00 and 99 DG-ID and DP-ID are selectable.



IP54 rating (dust/ water protection) construction, wide band receive coverage of 108 - 579.995 MHz, and versatile scanning capabilities make this a very robust handheld.

- System Fusion II compatible.
- 700 mW audio output.
- Wide band receive coverage of 108 - 579.995 MHz.
- 1,105 channel memory.
- CTCSS / DCS operation.
- Large multi-color mode indicator.
- Versatile scanning capabilities (programmable VFO, memories, & priority channel scans).
- 7.4 V 1,800 mAh Lithium Ion battery pack (SBR-24LI) Included.
- RF Squelch.
- WX channels with 'severe weather' alert (US version).
- Mini USB port for memory management and software updates.
- Transceiver to transceiver cloning with optional cloning cable (CT-27).
- Automatic power-off feature, RF squelch, transmitter time out timer, and busy channel lock-out.
- IP54 rating (dust / water protection) construction.
- Standard SMA antenna connector allows optional antennas to be used.

Dual Band

2 m / 70 cm
FT-4XR

Extremely Compact Dual Band Radio

The FT-4XR is the ultimate in compact designed (2.1" W x 3.5" H x 1.2" D) handheld transceivers, providing up to 5 W of stable and reliable output power thanks to Yaesu's integration of highly efficient Bridged Transless (BTL) amplifier technology.

Go ahead and drop the FT-4XR into your go-bag, glove box, or slip it into your back pocket easily. With such a slim and compact design you'll barely notice it but always have it when you need it. It's the ultimate way to take 2m and 70cm with you virtually anywhere!



Its small size doesn't mean it is small on audio. The FT-4XR handheld transceiver has a 1.4-inch front speaker that delivers 1 watt of powerful clear and crisp intelligible audio. So no matter the environment you'll always be able to hear and respond.

- Three selectable TX power settings: 5 W (high) / 2.5 W (middle) / 0.5 W (low).
- More than 15 hours operating time with supplied 1,750 mAh Li-ion battery pack.
- Large-capacity 200 memory channels.
- Selectable frequency steps (5 / 10 / 12.5 / 15 / 20 / 25 / 50 / 100 kHz).
- WX channels with 'severe weather' alert.
- PC programmable with optional programming cable (SCU-35).
- Transceiver-to-transceiver cloning with optional cloning cable (SCU-36).



**YAESU
3-YEAR
WARRANTY**

All current Yaesu amateur radios come with a three (3) Year Manufacturer's Warranty! The move to a three (3) Year Warranty is a firm commitment from Yaesu to continue to supply top quality products for many years to come.

Dual Band

2 m / 70 cm
FT-65R

Workhorse Dual Band

An excellent dual band transceiver based on the ever popular FT-60R. Very compact and ruggedly constructed with three selectable power settings. A large front-firing speaker provides a full 1 watt of crisp, clear audio even in noisy environments. Capable of over 9 hours of operation and 11.5 hours of operation with the optional 2500 mAh Li-Ion battery.

A variety of user requested features such as versatile scanning capabilities, programmable VFO scan, memory scan, weather alert scan, FM broadcast receive, auto power off and PC programmability makes this an excellent value radio.



- Selectable output power settings - 5 W / 2.5 W and 0.5 W.
- Speaker provides 1 watt audio input.
- Supplied 1950 mAh Li-ion battery pack provides more than nine (9) hours operation. Optional higher capacity 2500 mAh Li-ion battery pack provides more than 11.5 hours of operation.
- LED display.
- Four (4) quick recall keys (QRK) are individually user-programmable to store and recall favorite frequency settings and to be used as shortcut keys to set mode menu items.
- White LED flashlight.
- Programmed VFO scan, memory scan, priority channel scan, weather alert scan.
- WX channels with 'severe weather' alert (US Version only).
- VOX operation.
- FM broadcast receiver.
- ARTS (automatic range transponder system).
- DTMF operation - CTCSS / DCS operation.
- Busy channel lock-out.
- Battery saver function.
- Automatic power-off.
- Transmitter time-out-timer.
- Rugged and durable construction.

Tri-Band

2 m / 1.25 m / 70 cm
VX-6R

True Tri-Band Coverage

Don't let your operating environment stop you from enjoying radio on-the-go. For 'anywhere' communication you'll find the VX-6R just what you need. It is both rugged and submersible (JIS7: 30 minutes of submersion at depth of 3 feet), which means you can take it just about anywhere.

A front firing speaker delivers strong audio. The dual-selector knob allows for easy operation of memory selection, VFO, volume level, and settings in one convenient location. Supplied with a strong tri-band antenna this HT has everything.



- Covers 504 kHz to 998.99 MHz (with cell blocked).
- 5 watts of power 144 and 440 MHz bands; 1.5 watts on 222 MHz.
- One-touch memory access.
- FNB-80LI 1400 mAh lithium-ion battery pack standard.
- Emergency automatic ID.
- Security password.
- CW trainer.
- Enhanced paging and code squelch (EPCS).
- Wake-up battery saver.
- 900 memories with alpha-numeric labels.
- Compact: measures just 2.3" x 3.5" x 1.1" WHD.
- Oversized volume and squelch knobs.

HT QUESTIONS? HRO HAS THE ANSWERS!

We are here to help. Ham Radio Outlet salespeople are available to answer your questions about HT's, features, and accessories. Simply contact your local HRO store for assistance.

uniden®

Base/Mobile

True I.Q. Trunking SDS-200

HRO Price:
\$699.99



- True I/Q™ receiver.
- TrunkTracker X.
- Direct ethernet connectivity for streaming and control.
- Complete USA / Canada radio database.
- Location control for simple operation.
- External speaker jack.

- Auxiliary USB type A jack for future expansion.
- 3.5" customizable color display.
- GPS connectivity for simple mobile operation.
- Recording, playback, and replay.
- PC programming & control.



WiFi Remote + Trunk Tracker V BCD-536HP

HRO Price: \$599.95

- APCO 25 Phase I / II.
- Motorola, EDACS, LTR trunking.
- HomePatrol operation.
- WiFi link for remote operation.
- USA / Canada database.
- Zip Code selection.
- Fire tone-out alert.
- Temporary avoid.
- CloseCall® RF capture.
- System channel / number tagging.
- DCS / CTCSS rapid decode.
- Audio AGC.

- S.A.M.E weather alert.
- Backlit keypad & LCD.
- 4 GB memory.
- Enhanced dynamic memory.
- USB connectivity.
- PC programming/cloning.
- Covers 25-512, 758-824, 849-869, 894-960, 1240-1300 Mhz.
- Includes antenna, DC adapter, USB cable, three wire harness, mounting bracket and hardware.



GPS Support & APCO-25 BCD-996P2

HRO Price: \$449.95

- 25,000 dynamically allocated channels.
- Location-based scanning.
- TrunkTracker V.
- APCO 25 Phase I & II.
- Links to optional GPS.
- Dual color display.
- Multi-site trunking support.
- Temporary lockout.

- Dangerous crossing or road and POI alert.
- DIN-E mounting.
- Close-Call™ RF capture technology.
- Public safety scanner.
- FREE downloadable programming software.
- USB connector.

Handheld

Trunking BCD-436HP

HRO Price:
\$499.95



- APCO 25 Phase I / II.
- Easy HomePatrol operation.
- 4 GB memory.
- USB connectivity
- CloseCall® RF capture.
- Audio AGC.
- S.A.M.E weather alert.
- Backlit keypad & LCD.

- Includes antenna, USB adapter, 3AA NiMH batteries, hand strap, SMA-BNC ant adapter.
- Motorola, EDACS, LTR trunking
- USA/Canada radio database pre-programmed.
- Enhanced dynamic memory.
- System channel / number tagging.
- DCS/CTCSS rapid decode.
- PC programming and cloning.
- Covers 25-512, 758-824, 849-869, 894-960, 1240-1300 MHZ.

I/Q Scanner With SDR Technology SDS-100

HRO Price:
\$649.99

Uniden has created the first scanner to incorporate Software Defined Radio (SDR) technology. The SDS100's digital performance is better than any other scanner in both simulcast and weak-signal environments.

This is the first scanner that allows you to decide what to display, where, and in what color. Custom fields put the information important to you right where you need it.

Of course, the SDS-100 also includes all the advanced features you've come to expect from a Uniden scanner: Trunktracker X, weather alerts, APCO P-25 Phase I and II, location-based scanning, and USA / Canada radio database. It meets JIS4 (IPX4) standards for water resistance. This is a do-all, take-anywhere scanner.



Portable

Touch Screen Programming HOME PATROL II

- Digital touch screen.
- USA & Canada database.
- APCO P-25 Phase I & II.
- USB-source charging.
- No subscription.
- Simple programming by entering your Zip Code.
- 3.5" daylight viewable bright display.
- Sentinel Windows PC software included.
- S.A.M.E. emergency weather alert system.
- Famous TrunkTracker IV.

Great for monitoring public safety, local government, amateur radio operators, and more.

HRO Price:
\$699.95



SCANNER ACCESSORIES/SHORTWAVE

Carrying Cases



Protective Leather or Nylon Scanner Cases

Protect your portable scanner investment with these rugged, attractive, form-fitting cases designed specifically for each scanner model. Scanner Master offers three types: Hard leather (for the most protection), soft leather, and nylon with different belt attachments as noted below.

Bearcat SDS-100

With swivel belt clips for professional swivel and quick release.

- Hard Leather Case: HRO Price: \$39.95
- Soft Leather Case: HRO Price: \$39.95
- Nylon Case: HRO Price: \$29.95

Bearcat BCD-436HP

With swivel belt clips for professional swivel and quick release.

- Hard Leather Case: HRO Price: \$39.95
- Soft Leather Case: HRO Price: \$34.95
- Nylon Case: HRO Price: \$29.95

Bearcat BCD-325P2

Bearcat BC-125AT

Bearcat BC-75XLT

- Hard Leather Case (Fixed Belt Clip): HRO Price: \$39.95
- Soft Leather Case (Swivel Belt Loop): HRO Price: \$39.95
- Nylon Case (Fixed Belt Loop): HRO Price: \$29.95

Whistler WS-1040

Radio Shack Pro-106

Radio Shack Pro-651

- Hard Leather Case (Fixed Belt Clip): HRO Price: \$49.95
- Soft Leather Case (Swivel Belt Loop): HRO Price: \$39.95
- Nylon Case (Fixed Belt Loop): HRO Price: \$29.95

SCANNER QUESTIONS? HRO HAS THE ANSWERS!

We are here to help. Simply contact your local HRO store for assistance.

Desk Mounts

- Radios Not Included -



DESK-MT BASE-4

Desk mount for four base scanners.
HRO Price: \$79.95

DESK-MT BASE-3

Desk mount for three base scanners.
HRO Price: \$69.95



DESK-MT BASE-2

Desk mount for two base scanners.
HRO Price: \$59.95

DESK-MT PORT-3 PORT-2 PORT-1

Desk mount for one, two, or three portable scanners.
HRO Price: \$59.95
HRO Price: \$49.95
HRO Price: \$39.95



Software

BuTel

Scanner Programming Software

Scanner Master is the US distributor of the very popular Butel line of scanner software. With Butel software you can remotely program your scanner through its easy-to-use 'Basic' software interface which includes a powerful Radio-Reference.com direct download feature (Radio Reference user account required).

The Butel 'Pro' software also includes full virtual control, audio recording and data logging.

Bearcat BCD-325P2, 396XT, 996P2/XT, 15X

- ARC-XT: HRO Price: \$39.95
- ARC-XT Pro: HRO Price: \$69.95

Bearcat SDS-100, SDS-200, BCD-436HP/536HP

- ARC536: HRO Price: \$39.95
- ARC536 Pro: HRO Price: \$69.95

Whistler WS-1040, WS-1065, GRE PSR-500/600, RS Pro-106/197, RS Pro-651/652

- ARC500: HRO Price: \$34.95
- ARC500 Pro: HRO Price: \$69.95

Shortwave



C.C. CRANE

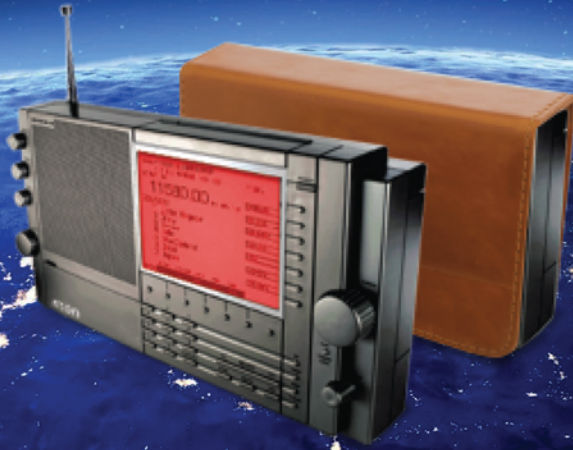
AM/FM/SW/ WX/Aviation/SSB CC SkyWave SSB

HRO Price: \$149.99

- Direct entry of a frequency plus auto scan and store.
- Lighted LCD display.
- Selectable fast or fine tuning on all bands except weather.
- 400 memory presets.
- Runs on (2) AA Alkaline batteries (not Incl.)
- Optional/Available CC Skywave AC adapter.
- Stereo headphone jack and fold-out back stand.
- Clock with 12/24 hour format and alarm.
- Rotary volume knob.
- Compact size.
- One Year Limited Warranty.

You can now listen to Hams, long range aviation (commercial and military), maritime, space and even spy transmissions from all over the world. Single Side Band is an efficient and reliable way to get long range information without Internet or satellite and it's not available on your smartphone. Ham radio operators play a critical part in emergencies when virtually all normal communication is down.

DIRECT ACCESS TO NEWS



Elite Satellit



Elite Executive HD

- Frequency coverage: 100-30,000 KHz, includes Shortwave, medium wave AM broadcast band and long wave; 76-90, 87-108
- Reception modes: AM, FM-stereo, Single Sideband (selectable USB/LSB), Aircraft
- Programmable memories: 500 user programmable with alpha labeling plus 1200 user definable country memories, for a total of 1700
- Dual conversion super heterodyne circuit: results in minimized interference through superior selectivity
- Digital Phase Lock Loop (PLL) synthesized tuning with Direct Digital Synthesis (DDS) for drift-free frequency stability and finest tuning resolution
- Tuning modes: variable-rate tuning knob, direct keypad frequency entry, up/down push buttons and auto-tuning
- Single sideband synchronous AM detector: selectable USB/LSB or double sideband to minimize adjacent frequency interference and fading distortion of AM signals
- Selectable bandwidths: 7.0, 4.0, 2.5 kHz for excellent selectivity
- Digital display: large 5.7 inch square, 240 x 320 pixel, dot matrix display- shows all modes and selected functions
- Display backlighting: evenly lit backlight enables display viewing under all lighting conditions
- High dynamic range: allowing for detection of weak signals in the presence of strong signals
- Dual programmable clocks with WWV Auto-Setting
- Stereo line-level input: allows listening to other devices such as a CD player through the Elite Satellit
- External antenna connection for the addition of auxiliary antennas, e.g. professionally engineered Shortwave antennas; long-wire Shortwave antennas; specialized AM broadcast band antennas for enthusiasts of AM DX'ing; FM broadcast band antennas
- Separate, continuous bass and treble tone controls
- Selectable AGC (Automatic Gain Control): fast and slow mode
- Built-in antenna: telescopic antenna for AM, FM and Shortwave reception
- Power source: 4 D batteries (not included) or AC adapter (included)
- Leather case with craftsman stitching
- 3 color LCD screen
- Radio Data System (RDS)
- AM/FM/LW/SW bands
- FM with RDS (Radio Data System)
- Single sideband (SSB) with +/1 kHz tuning
- VHF Aircraft band
- Automatic or Manual Digital Tuning
- FM stereo/mono selection
- Electronic/volume/treble/bass control
- Sync detector with selectable sideband
- Direct key-in meter band for SW
- 700 memory stations
- PLL synthesized dual conversion receiver
- Local/DX switch
- Local/world time zones
- Clock/Alarm/Sleep Timer with time backup
- Rich orange LCD display
- Reset/Lock button
- FM telescopic antenna
- Power supply: Included AC adapter or 4 AA batteries (sold separately)
- Leather case with craftsman stitching

**HAM
RADIO
OUTLET**

Authorized Dealer

eton
EMPOWERED BY NATURE

DIRECT ACCESS TO NEWS



Elite 750



Unbelievable Memory



The classic look & style to match



On every wavelength

Elite 750

- AM/FM/LW/SW bands
- Aircraft Band
- Set 9/10 KHz AM tuning; set FM tuning range
- Single-Side Band (SSB)
- 360 degree rotate AM antenna
- Auto/Manual/Direct frequency key-in and station memory tuning
- Auto Tuning Storage function (ATS) for FM/AM Shortwave
- 1000 station memories (each band 100 memories, 500 customizable)
- Dual alarm clock function
- Line in socket (can be used as speaker for MP3)
- Line out socket (radio broadcasting can be transferred to other device)
- External antenna jacks for both AM/FM
- Power source: DC input (6V) power supply included

**HAM
RADIO
OUTLET**

Authorized Dealer

eton
EMPOWERED BY NATURE

MMDVM/PACKET/DATA

ZUMspot

Multi-Mode Hotspot

Touchscreen
ELITE 3.5LCD
ZUMSPOT KIT



The Elite 3.5LCD ZUMspot kit is an advanced radio module board. Paired with a Raspberry Pi 3B+ and the MMDVM software it becomes a small and efficient multi-mode digital hotspot.

- High performance 32-bit ARM processor.
- Supports DMR, P-25, D-Star, System Fusion, NXDN and POCSAG.
- Onboard LEDs to show status (Tx, Rx, PTT, Mode).
- Up to 10 mW RF power.
- SMA antenna connector, UHF antenna included.
- Mounted on Raspberry 3B+.
- The firmware is pre-loaded on a 16GB SD card and is easily upgraded via software.
- Built-in 3.5" color LCD display.
- 3A power supply included.
- 1 Year Warranty.
- Open source firmware (MMDVM) and software (PiStar) and board design.
- ZUMspot board fully assembled and tested.

HRO Price: \$249.95



SETUP QUESTIONS?
HRO HAS THE ANSWERS!

Watch our YouTube video
and get your ZUMspot setup
quickly and easily!

<https://www.youtube.com/watch?v=-2bwhekSWjY>

Farallon Electronics

Data Modem



PACTOR-4
DR-7400

HRO Price:
\$1628.95

The DR-7400 offers a lower priced entry to the P4dragon modem class. The DR-7400 has been optimized for use with the new high-end data transmission mode PACTOR-4.

The DR-7400 is software compatible to the PTC-II series and to the DR-7800 so that existing PACTOR software (AirMail, RMS Express, Alpha etc) can continue to be used. Due to the plug compatibility of the radio ports, a change from the tried and tested PTC-II technology to the innovative P4 dragon technology is very easy. Change over the plugs, turn on, and enjoy PACTOR-4!

- The DR-7400 has many of the features of the DR-7800 but a lower price.
- Backwards compatible to PACTOR-1/2/3. Automatic negotiation during link setup.
- Noticeably improved reception with PACTOR-2 and PACTOR-3.
- Operating Modes: PACTOR-4, PACTOR-3, PACTOR-2, PACTOR-1, weather-FAX (receive), GPS / RTTY / NAVTEX decoder.

Data Modem



PACTOR-4
DR-7800

HRO Price:
\$1999.95

The DR-7800 P4dragon is the no compromise further development of the legendary PTC-II, which was designed for professional use and for the ambitious amateur radio enthusiast. The DR-7800 has been optimized for use with the new high-end data transmission mode PACTOR-4.

The DR-7800 is software compatible to the PTC-II series so that existing PACTOR software (AirMail, RMS Express, Alpha etc.) can continue to be used.

- Operating Modes: PACTOR-4, PACTOR-3, PACTOR-2, PACTOR-1, weather-FAX (Receive), GPS decoder.
- Display: 256 x 64 pixel OLED, blue, high contrast, excellent readability, no viewing angle problems, display of spectrum and much more.

PACTOR-4 Features

- Max net speed 10500 bps.
- 1.5-3x faster than P3.
- Backwards compatible.
- 2400 Hz bandwidth.
- Highly adaptive.
- Highly resistant to interference.
- 6 auto notches.
- Adaptive equalizer.

Farallon Cables/Accessories

Model	Description	HRO Price
Miscellaneous		
9001	6' power cable	\$17.95
8120	1200 baud packet cable	\$49.95
8050	9600 baud packet cable	\$49.95
Control Cables		
8080	Modem to Kenwood or Yaesu radio, SCS 13pin DIN to DB9 female	\$39.95
8081	Modem to Icom radio, SCS 13pin DIN to 3.5mm mini phone plug	\$39.95
8083	Modem to Icom or SGC radio, SCS 13pin DIN to male DB9, 5"	\$39.95
8130	Modem to Yaesu radio, SCS 13pin DIN to 8pin mini-DIN, 2m	\$39.95
Audio Cables		
8050	Modem to Yaesu radio, SCS 5pin DIN to 6pin mini DIN 9600 baud	\$49.95
8120	Modem to Yaesu radio, SCS 8pin DIN to Yaesu 6pin mini-DIN, 2m	\$49.95
8123	Modem to Yaesu radio, SCS 8pin DIN to Yaesu 5pin DIN, 2m	\$49.95
8125	Modem to Yaesu radio, SCS 5pin DIN to 1/8" stereo phone plug	\$49.95
8127	Modem to Yaesu FT-847 radio, SCS 5pin DIN to 1/8" stereo phone plug	\$49.95
9090	Modem to Icom radio, SCS 8pin DIN to Icom 8pin DIN, 1.5m	\$49.95
9095	Modem to Icom radio, SCS 8pin DIN to Icom 13pin DIN, 1.5m	\$49.95
9096	Modem to Kenwood radio, SCS 8pin DIN to Kenwood 13pin DIN	\$49.95
9097	Modem to Kenwood radio, SCS 8pin DIN to Kenwood 13pin DIN	\$49.95



TNC's



Multi-Mode DSP Controller KAM XL™

HRO Price:
\$449.95

Kantronics' third generation multi-mode TNC is a state of the art design for operations on HF, VHF and UHF while supporting DSP modems and popular new modes of operation. The unit provides modes of Packet 300, 1200 or 9600 baud, G-TOR, Pactor 1, AMTOR ARQ, PSK31, RTTY, NAVTEX/AMTEX, ASCII, WEFAX and CW. It has a dual port mailbox and remote SYSOP access. It is GPS NMEA-0183 compatible and provides Kantronics Host Mode and KISS.



VHF/UHF TNC KPC-3 Plus 512K USB

HRO Price:
\$239.95

This compact, low current TNC has become the work horse of packet radio today. It features multiple packet connects, digipeating for APRS® operations, WEFAX reception, a GPS mode for tracking, personal packet mailbox. Also available with RS232 interface for \$289.95.



Dual-Speed Dual-Port TNC 9612XE USB

HRO Price:
\$449.95

This is the rapid delivery model, supporting 9600 baud. It features both 1200 and 9600 packet ports, advanced APRS® digipeating (APRS® is a trademark of Bob Bruninga), (K-Net) net-working, amateur beeper (paging), the ability to download EMWIN weather broadcasts. Also available with RS232 interface for \$489.95.

RADIO CONTROL SOFTWARE

Premier Ham Radio Software Suite HRD



HAM RADIO DELUXE SOFTWARE
The Radio Amateur's Best Asset
www.HamRadioDeluxe.com

RIG CONTROL

Organize buttons, sliders, and drop-downs to toggle radio options, select modes and filter settings, and control level inputs via your computer screen.

LOGBOOK

A complete DX operations center, Logbook is the ideal shack accessory for everyone. Keep track of all important contact information with the click of a mouse.

DIGITAL MODES

DM-780 is capable of digital modes, including CW, RTTY, SSTV, PSK31, MT-63, and more. Digital Master interfaces with the popular KIEL WinKeyer.

SATELLITE TRACKING

Take the guesswork out of satellite operations using the latest orbital mechanics equation and up-to-the-minute Keplerian element information.

ROTATOR CONTROL

Integrating with Logbook and Satellite Tracking, Rotator Control manages beam headings via any computer interfaced rotator controller.

Support:

<https://support.Ham-Radio-Deluxe.com>

Forums:

<https://forums.Ham-Radio-Deluxe.com>

Digital Download - HRO Price: \$99.95

APRS Trackers & Digipeaters

APRS Tracker TNC & Transceiver APRS Voyager



Built-in 38.5 dbm / 7 watt transceiver

APRS Voyager incorporates a built-in transceiver and power amplifier capable of transmitting and receiving APRS® packets. The only thing you need to do is to connect a proper antenna to the SMA connector. Output power is programable between 5 watts and 7 watts.

Supports Mic-E/Base-91/Plain text position reporting; a main feature for an APRS tracker.

Built-in Bluetooth interface

A built-in Bluetooth® interface which can work in one of selectable modes: Serial console – similar to RS-232 serial console. KISS – allows to exchange packets with your laptop, tablet or smartphone with APRS® software installed. Works great with APRSDroid. GPS passthrough – if you have a GPS receiver you can forward the NMEA stream to any other device using Bluetooth® interface.

HRO Price: \$249.95

APRS Digipeater & i-Gate WX3in1 Mini



APRS Station

WX3in1 Mini allows you to generate APRS® data packets with information defined by the user and send them in a specified interval. In this way, it is possible to send beacons, objects, weather and telemetry data.

APRS Station

The main purpose of the device is receiving and sending APRS® data packets via an amateur radio transceiver. WX3in1 Mini is capable of receiving an APRS® packet, decoding the sender, recipient, path and information field. Then actions are performed in accordance with the options configured by user: Packet is digipeated via the APRS® network, Packet is sent to the APRS-IS server, Packet is ignored if it was corrupted.

GPS Support, Bluetooth® interface support, KISS TNC operation, weather station support, and a ton more features makes this a very configurable unit.

HRO Price: \$139.95

RIG/PC CONNECTION



A RIGblaster is the easiest way to connect your radio to your computer to operate PSK31, RTTY, WinMOR, Olivia, Packet and more! Chase DX easily using advanced JT65-A! Unrivalled simplicity, True FSK, True-keyed CW & CAT/CI-V control – see why these are the World's Finest Digital Mode Interfaces! Includes DVD with more than 100 popular software programs. All RIGblasters are ground isolated and RF filtered. Supplied with all the cables you need to get on the air. These models work with more than 2000 radio models. Kits are available for 4-pin round or RJ22 connectors.



Dual Sound Cards RIGBLASTER DXpro

HRO Price:
\$319.95

RIGblaster DXpro is a thoroughly modern sound card interface designed for the 21st century. Combining dual sound cards and advanced software-controlled features, the DXpro will empower your station whether your interests are chasing DX with weak-signal modes, RTTY and SSB contesting, or operating remotely over the internet. Works with all sound-card based digital mode programs and logging software. **#58001-1809**

DXpro Accessories:

DXkey Remote **#581421-1819** - HRO Price: **\$19.95**

DXpro AC Control Kit **#58142-1820** - HRO Price: **\$65.95**



Bluetooth® RIGBLASTER BLUE

HRO Price:
\$219.95

The West Mountain Radio RIGblaster Blue is a completely integrated Bluetooth® wireless interface. Use a Bluetooth® headset with your radio. Provides safe, secure hands-free operation. VOX PTT is available in the headset mode. Pair with any compatible laptop or tablet for mobile operation. Use with Yaesu, Kenwood, Icom, Ten-Tec and Elecraft radios. Pairing radio to any compatible smartphone or tablet provides for mobile rig control of digital modes. (Compatible software is required.) Perfect for mixed mode nets plus PSK31, RTTY, WinMOR and Packet. Operate using over 100 popular ham radio sound cards (optional). **#58013-1502**



Fully Isolated RIGBLASTER ADVANTAGE

HRO Price:
\$204.95

The only RIGblaster with a built-in soundcard. It works with any radio using one USB cable to connect to PC. Built-in CAT or CI-V rig control interface. Mic input with PTT override and interrupt. Front panel transmit and receive audio and VOX delay controls. Fully isolated CW / FSK output for keyboard CW and RTTY. Includes (1) 3-ft 8-pin mic cable, (1) 6-ft 1/8" audio cable, USB cable, software programs DVD, and accessory kit. **#58012-1288**

Simple Install RIGBLASTER PLUG & PLAY

HRO Price: **\$124.95**



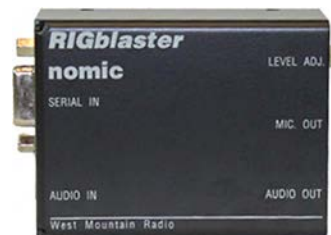
Simple USB Plug and Play installation. One plug to the radio and one USB connection to the computer. Built in USB to serial converter for PTT, CW and CAT or CI-V rig control. USB powered, no additional power needed. Compact: great for mobile or QRP operation. Fully isolated CW keying output for direct keying of your rig's CW. Includes: radio specific 8-ft data jack adapter cable, 12" computer audio and USB cables and software programs DVD. See chart below for models.

RIGblaster Plug & Play - Radio Versions

Model	Description	HRO Price
58011-962	RIGblaster Plug & Play Icom 8pin ACC1	\$124.95
58011-963	RIGblaster Plug & Play Icom 13pin DIN	\$124.95
58011-964	RIGblaster Plug & Play YIK 6pin mini-DIN	\$119.95
58011-965	RIGblaster Plug & Play Kenwood ACC 13pin DIN	\$124.95

Compact RIGBLASTER NOMIC

HRO Price: **\$69.95**



The RIGblaster Nomic is a small, simple, rugged and inexpensive sound card interface, perfect for Echolink®, portable, or field setups. Supplied with both a standard DB9 RS232 serial cable and USB cable interface (supported for Mac (OS9,10), Linux, Windows (98SE – Vista 32 and 64 bit)! May be used with old or new computers with your choice of USB or RS232 DB9 serial. No external power supply necessary so it is great for portable or QRP operation. Simple and inexpensive choice for a dedicated Internet link with the EchoLink® System. Includes the following: 3' 8-pin round circular mic cable, 3' RJ45 mic cable, USB to RS232 male adapter, 6' DB9M to DB9F serial cable, (2) 6' 1/8" audio cables, owner's manual, software programs DVD, and accessory kit. **#58008-959**

RIGblaster Accessory Cables

Model	Description	HRO Price
58107-971	Rig Control Cable for Icom CI-V Radios	\$9.95
58108-972	Rig Control Cable for Yaesu mini-DIN-8	\$10.95
58108-974	Rig Control Cable for Yaesu DIN-6	\$10.95
58120-984	CW Cable Kit for RIGblaster Plus II, Plus, Plug & Play 6 ft	\$9.95

SOFTWARE

Radio Set Up the Easy Way!

Set Up All the Features... Not Just the Memories
with RT Systems Programming Software and Cables

rt SYSTEMS 
RADIO PROGRAMMING MADE EASY

New! RT Systems Programmers Available for DMR Radios From:

Alinco BTech
Anytone Retevis
Baofeng TYT

Check with HRO or RT Systems
for your radio model from any of
these radio manufacturers

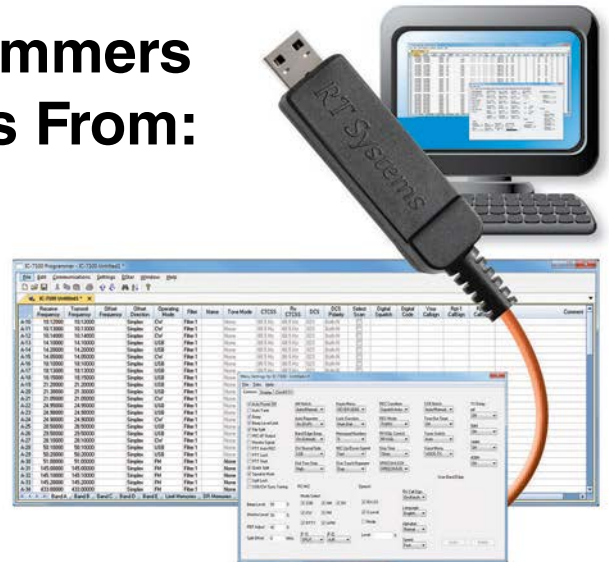
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Icom • JetStream • Jimtom • Jingtong
Juentai • Kenwood • Leixen • Luiton
Midland • Powerwerx • Pofung • Puxing

Quansheng • QYT • Radioddity • Radtel
Retevis • Rugged Radios • SainSonic
Senhaix • Socotran

Talkcoop • Talkpod • TDXOne • Tera
TIDradio • Tokmate • Tonfa • TYT • VGC
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*When you do something, no matter what it is,
do it to the best of your abilities.*



The Programming System that Works!

"RT Systems Programmers simplify things a lot when you have limited time to figure things out on the radio."

- Tom, New Castle, DE



* Each Programmer is unique to a specific radio...

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MFJ Digital Mode Devices

TNC-X -- An Inexpensive TNC for VHF Packet and APRS!



Connect MFJ-1270X to your FM radio and your computer and the world of digital

packet radio is yours to enjoy! TNC-X is a self-contained TNC, not a computer sound card interface that ties up computer's resources. Works with any packet software program supporting KISS mode. Unlike other TNCs, you never have to worry about it "accidentally" falling out of KISS mode. KISS makes it extremely simple to use. There are no complicated menus of parameters to adjust. Just plug it in and it works. USB port works with all major computer operating systems including Windows (all versions after 95, including 64-bit), Mac OS X (as well as Mac OS 8 and 9), and Linux. It also supports a separate conventional serial port. Built-in active audio filter substantially improves demodulation performance. TNC-X also supports true software DCD. You can leave the squelch of the radio connected to TNC-X open for very fast transmit/receive turnaround times. TNC-X is perfect for APRS™. Fully supported by virtually every APRS™ mapping program. Add X-Digi board and convert TNC-X into a modern, remotely configurable digipeter. Super compact 5 1/8" x 1 1/2" x 3 1/4" inches. Plug-and-play . . . use with MFJ TNC to radio cables as well as MFJ's A to B USB cable.

MFJ-1270DG, X-Digi is an inexpensive board that plugs into TNC-X's expansion header and makes it into a stand-alone full-featured digipeter. Supports WIDEN-N paradigm for APRS™, or can act as a general purpose digipeter. X-Digi will never be obsolete. Firmware upgrades available free by the internet. No equipment required to flash the updated code into your X-Digi.

MFJ USB-to-Radio Multimode Interface

MFJ-1205 is exceptionally easy to setup and use. However, simplicity doesn't mean compromised performance. Advanced features: Full USB connectivity, powered by USB port, dedicated on-board sound card, quick *plug-and-play* connect-ivity, incredibly easy to adjust and operate, works with all digital modes, dozens of free downloadable programs, innovative circuitry eliminates delay control, complete line of interface cables, low cost, small size, lightweight, perfect for base station, portable, or "go-kit" apps. Initial no-solder jumpers take only a second to install, and once in place, they're locked in until you decide to change radios. To hook up, simply connect the MFJ-1205 to any free USB port on your computer and plug the appropriate interface cable into the back of your radio. *That's it!* No need to disconnect the microphone or fumble around with patch cords to get started. Front-panel controls set Receive and Transmit levels, and there's no front-panel "Delay" to adjust because the MFJ-1205 controls your radio's PTT line using a unique internal detector circuit. Transmit and receive using traditional modes such as CW, RTTY, SSTV, AMTOR, PSK31, and EchoLink, or explore newer modes like MT-63, WINMOR, WSPR, and WSJT-X. In fact, new experimental modes are emerging all the time. If your radio can pass the signal and computer can run the mode's online software, MFJ-1205 sound card and computer will handle the rest! Just select an MFJ cable configured for your radio, plug it in, and start exploring the wonders of digital radio. The signal path between the radio and computer is completely isolated against ground loops and common-mode noise.



Got Pi?!

MFJ-1270Pi
Raspberry Pi™ TNC



PN: 862-TNCPi
Manufactured by MFJ Enterprises
TNC-Pi TNC for Raspberry Pi



Send text messages and emails over-the-air using ham radio!

Plug a MFJ-1270Pi hat onto your Raspberry Pi™. You'll have a tiny, operate-anywhere, messaging system!


Build an iGate, Digipeater, RMS gateway, and more that can go anywhere!

Use widely-available free software such as Xastir, LinBPQ, or APRx. Stacked TNCPi shown right, not included.



Remotely operate your transceiver from anywhere!

MFJ-1234C lets you remotely operate using any web browser on phones, iPad, tablet, laptop, even a Kindle! Use nearly any transceiver with CAT control, old or new, no computer or computer knowledge needed. Operate all modes SSB, CW, FM, digital -- any transceiver mode. Control from anywhere via the internet using any browser -- radio, rotor, CW keying, VoIP, digital modes, logging, spot monitoring, callbook lookups, more. **What else you can do?** Operate digital modes including FT8 and RTTY. WSJT-X, Fldigi are installed. Look-up calls using included FCC database or optional QRZ XML subscription, monitor DX spots, watch for unworked or unconfirmed calls, design, maintain multiple logs, upload ADIF logs to ARRL LoTW server, send CW from a mobile device, keyboard or paddle, has 32 programmable macros for control flexibility. Single-click updating, I/Q Input for SDR radios, onboard VoIP server gives outstanding 2-way audio, includes email, word processing, spreadsheet programs, 1000's of Linux programs, including many for ham radio, modify and program RigPi Station Server features using a text editor. **One** browser can control a radio while a second can control another radio, etc. 2 or more hams from different areas can operate different rigs using MFJ-1234C.



<https://www.mjenterprises.com/Product.php?productid=MFJ-1234C>

Apple iPhone connected to RigPi Station Server from anywhere via the Internet
RigPi trademarked. Howard Nurse, W5HN.
Raspberry Pi is a trademark of the Raspberry Pi Foundation.

TIMEWAVE TECHNOLOGY

Data Controller



Multi-Mode PK-232SC

HRO Price:
\$599.95

With the addition to the PK-232 of a built-in sound card, rig control, computer isolation, and total USB connectivity, the PK-232SC brings a new level of performance with sharp, accurate DSP filters for all its internal data modes and dual transformer isolation for sound card data modes. Weak signals magically appear from the noise and QRM bounces off the new DSP filters for cleaner copy with fewer errors than the old analog filters.

More Filters, Better Filters, Auto Selection

The PK-232SC brickwall filters have tighter bandwidth and steeper skirts for improved noise and QRM rejection. New firmware (version 7.2) allows a wider selection of filters than the original PK-232, so the filter can match the mode. The correct DSP filter is automatically selected when you choose an internal mode. In RTTY, Timewave's proven twin peak filters pluck the mark and space tones from the noise and QRM for great copy. In PACTOR, the filter bandwidth automatically changes when the baud rate shifts in response to the error rate of the link. In Morse (CW), the operator can preset either 100 Hz or 200 Hz bandwidth. The PK-232SC is compatible with all Windows XP, Vista, and Windows 7 software terminal programs for the PK-232.

Sound Card Interface and Rig Control

For maximum flexibility, Sound Card / TNC switching is both software and panel switch controlled; sound card mode selection is software controlled. For example, when operating with Radio Operating Center software, changing to PSK31 from Pactor or MT63 is a simple menu click. The single USB cable from your PC also moves your logic level Kenwood RX / TX / RTS / CTS, Yaesu CAT, and Icom CIV and USB rig control interface to the back panel of your PK-232SC.

All the Proven Modes + All Sound Card Modes

PK-232SC supports all new sound card modes in addition to all of the existing PK-232 modes: Pactor, VHF/ HF packet, AMTOR/ SITOR, Baudot, ASCII, Morse, HF Weather FAX, TDM, and NAVTEX. The PK-232 / PSK comes with a complete cable and connector set in addition to Timewave's on-line and telephone support. As always, you can upgrade any PK-232 ever built to the latest PK-232SC!

- Digital signal processor & 18 DSP filters.
- Twin peak RTTY filters; adaptive PACTOR filters.
- Works with all sound card modes.
- USB sound card audio.
- Rig control for Icom, Yaesu, and Kenwood transceivers.

Radio Control

Plug & Play Remote Control HAMLINK USB™

USB Rig
Controller
Plus

HRO Price:
\$59.95

**Connect and
control your
transceiver via
USB with Plus
option for T-R
switch, key,
foot switch,
input, or user
I/O.**



The HamLinkUSB™ Rig Controller Plus is a USB to logic level conversion device for CAT / CI-V enabled transceivers that provides PTT output, keying output, or foot switch input options.

The CAT / CI-V feature provides a logic level serial interface which connects directly with non-RS-232 CAT / CI-V inputs on Kenwood, Icom, Yaesu, Ten-Tec, Elecraft and Alinco models. The controller is compatible with most soundcard and software control programs such as PK-Term 3.0.

HamLinkUSB

Optional Cable Assemblies

HLUSB-CIV CI-V - Icom, Ten-Tec, Elecraft.
HRO Price: \$8.95

HLUSB-CAT MiniDIN-8 cable assembly for
Yaesu FT-857 / 817/ 100 / 100D
HRO Price: \$13.95

HLUSB-4CON 4 conductor with 3.5 mm plug
to open end cable.
HRO Price: \$13.95

**TIMEWAVE
TECHNOLOGY
QUESTIONS?
HRO HAS THE ANSWERS!**

**We are here to help. Simply contact
your local HRO store for assistance.**

Noise Reduction



Cancel Noise ANC-4

HRO Price:
\$259.95

The ANC-4 RF device eliminates or reduces power line noise, computer noise, TV generated interference, and other types of electrical noise. Attach the unit directly to the antenna connector of the receiver or transceiver to cancel locally generated noise before it affects the receiver AGC circuits. Reception of signals well below the noise level of the local interference is possible.

To cancel locally generated interference, the ANC-4 detects the interfering signal and adjusts its phase and magnitude so that it matches the offending interference at the receiver input, but is 180 degrees out of phase. Front panel controls allow adjustment of both phase and magnitude. Connect the ANC-4 between the main station antenna and the receiver antenna connector. A second antenna connects to the ANC-4 to pick up noise. A short wire antenna or short collapsible whip is generally satisfactory for eliminating noises generated around the operating position or in the house, but an external antenna works better to eliminate noises generated outside the home. Any noise antenna that works, including combinations of horizontal and vertically polarized antennas, is satisfactory.

The ANC-4 operates as an active antenna by using the noise antenna and the NOISE GAIN control to amplify the antenna output. The unit can also be used as a diversity combiner to peak weak signals or null interfering signals.

Sound Card Modem



USB Audio NAVIGATOR

HRO Price:
\$374.95

The Navigator USB sound card modem has a proven USB audio sound chip, six FTDI USB serial COM ports, a K1EL WinKey keyer, true FSK and rig control connections for every radio. A built-in USB sound card with isolated audio I/O to your radio prevents ground loops. A second audio input lets you use both receivers in a dual receiver radio. The logic level and RS-232 rig control ports support your Icom CI-V, Yaesu CAT, Kenwood and other radios. Front panel controls set both RX audio levels, TX audio out-put level, audio monitor level, and the CW speed.

DIGITAL/ANALOG AUDIO

Tigertronics™
Grants Pass, Oregon

Sound Card Modem



USB Sound Card SignalLink™ USB

**HRO Price:
\$134.95**

The SignalLink™ USB combines the legendary performance of our SL-1+ with a state of the art "built-in" low-noise USB sound card. The unit delivers optimum performance while eliminating the need to attach to your computer's sound card. Convenient front panel controls and simplified installation make the SignalLink™ USB very user-friendly.

Virtually all sound card digital and voice modes are supported including FT8, PSK31, VARA, RTTY, SSTV, CW, and EchoLink®, to name a few. Performance on all modes has been optimized by the use of special low-noise parts and careful design techniques. Front panel controls let you adjust your transmit audio, receive audio, and transmit delay "on the fly."

The SignalLink™ USB works with virtually all radios and can be attached to the mic jack, data port or accessory port (see table below). A wide selection of fully assembled radio cables is available for common base, mobile and hand-held (HT) radios. A special unterminated radio cable is available for radios that use a non-standard connector. The SignalLink™ USB comes fully assembled and tested. No external power required. Power is provided by the USB port.

The SignalLink™ USB comes with all required cabling including a radio cable (specify which radio cable is included using the table below), USB cable, mono cable, plus jumper wires, Allen wrench, software CD, and documentation. Compatible with Windows XP/ME/2000/VISTA/7/8/10, Mac OS9.1 or later, and Linux. FCC certified to comply as a Class B digital device.

- SLUSB4R 4-pin round mic connector
- SLUSB8R 8-pin round mic connector
- SLUSBRJ11 RJ-11 mic connector
- SLUSBRJ45 RJ-45 mic connector
- SLUSBKX3 Elecraft KX2 & KX3
- SLUSB5PD 5-pin DIN ACC / Packet
- SLUSB8PD 8-pin DIN ACC
- SLUSB6PM 6-pin mini DIN Data
- SLUSB8PM 8-pin mini DIN ACC / Data
- SLUSBK3 Elecraft K3 (rear panel)
- SLUSB13I Icom 13-pin DIN ACC
- SLUSB13K Kenwood 13-pin DIN ACC
- SLUSBHTW Ken/Baofeng/Wouxun HT
- SLUSBHTY Yaesu HT 4-pin TRRS
- SLUSBVXY Yaesu HT TRRS threaded

WEST MOUNTAIN
RADIO



West Mountain Radio audio products contain ClearSpeech® noise reduction/ digital signal processing that provides extremely effective noise reduction for voice and CW. Reduces or eliminates atmospheric noise, hum, hiss, static, and heterodynes. Greatly improves the signal-to-noise ratio and thus the readability of all QSO's!

DIY Noise Reduction CLRmodule Clearspeech DSP Noise Reduction Processor



Noise reduction DIY Board. Simple pin connections provide the ability to connect directly to radio and speakers. The unit is extremely effective in improving communication

clarity. QSO's will be more enjoyable without the fatigue of background noise. In many cases, there will be a noticeable improvement in understanding weaker signals, making contacts, and general listening. PC hookup and utility for programming. #58413-1763
HRO Price: \$99.95



Noise Reduction CLRdsp

Speaker and headphone amplifier with Clear Speech® adaptive DSP noise reduction for voice and CW. Recognizes intermittent nature of CW and allows it to pass noise free. Continuously adjustable noise reduction. Contains 11 watt (into 4 ohms) power amplifier. Sturdy aluminum case. Ideal for mobile operation as well as home station. Plugs into the speaker or headphone output on the radio. Powerpoles® plug into any 12V supply. #58407-949 **HRO Price: \$199.95**



Noise Reduction CLRstereo

Independent DSP noise reduction for main and sub RX or two separate radios. Features flexible audio switching, independent volume, tone, and filtering for both channels, PTT input for fast audio recovery, and dual power option. You can use USB or 12 VDC to power. #58412-1762 **HRO PRICE: \$349.95**

15 Watt Speaker PWRspkr



**HRO Price:
\$75.95**

RMS linear power amplifier minimizes distortion at high sound levels. Sharp bandpass

filter with 300 Hz to 3.2 kHz pass band attenuates unneeded bass and treble sounds. Adjustable gain control. Plugs into radio's speaker or headphone jack. Ideal for use in truck or car for improved communication in noisy environment. Power cable fitted with Powerpole® connectors. #58406-947

Noise Reduction CLRspkr



**HRO Price:
\$199.95**

Amplified loudspeaker with advanced ClearSpeech® adaptive DSP noise reduction

for voice and CW. Recognizes intermittent nature of CW and allows it to pass noise free. Continuously variable adaptive filter noise reduction. Contains 4in. loudspeaker with 7.5 watts RMS maximum amplifier. Volume control knob for adjustment of internal speaker sound level. Front mounted 1/8 - inch stereo output jack for powered speakers or 16 ohm (or higher) headphones. #58407-948

RF Immune Speakers COMspkr



**HRO Price:
\$39.95**

Eliminate HAM radio station noise and interference. Replaces any RF interference prone computer speakers easily. Amplified speaker system

optimized for operation in close range of any radio transmitter. Exceptionally high rejection of radio frequency interference from 1 to 1000 MHz. Stereo high fidelity response for use with voice or music. High 3-watts per channel acoustic power output can be heard clearly in noisy environments. Built-in amplifier assures compatibility with most computers and/or two way radios. Powered via USB. #58410-950

MFJ

Noise Canceller



Signal Enhancer MFJ-1026

An adjustable antenna network that combines two antenna signals to give various directional patterns. Null out strong interfering signals or peak weak signals at the push of a button. Use external or built in active noise antenna. Works on all modes from BC to low VHF. Eliminate severe line noise from many sources before it ever gets into your receiver. Can run off 12 VDC or 110 VAC using MFJ-1312D.



Signal Enhancer MFJ-1025

Similar to the MFJ-1026. No active antenna.

Noise Filter



AC Line Filter MFJ-1164B

Filters AC Line RFI, surges, noise, transients, and hash ~ 30dB. Four 15 A/120 VAC outlets.

SSB Speech Refined



Intelligibility Enhancer MFJ-616 / MFJ-618

Speech Intelligibility enhancer extraordinaire. An amazing difference in understandability of SSB speech. No hissing, ringing, or other strange effects, making a dramatic improvement. **MFJ-618** has separate adjustable channels for each ear.

Speakers/Headphones



Padded Headphones MFJ-392B

MFJ's communication headphones are perfect for amateur radio and shortwave listening. All modes, each earphone with separate volume control. Super padding. 9' cord. Padded headband and comfort cushion ear pads. Mono / stereo adaptor included.



Padded Headphones MFJ-393M K|I|M|I

Professional boom mic / headphones for contesting, DXing, traffic nets. Comfortable padding seals out noise. Frequency tailored mic. Adjustable boom.



Speaker MFJ-281

The MFJ ClearTone™ speaker restores the broadcast quality sound of shortwave listening. Makes copying easier,

enhances speech, improves intelligibility, reduces noise, static, hum. 3-inch speaker handles 8 watts. 8 ohm. 6 foot cord.

Microphones



Desktop Mic MFJ-299

Desk microphone, tailored for SSB. Adjustable 11 inch boom. Graphic equalizer, compressor, VU meter, on-air indicator, PTT / lock switch. Requires additional MFJ cable.



Desktop Mic MFJ-297

A basic SSB boom microphone with easy controls and PTT switch. Requires additional MFJ cable.



MIC Control Center MFJ-1263

Microphone control center allows for instant switching of microphones to different transceivers. Use PTT footswitch, headset boom mic, phones, speaker, audio-in jack.

KISS Mode TNC



Universal TNC MFJ-1270X

A universal self-contained KISS mode TNC that works with every packet software program that supports KISS mode. Perfect for APRS. Fully compatible with WinLink 2000. Works with Windows, MAC OS X and Linux. Active audio filter cleans up analog signals. Small, inexpensive, low power consumption, expandable.

MICROPHONES

HEIL HAM RADIO



HM-10XD *

The HM-10XD features our new HC-5X and HC-4X elements. The narrow response of the HC-4X is ideal for DX work and the full response of the HC-5X is great for everyday rag chew. It comes equipped with a microphone clip and a foam windscreen.

HM-12 *

The high output full range "Genesis" dynamic element in the HM-12 is designed to work with just about every amateur radio low impedance transmitter. The element is mounted in a unique internal shock mount and exhibits nearly -35 dB of rear rejection, reducing background and ambient noise from the transmitted signal. This microphone has a unique internal windscreen plus an external foam windscreen. It has the 5/8" X 27 microphone clip designed for our booms and stands. Frequency response: 80 Hz-14 kHz @ -55 dB.



PR-77D/PR-77DP *

A professional quality dynamic microphone for commercial broadcast, recording, podcasts and any application that requires a smooth flat response over a wide frequency range. Excellent transient response, great speech articulation and low IMD with -40 dB rear rejection. Features a two position switch allowing the selection of the best characteristics for voice or music. Choose purple or black.



PR-781/PR-781G *

These professional quality dynamic cardioid microphones for amateur radio provide a wide frequency response, great articulation, and a -40 dB of rear rejection with ample output to drive most amateur radio microphone inputs. The PR-781 is specifically designed for use with most makes of Elite transceivers by Kenwood, Flex, Elecraft, Yaesu, Ten Tec and Icom. The PR-781G is the same great design and performance as the PR-781 but now with a beautiful gold screen. Both models come with the SM-3 mount.



The Fin™ *

The Fin™ utilizes the PR-20 element so popular in the professional audio realm. It is housed in a gorgeous high-gloss chrome finish. If phantom power (not compatible with Icom transceivers) is provided to The Fin™, the blue wind screen (also available in red) becomes illuminated by 4 embedded LEDs. Now also available in satin black with red, or blue LEDs/foam.



HANDI-MICS *

The Handi Mic is an ultra-compact hand microphone utilizing a special internal shock mount, yielding superior audio compared to the standard microphones offered by the radio manufacturers. The Handi Mic is available with the "IC" element designed for Icom rigs. A special "Pro" version is also available, with a wide-range dynamic element that sounds great on FM mobile rigs. Both have PTT.

Model Element

HM-IC Electret for most ICOM
HM-PRO Wide Range Dynamic



ICM/ICM BG

A salvation for Icom users. The ICM is a high-quality microphone for early Icom transceivers that comes in an all platinum colored finish or a matte black with gold grill. It features a high-gain condenser element that provides full-bodied audio with plenty of drive to match up with the low-gain audio systems of the earlier Icom rigs. It also works well with the higher-gain "Pro" radios and IC-7800. It comes with an attached, shielded 8' cable terminating in an 8-pin mic plug and a 1/4" PTT pigtail. Connecting cable needed for certain radios.



GOLD ELITE *

The new Gold Elite microphone is designed and crafted specifically for amateur radio communications. It contains two distinctly different high performance dynamic elements that are available at the flip of a switch to meet the different types of communications needs. The Gold Elite microphone comes to you with a foam windscreen and a 5/8"-27 microphone clip that is designed for our booms and desk stands.



The Heritage HHG *

The Heritage is a dynamic microphone with a vintage chrome look. It utilizes the PR 20 element and has a lockable on/off switch. It is available in chrome or black matte with blue foam windscreen.



HHG - Chrome/Blue Screen
HHGB - Black/Blue Screen

PR-30 *

The PR 30 was designed for commercial broadcast, live sound and recording. It has comparable sound to the finest condenser microphones because of its wide frequency response, excellent transient response and low IMD. The PR 30 comes standard with the SM-3 5/8" X27 mount. Available in champagne and black.



PR-40 *

The PR 40 was designed for commercial broadcast, live sound and recording. It features the Heil dynamic element with a perfectly flat response from 28 Hz all the way up to 18 kHz and has gorgeous articulation. The PR 40 is shipped with the SM-3 5/8" X27 mount. Available in champagne, chrome, gold, black and gold, or all black.



PR-10 | MIC-PACKAGE *

It's small in stature, mighty in performance; the PR 10 combines a desk stand, boom and the latest microphone offering from Heil Sound. The integrated mic exhibits outstanding speech articulation with perfect balance of highs and lows. Works well on most all transceivers. Also available as the PR-10 Red with the LB-1R.



* Adaptor cable not included.
Separate CC-1 or CC1-XLR cable required.

MICROPHONE ACCESSORIES

HEIL
HAM RADIO

Shock Mount SM-1

*Microphone not included

The ultimate suspension mount for your Heil hand microphones. This shock mount can be used on all Heil stands or booms with a simple 5/8"x 27" std. thread mount.

HRO Price: \$79.00



Shock Mount PRSM

This flexible support system helps suppress low frequency rumble by dampening vibrations. The PRSM fits large diameter microphones including the PR 30/40/781 and can be used on all booms or stands with 5/8"x27" threading.



PRSM-B black finish.
HRO Price: \$99.00

Switches

PTT Hand Switch HS-2

Heil's high quality hand switch made for PTT operation is shaped to fit your hand naturally and comfortably. Comes with a 6 foot cable that plugs into the AD-1 or CC-1 adapter.

HRO Price: \$35



Single Circuit Foot Switch FS-3

Use the FS-3 to control the transmit function of your amateur radio. A 6-foot shielded cable is terminated with a commercial 1/4" plug that connects into the Heil CC-1 and AD-1 cable system.

HRO Price: \$35



Dual Foot switch FS-2

This unique dual-action footswitch provides two sequenced micro switches, one for each connection to your transmitter and your linear amplifier; when you press down on the foot switch, the amplifier's switch is engaged first, followed immediately by the switch for the radio, and when you let up the reverse sequencing takes place. This provides safe switching for both radio and amplifier without a control cable between the two units.

HRO Price: \$49



Mounts

Illuminated Base LB-1R

Red Finish with
White Light
HRO Price: \$99.00



Illuminated Base LB-1B

Black Finish
with
Blue Light
HRO Price: \$99.00



Heil Sound's fun light up bases have an oversized PTT with the Heil logo and LED lights that can be illuminated in 2 different ways. It has standard 5/8"x27" brass threading to work with any Heil Sound microphone accessories. This weighted base features a high strength plastic covering and great looks.

Classic Base CB-1 PTT

This beautiful reproduction of a 1930 RCA microphone base has stainless trim and features a PTT with a 4" riser that accepts 5/8" x 27" hardware.

HRO Price: \$79



Flange Mount FL-2

Basic mount with brass insert. Fits the PL-2T, SB-2, & HB-1.

HRO Price: \$29



Desktop Flush Mount DT-1

Allows PL-2T, SB-2 and HB-1 to slip into 1-1/2" hole drilled into the desktop.

HRO Price: \$39



Vertical Surface Mount WM-1

The WM-1 is a unique mount for the Heil booms that allows them to be mounted on a vertical surface. The brass insert of the WM-1 ensures smooth, perfect fit with PL-2T and HB-1.

HRO Price: \$29

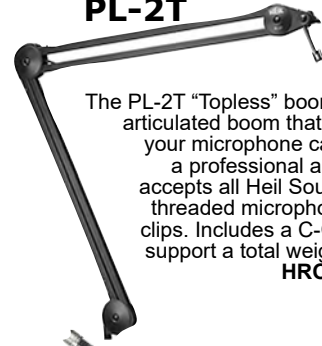


Booms

Studio Boom PL-2T

The PL-2T "Topless" boom is a unique articulated boom that lets you tuck your microphone cable away for a professional appearance. It accepts all Heil Sound 5/8" x 27" threaded microphone mounting clips. Includes a C-Clamp. It can support a total weight of 2.5 lbs.

HRO Price: \$115



Small Boom SB-2

This compact, adjustable boom accepts standard 5/8" x 27" threading and comes with a C-Clamp. It is compatible with all Heil Sound hardware.

HRO Price: \$69



Economy Mic Boom HB-1

The HB-1 is an articulated boom balanced by four external springs. It is capable of supporting microphones weighing up to 2.5 lbs. and any standard 5/8" x 27" threaded microphone hardware. The HB-1 is shipped with a C-Clamp mount that accepts up to a 1.5" thick table and is compatible with all Heil Sound hardware.

HRO Price: \$79



Riser | RS-1

This 12" riser allows you to mount any Heil Sound boom behind your transceiver or console.

HRO Price: \$49



Wireless Adaptor

Wireless Adaptor | HBA

We bring to you a pair of simple wireless devices one connecting into any of our 3 pin balanced XLR microphones (PR 20, PR 22, PR 781, etc) and the receiver connected to the microphone input of any Heil AD-1 headphone adapter. It has a range of about 40'. The stations you work can not tell that you are using a wireless adaptor instead of a wired mic cable. A PTT is required.



HEADSETS

HEIL HAM RADIO

Pro Series



Stereo and Selectable Elements

* PRO-7

The Pro 7 features an audio balance control allowing the user to adjust levels between speakers. It also features the Heil Sound Phase Reversal Switch, which allows the user to "move" the incoming signal to significantly improve copy in a tough DX pile up. The mic boom can be rotated for use on either the right or left ear. The Pro 7 is available in black or blue. Outfitted with the HC-7 dynamic element or the iC electret element, the HC 74 Element for DX is available separately. Compatible with current AD-1 series adapter cables.



Professional and Lightweight

PRO SET 3

Pro Set 3 stereo headphones are professional and lightweight designed for music recordings, internet, commercial radio, and ham radio. They ship with 3 detachable cables: a 1.8 M flexible straight cable, a 1.8 M straight cable with 3.5mm plug, and a 3 M coiled cable. All cables feature a twist lock terminating in a 1/8" (3.5mm) professional gold plated screw-on 1/4" (6.3mm) adapter. The Pro Set 3 features the Heil Sound Phase Reversal Switch, which allows the user to "move" the incoming signal to significantly improve copy in a tough DX pile up.

Pro Series

Improved Comfort

* PRO SET ELITE



The redesigned Pro Set Elite features improved comfort and durability. It offers dual side, highly efficient speakers mounted in acoustically tuned chambers which offer high rejection of outside noise. The headset folds for easy transport and storage and comes in two models. The Pro Set Elite-6 contains the Heil HC-6 full range dynamic microphone element and the Pro Set Elite-iC contains the Heil iC electret microphone element specifically designed for Icom.

Application Specific

* PRO SETS



Pro Sets are lightweight, versatile boomsets with the Heil Sound Phase Reversal Switch, allowing the user to "move" the incoming signal to significantly improve copy in tough DX pile ups.

Pro Set Media Pro for computer has a high-level condenser element and two 1/8" plugs for applications requiring connection of a headset / boom mic to a computer's sound card.

Pro Set 6 for commercial broadcast applications utilizes the HC-6 dynamic element. Requires AD-1 adapter.

Pro Set iC with electret condenser designed for low mic inputs used on many Icom transceivers. The iC requires 5 volts of DC phantom power (provided by all Icom rigs). Requires AD-IC or AD-ICM adapter.

Pro Set Accessories:
BAG -1 Leatherette travel bag for all Heil Sound headsets. **HRO Price: \$29**

* Adaptor cable not included.
Separate AD-1 cable required.

Lightweight Headsets

Handie Talkie Headset

These HTH single-sided and HTHD dual sided light weight headsets are designed for use with popular handheld transceivers featuring an in-line PTT.

Single Sided Model
Dual Sided Model

HTH HTHD

HTH-K, HTHD-K works with 2-pin Kenwood, Baofeng, and Wouxun. **HTH-i, HTHD-i** works with 2-pin Icom. **HTH-Y, HTHD-Y*** works with TRRS Yaesu / Vertex. *For weather resistant Yaesu / Vertex, use the HTH-Y and HTH-ADY adapter.



* BM-10

Only 3 oz. Has an articulate boomset that is ideal for DXpeditions, mobile, and general rag chewing. The speakers are extremely sensitive and don't require much AF drive from the transceiver. The frequency response is 60 Hz - 12 kHz with very low distortion. The ear pads are replaceable acoustic foam. Two versions, a BM-10-Dynamic and a BM-10-iC (electret), to accommodate many radios on the market today. AD-1 cable required.

BM-17*

The BM-17 is a new, lightweight headset designed for emergency communications available as either a single-side or dual-side model, with either a BM-17-Dynamic element or a BM-17-iC Electret element.

BM-17 Dynamic Dual
BM-17 Dynamic Single
BM-17 ICOM Dual
BM-17 ICOM Single



PRO MICRO * PMD-6

The lightweight Pro Micro headsets are designed for commercial broadcast applications. They are available in single sided or dual sided models.

Pro Micro 6 is equipped with HC-6 element. AD-1 cable required.

Pro Micro iC has an electret condenser designed for low mic inputs used on many Icom transceivers. The iC requires 5 volts of DC phantom power (provided by all Icom rigs). Requires AD-IC or AD-ICM adapter.



Dual Sided

PRO MICRO * PMS-6

Single Sided



HEIL HAM RADIO

Handheld Microphone

Handheld Mic
HMM-Dyn | HMM-iC



The HMM brings new technology to the hand microphone. When you place a microphone element inside a clam shell, the result is a hollow muffled sound. To solve this problem, we installed a grill on the top of the microphone that detunes the internal resonance of the housing. We came up with a very special, full-range microphone element with great speech articulation. A very flexible but sturdy coil cable terminates with 1/8" male for the microphone and a 1/4" male for the PTT control.
HMM-Dyn (Dynamic)

Also offered with the iC electret element as **HMM-iC**. AD-1 cable required.

Audio Processor

Parametric Receive
Audio System
PRAS EQ



The Parametric Receive Audio System Equalizer (PRAS EQ) is an audio processor that enhances the internal audio systems of amateur radio, shortwave, commercial, and CB receivers. The PRAS EQ allows radio operators to modify, shape, and improve the audio output of their receivers using three separate EQ controls. The PRAS is supplied with a 2.5 mm barrel to Powerpole® adapter cable and a 1/4" to 1/8" stereo adapter.

Powered Speaker
HPS-5

The Heil Powered Speaker (HPS-5) is a two-way powered speaker designed to be used with the PRAS. Together they provide unmatched speech articulation and bring new dimensions to receive audio quality. The HPS-5 features a 5" driver and a 24-watt amplifier. It comes with an XLR to XLR cable, a 2.5 mm barrel to Powerpole adapter cable, a 1/8" to 1/8" stereo source cable, and a 1/4" to 1/8" stereo adapter.



VIBROPLEX®



The high-quality **Bencher** product line is now part of the oldest name in Ham Radio, Vibroplex.

Advanced Performance
RJ SERIES HAND KEYS

The "RJ" hand keys have an advanced American-style design derived from the telegraph keys that won the west, yet with modern features like Oilite bearings, a solid navy knob, gold-plated solid silver contacts, full locking adjustments of all tension and spacing parameters, and Bencher quality materials throughout. These keys are ideal for the new amateur just mastering code as well as the old time brass pounder anxious to "clear the hook." This key offers the Morse code operator an investment that will bring years of pride and satisfaction. Try the Bencher "RJ" hand key at your nearby HRO. You will be convinced there is no better key available. **HRO Price: RJ-1 Black \$149.95 | RJ-2 Chrome \$179.95**

Unique Design
HEX KEY



Gold plated silver contacts. Molded acrylic finger paddles. Polished chromium parts. Magnetic tension adjustment and adjustable contact spacing. Black powder coated steel base. **HRO Price: \$309.95**

Iambic Paddles
BY SERIES



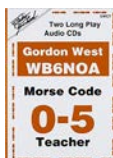
You will enjoy the smooth, precise action of a Bencher paddle with any iambic keyer. These paddles feature a heavy steel base, gold plated silver contact points, non-skid feet, stainless steel adjustable spring, self-adjusting needle bearings, and large acrylic finger paddles.

Single Lever Paddles
ST SERIES

Superb Bencher features and construction for the ham who prefers single lever operation.

ST-1 Black - HRO Price: \$139.95
ST-2 Chrome - HRO Price: \$164.95

BY-1 Black - HRO Price: \$169.95
BY-2 Chrome - HRO Price: \$209.95



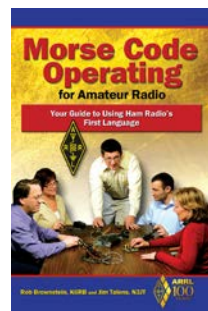
Gordon West
WB6NOA
Morse Code
0-5 WPM Teacher



Gordon West
WB6NOA
0-5 WPM
IN-DEPTH
LEARNING COURSE



Gordon West
WB6NOA
5-16 WPM
SPEED BUILDER
COURSE



Ham Radio's
First
Language

MORSE CODE
OPERATING

Tune in to the low end of any HF band, and you'll find it populated with ham radio operators using Morse code for casual conversations, chasing DX or fast paced contests.

Morse Code Operating for Amateur Radio is your introduction into the fascinating world of radio communication by Morse code, now simply called "CW". It discusses how to get started in the hobby, the advantages to learning and using Morse code, how to set up your station for CW and how to adjust your Morse code key. #0004
HRO Price: \$12.95

VIBROPLEX®

Quality & Pride Throughout!

Non-Iambic Paddle VIBROKEYER

The Vibrokeyer is designed for those who prefer a non-iambic paddle. The single lever paddle imitates the automatic dots and dashes of the electronic keyer with the same motion used to operate the "Bug."

Vibrokeyer Deluxe: Highly polished decorative chrome base with bright chrome top parts. Silky smooth movements are jeweled as in fine Swiss watches. **HRO Price: \$199.95**

Vibrokeyer Standard: A neat, crisp black textured finish base with bright decorative chrome parts. Non-jeweled movement. **HRO Price: \$164.95**



Iambic Paddle VIBROCUBE



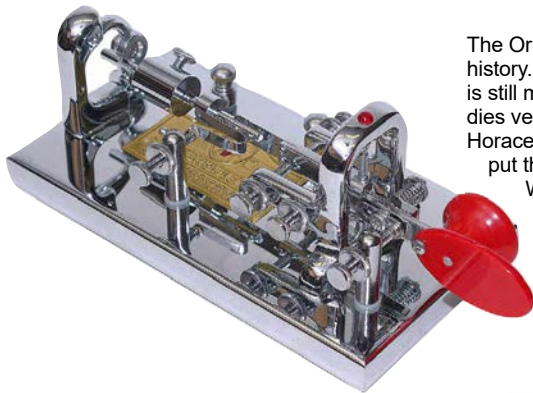
The Vibrocube registers just under 6 pounds on the scale. It is a large paddle that stays in place on the desk and accommodates a large hand comfortably. The base is USA-forged cold-rolled steel, upper components are zinc, steel and brass. The finger pieces are hard red acrylic. Instead of magnetic tensioning, we use a spring loaded method which provides a greater range of possible tension settings than magnets allow.

Vibrocube Standard - HRO Price: \$189.95
Vibrocube-S-Upgrade - HRO Price: \$219.95

Vibrocube Deluxe - Like the Standard version with jeweled upper and lower trunion screws, an all-chrome base and all-chrome top components. **HRO Price: \$289.95**

Non-Iambic Paddle ORIGINAL

The Original Vibroplex is a genuine piece of history. First patented in 1894, the Original is still manufactured today using tools and dies very similar to those used by its inventor, Horace G. Martin. Modern-day operators can put their fist to the same equipment as the Western Union and railroad operators of old. **Original Deluxe pictured.**
HRO Price: \$259.95

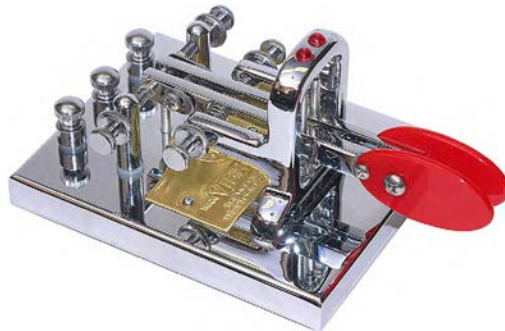


Standard or Deluxe IAMBIC

This is the modern descendant of the Original. It incorporates the traditional Vibroplex look for use with modern electronic keyers.

Iambic Deluxe: Same as Presentation but without the 24K gold plated brass plate. **HRO Price: \$209.95**

Iambic Standard: A neat, crisp black textured finish base with bright decorative chrome top parts. **HRO Price: \$164.95**

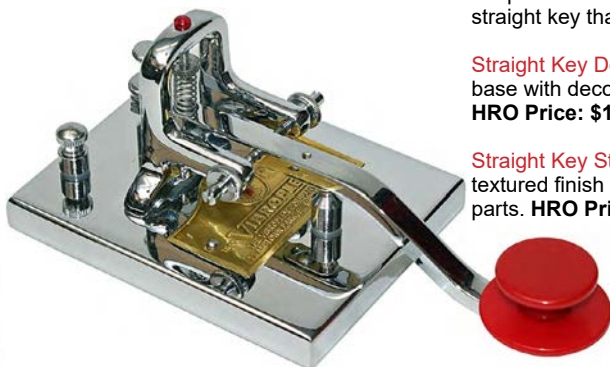


Standard or Deluxe STRAIGHT KEYS

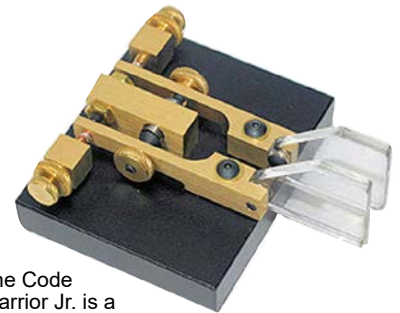
Vibroplex® offers a STRAIGHT key with a unique mechanical action, unlike any other straight key that has ever been manufactured.

Straight Key Deluxe: Highly polished chrome base with decorative chrome top parts. **HRO Price: \$199.95**

Straight Key Standard: A neat, crisp black textured finish base with bright chrome top parts. **HRO Price: \$164.95**



Home/Portable CODE WARRIOR JR



The Code Warrior Jr. is a small footprint, steel base key with brass top parts and silver tipped copper contacts. Practical for home or portable use. Magnetic return action for wide range of tension adjustment. Weighs just 1 lb 10 oz. Budget priced. Available with black or blue base.
Code Warrior Jr - HRO Price: \$99.95

Bright Finish CHROME WARRIOR



The Chrome Warrior is identical to the Code Warrior Jr. but has a decorative bright chrome polished steel base. **Chrome Warrior - HRO Price: \$139.95**

MORSE READERS/KEYS

MFJ

Morse Practice



Practice Oscillator MFJ-554

The world's finest code practice oscillator is designed for demanding classroom use and abuse. It produces a true pure sine wave side tone with no trace of harsh key clicks. You'll hear the clearest, sweetest sounding CW you have ever heard. Delivers full 1 watt into built-in 3" speaker - fills an entire room. Low distortion - less than .2% total harmonic distortion from its BTL (Bridge-Tied-Load) amplifier. Volume control, 400-1000 Hz tone control, on/off switch, power on LED, 1/4 inch key jack, 3.5mm external speaker jack uses 12 VDC. All metal enclosure.
HRO Price: \$129.95



Morse Reader MFJ-461

Decodes and displays Morse code on two-line high-contrast LCD. Just hold close to receiver. 3-60 WPM. Use 9V, not included.
HRO Price: \$119.95



Morse Code Tutor MFJ-418

Morse Code Tutor has all of the practice you will ever need built into a microprocessor. Work from a beginner to master! 3-60 WPM. Use 9V, not included. **HRO Price: \$119.95**

Keyers



Voice Keyer MFJ-434B

A microprocessor-controlled voice keyer that sends your call and does contest exchanges in your own natural voice. Store frequently used phrases, repeat messages continuously, use 8-pin modular or 8-pin round microphone plug. Record and play back off-air signals.
HRO Price: \$244.95



CW Keyer MFJ-464

Keyer / Reader. They won't know you never passed the code test! Sends and reads 5-99 WPM. Auto speed tracking. 2-line LCD. Use paddle or keyboard. Easy menu operation. Front panel speed, volume controls.
HRO Price: \$244.95



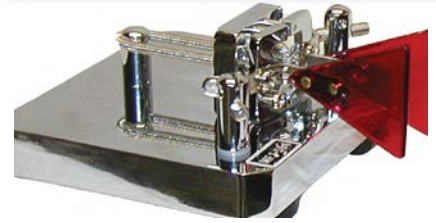
CW Keyer MFJ-495

The MFJ-495 Memory Keyer is a full-featured memory keyer combining dual microprocessors and a nonvolatile EE-PROM chip for a full featured, low cost, high reliability design. Unlike other keyers, it uses an LCD display to set keyer functions and show the sending message. The MFJ-495 keys CW from a paddle, a keyboard and a serial computer interface. All code parameters are changed with an easy to use menu interface shown on the LCD display.
HRO Price: \$229.95

Code Oscillator MFJ-557

Practice sending Morse code. Telegraph key, code oscillator, speaker on heavy non-skid steel base. Volume and tone controls. Use only a 9V battery (not included). **HRO Price: \$74.95**

Lambic Paddles/Keys



Chrome or Black MFJ-564 CHROME MFJ-564B BLACK

Chrome/black lambic paddle features a full range of adjustments in tension and contact spacing, self-adjusting nylon and steel bearings, contact points that almost never need cleaning, precision machine frame and non-skid feet on a heavy base.
HRO Price: \$129.95



Minimal and Lightweight MFJ-561

Miniature, light-weight lambic paddle fits into an Altoids® tin! Precision formed, perfect for traveling. **HRO Price: \$44.95**

Straight Key



Wood Base MFJ-553

Deluxe wood base features a Morse code straight key on a non-skid, beautifully stained wood base. A steel underplated bottom makes it stay on your table. 3' cable with 3.5 mm plug. Handsome. **HRO Price: \$54.95**



SWR/WATT METERS

MFJ

Dummy Loads



MFJ-9214
QRP Wattmeter / Dummy Load, rig protection circuit. Handles 5 watts. 4W x 1.5H x 2.75D



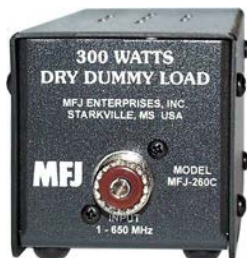
MFJ-267
Dry dummy load with a large SWR/Wattmeter combo. Large 3" cross-needle SWR meter, 1500 watt dry load. 1.8 to 30 MHz.



MFJ-264
HF / VHF dry dummy load covers up to 650 MHz, usable to 750 MHz. Rated 1.5 kW for ten seconds, 100 watts continuous. Perforated metal cabinet. SO-239 connection.

MFJ-260C

HF / VHF Dry Load is similar to MFJ-264, but handles 300 watts for 30 seconds. Has derating curve. SO-239.



MFJ-263



300 W dry dummy load, good to 3 GHz! Mounted on large, heavy-duty air-cooled heatsink. Handles 125 W continuous, 300 W for 10 seconds. Teflon® N connector.

MFJ-250

1 kW Dummy Load, 50-ohm. Oil filled, low SWR to 400 MHz. Rated 1 kW CW or 2 kW PEP for 10 minutes. One half rating for 20 minutes. 200 watts CW or 400 watts PEP continuous. Includes industrial transformer grade oil (no PCB).



Meters



MFJ-812B

HF SWR Wattmeter, 2 / 220 MHz, built-in field strength meter. FWD/REV power in two 30 / 300 W ranges.



MFJ-815D

Lighted 3 inch cross-needle meter, 1.8-60 MHz, 300 / 3000 W fwd, 60 / 600 W ref. True peak meter.

Giant Display



MFJ-891

Peak-reading giant 4.5 inch cross-needle SWR / Wattmeter. 20 / 200 / 2000 W ranges. Super bright LED backlight. DC grounded antenna connections. SO-239 connectors. 7.25 W x 4.5 H x 4.5 D.

MFJ-868B

Giant SWR / Wattmeter measures 6.5 inches diagonally across face. Covers 1.8 to 30 MHz. Has 20 / 200 / 2000 W ranges for accurate QRP or QRO operation. MFJ Wattmeter Power Saver™ circuit turns on meter only when RF power is being measured. Covers 1.8-54 MHz. Uses 9 V battery or 12 VDC or 110 VAC with MFJ-1312D.



MFJ-867

Giant 144 / 220 / 440 MHz Wattmeter. Same size as MFJ-868. On only when power is being measured. 1.8-54 MHz. Uses 9 V battery or 12 VDC or 110 VAC with MFJ-1312D.



MFJ-864

Lighted Cross-Needle SWR / Wattmeter, 1.8-60 / 144 / 440 MHz, 30 / 300 Fwd, 6 / 60 Ref. Features separate HF and VHF / UHF directional couplers to connect and monitor separate HF and VHF/UHF transceivers simultaneously.

MFJ-822

Covers 1.8-200 MHz, 30 or 300 watts. Cross-needle SWR / Wattmeter for HF / VHF and VHF / UHF (MFJ-842) read forward / reflected power and SWR simultaneously on the huge 3" meter. Perfect for mobile or portable operation. Two selectable power ranges, built-in meter light (+12 VDC). SO-239 connectors. 3-1/4 W x 3-1/4 H x 3-1/4 D inches.



MFJ-860

MFJ-862

MFJ-864

MFJ-862

Covers 144 / 220 / 440 MHz. 30 / 300 watts forward, 6 / 60 watts reflected ranges. 5.64 W x 2.5 H x 2.25 D inches. Has one sensor for all three bands.

Digital Wattmeter



MFJ-826B

MFJ's high accuracy digital SWR / Wattmeter and frequency counter measures to 1.5 kW at 1.8-54 MHz. True peak or average forward and reflected watts, SWR and frequency can be simultaneously displayed. You get three high-resolution forward / reflected power ranges that are automatically selected: a true QRP range (25 watt full scale), a mid-range (250 watts full scale) and a high-range (1500 watts full scale). Use 12 VDC or 110 VAC with optional MFJ-1312D. Attractive cabinet measures 6-1/2 W x 2-5/8 H x 6 D inches.

DIAMOND
ANTENNA

HF - SHF | SX-1100



HF - UHF SX-240C



All models:

- Illuminated meters.
- Require 12 volts DC. Plug Included.
- Low insertion loss generally less than 0.2 dB in HF range and 0.3 dB at higher frequencies.
- Power measurement accuracy generally $\pm 10\%$ on higher power ranges and $\pm 5\%$ on the lower.
- Low loss SO-239 connectors are used except for the high frequency models as noted in the table.
- Measurements are forward power, reflected power, SWR and, on selected frequencies, PEP monitor.

Diamond Meters

Model	Freq MHz	PWR Watts	IN/OUT	HRO Price
SX-100	1.6-60	30 300 3000	SO-239	\$124.95
SX-200	1.8-200	5 20 200	SO-239	\$95.95
SX-240C	3.5-30 50-54 130-150 430-450	30 300 3000	SO-239	\$319.95
SX-400	140-525	5 20 200	SO-239	\$109.95
SX-600	1.8-160 140-525	5 20 200	SO-239	\$189.95
SX-1100	1.8-160 430-450 800-930 1230-1300	5 20 200	SO-239 + N-Type	\$254.95

METER QUESTIONS? HRO HAS THE ANSWERS!

We are here to help. Ham Radio Outlet salespeople are available to answer your questions about Wattmeters, SWR meters, and more. Simply contact your local HRO store for assistance.

Palstar



Remote Coupler PM2000A

The PM2000A measures and displays forward power (up to 2000 W), reflected power, and SWR simultaneously on its dual movement meter system in the frequency range of 1.8 MHz to 60 MHz. Accuracy of the readings is assured because the PM2000A features a true shielded directional coupler. The backlit meter can display either peak or average power readings with a Peak Hold function, and has 300 and 2000 watt range settings.

The PM2000AM mobile version has a remote coupler that can be mounted up to 14' from the display head.

- PL259 coax connector.
- 115 VAC to 12 VDC adapter included.
- Size: 4.5" x 3.25" x 3.25" deep.
- Weight 1.2 lbs. / 0.55 Kg.

PM-2000A - HRO Price: \$259.95
PM-2000AM - HRO Price: \$198.95

Call To Order
Monday - Friday
9:30 AM to 5:30 PM

Anaheim, CA | (800) 854-6046
Atlanta, GA | (800) 444-7927
Denver, CO | (800) 444-9476
Milwaukee, WI | (800) 558-0411
New Castle, DE | (800) 644-4476
Phoenix, AZ | (800) 559-7388
Plano, TX | (877) 455-8750
Portland, OR | (800) 765-4267
Sacramento, CA | (877) 892-1745
Salem, NH | (800) 444-0047
San Diego, CA | (877) 520-9623
Winter Springs, FL | (800) 327-1917
Woodbridge, VA | (800) 444-4799

Go Online To Order
www.hamradio.com



DAIWA



Cross Needle CN-501H

- Cross needle design reads forward, reverse and VSWR simultaneously, no calibration required.
- Easy to read meter.
- PEP monitor function.
- Illuminated meter, 12 VDC plug provided.

Specifications

	CN-501H	CN-501H2
Frequency Range	1.8-150 MHz	1.8-150 MHz
Power Range	15 / 150 / 1.5 KW	20 / 200 / 2 KW
Rating	1.5KW (1.8-60 MHz 1KW (144 MHz)	1.5KW (1.8-60 MHz 1KW (144 MHz)
SWR Detection	4 W Minimum	4 W Minimum
Price	\$124.95	\$129.95



Professional Series CN-901HP3

- Easy to read, illuminated, extra large meter face with mirrored graph in .5 watt increments.
- Cross needle design reads forward, reverse and VSWR simultaneously, no calibration required.
- CN-901HP3 is the new 3000 watt version.
- 12 VDC plug provided.

Specifications

	CN-901 HP3	CN-901 V	CN-901 G
Frequency Range MHz	1.8-200	140-525	900-1400
Power Range Watts	20/200/3K	20/200	2/20
Impedance	50 ohm	50 ohm	50 ohm
Connectors	SO-239	SO-239	N-Type
SWR Detection	5 W Min	5 W Min	.5 W Min
Price	\$239.95	\$174.95	\$279.95

ANTENNA ANALYZERS

MFJ

SWR Analyzers



MFJ-259D

SWR Analyzer™ with impedance meter reads antenna SWR, complex RF impedance, resistance (R) and reactance (X) or magnitude (Z) and phase (degrees), coax cable loss in dB, coax cable length and distance to fault, return loss, reflection coefficient,

inductance and capacitance. Tells battery voltage. Has huge LCD digital readout with built-in frequency counter, side-by-side SWR and RF impedance meters, Ni-Cd / Ni-MH internal battery charger, battery saver feature, low battery warning, and easy-access batteries. Has smooth, reduction drive tuning. Truly portable. Uses 10 alkaline, Ni-Cd or Ni-MH batteries (not included) or 110 VAC with optional MFJ-1312D.



MFJ-269D

Covers 530 kHz to 230 MHz plus 415 to 470 MHz HF / VHF / UHF. Has all of the features of the MFJ-259D plus a 12-bit A/D converter (gives much better accuracy and resolution), CoaxCalculator™ (calculates coax line length in feet given coax length in electrical degrees and vice versa) and coaxial characteristic

impedance input (zero to six hundred ohms). MFJ269DPro has N connector.



MFJ-249D

If digital display is all you need, MFJ-249D does everything MFJ-259D does without analog meters. Same great features at a lower price. Solid metal case. MFJ-249D covers .2-230 MHz.

Antenna Analyzer



MFJ-213

MFJ-213 covers 1-60 MHz with digital precision. It also displays SWR, complex impedance, and impedance magnitude simultaneously all on the same easy-to-read LCD screen. Use it to measure capacitance, inductance, field

strength, frequency, plus generate test signals. You can also fine tune stubs, analyze coax, test baluns and RF transformers, and perform many other important RF-related tasks around the shack or on the road! MFJ-213 has all of the features of the popular MFJ-266C but its frequency range is 1-60 MHz.

Color Screen VNA



MFJ-223

Pocket-Size, Incredible Performance! Truly accurate SWR, R, X and Z! This pocket-sized wonder breaks the mold for analyzer design with user-friendly convenience, top notch accuracy, and a vivid TFT multi-color display. Don't let the size fool you, MFJ-223 is packed with all the VNA features and performance you need! For example, get data for SWR, resistance (R), reactance (X), and impedance magnitude (Z) delivered on a color-coded high-resolution bar-graph display or sharply defined swept-frequency plots. Get continuous DDS frequency coverage with 100-Hz resolution and a full selection of tuning steps and sweeps. There's a movable marker that calls up alpha-numeric data for any point on any plot -- and a memory to capture current data when you turn the analyzer off. Built in help menu and a field-strength indicator warns when powerful interference is present. Best of all, juggling batteries is a thing of the past -- a long-running lithium-polymer power source is built right in. Recharge via any USB port.



LCD Display

CAA500 Mark II

Commercial Grade SWR / Impedance Analyzer Range: 1.8 - 500 MHz (including 222 MHz band). Check antenna installations in just seconds. Determine SWR and resonance instantly. New color TFT display permits easy viewing of frequency and band information, even in the dark. Also has a Band Sweep function that allows

you to measure SWR across the selected ham band and view it on the display graph. Makes SWR adjustments quick and easy. Both SWR and impedance measurements are provided simultaneously. Precision analog meter provides SWR / impedance changes in real time. **HRO Price: \$439.95**



MFJ

Graphic Analyzer



MFJ-225

2.5-180 MHz continuous two-port Graphic Analyzer. A compact, completely self-contained handheld graphing analyzer in the field. On the bench it becomes a full-fledged two-port (S21) desktop machine when teamed up with your PC. Using powerful IG-miniVNA freeware, you can run detailed data analysis and print out stunning color-graphic plots to document your work. Built-in back-lighted 3-inch LCD graphic display. Full screen, easy-to-view SWR bargraph, capture vivid swept displays for SWR, impedance, return loss, phase angle, and more. DDS generator.

ANTENNA ANALYZERS

RigExpert

When it comes to the installation or maintenance of an antenna, antenna analyzers simplify your work.

RigExpert™ antenna and cable analyzers help you match your antenna and/or filters, detect cable faults, or check for loss. They are ready for use in the field immediately after powering on and do not need pre or recalibration.

Our instruments have a simple and convenient user interface, as well as a built-in help assistant. All these advantages and high accuracy of measurements make RigExpert™ antenna and cable analyzers indispensable tools for HAM operators and radio engineers.

- Rapid check-out of an antenna.
- Tuning an antenna to resonance.
- Antenna SWR and impedance measurement and comparison before and after specific event (rain, hurricane, etc.).
- Making coaxial lines or measuring their parameters.
- Cable testing and fault location.
- Measuring capacitance or inductance of reactive loads.
- Analyzers with the Zoom feature use their arrow keys to increase or decrease the center frequency or scanning range. The chart will zoom in or out or change its position.

HF Analyzers



AA-35 ZOOM

The AA-35 ZOOM is a portable, self-calibrating analyzer, designed for measuring SWR (standing wave ratio), return loss, cable loss, as well as other parameters of cable and antenna systems in the range of 60 kHz to 35 MHz, with incredible ZOOM capability. Uses an SO-239 connector.
HRO Price: \$299.95

AA-55 ZOOM/BT

This analyzer is designed for measuring SWR (standing wave ratio), return loss, cable loss, as well as other parameters of cable and antenna systems in the range of 60 kHz to 55 MHz. A built-in ZOOM capability makes graphical measurements especially effective. Uses an SO-239 connector.



HRO Price with Bluetooth: \$378.95

UHF Analyzers



AA-650 ZOOM

RigExpert AA-650 is a powerful antenna analyzer designed for testing, checking, tuning or repairing antennas and antenna feedlines. Frequency range .01 to 650 MHz

Graphical SWR (standing wave ratio) and impedance, as well as Smith/polar chart displays are key features of these analyzers which significantly reduce the time required to

adjust an antenna. Easy-to use measurement modes, as well as additional features such as connection to a personal computer. **HRO Price: \$699.95**

AA-2000 ZOOM

RigExpert AA-2000 ZOOM is a powerful antenna analyzer designed for testing, checking, tuning or repairing antennas and antenna feedlines in the frequency range 0.1 to 2000 MHz. Graphical SWR (standing wave ratio) and impedance, as well as Smith/polar chart displays are key features of these analyzers which significantly reduce the time required to adjust an antenna. Easy-to use measurement modes, as well as additional features such as connection to a personal computer makes the RigExpert AA-2000 attractive for professionals and hobbyists. Bluetooth LE connection. Type N connector.

HRO Price: \$1139.95

.1 to 1.6GHz model also available.

AA-1500 Zoom..... 0.1-1.5 GHz.... \$939.95

Portable Analyzer

STICK-230



Don't let the size fool you! This analyzer is designed for measuring SWR (standing wave ratio), return loss, as well as other parameters of cable and antenna systems in the range of 100 kHz to 230 MHz. And is extremely portable. The following tasks are easily accomplished by using this analyzer.

- Rapid check-out of an antenna in the field or stationary conditions.
- Tuning an antenna to resonance.
- Comparing characteristics of an antenna before and after a specific event (rain, hurricane, etc.).
- Measuring capacitance or inductance of reactive loads.

HRO Price: \$319.95

STICK-PRO



Similar to the Stick-230 but with extended range. Measure SWR (standing wave ratio), return loss, as well as other parameters of cable and antenna systems in the range of 100 kHz to 600 MHz. Single type N connector output.
HRO Price: \$439.95

VHF Analyzers

AA-230 ZOOM BLE



The analyzer is designed for measuring SWR (standing wave ratio), return loss, cable loss, as well as other parameters of cable and antenna systems in the range of 100 kHz to 230 MHz.

A built-in ZOOM capability makes graphical measurements

especially effective. An integrated time domain reflectometer mode can be used to locate a fault within the feedline system. Uses Type N connector.

HRO Price with Bluetooth: \$439.95

TEST INSTRUMENTS

MFJ

RFI/Noise Detector



Locate RFI Noise MFJ-805

Use this RFI detector to track down and eliminate RFI caused by radiating cables and wires. Find RFI generated by consumer devices, computers and high-tech office equipment. The detector isolates cables picking up RFI and indicates when you've suppressed the problem.

MFJ-805 also works with mobile installations, ferreting out alternator noise, ignition pulses, and microprocessor noise on feedlines and power leads.

With a signal generator you can profile the radiating current distribution of antennas, radials, feedlines, ground systems and control lines.

Easy-to-use. Simply clamp current transformer over suspected cable or wire to detect RFI causing common-mode currents. Super compact 2.25 W x 4.75 H x 1 D inches fits in your shirt pocket. Use 9 Volt battery (not included). Usable from VLF to VHF. Gain adjustable over 50dB range.
HRO Price: \$129.95

Step Attenuator



0 to 170 MHz MFJ-762

Step attenuator: 0 to 170 MHz; receive line only: 0 - 81 dB of attenuation; 50 ohms. Plot accurate antenna patterns. Connect the attenuator between your receiver and antenna and use your S-meter as a precision calibrated field strength meter. Eliminate blocking and cross-modulation by attenuating strong out-of-band signals before it gets into your receiver. Must be used only in a "Receive" line, not at the output of your transmitter. Connect it to your receiver input to properly terminate your preselector at all frequencies to ensure good out-of-band filtering. Use it to determine gain and loss and to evaluate linearity of circuits.
HRO Price: \$119.95

Power Line Noise



Power Line Noise MFJ-852

This MFJ handheld power line noise meter lets you walk or drive around the neighborhood to search out leaky insulators, loose hardware, and corroded ground lines quickly. You can track the noise source right down to the pole, transformer or insulator. You can also pinpoint faulty dimmers, electric fence arcs, sparking power equipment, neon signs and much more! Let equipment owners hear how troublesome their noise is and see first hand what's causing the problem.
HRO Price: \$144.95

Antenna Phase Shift



Precision Meter MFJ-222

MFJ uses a low-power, high-speed dual comparator circuit to make precision phase measurements between 1 - 50 MHz. A circuit indicates if unknown phase lags or leads the reference signal.

Signals used for measurement can come from an antenna analyzer such as the MFJ-269 or any other generator that will supply at least 1 volt peak output into the load. It has a built-in switchable 50 Ohm load (250 mW max) so the use of an external load and BNC TEE is not needed in most tests. MFJ-222 reads the frequency of the signal so generators with only a coarse or no frequency readout can be used.

Setup is simple. Plug in the signal generator output to IN, connect the Reference OUT to the input of the network and the output of the network to UNKNOWN. Turn it on and read the phase shift and the frequency. A bright two line LCD display allows precision readout of the phase from -180 to +180 degrees without interpreting an analog meter or guessing at the phase polarity. With low power components, it will operate many hours on a single 9V battery or with the AC adapter MFJ-1312D (both optional). **HRO Price: \$169.95**

Field Strength Meter



100 KHz to 500 MHz MFJ-801

This easy-to-use MFJ antenna meters show the strength of the actual field being radiated from your antenna. You can use it to determine the basic radiation pattern of your antenna and see which direction your signal is strongest. You can make changes to

your antenna and instantly know if it radiates better or worse. You can compare one antenna to another find out which HT antenna radiates the strongest signal? Measure your HF antenna now and compare it later to make sure its performance is still up to par. Adjust a ground lead, artificial ground, counterpoise or tune your transmitter or antenna tuner for maximum field strength. You can check for RF floating around the shack that may be caused by faulty antennas or poorly shielded equipment. Demonstrate the concept of gain or antenna polarization. Find hidden transmitter bugs at office or house. Usable from 100 KHz to 500Mhz.
HRO Price: \$54.95

Field Strength Meter



100 KHz to 500 MHz MFJ-802B

This new easy-to-use MFJ antenna meter shows the strength of the actual field being radiated from your antenna. You can use it to determine the basic radiation pattern of your antenna and

instantly know if it radiates better or worse. You can compare one antenna to another. Find out which HT antenna radiates the stronger signal. Measure your HF antenna now and compare it later to make sure its performance is still up to par. Adjust a ground lead, artificial ground, counterpoise or tune your transmitter or antenna tuner for maximum field strength. The MFJ-802B includes a built-in "sense" antenna to simplify measurements.
HRO Price: \$74.95

Ham Radio Outlet carries the full line of MFJ products. For more information simply contact your local HRO store.

MFJ

DC Power Strips



MFJ-1118

High current multiple DC outlet. Use for two HF and / or VHF transceivers and six or more accessories from your transceiver's main 12 VDC power supply.



MFJ-1117

To power four HF / VHF radios (two at 35 amps each and two at 35 combined) simultaneously.



MFJ-1116

Deluxe multiple DC power outlet. 8 outlets for powering accessories.



MFJ-1112

MFJ-1112 is like the MFJ-1116 without on / off switch, voltmeter and fuse. 6 pair outlets.



MFJ-1129

Get the best of both connectors. Has Anderson Powerpoles® and high-current binding posts. Outlets 1, 2, 4-8 are Powerpoles®, outlet 3 is a 35 A high current binding post. Includes 7 pairs of Powerpole® 35A contacts, ten fuses.



MFJ-1128

12 outlets, factory installed fuses, handles 20 amps total.



MFJ-1126

8 outlets
12 - 35A contacts.



MFJ-1124

6 outlets
8 - 35A contacts.

DC Distribution Box

MFJ-1107

Four sets of Powerpole® outputs, a total of 40A, one binding post input, 40A. Two 2.1 mm center positive power plugs for accessories. Powerpole® mating connectors included. 4 W x 1.5 H x 2.75 D inches.



Rig Protection

MFJ-4402

Protect your mobile rig from many unseen operating problems found in vehicles today. A built in surge protection diode reduces the chance a high voltage spike will damage your rig, and has reverse polarity protection.



MFJ-4402 will shut down your rig if the voltage gets too low for proper vehicle operation. A delay timer, which is controlled off the ignition sense line, ensures your rig does not turn on until normal voltage is reached.

MFJ-4402 connects to your rig with Anderson Powerpoles® for high-current lines and a bayonet lug to the ignition sense line. A 30A fuse protects for over-current or reverse voltages. Fits nicely due to its compact size of 2-7/8 W x 4 H x 1-1/2 D inches.



MFJ-4403

Transceiver voltage conditioner provides reverse, overvoltage, voltage transient, and short circuit protections. Gives

superb noise and ripple filtering and power supply buffering for your base, portable, or mobile transceiver. MFJ-4403 protects against accidental reverse voltage connection, alerting with a bright warning LED. Once DC polarity is corrected, MFJ-4403 recovers and operates normally.

Heavy duty transient suppressor handles peak currents up to 200A. Four farads of ultra high value capacitors filter off virtually all power supply noise and ripple, and provide power supply buffering. For temporary mobile operation like a rental car, run your transceiver a full 100 W SSB from your 10-15 A cigarette lighter socket. Standard Anderson Powerpole® connectors are used for the DC input and output. Compact 4 W x 3 H x 2 D inches.

DC Meters



Volt/Amp Panel Meter MFJ-4422

4.5-30 VDC / 30 A Digital Volt / Amp Panel Meter with built in Current Shunt. Connect inline to monitor voltage and current of your mobile radio or accessory. Displays voltage and current simultaneously with dual .28 inch red / blue LED digits. Input / output with Anderson Powerpoles®. Handles up to 30 A. Reverse polarity protected. 3 W x 2 H x 1 D inches.



Wattmeter/Power Analyzer MFJ-4424

High Precision Wattmeter / Power Analyzer displays amps, volts, and watts continuously from 4.8-60 V. Measure current, peak current, power and peak power. Input / output with Anderson Powerpoles®. Backlit LCD display. 3.25 W x 1.75 H inches.

Mobile DC Monitors

CIG-Lighter MFJ-4431



CIG-Lighter MFJ-4432



MFJ's new voltage monitors show car battery voltage at all times. Three 3/8" tall bright red LEDs are easily seen day or night. Plug into a cigarette lighter and you are ready to monitor. Use 12 V or 24 V batteries, 8-30 VDC. Built-in fuse. MFJ-4431 comes with a mounted display, adhesive, plug with 2 foot wire. Module is a compact 2-5/8 W x 1-3/8 H x 2-1/4 D. MFJ-4432 is an all-in-one plug / module, 1-1/2 W x 1 H x 4 D.

CLOCKS

MFJ

12/24 Hour Clocks

MFJ-105D

This is the world's most popular ham radio wall clock! True 24 hour quartz movement. Huge 12-inch black face with large white numerals gives excellent visibility across room. Attractive gold colored hour, minute and seconds hands looks great on any hamshack or other wall! **HRO Price: \$44.95**



MFJ-137RC

Large 14-inch diameter analog atomic wall clock. 12hour format displayed under real glass face. **HRO Price: \$54.95**



MFJ-115

Set this 24 hour Quartz clock to UTC/ GMT and you can determine the time in any zone of the world at any time of the day. Premier world cities encircle its colorful world map face to indicate time zone. 12" face is easy to see across room. Seconds hand. **HRO Price: \$44.95**

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MFJ-133RC

Dual time zone LCD Atomic Clock lets you read any two time zones in 24 or 12 hour format. Super compact, attractive silver clock folds up and slides in a shirt pocket. **HRO Price: \$54.95**



MFJ-123B

World map clock, shows 12 or 24 hour time anywhere in the world. Also shows day of week, month, date, and year. Time displays hour / minute / second. Daylight savings time feature. **HRO Price: \$79.95**

hour / minute / second. Daylight savings time feature. **HRO Price: \$79.95**

MFJ-112B

World map clock, shows 12 or 24 hour time anywhere in the world. Also shows day of week, month, date, and year. Time displays hour / minute / second. Daylight savings time feature. **HRO Price: \$49.95**



JUMBO Display



MFJ-139RC

This jumbo LCD clock display boasts giant 4 inch digits. The whole display is 15-3/4 W x 10-3/4 H x 3/4 D inches. Place it on a desk with its convenient flip stand or hang on your wall. You never need batteries for this solar-powered clock. Use 24 or 12 hour time format with MFJ exclusive TrueUTC™ time, including Hawaii and Puerto Rico. Select GMT or other time zone on the map. Turn daylight savings time on or off. Includes an indoor thermometer and hygrometer to read indoor humidity. It displays the month, date and day of the week in one simultaneous look at this handsome clock. Beautiful metallic tan color and bright LCD display. **HRO Price: \$124.95**



MFJ-113

Switchable 12 / 24 hour display with HUGE 1.8" red LEDs. Absolutely shines from across the room. Super compact 3-1/2 H x 9 W x 2-1/2 D in. Nine minute ID timer, alarm, 9 V battery backup (not included). Use 110 VAC, 60 Hz. Great for the sight impaired! **HRO Price: \$34.95**



MFJ-130BRC

12/ 24 hour wall or desk mount atomic clock. Almost 2 inch high digits can be read from across the room. DST can be disabled to accurately read UTC consistently. Running seconds, month, date, day, and indoor temperature are all displayed! **HRO Price: \$44.95**

Dual Display



MFJ-148RC

Especially designed clock for amateur radio. This model has two independent atomic 24 / 12 hour clocks with exclusive UTC time zone and a dedicated station ten minute ID timer. A single time base keeps both clocks perfectly synchronized. It is radio controlled so it keeps perfect time. Set each clock independently for 12 or 24 hour display, time zone, and DST on / off. Built-in 10 minute station ID timer with LED and buzzer alerts. Timer resets by a simple press of a switch. Huge 5 W x 1.5 H LCD display with LED backlights. Flip stand for desk display and mounting hole for wall mount. Uses two AA batteries (not included). Sexy black hard plastic cabinet is 6.5 W x 3.5 H x 3/4 D inches. **HRO Price: \$79.95**



MFJ-108B

Dual clock has separate 24 / 12 hour displays. Read UTC and local time simultaneously. Features huge high-contrast 5/8-inch LCD numerals that make it easy to read across the room. Mounted in attractive solid brushed aluminum frame with sloped face for easy viewing. Synchronize to UTC for split-second timing. Quartz controlled for excellent accuracy. Long life button battery included. 4 1/2 W x 1 D x 2 H". MFJ one year limited warranty. **HRO Price: \$34.95**



MFJ-121B

Read both UTC and local time at a single glance with this dual atomic clock. Displays 24 / 12 hour time simultaneously – set each independently. Automatic backlight lights up every day at your preset time for 8 hours. Mounted in a handsome silver-metallic, hard-plastic frame, it has HUGE, easy-to-see 1 W by 2 H inch LCD numerals, an exclusive UTC zone and running seconds display. 11-3/8 W x 7-1/4 H x 1 D mounts on wall or desk mount. Daylight savings time can be disabled independently in each clock display. Uses four AA batteries (not included). **HRO Price: \$114.95**



Radios are NOT included.
They are shown for illustration purposes only.

Between The Seats Mount LM-WEDGE

Plastic device holder wedges between seat and console. Adjustable viewing angle, provides multiple options for installing two devices:



Mobile Radio Remote Head, HT, Microphone (Cell phone attaches with the optional LM-H holder) in any combination you prefer.

HRO Price: \$49.95

Bendable Floor Mount LM-300



This mount has a 22" Gooseneck Swivel Mounting Pedestal, allowing you to place your device in the perfect position for optimal viewing. Just loosen the passenger seat bolt, slide the mount bracket under the bolt, tighten the bolt. The mount comes with a 4 hole AMPS plate to mount remote heads. **HRO Price: \$26.95**

Yaesu/Icom Adaptor LM-AD1

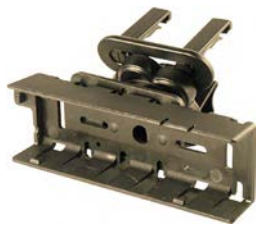


Adapter kit for the remote display heads that use the camera style threaded socket to hold the display head to the mount.

The kit is sold separately and attaches to all the Lido Mounts. **HRO Price: \$12.95**

Rail Mount With Express Plate LM-1000EXP

HRO Price: \$19.95



Vent Mount LM-100

The vent mount has a 4 hole AMPS pattern that can be attached to Alinco, Icom, Kenwood and Yaesu remote head brackets. Swivel 360 degrees for optimal viewing. The vent mount can be installed or removed in seconds. Fits most horizontal vent louvers. It does not work on the large circular vents like those found in Mustangs and PT Cruisers. Remote head bracket not included.

HRO Price: \$14.95

Vent Mount With Side Grip Holder LM-100H



The vent mount includes a side grip holder for some Kenwood and Icom remote heads. The grip has padded arms and can handle devices from 1 7/8 inches to 4 1/4 inches in height. Easily remove your device to store out of sight when you reach your destination. For use with horizontal air vent louvers. **HRO Price: \$24.95**

Cup Holder Mount

LM-803-EXP-2



This mount comes with the Lido EXP-2 Express plate as well as the LM-1203 adhesive Mic Hanger. The plate can accommodate the belt clip on any portable radio. The Lido LM-803 cup holder mount height can be adjusted from 6 1/2" to 8". **HRO Price: \$24.95**

Side Grip Holder LM-H

Optional side-grip holder fits all Lido Mounts. Place your device in the LM-H and squeeze the arms together. Push button on the side releases the arms. Holds large size HT's, remote display heads, GPS units, cell phones etc.

HRO Price: \$14.95



Nifty!

HT DESK STAND



Radio not included.

The HT Desk Stand sports a glossy jet black finish. Main support plate and shelf are made of tough, durable polycarbonate and the steel base has a heavy-duty powder coat finish. This thing looks great! Adjustable to fit all hand held radios. Provides solid stable support, holding the radio at a convenient viewing and operating angle.

HRO Price: \$37.95

WIRE BALE STAND



Our Universal Wire Bale Stand can be used with any radio equipped with a foldable wire stand, providing an ideal angle for viewing the display and working the controls. Use with the FT-991, IC-7300, IC-7000, IC-718, TS-2000, TS-590, K3, K3S, DX-SR8T.

HRO Price: \$22.95

DESK STAND



Radio not included.

Desk Stands are custom designed to perfectly fit your radio, providing an ideal angle for viewing the display, and stable support for touching buttons on the screen and working the controls. Your radio securely attaches to the stand using two thumbscrews for the mounting holes at the back of the control head. An additional four rubber feet are provided for use with the main body of the radio allowing it to also be placed on the desk top.

Icom ID-5100HRO Price: \$30.95
Icom IC-2730HRO Price: \$25.95
Elecraff KX3HRO Price: \$28.95
Yaesu FTM-400XDR.....HRO Price: \$28.95

Radio Manuals



Nifty Mini-Manuals

Fully laminated, spiral bound booklets, 4.25 x 8 inches, providing simplified step-by-step instructions for all your radio's features. These short-form manuals are smaller, more durable, and easier to use than manuals normally supplied with a radio.



Gordon West

Study With The Best!

KENWOOD

Model	Description	HRO Price
NIFTY-TH-D74A	Mini-Manual + Reference Card	\$27.95
NIFTY-TM-D710G	Mini-Manual	\$19.95
NIFTY-TM-V71A	Mini-Manual	\$21.95
NIFTY-TS-2000	Mini-Manual	\$12.95
NIFTY-TS-480S/HX	Mini-Manual	\$19.95
NIFTY-TS-590SG	Mini-Manual	\$23.95
NIFTY-TS-890S	Mini-Manual	\$28.95

ALINCO

Model	Description	HRO Price
NIFTY-DJ-500T	Reference Card	\$4.95
NIFTY-DJ-V57T	Reference Card	\$6.95
NIFTY-DR-635T	Mini-Manual	\$11.95

MFJ

Model	Mini-Manual Description	HRO Price
NIFTY-MFJ259B/C	Mini-Manual MFJ-259	\$9.95
NIFTY-MFJ269/C	Mini-Manual MFJ-269/C	\$12.95

MISCELLANEOUS

Model	Description	HRO Price
NIFTY-MM-BandPlan	Amateur Radio Band Plan	\$11.95
NIFTY-D-STAR-BOOK	E-Z Guide to D-Star Operations Book	\$15.95
NIFTY-MMDXFIELD	DX Field Guide Book	\$18.95
NIFTY-PSK31-BOOK	E-Z Guide to PSK31 Operations	\$14.95
NIFTY-RADIOMG	Radio Monitoring Guide	\$18.95
NIFTY-ECHOLINK-BOOK	Guide to Echolink	\$15.95
NIFTY-K3S	Mini-Manual Elecraft K3S	\$26.95
NIFTY-KX2	Mini-Manual Elecraft KX2	\$23.95
NIFTY-KX3	Mini-Manual Elecraft KX3	\$25.95
NIFTY-P3	Mini-Manual Elecraft P3	\$10.95

ICOM

Model	Description	HRO Price
NIFTY-IC-T70A	Reference Card IC-T70A	\$4.95
NIFTY-IC-718	Mini-Manual IC-718	\$18.95
NIFTY-IC-2730	Mini-Manual IC-2730	\$18.95
NIFTY-IC-7100	Mini-Manual IC-7100	\$31.95
NIFTY-IC-7300	Mini-Manual IC-7300	\$25.95
NIFTY-IC-7610	Mini-Manual IC-7610	\$26.95
NIFTY-IC-9700	Mini-Manual IC-9700	\$28.95
NIFTY-IC-705	Mini-Manual IC-705	\$27.95
NIFTY-ID-51A Plus 2	Mini-Manual + Reference Card ID-51A	\$4.95
NIFTY-ID-4100	Mini-Manual ID-4100	\$28.95
NIFTY-ID-5100	Mini-Manual ID-5100	\$30.95

YAESU/WOUXUN

Model	Description	HRO Price
NIFTY-FT450D	Mini-Manual	\$22.95
NIFTY-FT891	Mini-Manual	\$23.95
NIFTY-FT991A	Mini-Manual	\$25.95
NIFTY-FTDX101D/MP	Mini-Manual	\$25.95
NIFTY-FT3DR	Mini-Manual	\$26.95
NIFTY-FT5DR	Mini-Manual	\$26.95
NIFTY-FTDX3000	Mini-Manual	\$26.95
NIFTY-FTDX5000/MP	Mini-Manual	\$26.95
NIFTY-FTM-100DR	Mini-Manual	\$25.95
NIFTY-FTM-300DR	Mini-Manual	\$28.95
NIFTY-FTDX10	Mini-Manual	\$25.95
NIFTY-FT8900R	Mini-Manual	\$17.95
NIFTY-FT60R	Reference Card	\$6.95
NIFTY-FT65R	Reference Card	\$6.95
NIFTY-FT70DR	Mini-Manual	\$21.95
NIFTY-FTM400XDR	Mini-Manual	\$28.95
NIFTY-VX6R	Mini-Manual + Reference Card	\$24.95
NIFTY-KGUV3	Reference Card KGUV 1/2/3	\$6.95
NIFTY-KGUV6 Amateur	Reference Card KGUV6 Series	\$6.95
NIFTY-KGUV8D	Dual Card Set KGUV8	\$4.95

STUDY MANUALS

GWTM	Technician Class Book	\$29.95
GWTW	Technician Audio Theory Course on 4 CDs	\$29.95
NCS	Tech Book plus Software Package	\$34.95
GWGM	General Class Book	\$24.95
GWGW	General Audio Theory	\$29.95
GWEM	Extra Class Book	\$32.95
GWEW	Extra Audio Theory Course on 6 CDs	\$44.95
ECS	Extra Book plus Software Package	\$46.95
HOS	W5YI Ham Operator Software without books	\$29.95
HOSB	W5YI Ham Operator Software Plus 3 books	\$99.95
GUS	General Book plus Software	\$34.95

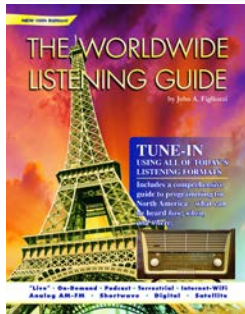
MORSE CODE STUDY MATERIALS

GW05	Morse Code 0-5 wpm on 8 CDs	\$39.95
GW13	Morse Code 6-16 wpm on 8 CDs	\$39.95
GW20	Morse Code 10-28 wpm on 8 CDs	\$39.95
GWCT	CW Refresher Course 0-5 wpm on 2 CDs	\$14.95

OTHER BOOKS

GSE	Getting Started in Electronics	\$19.95
MINI-4	Mini Notebook, Vol. 4: Electronic formulas, symbols, and circuits	\$12.95
BELC	Basic Electronics	\$19.95
BDE	Basic Digital Electronics	\$17.95
BCE	Basic Communications (analog) Electronics	\$17.95
GROL+	Get Your Commercial Radio License Book	\$49.95
RADAR	License Book	
GRSP+	Get Your Commercial Radio License Book + W5YI Study Software Package.	\$79.95
RADAR	License Book + W5YI Study Software Package.	

Shortwave Listening



Worldwide Listening Guide

Written by John Figliozi. New and expanded 10th edition provides comprehensive program guide to all of the ways programs can be heard: "live",

on-demand, WiFi, podcast, satellite, internet, digital, and, of course, analog AM, FM, and SW. Spiral bound to open in a flat, easy-to-use format.

HRO Price: \$29.95

Nifty!

Radio Monitoring Guide

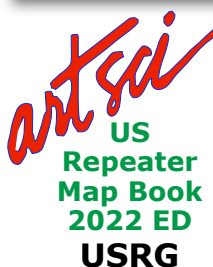


Covering 0.5 to 500 MHz, this reference to short-wave, police, fire, aviation, marine radio and more, combines shortwave listening and VHF / UHF scanning into one guide. Use it as a tuning guide, and for

programming the scanning capabilities of your radio. Has information useful for monitoring radio services including International Space Station frequencies and NASA rebroadcasting. Amateur radio HF DX propagation beacons, plus Maritime and other popular emergency and communication nets are covered. Web page URL's are provided to sites offering current broadcast schedules.

HRO Price: \$18.95

Repeater Directory



The PERFECT traveling companion. Road maps show major highways and cities in every state. Amateur radio repeater frequencies are included. This is a must for truckers and travelers. Enhanced maps provide great highway detail.

HRO Price \$17.95

Nifty E-Z Guide to EchoLink Operation



Bernie Lafreniere, N6FN

Nifty!

Echolink Operating Guide

This ideal reference for those getting into EchoLink shows how to make contacts using your computer or DTMF equipped transceivers.

- Straight forward, simple explanations for both beginning & experienced users.
- Voice over Internet technology.
- EchoLink computer users, simplex links, and repeaters.
- Installing and using EchoLink software.
- Call sign validation and authentication.
- RF Link transceiver requirements.
- Establish RF EchoLink simplex and repeater nodes.
- Create a node by interfacing your transceiver to a computer.
- Configure EchoLink's sysop setup menus.
- Add EchoLink capability to a repeater.
- Numerous clear illustrations.

HRO Price: \$15.95

QSL Holders



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HRO Price: \$9.95

Ham Magazines

MONTHLY

CQ, QST

BI-MONTHLY

QEX, NCJ
On The Air

CQ Publications

TSVAAGR

The short vertical antenna and ground radial book

ARC2023

Amateur Radio Calendar 2023

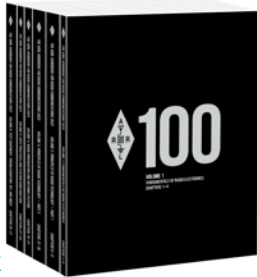
VISIT YOUR LOCAL HRO AND BROWSE THROUGH OUR LARGE SELECTION OF AMATEUR RADIO RELATED BOOKS.



ARRL BOOKS



ARRL Handbook 2023



This 100th edition of The ARRL Handbook is your complete guide to radio experimentation, discovery, and innovation. It is The Handbook - written by radio amateurs for everyone with a desire to advance the pursuit of wireless technology.

Key Topics

- Radio electronics theory and principles.
- Circuit design and equipment.
- Radio signal transmission and propagation.
- Digital and analog modulation and protocols.
- Antennas and transmission lines Construction practices.

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*Standard hardcover available only from ARRL.



12th Edition OPERATING MANUAL

Revised 12th Edition. Everything you need to know about radio operating. Four sections: Basic station and operating techniques; Radio clubs and public service; On-Air activities and

radiosport; Resources for the active ham.

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ARRL MAPS

- Map North America Azimuthal **#7717**
- Map North America Robinson..... **#8804**
- Map North American..... **#8977**
- GRID ATLAS Grid Locator Atlas..... **#2944**

ARRL LISTINGS

- DXCC LIST Official ARRL DXCC List.. **#0840**
- LB Log Book..... **#1250**
- RD Repeater Directory..... **#1434**

Radio Manuals

Use ARRL License Manuals with ARRL Online Exam Review for Ham Radio!

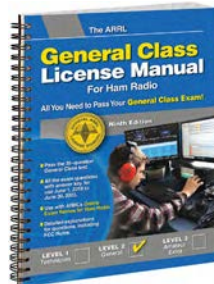


Ham Radio License Manual

Includes the latest complete question pool with answer key and explanations for use to pass the 35-question license test. Designed

for self-study or classroom use. Take as many randomly generated practice exams as you want. Discover the unique mix of technology, public service, convenience, and fun that make up ham radio.

#1557 Spiral Bound. **#1564** Soft Cover
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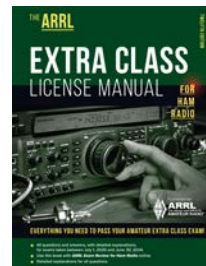


General Class Ham Course

The fastest way to General Class License! 9th Edition.

Covers all material you need to pass the General Class License exam. Each topic is divided into bite-sized lessons with colorful illustrations covering procedures, practices, regulations, components, circuits, equipment, propagation, electrical safety and more. **#1069** Spiral Bound.

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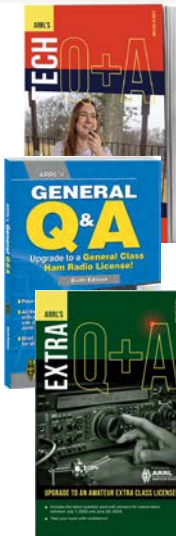
Extra Class Ham Course

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Extra Class exam: rules, specific operating skills and more advanced electronics theory. To upgrade you must already hold a General Class license then pass a written examination. This manual is valid through 7/31/2024.

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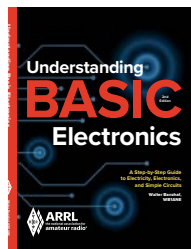
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Take a quick, easy path to your first ham license. Pass the 35-question Technician class examination by studying this question pool with brief, clear explanations. **#1601** 8th Edition
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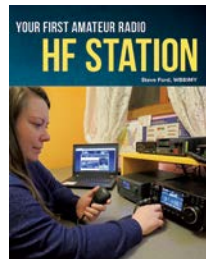


Understanding Basic Electronics

Your gateway into the exciting world of electricity and electronics. This book is written in a friendly, easy to understand style.

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HRO Price: **\$29.95**

YOUR FIRST AMATEUR RADIO HF STATION



Here is practical advice on choosing your first radio, antenna, computer, software, and accessories. Explains the best way to set them up, how to safely hook up to power while protecting your gear. Explains where to put your priorities. **#0079**
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ARES FIELD RESOURCE MANUAL

This manual is intended to serve as a quick trainer and reference for amateurs deployed in the field for emergency services work, primarily through the ARRL Amateur Radio Emergency Service (ARES).

It provides basic program information, forms and operating aids. A number of templates can be customized for the local area to include reference information such as important phone numbers, emergency frequencies, maps, organizational details and so forth. **#5439**
HRO Price: **\$12.95**

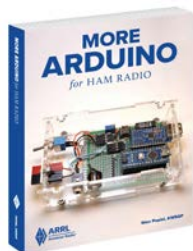
Project Books

MICRO-CONTROLLER PROJECTS



All the information you need to build fascinating projects using the Arduino, STM32 ("Blue Pill"), ESP32, and Teensy 4.0 micro-controllers. Unfamiliar with C or C++ programming? No problem. Microcontroller Projects for Amateur Radio provides all the introduction you need to

build projects such as a programmable power supply, a signal generator, a DSP mic processor, and more! Features many practical hands-on projects. #1281 HRO Price: \$34.95

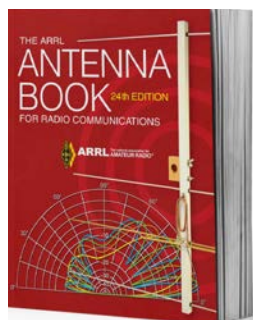


MORE ARDUINO FOR HAM RADIO

Introduces many of the new Arduino boards and add-on modules, followed by an overview of the software, tools,

and techniques needed to bring projects to life. These concepts are put to work in 10 practical projects that showcase a wide variety of applications and include detailed descriptions of how the software "sketches" work. Each project is complete as-is, with ideas for you to add your own personal touches or create your own projects using the techniques and modules presented. That's part of the fun of the Arduino and the Open Source community. #1472 HRO Price: \$34.95

ARRL ANTENNA BOOK



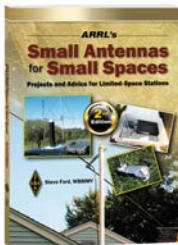
The ARRL Antenna Book for Radio Communications is a single resource covering antenna theory, design and construction, and practical treatments and projects. This book contains everything you need to understand how radio signals

propagate, how antennas work, and how to construct your own antenna system. Use The ARRL Antenna Book to build hundreds of antenna designs: dipoles, verticals, loops, beams, and more.

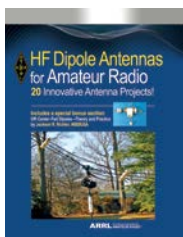
Presented in this 24th edition of The Antenna Book is persistent pioneering development by radio amateurs, for radio amateurs. You'll find new and time-tested antenna projects for radio communications across nearly any frequency, mode, and circumstance you can think of. #1113 HRO Price: \$34.95

Antenna Books

ARRL's SMALL ANTENNAS FOR SMALL SPACES



Fully updated, the second edition of ARRL's Small Antennas for Small Spaces is a valuable resource for radio amateurs who live in apartments, condominiums, or houses on small lots. Filled with practical advice, this book guides you to finding the right antenna design to fit whatever space you have available. In Small Antennas for Small Spaces you'll find ideas and projects that will get you on the air regardless of where you live! #0512 HRO Price: \$19.95

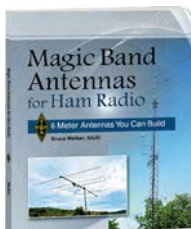


ARRL's HF DIPOLE ANTENNAS FOR AMATEUR RADIO

ARRL's HF Dipole Antennas for Amateur Radio is a collection of 20 HF dipole antenna designs published in QST, and is written to help you too get the most out of your SDR. It will even help you decide what to buy. #7203 HRO Price: \$24.95

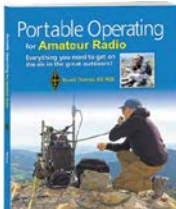
ARRL's membership journal, between 2000 and 2017. It includes innovative antenna projects for single- and multiband antennas, as well as antennas for portable applications. #0994 HRO Price: \$19.95

6 Meters MAGIC BAND ANTENNAS



Designed for radio amateurs who want to discover the mysteries of the "magic band." Six meters is a band full of surprises...When you least expect it, 6 meters can suddenly open for contacts over hundreds and even thousands of miles. #0987 HRO Price: \$19.95

Setup Anywhere PORTABLE OPERATING FOR AMATEUR RADIO



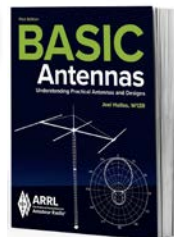
A new generation of compact, full-featured, portable radios combines with modern battery technology to make it easier than ever to set up your station. #0802 HRO Price: \$19.95

ARRL ANTENNA BOOKS

IAC..... International Antenna Collection
ACVOL8 Antenna Compendium Vol. 8

ARRL TECHNICAL BOOKS

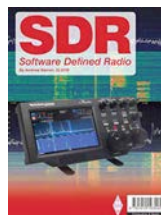
HK.....Hints and Kinks (18th ed.)



ARRL's BASIC ANTENNAS

Basic Antennas is a comprehensive introduction to antennas--basic concepts, practical designs, and details of easy-to-build antennas. You'll learn how to make antennas that

really work! This book will provide a foundation in antenna theory and design necessary for anyone undertaking more advanced topics such as those presented in The ARRL Antenna Book. #9994 HRO Price: \$29.95

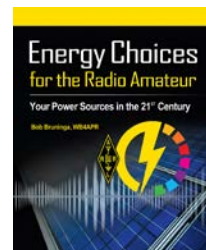


ARRL's SDR SOFTWARE DEFINED RADIO

Everyone is talking about software defined radio (SDR) but is SDR right for you? Software Defined Radio sets out to explain the basics,

without getting too technical, and is written to help you too get the most out of your SDR. It will even help you decide what to buy. #7203 HRO Price: \$24.95

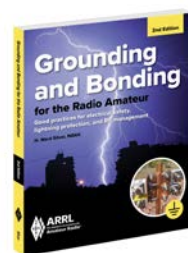
ARRL's ENERGY CHOICES



Revolutionary changes are taking place in the way we produce and consume power for our homes, transportation, and the technology that we use every day. This book explores the ongoing changes in the world of power and energy, and takes a careful look at the choices we can make. Home solar or utility power? Oil/gas heat or electric heat pump? Gas car or hybrid/EV? #1038 HRO Price: \$29.95

3rd Edition STORM SPOTTING

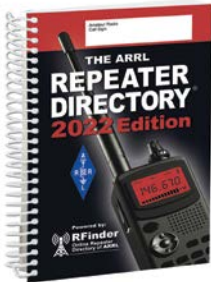
Use Your Communication Skills to Help Keep Your Community Safe. Thousands of ham volunteers provide real-time information. Storm Spotting and Amateur Radio can help you become one of the volunteers, providing ground-truth information when it is needed most. #1410 HRO Price: \$19.95



GROUNDING & BONDING

2ND EDITION Shows you how to make sure your station follows current standards for lightning protection and communication systems, not to mention the National Electrical Code. #1496 HRO Price: \$24.95

REPEATER LISTINGS



ARRL 2022 REPEATER DIRECTORY

The 2022 Repeater Directory® includes “crowdsourced” listings contributed by users, repeater owners, and volunteer frequency coordinators. Public service volunteers:

include this printed directory with your emergency ‘go kit’. 28,000+ listings. World’s largest printed directory of repeater systems. Listings for US and Canada, organized by state/province, city, and operating mode. Digital repeaters including System Fusion II, D-STAR®, DMR, NXDN, and APCO P-25 systems. VHF/UHF and microwave band plans included.

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BUCKMASTER INTERNATIONAL, LLC Directory HAMCALL™ DVD

The first and only database with more than 2,570,000 worldwide callsigns; it is the most complete callsign database available. Includes 6 months of internet updates and HamCall.net Gold Password for full access to HamCall.net website including callsign search, advanced search, and DX Spots. Also includes archival data dating back to circa 1920.

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- 147,000 e-mail addresses, 7,400 photos and QSL cards, 162,000 vanity calls 11,000,000 US archive callsigns.
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- Search by callsign, class, name, street address, city, state, postal code, county, country, or QSL manager.
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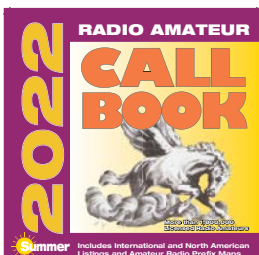
In most cases, orders over \$100 and to the 48 continental US states ship for free from Ham Radio Outlet. We strive to ship the same day your order is placed and to ship from the store closest to your shipping destination.

CATALOG PRICES

HRO discount prices shown are current as of September 26, 2022, when this catalog was assembled. Prices change. Please be sure to call one of our toll-free numbers or check our Web page for the latest prices. HRO strives to offer the most competitive prices in the industry on a full line of quality ham radio products. Many manufacturers offer “coupons” or similar promotions. Call or check our website <https://hamradio.com> for the latest promotions.

SOFTWARE

Software is sold on a non-returnable basis. Any software problems will be resolved under the terms of the manufacturer’s warranty.



Includes International and North American Listings and Amateur Radio Prefix Maps

2022 Directory RADIO AMATEUR CALLBOOK

The Radio Amateur Callbook on CD-ROM contains the callsign and address information of Amateur Radio stations all over the world. With more than 1,600,000 licensed radio amateurs, it lets you find the data you are looking for in a fast and easy manner. The Callbook is divided in two databases: The U.S. and the international database.

In the U.S. database, you can search by different fields (call, name, city, ZIP or county). In addition, there is a text search facility. Use the search menu to start the search. In the international database, you can search by call sign or by text string.

BONUS USB drive version! The widely popular Radio Amateur Callbook is now available on a 1 GB flash drive. This bamboo, eco-friendly flash drive features a magnetic cap. Perfect for Amateur Radio operators who use net books or other portable devices which don’t have a CD-ROM drive. Free with CD-ROM purchase. System Requirements: Windows XP, Vista, 7 or 8.
HRO Price: \$49.95



HAM RADIO OUTLET EXTENDED WARRANTY PROGRAM


HRO’s Optional Extended Warranty Program extends the original manufacturer’s limited warranty on most Amateur Radios, but not for attendant accessories (like batteries, microphones, speakers, etc.) A period of one (1) or two (2) additional years can be selected, and all limitations, exceptions, and exclusions of the original manufacturer’s warranty apply during this extended period.

The HRO Extended Warranty Program must be purchased within 30 days of the date the original product(s) was purchased, and is only available to the original purchaser of the relevant

product(s). Neither the benefits nor coverage of this program are assignable or transferable, and verification that the Extended Warranty Program was purchased, product purchase date and serial numbers may be required of the buyer.

The HRO Extended Warranty Program starts at the conclusion of the new product original warranty period, and all Extended Warranty claims must be processed by HRO directly via any one of our store locations.

Further details are available online at <https://www.hamradio.com>



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TECHNICIAN CLASS



Technician Class book for the 2022-2026 entry level exam! **Gordo** reorganizes the Q&A into logical topic groups for easy learning! Key words are highlighted in his explanations to help you understand the material for test success. Web addresses for more than 125 helpful, educational sites.
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Gordo's book with **W5YI** software allows you to study at your computer and take practice exams. Explanations from **Gordo's** book are on the software – answer a question wrong and his explanation appears to reinforce your learning. Includes free Part 97 Rule Book.
W5Y NCS-18 \$34.95

Tech Audio Course on CD

Welcome to Gordo's classroom! Technician audio theory course recorded by **Gordo** talks you through the Element 2 question pool. Follows the order of his **Technician Class** book, and is full of the sounds of ham radio operating excitement! An excellent study aid if you spend a lot of time in your car or pick-up! On 4 audio CDs.
W5Y GWTW-18 \$29.95

GROL + RADAR

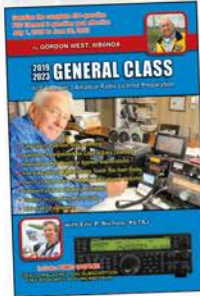


Get your FCC commercial radio licenses and add valuable credentials to your resume! **GROL+RADAR** includes the new FCC Element 1 question pool for the Marine Radio Operator Permit (MROP), the Element 3 pool for the General Radiotelephone Operator License (GROL), and the Element 8 pool for the RADAR Endorsement. Many employers require these licenses for jobs in marine, aero, safety, and municipal positions. **Gordo** and his team have written clear explanations for all the Q&A to make studying for these exams educational and fun. If you're an Extra Class ham, many of the technical/math questions will look familiar to you. Fully-illustrated to aid your learning. Book includes a searchable CD-ROM with all FCC Rules for Parts 2, 13, 23, 73, 80 and 87.
W5Y GROL-09 \$49.95

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Study at your computer and take practice exams. Software includes explanations from **Gordo's** book, scores your results and highlights areas that need further study. Includes free Part 97 Rule Book.
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Ham Operator Software has All Exams



Want to study at your computer without tying up your internet connection? This value pack includes the Tech, General and Extra class exams (Elements 2, 3, and 4) along with a free Part 97 Rule Book. Software includes **Gordo's** answer explanations from his books! Everything you need to go all the way to the top!

Software only **W5Y HOS-20 \$29.95**
 Software with all 3 West Books **W5Y HOSB-20 \$99.95**

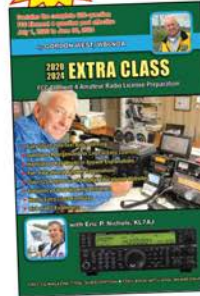
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NEW! EXTRA CLASS



Extra Class book Go to the top with Gordo! 2020-2024 book includes all Element 4 Q&A reorganized into logical topic groups. **Gordo's** fun, educational explanations with highlighted keywords, and great memory tricks for those tough theory questions! Wait 'til you meet "Eli the Ice Man!"
W5Y GWEM-20 \$32.95

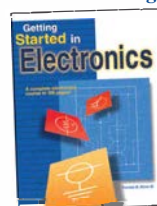
Extra Book & Software Package

Study at your computer and take practice exams as the **W5YI** software scores your results and highlights areas that need further study. Includes explanations from **Gordo's** book. Free Part 97 Rule Book.
W5Y ECS-20 \$46.95

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Extra Class Theory Course recorded by **Gordo** talks you through the difficult Element 4 theory to help you understand the material and get you ready for your upgrade to the top. On 6 audio CDs.
W5Y GWEW-20 \$44.95

Getting Started in Electronics



by Forrest M. Mims
 This is a complete electronics course in 128 pages! This famous electronics inventor teaches you the basics, takes you on a tour of analog and digital components, explains how they work, and shows how they are combined for various applications. Includes circuit assembly tips and 100 electronic circuits you can build and test. **Forrest** has written dozens of books, hundreds of articles, invented scientific devices and travelled to the Amazon for NASA, and loves to share his knowledge with eager students!
W5Y GSTD \$19.95

Engineer's Mini Notebooks



These **Mims** classics teach you hands-on electronics! Study and build 100s of practical circuits and fun projects. Each volume contains several of his famous Mini Notebooks. Terrific ideas for science fair projects and a great way to learn about electronics! Useful reference guides for your workbench!

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Vol. 2: Science & Communications Circuits & Projects **W5Y MINI-2 \$12.95**
Vol. 3: Electronic Sensor Circuits & Projects **W5Y MINI-3 \$12.95**
Vol. 4: Electronic Formulas, Symbols & Circuits **W5Y MINI-4 \$12.95**

All W5YI software products are compatible with Windows operating systems.

BASE STATION

IC-9700

2M / 70CM / 23CM SDR Transceiver



IC-7300

HF / 6M SDR Transceiver



IC-718

HF All Mode Transceiver



IC-7610

HF / 6M SDR Transceiver



IC-7851

HF / 6M Transceiver



IC-PW2

HF / 6M 1 kW Amplifier



ON THE GO



ID-52A
2M / 70CM
Analog/Digital Transceiver



IC-705
HF / 6M / 2M / 70CM Transceiver

D-STAR ready



ID-RP2010V
ID-RP4010V
ID-RP1200VD

2M Analog/D-STAR Repeater
70CM Analog/D-STAR Repeater
23CM Analog/D-STAR or DD Repeater



IC-7100
HF / 6M / 2M / 70CM
Analog / Digital



ID-5100A
2M / 70CM Analog / Digital

IC-905
2M / 70CM / 23CM / 13CM / 5CM / 3CM Transceiver



NEW



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2M Mobile

ANALOG

NEW



IC-T10
2M / 70CM Portable



IC-V86
2M Portable



IC-V80 Sport
2M Portable



IC-R6 Sport
100 kHz - 1 GHz*
Wideband Portable Receiver



IC-2730A
2M / 70CM Mobile

RX



IC-2300H
2M Mobile

IC-R8600

10 kHz – 3 GHz*
Wideband SDR Receiver



*Frequency coverage may vary. Refer to owner's manual for exact specifications.
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MFJ What's New?



MFJ-9219

QRP Antenna Tuners, SWR/Wattmeter, and Dry Dummy Load

The name says it all! You get a great QRP Antenna tuner with a handy SWR/Wattmeter and a dry dummy load is built in as well! This will be your ultimate backpacking accessory for your QRP adventures. Tiny 5Wx4Hx3D inches easily fits in your backpack along with your QRP rig and accessories. *And still you will have room for some snacks and sodas!* 1.5 inch SWR/Wattmeter. Antenna Tuner handles 25 Watts. BNC Connectors.



MFJ-4713

4-Position Remote HF Antenna Switch, 1.8-30 MHz

Switch between four antennas remotely. Covers 1.8 to 30 MHz. Run one coax from the indoor switch to your outdoor control on your mast or tower. Hook up a coax patch cable from the indoor switch to your transceiver. Green LEDs show you which of four antennas you select. Handy mounting holes on both units. Quality SO-239 connectors, ground lugs. Outdoor unit is 5Wx4.25Hx1.75D inches. 2x2.75" mounting lip. Indoor switch is 3.75Wx2.75H x1.5D inches. .25x3.75 inch mounting lip. Off position. Use 12 VAC with *included* 407-1072 wall adapter.



MFJ-1146

DC Filtered Power Strip, 40A, 13.8 VDC

Wipe out power-line RFI with the MFJ-1146!

Whether it's a noisy switcher, power line, or an engine, up to -60 dBm of suppression keeps the hash out of your rig and away from your ears. This isn't a dainty filter either. Rated for a total load of 40A at 13.8 VDC, but even if you blow a fuse, a series of LED indicators tells you instantly which one is out. Worried about RFI getting in after the filters? Properly grounded, the aluminum case keeps RFI out. 4 sets of *Power Poles*™, 2 sets of high-current binding posts, gives you great versatility for power needs.



**MFJ-1912
Stainless
Portable
Antenna
Mast Mount**

Put up a 50-foot antenna

most instantly, anywhere!!! Just drive your auto tire over the base mount. You're ready to set up an Inverted V, Yagi, or other antenna. Stainless steel portable mount has every conceivable antenna connector, plus 2 U-bolts to securely hold a mast. 3/8-24, SO-239, NMO, binding posts have you covered for any RF need. Use 2.25", MFJ-1917 series or smaller masts.



**MFJ-1914
Portable
Antenna
Mast Field
Mount**

MFJ-1914 is a stainless steel antenna mast mount system complete with four heavy duty 15-inch galvanized tapered stakes with outer pins for secure ground mounting of your favorite MFJ telescopes or other masts. It includes two U-bolts that will hold up to 2.25 inch OD masts sturdy. This is the perfect and quick solution for fast set-ups for field day and POTA (Parks On The Air) activations. Telescopic masts and portable operations are more popular than ever and this MFJ-1914 will help you get your antennas up in the field quickly, easily and safely! Field tested with MFJ-1917 heavy duty 43 foot telescopic mast.



MFJ-1270Pi

Raspberry Pi TNC

Send text messages and emails over the air using ham radio! Plug a MFJ-1270Pi hat onto your Raspberry Pi. You'll have a tiny, operate-anywhere, messaging system! This lets you build an iGate, Digipeater, RMS gateway, and more that can go anywhere! The fun-to-build possibilities are endless! MFJ-1270Pi is a special version of TNC X designed to interface directly with the Raspberry Pi computer. It can connect to the Pi either via the serial port or the 12C protocol. A single Pi can support multiple TNC Pi's at the same time since each can be given a unique 12C address. Imagine the possibilities here. Use widely-available free software such as Xastir, LinBPQ, or APRX.



MFJ-2925

High and Low Variable Impedance Transformer

In some extreme cases, the impedances of an antenna and a transmission line are not equal and some sort of transformation must occur before the load can be matched to the line. It is possible to convert an impedance to a higher or lower value by inserting this MFJ-2925 in line. MFJ-2925 has a bypass/high/low three way switch with variable impedance adjustment. It can adjust the load impedance from the antenna presented to the coaxial line equal and an impedance match for a flat line is possible. Antenna and transceiver connections are SO-239 connectors. Compact 4.75Wx2.25Hx1D inches.



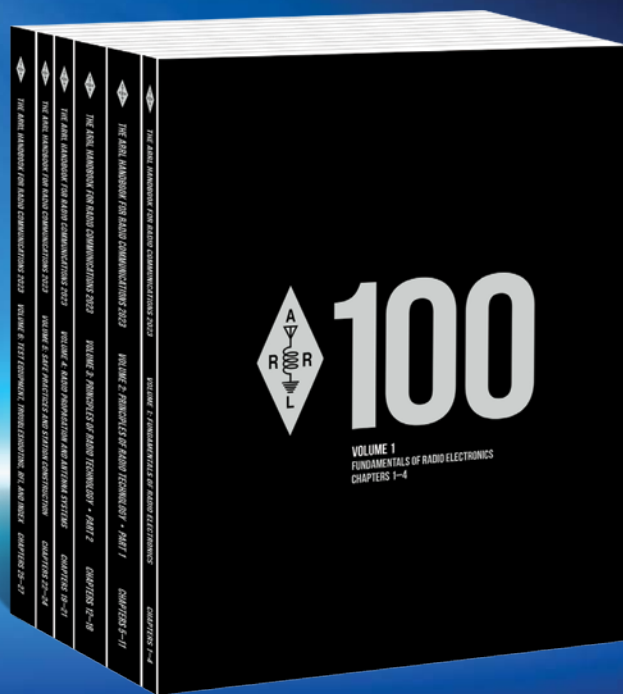
MFJ-1783/1784

Portable Box Fan Loop Antennas for 30-10M and 40-15 Meters

New MFJ Box Fan Loops have larger butterfly tuning capacitors, handle 300 Watts SSB PEP and have a tripod mounting connector and carry handle. Although larger than the original, they are still lightweight enough for portable. Also simply sit on the ground or picnic table. Made of aluminum, covered with ABS plastic. Each has the MFJ-1788 loop controller. 24 lbs. 36Wx36Hx4D".

Handbook 100

The 100th edition of *The ARRL Handbook*



Handbook 100 is by far the most extensively revised and expanded edition of *The ARRL Handbook for Radio Communications* in recent years. Each chapter is filled with the most up-to-date knowledge representative of the wide and ever-expanding range of interests among radio amateurs. There are practical, hands-on projects for all skill levels — from simple accessories and small power supplies to legal-limit amplifiers and high-gain antennas.

Handbook 100
6-Volume
Paperback Edition
Retail \$69.95

Updated with new projects and content, including:

- All-new chapter on radio propagation covering a wide range of bands and modes
- New content on portable station equipment, antennas, power, and assembly
- New and updated sections on electronic circuit simulation
- New section on how to use portable SDR to locate sources of RFI
- New cavity filter and high-power HF filter projects
- ...and more!
- New coverage on digital protocols and modes
- New material on RFI from low-voltage lighting and other sources
- Revised section covering new RF exposure limits



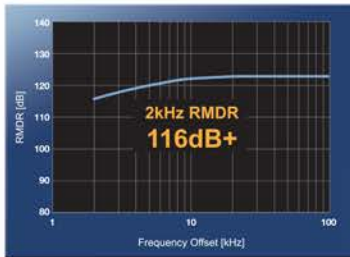
ARRL The National Association for
Amateur Radio®

The Birth of the New Standard in HF, Inheriting the Performance of the World Leading HF Hybrid SDR radio, FTdx101

A New Legend Begins...

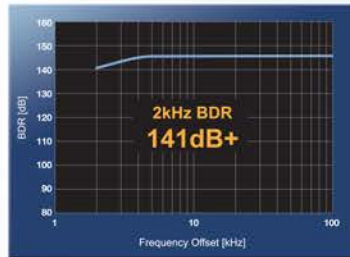
Facts:

• 2kHz RMDR 116 dB+



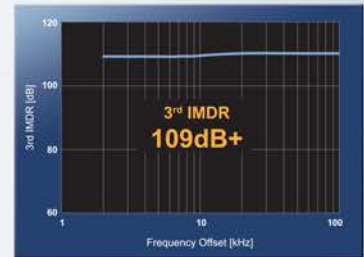
14MHz Band Reciprocal Mixing
Dynamic Range (RMDR)

• 2kHz BDR 141 dB+



14MHz Band Blocking
Dynamic Range (BDR)

• 2kHz 3rd IMDR 109 dB+



14MHz Band 3rd Intermodulation
Dynamic Range (IMDR)

Ultimate RF Performance with

- 5-inch TFT Color Touch Panel with 3DSS visual Display
- MPVD (Multi-Purpose VFO Outer Dial) enables Outstanding Operating Performance
- Remote Operation with LAN or Internet *LAN unit (optional)

HF/50MHz TRANSCEIVER

FTdx 10



*External Speaker SP-30: Optional

YAESU
The radio

YAESU USA
6125 Phyllis Drive, Cypress,
CA 90630 (714) 827-7600

For the latest Yaesu news, visit us on the Internet: <http://www.yaesu.com>

Specifications subject to change without notice. Some accessories and/or options may be standard in certain areas. Frequency coverage may differ in some countries. Check with your local Yaesu Dealer for specific details.

Carries the Yaesu genes for true RF performance

- SDR circuit emphasizes Receiving Performance
- Powerful RF Front-End & Low Noise Oscillator Enable Phenomenal Multi-Signal Receiving Characteristics*
 - RMDR : 113dB+ • BDR : 127dB+
 - 3rd IMDR : 102dB+ • TX Phase Noise : -143dBc/Hz
- Band-Pass-Filters dedicated for the amateur bands to eliminate out-of-band unwanted signals
- Built-in High-speed Automatic antenna tuner
- Effective QRM rejection by Dual-core DSP
- AESS (Acoustic Enhanced Speaker System) with included SP-40 speaker to create High-fidelity audio output
- 3DSS, real-time 3-Dimensional Spectrum Stream presentation
- High Resolution 4.3-inch TFT Color Touch Panel Display
- VMI (VFO Mode Indicator) shows the current operating mode
- "PRESET" Mode functions most suitable for FT8 operation
- Equipped with the External Display terminal

*Multi-signal receiving characteristic: 14MHz band/2kHz separation

*TX Phase Noise: 100W, CW mode

- Display is not included. The image is shown with an optional third-party external display that may be connected using a DVI-D digital cable.
- FT-710AESS includes External Speaker SP-40.



**HF/50MHz 100W
COMPACT SDR TRANSCEIVER w/ SP-40**

FT-710 Aess

Acoustic Enhanced Speaker System

YAESU
The radio

YAESU USA
6125 Phyllis Drive, Cypress,
CA 90630 (714) 827-7600

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Inherent Passion and Inspiration

Hybrid SDRs (Narrow Band SDR & Direct Sampling SDR)

2kHz RMDR 123dB+
2kHz BDR 150dB+
2kHz 3rd IMDR 110dB+

Ultra Low-Noise Local Oscillator System; 400MHz HRDDS (High Resolution Direct Digital Synthesizer)

2kHz Phase Noise -150dBc/Hz

VC-TUNE (Variable Capacitor Tune) signal peaking Maximum Attenuation -70dB

3DSS (3-Dimensional Spectrum Stream) visual display view up to last 25 seconds of band conditions in real time

TX Signal Purity

TX Phase Noise -150dBc/Hz (TX 14MHz 2kHz separation)



* Microphone M-1: Optional

In Homage to the Founder of Yaesu – Sako Hasegawa JA1MP

FTDX101MP 200W

HF/50MHz TRANSCEIVER

- External Power Supply with 3.94" (100mm) Front Speaker, FPS-101 included
- VC-Tune unit $\times 2$ (MAIN and SUB bands) included
- 300Hz Crystal roofing filter (MAIN band) included
- 600Hz Crystal roofing filter (MAIN and SUB bands) included
- 3kHz Crystal roofing filter (MAIN and SUB bands) included

The Ultimate

FTDX101D 100W

HF/50MHz TRANSCEIVER

- VC-Tune unit (MAIN band) included
- 600Hz Crystal roofing filter (MAIN and SUB bands) included
- 3kHz Crystal roofing filter (MAIN and SUB bands) included

YAESU
The radio

The Perfect Choice Sophisticated Dual Band Digital Transceiver

Built to Commercial Grade Specifications



《Actual Size》

**C4FM/FM 144/430MHz DUAL BAND
5W DIGITAL TRANSCEIVER**

FT-70DR

C4FM
Digital Communication
Clear and Crisp Voice Technology

AMS
Automatic Mode Select

Advanced C4FM Digital

System Fusion Compatible

Combines FM and Digital Communications
with AMS (Automatic Mode Select)

Coordinated Group Operation
with Digital Group ID

700 mW of Loud, Clear Voice, Audio Output

5 Watts of Reliable RF Power
from a Compact Handheld Unit

Wide Band Receive Coverage 108 - 579.995 MHz

Rugged Construction
Meets IP54 (Dust & Water protection)

Large Multi-Color Operating Mode Indicator

Huge 1,105 Channel Memory

YAESU
The radio

YAESU USA
6125 Phyllis Drive, Cypress,
CA 90630 (714) 827-7600

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Smart New Operating Features

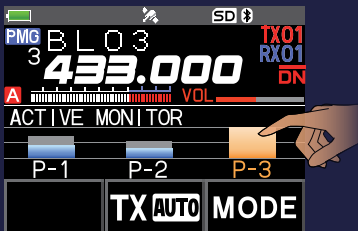


Touch & Go

Simply Touch the displayed Channel Bar to Quickly Start Communications
High-resolution Full-color LCD touch panel, and Ultra-High-Speed PLL Real-time Scope

PMG (Primary Memory Group) Activity Monitor

- Register the current display frequency into PMG with one press of the "PMG" key.
- Simply press the "PMG" key to instantly display the receive status of the registered frequencies in a Bar Graph (Activity Monitor).
- Touch & Go Operation allows quickly starting communication by touching the displayed target channel bar.



79 channel Band Scope

- Displays a bar graph of up to 79 channels, in high-speed real time, centered on the current VFO frequency.
- Select the number of channels from 79ch/39ch/19ch by touching the displayed channel number.
- Touch & Go Operation allows immediately moving to the frequency and starting communication by touching a displayed channel bar.



C4FM/FM 144/430MHz DUAL BAND
5W DIGITAL TRANSCEIVER

FT5DR

C4FM
Digital ClearVoice
Clear and Crisp Voice Technology

AMS
Automatic Mode Select
66 ch OPS

WIRES-X

Touch & Go
OPERATION
microSD
Card

Bluetooth

Comfortable Grip with Full Flat-Back
and Quick Release Holster (Supplied)

- Comfortable size and form with no protrusions provides excellent grasp, even when wearing gloves for outdoor activities.
- Quick Release Holster that easily attaches and releases the FT5DR and allows operation with an excellent hold and feel.



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The radio

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Fun to Operate Multi-Functional Mobile

Leading C4FM Digital & High-Resolution Full-Color Display

C4FM/FM 144/430MHz DUAL BAND
50W DIGITAL TRANSCEIVER

FTM-200DR

C4FM
Digital ClearVoice
Clear and Crisp Voice Technology

AMS
Automatic Mode Select

66 ch OPS

WIRES-X

microSD
Card

Bluetooth

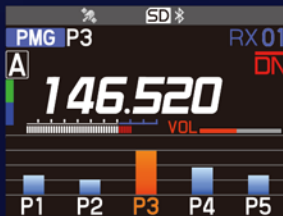


《 Actual Size 》

PMG-SR Monitor

Monitor a Primary Memory Group with a Single Receiver

PMG-SR* operation provides constant monitoring and communication on up to 5 channels in the PMG group, regardless of the VFO or Memory channel operation. Instantly register the current display frequency to the PMG group by pressing and holding the "PMG" key. In JTO mode or MANUAL mode PMG operation can be selected.



CFL Display

Custom Function List Display

The CFL screen allows checking and immediately executing priority functions simply by using the "F/Menu" key and dial.

Up to 8 functions or settings from the set-up menu can be registered in the custom function list.

KEYPAD		HOME	
SCAN	T-SQL	TXPWR HIGH	ARS AUTO
SQL	RPT-R	TONE 88.5	APRS OFF
DTMF	HIGH		

**3W Outstanding
Audio Output**

**Worldwide WIRES-X
Internet Communications**

**APRS
Fully Compatible**

FTM-200DR is a single receiver, there is no audio output when monitoring multiple registered channels. While the Operating channel is active, the real-time reception status of other channels is not displayed.

YAESU
The radio

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Introducing the Best Basic VHF/UHF FM Mobile

Yaesu's Legend Continues

New Operating Interface E2O-III (Easy to Operate III)
Ensures Ease of Operation

**Primary Memory Group
(PMG)**

VFO Band Skip

**Memory Auto Grouping
(MAG)**

Memory Data VFO Transfer

**3W Powerful
Clear & Crisp Audio**

Bluetooth® Wireless Operation*

**Wide-Range Receive Coverage
108MHz ~ 999.995MHz**

**Detachable Front Panel
for Flexible Installation**

144/430 MHz DUAL BAND 50W FM TRANSCEIVER

FTM-6000R



* Requires an optional Bluetooth® unit (BU-4), and a Bluetooth® headset (SSM-BT10) or commercially available Bluetooth® headset.

YAESU
The radio

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6125 Phyllis Drive, Cypress,
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Buy With Confidence

ABR Industries manufactures all assemblies in our Houston facility, guaranteeing quality control from start to finish. Being a critical component of your system or station, it's important to know where and how your coax cable assemblies are built.

Not All Cable Assemblies are Created Equal... See the ABR Difference.



ABR213 (PN:2213A)
Stranded Center, Solid PE Dielectric, 97% Copper Braid.
Non-contaminating Direct-Burial Ultra-Violet Resistant Jacket.
W/SILVER-TEFLON PL259 & WEATHERPROOF HST each end.
Attenuation per 100ft **Power Rating**
0.6dB @ 10MHz 3.43kW
1.0dB @ 30MHz 1.95kW
1.4dB @ 50MHz 1.5kW
2.4dB @ 150MHz .83kW
4.5dB @ 450MHz .45kW

- Application – HF workhorse cable. Heavy Duty coax for applications up to 500MHz. To be used with a heavy-duty rotor or stationary antenna systems.
- Lengths 1.5ft to 150ft in stock



ABR240F (PN:218XATC)
Stranded Center, Gas Injected Foam Dielectric, 100% Foil + 95% TC Braid.
Non-contaminating Direct-Burial Ultra-Violet Resistant Jacket.
W/SILVER-TEFLON PL259 & WEATHERPROOF HST each end.
Attenuation per 100ft **Power Rating**
0.9dB @ 10MHz 2.16kW
1.4dB @ 30MHz 1.24kW
2.1dB @ 50MHz 0.96kW
3.6dB @ 150MHz 0.55kW
6.3dB @ 450MHz 0.31kW

- Application – HF / Mobile cable. Medium duty coax for applications up to 500MHz. To be used with stationary antennas and light weight rotor applications
- Lengths 1.5ft to 250ft in stock



ABR400F (PN:25400F)
Stranded Center, Gas Injected Foam Dielectric, 100% Foil + 95% TC Braid
Non-contaminating Direct-Burial Ultra-Violet Resistant Jacket.
W/SILVER-TEFLON PL259 & WEATHERPROOF HST each end.
Attenuation per 100ft **Power Rating**
0.8dB @ 30MHz 2.77kW
1.1dB @ 50MHz 2.14kW
1.8dB @ 150MHz 1.22kW
3.3dB @ 450MHz 0.69kW

- Application – HF / VHF / UHF Low Loss cable. Versatile cable for applications to 500MHz. To be used with a heavy-duty rotor, array, or stationary antenna system.
- Lengths 1.5ft to 150ft in stock



RG316/U Teflon® .100" OD
HT jumpers *antenna attachment for better coverage"

Part#	Description	Length/Ft
23316-NM-3	N Male Both ends	3
23316-NM-6	N Male Both Ends	6
23316-SM-SF-3	SMA Male-SMA Female.....	3
23316-SM-SF-6	SMA Male-SMA Female.....	6
23316-SM-SF-9	SMA Male-SMA Female.....	9
23316-SM-SF-12	SMA Male-SMA Female.....	12
23316-SM-SF-15	SMA Male-SMA Female.....	15
23316-SM-3	SMA Male Both Ends	3
23316-SM-6	SMA Male Both Ends	6
23316-SM-PL-3	SMA Male-PL259	3
23316-SM-PL-6	SMA Male-PL259	6
23316-SM-SO-3	SMA Male-SO239	3
23316-SM-SO-6	SMA Male-SO239	6



ABR400F (PN:25400F)
Stranded Center, Gas Injected Foam Dielectric, 100% Foil + 95% TC Braid
w/N Male plugs each end. Complete
w/Weatherproof Heat Shrink Tubing (WP-HST)
Attenuation per 100ft **Power Rating**
0.8dB @ 30MHz 2.77kW
1.1dB @ 50MHz 2.14kW
1.8dB @ 150MHz 1.22kW
3.3dB @ 450MHz 0.69kW

- Application – VHF / UHF Low Loss cable. Versatile cable for applications to 8 GHz. To be used with a heavy-duty rotor, array, or stationary antenna system.
- Lengths 1.5ft to 150ft in stock



1" Tinned Copper Flat Ground Braid.
7ga 85/Amps w/1/4" Stud Ring Terminals.
Quick & Easy Grounding Terminations.
Lengths 3ft to 20ft in stock



1/2" Tinned Copper Flat Ground Braid.
10ga 53/Amps w/#10 Stud Ring Terminals.
Quick & Easy Grounding Terminations.
Lengths 1ft to 12ft in stock



233/2-G4-(length)
Unique design (Nickel Grommets 4" Spacing) allows for easy attachment to a vehicle's body or truck bed to create a "ground plane"
Good option as a buss-bar in the shack
1/2" wide tinned copper 38x48x8/34 10ga 53 amps
Lengths 1.5ft to 10ft in stock

Palstar Solid State Amplifier LA-1K



Specifications

- SSB power: 1000 watts PEP CW ICAS.
- CW Mode: power levels up to 850 W.
- FM / RTTY: 500 watts.
- AM: 275 watts.
- Frequency range: 1.8 to 54 MHz.
- Display: Color TFT touch screen.
- Output: 3 x RF SO-239 or type N
- ALC: Exciter power control.
- Drive Required: 40-55 W (all bands).
- Gain: 13+/-1 dB (nominal.)
- RF sensing: auto band switching.
- RF Output: vacuum relay T/R switching.
- Power supply: internal medical grade.
- DC supply: 100 VAC - 260 VAC 50 V @ 42 amps.
- Power devices: 2 x 5600 H 600 W LD-MOS.
- Auto-Protect: SWR / short circuit.
- Intermod: low IMD distortion >-35 dB.

ICOM®



Solid State Amplifier PW-2*



ICOM IC-PW2 HF and 50 MHz All Mode 1kW Linear Amplifier Pre Release Information

Specifications

- The latest LDMOS effortlessly provides 1KW output at full duty cycle even for extended periods of time.
- 2x6 antenna selector realizes SO2R (Single Operator Two Radio) operation with only one amplifier.
- Six antenna connectors which may be enabled for a variety of antennas and bands.
- Super low-distortion output with superior IMD (Intermodulation Distortion).

- When connected to ICOM transceivers all settings are automatically completed.
- Simultaneous band data output for both Main and Sub bands.
- The IC-PW2 has an internal LAN port for remote control operation from a PC.
- Touch screen color TFT LCD enable intuitive setting changes.

*The IC-PW2 has NOT formally been released by ICOM for sale in the United States. This is pre-release information only. This unit has not yet been approved by the FCC for sale in the US.

Amplifier Specifications

	Model	Frequency Range	Modes	Power In	Power Out	Voltage	Current	Pre-amp	Connector	Weight
AMERITRON	AL-1500	160-15 M*	SSB, CW	65 W	1500+ W	220 VAC	15 A	—	SO-239	50 lb** ***
	AL-1200	160-15 M*	SSB, CW	100 W	1500 W	220 VAC		—	SO-239	50 lb** ***
	ALS-1300	160-15 M*	SSB, CW	90 W	1200 W	220 VAC	15 A	—	SO-239	22 lb
	ALS-1306	160-15 M*	SSB, CW	100 W	1200 W	110/220 VAC	25/12 A	—	SO-239	22 lb
	ALS-500M	160-15 M*	SSB, CW	100 W	500 W	13.8 VDC	80 A	—	SO-239	7 lb
	ALS-600	160-15 M*	SSB, CW	100 W	600 W	110/220 VAC	16 A / 110 V	—	SO-239	13 lb
	ALS-606	160-6 M	All	75 W	600 W	120/220 VAC	12/6 A	—	SO-239	15 lb
	AL-80B	160-15 M*	SSB, CW	100 W	1000 W	110/220 VAC	15/10 A	—	SO-239	54 lb
	AL-800	160-15 M*	SSB, CW	100 W	750 W	110 VAC	12 A	—	SO-239	67 lb
	AL-800H	160-15 M*	SSB, CW	55 W	1500 W	240 VAC	9 A	—	SO-239	69 lb
	AL-811	160-15 M*	SSB, CW	75 W	600 W	110/220 VAC	8/4 A	—	SO-239	40 lb
	AL-811H	160-15 M*	SSB, CW	75 W	800 W	110/220 VAC	8/4 A	—	SO-239	41 lb
AL-82	160-15 M*	SSB, CW	100 W	1500 W	220 VAC	15 A	—	SO-239	52 lb***	
ICOM	PW-2	1.8-54MHz	SSB CW	100W	1000 W 500 W	240 VAC 110 VAC		No	SO-239	46.3 lb
MIRAGE	B-34	144-148 MHz	All	2 W	35 W	12-15 VDC	4 A		SO-239	2 lb
	B-34-G	144-148 MHz	All	2 W	35 W	12-15 VDC	4 A	Yes	SO-239	2 lb
	BD-35	143-149 430-450	FM	7 W	45 W	12-15 VDC	7 A		SO-239	3 lb
	B-310-G	144-148 MHz	All	4 W	100 W	13.8 VDC	15 A	Yes	SO-239	3 lb
	B-1018-G	144-148 MHz	All	10 W	160 W	13.8 VDC	25 A	10 dB	SO-239	5 lb
	B-2518-G	144-148 MHz	All	25 W	160 W	13.8 VDC	25 A	10 dB	SO-239	5 lb
	B-5018-G	144-148 MHz	All	50 W	160 W	13.8 VDC	24 A	Yes	SO-239	5 lb
PALSTAR	LA-1K	1.8-54 MHz	All	40-55 mW	1000 W SSB	110/260 VAC		—	SO-239	27 lb

*Owner modifiable for 10m **Add 35 pounds. Transformer shipped separately. ***Ships in 3 boxes. Transformer shipped in separate package.

AMERITRON

Linear Amps



**Low-Cost Desk Amp
AL-811H**

Ameritron mounts the 811A tubes vertically -- not horizontally -- to prevent hot tube elements from sagging and shorting out. Others, using potentially damaging horizontal mounting, require hard-to-find 811A tubes to retard harmful sagging and shorting.



Powerful 20 CFM computer grade fan -- not an open frame phonograph motor -- draws in cool air to pressurize the cabinet and efficiently cool your 811A tubes for an extra long life. You also get efficient full-size heavy duty tank coils, computer grade capacitors, heavy duty high silicon core power transformer, slug tuned input coils, operate/standby switch, transmit LED, ALC, dual meters, QSK compatibility with QSK-5 option and much more! 800 watts PEP from 120V outlet. UPS Shippable.



**3 Tube Amplifier
AL-811**

Ameritron's AL-811 linear amplifier gives you plenty of power to bust through QRM. Almost the same amp as the AL-811H but with only 3 tubes. 600 watts PEP from any 120V outlet.



**1300 Watt
AL-572**

Ameritron's new class of Near Legal Limit Amplifiers gives you nearly full legal SSB power output for 65% of the price of a full legal limit amplifier... and no one will ever know the difference! You get 1300 Watts PEP SSB nominal power out on the 160-15M amateur bands. Four rugged 572B tubes give you near legal limit power and instant 3 second warm-up time. This whisper quiet, desktop linear plugs into your nearest 120 VAC outlet - no special wiring needed. You get Ameritron's exclusive Instantaneous RF Bias, dynamic ALC, ParasiticKiller, Step-Start Inrush Protection, heavy duty power supply, fully neutralized tubes, Pi/Pi-L network, tuned input, pressurized ventilation, dual lighted cross-needle meters, multi-voltage power transformer, front panel ALC control, 6:1 vernier reduction drives, and much more!



**1200 Watt
AL-800**

The Ameritron AL-800 is a 1200 Watt linear amplifier covering all HF ham and WARC bands (a simple user mod is required for 10/12m operation). It is designed around a single Eimac® 3CX800A7 tube, and features dual illuminated cross needle meters, adjustable ALC, a heavy duty power supply with 14 voltage settings from 90-140 and 200-250 VAC, over current protection, step start inrush protection, and more. Covered by a one year warranty. Also available: AL-800H with 2x3CX800A& tubes at 1500 watts.

Legal Limit Amps



AL-80B

1 kW PEP output from a compact, desktop linear that plugs into 120 VAC outlet. Classic 3-500ZG tube, inrush current protection, two year limited warranty.



AL-82

Full legal limit amplifier using a pair of 3-500ZG tubes. Super heavy duty Hypersil® power transformer allows the tubes to be used to their full potential. Two illuminated meters, including one specifically for monitoring grid current. 220 VAC. Ships in 3 boxes.



AL-1200

Full legal limit amplifier using ham radio's toughest tube, the 3CX1200/Z7. The super heavy duty power supply loaf at full legal power.



AL-1500

Ameritron's most powerful amplifier uses a 3CX1500/8877 ceramic tube. You get full legal power output from a whisper quiet desktop linear. You get all this power, plus 65% efficiency, pi-network tuned input, Pi/Pi-L output, inrush current protection, multi-voltage transformer, QSK compatibility, and a one-year warranty.

HF POWER AMPLIFIERS

No-Tune Amps



HF + 6, 1200 W Solid State Amplifier ALS-1306

Covers 1.5-54 MHz with 1200 watts PEP output. Features instant automatic band-switching, no tuning and no warm-up. It is SWR protected with quiet variable-speed cooling. Metering includes PEP FWD / REF, PA balance and ALC with an LED Indicator. There are front-panel band / error LEDs. Front-panel ALC control. The ALS-1306 has modular construction for easy servicing, and is powered by a 50 VDC switching power supply. This compact, operator-friendly and attractive desktop amplifier fits neatly into any station. Just 10 W x 6.5 H x 18.5 D inches and weighs only 22 lb.



ALS-1300

AMERITRON ALS-1300 is a solid state near legal limit FET no-tune Amplifier. Get instant bandswitching, no tuning, no warm-up, no tubes to baby and no fuss! 1200W solid state FET no-tune amplifier includes most of the features of the ALS-1306 but no auto band switching and no 6 meters.



ALS-600

No tuning, no fuss, no worries – just turn on and operate. 600 watts PEP / 500 W CW, 1.5-22 MHz, instant bandswitching, SWR protected. 120 / 220 VAC. 9-1/2 W x 6 H x 12 D inches. Includes matching transformer power supply.

ALS-600S ALS-600 with 10 pound switching power supply.



Solid State 600 W @ 160-6 Meters ALS-606

New! Ameritron ALS-606S/ALS-606 Solid State 600 Watt amplifier covers 160-6 Meters (no mod required) and automatically bandswitches by your transceiver. It's only 4 dB below 1500 Watts - less than an S-unit - nobody can hear the difference! Be Heard! Work DX and ragchew with anyone. Just turn on, select band on your transceiver and operate. No tubes, no warming up, no tuning, ever. Desktop Size: 93/4Wx7Hx141/2D", just 14.2 pounds. SWR/thermal protected: extremely quiet, lighted peak reading Cross-Needle SWR/Wattmeter, front panel ALC control, operate/standby switch, multimeter. Includes Transformer Power Supply for 120/220 VAC, 32 lbs., 91/2Wx6Hx12D inches.



Mobile Amp ALS-500M

500 watts PEP output. Mobile no tune Solid State Amplifier. Uses four rugged 2SC2879 high power linear RF power transistors. Instant bandswitching, no tuning, no warm up. Just turn on and operate. Makes mobile QSOs safer. Very Compact at just 3 1/2 x 9 x 15 Inches. Fits in nearly any mobile installation; weighs only 7 pounds. Extremely quiet with a low speed, low volume fan. Stays off and silent until temperature rises. Remote control is optional, please choose ALS-500RC to add remote control at a later date, or select ALS-500MR if you want to purchase this amp with remote. 1.5-22 MHz (10/12 Meters with Mod-10 M option). Options include ALS-500RC remote head and SPS-75MV 110 VAC 75 A @13.8 VDC output power supply for using ALS-500M at home.

Accessories



Amp to Rig Interface ARB-704

Protects rig from damage by keying line transients and makes hooking up to your rig easy.



Stop Voltage Spikes ICP-120

Stops damaging in-rush current by absorbing high-voltage spikes. Works with nearly all linear amps.

Safely Tune Up ATP-100



The Ameritron ATP-100 AmplifierSaver lets you safely tune up your linear amplifier perfectly for full power output and best linearity.

Amp Saver ATP-102

This is the deluxe version of ATP-100. The ATP-102 has Duty Cycle and Pulse Rate controls on front panel for easy performance testing of wattmeters, QSK systems and other equipment.



Full Break-In Switch QSK-5



Ameritron's self-contained QSK-5 switch uses electronic PIN diode switching to give you

lightning fast QSK operation from nearly any HF linear amplifier. It lets you use your linear amplifier for high power QSK CW, for Packet, AMTOR and any mode requiring extremely fast switching between transmit and receive. Installation is simple. All you do is plug in a few cables to start enjoying QSK. This new QSK technology gets rid of unwanted power dissipation that causes damaging heat. Your expensive amplifier runs cooler so every component in your amplifier lasts longer.

DC POWER ACCESSORIES



Epic-H PWRgate

Epic-H PWRgate is a 12 volt uninterruptible power system that can supply up to 40 amps continuously from either a power supply or a Lead Acid/ Lithium battery with almost no voltage loss. It also charges the battery with its high performance charger. A separate solar panel input can be used to charge the battery directly from a solar panel with output less than 30 V. Horizontal configuration.

#58404-1795 HRO Price: \$189.95

Super PWRgate PG40s



12 volt uninterruptible power switch that can supply up to 40 amperes continuously from either a power supply or a battery, and can also charge the battery with its high performance charger. Connected equipment will instantly switch to battery during a power blackout or power supply failure.

#58403-1046 HRO Price: \$139.95



ISOpwr Plus

ISOpwrPlus is a solid-state switch using a high powered FET. It turns on when the car's alternator is running and turns off

when it is not. The switching point is 13.5 volts. PWRguard output shut-off when voltage is out of range. Safely handles 40 amperes and is protected with a 40 ampere ATC blade fuse. Includes three sets of Powerpole® connectors. USB port for setting operating thresholds and for monitoring.

#58401-1044 HRO Price: \$114.95

DC-to-GO with 4007U & Super PWRgate PG40s



Super PWRgate provides easy-to-use portable DC Power. Takes Group 24 Size Battery (sold separately). It includes a RIGrunner 4007U (conveniently mounted to battery box) and Super PWRgate PG40s (conveniently mounted to battery box). Optimized for use with gelled & AGM type batteries, but will keep flooded lead acid and marine type batteries near full charge as well. Solid, durable aluminum construction includes mounting holes for convenient, secure use in mobile units. Uses Anderson Powerpole® connectors.

#58513-1577 HRO Price: \$259.95

PWRcheck+

Provides display of voltage, current flow in either direction, wattage and amp-hours. Measures 0 V to 60 V (less than 8 V requires USB power to PWRcheck), 40



A continuous load. Accurate to within +/- 10 mV, +/- 10 mA. Resolution: 10 mV, 10 mA. Improved color touchscreen LCD displays data in digital, analog and bar graph formats. USB computer interface for configuration and log data download. Programmable alarm conditions for over-current, over / under voltage, amp hours. Uses Powerpole® connectors.

#58430-1564 HRO Price: \$184.95

PWRguard Plus



Turns off if voltage exceeds 15 volts or drops below 11.0 volts. Turns back on when voltage is in safe operating range. Momentary voltage dips below

11.0 volts are ignored to prevent false tripping while transmitting. Rated for 40 A maximum while transmitting, 30 A continuous duty. Soft turn-on / turn-off solid state switch protects radio and reduces inrush current – no relay contact bounce! Remote on / off capability. Indicator LEDs and audible alarm notify user when safety switch turns power off. User may disable buzzer. Uses Anderson Powerpole® connectors

#58402-1045 HRO Price: \$109.95

RIGrunner Power Distribution Panels

RIGRunners are the most convenient and safest way to connect all your 12 volt equipment. Uses Anderson Powerpole® – ARES, RACES, RSGB standard. Polarized and color keyed. 40 amps total (8012 is 80 amps total). Outlets fused with assorted ATC / ATO automotive fuses. Blown fuse LED indicators. For home and mobile installations. 6-foot input cable, #10 AWG with 1/4-inch terminals. (#8 AWG for 8012). "Complete" versions include Powerpole® packs. Alternate voltage versions of RIGrunners (24-48 VDC) are available!



RIGrunner 4004U

40 amp, 4 outlets. 2 USB ports with 4 A charge. 6 pairs of 30 A Powerpole®

sets. #58315-1043 HRO Price: \$84.95



RIGrunner 4008

RIGrunner 4008 40 amp, 8 outlets. LED and audible alarms. 6 pairs of 30 A Powerpole®

sets. #58307-1035 HRO Price: \$99.95



RIGrunner 4005

40 amp and 5 outlets with 6 pairs of 30 A Powerpole®

sets. #58312-1039 HRO Price: \$74.95



RIGrunner 4008H

RIGrunner 4008H 40 amp, 8 outlets horizontal. 12 pairs of 30 A Powerpole®

sets. #58307-1037 HRO Price: \$94.95



RIGrunner 4005H

40 amp and 5 outlets that are horizontal. 6 pairs of 30 A Powerpole®

sets. #58312-1041 HRO Price: \$72.95



RIGrunner 4006U

Delivers up to 40 amps total through 6 outlets and includes a dual

USB socket for charging portable devices that need a USB socket for charging. Each port has an RFI protection capacitor. Each fuse has a blown LED. Each port uses high current Anderson Powerpole® connectors.

#58320-1749 HRO Price: \$104.95



RIGrunner 4010S+

RIGrunner 4010S+ 40 amp, 10 outlets. One master outlet and nine switched with LED and audible alarms. PWRguard shut off, internal USB port, remote access via USB port to turn on/off. Jumper for power saving mode. 12 pairs of 30 A Powerpole®

sets. #58303-1601 HRO Price: \$169.95



RIGrunner 4007U

40 amp continuous duty and 7 fused outlets. Automatic supply

voltage and load current measurement shown on a 3 x 7 segment display. Automatic shut off on high (HVD) or low voltage condition (LVD). Intelligent USB port for charging iPhone, Android and other USB devices.

#58313-1561 HRO Price: \$169.95



RIGrunner 8012C

RIGrunner 8012C 80 amp, 12 outlets with LED & audible alarms. 12 pairs of 30 A Powerpole®

sets. #58301-1028 HRO Price: \$179.95



All of Astron's solid-state electronically regulated Power Supplies have fold-back current limiting to protect from excessive current, and a heavy duty heat sink. Output voltage: 13.8 VDC \pm 0.05 volts. 220 V supplies available on special order at slightly higher price. AP models have Anderson Powerpole® connections.

RS-A Series Standard power supply with on / off switch. Adjust voltage internally.

SL Series Slim line design for low-profile looks.



RS-M-AP Series power supplies with front meters. One is for voltage and the other current. Now with Anderson Powerpoles®.

SS Series High efficiency switching supplies specially filtered for use with communications equipment for all frequencies including HF. Heavy duty design, low profile, light weight and EMI filter.

VS-M Series Variable power supplies with separate volt and amp meters. Adjustable output: 2-15 volts.

RM Series 19" x 5 1/4" rack-mount power supplies available with or without meters and may be variable. The RM-60 comes with or without meters.

Power Supplies

Brand	Model	Cont. Duty 13.8 VDC	Intermit Duty	Height in	Width in	Depth in	Weight lb
ALINCO	DM-330MVT	30 A	32 A	2.8	6.1	8.07	3.5
	DM-30TR	20 A	30 A	2.8	6.1	8.07	3.5
ASTRON	RS-4A	3 A	4 A	3.75	6.5	9	5
	RS-7A	5 A	7 A	3.75	6.5	9	9
	RS-12A	9 A	12 A	4.5	8	9	13
	RS-20A	16 A	20 A	5	9	10.5	18
	RS-35A	25 A	35 A	5	11	11	27
	RS-35A-AP*	25 A	35 A	5	11	11	27
	RS-50A	37 A	50 A	6	13.75	11	46
	RS-70A	57 A	70 A	6	13.75	13.75	48
	RS-12M	9 A	12 A	4.5	8	9	13
	RS-20M-AP*	16 A	20 A	5	9	10.5	18
	RS-35M-AP*	25 A	35 A	5	11	11	27
	RS-50M-AP*	37 A	50 A	6	13.75	11	46
	RS-70M-AP*	57 A	70 A	6	13.75	12.12	48
	RM-50A	37 A	50 A	5.25	19	12.5	50
	RM-60A	50 A	55 A	7	19	12.5	63
	RM-35M	25 A	35 A	5.25	19	12.5	38
	RM-50M	37 A	50 A	5.25	19	12.5	50
	RM-60M	50 A	55 A	7	19	12.5	63
	VS-35M-AP*	25 A	35 A	5	11	11	29
	VS-50M-AP*	37 A	50 A	6	13.75	11	46
SL-11R	7 A	11 A	2.75	7.62	9.95	11	
SL-15R	12 A	15 A	2.75	7.62	9.95	14	
SS-18	15 A	18 A	2.38	6	9	3.6	
SS-25-AP	20 A	25 A	2.88	7	9.38	4.2	
SS-30M-AP	25 A	30 A	3.75	7	9.63	5	
SS-50-AP	40 A	50 A	2.88	7	9.38	5	
DIAMOND	GZV4000	40 A	42 A	4.5	8.25	13	8
KENWOOD	KPS-15	23 A	24 A	2.2	7	8.25	4
POWERWERX	SS-30DV	25 A	30 A	2.5	5	6.1	3
	SPS-30DM	25 A	28 A	2.5	5	6.1	3.7
SAMLEX	SEC1212	10 A	12 A	2.2	7	8.25	3
	SEC1223	23 A	24 A	2.2	7	8.25	4
	SEC1223BBM †	23 A	24 A	2.2	7	8.25	4
	SEC1235M	30 A	35 A	2.4	7.28	8.19	4.5
YAESU	SEC1235P-M	30 A	35 A	2.4	7.28	8.19	2.28
	FP-1023	23 A	24 A	2.2	7	8.25	4
	FP-1030A	25 A	30 A	9.8	5.9	9.5	20.9

*AP models now with Anderson Powerpoles® †Contains a backup battery module (220 volt versions of some models available at additional cost by special order. Contact HRO for details.)

Wire & Accessories

HRO carries all types of wire and accessories to make your next project a breeze. Everything from bulk wire, Anderson Powerpoles®, block connectors, adaptors, pins, plugs, and the tools to cut/crimp just about anything. Simply contact your local HRO for more information.



POWER SUPPLIES

MFJ



MFJ-4128

Switching power supply delivers 28 A surge, 25 A continuous at 13.8 VDC. Selectable AC input voltage 85-135 and 170-260 VAC. 5-way binding posts, cigarette lighter socket, fan "on" LED indicator. 7 W x 2.25 H x 7.5 D and 4 lb.



MFJ-4235MV

Switching power supply gives 35 A surge, 30 A continuous. 4-16 VDC with 1% voltage regulation. AC input 90-125 or 200-240V. 7 W x 4.25 H x 8.75 D inches and 4 lb.



MightyLite™ MFJ-4125

Switching Power Supply. 25 amps surge, 22 amps continuous. No RF hash! Low ripple, highly regulated. Great review by QST magazine. Over-voltage and over-current protection circuits. Switchable AC input voltage, works from 85 to 135 VAC or 170 to 260 VAC. Replaceable fuse. Tiny 5.5 W x 2.5 H x 5.75 D inches. Weighs just 3.5 lb.



MFJ-4215MV

15 amp switching power supply, 15A surge and 13A continuous. Variable 4-16 VDC with 1% voltage regulation. Backlighted volt / amp meters. 5-way binding posts for output. 5 W x 3.75 H x 7 D at 2.9 lb.



MFJ-4245MV(P)

Similar to MFJ-4225 but handles 45 amp surge and 40 amp continuous. 7.5 W x 4.75 H x 9 D inches. Weighs just 5.5 lb. P model has power poles.

24V Adjustable Output



MFJ-4218MV

Ham radio's only adjustable 0-24 VDC output switching power supply! 18 A at 13.8 VDC, 9 A at 24 VDC. Backlighted volt / amp meters, 5-way binding posts. LED load fault indicator. 6 W x 2.25 H x 6.75 D and 2.2 lb.



MFJ-4225MV

Similar to MFJ-4215 but adds large 3-inch amp, volt meters and a cigarette lighter plug. 5.25 W x 4.5 H x 6 D inches. Weighs 3.7 lb.



MFJ-4275MV

75 amp switching power supply is great for powering your Ameritron ALS-500M amplifier. 75 A maximum and 70 A continuous. 110/220 VAC switchable. Highly regulated with load regulation better than 1%. Ripple voltage is less than 12mV peak-to-peak at rated load. No RF hash. Short-circuit, overload, and over temperature protection systems. Front panel adjustable voltage 4-16 VDC. Battery charging feature provides charging current of 20 A continuous, 30 mA trickle charge. 9.75 W x 5.5 H x 9.5 D inches.

Powerpole® Ready



MFJ-4125P

This version available with 2 pair of Powerpoles® and 5-way binding posts on front panel, and quick connects on back.

Transformer Supply



MFJ-4035MV

19.2 lb transformer delivers 35 A max, 30 A continuous. 1-14 VDC out, 110VAC in. Highly regulated, 1% load regulation. 5-way binding posts, quick connects. It is a transformer supply, not a switching supply.

Super Tiny Supply



MFJ-4115

Ultra-Compact 15 amp switching power supply weighs just 1.5 lb and is 3.75 W x 2.25 H x 7.75 D inches. Has over-voltage and over-current protection. 17 A surge, 15 A continuous.



MFJ-4230MVP

30 amp switching power supply with switchable amp / volt meter. Super compact 5 W x 2-1/2 H x 6 D inches. 120 / 240 VAC switchable. Gives 25 amps continuous or 30 amps surge at 13.8 VDC. Front panel voltage adjustable 4 to 16 VDC. MFJ-4230MVP is similar to MFJ-4230MV but adds a pair of Powerpoles® on back.



samlexamerica®

For Base Stations



SEC-1212 & SEC-1223

The perfect lightweight companion for a 100 watt transceiver. SEC-1212 has the same form factor as SEC-1223.

- Switch Mode Design for minimal power loss.
- Highly efficient, light weight, and compact.
- Produces clean, consistent power with circuit innovations that minimize output voltage ripple and RFI.
- Works on 200 – 240 VAC input voltage with a simple jumper change.
- UL and FCC compliant.
- Safety features: over/under voltage protection and quiet cooling fan.

SEC-1212 - HRO Price: \$134.95

SEC-1223 - HRO Price: \$154.95



SEC-1235M

This unit includes built-in volt and amp meters and is the best power supply value.

- All features of above SEC-1212/1223 plus advanced switch-mode technology.

SEC-1235M - HRO Price: \$169.95



SEC-1235P-M

This unit sports the newly designed backlit analog meters and is lighter and quieter.

- Advanced power factor corrections
- Universal AC input

SEC-1235P-M - HRO Price: \$189.95

Power Supply
Modular Connector Cable
SEC-PSPP



Model	Input VAC	Out VDC	Amps Out Nominal	Amps Out Peak
SEC-1212	100-130	13.8	10	14
SEC-1223	100-130	13.8	23	25
SEC-1235M	100-130	13.8	30	35
SEC-1235P-M	100-240	13.8	30	35
SEC-1223BBM	Preset 100/130	13.8	23	25

Samlex is THE power supply choice for radio manufacturers around the world. These compact switching power supplies offer reliable power at an affordable price!

SAMLEX POWER SUPPLIES CARRY A 3-YEAR WARRANTY



SEC-1223BBM

Samlex combines the reliability of the SEC-1223 power supply with the reassurance of the BBM-1225 battery backup module. This combined unit automatically provides uninterrupted DC power in the event of a power outage.

- All features of the SEC-1212/1223 units plus reliable, uninterrupted DC power source in conjunction with an external battery.

SEC-1223BBM - HRO Price: \$199.95

Radio Cabinets



Visit/Call for Info.

Integrate your mobile radio with any Samlex desktop switching power supply to create an attractive and functional desktop.

All-In-One Inverter/Charger



Perfect pure sine wave unit for emergency backup power for the "ham shack" in case of a major power outage. When you lose power, the EVO™ is programmed to switch to generator or battery/inverter mode to power your equipment. When the power comes back it automatically returns to grid power and charges your batteries for future use. Optional EVO-RV remote control.

- Configurable Multi-Stage high current battery charger with equalization – for safe and optimal charging of batteries, including Lithium.
- Input for solar charger controller or other DC source.
- 3 Year Limited Warranty.

EVO-2212	EVO-3012	EVO-2224	EVO-4024
1200 W	3000 W	2200 W	4000 W
12 VDC	12 VDC	24 VDC	24 VDC
\$1894.95	\$2274.95	\$1894.95	\$2309.95

DC to AC Inverters



PST-150-12 150 Watt
PST-300-12 300 Watt
PST-600-12 600 Watt

The PST series provides clean pure sine wave power. PST's commercial grade design is suitable for heavy duty loads, long periods of continuous operation and reliable AC power.

- Quiet operation with temperature-controlled fan reduces energy consumption.
- Extremely low interference with other devices.
- Pre-set for 12 V input. GFCI protected outlets.
- Safety certified to UL & CSA standards, FCC compliant.
- 3 Year Limited Warranty.

Model	PST-150-12	PST-300-12	PST-600-12
Watts	150	300	600
Price	\$194.95	\$229.95	\$309.95

Solar Power



Portable Kits
MSK-90 90 Watt
MSK-135 135 Watt

Whether you need to charge your 12 V batteries during field emergencies or to get extended remote run-times for your equipment, these MSK kits include a built-in, three-stage 10 amp charge controller to protect batteries and prevent overcharging. Plus they come with pre-wired battery clamps on a 16' cable. 10 year power warranty on solar panels (Canada/US).

POWER SUPPLIES/BATTERIES



Switching Power Supply DM-30TR



Compact, lightweight design features 9-15 VDC variable output up to 20 amps continuous and 30 amps peak. The noise offset circuit lets you move any switching noise to another frequency. Features large illuminated digital volt / amp meter, rear panel (30 A peak) binding posts, front panel quick terminals (5 A), front panel Anderson Powerpole® (30 A), short circuit, over temperature, and current limiting protection. Front panel adjustable.

32 Amp Switching DM-330MVT



Super compact, lightweight power supply is great for portable operations. Provides 32 A peak, 30 A continuous. Variable output 5-15 VDC. Preset voltage function. Patent pending noise offset circuit removes pulse noise. Short circuit protection. Convenient front panel connections. Cigarette plug socket.



40 Amp Switching Mode DC Power Supply GZV4000

The GZV4000 switching mode DC power supply has a 40 amp continuous rating at 100% duty cycle. The

supply has variable voltage from 5-15 VDC using a voltage control knob with a center detent at 13.5 VDC. There is overload and short circuit protection with current feedback at approximately 42 amps and temperature protection with a variable speed fan. An AC line filter gives EMI protection. The meter selector allows monitoring of voltage and current. Power and overload indicators included. Front panel DC terminals, a cigarette lighter jack, and an internal 8 ohm speaker. Operates on 120 VAC ± 20%, 50-60 Hz. Ripple and noise is less than 8 mV rms. 240 VAC models also available for GZV4000.

HRO Price: \$179.95

FOR 224V operation the GZV4000-220V switching mode DC power supply has a 40 amp continuous rating at 100% duty cycle.

HRO Price: \$179.95



Bioenno Power®

Lithium Iron Phosphate Batteries

Bioenno Power's Lithium Iron Phosphate batteries are designed with ham radio applications in mind, and provide several key advantages:

- Based on advanced Lithium Iron Phosphate (LiFePO4) battery chemistry.
- Compatible with every brand (Icom, Kenwood, Yaesu, Elecraft, Alinco, etc.).
- Built-in protection-circuit-modules (PCM), which are "micro-computers" that internally balance cells and provide protection from overcharging, over-discharging, over-current, and short circuiting.
- 50% to 70% lighter than SLA (sealed lead acid) batteries.
- Service life of 2000+ charge cycles or 5-10+ years, with a shelf life that far exceeds the service life of many other batteries.
- Powerpole® connectors that are already attached and can connect directly to radios.
- Thermally and chemically stable.
- Dependable and reliable.

Based in Santa Ana, California, Bioenno Power products are currently used in a variety of applications and industries including ham radio, surveillance, avionics, scientific equipment, communications, audio/visual equipment, e-bikes/e-scooters, etc. with capacities ranging from 3 Ah up to 200 Ah. Contact HRO for all available sizes.



BLF-1203W

12 Volt - 3 Ah LFP Battery
LiFePO4
HRO Price: \$49.95

BLF-1206A

12 Volt - 6 Ah LFP Battery
LiFePO4
HRO Price: \$79.95



BLF-1209A

12 Volt - 9 Ah LFP Battery
LiFePO4
HRO Price: \$99.95

BLF-1212A

12 Volt - 12 Ah LFP Battery
LiFePO4
HRO Price: \$124.95



BLF-1215A

12 Volt - 15Ah LFP Battery
LiFePO4
HRO Price: \$149.95

BLF-1220A

12 Volt - 20 Ah LFP Battery
LiFePO4
HRO Price: \$192.95



Please note that these batteries should be charged using a LiFePO4 compatible charger, and not with a charger for SLA batteries.

BATTERIES/CABLE ACCESSORIES

Charge Controller



The West Mountain Radio CBA Charger can be used with a West Mountain Radio CBA series and a user provided battery charger to automate life cycle tests, automatically alternating between periods of charging the battery and discharging the battery. By automatically switching between charge and discharge cycles of the battery, a hands-free lifetime test of the battery can be performed.

When the unit is idle, the two pairs of Powerpoles® are open. When the unit is in a charging state, the two Powerpoles® are connected together, connecting the user provided battery charger to the battery.

#58254-1424

HRO Price: \$99.95

DC Meters



Wattmeter/Power Analyzer MFJ-4424

High Precision Wattmeter / Power Analyzer displays amps, volts, and watts continuously from 4.8-60 V. Measure current, peak current, power and peak power. Input / output with Anderson Powerpoles®. Backlit LCD display. 3.25 W x 1.75 H inches.



Volt/Amp Panel Meter MFJ-4422

4.5-30 VDC / 30 A digital volt / amp panel meter with built in Current Shunt. Connect inline to monitor voltage and current of your mobile radio or accessory. Displays voltage and current simultaneously with dual .28 inch red / blue LED digits. Input / output with Anderson Powerpoles®. Handles up to 30 A. Reverse polarity protected. 3 W x 2 H x 1 D inches.

Battery Analyzer

WEST MOUNTAIN RADIO Computerized Battery Analyzer



CBA V

The CBA is much more than a simple battery voltage tester or a battery load tester. The CBA will test virtually any type or size of battery, any chemistry, any number of cells up to 55 volts. For the first time and for a reasonable price, anyone can do scientific tests of their batteries by letting their computer do all the work. The CBA is capable of higher test rates than other testers: up to 40 amps or 150 watts, whichever is higher. It not only tests the total amount of energy stored in a battery (capacity in amp-hrs), but it graphically displays and charts voltage versus amp hours.

#58250-1852

HRO Price: \$179.95

Coax-Seal



Coax-Seal

Coax-Seal will seal all types of coax fittings, baluns, antenna parts and connectors of any shape. Wrap Coax-Seal around the object you want to protect and then mold it into shape. Keeps moisture out of the coax fitting on antenna feed lines. Need to make a change? Just remove it and start over.

Seals and protects all types of cable, wire and connectors from moisture and corrosion. Adheres to all cable and wire hardware and cable jackets. Offers years of protection from the effects of weather. Stays flexible, hot or cold; easy to remove.

HRO Price: \$4.95/per roll

Cable Ties

It's a Wrap!

BongoTies™

Handy Ties for Cables and Other Unruly Items



BongoTies have hundreds of uses around the office, home, garage, studio, and industry. Stop and look at all of those messy wires behind your computer right now! Each bag has 10 BongoTies. Enough for most jobs. Sturdy reclosable bags with zip-lock tops. BongoTies are approx. 5 in. in length, and stretch to approx. 18-20 in.

(Not for outdoor use.)

HRO Price: \$6.99 for a bag of 10

Coax Wrap



CoaxWrap will provide your coax connections with outstanding protection from the weather. Just wrap the connection with the convenient roll. When you need access to the connection, the wrap removes easily. Available in red, white, blue, clear, and black.

HRO Price: \$6.95/ per roll

CABLE ASSEMBLIES/CONNECTORS

Cable Assemblies

CABLE X-PERTS

Ready-Made Coax Cable Assemblies

Model	Connector Both Ends	Burial	UV Resistant	Shields	Attenuation dB @ 100 ft	Best Freq.
CXP1318FC	PL-259	Yes	Yes	2 (100% bonded foil + 95% TC Braid) V/F 84%	50 MHz 1.1 150 MHz 1.9 450 MHz 3.3	50-450 MHz
CXP008C	PL-259	No	Yes	1 (95% BC Braid) V/F 78%	10 MHz 0.51 30 MHz 0.9 50 MHz 1.2	1-50 MHz
CXP1318FN	N	Yes	Yes	2 (100% bonded foil + 95% TC Braid) V/F 84%	150 MHz 1.9 450 MHz 3.3	150 MHz and higher
CXP08XC	PL-259	No	Yes	1 (95% BC Braid) V/F 78%	10 MHz 0.98 30 MHz 2.0	1-30 MHz
CXP213C	PL-259	Yes	Yes	1 (97% BC Braid) V/F 66%	10 MHz 0.62 30 MHz 1.2	1-30 MHz (High Power)

RG213/U with PL-259		
Part Number	Length (ft)	HRO Price
CXP213C100	100	\$153.95
CXP213C50	50	\$88.95
CXP213C6	6	\$25.95
CXP213C3	3	\$20.95
RG8/U Foam with PL-259		
CXP008C100	100	\$176.95
CXP008C50	50	\$100.95
CXP008C25	25	\$61.95
CXP008C12	12	\$38.95
CXP008C6	6	\$27.95
CXP008C3	3	\$21.95
RG8X-Mini with PL-259		
CXP08XC100	100	\$98.95
CXP08XC75	75	\$77.95
CXP08XC50	50	\$58.95
CXP08XC25	25	\$37.95
CXP08XC18	18	\$33.95
CXP08XC6	6	\$26.95
CXP08XC3	3	\$22.95

9913-Type Flexible with N-Connector		
Part Number	Length (ft)	HRO Price
CXP1318FN100	100	\$173.95
CXP1318FN50	50	\$101.95
CXP1318FN25	25	\$63.95
CXP1318FN6	6	\$31.95
CXP1318FN3	3	\$26.95
9913-Type Flexible with UHF Connectors		
CXP1318FC100	100	\$169.95
CXP1318FC50	50	\$97.95
CXP1318FC6	6	\$27.95
CXP1318FC3	3	\$21.95

Tinned Copper Ground Braid		
Part Number	Length (ft)	HRO Price
235	1" wide	\$1.50/ft
2332	1/2" wide	\$0.70/ft
235RT-5	1" 5' long *	\$11.95
235RT-10	1" 10' long *	\$17.95
2332RT-5	1/2" 5' long	\$8.95
2332RT-10	1/2" 10' long *	\$11.95

*With ring terminals

Connectors (Contact HRO for others)

Model	Description	HRO Price
BNC-44	BNC to UHF Adapter	\$6.99
N-31	N to UHF Adapter	\$9.95
PL-259ST	PL-259	\$3.49
N-TGS	Type N Male	\$7.95
UHF-08-TGNZ	4 Hole SO-239 Chassis Connector	\$4.95
UHF-10	Double Male UHF	\$5.99

Model	Description	HRO Price
UHF-11	UHF Barrel	\$4.99
UG-363-4	Long UHF-UHF Barrel	\$17.95
UHF-15-DGN	Right Angle Teflon Gold Pin	\$8.95
UHF-13	UHF "T"	\$7.99
UHF-19	BNC to UHF Adapter	\$6.99
UHF-18	UHF to N Adapter	\$8.99

Cable

Times

Call for Low Discount Prices on Times Cable

LMR-200 - RG58 type

This is a standard RG58 'type' outdoor cable that is ideal for jumper assemblies, short antenna feeder runs, or any application requiring an easily routed, low loss RF cable. It has a solid BC inner conductor, foam polyethylene dielectric, aluminum tape outer conductor, a tinned copper overall braid and black polyethylene jacket. The velocity factor is 83%. It will withstand 1000VDC, a peak power of 2.5 kW, and shielding effectiveness is >90 dB.

LMR-240 - RG8X type

This RG8X 'type' outdoor cable has a solid BC inner conductor, foam polyethylene dielectric, aluminum tape outer conductor, a tinned copper overall braid and black polyethylene jacket. The velocity factor is 84%. It will withstand 1500 VDC, a peak power of 5.6 kW, and shielding effectiveness is >90 dB.

LMR-400 - RG8/213 type

This is a standard RG8 / RG213 'type' outdoor cable that has a solid BCCA inner conductor, foam polyethylene dielectric, aluminum tape outer conductor, a tinned copper overall braid and black polyethylene jacket. The velocity factor is 85%. It will withstand 2500 VDC, a peak power of 16 kW, and shielding effectiveness is >90 dB.

LMR-400-UltraFlex

Similar specs as LMR-400 with TPE jacket.

Coax & Connectors



Andrew coax and all the matching connectors you will need are available as a special order drop shipment. Contact your nearest HRO store for complete details.

MODEL	CABLE TYPE	DIAMETER
AVA5-50.....	Foam Dielectric	7/8"
FSJ4-50B.....	Superflex	1/2"

*Plus Shipping

COAX/ROTATOR CABLE

We have RF Cable available from



American Built & Reliable

ABR Industries manufactures coax with a non-contaminating, ultraviolet resistant, and direct burial jacket. Cables are American Made and are fully tested and ready to use.

Coax

Purchase coax in any length up to 500 ft

RG8/U

Standard RG8 /U, #13 stranded copper center conductor, cellular polyethylene insulation, 97% bare copper shield, PVC jacket, 50 ohm impedance, 78% velocity factor and 1.8 dB loss per 100' at 100 MHz. The most popular cable for HF/VHF/UHF. Use when long cable runs are not required.

RG213/U

RG-213 / U coax, #13 stranded copper center conductor, solid polyethylene insulation, 97% bare copper shield, non-contaminating PVC jacket, 50 ohm impedance, 66% velocity factor and 2.2 dB loss per 100' at 100 MHz. This RG-8 type cable is best for HF. It may be buried.

9913F-7

9913F-7 is RG8/U-type coax, #9.5 stranded copper conductor, foam polyethylene insulation, 100% foil plus 88% braid shield, PVC jacket, 50 ohm impedance, 84% velocity factor and 1.4 dB loss per 100' at 100 MHz. The best cable for VHF and UHF applications.

RG8X

RG8X is small diameter coax, #16 stranded copper center conductor, cellular polyethylene insulation, 95% bare copper shield, PVC jacket, 50 ohm impedance, 78% velocity factor and 3.7 dB loss per 100' at 100 MHz. Good for short VHF runs and most HF uses.

Rotator Cable

8 wire, standard duty - 8 wire cable using six #22 and two #18 tinned copper conductors. PVC insulation.

8 wire, heavy duty - 8 wire cable using 6 - #18 and 2 - #16 tinned copper conductors. PVC insulation; chrome PVC jacket.

When Ordering Bulk/Roll Cable

Please order in multiples of 50 feet. Continuous length spools up to 500 feet are available. Call for quotes.

Direct Bury Cable

218XATC - lightweight for mobile, dipole antennas, or jumpers between equipment in tight places. RG8X (LMR@240 type) with PL-259 connectors and adhesive lined HST at both ends. Jacket is UV resistant and direct burial.

RG8X-Direct Bury with PL-259		
218XATC-PL-1.5	1.5	\$26.95
218XATC-PL-3	3	\$26.95
218XATC-PL-6	6	\$29.95
218XATC-PL-9	9	\$29.95
218XATC-PL-12	12	\$29.95
218XATC-PL-18	18	\$37.95
218XATC-PL-25	25	\$38.95
218XATC-PL-30	30	\$43.95
218XATC-PL-40	40	\$49.95
218XATC-PL-50	50	\$54.95
218XATC-PL-75	75	\$72.95
218XATC-PL-100	100	\$89.95
218XATC-PL-125	125	\$99.95
218XATC-PL-150	150	\$113.95
218XATC-PL-250	250	\$159.95

HT Jumpers

ABR Industries now supplies HT jumpers in various short lengths of RG316/U Teflon® .100" OD.

These can be had in 3, 6, 9, 12, and 15 foot lengths of SMA male to SMA female, or 3 and 6 foot lengths of SMA male at both ends, or SMA male to PL259 or SO239.

Ground Braid

Also available are various lengths of 1-inch or ½-inch tinned copper flat ground braid with ¼-inch stud ring terminals

And there are a few different lengths of ½-inch tinned copper with nickel grommets at 4" spacing for easy attachment to a vehicle body or truck bed to create a "ground plane" or an option as a buss-bar in the shack.

Direct Bury Cable

2213A - UV resistant, direct bury. RG213/U Mil-Spec w/PL259 connectors and adhesive lined HST at both ends. Solid polyethylene dielectric, high power, bands below 30MHz with amplifiers.

RG213/U with PL-259		
Part Number	Length (feet)	HRO Price
2213A-PL-1.5	1.5	\$28.95
2213A-PL-3	3	\$32.95
2213A-PL-6	6	\$37.95
2213A-PL-18	18	\$59.95
2213A-PL-25	25	\$69.95
2213A-PL-50	50	\$114.95
2213A-PL-75	75	\$149.95
2213A-PL-100	100	\$184.95
2213A-PL-150	150	\$229.95

25400F - (LMR@ 400UF) UV resistant, direct-bury, for frequencies above 144 MHz. PL-259 connectors and adhesive lined HST at both ends.

RG8/U Direct Bury with PL-259		
25400F-PL-1.5	1.5	\$28.95
25400F-PL-3	3	\$33.95
25400F-PL-6	6	\$39.95
25400F-PL-12	12	\$54.95
25400F-PL-18	18	\$66.95
25400F-PL-25	25	\$79.95
25400F-PL-50	50	\$129.95
25400F-PL-75	75	\$179.95
25400F-PL-100	100	\$199.95
25400F-PL-150	150	\$269.95

25400F - (LMR@ 400UF) UV resistant, direct bury, for frequencies above 144 MHz. N male connectors and adhesive lined HST both ends.

RG8/U Direct Bury with N Male		
25400F-NM-3	3	\$36.95
25400F-NM-6	6	\$41.95
25400F-NM-12	12	\$54.95
25400F-NM-18	18	\$72.95
25400F-NM-25	25	\$79.95
25400F-NM-35	35	\$99.95
25400F-NM-50	50	\$129.95
25400F-NM-75	75	\$169.95
25400F-NM-100	100	\$199.95
25400F-NM-150	150	\$269.95

ANTENNA TUNERS



Antenna Tuner AT-5K

The AT5K takes power handling to the next level over the AT4K, coming in with a rating of 3500 watts single tone continuous performance with low losses

and wide Z range. Palstar's AT5K, like its AT4K little brother, has a T-matching network utilizing a 1:1 unbalanced-to-balanced transformer at the INPUT of the network.

- 3500 watts single tone, high efficiency, low tuner losses and wide Z range.
- 160m to 15m with limited Z range on 10m.
- Balanced output with high power 5 kW Teflon® wire balun at the input of tuner circuit.
- Ferrite 1:1 input balun.
- Custom, large plate variable capacitors (600 pF @ 6 kV).

- 10 amp 7 kV CERAMIC 3.25" body roller inductor (35 µH) wound with 10 ga. plated solid copper wire.
- Six-position switchable antenna input switch with 7 kV, 10 amp contacts.
- Peak and peak hold dual cross-needle metering (1-2 sec hold) with backlighting.
- Fan cooling for extended 100% duty cycle operation.



Antenna Tuner AT2KD

The AT1500DT and the AT1KIP have been combined into a new 2 kW tuner. The AT2K has all our features such as: peak and

peak-hold; a resonant free roller system to operate from 6m to 160m continuously; new LED lit meter system; and a new compact size.

- Power rating 2000 watts PEP.
- Frequency tuning 160m to 6m.
- Impedance matching range 20 ohms to 1200 ohms.
- Easy and quick tuning with only two controls.
- Palstar designed ceramic body roller inductor.
- 6 position mode switch for multiple antennas.
- Meter power range 0-300 watts / 0-3000 watts.
- Active peak and peak hold dual

- cross-needle metering (1-2 sec hold) with LED backlighting.
- Differential capacitor tuning with 2 stators and 1 rotor (420 pF - 13 pF - 420 pF @ 5 kV).
- High power ferrite 1:1 or 4:1 current balun (optional) externally installed.
- Size: 12 1/2" W x 5 1/2" H x 16" D.
- Weight: 12 lb.



Antenna Tuner AT-2K

The smaller roller inductor allows the AT-2K to tune 6 meters, while a relay-switched toroid adds the extra inductance needed for 160 meter coverage. Newly designed capacitors feature

lower minimum capacitance for improved high band performance, while maximum capacitance has been increased to 400 pF for better low band performance.

- Power rating 2000 watts PEP.
- Impedance range 20 to 1500 ohm 160m to 10m (assuming resistive load).
- Low minimum custom variable capacitors (15 pF to 400 pF at 4.5 kV).
- 10 µH relay-switched add-on inductor for 160 meters, roller inductor with turns counter.
- 18 µH 5 kV ceramic body roller

- inductor with turns counter.
- Silver plated inductor wheel shaft and contact wheel.
- Active peak / peak hold cross-needle metering w/ backlighting.
- 6 position ceramic wafer antenna selector switch.
- Optional 1:1 or 4:1 current balun available.

**Designed By Hams for Hams.
Made in the USA!**



Antenna Tuner AT4K

The AT4K has a power rating of 2500 watts single tone continuous.

- Unbalanced / balanced output (switch activated on front panel) with high power balun at the input of tuner circuit.
- T match circuit: impedance matching range 8 - 2000 ohms.
- Custom large value (460 pf) variable capacitors at 6 kV.
- Switchable antenna inputs.

- 10 amp edge-wound silver plated ceramic body roller inductors crank handle driven.
- Ferrite 1:1 input balun.
- Peak / peak hold dual cross-needle metering (1-2 sec hold) with backlight.
- Size: 15" H x 7" W x 16" D
- Weight: 20 lb.



Antenna Tuner AT-500

Covering 160 to 6 meters, the AT-500 has a differential tuning capacitor with 2 stators and 1 rotor, a precision ceramic body roller inductor, and a 4:1 ferrite current balun for balanced line feeds.

- Power rating: 600 watts PEP SSB; 500 watts CW.
- Output to both balanced and unbalanced lines.
- Impedance matching range 20 ohms to 1500 ohms.
- 6 position mode switch for multiple antennas.
- Active crossneedle peak/peak

- hold metering with backlighting.
- Meter power range 0-300 watts / 0-1000 watts.
- Differential capacitor tuning with 2 stators and 1 rotor (360 pF - 14 pF - 360 pF @ 2.5 kV).

Palstar Products

Model	Description	Price
Amplifier		
LA-1K	1KW solid state amplifier	\$3,895.95
Antenna Tuner		
HF-AUTO	1500 W Antenna Tuner	\$1,695.95
AT5K	3500 W Antenna Tuner	\$1,259.95
AT4K	2500 W Antenna Tuner	\$1289.95
BT1500A	1500 W Balanced Antenna Tuner	\$889.95
AT2K	2000 W Antenna Tuner	\$694.95
AT2KD	2000 W Differential Antenna Tuner	\$695.95
AT500	600 W Antenna Tuner	\$489.95
Wattmeters		
PM2000A	2000 W Wattmeter 1.8 MHz to 60 MHz	\$259.95
PM2000AM	200 W Wattmeter mobile 1.8 MHz to 60 MHz	\$198.95
Shortwave Accessories		
SP-30B-BLACK	Speaker 12 watts (for R30C/CC)	\$139.95
Dummy Loads		
DL1500	Dummy Load 1500 W - 450 MHz	\$194.95
DL2.5HP	Dummy Load 2500 W -1.8-60 MHz meter	\$695.95

Remote Antenna Tuners



Smartuners™ are the most versatile and reliable antenna couplers available. Working with power levels from 1.5 to 500 watts and with frequency ranges spanning the HF bands from a single antenna, they provide all-purpose tuning ideal for base, mobile, or portable operation. Just provide 12 V, connect to transceiver, antenna, and ground, and get on the air with minimum SWR. For more info just visit sgcworld.com for a detailed review of the Smartuner family, and find the right one for your needs. Stop tuning, start talking.

The Original Smartuner™

SG-230
\$539.95



The SG-230 Smartuner™ was the first product in the HF market to offer fast, flexible tuning without any user interface. It is built in a rugged, factory sealed ABS enclosure. With this tuner and any single antenna, you will have continuous coverage from 1.8 to 30 MHz and it can be used with any transceiver you'll ever own. The SG-230 can be used in base station, mobile, marine and aviation applications, and has been the "Gold Standard" of automatic antenna tuning for more than a decade. #54-14

Smartuner™
SG-237
\$389.95

The SG-237 is the most popular Smartuner™. Its rugged construction and small size allow for maximum flexibility. It has a 100 W power rating and expanded coverage to 60 MHz, matching it perfectly with the most popular HF + 6m transceivers. It will work with any balanced or unbalanced antenna including whips, backstays, dipoles, loops and long wires. #54-18



HF Antenna Coupler
SG-235
\$1199.95



This fully automatic coupler for 500 watts will tune an antenna at least 23 feet long for the HF bands. The SG-235 automatically evaluates and switches 64 input and 32 output capacitor combinations plus 256 inductance combinations in a Pi network design. The tuner remembers the chosen frequency plus the tuning values and automatically reselects those values when transmitting on or near that same frequency. #54-15

SGC Smartrunners

Specifications	SG-230	SG-235	SG-237
PEP Input (W)	3-200	3-500	3-100
CW Max Input (W)	80	200	40
Frequency (MHz)	1.8-30	1.8-30	1.8-60
Input Current (A)	0.9	1.4	0.3
Antenna Length (<3.3 MHz)	8 ft	50 ft	8 ft
Antenna Length (>3.3 MHz)	23 ft	300 ft	28 ft
Dimensions (in)	16x12x3	16x12x3	7x6x1.5
Weight (lb)	8	8	2
Water Resistant	yes	yes	yes
HRO Price	\$539.95	\$1,199.95	\$389.95

NEW

Manual Tuner



1.8-50MHz Tuner
CAT-300



Tunes dipoles, verticals, mobile whips, long wires and other antenna designs in all bands between 1.8MHz and 50MHz

Cross needle meter displays forward power, reverse power, and SWR simultaneously

Specifications:

Max Power: 300W (SSB)

Input impedance: 50 Ohm

Output impedance: 10 - 600 Ohm

Voltage Required For Meter Light: DC 11V - 15V, 250mA

Weight: 6 Lb

Dimensions: 10 x 4 x 8 inches

HRO Price: \$269.95

Mobile Tuner



TARGETuner
\$229.95

TARGETuner mobile antenna management system provides a controller with intelligent automatic controls for the tunable mobile screwdriver antenna, and a remote RF module. #58425-1473

- Senses RF signal into the antenna.
- No radio data link required for band selection; Auto tuning.
- Direction switch and motor control of speed and direction.
- Programmable for stall current sensing.
- Easy programming and memory capabilities.

ANTENNA TUNERS/METERS

LDG Electronics

In 1995 LDG Electronics pioneered the automatic Switched-L HF tuner. Powered by a microprocessor, it did away with manually tuned capacitors and inductors, automatically finding a match in seconds.

Now over twenty years later LDG has grown to be an industry leader, offering a wide array of tuners and other amateur products. Refining the original design with new tuning algorithms and upgraded components, LDG tuners define the state of the art. LDG remains a family-owned and operated business.



All LDG products come with a two year transferable warranty.

For Most Modern HF Transceivers

Z-100A

The Z-100A features LDG's famous 10:1 SWR tuning range that matches Dipoles, Verticals, Endfed wires, G5RVs or even an Off-center fed Windham.

Easy integration means plug and play operation; installation could not be simpler. The Z-100A tuner goes anywhere with your HF radio... desktop, portable, parks, islands, or tall summits. Includes cables for Icom, Kenwood, & Yaesu. **HRO Price: \$199.95**



- Frequency Range: 1.8 - 54 MHz.
- Power: 125 W PEP, 30 W Digital.
- Input Impedance: 50 ohms.
- Tuning Range: 10:1 SWR.
- Memories: 2000.
- Retune Time: < 1.0 Seconds.
- Voltage: 13.8 VDC +/- 15%.
- Current Draw: 500 mA tuning, 20 mA idle.
- Size: 6.3" x 6.3" x 1.5"
- Weight: 1.5 lb.

Transceiver Matching



Z-817 Automatic Tuner for the Yaesu FT-818

The Z-817 automatic tuner, operating on 160 - 6 meters, attaches to the CAT port with the provided cable. Press the One-Touch-Tune button on the tuner and the Z-817 sets mode and power on the radio, tunes, then restores mode and power. Tuning time is 0.2 seconds for recalling one of its 2000 memories, and average time for a full cycle is 2.5 seconds. The Z-817 also works with any QRP radio with output of up to 20 watts. Press the tune button on the tuner while transmitting a carrier and it finds a match. Includes one foot CAT interface cable. Has CAT-thru port to allow computer control of radio. Tuning range of SWR loads from 6 to 450 ohms. It is powered by four AA batteries (not included). Size is 4.5" W x 4.5" H x 1.5" D. **HRO Price: \$129.95**

Remote Tuner



RT-100 & RC-100

Automatic Antenna Tuner/ Remote Control

Place this 100 watt coax-in / coax-out tuner near the feed-point of the antenna and it will virtually eliminate all feed line loss due to SWR. The RT-100 is DC powered over the coax, so no extra cables are needed. Add your own DC injection circuit or use the LDG RC-100 to power and control the tuner from your shack.

The RC-100 will provide DC power over the coax as well as control for auto mode, lock, and tune. **HRO Price: \$269.95**



Dual Color Analog Meters



MC-7610 Designed For The Icom IC-7610

- Dual 3.5" Analog Meters
 - Displays: S-Meter, RF power, SWR, etc.
 - Color/Brightness adjustment for each Meter
 - Voltage: 13.8 VDC +/-15%
 - Current Draw: 500 mA Max
 - Size: 8.0"x7.0"x1.5", 200x175x40mm
 - Weight: 1.5 pounds, 680 grams
- HRO Price: \$189.95**



MC-101 Designed For The Yaesu FTdx-101

- Dual 3.5" Analog Meters
 - Displays: S-Meter, RF power, SWR, etc.
 - Color/Brightness adjustment for each Meter
 - Voltage: 13.8 VDC +/-15%
 - Current Draw: 500 mA Max
 - Size: 8.0"x7.0"x1.5", 200x175x40mm
 - Weight: 1.5 pounds, 680 grams
- HRO Price: \$189.95**



MC-990 Designed For The Kenwood TS-990

- Dual 3.5" Analog Meters
 - Displays: S-Meter, RF power, SWR, etc.
 - Color/Brightness adjustment for each Meter
 - Voltage: 13.8 VDC +/-15%
 - Current Draw: 500 mA Max
 - Size: 8.0"x7.0"x1.5", 200x175x40mm
 - Weight: 1.5 pounds, 680 grams
- HRO Price: \$189.95**



MC-7800 Designed For The Icom IC-7851

- Dual 3.5" Analog Meters
 - Displays: S-Meter, RF power, SWR, etc.
 - Color/Brightness adjustment for each Meter
 - Voltage: 13.8 VDC +/-15%
 - Current Draw: 500 mA Max
 - Size: 8.0"x7.0"x1.5", 200x175x40mm
 - Weight: 1.5 pounds, 680 grams
- HRO Price: \$189.95**

LDG Electronics

Tune Multiple Antennas



AT-1000ProII

The AT-1000ProII features an auto mode that automatically starts a tuning cycle any time the SWR exceeds a limit you set. Tune two antennas and switch between them. 2000 memories store tuning parameters for each antenna. The unit operates at any power level between 5 and 1000 watts peak RF input. A large, easy-to-read LED bar graph has two selectable ranges. It will tune from 1.8 to 54 MHz.

HRO Price: \$499.95



AT-100ProII

This automatic desktop tuner covers 1.8 – 54 MHz. A two-position antenna switch allows you to switch instantly between two antennas. The AT-100ProII requires just 1 watt for operation, but will handle up to 125 watts, making it suitable for everything from QRP to a typical 100 watt transceiver. It includes more than 2,000 memories for each antenna, automatically storing tuning configurations for each frequency and band as you use them. Includes antenna and bypass indicators on front panel.

HRO Price: \$249.95



AT-600ProII

The AT-600ProII will handle up to 600 watts SSB and CW, 300 on RTTY (1.8 – 30 MHz), 250 watts on 54 MHz.

- Processor-controlled switched L-tuner.
- Matches coax-fed antennas. Matches 10:1 SWR down to 1.5: 1.
- Use with longwires, random wires, and antennas fed with ladder line by adding an optional balun.
- Two antenna ports.
- Requires 11-16 VDC at 750 mA.

HRO Price: \$369.95

Low-Cost Tuner



Z-100Plus

Designed to provide 125 watt power handling in SSB, CW and digital modes, the Z100Plus features 2000 memories that store both frequency and tuning parameters. Operating frequencies are stored with tuning parameters to make memory tunes in a fast 0.1 seconds. Full tunes take an average of only 6 seconds. This makes the Z-100Plus perfect for SOTA, POTA and other portable operations.

HRO Price: \$179.95

Portable Tuner



Z-11ProII

Now includes battery pack!

Here is everything you need in a small, portable tuner designed for battery operation. Only 5" W x 7.7" D x 1.5" H and weighing 1.5 pounds, it handles 0.1 to 125 watts, making it ideal for both QRP and standard 100-watt transceivers from 160 – 6 meters. With 8,000 memories, the Z-11 ProII uses a state-of-the-art processor-controlled switched-L tuning network. It matches dipoles, verticals, inverted-Vs or virtually any coax-fed antenna. With an optional LDG balun, it will also match longwires or antennas fed with ladder-line.

HRO Price: \$184.95

High Power Tuner



AT-200ProII

The AT-200ProII handles up to 250 watts SSB or CW on 1.8 – 30 MHz, and 100 watts on 54 MHz (**including 6 Meters**). Rugged and easy-to-read LED bar graphs show power and SWR. A function key on the front panel allows you to access data such as mode and status. An LED indicates bypass mode and another shows which antenna is selected.

HRO Price: \$289.95

ANTENNA TUNERS

MFJ

HF Roller Inductor



MFJ-962D

Handles 1.5 kW PEP SSB amplifier input power (800 W output). Peak-reading cross-needle SWR / Wattmeter, AirCore™ roller inductor.



MFJ-969

Covers 6 thru 160 meters! 300 watts PEP SSB. TrueActive™ peak-reading SWR / wattmeter, antenna switch, built-in dummy load, 4:1 balun, Lexan® front panel. 3-1/2" H x 10-1/2" W x 9-1/2" D.



MFJ-989D

The world's most popular legal limit antenna tuner! Easily handles 1500 watts SSB / CW, 1.8 to 30 MHz including MARS / WARC bands. 500 pF air variable capacitors, AirCore™ roller inductor with fast-tune crank knob, TrueActive™ peak-reading cross-needle SWR / Wattmeter, high voltage current balun, more! 12-7/8" W x 6" H x 11-5/8" D.



MFJ-986

Similar to MFJ-989D, but "D" has 2-knob tuning (differential capacitor and AirCore™ roller inductor) to make tuning fool-proof and easier than ever.

HF Switched Inductor Tuners



MFJ-904H

MFJ brings you the world's smallest full power 150 watt 80-10 meter antenna tuner. Covers 3.5 to 30 MHz – with 4:1 balun and SWR / Wattmeter! Extra wide matching range lets you tune nearly any antenna. It is no toy! Built with real air variable capacitors (600 volt, 322 pF) and three stacked powder iron toroids to handle real power – not just QRP. Bypass switch lets you bypass tuner when you don't need it. You can use nearly any transceiver at full power with nearly any coax fed or random wire antenna for portable, home, or mobile operation. SO-239 connector. 7-1/4" W x 2-1/4" H x 2-3/4" D.



MFJ-902B

Tiny Travel Tuner, 4-1/2" W x 2-1/4" H x 3" D, full 150 W, 80-10 meters, tuner bypass switch.



MFJ-901B

Wide range 200 watt PEP versa tuner. Covers 1.8 to 30 MHz.



MFJ-949E

More hams use MFJ-949s than any other antenna tuner! 300 watts, 1.8 to 30 MHz, custom inductor switch, 1000 volt tuning caps, full size peak / average lighted cross-needle SWR / Wattmeter, 8 position antenna switch, dummy load, scratch proof Lexan® front panel. 3-1/2" H x 10-5/8" W x 7" D.



MFJ-948

Economy version of MFJ-949E, less dummy load, Lexan® front.



MFJ-945E

HF / 6 meter mobile tuner. Extends mobile antenna bandwidth. Tiny 8" x 2" x 6" fits easily in car.



MFJ-941E

Super value tuner handles 300 watts PEP, covers 1.8-30 MHz, lighted cross-needle SWR / Wattmeter, 8-position antenna switch, 4:1 balun, 1000 volt capacitors.



MFJ-931

Artificial RF Ground. Creates artificial RF ground or electrically places far-away RF ground directly at rig. Includes 300 W tuner with cross-needle SWR / Wattmeter.



MFJ-971

Portable / QRP tuner tunes coax, balanced line, random wire 1.8-30 MHz. 30 / 300 or 6 watt ranges. Matches MFJ QRP rigs. 6" W x 6-1/2" D x 2-1/2" H.

Manual Tuners



MFJ-906 / 903

6 meter tuners. MFJ-906 has lighted cross-needle SWR / Wattmeter with bypass switch. Handles 100 W FM/ 200 W SSB. MFJ-903 is without SWR/Wattmeter and bypass switch.



MFJ-921 / 924

VHF / UHF Tuners. MFJ-921 covers 144 / 220 MHz. MFJ-924 covers 440 MHz. Both include SWR / Wattmeter. 8" W x 2.5" H x 3" D.

ANTENNA TUNERS/COAX SWITCHES

MFJ

Automatic Tuners



MFJ-993B

300 watt automatic HF antenna tuner is like the MFJ-929, but you can select 300 watts (6-1600 ohms matching range) or 150 watts (6-3200 ohms matching range). Also has 4:1 current balun, remote control port.



MFJ-939I/K/Y

From 2 to 200 watts automatic antenna tuner. Plug and Play for ICOM, Yaesu, Alinco and other HF rigs. Has 20,000 memories, covers 1.8-30MHz, powered by transceiver and includes interface cable. Requires adjustment of internal jumper and cable for specific radio. Audio SWR meter, small size, instant recall and fast tuning.



MFJ-994B

600 watt Intelli-Tuner™. Like MFJ-993B, but has 10,000 VirtualAntenna™ memories and handles 600 watts CW / SSB, matches 12-800 ohms. Does not have LCD display, antenna switch or 4:1 balun.



MFJ-929

200 watt automatic HF antenna tuner in a compact size 6-1/2" W x 2-7/8" H x 8-3/8" D inches. Ultra-fast, 20,000 VirtualAntenna™ Memories, antenna switch, efficient L-network, matches 6-1600 ohms, 1.8-30 MHz. Digital SWR / Wattmeter, radio interface.



MFJ-998

1500 watt SSB / CW Intelli-Tuner™. Digital and analog SWR / Wattmeter, ultra-fast, automatic tuning, wide range (12-1600 ohms from 1.8 to 30 MHz), radio interfaces, built-in antenna switch for two coax / long wire, automatic bypass to protect your amplifier, field upgradeable software. MFJ-998RT with MFJ-4117 bias-tee also available for remote use.

MFJ-926B

200 watt HF remote automatic tuner. Matches random wire or coax feed. Fully weather sealed for remote outdoor and marine use. Includes MFJ-4117 bias-tee.



Random Wire Tuner

MFJ-16010

Random wire tuner. Operate all bands anywhere with MFJ's reversible L-network. 1.8-30 MHz. 200 W PEP. Tiny at 2" W x 3" H x 4" D. Turns a random wire into a powerful transmitting antenna.



Loop Tuners

MFJ-936C



Turn wire or coax into a small, high-efficiency multi-band transmitting magnetic loop antenna! Work the world from 3.5 to 30 MHz using a full 150 Watts on sideband, CW, and digital.

Small magnetic loops are very quiet on receive. The high-Q design reduces QRM, overloading, and harmonics. It's perfect for apartments, antenna-restricted areas, and portable operations.

Other Loop Tuner Models Available:



MFJ-935C MFJ-9232 MFJ-933C

Surge Protector

MFJ-270



Safeguard your expensive gear from static electricity and lightning induced surges traveling on 50 ohm coaxial line. Ultrafast gas discharge tube safely shunts up to 5000 amps of peak impulse current harmlessly to an independent ground. SWR less than 1.1:1. Less than 0.1 dB loss. Use up to 1000 MHz. Handles 400 W PEP.

MFJ-270N has low loss N-connectors. **MFJ-272** with SO-239s, handles 1.5 kW PEP.

HF Antenna Switches



MFJ-1702C

2 position antenna coax switch. New center ground, lightning arrester. 2.5 kW PEP, 1 kW CW. Loss below .2 dB. 50 dB isolation @ 450 MHz. 50 ohms. 3" x 2" x 3".

MFJ-1704

Like MFJ-1702C. 4 positions. 6.25" W x 4.25" D x 1.25" H. 50 ohm load. SWR 1.1: 1 to 30 MHz; 1.5:1, 30-650 MHz. SO-239 connectors.



MFJ-1701

6 position antenna switch, 50-75 ohms. Handles 2 kW PEP or 1 kW CW. 1.8-30 MHz. SO-239 connectors. Unused positions automatically grounded.

MFJ-1700C

6 position antenna and transceiver switch switches between 1-6 antennas and 1-6 rigs. Handles 2 kW PEP or 1 kW CW, 1.8 to 30 MHz.



LIGHTNING PROTECTION/COAX SWITCH

Lightning Protected Coax Switches

ALPHA DELTA

4 Position Switch Delta-4B



This lightning protected 4 position RF coax switch uses the Alpha

ARC-PLUG® cartridge to protect your equipment from electrical surges. The exclusive center "off" (ground) position internally disconnects and grounds all antenna circuits. It has a diecast housing with constant impedance micro-strip cavity construction. Features a positive detent roller bearing switch drive. Handles full legal power. Delta-4/N for type "N" connectors. The Delta-4 handles frequencies through 500 MHz and the Delta-4/N through 1.3 GHz.

HRO Price: \$109.95; Type N: \$119.95.

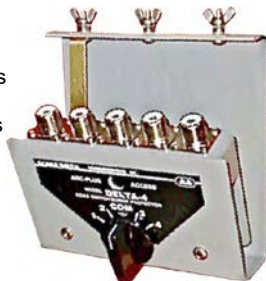
2 Position Switch Delta-2B



This 2 position coax switch has the same features as the Delta-4. Order UHF, or type "N" connectors for low-loss performance through 1.3 GHz.

HRO Price: \$83.95; Type N: \$98.95.

Antenna Selector Console Desktop Coax Switch



This series retains all the features and specifications of the precision DELTA-4B series, including ARC-PLUG® module surge protection, in a desk top console that will sit right next to the equipment on your desk without having to be secured or bolted down. The console features a powder-coated steel housing and a solid brass ground buss, with #10 wire attachment hardware across the rear of the housing providing a common ground point for all station equipment and accessories.

Model ASC-4B Antenna Selector Console Switch (4 position, UHF Connectors thru 500 MHz). **HRO Price: \$164.95**

Model ASC-4B/N Antenna Selector Console Switch (4 position, N Connectors thru 1.3 GHz). **HRO Price: \$169.95**

ALPHA DELTA



The ATT3G50 coaxial surge protector was designed for the cellular, microwave point-to-point, and the broadband wireless industry. These products feature very low loss performance through 3 GHz for 50N models and 500 MHz for 50U models. Typical loss is 0.1 dB at 1 GHz through 0.5 dB at 3 GHz. This series represents the lowest loss broadband design in the industry. Choose connector: type "N" (50N models) or "UHF" (50U models).

The Defense Logistic Agency (DLA) has assigned National Stock Number (NSN) 01 5470278 to the Model TT3G50 Coax Surge Protector and NSN 5325 01 5466841 to the 3G50 ARC-PLUG® Cartridge for use in all US Military and NATO applications, worldwide.

- ATT3G 50N**
200 W – 3.0 GHz, Type N..... **\$65.95**
- ATT3G 50NHP**
2 kW – 3.0 GHz, Type N..... **\$65.95**
- ATT3G 50U**
200 W – 500 MHz, UHF **\$55.95**
- ATT3G 50UHP**
2 kW – 500 MHz, UHF..... **\$55.95**

HF Antenna Switches



DAIWA

2 Position Coax Switch



CS-201A

Daiwa has two heavy-duty coaxial switches. Model A (SO-239 connectors) is usable to 500 MHz, model GII (N connectors) is usable to 1.3GHz. The unused positions are grounded.
HRO Price CS-201A (SO-239): \$36.95
HRO Price CS-201GII (N): \$59.95



2 Position Coax Switch



CX-210A

Diamond's heavy-duty wideband coax switch, the CX-210A, is a high quality 2 position coax switch with SO-239 connections. Like most Diamond products, this switch is very well built and durable. Two screws on the back allow you to mount the switch to a flat surface.
HRO Discount Price: \$56.95

Ground Clamp



**Model
UCGC**

The UCGC clamp mounts directly on a standard 5/8" copper ground rod. You can attach up to 4 Model ATT 3G50 series coax surge protectors. The ground clamp is made from solid copper and has stainless steel mounting hardware with 6 bolts, washers, and nuts. It includes an adjustable copper ground wire clamp for your station single point ground wire of up to 4 gauge in size.
HRO Price: \$54.95

LIGHTNING PROTECTION/BALUNS

Lightning Protection

PolyPhaser
CORPORATION

Coaxial Impulse Suppressors

Hermetically-sealed voltage sensitive gas tubes and other components assure that surge voltages and currents will not reach your equipment.

Flange Mounts
HRO Price:
\$71.95 - \$79.95



MODEL	FREQ RANGE	MAX POWER
IS-50 UX-C0	1.5-700	HF - 2kW VHF - 375 W UHF - 125 W
IS-50 NX-C0	1.5-700	HF - 2kW VHF - 375 W UHF - 125 W
IS-50 NX-C2	125-220	VHF - 375 W
w/N Connectors	220 - 700	UHF - 125 W
	700 - 1 GHz	SHF - 50 W

Bulkhead Mounts
HRO Price:
\$75.95 - \$94.95



MODEL	FREQ RANGE	MAX POWER
IS-B50LN-CO-ME	1.5-400	HF - 2kW VHF - 375 W UHF - 125 W
IS-B50HN-CO	1.5-700	HF - 3kW VHF - 500 W UHF - 200 W

Rotator Control Protector Model IS-RCT

Provides protection for rotator controllers, motors, control box, and other nearby equipment. **Call for info.**

Grounding Panel Model CU-SPGP

A .062" thick copper plate mounted on a painted 1/2" plywood backing. Mounting protectors and a single ground point established for station equipment. Comes with concrete anchors, all mounting screws, 10' of 1.5" copper grounding strap, 2 brass sandwich plates, and joint compound. 18" x 12".

GOT QUESTIONS?
HRO HAS THE ANSWERS!

Contact your local HRO
for questions about
**GROUNDING, BONDING and
LIGHTNING PROTECTION!**

Baluns



LDG
Electronics

200 watts
1.8 to 30 MHz

RBA-4:1	..... Remote 4:1	..... Balun	\$29.95
RBA-1:1	..... Remote 1:1	..... Balun	\$29.95
RU-1:1	..... Remote 1:1	..... Unun	\$29.95
RU-4:1	..... Remote 4:1	..... Unun	\$29.95
RU-9:1	..... Remote 9:1	..... Unun	\$29.95

RadioWavz

The RadioWavz baluns are designed to handle full legal power with a low SWR.



1:1 Air	..... B11a	..... \$34.95
1:1 Ferrite	..... B11f	..... \$46.95
1:1 Isolation	..... B11i	..... \$46.95
1:4 Voltage Air	..... B14va	..... \$46.95
1:4 Voltage Ferrite	..... B14vf	..... \$52.95
1:4 Current Air	..... B14ca	..... \$46.95
1:4 Current Ferrite	..... B14cf	..... \$56.95
1:6 Current Isolation	..... B16ci	..... \$56.95
1:9 Balun Isolation TX	..... B19tx	..... \$46.95

Insulators

MFJ

Mid Feed Point Ladder Line Insulator MFJ-16F01



The MFJ-16F01 is an extra strong fiberglass ladder line middle insulator. It contains a high strength coax connector at the midpoint, an SO-239, and features quadruple weave-through ladder line for stress relief. **HRO Price: \$15.95**

ALPHA DELTA



Delta-C

Dipole kit with center insulator with SEP static suppressor and 2 end insulators, no wire.
HRO Discount Price: \$35.95

PALOMAR
ENGINEERS®



CB-4-1500TS

The CB-4-1500TS balun is a 4:1 impedance transformer designed to step down balanced ladder line feed point impedances of 600-50 ohms to 150-16.7 ohms unbalanced coax at 1500 watts PEP from 1.8 to 61 MHz. **HRO Price: \$89.95**

CB-1-5000EB

The CB-1-5000EB current balun is used for dipole antennas to keep RF on the antenna and off the outside of the coax braid. Rated 5000 watts PEP from 1-61 MHz. **HRO Price: \$119.95**



CMNF-500-50

Common mode coax noise filter rated at 500 watts PEP from 1-61 MHz with common mode attenuation up to 38 dB. Not effective for noise from AC power lines or noise received directly by antenna.
HRO Price: \$69.95

CU-1-5000SO

The CU-1-5000SO is a high power unun used as a line isolator or feedline choke. SO-239 in/out connectors. Rated 5 kW PEP 1.8-61 MHz. If you run RTTY contests or digital modes at 1500 W output, this is the unun you need for high duty cycles.
HRO Price: \$99.95



CU-4-9-1200

Model CU-4-9-1200 is a 4:1 and a 9:1 Ruthroff unun with one side stud for 4:1 (200:50Ω), a top stud/eyebolt for 9:1 (450:50Ω) output, and a side stud for ground connection. Input power levels up to 1.2 kW PEP when used with a matched load. A great multipurpose unun for end fed non-resonant antennas, traveling wave verticals, etc.
HRO Price: \$109.95

RFI SOLUTIONS/HF WIRE ANTENNAS



Transceiver/Amplifier Kits



These RFI kits effectively suppress transmitter RFI and reduce common mode receiver noise. Quick installation - immediate RFI reduction.

No radio mods required – works on all brands.

Part#	Desc	HRO Price
RFI-XCVR-STD	Single antenna port radio	\$39.95
RFI-XCVR-DELUXE	Multi-antenna port radio	\$89.95
RFI-LA-GAC	AC powered linear amps	\$54.95

Electronic Device RFI Kits

Part#	Desc	HRO Price
RFI-WW-10	Wall wart noise filter	\$29.95
RFI-HTS	Audio/video home theater	\$69.95
RFI-COMPUTER	Laptop or desktop	\$49.95
RFI-SMPS	Switch mode power supply	\$29.95

Ferrite Combo/Bulk Kits



Part#	Desc	HRO Price
FSB31-1/2-10	1/2" Snap on Qty: 10	\$59.95
F240-31-10	1.4" ID Ring Qty: 10	\$89.95
FSCP-31-22	1/4, 3/8, 1/2, 3/4 Snap on	\$94.95
FMSCP-31-10	1/4, 1/2, 3/4 Snap On	\$49.95
MRSCP-31-17	3/8, 1/2, 3/4 Snap On +1.4" ID Ring	\$94.95
FRCP-240-10	31-(4), 61-(3), 75-(3) Ring	\$119.95

Antennas



End Fed Antenna BAS-71

One of the most popular antennas today is the end fed due to its ease of installation, portability and stealth in various installations. It can be a condo dweller's only access to the world of ham radio or the best alternative for a backpacking SOTA (Summits on the Air) mountaintop expedition.

The antenna is simple to deploy, folds up easily for transport, and weighs under a pound, yet, with the 71 foot included wire, can work the 80-10 meter bands easily with the built in antenna tuner of most current day transceivers.

The key to the antenna's success is the matching network interface between the long wire antenna and the coax feed line to the transceiver. Palomar Engineers employs a dual core matching system that offers wide bandwidth (1.8-61 MHz), 500 watt PEP rating, and a connection for a counterpoise or ground if desired, and a SO-239 female coax connector for easy attachment of coax cable (50 or 75 ohm is ok).

The antenna can be used as a sloper, "L" with a vertical section and a longer horizontal section, or as a random horizontal antenna between two trees or supports.



Dual Wire Counterpoise Kit

Feed Line Choke



Includes 71 foot antenna for 80-6 meters, dual wire counterpoise kit and a feed line choke all in one convenient package (great for HOA restricted areas, camping and portable operations).



Off Center Fed Antenna PAL-8010OCF

Super convenient and quick – great for contest operation! Choose 1500 or 5000 watt PEP (use 5KW model for digital modes over 1000 watts). Unlike other OCF antennas (at twice the price, and no WARC band or 15 Meter operation), you can transmit and receive on 12,15 and 17 meters with our OCF. Better engineering and lower price!

- Covers 80-40-20-17-15-12-10-6 meter ham bands
- Low SWR on most bands with little or no tuning
- 1.5KW PEP (SSB-ICAS)
- Stainless Steel hardware for long life
- Halyard Hoist for ease of installation
- Insulated #14 wire for durability, High Strength insulators
- 4:1 Balun and 1:1 Choke included in a single enclosure

For best results support center at 30+ feet and ends over 15 feet. Angle of feed each side must be great than 45 degrees or 120 – 180 degrees total between each side preferred. Any length of 50 ohm feed line ok but longer feed lines over 50 feet may show reduced SWR on some bands due to losses in feed line and soil conductivity, nearby objects, etc. Due to local ground conditions, antenna height and feed line length, SWR may vary from samples shown and an antenna tuner may be required or some bands to bring SWR at end of feed line to acceptable levels. Overall length is 134 feet.

Balun

1:1 Mini Choke MC-1-500-50

Uses proprietary Multi-Mix, Multi-Core, Multi-Turn ferrite technology for maximum choking (up to -38 dB common mode noise rejection) and maximum bandwidth. 500 Watts PEP, 50 ohm SO-239 connectors Input and Balanced Output, 1-61 MHz (usable to 100 MHz). 1:1 balun included in interface.



RadioWavz

MODEL.....	PRICE
G5RV Jr.	\$64.95
G5RV Lite-E	\$109.95
G5RV-E	\$94.95
G5RV MAX-E	\$154.95



FREQ....	MODEL.....	PRICE
80 m.....	80-DBZ	\$109.95
75 m.....	75-DBZ	\$99.95
40 m.....	40-DBZ	\$69.95
20 m.....	20-DBZ	\$59.95
17 m.....	17-DBZ	\$54.95
10 m.....	10-DBZ	\$54.95
6 m.....	6-DBZ	\$49.95
2 m.....	2-DBZ	\$49.95

Portable HF



CHAMELEON™ ANTENNA EM-COMM II

For backup emergency HF system or permanent installation. Contains an integral broadband impedance matching network (transformer 5:1) allowing broadband antenna tuning. It is the perfect backup antenna for apartments, condominiums, homeowners associations, deed restrictions, and CCRs, ARES, RACES, MARS, EMCOMM, NVIS, first responders, and especially for emergency preparedness.

Totally waterproof, the antenna is 60' long and covers 6m to 160m. An external tuner is required. It weighs 1 pound and has an SO-239 RF connection.

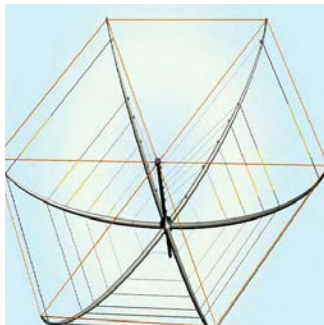
The antenna will perform as a sloper or in an inverted "V" configuration. For an NVIS configuration (40m - 80m) the antenna must be installed horizontally with the ground and elevated between 9' and 12' high. It does not require any ground-plane but will perform better with one. A ground terminal is available.

Dipoles with 1:1 Balun

80 m	80-DP11.....	\$89.95
40 m	40-DP11.....	\$64.95
20 m	20-DP11.....	\$54.95
10 m	10-DP11.....	\$49.95

DX (OCF) Windom

DX 40	DX-40	\$79.95
DX 80	DX-80MSH	\$134.95



HEX Beams

Sentinel Series Feature:

- Single coax feed (except for Barrett and Broadband options).
- Low SWR.
- No tuning; just plug and play.
- Improved broad band response over original hex beam design.
- Performs well at lower heights.
- Handles full legal limit of power.
- Small physical foot print.
- Light enough for a push up mast.
- Symmetrical shape withstands wind better.

Sentinel Models:

Sentinel Barrett Series Hex Beam
160-10m or 40-6m.

Sentinel Hex Beam 6 bands
10, 12, 15, 17, 20, and 40m.

Sentinel Hex Beam 10 m & 6 m
Dual band.

Sentinel Hex Beam 4-band
Covers 20, 15, 10, and 6m .

Sentinel Hex Beam 20m
Single band antenna.

Sentinel Hex Beam 10m
Single band antenna.

Sentinel Hex Beam 6m
Single band antenna.

BUCKMASTER

HF OCF Antennas

Off Center Fed (OCF) Antennas



Worldwide DX, multiband, and no tuner required.

4-BAND: 40, 20, 10, & 6 meters 68 feet (23+45) long.

DX-OCF-40.....	300 W	\$244.95
DX-OCF-HP40.....	3 kW	\$349.95

7-BAND: 80/75, 40, 20, 17, 12, 10, & 6 meters 135 feet (45+90) long.

DX-OCF.....	300 W	\$248.95
DX-OCF-HP.....	3 kW	\$359.95

8-BAND: 160, 80/75, 40, 20, 17, 12, 10, & 6 meters 270 Feet (90+180) long.

DX-OCF-160.....	300 W	\$324.95
DX-OCF-HP160.....	3 kW	\$434.95

ALPHA DELTA

Limited Space Antennas

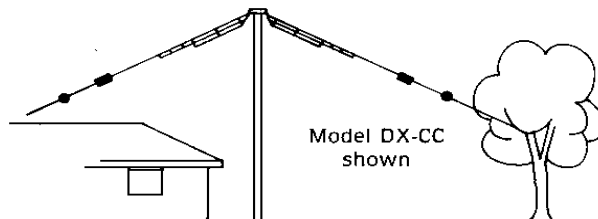
All of Alpha Delta's limited space antennas use stainless steel hardware where required, are fully assembled, and are manufactured to withstand severe weather. SO-239 connectors. The DX-A and DX-B slopers must be attached to a tower with an HF size beam on top to be a "capacity hat" for proper tuning. Power Rating: 1000 watts CW/PEP.

Model DX-B is a single wire, high performance quarter-wave sloper antenna for 160, 80, 40 & 30 meters. For limited space, the antenna requires only 60 feet for installation. Use with a wide range antenna tuner. Pre-assembled and pre-tuned. Has stainless steel hardware, 12 gauge insulated solid copper wire and the Alpha Delta "ISO-RES" RF choke coils, 50 ohm coax feed.

HRO Price: \$144.95

Model DX-A: Quarter wave twin sloper for 160-80-40 meters. One leg is 67'; the other 55'. Installs as an inverted-V.

HRO Price: \$139.95



Model DX-CC: A no trap 80-40-20-15-10 meter dipole. 82' long.
HRO Price: \$179.95

Model DX-DD: A no trap 80-40 meter dipole. 82' long.
HRO Price: \$154.95

Model DX-EE: A no trap 40-20-15-10 meter dipole. Only 40' long.
HRO Price: \$164.95

ANTENNAS

hy-gain

HF + 6m Verticals

AV-640

Uses quarter wave stubs on 6, 10, 12, and 17 meters and efficient end loading coil and capacity hats on 15, 20, 30, and 40 meters. No radials. No traps. No ground. No tuning. Handles 1500 watts. Sleek, low profile. Small area required for mounting. Automatic bandswitching, single coax cable feed, each band is individually tunable, wide VSWR bandwidth.



AV-620

Covers all bands 6 through 20 meters.



AV-680

No ground or radials needed. 6-80m, 26 ft tall, 18.5 lb. 1500 W key down for two minutes. 1/4 wave stubs on 6, 10, 12, and 17m. Low SWR. Wide bandwidth. Auto band switching. Low 2.9 sq ft wind surface, mounts on decks, roofs, patios. 65 mph wind survival.

All Hy-Gain multi-band vertical antennas are entirely self-supporting. No guying required. Their extremely low angle of radiation and omni-directional patterns offer remarkable DX performance. All handle 1500W PEP SSB and have low SWR. All except the AV-18VS have automatic band switching, and all except the AV-18HT include a 12-inch heavy duty mast support bracket. Radiators are heavy duty, slotted, tapered swaged, aircraft aluminum tubing with full circumference compression clamps. All include all stainless steel hardware. Recessed SO-239 prevents moisture damage. Two year limited warranty.

HF + 160

AV-18HT

The famous Hy-Gain HyTower, 53 ft tall, 114 lb, covers 10-80m with 160m and 17m optional. Automatic band selection uses unique stub-decoupling. 250 kHz 80m bandwidth with 2:1 SWR. LC-160Q optional base loading coil for 160m and MK-17 optional 17m kit. Special tilt-over hinged base for easy raising and lowering.

10-80 m + 160 m Optional DX-88

10-80m with 160m optional, 25 ft tall, 18 lb. All bands are easily tuned with exclusive adjustable capacitors. 80 / 40m tunable from ground without lowering antenna. Super heavy-duty construction. Options include **Kit-160-88** for 160 meter add-on, **GRK-88** ground radial system, and **RRK-88** roof radial system.



6-160 Meters

AV-6160

6-160m, 43 ft tall, 20 lb, low profile, self-supporting vertical assemblies in less than an hour. Entire length radiates for exceptionally low angle radiation. A wide range automatic or manual antenna tuner at your rig easily matches this antenna for all bands. Includes ATB-65 base mount. Optimized balun design allows direct coax feed.

Hy-Gain sells a large assortment of wire antennas, multi-band beams, and other verticals. Ask about baluns, aluminum tubing, and parts.

HF Verticals

DX-77A

10-40m, 29 ft tall, 25 lb. No ground radials required. Off-center-fed Windom has 55% greater bandwidth than competitive verticals. Heavy-duty tiltable base. Each band independently tunable.

AV-18VS

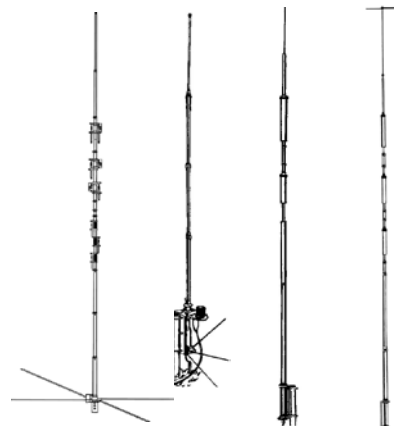
Covers 80 through 10m continuously. Easily change bands by manually moving band change wire at base loading coil. Handles 1500 W PEP. 18 ft tapered 6063-T6 aircraft aluminum tubing strength. 4 lb. Stainless steel hardware. 80 mph wind survival.

AV-12AVQ

10-15-20m, 13 ft tall, 9 lb. Automatic band switching, self supporting. 1500 W, Hy-Q™ traps give full 1/4 wave performance with broad banding top hat. SWR less than 2:1. Ground or roof mount; requires radials.

AV-14AVQ

10-40m, 18 ft tall, 9 lb, 1500 W PEP. Auto band switching. Ground or roof mount. Requires radials. Heavy duty bracket with recessed SO-239 mounts on 1.5-1.625" diameter mast. Optional MK-80, 80m add-on kit, and AV-14RMQ roof mount kit. AV-12AVQ 13 ft 3-band version also available.



DX-77A / AV-18VS / AV-12AVQ / AV-14AVQ

MFJ

End Fed Horizontal Wire Antennas MFJ-1982



End-fed radiators have the unique quality of resonating on the 1/2-wave fundamental frequency plus odd / even harmonics above! Broadband matching transformer at feed point lets the entire HF spectrum be yours! SWR is so low you may never need a tuner.

Installation is fast for home, road, emergencies – just one high center or end support. Toss your EFHW over a high limb for an inverted-V, raise the far end

high for a powerful sloper, or even go vertical with an inverted-L. Comes with a rugged insulated wire radiator that prevents detuning when in contact with limbs/branches. “No-snag” end insulator slides over branches and through foliage. Dark jacketed wire is virtually invisible. Don’t let antenna restrictions keep you off the air! Power ratings are in watts PEP for SSB / CW modes, with 50% or less transmit time (ICAS).

MFJ-1982LP \$79.95	30 W QRP	80-10 Meters
MFJ-1984LP \$69.95	30 W QRP	40-10 Meters
MFJ-1982MP \$94.95	300 W Restricted space.....	80-10 Meters
MFJ-1984MP \$84.95	300 W Restricted space.....	40-10 Meters
MFJ-1982HP \$119.95	800 W High power.....	80-10 Meters
MFJ-1984HP \$104.95	800 W High power.....	40-10 Meters



1/2 Wave 6-Band HF Cobweb Antenna MFJ-1836

Restricted space spoiling your operating fun? MFJ Cobweb puts your call back on the map! This six-band (20, 17, 15, 12, 10, 6 meters) full half-wave Cobweb Antenna is perfect for restricted space or portable operation. Sky-gray fiberglass spreaders and nearly invisible wire elements (flat 9 x 9 x 1/2 feet square; 8 pounds) blend in with your surroundings while standing tough against nasty weather.

Outstanding performance! Horizontally polarized for less local noise pickup plus solid gain over verticals will allow you to work DX easily – even on QRP. Omni-directional. No radials needed! Works great at low heights. Low SWR is due to MFJ’s exclusive Spider-Match™ broadband network. Use lightweight TV hardware to mount on your chimney, balcony, mast. Low in cost, but big on performance.

MFJ-1836 HRO Price: \$274.95
MFJ-1836H legal limit model. **HRO Price: \$284.95**
MFJ-1836HK34 adds 30 / 40 meters. **HRO Price: \$149.95**

40-6 Meter Cobweb Super Heavy-Duty Antenna MFJ-1838

The new, super heavy-duty 40-6 meter Cobweb Antenna, MFJ-1838, is built to survive harsh northern winters, heavy snow, ice and strong winds. It has super-strong large-diameter fiberglass and heavy-duty 14 gauge stranded hard copper wire. 8-bands: 40, 30, 20, 17, 15, 12, 10, 6 Meters, 1500 watts. 12 feet, 23 lb.
HRO Price: \$439.95



Hexbeam Antennas MFJ-1846 MFJ-1848 MFJ-1856

1500 watt Hexbeam delivers solid gain and directivity on 20, 17, 15, 12, 10, and 6 meters in a low-profile package that will have your pocket-book and your neighbors smiling!

The MFJ-1846 uses an updated G3TXQ element configuration for excellent gain, improved bandwidth, superior front-to-back ratio and low SWR - makes snagging rare DX easy! That’s just the beginning! MFJ takes the Hexbeam’s unique balanced-tension framework to a new level with rugged mounting hardware, exceptionally durable spreaders and sliding antenna-wire guides.

All designed to ensure years of reliable service in tough weather conditions. Gain and directivity makes the difference when DXing or maintaining schedules and the Hexbeam delivers!

MFJ-1846 Specifications:
 • Gain: 5.3 dBi in free space.
 • Typical turning radius: 11 ft.
 • Maximum mast size: 2-1/16" OD.
 • Weight: 25 lb.
HRO Price \$539.95

MFJ-1848 Specifications:
 • 8-Bands: 40, 30, 20, 17, 15, 12, 10, 6 meters.
 • 40 and 30 meters are each one-element radiators.
 • 1500 watts.
 • Weight: 28 lb.
HRO Price: \$719.95

MFJ-1856 Specifications:
 • 6-Bands: 20, 17, 15, 12, 10, 6 meters.
 • 1500 watts.
 • Weight: 30 lb.
HRO Price: \$709.95



2 Elements on 20, 17, 15, 12, 10, 6 m MA-6B

Cushcraft’s latest MA-6B gives you 2-elements on six bands! You get solid signal-boosting directivity in a bantam-size and weight.

Mount on your roof or mast using standard TV hardware. It’s perfect for exploring exciting DX without the high cost and heavy lifting of installing a large tower and full-sized array. Its

7-foot 3-inch boom has a turning radius less than 9 feet. Contest tough and handles 1500 watts.

The unique MA-6B is a two-element Yagi on 20 / 17 / 15 / 12 / 10 / 6 meters. It delivers solid power-multiplying gain over a dipole on all bands. You get automatic band switching and a super easy installation in a compact 26 pound package. When working DX, what really matters are the interfering signals and noise you don’t hear. That’s where the MA-6B’s impressive side rejection and front-to-back ratio really shines. **HRO Price: \$1049.95**

MA-5B Like MA-6B but five bands: 20, 17, 15, 12, 10 meters. 12 and 17 meters is a single element trapped dipole. **HRO Price: \$729.95**

ANTENNAS

MFJ

HF Antennas

HF Whips MFJ-16xxT

HF antenna whips handle 250 watts PEP. Whips are about 7 feet fully extended and collapse to about 4 feet for easy storage. Simply screws into any 3/8 x 24 female mount for quick band-changing. Each whip is ruggedly constructed. Heavy duty 4-foot, 3/8" diameter fiberglass rods, nearly indestructible eighth-inch diameter PH-17-7 stainless steel whips, and chrome-plated brass fittings will give you years of service.

Sleek low-profile construction has low wind loading and the semi-rigid fiberglass eliminates the need for springs or guys. Black anti-static jacket protects the loading coil and blends with any vehicle. Stainless steel whips are adjustable for lowest SWR. Push the whips down to park in the garage or fully extend for maximum efficiency during mobile operation. Includes Allen wrench and complete tuning and matching instructions.

- | | |
|-----------------------|------------------|
| MFJ-1675T - 75 M..... | MFJ-1617T - 17 M |
| MFJ-1660T - 60 M..... | MFJ-1615T - 15 M |
| MFJ-1640T - 40 M..... | MFJ-1612T - 12 M |
| MFJ-1630T - 30 M..... | MFJ-1610T - 10 M |
| MFJ-1620T - 20 M..... | MFJ-1606T - 6 M |

Telescopic Whips



MFJ-197x

MFJ's premium stainless steel telescopic whips are the perfect choice for building collapsible multi-band dipoles, mobiles, portable and base antennas. They are handy for traveling, mini DXpeditions, vacations, etc. Use them to replace your current automatic screwdriver whip for a more highly efficient fixed mobile operation. Rigidly collared at the base, stronger than plated brass, and impervious to rust and corrosion, they stand up to the forces of nature and the rigors of portable operation where others might fail.

MODEL	SECTIONS	HEIGHT'	COLLAPSED"
MFJ-1979.....	10.....	17.....	27
MFJ-1977.....	7.....	12.....	26
MFJ-1976.....	7.....	10.....	20
MFJ-1974.....	5.....	8.....	24
MFJ-1972.....	3.....	4.5.....	22

Base Antennas

80 m - 6 m MFJ-2389



8 popular bands in one antenna! You get a 1/4 Wave on HF, 80-6 Meters, a 1/2 Wave and 2.15 dBi gain on 2 Meters and a 5/8 Wave with 5.5 dBi gain on 70 cm. SWR is 1.5:1 or less and it handles 200 watts PEP SSB, 150 watts on 6M to 70cm on FM. Super lightweight at less than 6 lbs. and just

8.5 feet tall, this antenna lets you mount in a restricted space environment such as an attic or balcony. Its ground radial system is built-in, so no fooling with counterpoise wires. Has SO-239 feedpoint connection.

40 m - 6 m MFJ-1796

6 band vertical covers 40 through 6 meters. 12 feet tall with tiny 24-inch footprint. Mounts anywhere, handles 1500 watts PEP.

40 m - 2 m Mini Dipole MFJ-1775

1/2 wave, 6-band rotatable mini-dipole. Just 14 feet wide, can be turned by a small TV-type rotator. Covers 40 through 2 meters, handles 1500 watts.

Wire Antennas



80 m - 10 m G5RV MFJ-1778

All-band G5RV antenna. 102 feet long, 32.5 foot ladder line ending in SO-239 connector for coax feedline. 1500 watts. 80-10 m, 160 meters with tuner/ ground.

40-10 m G5RV Junior MFJ-1778M

G5RV Junior. Half-size, 52 feet. Covers 40-10 meters.

On-Glass Dual Band

MFJ-1734

Dual band glass mount 144 / 70 cm antenna gives 2.6 dB gain on 2 meters and 6.3 dB gain on 70 cm. Low SWR on both bands.

MFJ-1738

Single band glass mount 2 meter antenna gives 2.6 dB gain. Low SWR across entire 144-148 Mhz band. Handles 50 W.

VHF/UHF Mobile

MFJ-1724B

Mobile magnetic mount dual band antenna gives you a quarter wave stainless steel whip for 2 meters and 70 cm, coax, and connector. Low SWR, 200 watts.

MFJ-1729

Mobile Magnetic Mount super gain dual band antenna. Get a whopping 2.6 dB gain on 2 meters and 6.3 dB gain on 70 cm.



MFJ-1432

Dual band, 62.5" RuffRider™ hyper gain mobile antenna. 7.6 dB gain on 70 cm, 5 dB gain on 2 m. Requires tri-magnet mount, not included.

2 m/6 m Mobile

MFJ-1728B

Mobile magnetic mount 5/8 wave 2 meter and 1/4 wave 6 meter antenna. Low SWR, 300 watts.

Hi-Q Loop Antennas

MFJ-1786

Tiny 36" diameter loop antenna operates 10-30 MHz continuously – including WARC bands! Ideal for apartments, small lots, motor homes, attics, etc. Handles 150 watts. MFJ's included remote control has Auto Band Selection™. Auto tunes to desired band, then beeps to let you know. No control



cable needed. Fast / slow tune buttons, built-in two range cross-needle SWR / Wattmeter. All welded construction, large 1.05" diameter round radiator gives you highest possible efficiency. Heavy duty ABS plastic housing has ultraviolet protection. 220V version available.

WiFi Antennas



802.11b Wireless LAN Antennas

NGC offers a wide selection of directional and omnidirectional antennas for Amateur Television, the ISM band, LAN / WAN, data links and wireless internet.

GP-24R

ATV/ISM band: 2400-2500 MHz.
Omnidirectional gain: 15.4 dBi.
Height: 5' 10".
Connector: N-Type.
HRO Price: \$59.95

GP-24-3R

Same as GP-24 but omnidirectional with 3 degree electrical downtilt.
HRO Price: \$159.95

V/UHF Bandpass Filter

OCI

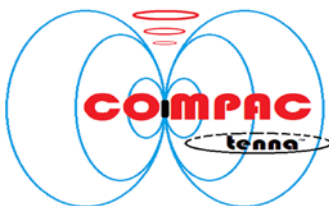


Get rid of unwanted noise and give your 2 m and/or 70 cm receiver the best front end sensitivity. Reduce the squawks and squeals of

intermod and protect from lightning. Good passband loss and out-of-band attenuation with excellent SWR. These filters are made to be transmitted through (tested to 160 watts) and are available with UHF or N connectors.
HRO Price: VHF \$179.95 | UHF \$239.95

GOT QUESTIONS? HRO HAS THE ANSWERS!

Contact your local HRO with questions about antennas, coax, connectors, filters, and more.



COMPACTenna is a family of small antennas which require no tuning and a small ground plane yielding high performance. There are antennas for mobile allowing passage into garages and drive-thrus. There are models for home use that are perfect for condos and apartments.

Mobile/HF Antennas



The photo shows the 7" 2m/220/440 model on the left and the 9" Scan-III Government bands on the right.

Model	Height	HRO Price
2m/220/440	7"	\$99.95
2m/440	7"	\$89.95
SCAN-III Govt	9"	\$114.95

NEW MODELS

2m/440 PLUS For Maximum Gain on 2m & 70cm	9"	\$109.95
LMR-1 Land Mobile Radio	9"	\$179.95

Base Antennas



Combine one of our antennas above with our Compac-Counterpoise adaptor and you now have a powerful base station antenna that fits almost anywhere. Available in SO-239 and N connectors.

Tarheel Mobile Antennas



3.5-54 MHz
**LITTLE
TARHEEL
II**

10-40 M
**BABY
TARHEEL**

When properly installed on your vehicle the Little Tarheel II will provide continuous coverage from 3.5 to 54 MHz with the supplied whip. Like all of our motorized antennas, this model meets the highest standards but in a smaller size.

It comes with sensors pre-installed so if you decide to add one of the auto controllers (SDC-100 Simple Controller, SDC-102 Programmable Controller, Turbo Tuner, and Tunematic) now or later, everything is ready.

This antenna is for the person who wants to enjoy HF mobile with a more compact antenna. Don't let the small size fool you. The Little Tarheel II mounts higher on the vehicle so you have less ground loss and higher performance. Because of its smaller size, this antenna offers the convenience of a more common type of mount like the Diamond K400 Series, the Comet Series, or similar 3/8" stud type mount.

The Little Tarheel II comes as a package. All you need is a mount and a nice HF radio. Included standard with the antenna is: the whip, 20 feet of plug and play control cable, manual control box, ferrite decoupling core, and 3/8" x 24 stud.

The antenna is powder coated in standard colors of black, white, red or silver. It also comes with the tough Lexan™ Weather Shield like its big brothers. This model also uses the commercial 12 volt gear motor.

The antenna has a **ONE YEAR NO MATTER WHAT WARRANTY** to the original owner.

Specifications:

- Lower mast size & weight: 1 1/2" & 1.9 lb.
- Lower mast length: 16".
- Whip length: 32".
- Total antenna length: 54 MHz position: 48", 3.5 MHz position: 54".
- Continuous coverage: 3.5 - 54 MHz.
- Power rating: 200 watts PEP.
- Typical SWR: 1.5 or less.

6 METER ANTENNAS



Call For Best Pricing And Availability!

Low Noise 6-Meter Loop-Fed Arrays

Cushcraft's computer optimized third generation G0KSC Loop Fed Array (LFA) yagis are specifically designed for low noise – hear weak signals that others can't!

Highly suppressed side lobes eliminate unwanted noise and signal pickup from sides making your desired signal pop out!

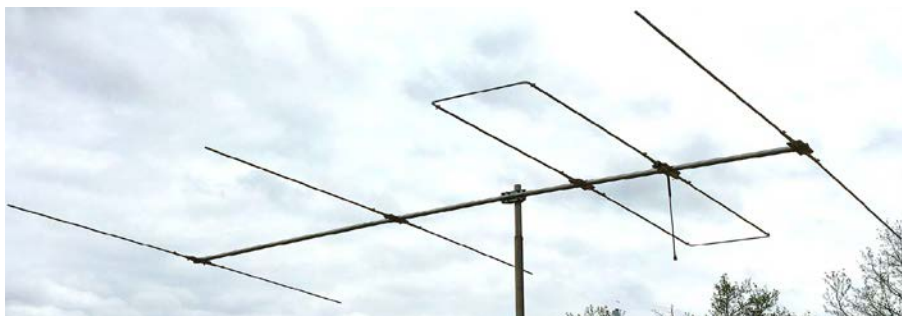
See and hear for yourself how signals pop out from a low-noise G0KSC LFA as compared to a top performing yagi at:
www.cushcraftamateur.com/LFA-6M5EL.php

Wide-spaced LFA yagis have lower SWR, higher gain, better front-to-back and are more broadband than dipole fed yagis.

Cushcraft's direct 50-ohm feed has no lossy matching network that limits power handling. These LFAs handle 5,000 watts. Your actual operational power is limited by your coax, connectors and other accessories.

Cushcraft LFAs are also computer optimized for maximum mechanical strength using exceptionally strong tooled parts to give you years of reliable service.

All Cushcraft 6 meter LFAs have heavy duty 2-inch diameter double-walled booms, 5/8" fully insulated elements, and 7/16" outer tip sections. Climb the tower only once!



LFA-6M 4EL: \$344.95



LFA-6M 7EL: \$709.95



LFA-6M 8EL: \$959.95



LFA-6M 5EL: \$429.95

6-Meter Antenna Performance

Model	LFA-6M4EL	LFA-6M5EL	LFA-6M7EL	LFA-6M8EL
Gain	10.7 dBi @ 50.15	11.88 dBi @ 50.15	13.5 dBi @ 50.15	14.09 dBi @ 50.15
F/B	35.24 dB @ 50.15	27.35 dB @ 50.15	23.8 dB @ 50.15	23.81 dB @ 50.15
Peak Gain	10.76 dBi	11.91 dBi	13.5 dBi	14.15 dBi
Peak F/B	44.78 dB	28.01 dB	26.23 dB	26.27 dB
Power Rating	5kW*	5kW*	5kW*	5kW*
SWR	<1.5:1 50-50.4	<1.5:1 50-50.3	<1.5:1 50-50.4	<1.5:1 50-50.4
Stack Distance	17.6 ft recommended	20 ft recommended	24 ft recommended	26.6 ft recommended
2 Stacked Gain	13.59 @ 17.6ft	14.78 dBi	16.28 dBi	16.94 dBi
2 Stacked F/B	25.04 dB	36.02 dB	25.19 dB	25.80 dB
Boom Length	13 ft	21 ft	33.6 ft	42 ft
Weight	8 lb	17 lb	37 lb	39 lb
Turning Radius	6' 11"	11' 4"	17' 8"	21' 4"
Wind Loading	TBA	TBA	TBA	TBA
Wind Survival	120 MPH	118 MPH	108 MPH	100 MPH

*Power handling is limited only by operating station accessories such as coax.

See www.cushcraftamateur.com for full specifications: SWR curves, patterns, gain, wind loading, wind survival, front-to-back, and more.

2 METER ANTENNAS

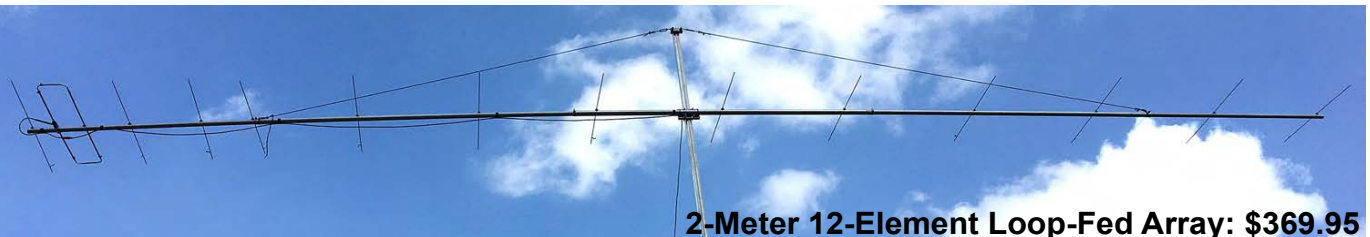


Call For Best Pricing And Availability!

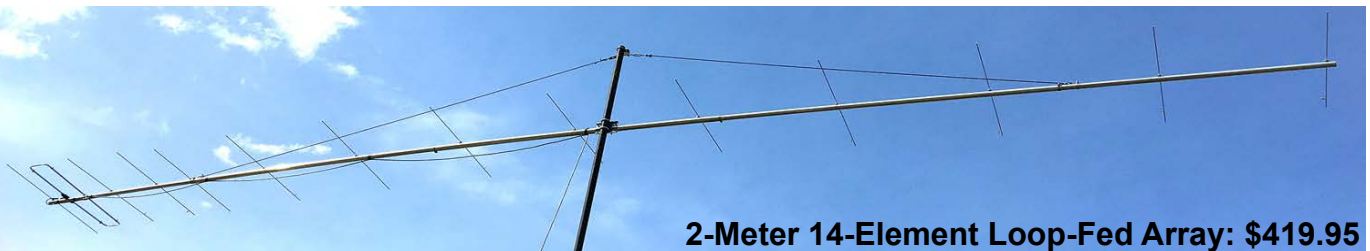
Low Noise 2-Meter Loop-Fed Arrays



2-Meter 9-Element Loop-Fed Array: \$304.95



2-Meter 12-Element Loop-Fed Array: \$369.95



2-Meter 14-Element Loop-Fed Array: \$419.95

2-Meter Antenna Performance

Model #	LFA-2M 9EL	LFA-2M 12EL	LFA-2M 14EL	LFA-2M 16EL***
Gain @ 144.1 MHz	14.04 dBi	15.79 dBi	16.56 dBi	17.25 dBi
Gain @ 144.3 MHz	14.06 dBi	15.80 dBi	16.10 dBi	17.27 dBi
F/B @ 144.1 MHz	26.39 dB	30.52 dB	31.26 dB	33.47 dB
F/B @ 144.3 MHz	25.20 dB	28.73 dB	33.86 dB	37.53 dB
Peak Gain	14.09 dBi	15.82 dBi	16.64 dBi	17.3 dBi
Peak F/B	26.67 dB	30.53 dB	34.1 dB	38.02 dB
Power Rating	3 kW*	3 kW*	3 kW*	3 kW*
SWR	<1.1:1 148.600 to 145.200 MHz	<1.1:1 143.700 to 145.900 MHz	<1.1:1 143.900 to 144.800 MHz	<1.12:1 144.000 to 144.900 MHz
Boom Length	14.5 ft	23 ft	28 ft	35 ft
Weight	7.74 lb	9.75 lb	11.75 lb	19.27 lb
Turning Radius	7.36 ft	11.7 ft	14.06 ft	18.12 ft
Wind Loading	1.03 sq ft	1.64 sq ft	2.07 sq ft	2.5 sq ft
Wind Survival	173 MPH**	109 MPH**	83 MPH**	92 MPH**
Stack Distance Vertical	7-10 ft	7-10 ft	7-10 ft	7-10 ft
Stack Distance Horizontal	7-10 ft	7-10 ft	7-10 ft	7-10 ft
2 Stacked Vertical @ 144.3 MHz	16.97 dBi	18.65 dBi	19.39 dBi	20.18 dBi
2 Stacked Horizontal @ 144.3 MHz	16.93 dBi	18.51 dBi	19.38 dBi	20.15 dBi
4 Stacked Vertical @ 144.3 MHz	20.06 dBi	21.74 dBi	22.06 dBi	23.18 dBi
Sky Temp @ 144.1 MHz	239.3 K	221.0 K	214.9 K	213.4 K
G/T Figure @ 144.1 MHz	-3.73 dB	-1.70 dB	-0.85 dB	-0.12 dB

! All off our LFA's feature

**LARGE DIAMETER BOOMS
HEAVY DUTY CONSTRUCTION
SUPER LOW NOISE
+5 kW RATED**



2-Meter 16-Element Loop-Fed Array \$504.95

* Power handling is limited only by operating station accessories such as coax.

** Other options available if higher wind loading/survivability is required.

***LFA-2M 16EL requires a 1:1 choke balun.

BASE ANTENNAS



A4S

4-element tri-band (10 / 15 / 20m) beam on an 18 ft boom, handles full legal power limit. A true high-performance tri-bander with precisely tuned high power traps, carefully selected element lengths, and proper spacing. High gain, low SWR, and wide bandwidth makes this a premium antenna choice. A744 adds on 30/40m.



A3S

Classic 3-element tri-band (10 / 15 / 20m) beam on a 14 ft boom, handles full legal power limit. Construction features included pinned boom sections, heavy duty element clamps with backing plates, and all stainless steel hardware. High power traps are still hand-made and individually tuned. A proven performer! A743 adds 30/40m.



A3WS

3-element 12/17 meter beam on a 14 ft boom with all the same construction characteristics of the A3S. Add the optional A103 for 30m.



MA-5B

5-band beam in a compact 26 lb package! Automatic band switching, easy installation, handles 1500 watts on a 7' 3" boom with less than 9 ft of turning radius. Impressive side rejection and front-to-back ratio makes this a great performing HF antenna.



A270-6S

Increase the range of your dual-band base station with a dual-band yagi. Eliminate an extra feed line, and realize extra gain for your FM digital modes. Pre-tuned 3 elements per band. Assembles in a snap. A270-10S pre-tuned 5 elements per band for even better point-to-point communications.

Contact your local Ham Radio Outlet for more information about all available Cushcraft antennas and accessories!

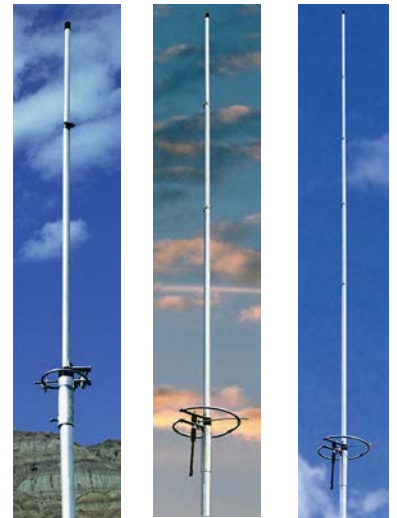
R9

6-80 meter vertical requires no radials! 1500 watts SSB / CW, no antenna tuner needed. Easy to assemble, low profile. Rugged construction. Thick fiberglass insulators, all stainless-steel hardware. 31.5 ft tall, 25 lb. Mounts to 1.25 - 2 inch mast. 4 sq ft wind surface.



R8

6-40 meter vertical requires no radials. Optional R-8TB tilt base and R-8GK three-point guy kit.



RINGOS

AR-2 (2m) / AR6 (6m) / AR10 (10m) Ringos have been around forever. These compact, FM verticals are broad banded, lightning protected, extremely rugged, economical, electrically bullet-proof, low-angle, and they work!

BASE ANTENNAS



Call For Best Pricing And Availability!

HF Antennas

Model	Bands	Ele	Fwd Gain dBi	Max F/B dB	Min SWR	Boom Length FT, M	Boom Diameter IN, CM	Longest Ele (Ht) FT, M	Turning Radius FT, M	Max Mast Dia IN, CM	Wind Surf Area SQFT, SQMT	Shipping Weight Lb, KG
MA-5B	10, 12, 15, 17, 20 m	3	5.3 10m, 1.0 12m, 4.8 15m, 1.0 17m, 3.6 20m	22	1.2:1	7.3, 2.2	1.5, 3.8	17.5, 5.3	8.8, 2.7	1 1/2, 3.8	3.22, 0.3	26.5, 12
MA-5VA	10, 12, 15, 17, 20 m	1	1-2		1.2:1			14.7, 4.48				6.5, 2.95
MA-6VA	6, 10, 12, 15, 17, 20 m	1	1-2		1.2:1			14.7, 4.48				6.5, 2.95
R6000	20 - 10 + 6 m	1	3		<1.2:1			19, 8.7		1 3/4, 4.4	1.5, 0.14	12.5, 5.6
R8	40, 30, 20, 17, 15, 12, 10, 6 m	1	3		<1.3:1			28, 7.3				23, 10.5
A3S	20, 15, 10 m	3	8	25	<1.2:1	14, 4.3	1.5, 3.8	27.8, 8.5	15.5, 4.7	2, 5.1	4.4, 0.41	30, 13.6
A743 Kit	40 m for A3				<1.2:1			35, 10.7	15.5, 4.7	2, 5.1	0.06, 0.06	7, 3.2
A3WS	17, 12 m	3	8	25	<1.2:1	14, 4.3	1.5, 3.8	25, 7.6	14.4, 4.4	2, 5.1	4.1, 0.38	26.5, 12
A103 Kit	30 m for A3WS				<1.2:1			32, 9.8	14.4, 4.4	2, 5.1	0.04, 0.04	6, 2.7
A4S	20, 15, 10 m	4	8.9	25	<1.2:1	18, 5.5	2, 5.1	32, 9.8	18.4, 5.6	2, 5.1	5.5, 0.51	38, 17.2
A744 Kit	40 m for A4S				<1.2:1			35, 10.7	18.4, 5.6	2, 5.1	0.3, 0.03	7.5, 3.4
TEN-3	10 m	3	8	25	<1.2:1	8, 2.4	1.4, 3.5	18, 5.5	9.8, 3	2, 5.1	2, 0.19	10.5, 4.8
XM240	40 m	2	6	25	1.1:1	22, 6.7	2.5, 6.3	43, 13.1	24.3, 7.4	2.5, 6.35	5.5, 0.51	59, 26.8
D-3	20, 15, 10 m	1			<1.2:1			26, 7.9	4, 1.2	2, 5.1	0.9, 0.08	11, 5
D-3W	17, 12 m	1			<1.2:1			34, 10.4	5, 1.5	2, 5.1	0.9, 0.08	13, 5.9
D-4	40, 20, 15, 10 m	1			<1.2:1			36, 11	5.5, 1.7	2, 5.1	1.3, 0.12	15.5, 7
D-40	40 m	1			<1.2:1			42, 12.8	6.5, 2	2, 5.1	1.7, 0.16	15, 6.8
AR-10	10 m	1	3		<1.2:1			17.6, 5.4		1 1/4, 3.2	1 2/3, 0.16	5, 2.3

VHF / UHF Antennas

Model	Frequency Coverage	Ele	FWD Gain dBi	Max F/B dB	Conn	Polarization HORZ, VERT	Boom Length FT, M	Longest Ele (Ht) FT, M	Turning Radius FT, M	Max Mast Dia IN, CM	Wind Surf Area SQFT, SQMT	Shipping Weight Lb, KG	HRO Price
A13B2	144-148	13	15.8	26	U	Y | Y	15, 4.6	3.4, 1	8.9, 2.7	2, 5.1	1.8, 0.17	9.5, 4.3	\$324.95
A17B2	144-145	17	18	26	N	Y | N	31, 9.4	3.4, 1	17.3, 5.3	2, 5.1	3.9, 0.36	18, 8.2	\$504.95
A224WB	222-225	4	10.2	24	U	Y | Y	3, 0.09	2.2, 0.7	3, 0.9	2, 5.1	0.23, 0.02	2.5, 1.1	\$154.95
A50-3S	50-54	3	8	20	U	Y | N	6, 1.8	9.8, 3	6, 1.8	2, 5.1	1.8, 0.17	8.5, 3.9	\$244.95
A50-5S	50-54	5	10.5	24	U	Y | N	12, 3.7	9.8, 3	7.5, 2.3	2, 5.1	2.7, 0.25	13, 5.9	\$379.95
A50-6S	50-54	6	11.6	26	U	Y | N	20, 6.1	9.8, 3	11, 3.4	2, 5.1	4.5, 0.42	22, 10	\$504.95
A148-3S	144-148	3	7.8	25	U	Y | Y	2.8, 0.9	3.3, 1	2.8, 0.9	2, 5.1	0.27, 0.03	3, 1.4	\$119.95
A148-10S	144-148	10	13.2	24	U	Y | Y	12, 3.7	3.3, 1	6, 1.8	2, 5.1	1.2, 0.11	6, 2.7	\$199.95
A148-20T	144-148	20	13	20	U	Y | Y	10.8, 3.3	3.3, 1	6.8, 2.1	1.5, 3.8	1.4, 0.13	7.5, 3.4	\$264.95
A449-6S	440-450	6	10.5	18	U	Y | Y	2.9, 0.09	1.1, 0.3	2.9, 0.9	2, 5.1	0.3, 0.03	2.5, 1.1	\$124.95
A430-11S	430-440	11		20	U	Y | Y	4.2, 1.3	1.1, 0.3	2.8, 0.9	2, 5.1	0.39, 0.04	3.5, 1.6	\$174.95
A449-11S	440-450	11	13.2	20	U	Y | Y	4.2, 1.3	1.1, 0.3	2.8, 0.9	2, 5.1	0.39, 0.04	3.5, 1.6	\$174.95
AR270	144-148	1	3		U	N | Y		3.75, 1.13		2, 5.1	0.27, 0.03	2, 0.9	\$174.95
	430-450	1	5.5		U	N | Y							
AR270B	144-148	1	5.5		U	N | Y		7.7, 2.3		2, 5.1	0.47, 0.044	2.4, 1.09	\$244.95
	430-450	1	7.5		U	N | Y							
A270-6S	144-148	3	7.8	20	U	Y | Y	2.8, 0.09	3.4, 1	2.8, 0.9	2, 5.1	0.3, 0.03	3.5, 1.6	\$189.95
	430-450	3	7.8	18	U	Y | Y							
A270-10S	144-148	5	10	20	U	Y | Y	6.2, 1.9	3.4, 1	6.2, 1.9	2, 5.1	0.73, 0.07	5, 2.3	\$229.95
	440-450	5	10	18	U	Y | Y							
A6270-13S	6m, 2m, 70cm	5	8 6m 10 2m 10 70cm	20	U	Y | Y	8.8, 2.56	9.7, 3	6.16, 1.87	2, 5.1	2.52, 0.23	9.5, 4.3	\$379.95
AR-6	50-54		3		U	N | Y		10.1, 3.1		1.25, 3.2	0.37, 0.03	4, 1.8	\$154.95
AR-2	135-160		3		U	N | Y		3.9, 1.2		1.25, 3.2	0.21, 0.02	2, 0.9	\$109.95
AR-450	440-460		3		U	N | Y		1.4, 0.42		0.75, 0.88	0.1, 0.01	2, 0.8	\$89.95
ARX-2	137-160				U	N | Y		9.3, 2.8		1.25, 3.2	0.33, 0.03	2.5, 1.1	\$124.95
ARX-2B	134-164		7		U	N | Y		14, 4.3		1.25, 3.2	0.5, 0.05	3.5, 1.6	\$174.95
ARX-220B	220-225		7		U	N | Y		9.3, 2.8		1.25, 3.2	0.3, 0.03	3, 1.4	\$174.95
ARX-450B	435-450		7		U	N | Y		5, 1.5		1, 1.5	0.2, 0.02	2, 0.9	\$154.95

BASE ANTENNAS



VHF / UHF Base Antennas

2 m Verticals

These easy-to-assemble verticals are made of aluminum and high-strength fiberglass. When disassembled the longest part is about 4'. Choose 3, 6, or 7 dB gain and the overall length that best suits your application.

G7-144

- Frequency range: 144-148 MHz.
- Gain: 7 dB.
- Bandwidth: 4 MHz.

G6-144B

- Frequency range: 143-149 MHz
- Gain: 6 dB.
- Bandwidth: 6 MHz

G3-144

- Frequency range: 144-148 MHz.
- Gain: 3 dB.
- Bandwidth: 4 MHz.

220 & 440 MHz Verticals

G7-220

The G7-220 is of similar design and construction as the G7-144. Fiberglass & aluminum.

- Frequency range: 220-225 MHz.
- Gain: 7 dB.
- Bandwidth: 5 MHz.

G6-440

The G6-440 is of similar design and construction as the G6-270R. One piece radome.

- Frequency range: 440-450 MHz.
- Gain: 6 dB.
- Bandwidth: 10 MHz.

Repeater Antennas THE SPIRIT SERIES

Hustler's omnidirectional, collinear design base station antennas are enclosed in a rugged fiberglass radome that will help minimize pattern variations due to high winds or extreme conditions. Models are available for 144, 220, 440, 900 MHz, and 1.2 GHz. The gain will be unity, 3, 6, 9, or 12 dB depending on the frequency.

Call HRO for quotes on custom frequencies.



2 m / 70 cm Dual Band G6-270R

The G6-270R is a combination G6-144B and G6-440. It is factory tuned for quick and easy installation.

- Frequency range: 144-148 MHz / 435-445 MHz.
- Gain: 6 dB.
- Bandwidth: 4 MHz – 2 m / 10 MHz – 70 cm.
- One piece radome.
- VSWR: < 1.5:1 @ resonance.

HF Base Antenna

6-BTV

10, 15, 20, 30,
40, 75 or 80 m

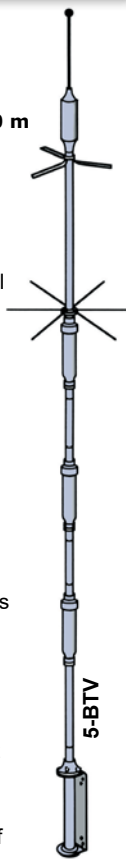
5-BTV

10, 15, 20, 40, 75 or 80 m

4-BTV

10, 15, 20, 40 m

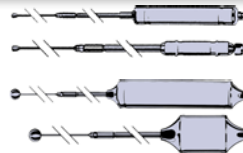
- Broadbanded, low VSWR at band edges.
- Power capability – full legal limit on SSB or CW.
- Solid one-inch fiberglass trap forms for optimum electrical and mechanical stability.
- Heavy wall, high strength aluminum tubing, heavy duty aluminum mounting bracket and low loss, high strength insulators.
- Stainless steel clamps and hardware.
- Easy assembly and tuning.
- Single line feed with any length of 50 ohm coax used as ground mount with or without radials, or elevated mount with radials.
- All the BTV's can be mounted in a piece of PVC and disguised as a flagpole in deed restricted neighborhoods.



30-MTK

30 meter add on kit for 4/5 BTV

HF Resonators



VP-1

Customize your HF mobile system with Hustler products. Resonators may be used separately on one of the masts or up to three at a time with the VP-1. Add the QD-2, springs and mounts as needed for your installation.

Switch bands automatically with any three Hustler HF resonators. Adapts any Hustler mast to tri-band operation automatically.

Hustler HF Resonators

Model	Type	Band	Power SSB	Bandwidth 2:1 SWR	Weight lb.
RM-10	STD	10M	400W	150-250KHz	0.41
RM-11	STD	11M	400W	150-250KHz	0.41
RM-12	STD	12M	400W	90-120KHz	0.41
RM-15	STD	15M	400W	100-150KHz	0.42
RM-17	STD	17M	400W	120-150KHz	0.44
RM-20	STD	20M	400W	80-100KHz	0.46
RM-30	STD	30M	400W	50-60KHz	0.84
RM-40	STD	40M	400W	40-50KHz	0.84
RM-60	STD	60M	400W		
RM-75	STD	75M	400W	25-30KHz	1.05
RM-80	STD	80M	400W	25-30KHz	1.05
RM-10-S	Super	10M	1kW	250-400KHz	1
RM-15-S	Super	15M	1kW	150-200KHz	1.2
RM-20-S	Super	20M	1kW	100-150KHz	1.25
RM-40-S	Super	40M	1kW	50-80KHz	1.8
RM-75-S	Super	75M	1kW	50-60KHz	2.1
RM-80-S	Super	80M	1kW	50-60KHz	2.1

Hustler Base Antennas

Model	Band	Gain	Connector	Height Ft.
G7-144	2 m	7 dB	N Female	16.3
G6-144B	2 m	6 dB	SO-239	9.8
G3-144	2 m	3 dB	SO-239	7.5
G7-220	1.25 m	7 dB	N Female	10.2
G6-440	70 cm	6 dB	N Female	7.3
G6-270R	2 m/70 cm	6 dB	N Female	7.6
6-BTV	10-30-80 m			24
5-BTV	10-80 m			25
4-BTV	10-40 m			21.4

VHF/UHF Mobile Antennas

Model	Band	Gain	Power	Mount
LMC-270	2 m/70 cm	2.4/4	100	NMO
MX-270	2 m/70 cm	2.4/4	100	Mag
LMG-144	2 m	3.4	200	NMO
BBG-144	2 m	3.4	200	NMO
BBG-440-5	70 cm	5	200	NMO
BBGT-144	2 m	3.4	200	Trunk
MX-220	1.25 m	3.4	200	Mag
MX-2B	2 m	3.4	200	Mag
MX-440B	70 cm	3.4	200	Mag
SF-2	2 m	3.4	100	3/8 x 24
SF-220	1.25 m	3.4	100	3/8 x 24
RX-2	2 m	3.4	100	Mag
RX-220	1.25 m	3.4	100	Mag
RX-440	70 cm	5	100	Mag
CG-144	2 m	5.2	200	3/8 x 24
CG-220	1.25 m	5.2	200	3/8 x 24
CGT-144	2 m	5.2	200	Trunk
CGT-220	1.25 m	5.2	200	Trunk
THF	140-500	Unity	200	Trunk
UGM	140-500	Unity	25	Mag

MOBILE ANTENNAS/MOUNTS

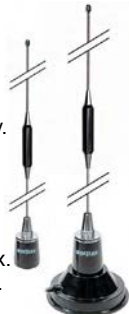
VHF / UHF Mobile Antennas

Dual Band

Dual band models for 144/440 MHz give you 2.4 dB / 4 dB gain. The antennas are rated at 100 watts.

LMC-270

- NMO style coil.
- Chrome top.
- Coil and whip only.



MX-270

- NMO style magnetic mount.
- Chrome top.
- 17 ft RG58/U coax.
- PL-259 connector.

Magnetic Mounts

Models for 144, 220, and 440 MHz are power rated for 200 watts. Each has an NMO-style coil and a magnetic mount.

MX-2 144 MHz 3.4 dB gain

MX-220 ...220 MHz..... 3.4 dB gain

- Chrome top.
- 10 oz magnet.
- 17 ft RG58/U coax.
- PL-259 connector.

MX-2B 144 MHz 3.4 dB gain

MX-440-5B440 MHz.....5.0 dB gain

- Same as above but all black coil

Collinear

Collinear models for 144 MHz and 220 MHz provide 5.2 dB gain. They are power rated for 200 watts. All have a swivel ball for vertical positioning.

CG-144 6 MHz bandwidth

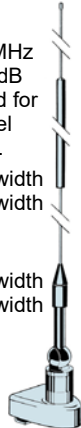
CG-220 4 MHz bandwidth

- 3/8" x 24 thread.
- 5/8 over 1/4 wave.

CGT-144 6 MHz bandwidth

CGT-220 4 MHz bandwidth

- Trunk mount base.
- 17 ft RG58/U coax.
- PL-259 connector.



Unity Gain

An antenna to custom trim as needed for VHF or UHF frequencies. Covers 140-500 MHz.

THF

Trunk Lip Mount

UGM

Magnet Mount



Coil and Whip

Models for 144 or 440 MHz are power rated for 200 watts. NMO-style coil on each requires an NMO mount.

LMG-144-3 3.4 dB gain

- Chrome top and bottom.
- Contact-silver painted push pin.

BBG-144 3.4 dB gain

BBG-440-5 5.0 dB gain

- Chrome top, swivel ball, and spring

BBGT-144 3.4 dB gain

- Includes trunk mount
- 17 ft RG58/U coax
- PL-259 connector



5/8 Wave

Base-loaded 5/8 wave models for 144 MHz, 220 MHz, and 440 MHz are power rated for 100 watts.

SF-2..... 144 MHz 3.4 dB gain

SF-220.. 220 MHz 3.4 dB gain

- 3/8"x24 thread.
- Mount to any Hustler mount.



SF-2

RX-2 144 MHz .. 3.4 dB gain

RX-220 .. 220 MHz .. 3.4 dB gain

..... 440 MHz .. 5.0 dB gain

- 3 oz magnetic mount.
- 15 ft RG-58/U coax.
- PL-259 connector.



RX-2

Accessories

Radial Kit MKR-2

Used to convert RX Series, SF Series, & CG Series to fixed station operation. Contains three radials. Mount can accept any 3/8" x 24 threaded mount.



Quick Disconnect QD-2

Remove antennas easily with a push and twist release. Compression design of 100% stainless steel. 3/8" x 24 threads.

Mobile Mounts

• **BM-1** Bumper mount with stainless steel strap and 1" diameter ball with 3/8 x 24 threads.



BM-1

• **MBM** Powerful 5" diameter magnet with 3/8 x 24 threads. 16' of RG58U coax with PL-259 connector.



MBM

• **SSM-1** Heavy duty ball mount with 4" stainless steel spring with copper braided center conductor to prevent detuning. 180 degree adjustable.



SSM-1

• **SSM-2** Heavy duty 2" diameter stainless steel ball mount. 180 degree adjustable. Accepts 3/8 x 24 antennas.

• **SSM-3** Heavy duty stainless steel 4" spring with 3/8 x 24 coupling stud. Copper braided center conductor to prevent detuning.

• **C-32** Chrome plated 1" ball mount. Accepts 3/8 x 24 antennas.



C-32

• **C-29** Stainless steel 4" spring. Copper braided center conductor to prevent detuning.



CHMB



CMMA



CTMA

• **C-30** Chrome plated 4" spring. Copper braided center conductor to prevent detuning.



C-30

• **RSS-2** Stainless steel 3" spring. Used for mobile antennas between resonator and mast. Copper braided center conductor to prevent detuning. Accepts 3/8 x 24 antennas.

• **HLM** Trunk lip mount designed for hatch and slanted back vehicles. 180 degree 1" diameter ball, which accepts 3/8 x 24 antennas. RG58U coax with PL-259 connector.



• **HOT** Trunk lip mount with easy off/on with thumb knob. 180 degree 1" diameter ball, which accepts 3/8" x 24 antennas. RG58U coax with PL-259 connector.



• **TLM** Trunk lip mount which accepts 3/8 x 24 antennas. RG58U coax with PL-259 connector.



• **RVM** Recreational vehicle mount with heavy duty bracket. Easy antenna removal or lay down with thumb knob. 1" ball accepts 3/8" x 24 antennas. RG58U coax with PL-259 connector.



All mounts below are supplied with 17' RG-58U cable.

CHMA..... 3/8" Hole mount without connector

CHMA-B..... 3/8" Hole mount w/crimp-on BNC

CHMA-P 3/8" Hole mount w/crimp-on PL-259

CHMB..... 3/4" Hole mount without connector

CHMB-B..... 3/4" Hole mount w/crimp-on BNC

CHMB-P 3/4" Hole mount w/crimp-on PL-259

CMMA NMO 10 oz mag w/solder-on PL-259

CTMA NMO Trunk mount without connector

CTMA-P..... NMO Trunk mount w/crimp-on mini UHF

Mobile Masts

Fold-Over MO-1

Mobile mast 54" high for bumper, fender or hitch mounting. Folds over at 15" above base. 3/8 x 24 threaded.

Fold-Over MO-2

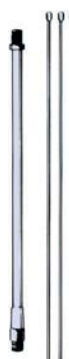
Mobile mast 54" high for bumper, fender or hitch mounting. Folds over at 27" above base. 3/8" x 24 threaded.

Solid Mast MO-3

Mobile mast 54" high for bumper, fender or hitch mounting. Solid aluminum with white vinyl coating. 3/8 x 24 threaded.

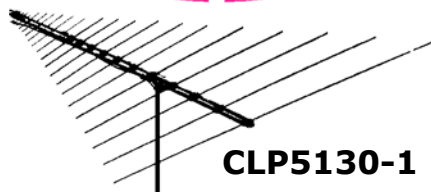
Solid Mast MO-4

Mobile mast 22" high for trunk or deck mounting. Three retuning tip rods included. 3/8" x 24 threaded.



SWL/SCANNER/HF/HT ANTENNAS

Log Periodic



CLP5130-1

The CLP5130 antennas are high gain, wide band VHF/UHF log periodic beams for horizontally polarized base station use. Covers amateur bands from 50-1300 MHz, FM broadcasting, scanning, VHF / UHF TV, air band communications, government and business bands.

Forward gain is 10 to 12 dB – 10 to 16 times the gain of a non-directional discone type antenna. The VSWR is less than 2.0:1 across the band. The high-quality aluminum antennas have a boom design that allows movement of the phasing line. Distortions in the vertical and horizontal planes are minimized and element adjustment is not necessary. The boom-to-mast bracket is made of a lightweight and rugged magnesium alloy.

Create Antennas

	CLP 5130-1	CLP 5130-2
Frequency	50-1300 MHz	108- 1300 MHz
No. Elements	23	19
Power PEP	500 W	500 W
Forward Gain	10-12 dBi	10-12 dBi
Front/Back	15 db	15 db
Longest Element	9' 10"	4' 6"
Boom Length	5' 9"	4' 6"
HRO Price	\$459.95	\$369.95

Discone Antennas



MFJ

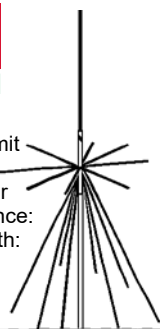
MFJ-1868

Ultra wide-band antenna receives 25-1300 MHz. Perfect for scanners. Transmit 50-1300 MHz. Handles 200 W. Ideal for 2 / 6 meters, 220 /

440 MHz. Includes SO-239 connector, 50' coax, stainless steel elements and mounting hardware. **HRO Price: \$84.95**

DIAMOND ANTENNA
Super Wideband D-130J/NJ

Monitor 25-1300 MHz. Transmit on 50, 144, 430, 1200 MHz. All stainless steel. Input power 200 watts maximum. Impedance: 50 ohms. VSWR: 1.5:1. Length: 1.7 meters. Mounts on 1" to 2" masts. D-130 UHF and D-130NJ Type-N connector.



HRO Prices: D-130J or D-130NJ \$124.95

C★MET
Wideband RX/TX DS-150S

Extremely wideband scanner/receive antenna. Perfect for RX on 25MHz to 1300MHz. You can also TX on 6/2/220/440/900/1200MHz. Includes 65 feet of RG-58A/U coax with PL-259 connectors installed.

HRO Price: \$119.95



DIAMOND ANTENNA

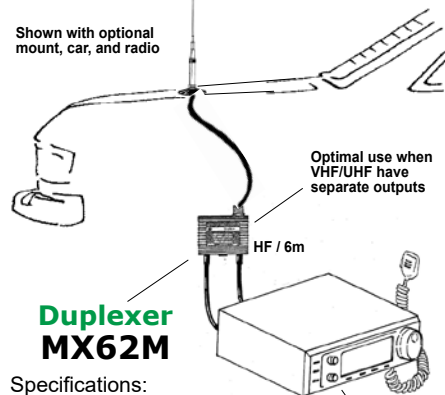
Mobile Antenna System for HF/VHF Transceivers HV7A

HV7A

Five band capability: 70 cm, 2 m, 6 m and 2 HF bands through use of loading coils. Fold-over feature allows for easy access into low overhead buildings.

Bands Supplied: 10m / 6m / 2m / 70cm
Opt. Loading Coils: 40m / 20m / 17m / 15m
Power, PEP: HF 120W / VHF 200W
Mount Connection: UHF
Length: 54" (HV7A)
SWR: 1.5:1 nominal
HRO Price: \$129.95

Shown with optional mount, car, and radio



Optimal use when VHF/UHF have separate outputs

Duplexer MX62M

Specifications:

- HF / 6m, 2m, 70cm duplexer
- 1.6-56 MHz LPF
- 76-470 MHz HPF
- (76-120 receive only)
- Watts: 600 PEP.
- 2 dB LPF Loss
- 3 dB HPF Loss
- Isolation: 50 dB

HRO Price: \$69.95

Optional Loading Coils

HVC14 20m \$37.95
HVC18 17m \$37.95
HVC21 15m \$37.95

Use with HF/VHF mobile transceivers such as the IC-7100, FT-891, or combine 2m and HF rigs.

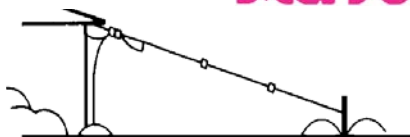
SWL Antennas

ALPHA DELTA

DX-SWL-S

Requires only a single elevated support 25' or higher. DX-SWLs Frequency Coverage: 90m (3.2-3.5 MHz) 60m (4.75-5.0 MHz) 49m (5.95-6.2 MHz) 41m (7.1-7.3 MHz) 31m (9.5-9.9 MHz) 25m (11.65-12.05 MHz) 21m (13.6-13.8 MHz) 19m (15.1-15.6 MHz) 16m (17.55-17.9 MHz) 13m (21.45-21.85 MHz) This antenna is a "no-trap" design using the same components and "ISO-RES" coil design as used in other Alpha Delta designs. Includes insulators, support rope and static electricity protector. Antenna is only 40 feet long.

HRO Price: \$139.95

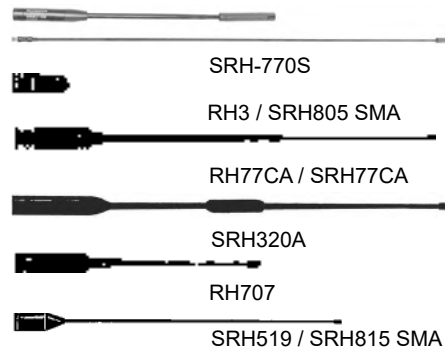


DX-SWL

The DX-SWL is tuned for the most popular SWL bands (13, 16, 18, 19, 21, 25, 31, 41, 49, 90 and 120 meters). It can be used as a multi-band transmit antenna with the appropriate antenna tuner. Length is 60 feet. Requires a single support. Standard coax connects antenna to your radio. Feed point is 50 ohms. SO-239 connection. **HRO Price: \$139.95**

Handheld Antennas

Upgrade the RX/TX performance of your HT. A definite improvement over the stock antenna.

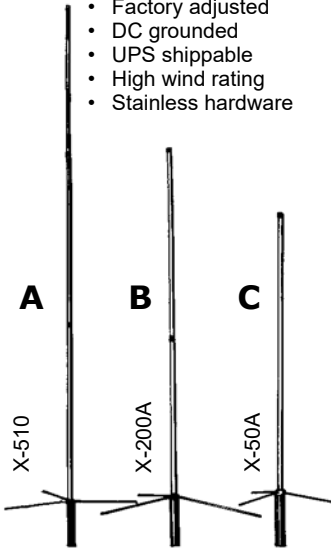


DIAMOND ANTENNA

The Standard by Which All Others are Judged

Base Antennas*

- Wide-band performance
- Highest gain
- Fiberglass radome
- Factory adjusted
- DC grounded
- UPS shippable
- High wind rating
- Stainless hardware



Model	Bands	Gain, dBi	Watts	Connector Type	Weight (lb)	Length (ft)	MPH (no ice)	Fig	HRO Price
A502HB	6m Yagi 2 element	6.3 dBi	400 PEP	UHF	3.75	2.6			\$129.95
A144S5	2m Yagi 5 element	6.0 dBi	100 PEP	UHF	1.4	3.1			\$69.95
A430S10	70cm Yagi 10 element	13 dBi	100 PEP	UHF	1.4	3.6			\$74.95
A430S15	70cm Yagi 15 element	14.8 dBi	100 PEP	UHF	2.15	7.4			\$94.95
CP-22E	2m	6.5	200	UHF	3	9	90	B	\$64.95
CP-5HS (2)	40/20/15/10/6m		200	UHF	6.6	11.75	80		\$379.95
CP-62	6m	5.5 dBi	200	UHF	9	22	80		\$219.95
CP-610	10/6m	5.5/3.4 dBi	200	UHF	9	22	80		\$264.95
F-22A	2m	6.7	200	UHF	5	10.5	112	B	\$102.95
F-23H	144-174 tunable	7.8	350	UHF	5	15	90	A	\$159.95
F-718	70 cm	11.5	250	N	5	15	90	A	\$199.95
MG-200	2.4 GHz	11		N	3	6	135	C	\$59.95
V2000A (1)	6m/2m/70cm	2.1/6.2/8.4	150	UHF	4	8.3	110	B	\$159.95
X-30A	2m/70cm	3.0/5.5	150	UHF	2	4.5	135		\$69.95
X-50A	2m/70cm	4.5/7.2	200	UHF	3	5.6	135	C	\$99.95
X-50NA	2m/70cm	4.5/7.2	200	N	3	5.6	135	C	\$99.95
X-200A	2m/70cm	6.0/8.0	200	UHF	4	8.3	112	B	\$129.95
X-300A	2m/70cm	6.5/9.0	200	UHF	4	10	112		\$144.95
X-300NA	2m/70cm	6.5/9.0	200	N	4	10	112	B	\$144.95
X-510HDM	2m/70cm	8.3/11.7	330/250	UHF	5	17.2	90	A	\$199.95
X-510HDN	2m/70cm	8.3/11.7	330/250	N	5	17.2	90	A	\$199.95
X-510NJ	144/430	8.3/11.7	200	N	5	17.2	90	A	\$209.95
X-6000A	2m/70/23cm	6.5/9.0/10.0	100	N	5	10	112	B	\$189.95
BB7V	2-30 MHz		250	UHF	6	5/22	80		\$384.95
CP6AR	75/40/15/10/6m		200	UHF	9.9	15.1	80		\$449.95

All base antennas grounded for lightning protection. Factory adjusted for American amateur bands, no tuning required.
*Most longer base antennas require additional freight. This applies to ALL Diamond Base Antennas

1. 52-54 MHz only. DPGH62 is adjustable from 50-54 MHz
2. 28/50 MHz 400 W PEP, 14/21 MHz 400 W PEP, 7 MHz 200 W PEP

Handheld and Receiving Antennas

Model	Description	HRO Price
D-130J	Wideband discone 25-1500 MHz. 20 W Transmit 50-1300 MHz. 100 W 144-3000 MHz, No cable.	\$124.95
D-130NJ	Wideband discone 25-1500 MHz. 20 W Transmit 50-1300 MHz. 100 W 144-3000 MHz, No cable, Type N.	\$124.95
D-3000N	Wideband discone RX 25-3000 MHz, TX 50-1300 MHz 20 W 50 MHz, 20 W transmit 50 MHz. 100 W 144-1300 MHz, 67" tall, Type N	\$154.95
RH-3	2m/70cm dual-band HT antenna. 1.75" BNC. 120-900 MHz receive	\$26.95
RH-77CA	High gain 2m/70cm dual-band HT antenna. Receive range to 900 MHz. BNC	\$22.95
RHF-10	144/440. Air band 6W. Receive only 150/300/450/800/900 MHz. BNC	\$22.95
RHF-40	Super flexible version of Model RH-77CA	\$27.95
SRHF-40	Super flexible 15" tail SMA 144/440 MHz HT antenna	\$26.95
RH-205	2m HT antenna, telescopic, 5/8 fully extended, 47.5"; 1/4 retracted, 9".	\$26.95
RH-519	2m/70cm slim dual-band HT antenna. Flexible. 8" BNC, 10 watts.	\$23.95
RH-707	2m/70cm dual-band, tiltable whip HT antenna. 8-1/4" BNC.	\$29.95
SRHF10	HT antenna, 144/440 MHz. Air Band 6W, SMA, Receive only 150/300/450/800/900 MHz	\$21.95
SRJF-10	144/440 MHz, Air Band 150/300/450/800/900 MHz (Receive only), 2.75", 6W, SMA(F) 1/4 wave length	\$21.95
SRH-519	2m/70cm slim dual-band HT antenna. Flexible. 8" SMA, 10 watts.	\$24.95
SRH-77CA	High gain 2m/70cm dual-band flexible HT antenna, SMA	\$22.95
SRH-770S	2m/70cm, 10W max, SMA-P, 2m 3/8 wave 2.15dBi, 70cm 3/4 wave 4.5dBi	\$34.95
SRJ-77CA	Same as SRH-77CA for Wouxun, SMA. Reverse SMA.	\$24.95
SRH-229	For Alinco DJ-G29T. High gain, flexible whip, 13", 220-900 MHz, 10W, 4dB, SMA	\$29.95
SRH-320A	2m/1-1/4m/70cm tri-band HT antenna. Flexible. SMA. 10 watts	\$46.95
SRH-789	Telescoping handheld antenna 95-110 MHz, 6 sections, folds at base	\$33.95
RH-789	Same as SRH-789 but BNC connector	\$32.95
SRH-805	2m/70cm/23cm tri-band HT antenna. 1.75" SMA, 10 watts.	\$26.95
SRH-815	2m/70cm/23cm tri-band HT antenna. Flexible. 6" SMA, 6 watts.	\$32.95
SRH-940	6m/2m/440 MHz SMA HT antenna	\$34.95
SRH-999	6m/2m/70cm/23cm quad-band HT antenna. Flexible. 21 1/4" SMA, 10 watts.	\$54.95

Specialty Antennas

High Power 2 m/ 70 cm

Dual-band mobile antenna. 300 watts (2m) and 250 watts (70cm). Use K400 and K600 series mounts. **NR7900A HRO Price: \$84.95**

Quad Band FM

10m/6m/2m/70cm quad FM antenna for FT8900R radio or multi radio applications. Use K400 and K600 series mounts. **CR8900A HRO Price: \$114.95**

2 m/ 70 cm Mobile

Ideal antenna for increased performance of HT radio or where a compact antenna is required. Magnetic mount base. 1/4 wave (2m) and 1/2 wave (70cm), black finish. Available in UHF or SMA cable configuration. **MR77 / MR77SMA HRO Price: \$37.95**

2 m/ 70 cm Mobile

NR-770HRKS HRO Price: \$114.95

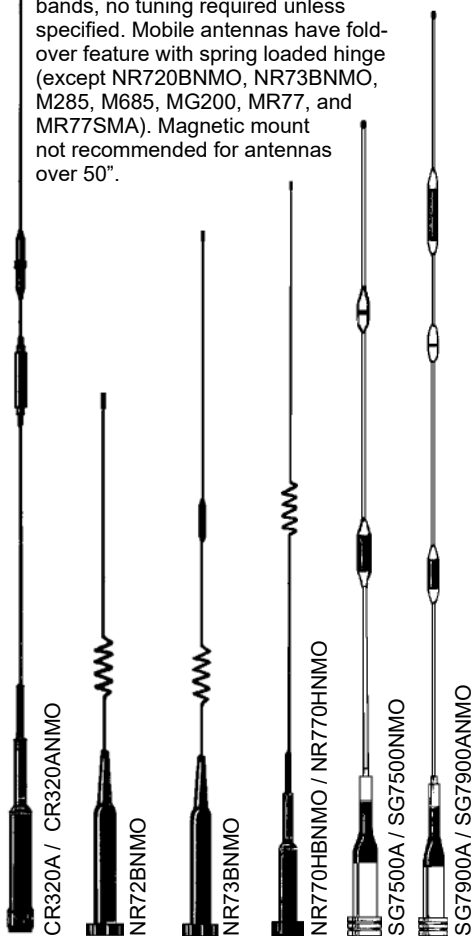


ANTENNAS/DUPLEXERS

DIAMOND
ANTENNA

Mobile Antennas

Factory adjusted for American amateur bands, no tuning required unless specified. Mobile antennas have fold-over feature with spring loaded hinge (except NR720BNMO, NR73BNMO, M285, M685, MG200, MR77, and MR77SMA). Magnetic mount not recommended for antennas over 50".



Antennas

Model	Bands	Gain dB	watts	Mount	Length (in)	HRO Price	
AZ504SP	2m/70cm	2.15 dBi	50	UHF	15.5	\$39.95	
AZ507RSP	2m/70cm	2.15(2m) 4.9(70cm)	50	UHF	27.5	\$47.95	
CR320A* (4)(6)	2m/1-1/4m/70cm	2.1/3.8/5.5	100	UHF	36	\$79.95	
CR320ANMO* (4)(6)	2m/1-1/4m/70cm	2.1/3.8/5.5	100	NMO	36	\$79.95	
CR627B* (4)(5)	6m/2m/70cm	2.1/4.5/7.2	150	UHF	60	\$89.95	
CR8900A (4)(7)(FM Only)	10m/6m/2m/70cm	2.15(2m) 5.5(70cm)	60	UHF	50	\$114.95	
D220 discone	100-1600 MHz		2	50	PL-259	35.5	\$109.95
MG200 (7)	2.4 GHz	7		N	23.6	\$59.95	
HF6FX (4)(7)	6m	2.15	250	UHF	44	\$69.95	
M285 (4)(8)	2m	3.4	200	UHF	52.4	\$31.95	
M285SNMO (4)(8)	2m	3.4	200	NMO	52.4	\$33.95	
MR75S Mag Mt	2m/70cm	2.15/3.4	35	SMA	20	\$36.95	
MR75SJ Mag Mt	2m/70cm	2/2.4	35	SMA	20	\$36.95	
MR77* (7)	2m/70cm	2.15/3.4	70	†	20	\$37.95	
MR77SMA* (7)	2m/70cm	2.15/3.4	70	**	20	\$37.95	
MR77SJ Mag Mt	2m/70cm	2.15/3.4	70	SMA	20	\$37.95	
M685S (4)(7)	6m	2.15	200	UHF	52.4	\$34.95	
M685SNMO (4)(7)	6m	2.15 dBi	200	NMO	52.4	\$34.95	
NR124N	23cm	8.4	100	Type N	25	\$54.95	
NR140BNMO	1-1/4m	4	159	NMO	36.2	\$46.95	
NR22LH (4)	2m/70cm	6.5	100	UHF	96.8	\$74.95	
NR2000NA	2m/70cm	3.15/6.3/9.7	100	N	39	\$84.95	
NR-72BNMO* (4)(7)	2m/70cm	2.1/2.1	100	NMO	14	\$39.95	
NR-73BNMO*	2m/70cm	2.1/5.3	100	NMO	33	\$55.95	
NR-770HA	2m/70cm	3.0/5.5	200	UHF	40	\$54.95	
NR-770HBNMO	2m/70cm	3.0/5.5	200	NMO	41	\$54.95	
NR-770HB*	2m/70cm	3.0/5.5	200	UHF	40	\$54.95	
NR-770HBNMO*	2m/70cm	3.0/5.5	200	NMO	41	\$54.95	
NR-770HRKS (9)	2m/70cm	3.0/5.5	200	UHF	40.2	\$114.95	
NR-7900 (4)	2m/70cm	3.7/6.4	300/250	UHF	57	\$84.95	
SD330 Screwdriver	3-20 MHz		200	UHF	73	\$399.95	
SG7000A (4)(7)	2m/70cm	2.1/3.8	100	UHF	18	\$69.95	
SG7500A	2m/70cm	3.5/6.0	150	UHF	41	\$72.95	
SG7500NMO	2m/70cm	3.5/6.0	150	NMO	42	\$72.95	
SG7900A (4)	2m/70cm	5.0/7.6	150	UHF	60	\$109.95	
SG7900ANMO (4)	2m/70cm	5.0/7.6	150	NMO	62	\$114.95	

* Black anodized finish.

† Mag mount with 13' RG58 cable w/UHF.

** Mag Mt w/13' RG58 cable w/SMA.

4. Magnetic mounts not recommended. Vehicle ground required.

5. 52-54 MHz only.

6. 100 watts on 1-1/4 m; 200 watts on 2m and 70cm.

7. Gain rated in dBi.

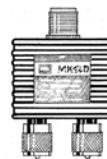
8. Tunable from 144-174 MHz.

9. Black with adhesive-backed mount.

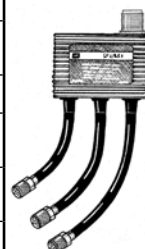
Duplexers and Triplexers

Model	Port	Freq MHz	CW watts	PEP watts	Loss dB	Isol. dB	MIX Conn.	Port Conn.	HRO Price
MX-37	LPF HPF	1.6-470 900-1300		100 50	.25 .45	45	N-Jack (F)	PL-259/12" cable N-Male/12" cable	\$59.95
MX-62M	LPF HPF	1.6-56 76-470		200 200	.2 .2	50 50	SO-239	PL-259/12" cable PL-259/12" cable	\$69.95
MX-72D	Similar to MX-72H, but direct connection								\$46.95
MX-72H	LPF HPF	140-150 400-460	150 100	150 100	.1 .2	60 60	SO-239	PL-259/12" cable PL-259/12" cable	\$49.95
MX-72N	Similar to MX-72H, but Type-N on UHF port								\$49.95
MX-72A	Similar to MX-72H, but Type-N on MIX Conn.								\$54.95
MX-214	LPF HPF	140-150 220-225		300 200	.3 .4	40 40	SO-239	PL-259/12" cable PL-259/12" cable	\$49.95
MX-324	LPF BPF HPF	1.6-150 220-225 400-550		800 600 500	.3 .4 .4	40 40 40	SO-239	PL-259/12" cable PL-259/12" cable PL-259/12" cable	\$89.95
MX-610	LPF HPF	1.3-30 49-470		600 500	.2 .25	45 45	SO-239	PL-259/12" cable PL-259/12" cable	\$69.95
MX-2000	LPF BPF HPF	1.6-60 110-170 300-950		800 800 500	.15 .20 .25	60 60 60	SO-239	PL-259/12" cable PL-259/12" cable PL-259/12" cable	\$84.95
MX-3000	LPF BPF HPF	1.6-160 350-500 850-1300		800 400 200	.15 .25 .30	55 55 55	N-Jack (F)	PL-259/12" cable PL-259/12" cable N-male/12" cable	\$79.95
MX-3000N	Similar to MX3000, but with Type-N male on BPF connection								\$89.95

MX-72D



MX-324
MX-2000
MX-3000
MX-3000N



MX-72H
MX-72N
MX-62M
MX-610



ACCESSORIES & MOUNTS

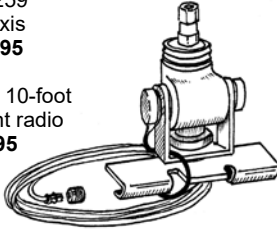
**DIAMOND
ANTENNA**

Special Trunk Mount for 3/8 x 24 thread antennas K400-3/8C

Here's the ideal mounting system for Little Tarheel, Hamsticks™, and other medium weight antennas. A spring is recommended for stiff or heavy antennas.

Power: 350 watts RMS
Cable: 6 1/2' RG316 Teflon® coax
Connector: PL-259
Adjustment: 2 axis
HRO Price: \$73.95

Note: Use C110, 10-foot extension for front radio installation. **\$19.95**



Diamond Accessories

Model	Description	HRO Price
SP-1000	Lightning Protector DC-1000 MHz, Max Power 400 W PEP, SO-239, VSWR <1.2	\$29.95
SP-1000PW	Lightning Protector DC-1000 MHz, Max Power 400 W PEP, SO-239, PL-259, VSWR <1.2	\$34.95
SP-3000P	Lightning Protector DC-3000 MHz, Max Power 400 W PEP, Type-N(F), Type-N(M), VSWR <1.2 Waterproof	\$41.95
SP-3000W	Lightning Protector DC-3000 MHz, Max Power 200 W PEP, Type-N, VSWR <1.2 Waterproof	\$41.95
MGC-50	Window feedthru assembly, HF-50 MHz 50 W, 2m 40 W, 440 MHz 30 W, 1200 Hz 10 W, SO-239	\$54.95
CX-210A	Heavy duty wideband coax switch, DC-1000 Mhz. 1.5 kW, UHF(F) to UHF(F) Waterproof	\$56.95
CX-210N	Heavy duty wideband coax switch, DC-1500 MHz. 1.5 kW, N connector.	\$79.95
CX-310	Heavy duty 3 position coax switch, wideband. DC-800 MHz. SO-239 connectors.	\$92.95
DL-30A	Dummy load. DC-500 MHz, 15 W RMS (max)/100 W peak. PL-259 connector.	\$39.95
DL-30N	Dummy load. DC-1500 MHz, 15 W RMS (max)/100 W peak. Type N connector.	\$59.95
D38-24	UHF to 3/8-24 Adapter	\$19.95
SS-770R	Phasing harness, 114 MHz, 430 MHz, Input SO-239, Output x2 PL-259	\$74.95

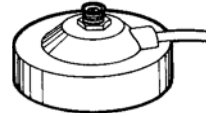
Mobile Mounts

Model	Description	HRO Price
C101	UHF base 6.5' RG316 Teflon coax w/PL-259	\$39.95
C101NMO	NMO base 6.5' RG316 Teflon coax w/PL-259	\$39.95
C101-3/8C	Replacement cable only for K400-3/8C	\$34.95
C101-3/8C Kit	Replacement cable and hardware for K400-3/8C	\$44.95
C104SMA	4' RG58/U Extension cable for PL-259. 90 degree SMA Male & SO-239	\$16.95
C105SMA	5' RG58/U Extension cable for C101/C101NMO. 90 degree SMA Male	\$16.95
C110BNC	10' RG316 Extension cable for C101/C101NMO. Use front radio installations. BNC male	\$29.95
C110SMA	10' RG316 Extension cable for C101/C101NMO. Use front radio installations. SMA male	\$29.95
C110	10' mini-8/RG8X extension cable for C101/C101NMO. Use front radio installations.	\$19.95
C211	Combination of C101 and C110. 16.5 feet cable assembly	\$49.95
C213S	UHF base, 13.5' RG316 Teflon Coax with PL-259	\$44.95
C213SNMO	NMO base, 13.5' RG316 Teflon Coax with PL-259	\$45.95
CRM	Stainless steel right angle mount with U-bolt	\$16.95
DPK-4NM-N	Type N Magnet. 13.5mm coax w/type-N plug. Good to 1300 MHz.	\$54.95
HRKS	Adhesive backed UHF mount, 13.5' RG316 teflon coax with SMA and PL-259 adapter	\$71.95
K400-3/8C*	Special mount for 3/8x24 thread antenna. 6.5 feet RG316 w/PL-259	\$73.95
K400C*	Deluxe mount with UHF type base. 6.5 feet RG-316 Teflon coax w/PL-259	\$73.95
K400CNMO*	Deluxe mount with NMO type base. 6.5 feet RG-316 Teflon coax w/PL-259	\$73.95
K400S	Deluxe mount with UHF type base. 13.5 feet RG316 w/SMA (PL-259 adapter included)	\$79.95
K400SNMO	Deluxe mount with NMO type base. 13.5 feet RG316 w/SMA (PL-259 adapter included)	\$79.95
K412C	Trunk/hatchback mount. UHF base, 6.5' Teflon coax w/PL-259. 45" max	\$64.95
K412CNMO	Trunk/hatchback mount. NMO base, 6.5' Teflon coax w/PL-259. 45" max	\$67.95
K412S	Trunk/hatchback mount. UHF base, 13.5' RG316 coax w/SMA (PL-259 adapter included)	\$71.95
K412SNMO	Trunk/hatchback mount. NMO base, 13.5' RG316 coax w/SMA (PL-259 adapter included)	\$69.95
K515S	Deluxe luggage carrier mount. UHF base. 13.5 ft RG316 w/SMA (PL-259 adapter included)	\$69.95
K515SNMO	Deluxe luggage carrier mount. NMO base. 13.5 ft RG316 w/SMA (PL-259 adapter included)	\$69.95
K540KM	Deluxe Mirror/Luggage rack mount. Black, adjustable. 13' RG58C/U with PL-259	\$59.95
K550KM	Deluxe mini van luggage rack mount. Black, adjustable. 13' RG58C/U with PL-259	\$69.95
K550L	Oversize version of K550	\$47.95
K600M	Tilt angle (0-9 degrees) trunk mount. Black. RG-188 and low loss 7mm cable.	\$64.95
K600S	Tilt angle (0-9 degrees) trunk mount UHF base. 13.5 ft RG316 with SMA (PL-259 adapter included)	\$62.95
K702M	Deluxe low-profile magnet/suction mount. 6.5" diameter, 13' RG58 & PL-259	\$58.95
K9000LRM	Motorized mount for luggage rack. Use C-series cable assemblies	\$109.95
K9000LRMO	Same with oversize K515 hardware	\$109.95
K9000TM	Motorized mount for trunk lid. Use C-series cable assemblies	\$109.95
SPM-35	UHF type base on heavy 1.5 lb/4" magnet, 13.5mm coax with PL-259	\$49.95
SPM-NMO	NMO type base on heavy 1.5 lb/4" magnet, 13.5mm coax with PL-259	\$49.95



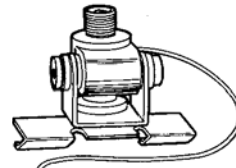
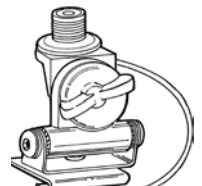
**SPM-35
SPM-NMO
DPK-4NM-N**

K702M

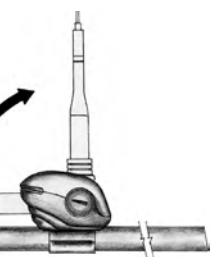


**K600M
K600S**

**K412CNMO
K412SNMO
K412C
K412S**



**K9000
Motorized
Mount**

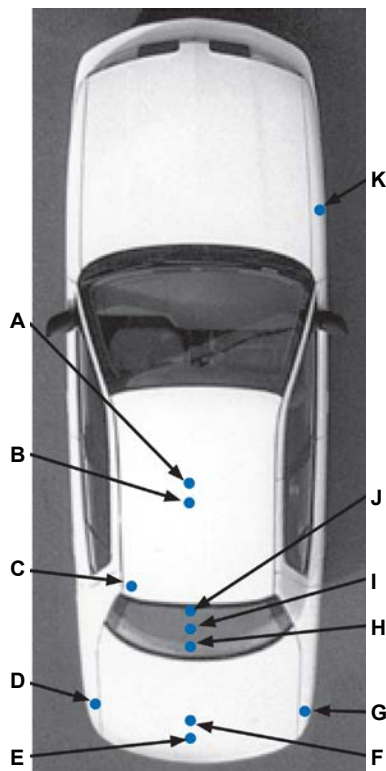


MOBILE ANTENNAS



Placement of Your Larsen Mobile Antenna

Placement of your Larsen Mobile Antenna is important to ensure proper performance. We recommend the following placement areas.



- A. MAGNETIC MOUNT**
Center of roof.....-0.2dB
- B. PERMANENT MOUNT (Reference Antenna)**
Center of roof.....0.0dB
- C. MAGNETIC MOUNT**
Corner of roof-0.2dB
- D. MAGNETIC MOUNT**
Trunk corner-3.4dB
- E. MAGNETIC MOUNT**
Center of trunk.....-2.1dB
- F. PERMANENT MOUNT**
Center of trunk.....-2.8dB
- G. TRUNK LIP MOUNT**
Corner of trunk.....-2.8dB
- H. ON GLASS MOUNT**
Glass low-3.0dB
- I. ON GLASS MOUNT**
Glass mid.....-1.2dB
- J. ON GLASS MOUNT**
Glass high.....-0.5dB
- K. MAGNETIC MOUNT**
Corner of hood.....-2.4dB

Mount Configurations

The most common Motorola NMO mounts are shown below. For more information about the mounts available please contact your local Ham Radio Outlet.

NMO B premium quality threaded.

NMO MMR mag mount, 80# pull strength.

NMO TLP heavy duty trunk lid.



NMO B



NMO MMR

NMO TLP

NMO Series Antennas

Select An Antenna

Once the base and thread type are selected, the final step is to choose the antenna.

All Larsen mobile antennas meet the industry's most demanding specs for electrical efficiency and mechanical durability.

Gain antennas are made of a coil and a whip. Quarter wave antennas are just a whip.

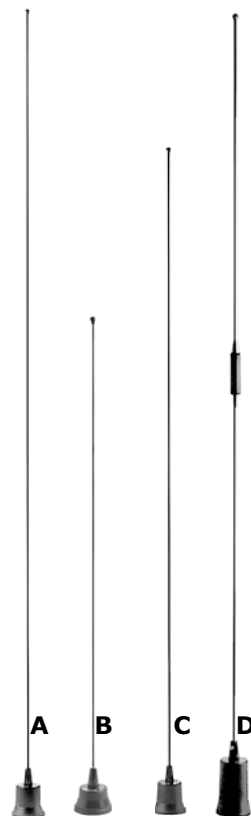
- Colors: Black coil base, chrome or all black whip.
- Made in the USA!
- 1-year No-Nonsense warranty™.

A. NMO 150 B (2m)
Frequency.....144-174 MHz
Gain 3 dB
Electrical 5/8 Wave
Height 49"

B. NMOQ C
Frequency.....144-448 MHz
Gain 0 dB
Electrical 1/4 Wave
Height 22" max

C. NMO 220 B (1.25M)
Frequency.....220-225 MHz
Gain 3 dBi
Electrical 5/8 Wave
Height 32"

D. NMO 2/70
Frequency.....144-148 MHz
.....442-448 MHz
Gain 3.8 dBi VHF
..... 5.2 dBi UHF
Electrical Center Loaded
..... 1/2 wave VHF, 5/8 UHF
Height 34 3/4"



Scanner Antenna

Tri-Band NMO 150/450/800

This is a great antenna for scanner operation. It is NOT tunable for amateur operation.

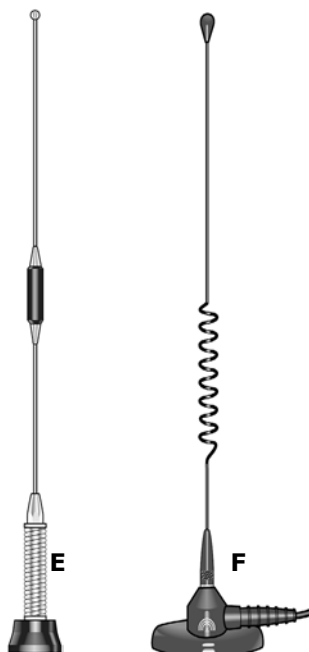
Frequency..... 150-165 Mhz
..... 450-470 Mhz
..... 806-950 Mhz
Gain 2.14 dBi ± 1dB
Mount..... NMO
Height 16.5"



Dual Band Antennas

Larsen dual band antennas provide excellent performance on 2m and 70cm. Each antenna is factory preset to guarantee optimal performance with no tuning required.

- A range of dual band configurations is available.
- Kulrod copper-plated 17-7 stainless steel rods for greater transmit range.
- Soldered contacts.
- Premium materials and construction provide superior electrical performance and mechanical durability.
- 1-year No-Nonsense Warranty™



E. NMO 2/70 SH

Frequency..... 144-148 MHz
 440-450 MHz
 Gain..... Unity
 Power..... 100 watts
 Electrical..... VHF Center Loaded: 1/4 wave
 UHF Center Loaded: 3/4 wave
 Base..... NMO UF base B w/ spring
 Height..... 17"

F. MM 2/70 PL

Frequency..... 144-148 MHz
 440-450 MHz
 Gain..... Unity
 Power..... 100 watts
 Electrical..... VHF Center Loaded: 1/4 wave
 UHF Center Loaded: 3/4 wave
 Connector..... PL-259 Installed
 Base..... 3" Round Magnet
 Pull Strength..... 54 lb.
 Weight..... 1 lb.
 Height..... 17"

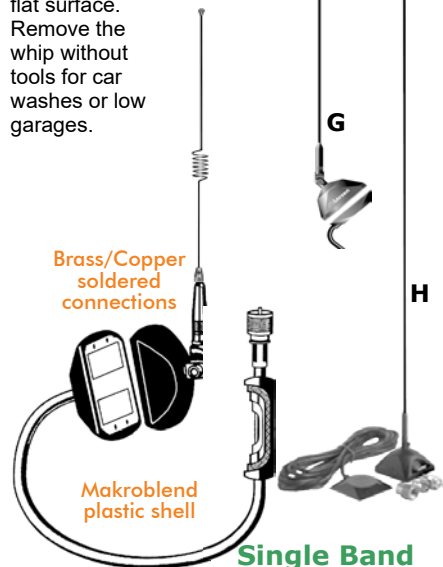
On-Glass Antennas

Larsen's advanced design techniques in glass-mount antennas result in superior transmit range plus tremendous mechanical durability. Glass mount performance is nearly identical to rooftop mounts, with no holes to drill. Properly installed on-glass antennas grip for years under demanding conditions, yet are easy to remove and remount.

Dual Band KG 2/70 CX-PL

The KG 2/70 is a VHF half-wave and a UHF collinear. It comes with 14 feet of RG-58/U coax.

The antenna installs easily on any flat surface. Remove the whip without tools for car washes or low garages.



Single Band KG-144-UDPL

G. KG 2/70 CX-PL

Frequency..... 144-148 MHz
 442-448 MHz
 Gain..... 2.4 dB VHF
 4.5 dB UHF
 Power..... 50 watts
 Electrical..... 1/2 wave colinear
 Base..... PL-259 (loose)
 Height..... 32-3/4"

H. KG-144-UDPL

Frequency..... 144-148 MHz
 Gain..... 2.4 dB VHF
 Power..... 50 watts
 Electrical..... 1/2 wave
 Base..... PL-259 (loose)
 Height..... 45"

In-Building / Public Safety

132 - 174 MHz PSIBVHF



Features

- Wide bandwidth VHF 132-174 MHz operation.
- Aesthetically pleasing: 1.5 mm (0.060 inch) thickness to ceiling.
- VSWR < 2:1.
- Optimized to low-frequency in-building environments.
- 15 x 15 inch (380 x 380 mm).

Applications

- In-building repeater systems.
- Bi-directional amplifier.
- Police, fire, government.
- Low profile ceiling mounting.
- Enhanced for in-building: gain-set to IB environment; multi-floor coverage.
- Avoids the nulls of traditional dipoles.

UHF version also available- PSIBUHF



Installed antenna fits flush with ceiling.

132 -174 MHz 380-570 MHz 700-960 MHz PSIBVU78

Features

- Wide bandwidth VHF, UHF 132-174 MHz, 380-570 MHz, 700-960 MHz.
- Aesthetically pleasing: 1.5 mm (0.060 inch) thickness to ceiling.
- VSWR < 2:1.
- Optimized to low-frequency in-building environments.

Applications

- In-building repeater systems.
- Bi-directional amplifier.
- Police, fire, government.
- Low profile ceiling mounting.
- Enhanced for in-building: gain-set to IB environment; multi-floor coverage.
- Avoids the nulls of traditional dipoles.



Comet Dual-Band Antennas

Model	Bands	Gain	Max PWR Watts	Connector	Weight lb' oz"	Length ft' in"	Max Wind Speed MPH	HRO Price
Dual Band Base Station Repeater Antennas								
GP-9*	2m/70cm	8.5/11.9	200	SO-239	5'11"	16'6"	90	\$214.95
GP-9N*	2m/70cm	8.5/11.9	200	N	5'11"	16'6"	90	\$209.95
GP-6*	2m/70cm	6.5/9.0	200	SO-239	3'8"	10'5"	90	\$149.95
GP-3*	2m/70cm	4.5/7.2	200	SO-239	2'12"	5'11"	112	\$99.95
GP-1	2m/70cm	3.0/6.0	200	SO-239	2'	4'2"	135	\$74.95
Dual Band Mobile Antennas- All Black Anodized								
SBB-7/SBB-7NMO	2m/70cm	4.5/7.0	70	PL/NMO	-	4'7"	-	\$79.95
SBB-5/SBB-5NMO	2m/70cm	3.0/5.5	120	PL/NMO	-	3'2"	-	\$58.95
SBB-2/SBB-2NMO	2m/70cm	2.15/3.8	60	PL/NMO	-	20"	-	\$42.95
B-10M/B10NMO	2m/70cm	-/2.15	50	PL/NMO	-	12"	-	\$42.95
CSB-750A	2m/70cm	3.6/6.1	150	PL	-	42"	-	\$75.95
CSB-770A	2m/70cm	4.4/6.9	150	PL	-	51"	-	\$89.95
CSB-790A	2m/70cm	5.1/7.7	150	PL	-	62"	-	\$99.95

*Some longer antennas require additional freight.

Comet Tri-Band Antennas

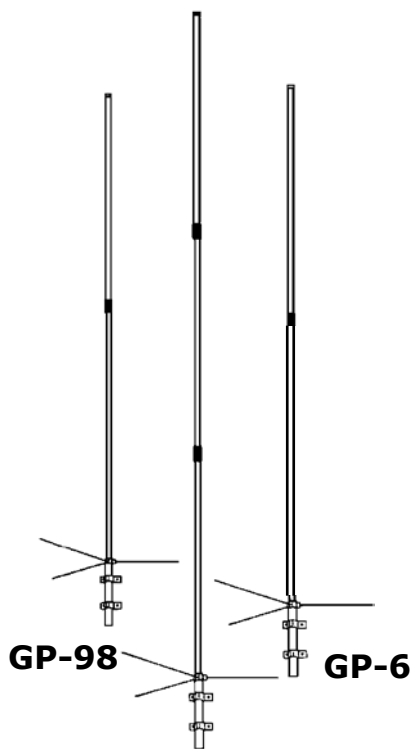
Model	Bands	Gain	Max PWR Watts	Connector	Weight lb' oz"	Length ft' in"	Max Wind Speed MPH	HRO Price
TriBand Base Station Repeater Antennas								
GP-15**	6m/2m/70cm	3/6.2/8.6	200	SO-239	2'15"	7'11"	90	\$169.95
GP-98**	2m/70cm/23cm	6.5/9.0/13.5	100	N-Female	3'6"	9'4"	90+	\$189.95
CX-333**	2m/220/70cm	6.5/7.8/9.0	120	SO-239	3'10"	10'2"	112	\$179.95
TriBand Mobile Antennas								
SBB-15**	6m/2m/70cm	2.15/4.5/7.2	120	PL-259	-	4'10"	-	\$84.95
SBB-224	2m/220/70cm	2.15/3.2/5.5	150	PL-259	-	3'1"	-	\$69.95
SBB-224 NMO	2m/220/70cm	2.15/3.2/5.5	150	NMO	-	3'1"	-	\$69.95
HF Antennas								
UHV-6**	40/(20*)/(17*)15/10/6 2m/70cm	HF 0 dBi 2m 2.15 dBi 70cm 5.5 dBi	120 W SSB HF 100 W FM on 6-70cm	PL-259	Max 1'4"	Max 6'4"	-	\$169.95
L-14*	Opt 20m coil for UHV-6						-	\$31.95
L-18*	Opt 17m coil for UHV-6						-	\$29.95
L-3.5*	Opt 75/80m coil for UHV-6						-	\$34.95
CHA-250B**	Ground Plane 3.5-57 MHz		150 W SSB HF 125 W CW	SO-239	7'11"	23'8"	67.5	\$399.95

**For the UHV-6 optional bands.

**Some longer antennas require additional freight.

6 Meter Antenna

Model	Description	Freq	Gain	F/B	Max Power Watts	Conn	SWR	Length ft' in"	HRO Price
CA-52HB4**	4 element beam	50-54 MHz	-	19 dB	400 W PEP	SO-239	<1.5:1	10'6" boom	\$179.95

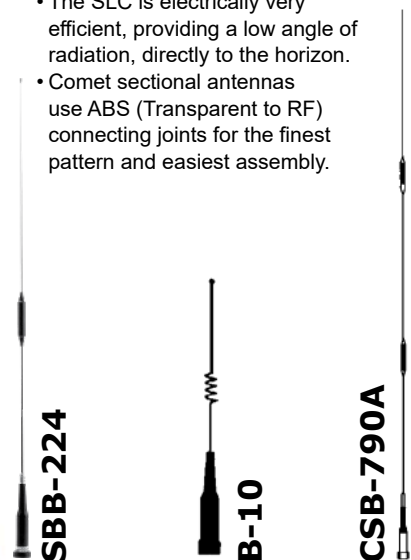


GP-9

Dual & Tri-Band VHF / UHF

Comet developed the Super Linear Converter (SLC) to increase actual gain of dual and tri-band antennas.

- A complete pre-formed phasing coil and phosphorus copper element eliminate additional components and gain loss.
- The SLC is electrically very efficient, providing a low angle of radiation, directly to the horizon.
- Comet sectional antennas use ABS (Transparent to RF) connecting joints for the finest pattern and easiest assembly.



SBB-224

B-10

CSB-790A



2 m and HT Antennas

Model	Bands	Gain	Max Pwr Watts	Connector	Length Ft' in"	HRO Price
Single Band Antennas						
SBB-25/SBB-25NMO	2m	4.1	100	PL-259/ NMO	4'8"	\$54.95
HT Antennas						
CH-32 Mini Antenna	2m/70cm	-	10	BNC	1.75"	\$29.95
HT-224	2m/220/70cm	1.3/1.4/1.8	10	SMA	11"	\$39.95
SMA-501 Mini Antenna	2m/70cm	-	10	SMA	1.5"	\$29.95
SMA-3	2m/70/33cm	1.2/1.7/3.4		SMA	9.75"	\$39.95
SMA-24/SMA-24J	2m/70cm	2.15/5.3	20	SMA/Rev SMA	17.5	\$21.95/24.95
BNC-24	2m/70cm		20	BNC	17.5	\$24.95
SMA-503/SMA-503J	2m/70cm	-	10	SMA	8.5"	\$27.95
CH-75	2m/70cm	-/3.2	50	BNC	14.75	\$24.95
SH-95	2m/70/23cm	1.5/2/5.5	10	BNC	15"	\$34.95

Comet High Power Duplexers and Triplexers

Zinc-alloy, die-cast, twin cavity, low input loss, high-isolation, and high-power. Modernize your station with Comet high-performance antenna products.

Model	Port	Freq MHz	CW Watts	PEP Watts	Loss dB	Isol dB	Mix Conn	Port Conn	HRO Price
CF-416A (2m/70cm)	LPF HPF	1.3-150 400-540	450 300	800 500	0.15 0.25	60 60	SO-239	PL-259 w/ leads PL-259 w/ leads	\$54.95
CF-416C (2m/70cm)	LPF HPF	1.3-150 400-540	450 300	800 500	0.15 0.25	60 60	N-Female	PL-259 w/ leads N-Male w/ leads	\$56.95
CF-4160I (2m/70cm)	LPF HPF	1.3-150 400-540	450 300	800 500	0.1 0.2	60 60	SO-239	PL-259 w/o leads N-Male w/o leads	\$52.95
CF-4160K (2m/70cm)	LPF HPF	1.3-150 400-540	450 300	800 500	0.1 0.2	60 60	SO-239	PL-259 w/o leads PL-259 w/o leads	\$54.95
CF-416B (2m/70cm)	LPF HPF	1.3-150 400-540	450 300	800 500	0.15 0.25	60 60	SO-239	PL-259 w/ leads N-Male w/ leads	\$52.95
CF-706A (2m/70cm)	LPF HPF	1.3-75 75-470	175 175	350 350	0.5 0.5	40 40	SO-239	PL-259 w/ leads PL-259 w/ leads	\$72.95
CF-530 (6m/125-470)	LPF HPF	1.3-90 125-470	350 350	600 600	0.2 0.2	45 45	SO-239	PL-259 w/ leads PL-259 w/ leads	\$78.95
CF-530C (6m/125-470)*	LPF HPF	1.3-90 125-470	350 350	600 600	0.2 0.2	45 45	PL-259	SO-239 w/o leads SO-239 w/o leads	\$76.95
CF-360A (10m/6m)	LPF HPF	1.3-30 50-470	350 350	600 600	0.2 0.2	45 45	SO-239	PL-259 w/ leads PL-259 w/ leads	\$69.95
CFX-4310C (2m/70cm/1.2)	LPF BPF HPF	1.6-60 100-150 350-500 840-1.4	600 450 300 100	1KW 800 500 200	0.15 0.25 0.25 0.3	50 50 50 50	N-Female	PL-259 w/o leads PL-259 w/o leads N-Male w/o leads	\$78.95
CFX-514 (6m/2m/70cm)	LPF BPF HPF	1.3-90 130-200 380-500	450 450 300	800 800 500	0.2 0.25 0.3	55 55 55	SO-239	PL-259 w/ leads PL-259 w/ leads PL-259 w/ leads	\$79.95
CFX-514J (6m/2m/70cm)	LPF BPF HPF	1.3-90 130-200 380-500	450 450 300	800 800 500	0.15 0.2 0.25	55 55 55	SO-239	SO-239 w/o leads SO-239 w/o leads SO-239 w/o leads	\$79.95
CFX-324A (2m/220/70cm)	LPF BPF HPF	1.3-150 200-320 390-500	350 350 350	600 600 600	0.2 0.25 0.3	40 40 40	SO-239	PL-259 w/ leads PL-259 w/ leads PL-259 w/ leads	\$88.95
CFX-324B (2m/220/70cm)	LPF BPF HPF	1.3-150 200-320 390-500	350 350 350	600 600 600	0.2 0.25 0.3	40 40 40	SO-239	PL-259 w/o leads PL-259 w/o leads PL-259 w/o leads	\$87.95

Dual Band

2 m/ 70 cm Mobile Antenna CA-2x4SR

The CA-2x4SR is an exceptionally wide-band VHF/UHF dual-band mobile antenna. High gain extended coverage area and excellent signal strength on both TX and RX.

The preferred antenna of many Search and Rescue (SR) volunteers due to the ability to TX and RX outside the ham bands (FRS/MURS/GMRS).

Nominal 2:1 or less SWR range
140-160MHz
435-465MHz

NMO Connector HRO Price: \$69.95
SO-239 Connector HRO Price: \$69.95

CA-SPR - optional spring. Replaces the lowest element. Protects against damage when offroad, brushes with tree limbs, garage doors, etc.
HRO Price: \$20.95

Dual Band Magnetic Mount M-721

Economical black anodized 2m/ 70 cm antenna. 19.5" tall and comes with 16.5 feet of RG-58 A/U coax. Coax terminates with an FME connector and includes BOTH PL-259 and SMA-male connectors for mobile and most handheld radios.

Gain 146 MHz: 1.7 dBi 3/8 wave
Gain 446 MHz: 4.1 dBi 1/4 + 5/8 wave
Max Power: 80 watts
VSWR: 1.5:1 or less
Impedance: 50 Ohm
HRO Price: \$39.95



2M/70CM

All Female Duplexer CF-4160N

1.3-170 / 350-540 MHz duplexer with three N-female connectors allows the user to attach their own low loss jumpers in the length needed.
HRO Price: \$58.95





HF Antennas

1.7 - 50 MHz 10-Band Telescoping Antenna HFJ-350M Toy Box

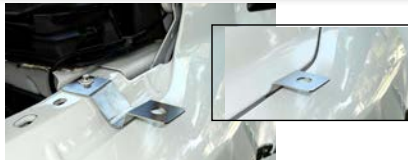


- Breaks down into four convenient sections for additional portability.
- Quickly and easily change frequency by changing plug to the desired band
- 1/4λ base loaded antenna.

- Large coil for 160M (1.8/1.9MHz) operating.
- For best performance, it's recommended to use an antenna tuner and counterpoise.
- Base connector is a PL-259.
- Max Power: 75 W SSB 3.5 MHz, 100 W SSB 1.7-50 MHz.

HRO Price: \$129.95

Mounts



Vehicle Specific Antenna Brackets

These stainless-steel no-holes-to-drill mounts use an existing fender bolt under the hood. A 3/4-inch hole accepts a standard NMO type connector or use Comet UHF connector mobile cable assemblies. Specific mounts for most popular trucks and SUVs: Chevrolet, Ford, Dodge, GMC. Call HRO for compatibility. Pictured: DG2ANTPF Dodge Ram 1500 2009-2014 HRO Price: \$24.95

IC-705/FT-818 CST-30

Mounts directly to the Icom IC-705 or Yaesu FT-817/818. Adjustable. HRO Price: \$35.95



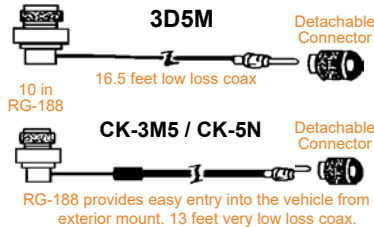
Window Gap Jumper CTC-50M

This device crosses the space between window frames. The frequency range is up to 1.3 GHz with SO-239 connectors. Max power HF100 W PEP, VHF 60 W, UHF 40 W, low loss, 50 ohm impedance. HRO Price: \$59.95



Universal Mount CP-5M / CP-5NMO

These universal mounts use the heavy-duty RS-730 lip bracket. Each includes 5 meters (16'6") of deluxe 2-step coax and an antenna mount connector: gold-plated PL-259 on coax end with detachable barrel for easy installation. 18-inch lead of mini RG-174 coax for easy entry through the weather seal. Choose the model that has the connector for the antenna you are using. HRO Price: \$74.95



Rack Mount RS-660U

This new roof-rack mount opens wider than the old version - up to 2.25 inches - and supports bigger antennas. HRO Price: \$39.95



Roll-Up Storage Bag CCB-HFJ



Keep your HFJ-350M antenna organized. Cloth storage bag stores all parts neatly and keeps them clean. Simple roll-up operation with velcro closure. HRO Price: \$29.95

Comet Mobile Mounting Systems

Comet has a wide variety of mobile mounts. Choose the mount and coax cable assembly that best fits your personal needs. All Comet cables have detachable connectors.

Model	Description	HRO Price
Mounts with Coax Cable Installed		
CP-5M	Universal multi-angle lip mount w/deluxe cable SO-239/PL-259 Connector	\$74.95
CP-5NMO	Same as CP-5M but with NMO/PL-259 Connector	\$74.95
HD-5M	Heavy duty version of the CP-5M	\$79.95
HD5-3/8-24	3/8-24 heavy duty lip mount w/ PL-259 Connector	\$74.95
LD-5M	Light duty lip mount, 16'4" deluxe cable assembly, UHF Connector	\$59.95
CM-5M	Standard heavy-duty mag mt w/ RG-58A/U, coax, UHF connector, max antenna height 4 ft	\$32.95
Mounting Brackets Only, No Coax		
RS-840	Heavy duty lip mount, low profile, accepts SO-239 connector	\$41.95
RS-730	Heavy duty universal lip mount, accepts SO-239 connector	\$32.95
RS-720	Medium duty universal lip mount, accepts SO-239 connector	\$29.95
RS-720NMO	Medium duty universal lip mount, accepts NMO connector	\$29.95
RS-520	Light duty universal lip mount, accepts SO-239 connector	\$29.95
Coax Cable Assemblies		
CK-3M5	17 foot high-quality cable includes 12" RG-188 to avoid water leak/cable damage. UHF Connector	\$42.95
CK-3M	Same as CK-3M5 but 9'9" of deluxe cable assembly, UHF Connector	\$37.95
CK-5N	13'6" of deluxe 2-step cable assembly, N-Connector	\$49.95
5D4N	13'6" low loss (2400 MHz) coax cable, N-Connector	\$34.95
3D4N	13'6" low loss (1200 MHz) coax assembly, N-Connector	\$32.95
Antenna Connector Adapters		
AD-25M	Turns an SO-239 mount into an NMO mount	\$15.95
AD-15M	Turns an NMO mount into an SO-239 mount	\$19.95

40 m - 70 cm Mobile Antenna UHV-6

Without HF coils attached, the UHV-6 is a tribander for 6m/2m/70cm. The top of the element has a threaded socket for the 40m, 15m, or 10m coils (included), making the UHV-6 a quad-band antenna.

- Optional coils for 80m, 20m, 17m.
- Easy to mount and configure.
- Fold-over hinge included.
- GAIN on 2m: 2.15 dBi;
- GAIN on 70cm: 5.5 dBi.
- Length 48" to approx. 76".

HRO Price \$169.95

10/6/2 m & 70 cm Quad Band UHV-4

Developed for the Yaesu FT-8900. The 10m and 6m bands tune independently and will tune for SSB and FM. Length approx. 54". HRO Price: \$119.95

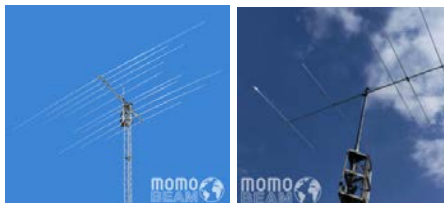




Beam Antennas

MOMO Beam is a premier supplier of quality monobanders, multibanders, 50MHz, and WARC band beam antennas. Meticulously designed and crafted with superior materials these are one of the best engineered beam antennas available.

PENTA10	10/12/15/17/20 Meters
TRI10	10/15/20 Meters
TRI7	10/15/20 Meters
DUO7	10/15 Meters
DUO4	4 Element 12/17 Meters
DIP40	40 Meter Dipole
MONO6	6 Element 6 Meters



Duplexers/Triplexers

MFJ-916B

Use HF or 2 meter / 440 MHz antennas with separate HF or 2 meter / 440 MHz rigs without a built-in duplexer. Low loss SO-239s, 50 ohm ports, 200 watts PEP.



MFJ-916BN with N type connector.

MFJ-916BC with coax pigtailed terminated with PL-259 connectors.

MFJ-4926S Triplexer for 1.6-60, 110-170 and 350-570 MHz. SO-239 connectors.

MFJ-4936S Triplexer for 1.6-150, 220-225 and 400-550 MHz. SO-239 connectors.



Window Feed-Thru



Weather-proof antenna feed-thru panels mount on your window sill to let you bring all your antenna connections into your ham shack without drilling holes through walls. Simply place on window sill and close window.

One cut customizes it for any window up to 48 inches. Use horizontally or vertically. Real Western Red Cedar wood is naturally resistant to rot, decay and insects – lasts longer, maintenance-free. Pitch and resin free for a wide range of beautiful finishes or leave it in its naturally beautiful raw finish. Edges are sealed by weather-stripping to insulate against all weather conditions.

All are 3/4" D x 3-1/2" H x 48" W, except for MFJ-4605, which is 3/4" D x 7" H x 48" W. Inside / outside stainless steel plates bond all coax shields together to ground connection. Stainless steel ground post brings outside ground connection inside.

MFJ-4602

Three SO-239 Teflon® coax connectors let you feed HF / VHF / UHF antennas. High voltage ceramic feed-thru insulators bring 450 / 300 ohm balanced lines into your ham shack. Ceramic feed-thru insulator for longwire or random wire. Stainless steel ground post.

MFJ-4603

Four 50 ohm Teflon® SO-239 coax connectors let you feed HF / VHF / UHF antennas at full legal power limit.

A 50 ohm Teflon(R) coax N-connector lets you use any antenna up to 11 GHz, including 450 MHz, UHF, satellite, moon bounce and 2.4 / 5.8 GHz Wi-Fi antennas.

A 75 ohm, 1 GHz F-connector makes it easy to bring in television, satellite, HD, cable TV and FM radio signals.

A pair of high-voltage ceramic feed-thru insulators lets you bring in 450 / 300 ohm balanced lines directly to your antenna tuner.

- A random / long wire antenna ceramic feed-thru insulator
- 5-way binding posts let you supply 50 volts / 15 amps DC / AC power to your outside antenna tuners / relays / switches
- Stainless ground post brings in ground connection, bonds inside / outside stainless steel panels together and drains away static charges
- MFJ's exclusive Adaptive Cable Feedthru™ lets you bring in rotator / antenna switch cable, etc. without removing connectors (up to 1-1/4" X 1-5/8"). Adapts to virtually any cable size. Seals out rain, snow, adverse weather.

MFJ-4601

Has six high quality Teflon® SO-239 connectors for HF / VHF / UHF coax-fed antennas and a stainless steel ground post. Handles full 1500 watt legal limit.

MFJ-4601N

Like MFJ-4601, but has N-type connectors.

MFJ-4600

Has four sets of ceramic feed-thru insulators and two SO-239 connectors.

MFJ-4604

Has five adaptive cable feed-thru – two for connectors up to 1-1/4" x 1-5/8" and three for UHF / N size coax connectors. Adapts to virtually all cables used in ham radio. Seals out weather.

MFJ-4605

Combines MFJ-4603 and MFJ-4604! Gives every connection you'll ever need and more - without drilling holes in wall!

Telescopic Masts

These portable, temporary telescopic fiberglass masts extend to the sky! Just pull out each section and twist to lock. Select from five models, 20 to 43 feet. Each mast collapses to an acceptable height for true portability. These high-strength fiberglass masts are super lightweight – the largest weighs just 7.7 lb. Twist and Lock sections allow quick pull-up and take-down. Use them while traveling, camping – at hotels, hamfests, field day, DX-peditions.

MFJ-1917

The largest mast can be used for a full-time permanent wire installation or small, lightweight beam or vertical. Put up a full size inverted V, dipole or vertical antenna in minutes and get the height you need to QSO with anyone, anywhere. Use multiple telescopic masts to construct other types of antennas like loops, quads, rotatable dipoles even beams. The ideas are endless!

MFJ-1910 33 ft., light duty w/top tie ring.

MFJ-1911 20 ft., light duty w/top tie ring.

MFJ-1913 28 ft., lightweight w/top tie ring.

MFJ-1916 34 ft., for heavy duty use.

MFJ-1917 43 ft., heavy duty w/top tie ring.



MFJ

Octopus Antenna



Octopus 4-Band Antenna

Reach out for big DX!

Choose your favorite four bands! Super easy to assemble! Use metal pole or telescopic mast up to 1-inch, easily secured, tightens with thumbscrew. And... just screw in your HamSticks™! (See page 94)

Rotate with a small TV rotator (see Hy-Gain AR-500, \$189.95) or just ground mount for omni-directional.

Uses eight HamSticks™ (two of the same for each band). Tough octagonal enclosure has eight 3/8" x 24 threaded connectors for Hamsticks.

Has built-in balun and a super strong base tube insulator made of fiberglass filled ABS.

Put this antenna up in minutes! Makes for a great stealth, portable, campground, or permanent base antenna. Super lightweight, 14-foot diameter. HamSticks™ break down to about four feet for easy storage.

MFJ-2100 Mounting bracket only
HRO Price: \$134.95

MFJ-2104 Mounting bracket with your choice of four (two each) 250 W HamSticks™.
HRO Price: \$299.95

MFJ-2104H Mounting bracket with your choice of four (two each) high power 600 W HamSticks™.
HRO Price: \$564.95

hy-gain

Rotators

HAM-VI

For medium antenna arrays up to 15 square feet wind load. Includes the DCU-2 digital auto control unit. No more terminal strips. Features cinch connector plus 8-pin plug at the control box. Maximum mast size 2 1/16".

HRO Price: \$1329.95



Tailtwister SERIES II

This unit handles medium communications arrays up to 20 square feet wind load area. Available with the DCU-1 Pathfinder digital control box or standard analog control box. Has 138 ball bearings for large load bearing strength. Maximum mast size: 2-1/16".

HRO Prices:
T2X - \$1044.95
T2XD2 - \$1234.95



HAM-IV

The popular Ham-IV is designed for medium antenna arrays up to 15 square feet. It features a dual 98 ball bearing race for load bearing strengths and an electric locking steel wedge brake. Maximum mast size 2-1/16".

HRO Price: \$774.95



AR-40

Especially for large FM-TV and compact communication antenna arrays up to 3.0 square feet wind load area. Dual 12 ball bearing race. Automatic position sensor never needs resetting. Maximum mast size: 2-1/16". Includes MSLD light duty lower mast support.

HRO Price: \$484.95



HDR-300A

Choose this rotator for king-sized antenna arrays up to 25 square feet of wind load. Heavy-duty self-centering steel mast clamp and hardware. Digital display accurate to 1 degree.

HRO Price: \$1889.95



CD-45II

The CD-45II handles up to 8.5 square feet of antenna wind load when mounted inside the tower or 5 square feet with the included MSLD light duty lower mast adapter. Has 58 ball bearing race. Maximum mast size: 2-1/16".

HRO Price: \$579.95



AZIMUTH/ELEVATION ROTATORS

hy-gain

Super Heavy Duty Rotators

Super strong, double worm gear drives, self-braking, extremely quiet motors, one degree position resolution, automatic digital controller. Up to 38 square feet wind load, 8,000 in/lb turning torque and 24,000 in/lb brake torque. Plus 700 pounds vertical load!

Hy-Gain | RAS-1



Hy-Gain | RAS-2



Hy-Gain | REAL-1



Controller | RAS-1 & RAS-2



Elevation Rotator REAL-1

Elevation rotator has all specifications of the popular RAK-1 but is for moving antennas 180 degrees up or down. Package includes RAK-ICU controller.

Azimuth and Elevation Rotators RAS-1 & RAS-2

Hy-gain offers RAS-1 and BIG RAS (RAS-2) super heavy-duty azimuth-elevation rotators. Same heavy-duty design as RAKs and includes the RAS-2C digital controller. RAS-2 has same specifications as RAS-1 below but with these super specs. Turning power: 5,000 inches per pound at all voltages. Vertical load: greater than 700 pounds. RAS-2 weighs 44 pounds.

HRO Prices:

RAS-1 including RAS-2CU controller	\$2369.95
RAS-1R rotator only	\$2369.95
RAS-2 including RAS-2CU controller	\$2844.95
RAS-2R rotator only	\$2844.95

HRO PRICES:

REAL-1 including controller	\$1629.95
REAL-1R rotator only	\$969.95

Specifications

RAS-1 Specs	Ras-1 @ 12 V	RAS-1 @ 18 V	RAS-1 @ 24 V
Wind load area (approx)	30 sq ft.	30 sq ft.	30 sq ft.
Turning torque	1400 in/lb.	1800 in/lb.	3240 in/lb.
Brake torque	14,000 in/lb.	14,000 in/lb.	14,000 in/lb.
Brake construction	Double worm gears	Double worm gears	Double worm gears
Vertical load	550 lb.	550 lb.	550 lb.
Rotation speed (360 degrees)	120 seconds	90 seconds	60 seconds
Precision, rotator weight	1 degree, 29 pounds	1 degree, 29 pounds	1 degree, 29 pounds
Rotation range (Az/El)	360 az/180 degrees	360 az/180 degrees	360 az/180 degrees
Position sensor	Reed switch	Reed switch	Reed switch
Mast size bottom/elevation	2.6 bottom 2.0 elevation	2.6 bottom 2.0 elevation	2.6 bottom 2.0 elevation

Hy-Gain RAU-1



Econo SPID Rotator RAU-1

Spid's smallest rotator is a step up from mainstream rotators and provides excellent support for direct round mast mounting. Incorporates elevation rotator to provide full AZ/EL capability. Ideal for light duty 3-4 element antennas, short boom, 6-meter beams, and 2-Meter / 70 cm beam antennas.

HRO Prices:

RAU-1 including RAK-ICU controller	\$1329.95
RAU-1R rotator only	\$774.95

SPID ROTATORS

hy-gain

Rotator Controllers



For Hy-Gain DCU-3

Digital rotator controller allows you to program 6 beam headings. Gives fully automatic or manual control of your HyGain

Ham or T2X Rotators. Has USB / RS-232 ports for computer control. Adjustable LCD sleep time. Field upgradeable firmware. Press a memory button or dial in your beam heading or let one of the popular software platforms take control for you. Bright blue LCD. Available for 110 VAC or DCU-3X for 220 VAC. **HRO Price: \$619.95**

DCU-2 controller with fewer programmable memories.

For Yaesu YRC-1

Replace your Yaesu rotator control box with the YRC-1 rotator controller. Easy to use; dial in your beam heading and tap the GOTO button. Bright blue LCD shows current, dialed-in, and computer-controlled beam headings, and your call sign. USB port for computer control. Fast variable DC motor minimizes overshoot. For current Yaesu – DXA series rotators. **HRO Price: \$414.95**



YRC-3 is like the YRC-1 but adds 6 memories.

Economy Digital Controller for HY-gain, Ham II, IV, T2X, Yaesu, and many other common rotators



Hy-Gain MDS RC-1

The RC-1 is a direct replacement control box for almost all versions of Yaesu and other rotators. Get ALL these features at half the cost of similar digital controllers!

- SSB, CW, RTTY, AM and FM modes.
- It is priced well below the repair cost of many factory control boxes.
- RC-1 uses slave power from existing Ham series, AC controllers (RC1-G, RC1-H). It is emergency and battery power compatible for DC models.
- You get automatic brake control on Ham series rotators and automatic speed control on DC powered rotators.
- A graphic LCD screen is large and bright blue for easy visibility. Huge beam heading digits!
- The "Go to" button gives you the reciprocal heading.
- Computer-controlled operation via the included USB (for RC1-Y) or serial ports let you use your favorite software programs. Field upgradeable firmware.
- Rugged aluminum for maximum RF shielding in a compact 5-1/4 wide x 3-1/2 height x 4-1/8 inches deep.
- RC1-Y for Yaesu **\$289.95**; RC1-P for Spid **\$289.95**; RC1-G **\$289.95** and RC1-H for Hygain rotators **\$309.95**.

HEAVY DUTY RAK-1



These super heavy-duty RAK rotators are designed with a simple double worm gear drive. This results in a super strong ultra-reliable rotator system with inherent self-braking. Each includes a precision automatic digital controller.

Turning is powerful, smooth, precise, and extremely quiet. The inherent self-braking action of its double worm gear drive positively stops it every time – it won't move!

It's fast! A high-torque DC gear motor rotates your antenna 360 degrees in just 60 seconds with 24 volts on the motor. The RAK rotators operate from 12 to 24 volts AC or DC. The higher the voltage, the higher the torque and the faster the turning speed – unique RAK feature.

HRO Prices:
RAK-1 including RAK-ICU controller ..
..... **\$1629.95**
RAK-1R rotator only **\$969.95**

PRECISION RAK-2



It's simple to mount! Pipe mast mount on both ends allows coax cables to pass through the center of the rotator and prevents cable tangling and damage. Optional adapter plate mounting.

It's precise! The included RAK-ICU controller has one degree resolution and a large 3/4 inch 4-digit easy-to-read soft green LED digital readout. Sealed reed switch sensor technology gives reliable all-weather operation and super tight tolerances with minimal play.

Tough and durable! Heavy-duty construction with 3/16" thick-wall steel pipe, ultra-durable steel housing.

HRO Prices:
RAK-2 including RAK-ICU controller ..
..... **\$2369.95**
RAK-2R rotator only **\$1529.95**

Hy-Gain RAK-1 Specifications

RAK-1 Specs	RAK-1 @ 12 V	RAK-1 @ 18 V	RAK-1 @ 24 V
Approx wind load area	30 sq ft.	30 sq ft.	30 sq ft.
Turning torque	1400 in/lb.	1800 in/lb.	3240 in/lb.
Brake torque	14,000 in/lb.	14,000 in/lb.	14,000 in/lb.
Brake construction	Double worm gears	Double worm gears	Double worm gears
Vertical load	550 lb.	550 lb.	550 lb.
Rotation speed 360 deg	120 sec	90 seconds	60 seconds
Precision	1 deg	1 deg	1 deg
Rotation range	720 deg	720 deg	720 deg
Rotator weight	16 lb.	16 lb.	16 lb.
Position sensor	Reed switch	Reed switch	Reed switch
Mast size top/bottom	2.0"/2.6"	2.0"/2.6"	2.0"/2.6"

Hy-Gain RAK-2 Specifications

RAK-2 Specs	RAK-2 @ 12 V	RAK-2 @ 18 V	RAK-2 @ 24 V
Approx wind load area	38 sq ft.	38 sq ft.	38 sq ft.
Turning torque	>5000 in/lb.	>8000 in/lb.	Contact Hy-Gain
Brake torque	24,000 in/lb.	24,000 in/lb.	24,000 in/lb.
Brake construction	Double worm gears	Double worm gears	Double worm gears
Vertical load	>700 lb.	>700 lb.	>700 lb.
Rotation speed/360 deg	120 sec	90 sec	60 sec
Precision	1 or 0.5 deg	1 or 0.5 deg	1 or 0.5 deg
Rotation range	720 deg	720 deg	720 deg
Rotator weight	24 lb.	24 lb.	24 lb.
Position sensor	Reed switch	Reed switch	Reed switch
Mast size top/bottom	2.6 inches	2.6 inches	2.6 inches

ROTATORS/ANTENNAS

YAESU
The radio



Hi-Tech Rotator G-2800DXA

The G-2800DXA is a high-technology rotator designed to turn the largest tower-mounted antenna arrays.

Medium Loads G-800DXA

The G-800DXA rotator is designed for medium to heavy loads and antennas up to 20 square feet, with control box resets.



Computer Controller GS-232B

The GS-232G rotator computer interface provides digital control of Yaesu rotators G-800DXA, G-1000DXA, G-2800DXA, and G-5500.

The GS-232B contains its own PIC18C452 micro-processor with ROM and RAM and 10-bit analog-to-digital converter. The 3 wire async serial line can be configured for serial data rates from 1200 to 9600 baud. The unit has a DB-9 male connector to connect to the RS232C COM port of your computer.

Supplied items include: control cable for the azimuth rotator (5 pin to mini DIN), control cable for the Az/EI rotator (dual 5 pin to DIN cable), DC power cable, and hook and loop fasteners. Requires 12 VDC @ 110 mA.

Yaesu Rotators Specifications

Model	Input Voltage	Motor Voltage	Rotation Time	Stationary Torque	Rotation Torque	Maximum Wind Load	Max Vert Load	Max Mast Size	Cable Type	Weight lb (kg)	HRO Price
G-450A	110 VAC	29-32 VAC	51 sec	217 ft lb.	39.8 ft lb.	10 sq ft.	242 lb.	2 in.	5-wire	7 (3.2)	CALL
G-800DXA	110 VAC	24 VDC	55 sec	3456 in lb.	43-79 ft lb.	17 sq ft.	440 lb.	2.5 in.	6-wire	10 (4.5)	CALL
G-1000DXA	110 VAC	24 VDC	55 sec	5200 in lb.	79 ft lb.	22 sq ft.	440 lb.	2.5 in.	6-wire	15 (6.8)	CALL
G-2800DXA	110 VAC	24 VDC	55 sec	20,832 in lb.	219 ft lb.	34 sq ft.	880 lb.	2.5 in.	6-wire	26 (11.8)	CALL
G-5500DC	110 VAC	22 VDC	58 sec	289 ft lb.	*	10.7 sq ft.	440 lb.	2.5 in.	6-wire	20 (9)	CALL

*Elevation 101 ft-lb, Azimuth 44 ft-lb.

Rotators

Yaesu's high quality rotators for amateurs include models for medium to large arrays and for satellite work. There are provisions for computer control.

Please contact your nearest HRO for more specifications and discount pricing on Yaesu products.

Large Loads G-1000DXA

The G-1000DXA is designed to handle bigger arrays up to 22 square feet. A great value.

VHF/UHF G-450A

The G-450A is ideal for smaller HF and VHF/UHF antennas. Features 360 degree radial compass display with overlap.



AZ/EL G-5500DC

This is the most popular azimuth and elevation rotator for satellite, moon-bounce or other space communications work. It provides horizontal and vertical antenna rotation in a single unit. The control box has two large meters, one showing elevation and the other azimuth. Meter aiming accuracy is within $\pm 4\%$. The G-5500 provides 180° elevation rotation with a rotation time of 67 seconds. A 360° azimuth rotation takes just 50 seconds. This rotator accepts up to a 2.5" mast, a maximum 1-5/8" horizontal cross-boom and 440 pounds of vertical load. Computer controllable with optional GS-232 computer interface.

HF Dipole Antenna

Pre-Tuned YA-30

This 83-foot broadband dipole provides optimum performance over 1.8-30 MHz. Usual requirements for an antenna tuner between the rig and antenna are eliminated by the unique broadband design. Handles 150 watts at an SWR of less than 1.9:1 on the amateur bands. Preassembled and pretuned. Can be installed as a horizontal flat-top, inverted-V, or sloper. 100 feet of RG-8X with PL-259 included.

HF Mobile Antenna

Motor Tuned HF/VHF/UHF ATAS-120A

The ATAS-120A provides HF / VHF / UHF coverage with automatic motorized tuning. Control radiator length from the transceiver for best SWR. Compatible with Yaesu's FT-100, FT-450, FT-847, FT-857, FT-891, FT-897, FT-991, and FT-710.

HF Portable Antenna

Hand Tuned HF/VHF/UHF ATAS-25

The ATAS-25 has radiating elements covering amateur bands 10-40m, 6m, 2m, and 70cm. Mounts to a standard camera tripod (not included). Uses a manual tuning system. Dual frequency operation possible with a duplexer (not included). Antenna collapses to less than two feet to carry; expands to 7.2 foot maximum height. This is an ideal system to use with the FT-891, FT-818, FT-897, and FT-857 transceivers. Weight is 2.05 pounds.

TUBULAR CRANK-UP TOWERS



MA Series Crank-Up Masts

The premier MA-series crank-up Tubular Towers are designed to be both safe and

neighbor friendly. The slender design gives a clean, flagpole-like appearance and is rated at 90 mph winds per the IBC 2006 code. Per TIA/EIA specifications, adequate safety margins are included. International Building Code calculations are available for most models.

The MA-40 and 550 models require base kits comprised of a flat base, two 1/2" x 10" anchor bolts, and a 4 ft rotor mast with rotor plate. Comes standard with a wall bracket. No guying is required when tower is properly bracketed to the eave of your roof.

MA-series towers are completely self-supporting only when used with accessory MARB or MAB series bases. The MARB series rotator base allows the entire tower and antenna to be rotated from the base (rotator not included).

This allows easy rotator maintenance plus emergency hand rotation of the entire tower and antenna.

The MA-550MDP and 770MDP models include a heavy duty motor drive with positive pull down. The MDP models provide motorized raising and lowering of the tower. A remote control unit (RMC-1000) accessory is available that allows raising and lowering from your ham shack or other remote location.

All models without motor drives come standard with manual hand winches which have load actuated brakes for maximum safety. This feature prevents the winch from free-wheeling and causing injury to you or your installation in the event that you lose your grip during raising or lowering.

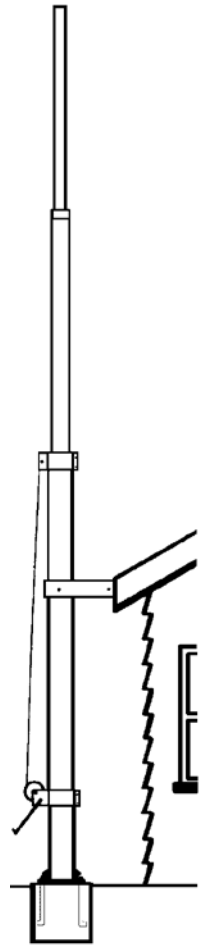
All steel used at US Tower conforms to ASTM specifications. All welding is done by certified factory personnel. All of our towers are factory tested by trained personnel before shipping.

MA-Series Crank-Up Towers

Model Number	Height Maximum	Height Minimum	Sections	Weight Pounds	Sec O.D. Top	Sec O.D. Bottom	HRO Price
MA-40	40'	21'6"	2	245	3" sq.	4.5"	CALL
MA-550	55'	22'1"	3	435	3" sq.	6.625"	CALL
MA-550MDP*	55'	22'1"	3	620	3" sq.	6.625"	CALL
MA-770	71'	22'10"	4	645	3" sq.	8.0"	CALL
MA-770MDP*	71'	22'10"	4	830	3" sq.	8.0"	CALL

All towers will handle 10 square feet WLA antennas at 50 MPH winds.

*These tower requires purchase of MCL-100 or RMC-1000



Crank-Up Tower Base Information

Foundations are designed in accordance with the International Building Code (IBC) for a "non constrained" condition using Class 5 soil. Alternate or custom foundation designs are available for an extra charge. Anchor rods may be ordered from US Tower. However, reinforcing steel and rebar are not provided. Welder's certified IAW AWS D1.1. Contact US Tower for additional information.

Because of wide variations throughout the country in zoning requirements and loading conditions (snow, wind, ice, etc.), it is the responsibility of the customer to make certain that his Tower conforms to all applicable codes. We recommend you obtain all necessary permits prior to purchase.

TMM Series Compact Towers

The TMM series has a minimum retracted height of 11'4" (may vary, depending on rotator used) and a maximum height of 47' including mast. At the tower's retracted height, visual impact is reduced to a minimum and antenna servicing is made easier. Typically the tower and antenna are below the roof line of your home when the tower is fully retracted.

The TMM series towers are lightweight, freestanding crank-up towers that allow up to 20.7 square feet of antenna in 90 mph winds per TIA/EIA specifications. The TMM-433HD allows 31.8 square feet in 90 mph winds. These lightweight towers should provide many years of trouble free service. All of our towers

have a hot dipped galvanized finish inside and out.

The TMM-433SS and 541SS have a 10" OD top section which will permit the installation of the Yaesu G800 and G1000 rotators inside the top section. Oversized rotators will prevent full retraction of your tower. However, they may be used if full retraction is not required.

All TMM Series towers require base kits comprised of a hinged T-base and anchor bolts, but include load actuated winch, rotator plate, and eight feet of 2" OD x .120" antenna mast.

Compact TMM-Series Crank-Up Towers

Model Number	Height Maximum	Height Minimum	Sections	Weight Pounds	Sec O.D. Top	Sec O.D. Bottom	HRO Price
TMM-433SS	33' w/o mast	12'3"	4	315	10"	18"	CALL
TMM-433HD	33' w/o mast	12'3"	4	400	12.5"	20 7/8"	CALL
TMM-541SS	41' w/o mast	13'	5	430	10"	20 7/8"	CALL

All towers will handle 18 square feet WLA antennas at 50 MPH winds.

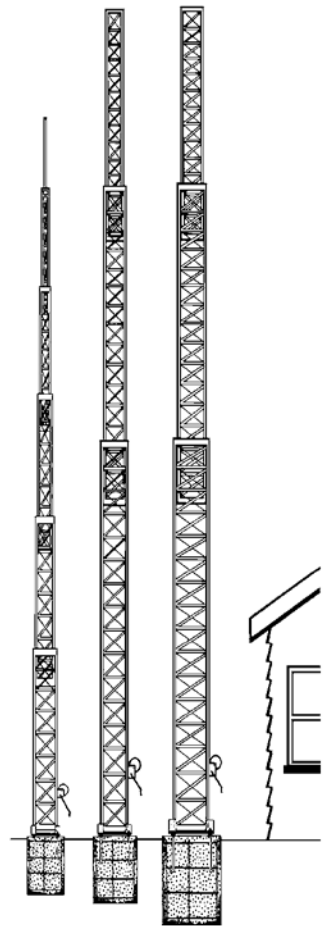
The Customer is Responsible for obtaining all local city or county building and tower permits **AND** for taking the tower off the freight truck when it is delivered. Please arrange for adequate help.

LATTICE CRANK-UP TOWERS

TX Series Freestanding Towers

US Tower's TX series crank-up towers are as strong or stronger than most competitors' heavy-duty models. The TX towers have 21 foot sections with 4 foot overlap to provide extra height and strength. In addition, the overlap helps prevent binding while lowering your tower in high wind conditions. The TX series towers have a large enough top section (12 1/2") to permit installation of most rotators inside the section for maximum strength while allowing the section to fully retract. Cross bracing at critical points on the tower ensures safety and additional strength. All crank-up towers have a heavy-duty, hot dipped galvanized finish both inside and out, which should provide many years of trouble free service.

The TX series towers come complete with rotator plate and Fulton hand winch, except MDP and MDPL models, which feature automatic load actuated brakes for maximum safety. Base kits are required, consisting of large steel anchor bolts and heavy-duty steel T-base that allows the tower to hinge on for easy installation. All T-bases will accept the TRX series raising fixtures for easy one-man installation. Other accessories include masts and motor drives. The TX-472MDP comes complete with MDP-750 motor drive with positive pull-down feature. The TX-489MDPL includes the MDPL-1000 motor drive and level wind feature. US Tower's TX series requires no guying. The wind loading is calculated at 90 mph.



TX Series Freestanding Crank-Up Towers

Model Number	Height Maximum	Height Minimum	Sections	Weight Pounds	Sec O.D. Top	Sec O.D. Bottom	HRO Price
TX-438	38'	21'9"	2	355	12.5"	15"	CALL
TX-455	55'	22'6"	3	670	12.5"	18"	CALL
TX-472	72'	23'3"	4	1040	12.5"	21 5/8"	CALL
TX-472MDP*	72'	23'3"	4	1210	12.5"	21 5/8"	CALL
TX-489MDPL*	89'	24'	5	1800	12.5"	25 5/8"	CALL

All towers will handle 18 square feet WLA antennas at 50 MPH winds.

*This tower requires purchase of MCL-100 or RMC-1000

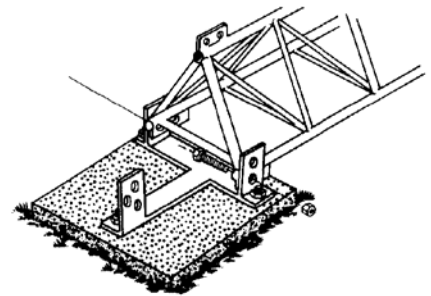
HDX Series Heavy Duty

US Tower's HDX series heavy-duty crank up towers have up to 2.5x more wind loading capacity than others commonly advertised. This superior strength allows for large stacked arrays, while using our commercial type bases and anchor bolts that can be easily installed and vertically adjusted. All HDX series T-bases are designed to use our TRX series raising fixtures to make installations and antenna servicing a one man job.

US Tower carries many different sizes and strengths of masts to use as accessories with the HDX series towers. The HDX-572MDPL and 589MDPL motorized towers provide dual level wind, positive pull down and heavy

duty gear box features. The HDX-589MDPL comes complete with the MCL-100 limit switch package included. All towers using MDP-750 and MDPL-1000 motor drives must use either the MCL-100 accessory limit switch package or the RMC-1000, which allows the raising and lowering of your tower from the comfort of your ham shack or any remote location.

All HDX series towers come complete with rotator plate, but require base kits consisting of anchor bolts and heavy-duty T-base. US Tower's special T-base design allows the tower to hinge for easy installation. US Tower's crank towers require no guying. The HDX Series towers are rated at 90 mph winds.



HDX Series Heavy Duty Crank-Up Towers

Model Number	Height Maximum	Height Minimum	Sections	Weight Pounds	Sec O.D. Top	Sec O.D. Bottom	HRO Price
HDX-538	38'	21'9"	2	600	15"	18"	CALL
HDX-555	55'	22'6"	3	870	15"	21 5/8"	CALL
HDX-572MDPL*	72'	23'3"	4	1600	15"	25 5/8"	CALL
HDX-589MDPL	89'	24'	5	2440	15"	30 5/8"	CALL
HDX-689MDPL*	89'	24'9"	5	3400	18"	37 1/8"	CALL
HDX-5106MDPL*	106'	25'6"	6	3850	15"	37 1/8"	CALL

All towers will handle 30 square feet WLA antennas at 50 MPH winds.
HDX-689MDPL rated at 60 square feet WLA of antenna at 50 MPH winds.
HDC-5106MDPL rated at 35 square feet WLA of antenna at 50 MPH winds.

*These tower requires purchase of MCL-100 or RMC-1000

TOWER QUESTIONS? HRO HAS THE ANSWERS!

For more information about U.S. Towers and related accessories please contact your nearest Ham Radio Outlet store. Our salespeople are happy to answer any of your questions.

CRANK UP ALUMINUM MASTS



ALM SERIES

The ALM Series is a patented mast system designed and manufactured by US Tower Corp. The intent of the ALM Series is to provide a versatile and highly capable mast system that can be quickly transitioned for different uses.

Using lightweight aluminum construction, the ALM Series masts can be easily loaded into a vehicle, transported to a field event, and deployed using a number of mobile mast mount options including hitch mounts and drive-on bases.

With its high wind rating, the ALM Series can also be used as a permanently installed mast attached to a house, an out structure, or installed free-standing. No guying is required for any deployment configuration of the mast.

Whether the intent is to use the ALM Series as a mobile solution, a fixed solution or both, the low maintenance, high strength, weather resistant construction of the mast ensures that you will be prepared at all times with an easy-to-use cost-effective solution.

Features:

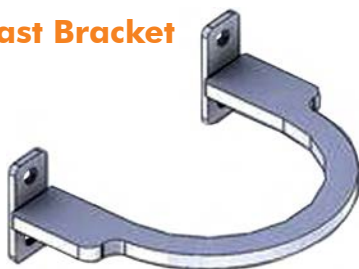
- Lightweight aircraft grade aluminum
- Rapid Deployment
- Corrosion resistant
- Ideal for temporary or permanent installations
- Built-in pivot clevis for easy tilt-up
- Adjustable height winch
- High-ratio winch
- High strength-to-weight ratio
- Low maintenance
- 4 1/2 ft, 2" O.D. antenna mounting mast with universal rotator mount plate

Options:

- Crank tilt-up raising feature (ALM MAF)
- ALM rotating feature (ALM MARB)
- Hitch mount fixture (ALM Hitch Mount)
- Wall mount fixture; 16" or 20" standoff arms
- Standalone base (ALM MAB)
- Drive-on mast stand (15603-0004-1012)



Mast Bracket



Mast Base



Four Heights Available		
Height	Rated	Load
16 ft.	50 lb.	9 sq ft. @ 65 mph
21 ft.	50 lb.	9 sq ft. @ 65 mph
26 ft.	50 lb.	8 sq ft. @ 65 mph
31 ft.	50 lb.	8 sq ft. @ 65 mph

STORE HOURS

Ham Radio Outlet is open Monday through Saturday. Phone hours are 9:30AM to 5:30PM and store hours are 10AM to 5:30PM. We are closed for most major holidays.

EASY ORDERING

Each HRO store has a local phone number, a Toll-Free 800 number, a fax number and an email address. Our friendly and trained staff is eager to answer your questions and place an order for you. You can also shop 24/7/365 on our safe, secure website at <https://www.hamradio.com>.

SALES TAX

Ham Radio Outlet collects, remits, and reports sales tax in accordance with all state and local requirements. For more information go to https://www.hamradio.com/general_info_sales_tax.cfm.

PRICING

No matter if you shop online, in-store, or over the phone, you will find the same low prices. Many prices shown are below suggested list price and, in most cases, we offer significant discounts from retail pricing. Manufacturers constantly change prices, offer specials, or react to market conditions. Simply check online or call one of our stores and our staff will be happy to quote you the current selling price. Prices are subject to change without notice or obligation to the customer. Sorry, we cannot honor typos in this catalog or on our online web pricing.

PAYMENT TYPES

We accept Visa, MasterCard, American Express, Discover and PayPal both online and in-store. Money Orders, Cashier's Checks and Personal checks are also accepted. However, processing time may delay shipment by 10 days or more on unsecured funds.

When using a credit card for phone orders, please have the card in front of you since we will need specific card information. For your protection, we thoroughly investigate the validity of all credit card purchases and may require additional verification before shipment.

COD is by approval only. COD payments must be made by cashier's check or money order at the time of delivery. There is a small fee for COD shipments. Contact your local HRO for more information.

COMMERCIAL SALES & PO'S

Written purchase orders will be accepted from city, state, and federal agencies. Commercial organizations require pre-approval if credit terms or open account is requested. HRO quotes prices that require payment on receipt of merchandise. Please indicate that you require terms when calling for price quotes. Typically net terms are only offered to Fortune 500 companies, Federal, State, City and local government entities.

FAST SHIPPING

HRO continually strives to ship each and every order as quickly as possible. In most cases, the shipment will be made from the location nearest to you, if stock is available. Otherwise we will ship from any location, even multiple locations, to fulfill your order. HRO is trying to provide the quickest and most efficient shipment process in the industry!

DELIVERY

United States: HRO provides FREE ground shipping in the continental USA on most items over \$100. Items under \$100 incur a flat rate shipping charge based on current shipping costs and conditions.

For expedited, domestic shipments HRO offers a variety of 2 day or next day service at an additional cost. A quote for these charges can be provided upon request.

Alaska and Hawaii: Shipments can be sent by UPS, FedEx, or the USPS. Contact your local HRO for more information.

Canada: We ship to Canada! Orders can now be shipped via UPS, FedEx, DHL or the USPS. Canadian shipping costs will be quoted and calculated on a per item basis. These costs will be added to your invoice. Contact us for additional details.

International Orders: We ship worldwide via UPS, FedEx, DHL or the USPS. Contact any of our stores with your needs. We can provide quotes and details for placing your foreign order. Payment methods include wire transfer, Visa, MC, PayPal, or check drawn in U.S. Funds from a U.S. bank. Shipments are made (depending on size) by UPS, FedEx, DHL, or International Mail. Some orders to some foreign countries cannot be insured to the full value.

Truck: On day of delivery, please be sure to have enough help, and/or proper equipment on hand for unloading merchandise. Truck drivers are NOT required to provide assistance. If you are not experienced at handling large, awkward items such as towers, antennas or amplifiers, please ask for properly trained people to assist you.

DAMAGED ITEMS

UPS or FedEx: If the item is obviously damaged, note this with the driver and refuse shipment. This item will be returned to HRO and another will be sent at no additional charge. If hidden damage is noted, contact UPS or FedEx as soon as possible. They will arrange pickup. Once the item is received by HRO, a replacement will be sent.

US Mail: Please contact our office immediately upon finding an issue.

Truck: If there is damage or the shipment is short, it is the customer's responsibility to file the claim with the trucking company. At the time of receipt of item, it is recommended that you have the driver write 'damaged' or indicate shortage on the bill of lading he gives to you. Be sure to have the same notation as well as driver's signature on his copy also.

LOST ITEMS

When your order is delivered, please carefully count items and if anything is missing, notify HRO at once. Occasionally, cartons shipped at the same time will arrive at their destination two or three days apart. If you notify HRO within 10 days, we will replace lost or damaged items after completion of proper documentation and acceptance by the shipping agency.

RETURNS

Products are not sold for evaluation. Under some circumstances and with prior approval of the store of purchase, HRO will accept an item for return. A 15% restocking fee may be applied and all freight charges may be assessed.

Refunds will be applied back to your original payment method except for cash, which will be refunded by check. HRO will pay from its corporate offices via corporate check. Refunds via corporate check may take 14-21 calendar days but often arrive sooner.

Defective merchandise may be returned within 10 days of the original purchase for exchange. Original receipt must accompany the return. Contact your salesman for details. Software is sold on a non-returnable basis. Any software problems will be resolved under the terms of the manufacturer's warranty. Cut lengths of wire and or cable are also non-returnable.

MANUFACTURER'S NEW EQUIPMENT WARRANTY

Ham Radio Outlet supports all manufacturer's warranties. HRO will assist you with invoice copies and shipping instructions as well as warranty service center directions for items that may fail during the manufacturer's warranty period.

Ham Radio Outlet may, in some cases, provide an in-store repair on items; please contact the store of purchase for that information. It will be necessary to provide us with the invoice number and purchase date, as most manufacturers need this information to process under their FREE warranty repair terms.

NEW EQUIPMENT WARRANTY RETURNS

When returning equipment for repair, please pack the item in original packing material or something similar to provide adequate protection during the shipping process. Note on box: "ATTENTION SERVICE." Include a copy of your purchase invoice, and a complete and detailed description of the problems. Without the invoice or a complete description, delays will be experienced in providing the proper service and returning the item to you. Be sure to insure the package for its replacement cost.

HRO will have repaired or replace the defective item at our option. If the item is found to be defective under the terms of the manufacturer's warranty, no charge will be made for service or return shipping within continental USA.

It is the customer's responsibility to ship all defective items to the service center for warranty repair.

HRO EXTENDED WARRANTY

HRO now offers an optional Extended Warranty Program for most amateur radios, which must be purchased within 30 days of the purchase of the related product. The Extended Warranty Program starts at the conclusion of the new product original warranty period, and must be processed by HRO directly via any of our stores.

The Extended Warranty Program can be purchased for one (1) or two (2) additional years, does not apply to accessory items, and is available to the original purchaser only and is not transferable. Qualifying items must be sent to HRO after the manufacturers 1 year warranty where HRO will have the item serviced or replaced.

SUPPORT

HRO prides itself in its ability to service the customer. If you are not happy, we are not finished.

If there is a problem please contact the manager of the store from which you purchased the merchandise. If your problem cannot be remedied by that store manager, please feel free to call HRO National Sales at (800) 444-4799 and explain the situation. At this point our National Sales Manager will see that your problem is addressed.

LOCATIONS

Stores Are Open 10:00 AM - 5:30 PM |
Phones Are Open 9:30 AM - 5:30 PM

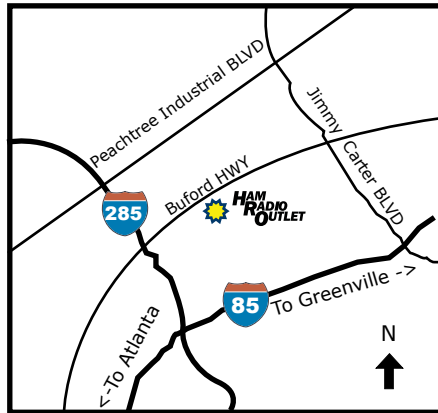
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anaheim@hamradio.com

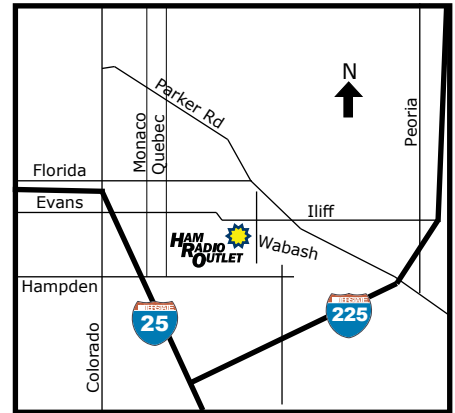
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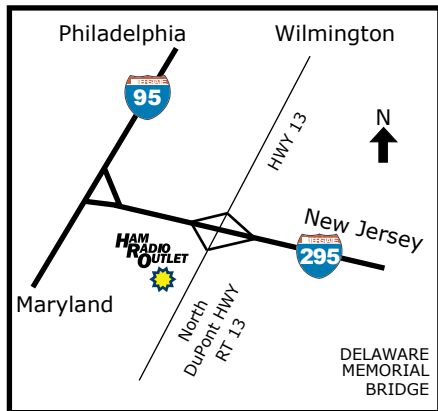
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Laura KB6UHF, Mark KC0PXT
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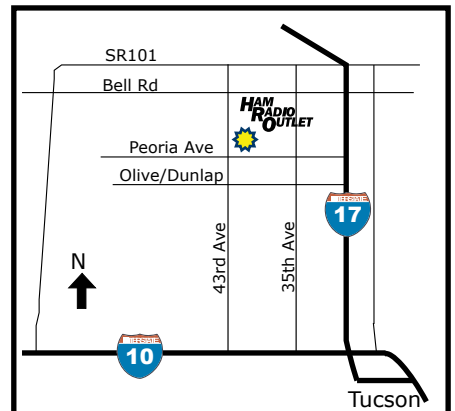
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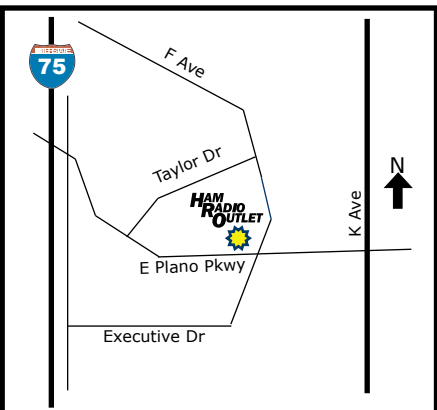
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Ron AC2RF
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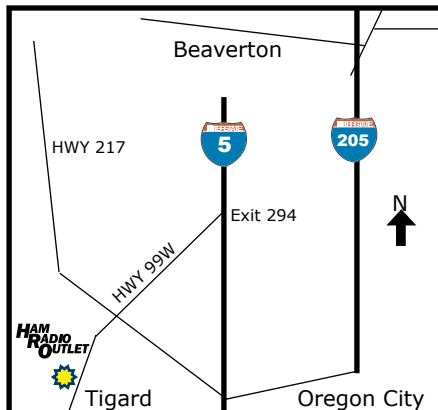
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Paul N0RWW
Jim KE7EEU
Richard K1RAB
Bob W8RH



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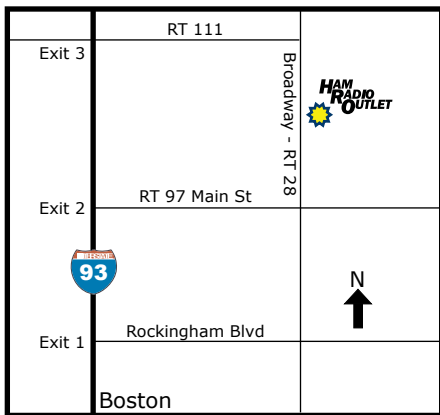
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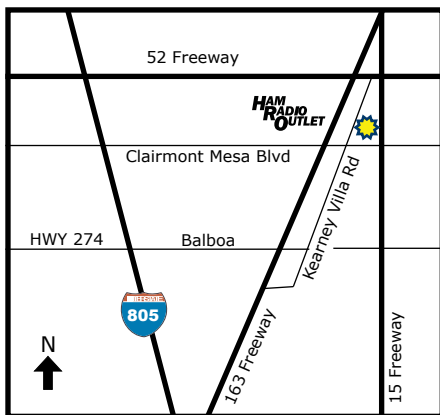
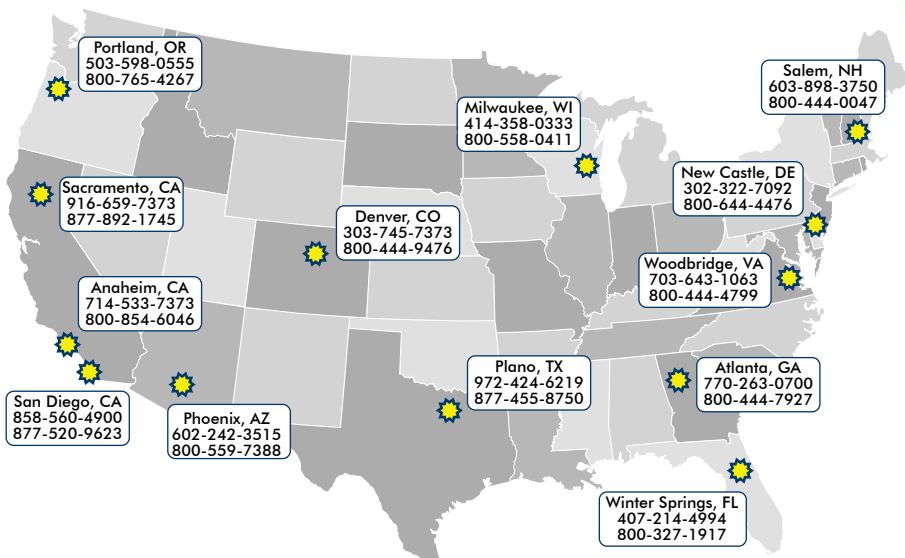
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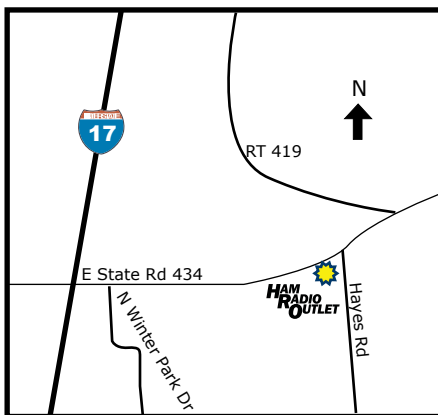
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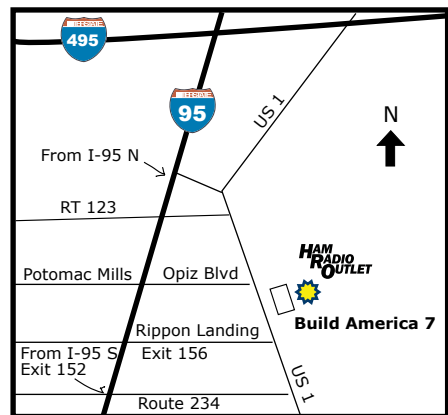
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