

## Easy Tuner Selector Chart

	200W	300W	600W	1500W	2500W+
Manual		934 949E 969		962D 976 989D	9982 ATR-30
Automatic	925 926 • 927 929	993B	994B	998	

To help find the right tuners for your application, simply select a power rating and tuner type (manual or automatic), then use the matrix above to look at the exact specifications of the tuners at your power level. If the desired features don't exist at your power level, just move up a level and check again.

### 600 Watt IntelliTuner™

#### Automatic Antenna Tuner

This tuner lets you rapidly tune any antenna—unbalanced, single-wire or balanced (with an external balun) automatically. The tuner includes a highly efficient switching L-network with wide matching capability, 1.8 to 30 MHz coverage, cross-needle power meters, a port for an accessory remote control, a radio interface port, and heavy duty 16 amp/1,000 volt relays. It is rated at 600 watts PEP SSB and 300 watts CW.

MFJ-994B .....\$320.00



### 1,500 Watt IntelliTuner™

This automatic antenna tuning center has an SWR/watt meter and an antenna switch for two antennas. It lets you rapidly tune almost any unbalanced or single-wire antenna automatically. Balanced feedlines may be used with an external 4:1 balun connected to the tuner's antenna output. The tuner features MFJ's exclusive Amplifier Bypass Control™. It fully protects your amplifier during tuning and will even take your amplifier off-line if SWR increases above a user-defined, pre-set limit. The tuner includes a highly efficient switching L-network with wide matching capability, 1.8 to 30 MHz coverage, cross-needle power meters, backlight LCD display, a radio interface port, and heavy-duty 16 amp/1,000 volt relays. It is rated at 1500 watts SSB/CW and will match impedances from 12 to 1,600 Ω antennas (SWR up to 32:1).

MFJ-998 .....\$639.00



### 2,500 Watt Continuous Carrier Tuner

This high power antenna tuner operates at power levels up to 2,500 watts SSB or CW. It uses an edge wound roller inductor in a matching "T" network to continuously tune loads between 1.8 and 30 MHz. The tuner also features a true peak or average reading SWR/wattmeter. It will match dipoles, inverted-vees, verticals, mobile whips, beams, random wires, and many other antenna types. There are rear panel connectors for coaxial and single wire or balanced feedlines. The balanced feedlines are isolated from the tuner chassis with a fiberglass panel to reduce capacitive coupling, withstand high voltages, and handle high currents. The tuner is designed to match 50 Ω output amplifiers, transmitters or transceivers to virtually any antenna with an impedance ranging from 12.5-2,000 Ω on 3.5-30 MHz. It will match loads ranging from 12.5-800 Ω on 1.8-3.5 MHz. An internal six-position antenna selector switch selects a built-in 50 Ω dummy load, two coaxial line outputs, or a single wire/balanced line output.

MFJ-9982 .....\$629.00



### Ameritron 3 kW Edge Roller Antenna Tuner

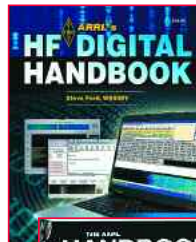
This high power antenna tuner has a roller inductor "T" matching network that continuously tunes all frequencies from 1.8 through 30 MHz. It also features a built-in 3 kW peak or average detecting directional power meter. There are rear panel connectors for coaxial and wire feedlines. A heavy-duty, high-voltage insulated, current-type balun allows use with balanced feedlines.

AMR-ATR-30 .....\$549.00



## ARRL Publications

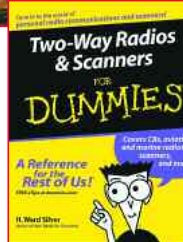
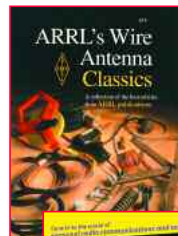
ARR-1034



ARR-1448

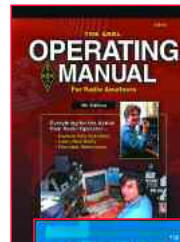


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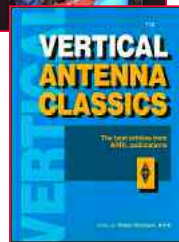


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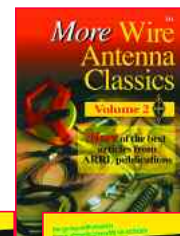
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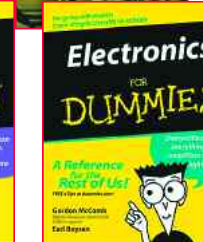
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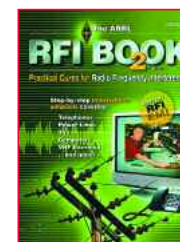
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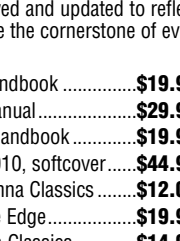
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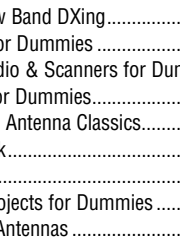
ARR-9892



ARR-9944



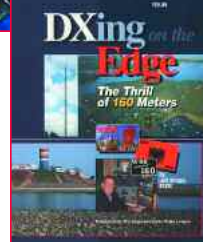
ARR-9994



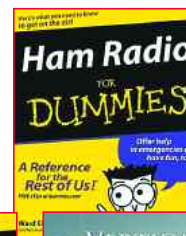
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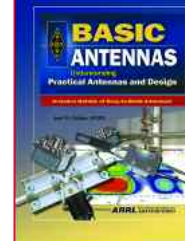
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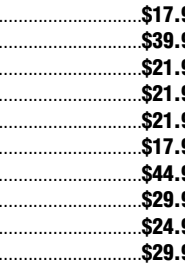
ARR-9392



ARR-9795



ARR-9994



ARRL Amateur Radio publications are known and respected worldwide and constantly reviewed and updated to reflect advances in technology. They are the cornerstone of every ham's technical library.

ARR-1034	ARRL HF Digital Handbook .....	\$19.95
ARR-1093	ARRL Operating Manual .....	\$29.95
ARR-1220	ARRL VHF Digital Handbook .....	\$19.95
ARR-1448	ARRL Handbook 2010, softcover .....	\$44.95
ARR-5218	ARRL Vertical Antenna Classics .....	\$12.00
ARR-6354	ARRL DXing on the Edge .....	\$19.95
ARR-7075	ARRL Wire Antenna Classics .....	\$14.00
ARR-7709	ARRL More Wire Antenna Classics .....	\$17.95
ARR-9140	ARRL ON4UN's Low Band DXing .....	\$39.95
ARR-9392	ARRL Ham Radio for Dummies .....	\$21.99
ARR-9696	ARRL Two-Way Radio & Scanners for Dummies .....	\$21.99
ARR-9704	ARRL Electronics for Dummies .....	\$21.99
ARR-9795	ARRL More Vertical Antenna Classics .....	\$17.95
ARR-9876	ARRL Antenna Book .....	\$44.95
ARR-9892	ARRL RFI Book .....	\$29.95
ARR-9944	ARRL Electronic Projects for Dummies .....	\$24.99
ARR-9994	<b>NEW!</b> ARRL Basic Antennas .....	\$29.95

# Outstanding Results— Maximum Protection!

## PolyPhaser Surge Protection Products

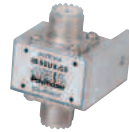
A power surge can arrive by way of any conductor entering your home. One way is a strike to the AC power line somewhere outside your home, creating a surge which travels to your equipment via the power line. Another is a direct strike to an antenna or tower, or a voltage-inducing near strike where energy is coupled into your antenna system and transmission line. A surge can also enter via the telephone line. While these sources seem to be independent, they all share ground return paths which can co-mingle the effects of a surge on any one of them. These sources need to be addressed to provide maximum protection for your electronic equipment.

DX Engineering provides an extensive line of lightning and surge protection products by PolyPhaser, a recognized pioneer and leader protecting communications systems worldwide.

## Broadband Coaxial Lightning Protectors, 50 Ω, DC Blocked

These broadband protectors are for general, single transmitter use in the 1.5 to 400 MHz frequency range. The lightning protectors are either bulkhead or flat surface (flange) mount. The units use a DC blocked gas tube design that has no DC continuity between the center pins. PolyPhaser's DC blocked products are designed to pass RF frequencies and block all DC. The protectors appear as a DC open between surge and protected ports and offer the best protection in the industry.

PPC-IS-50UX-C0	UHF Female, Flange, 2 kW HF, 1.5-400 MHz.....	<b>\$62.70</b>
PPC-IS-50UX-C1	UHF Female, Flange, 375W, 50-700 MHz.....	<b>\$62.70</b>
PPC-IS-50NX-C0	N Female, Flange, 2 kW HF, 1.5-400 MHz.....	<b>\$62.70</b>
PPC-IS-B50LN-C1	N Female, Bulkhead, 375W, 50-700 MHz.....	<b>\$65.50</b>
PPC-IS-B50LN-C0	N Female, Bulkhead, 2 kW HF, 1.5-400 MHz.....	<b>\$65.50</b>
PPC-IS-B50LU-C1	UHF Female, Bulkhead, 375W, 50-700 MHz.....	<b>\$65.50</b>
PPC-IS-B50LU-C0	UHF Female, Bulkhead, 2 kW HF, 1.5-400 MHz.....	<b>\$65.50</b>
PPC-IS-B50-HU-C1	UHF Female, Bulkhead, 500W VHF, 50-700 MHz.....	<b>\$76.00</b>
PPC-IS-B50HU-C0	UHF Female, Bulkhead, 3 kW HF, 1.5-400 MHz.....	<b>\$76.00</b>



## Broadband Coaxial Lightning Protectors, 75 Ω, Baseband, DC Passing

The PPC-IS-75FB/18 compliments the line of DX Engineering receive-only antennas. It is a 75 Ω lightning protector that has Type F connectors and passes 18 Vdc for control/power at the antenna units. The PPC-IS-75BB/6 is intended for low frequency/high frequency receive only, Local Area Network (LAN), and closed circuit video.

Model	Connectors:		Receive Only, DC Pass	Price
	Female	Mounting		
PPC-IS-75BB/6	BNC	Flange	6 Vdc Pass, DC to 30 MHz	<b>\$114.00</b>



## Rotor Control Line Protector

The PPC-IS-RCT is a lightning protector for up to 8 line rotor controllers. It protects the controllers by preventing strike energy from entering the premises. Use J1 or J2 clamps to mount the PPC-IS-RCT to tower legs or ground rods.

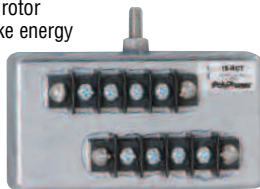
### Features

- Multi-strike capability
- Faster than gas tube
- Shunt type device for up to 8 lines

### Specifications

- Number of Wires: up to 8
- Operating Voltage: +/- 70 Vdc
- Maximum Surge Current: 6.5 kA
- Turn-on Voltage: +/- 82 V
- Maximum Operating Current: 2A
- Let Through Voltage: 230 Vpk
- Turn-on Time: 4 ns
- Temperature Range: -40° to +85° C

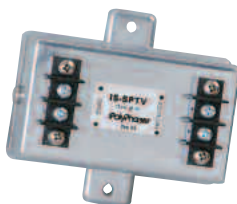
PPC-IS-RCT	Rotor Control Protector.....	<b>\$133.00</b>
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## Low Voltage AC 2-Wire Protector

The PPC-IS-SPTV is designed to protect two-wire low voltage AC applications, such as closed circuit TV cameras, from lightning damage. It features fast response time and lower differential voltage and harmonic energies than gas tubes.

PPC-IS-SPTV	Protector, CCTV power, 24 Vac, 5A max .....	<b>\$75.05</b>
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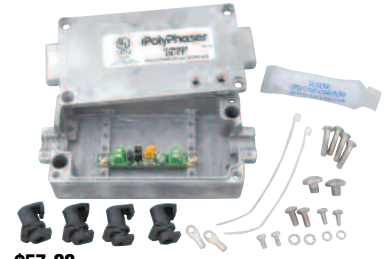


## Data/Phone Line Lightning Protector

The PPC-IX-1T is a lightning protector for two-wire telephone trunks. It is a weatherized, modular high speed digital data/DC line protector. It incorporates 1 T-board for use in high speed network and DC voltage applications. The unique design of this device allows it to be used in a variety of different voice and data applications.

- Fast response times
- Lower differential voltages and harmonic energies than gas tubes
- Application: Telco Trunks, POTS
- Data Rate: up to 25 Mbps
- Max Holding Current: 400 mA @ +20° C
- Operating Temperature: -40° to +65° C
- Turn-On Voltage: + or -210 volts typical

PPC-IX-1T	Data/Phone Line Protector, one twisted pair .....	<b>\$57.00</b>
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## AC/DC Power Protectors

Protecting your equipment from incoming lightning surge energy is accomplished at two levels. Both levels require a single point ground (SPG) system.

First: install an AC power shunt protector on the incoming power mains. It is important that the AC shunt protector is located at the SPG entry point.

Second: have the equipment connected to an AC series protector, which is also tied to the SPG. Keeping all equipment plugged into the same outlet and grounded to the same point allows them to rise and fall in potential at the same time with no other paths to a lower potential.

## AC Shunt

For residential applications, you should use PolyPhaser's PPC-IS-PM240-BP AC shunt protector at the AC main box. This works on AC main installations that consist of two hot, a neutral and a ground coming from a single, center-tapped transformer, typical of most U.S. residential installations.

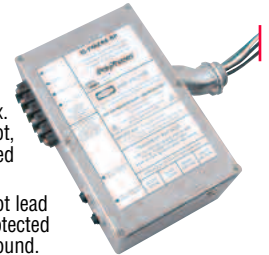
The AC shunt protector takes the surge energy on each hot lead to ground rather than the neutral line. Each hot lead is protected and includes a resettable circuit breaker on the path to ground. The AC shunt protector also includes a dry contact alarm indicator.

### Features

- Surge energy is shunted to ground, not to neutral
- Protectors on their own circuit breakers—won't interrupt load power
- Protection blocks/circuit breakers are replaceable if needed
- Remote/local status dry contacts

### Specifications

- Max Surge Current: 40 kA
- Turn-on Time: 25 ns
- Phase Quantity: 2
- Operating Temperature: +5° to +40° C
- Remote Status Capable: Yes
- Turn-on Voltage: 205 Volts
- Operating Voltage: 120/208 Volts
- Voltage Configuration: Bi-phase
- Local Status Indicator: Yes



## AC Series

Use the PLDO line of protectors in-line to protect sensitive equipment. The unit has a master on/off switch and circuit breaker for added protection. It is capable of handling multiple strikes. Mount the housing on the PPC-CU-SPGP grounding plate and tie the plate to your single point ground.

Model	Description	Price
PPC-IS-PM240-BP	Protector, AC Shunt, Power Mains	<b>\$437.00</b>
PPC-PLDO-240US-15A	Protector, AC Series, 240 Vac, 15 A	<b>\$250.00</b>
PPC-PLDO-120US-20A	Protector, AC Series, 120 Vac, 20 A	<b>\$229.00</b>
PPC-PLDO-120US-15A	Protector, AC Series, 120 Vac, 15 A	<b>\$209.00</b>



## Utility Enclosure

This weather-resistant, high impact thermo-plastic enclosure is perfect for outdoor installations of lightning protectors and other equipment. The enclosure measures 12 1/4" H x 12" W x 5 1/4" D and features a removable, self-latching hinged cover. This utility enclosure includes wall mounting hardware, an aluminum plate to mount lightning protectors, plate mounting hardware, two weather-tight coax feedthrough adapters, and drilling template. The coax feedthrough adaptors will fit coax sizes from RG8X to LMR400. The enclosure can be mounted to a post, pipe or tower leg using optional element clamps.

DXE-UE-1P	Utility Enclosure Package .....	<b>\$49.95</b>
DXE-CFT-1P	Coax Feedthrough, 6-pack.....	<b>\$14.95</b>



## ECLS-Series Band Clamps with Stud

The ECLS-Series clamps feature a 3/4 inch long, 10-24 welded stud for easy connection of feed wire, baluns, current chokes, etc. to tubular elements. Stainless steel hardware included. Sold in packs of 2. **See Page 36 for complete application list.**

**New!**



## Copper Strap to Tower

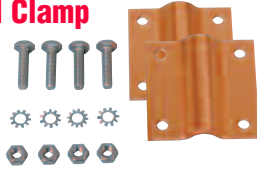
The PolyPhaser TK clamp series has a stainless steel plate to go between the copper strap and galvanized tower leg to prevent corrosion due to dissimilar metals. Use for tower leg diameters of 5/8 inches to 3 1/4 inches.



PPC-TK-1	Strap to Tower Leg Ground Clamp, 5/8" to 1 1/4" .....	<b>\$8.55</b>
PPC-TK-2	Strap to Tower Leg Ground Clamp, 1 1/4" to 2 1/4" .....	<b>\$8.55</b>
PPC-TK-3	Strap to Tower Leg Ground Clamp, 2 1/4" to 3 3/4" .....	<b>\$11.40</b>
PPC-TK-4	Strap to Tower Leg Ground Clamp, 3 1/2" to 5" .....	<b>\$11.40</b>

## Copper Strap to Copper Ground Rod Clamp

This clamp bonds a 5/8 inch ground rod to copper strap. 18-8 stainless steel hardware included.



PPC-58R-112S	Strap to Copper Ground Rod Clamp .....	<b>\$30.40</b>
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## Ground Wire to Copper Ground Rods

The PolyPhaser J series clamps are used to connect ground wire to copper ground rods sized from 1/2 inch to 2 1/4 inches. They accept wire ranging from #2 stranded to #10 solid. These clamps are made of cast bronze and include 18-8 stainless steel hardware.



PPC-J-1	Wire to Rod Transition Clamp, 1/2" to 1 1/3" .....	<b>\$14.25</b>
PPC-J-2	Wire to Rod Transition Clamp, 1 1/2" to 2 1/4" .....	<b>\$19.00</b>

## Copper Strap

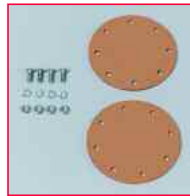
Use copper strap to achieve a low inductance ground system. Copper strap has a larger surface area and lower inductance per foot than equivalent cross-section wire. Use ground strap to tie equipment back to a common ground point. Copper strap should also be used to make a non-resonant counterpoise for towers mounted on mountain-tops or other rocky terrain. All copper strap is 2 inches wide and 0.011 inches thick.

DXE-CS2-25	Copper Strap, 2" by 25' .....	<b>\$54.95</b>
DXE CS2-50	Copper Strap, 2" by 50' .....	<b>\$96.95</b>
DXE CS2-100	Copper Strap, 2" by 100' .....	<b>\$184.95</b>



## Copper Strap to Copper Strap Clamp

If you need to bond two copper straps together, for extending an existing run or to add drops to equipment, the PolyPhaser PPC-MSC-3 bonding clamp is ideal. The PPC-MSC-3 accepts ground straps from 1 1/2 to 3 inches and includes 18-8 stainless steel hardware.



PPC-MSC-3	Multi-Strap Clamp .....	<b>\$14.25</b>
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## Copper Cleaning Kit

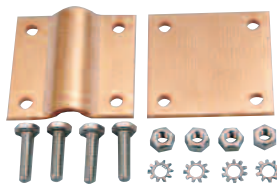
Proper preparation of the copper surfaces and application of copper joint compound prior to bonding is essential to maintain the low resistance properties of the strap connection. The copper cleaning kit has everything needed to establish the bond. Included are a non-abrasive scrub pad, copper joint compound and complete instructions.



PPC-CCK	Copper Cleaning Kit .....	<b>\$28.50</b>
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## Copper Strap to Copper Wire Clamps

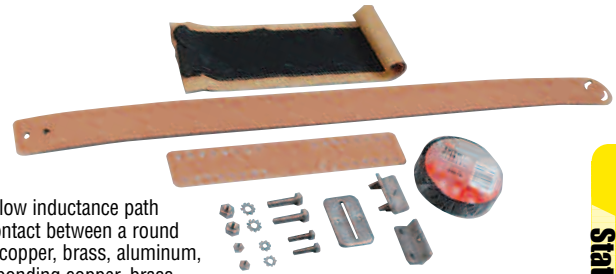
These PolyPhaser wire bonding clamps provide a convenient way to bond heavy gauge copper wire to copper grounding straps. These clamps handle from 6 AWG to 6/0 AWG, depending on the model. 18-8 stainless steel hardware is included.



PPC-1C-112S	Copper Wire to Strap Bonding Clamp, 6 to 1 AWG .....	<b>\$31.35</b>
PPC-10C-112S	Copper Wire to Strap Bonding Clamp, 1/0 to 6/0 AWG .....	<b>\$37.05</b>

## Coax Shield Ground Kits

These kits provide a low inductance path for proper ground contact between a round member made from copper, brass, aluminum, tin or steel to corresponding copper, brass, aluminum, tin or steel grounding material. Examples: grounding the coax shield as the coax leaves the tower or connecting a round tower leg to the ground system. Three kits are available for various combinations of shield material to grounding material and fit coax shield or tower leg diameters from 1/4 inch to 2 1/8 inches. These kits include a perforated strap, an adjustable angle, 24 inch long tail strap, a weatherproofing kit and all stainless steel brackets and hardware.



PPC-UNI-KIT-2CC	Copper to Copper Ground Kit .....	<b>\$47.50</b>
PPC-UNI-KIT-2CT	Copper to Aluminum Ground Kit .....	<b>\$47.50</b>
PPC-UNI-KIT-2TC	Aluminum to Copper Ground Kit .....	<b>\$47.50</b>
PPC-UNI-KIT-2TT	Aluminum to Aluminum Ground Kit .....	<b>\$47.50</b>

## Weatherproofing Kit

Use PolyPhaser's Weatherproofing Kit PPC-WK-1 when mounting lightning protectors or making ground connections outdoors. The kit prevents moisture ingress and easily handles extreme temperatures, the sun's UV rays and salt spray.



PPC-WK-1	Weatherproofing Kit .....	<b>\$8.55</b>
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## Ground Braid Assemblies

DX Engineering Ground Strap is available preassembled with lugs for both #10 and 1/4 inch bolt sizes. A grounding strap is ideal for grounding a rig, amp, etc. to a copper strip running behind the desk; the strip becomes the central ground point for the equipment. This central ground can be routed away with heavy copper strap to join any other similarly protected branches for single point grounding (SPG) lightning protection.

Other possible uses include noise reduction by grounding a vehicle exhaust, establishing a connection between a radial plate, balun, and a vertical antenna to keep current off of the feed-line, and any custom grounding application where a reliable connection is needed.

### Assemblies with 1/2 Inch Wide Braided Strap

DXE-TCB05-RT01	#10 ring lugs, 1' .....	<b>\$8.50</b>
DXE-TCB05-RT03	#10 ring lugs, 3' .....	<b>\$9.50</b>
DXE-TCB05-RT05	#10 ring lugs, 5' .....	<b>\$10.75</b>
DXE-TCB05-RT10	#10 ring lugs, 10' .....	<b>\$12.50</b>
DXE-TCB05-RT18I	1/4" ring lugs, 18" .....	<b>\$8.45</b>
DXE-TCB05-RT24I	1/4" ring lugs, 2' .....	<b>\$8.75</b>
DXE-TCB05-RT36I	1/4" ring lugs, 3' .....	<b>\$9.35</b>

### Assemblies with 1 Inch Wide Braided Strap

DXE-TCB10-RT01	1/4" ring lugs, 1' .....	<b>\$9.45</b>
DXE-TCB10-RT18I	1/4" ring lugs, 18" .....	<b>\$9.50</b>
DXE-TCB10-RT24I	1/4" ring lugs, 2' .....	<b>\$9.95</b>
DXE-TCB10-RT03	1/4" ring lugs, 3' .....	<b>\$10.95</b>
DXE-TCB10-RT05	1/4" ring lugs, 5' .....	<b>\$12.95</b>
DXE-TCB10-RT10	1/4" ring lugs, 10' .....	<b>\$17.95</b>

### 3/4 Inch Wide Braided Strap

DXE-TCB075-RT18I	1/4" ring lugs, 18" .....	<b>\$9.95</b>
DXE-TCB075-RT24I	1/4" ring lugs, 2' .....	<b>\$10.75</b>
DXE-TCB075-RT03	1/4" ring lugs, 3' .....	<b>\$11.95</b>



## Coaxial Cable Grounding Brackets

The CGB-Series Coax Grounding Brackets are a versatile solution for additional grounding of coaxial cable shields. The stainless steel bracket is supplied with a stainless steel V-bolt and hardware in your choice of two sizes for a solid connection to the tower leg. Each bracket has holes for use with DXE-363-SST bulkhead connectors or chassis mount SO-239 connectors.

**New!**



The Grounding Bracket is an ideal junction point for the coax pigtails that form the rotor loop to connect to the downleads. The bracket can also be used at the base of the tower to provide a solid grounding point before the coax cable is routed away from the grounded tower. The bracket has serrated teeth to bite through paint and corrosion. Additional fasteners are supplied if you wish to extend a ground braid or copper strap for secure grounding.

DXE-CGB-150	Coaxial Cable Grounding Bracket, fits 1/2" to 1 1/2" O.D. tube .....	<b>\$14.95</b>
DXE-CGB-200	Coaxial Cable Grounding Bracket, fits 1" to 2" O.D. tube .....	<b>\$14.95</b>

## Ground Strap

DX Engineering offers quality tinned copper braid in 5 widths for grounding applications. It is sold per foot to accommodate almost any project. Very long per-foot lengths may not be continuous—contact Customer Service to discuss your length needs if continuous length is required. The strap is available in these sizes:

DXE-TCB-038	3/8" wide x 1/32" thick .....	per foot <b>\$0.45</b>
DXE-TCB-050	1 1/2" wide x .030" thick .....	per foot <b>\$0.60</b>
DXE-TCB-063	5/8" wide x .030" thick .....	per foot <b>\$0.80</b>
DXE-TCB-075	3/4" wide x .040" thick .....	per foot <b>\$1.10</b>
DXE-TCB-100	1" wide x .045" thick .....	per foot <b>\$1.25</b>

# Maximum Isolation— Minimum Noise!

An often overlooked aspect of antenna relay systems is port-to-port isolation. Poor isolation manifests itself as receive noise being coupled from any unused antennas to the single selected antenna. For example, if you are using Antenna #1 but Antenna #7 is receiving a lot of noise, poor isolation will allow the noise to bleed over into your selected antenna port. This affects your ability to receive weak signals.

The DX Engineering RR8A Series Antenna Switches arrange the relays in a star pattern to select one or more of eight output ports when voltage is applied from a 9-wire control line. The RF-rated relays provide greatly improved power handling and SWR over conventional switches and allows port-to-port connections between any of the eight output ports. The port-to-port isolation is the best available—you will get no signal from unselected antennas! Our switches offer virtually no loss at HF and excellent low-loss performance up to 50 MHz (DXE-RR8A-SD) and 150 MHz (DXE-RR8A-HP).

## DX Engineering's Symmetrical Design—Highest Reliability and Performance!

### Remote Antenna Switches

Installation of these remote antenna switches is hassle-free! No need to remove the cover to install the control cable—it plugs in with an external connector. You can use inexpensive CAT-5 cable to connect between the relay switch and the controller at the operator position.

The DX Engineering RF Switch also provides great SWR and superior port-to-port isolation. Why is port-to-port isolation important? When you select an antenna with your RF switch you expect to hear all of the signals on that antenna—and that is all you want to hear! You don't want to hear signals from other antennas.

Port-to-port isolation is the property of the RF switch that keeps you from hearing signals from other antennas. If you have more noise than you would expect when you listen on a band, you may have less port-to-port isolation than you should.

There is a lot of RF out there; your antennas are immersed in RF all of the time. When you listen to 80m, for instance, your 40m antenna is still picking up the RF from the 40m band, 160m band, AM broadcast band, etc. Your other antennas are doing the same thing. Sometimes, the signals from two or more antennas can mix to give you even more interference issues. If the port-to-port isolation of your RF switch is lacking, you are going to hear some amount of noise that the other antennas are picking up.

This raises the noise floor of your location and makes it difficult to hear the station that you are trying to work.

DX Engineering RF Switches have a port-to-port isolation of greater than 60 dB for all ports, not just the best port. This is the best port isolation of all coax switches that we have tested—and we have tested ALL of the major brands. Some of the switches that we have tested from a major manufacturer have tested as low as 30 dB! None of the tested switches have a port-to-port isolation as high as the DX Engineering RF Switches.

**This is one component in your station that should be the very best!**

### Features

- Fully RF-shielded with high strength, UV-resistant cover, stainless steel mounting bracket and hardware
- Lightning protection standard
- Solderless, removeable plug for easy installation of control line with no disassembly
- Can be wired without disassembly
- Can select individual or multiple ports for stacking and phased array applications
- Safe 12-volt relay operation
- Unused antenna ports can be jumpered for open or shorted to ground



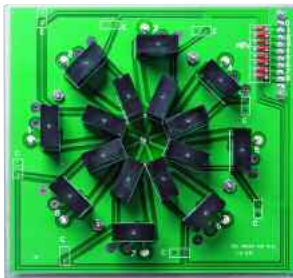
**New!**

### Ameritron RCS-4 Remote Antenna Switch

The Ameritron RCS-4 is a Four Position remote antenna switch which is powered through the coax cable.

The relay switch box may be tower, mast or wall mounted—the control console is located at your operating position. Bright LED indicators, steel enclosure, 50ms switching time, SO-239 connectors. Uses three heavy duty 10 ampere contact relays on a rugged G-10 fiberglass circuit board. The RCS-4 operates from 120 Vac power source, covers 1.8 to through 30 MHz at 1,500 watts.

AMR-RCS-4 1.5 kW Four Position RF Switch .....\$149.95



### DXE-RR8A-HP 5 kW Key-Down RF Switch

- Highest isolation
- 5 kW rating
- Usable to 150 MHz



### DXE-RR8A-SD 10 kW Key-Down RF Switch

- 10 kW rating
- Usable to 60 MHz
- Excellent isolation

The **DXE-RR8A-HP** uses 16 relays (2 per port) in a star arrangement to provide greater than 70 dB of port-to-port isolation. It is designed to switch coaxial lines in RF systems operating up to 5 kW continuous duty. The **DXE-RR8A-SD** is the largest switch in the RR8A series, designed to switch coaxial lines in high power RF systems up to 10 kW continuous duty.

### Specifications

- Port Isolation (Worst Case): 70 dB (RR8A-HP), 60 dB (RR8A-SD)
- Sealed RF Relays: 20 amps (HP), 25 amps (SD)
- Power Rating (<2:1 SWR at 30 MHz): 7 kW ICAS/5 kW CCS (HP), 10 kW ICAS/CCS (SD)
- Control Voltage: 10-14 Vdc/100 mA (HP), 10-14 Vdc/160 mA (SD)
- Loss (HP): <0.03 dB below 60 MHz, <0.25 dB below 150 MHz
- Loss (SD): <0.03 dB below 30 MHz, <0.16 dB below 60 MHz
- Impedance: 50 Ω
- Control Line: 8-wire plus ground, #24 up to 1,000 ft. (DXE-CW9S)

### CC-8 Controller

This controller can be used with any RR8A series RF switch, the RFS-1 or other products using 1-of-8 or BCD control. The unit features a metal case with rubber feet and has a built-in power supply. Unlike some other controllers, the CC-8 stays in place while you are switching. The control cable is attached via a modular plug. If you need to rearrange your shack, just unplug the connector! LED brightness is adjustable by a potentiometer on the rear panel.

### MFJ Manual Antenna Switches

#### Two-Position Manual Antenna Switch

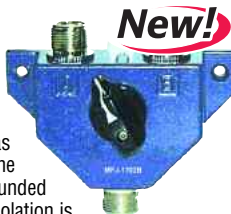
This 2-position coax switch has a center ground protection—the unused terminal is always grounded for static and RF protection. Isolation is better than 60 dB at 300 MHz and 50 dB at 450 MHz. The switch has less than 0.2 dB insertion loss and SWR below 1.2:1. Heavy cavity style construction, SO-239 connectors, and mounting holes for secure installation. Nominal Impedance: 50 Ω. Power Rating: 2.5 kW PEP, 1 kW CW. Dimensions 3" H x 2" W x 2" D.

MFJ-1702 .....\$19.95

#### Four-Position Manual Antenna Switch

Instantly select any of four antennas or center ground position. The switch features replaceable lightning surge protection that helps protect against distant lightning-induced surges and static. Isolation is better than 60 dB at 30 MHz and 50 dB at 500 MHz with extremely low SWR. Negligible insertion loss. Mounting holes for secure installation. Nominal Impedance: 50 Ω. Power Rating: 2.5 kW PEP.

MFJ-1704 .....\$79.50



DXE-RR8A-HP	5 kW Key-Down RF Switch.....	\$349.00
DXE-RR8A-SD	10 kW Key-Down RF Switch.....	\$395.00
DXE-CC8	Control Console, 8-position .....	\$159.95
DXE-RR8A-HP-P	5 kW Key-Down RF Switch Package, includes CC-8 controller .....	\$449.00
DXE-RR8A-SD-P	10 kW Key-Down RF Switch Package, includes CC-8 controller .....	\$495.00
<b>Accessories</b>		
AMR-RCS-12C	Ameritron Automatic Antenna Switch Controller.....	\$234.95
AMR-DB-13D	Cable, RCS-12C to Icom 706, 7000, 718 .....	\$23.95
AMR-DB-7DI	Cable, RCS-12C to Icom ACC2 .....	\$23.95
AMR-DB-7DK	Cable, RCS-12C to Kenwood TS-2000, 570, 870 .....	\$23.95
AMR-DB-8DY	Cable, RCS-12C to Yaesu 8-PIN CAT .....	\$23.95
AMR-DB-8MK	Cable, RCS-12C to Kenwood TS-480 .....	\$23.95
DXE-CW8	Control Wire, 8-conductor.....	per foot \$0.48
DXE-CW8-HD	Control Wire, 8-conductor heavy duty .....	per foot \$0.98
DXE-CW9	Shielded Control Wire, 9-conductor.....	per foot \$0.29

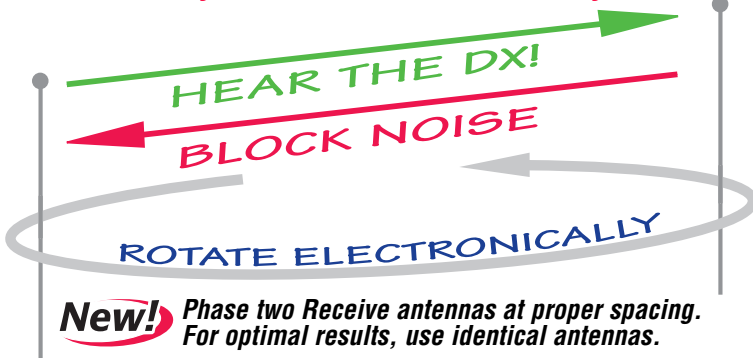
## Receive Antenna Variable Phasing Controller

Allows control of signal level and phasing of two receive antennas—see specifications below. It is available separately for those who want to design their own variable receive antenna system.



DXE-NCC-1 Receive Antenna Variable Phasing Controller .....\$599.95

## Electronically Rotatable Receive Antenna System



Phased receive-only antenna systems are used to create a directional pattern which can peak desired signals and remove interfering signals. Variable phase nulling allows an operator to improve reception by electronically reducing a stronger interfering signal arriving from a different direction.

This system includes two Active Receiving Vertical Antennas and the DXE-NCC-1 Receive Antenna Variable Phasing Unit. It combines the two verticals to produce a steerable directional array. The system improves your reception of weak DX by:

- Combining two omni-directional antennas to produce an adjustable directional pattern
- Reducing overload from a strong signal in a different direction
- Reducing interference from distant signals or noise in a different direction
- Nulling directional strong signals to hear weak stations on the same frequency

### Features

- Vertical antenna elements only 102 inches long
- Ideal for Amateur Radio or Shortwave listening
- Antenna elements are grounded when power is turned off
- Use with DXE-TVSU-1 sequencer for best protection before transmitting

### NCC-1 Phasing Unit Specifications

Usable Frequency Range: 300 kHz to 30 MHz

Optimum Performance Range: 500 kHz to 15 MHz

Third Order Output Intercept: +32 dBm each input, +38 dBm both inputs combined

Gain Flatness: +/- 1 dB over complete phase rotation

Gain: Adjustable from 0 dB to -40 dB

Available Phase Rotation: >360 degrees between 500 kHz and 15 MHz

Power: NCC-1 +13 Vdc nominal @ 1A minimum (2A recommended)

Antenna Port Power: 10-30 Vdc @ 300 mA maximum, TX muting available

DXE-AAPS-1P Active Antenna Phasing System .....\$1,099.95

## MFJ 1.5-30 MHz Deluxe Noise Canceller

This unit is designed to reduce noise or interference—or improve desired signals—before the noise affects sensitive receiver circuits. Unlike conventional noise blankers, it is effective on all types of noise, including interference (QRM) from unwanted signals.

You can adjust both phase and amplitude while combining two antenna inputs. The antenna inputs can be from two external antennas, or an external antenna and the unit's internal whip antenna. The signal output for the receiver is the vector addition or subtraction of signals from the two separate antennas. This removes unwanted noise and enhances desired signals.

The Deluxe Noise Canceller is optimized over the range of 1.8 to 30 MHz and has the interface circuitry necessary for operation with most modern HF transceivers.

MFJ-1026 1.5-30 MHz Deluxe Noise Canceller .....\$179.95



## RTR-1 Receive Antenna Interface for Transceivers

Now you can add a dedicated receive antenna to HF transceivers which lack a separate RX antenna input port! The DX Engineering RTR-1 Receive Antenna Interface is a unique, multi-purpose switch unit which automatically or manually switches the RF output antenna connector on any HF transceiver between reception using a separate receiving antenna system and transmitting with a standard transmitting antenna.

The RTR-1 enables operators to enjoy the improved reception that a low noise receiving antenna system offers. Connection to a Beverage, receive four-square, active receive antenna, and other receiving antennas and accessories is now possible.

- Stainless steel enclosure
- 200 watt switching capability
- Supports CW full break-in
- Switches out active receive antennas for close proximity to transmit antennas
- Allows use of RF preamp with single antenna
- Main antenna has SO-239 connector
- Receive outputs use RCA phono and Type F connectors
- Safe switching—transmit antenna is always connected to transceiver on power-off
- Hot switching lockout disables receive antenna during transmit mode

DXE-RTR-1 Receive Transmit Relay Switch .....\$159.95



## Receive Four-Square System

- W8J1 design
- Excellent directivity in a small space for better signal-to-noise ratio
- Switchable in four 90 degree spaced directions
- Reduced susceptibility to high angle signals compared to EWE, Flag, Pennant, or K9AY arrays
- Operates from 100 kHz to 30 MHz
- Each complete system package includes four active vertical antennas, RFS-2 switch, CC-8 controller, 1,000 feet of F6 flooded cable, connectors and tools
- Package also includes four active vertical antennas with relay protection (DXE-ARAV2-4P) and a TVSU-1 Time Variable Sequencer Unit to protect active antennas installed as close as 1/10 wavelength from transmitting antenna

DXE-RFS-TS2P Receive Four-Square System .....\$1,650.00

*System components also available individually.*



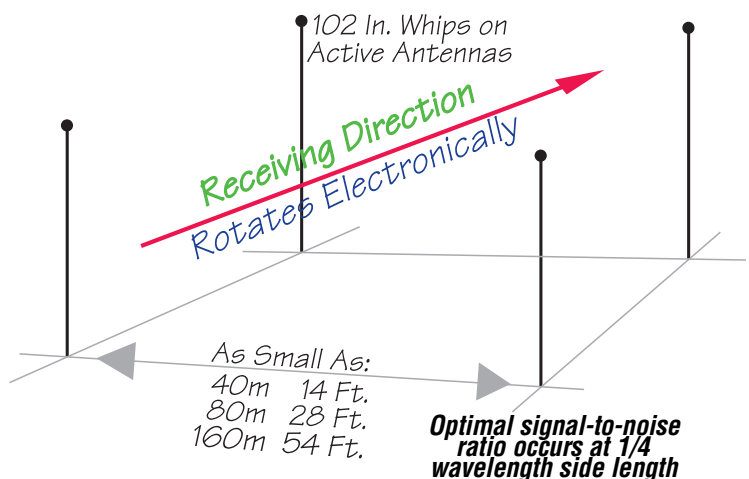
## Complete Electronically Steered Receiving System

- More than 5 S-units of front-to-back on optimized systems
- Works best on 160m, 80m & 40m
- Like having a rotatable Beverage antenna
- Fits in YOUR yard!
- Easily installed—no radials required

*Want to know what people are saying about this system?*

*Visit: [www.ham.net/reviews/detail/5336](http://www.ham.net/reviews/detail/5336)*

## Four-Square Receiving System



# Maximum Signal—Minimum Noise!

How often have you heard the old saying "If you can't hear 'em, you can't work 'em"? This is never truer than when you are in the pileup calling that rare contact that you need, wondering "Did he come back to me?" DX Engineering provides all the tools you need to construct fabulous receiving antennas—the kind that let you work stations that others can't even hear! These W8JI-designed

amplifiers and antenna controllers are known worldwide for their unequalled performance. Record-breaking DXpeditions—like VP6DX Ducie Island—know and use DX Engineering receiving equipment. You should follow their lead and enjoy hearing those weak stations like you have never heard them before.

## Single Direction Beverage Feed System

The DXE-BFS-1 is a single-wire Beverage Feed System. This W8JI design is immune to strong signal overload and core saturation common in multi-transmitter contesting environments, and is used by winning contest stations and low-band DXers. The unit uses an isolated-winding, matching transformer system to significantly increase the signal-to-noise ratio in Beverage and other high impedance antennas.

The DXE-BFS-1 works with antenna impedances from 400-500 Ω. Included with the DXE-BFS-1 is a 470 Ω, 2-watt non-inductive resistor that withstands nearby lightning strikes significantly better than hard-to-find carbon composition resistors.

Feedline impedance on the DXE-BFS-1 is designed for 75 Ω, although it will work with 50 Ω coax. The DXE-BFS-1 uses an industry standard CATV type F connector. DX Engineering sells quality 75 Ω coax and type F connectors for outdoor installations.

### Benefits

- 100 kHz to 30 MHz operating range
- Spark gaps minimize damage from lightning
- Wing nut terminals eliminate soldering
- Metal housings used for superior shielding and improved life
- Flange-mount holes for easy mounting
- Ground isolated secondary essential for building beverage arrays

DXE-BFS-1	Beverage Feed System .....	<b>\$49.95</b>
DXE-ECM-R470-2	470 Ω, 2-watt resistor, lightning damage-resistant, pack of 10.....	<b>\$20.00</b>



## Reversible Beverage System

The DXE-RBS-1P allows two Beverage antennas receiving in opposing directions to share the same space. With the DXE-RBS-1P, you can build a 2-wire reversible Beverage antenna system with superior signal-to-noise ratio, most useful at 40, 80 and 160m bands. The W8JI design consists of a Feedpoint System and Reflection Transformer. You can operate and even confirm the F/R ratio of this antenna at any time from the operating position.

This system is immune to strong signal overload and core saturation common in multi-transmitter contesting environments, and is used by winning contest stations and low-band DXers.

The DXE-RBS-1P has two antenna ports. The standard configuration of the DXE-RBS-1P has one port terminated (termination included) so both antennas share a common feedline. Applying 10 to 18 Vdc to the feedline switches between the antennas, and the direction of reception. For simultaneous reception from opposing directions, each of the two feedlines connect to a separate receiver.

While the DXE-RBS-1P is optimized to use 450 Ω ladder line for the antenna element, the system will work with any 300-600 Ω 2-wire line. 450 Ω ladder line is available from DX Engineering, sold separately. DX Engineering also sells quality 75 Ω coax and Type F connectors for outdoor installations.

### Benefits

- Broad operating range, 0.2 to 30 MHz
- Fully isolated grounds used to prevent common-mode noise and unwanted signals
- 75 Ω design enables the use of high quality, low cost cable
- Metal housings used for superior shielding and improved life

DXE-RBS-1P	Reversible Beverage Feed System.....	<b>\$199.95</b>
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## Active Receive Antenna Systems

DX Engineering's Active Receive Antenna Systems offer excellent receiving performance using a 102 inch whip antenna. The unique design is vastly superior to traditional active antennas in both signal handling and feedline decoupling. You get significantly better weak signal reception.

Available in vertical or horizontal dipole configurations, the systems include a non-conductive mounting plate, clamps, active matching system, and the 102 inch stainless steel whip elements. The horizontal dipole element uses two 102 inch whips for an overall length of 210 inches; the vertical configuration uses a single whip. Whip antennas have excellent wind survival and are very inconspicuous.

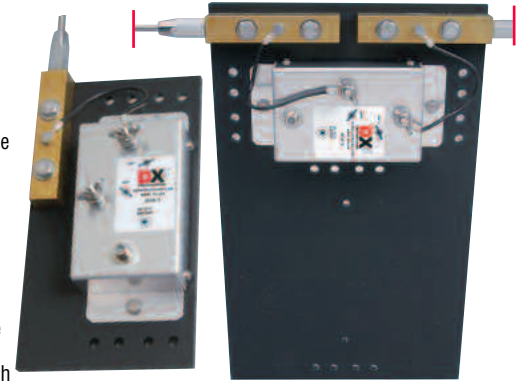
**When space is limited, use the DXE-ARAV2-1P or DXE-ARAH2-1P in conjunction with the DXE-TVSU-1 to provide for operation within 1/10-wavelength of a transmit antenna. The active antennas have relay protection to prevent overload of the transmit signal. The DXE-TVSU-1 sequencer controls switching times to ensure the receive system is protected before transmit power is applied. Use the DXE-ARAV2-4P, DXE-TVSU-1 and DXE-RFS-2 to provide four-square operation within 1/10-wavelength of a transmit antenna.**

The vertical configuration can be used as a single element or in combination with DX Engineering's RFS-2 Receive Four-Square Antenna System to build a broadband directional array that can be switched in four directions to peak the signal or null out noise. Vertical configurations are for suburban or rural locations with low levels of ground wave propagated noise. The dipole configuration makes a very sensitive, horizontally polarized receiving antenna. Horizontal polarization can greatly reduce ground wave propagated noise in congested urban environments. Light weight and low wind resistance reduces support requirements. The output connector is a Type F, allowing use of readily available high performance CATV feedlines and connectors (see page 29).

### Features

- Sensitive—weak signal sensitivity rivaling full size antennas
- Wide bandwidth—100 kHz to 30 MHz
- Excellent strong signal handling—outstanding third order intercept of +30 dBm
- Reduced noise—quiet FET followers and high feedline shield isolation
- Easy mounting and installation flexibility—pre-drilled mounting plate and universal clamps

DXE-ARAH2-1P	Active Receive Antenna, horizontal configuration with relay .....	<b>\$349.95</b>
DXE-ARAV2-1P	Active Receive Antenna, vertical configuration with relay .....	<b>\$289.95</b>



## 2-Port Receiving Antenna Switch

Select one of two output ports (generally connected to different receiving antennas) from one feedline using the DXE-RLS-2. Install the DXE-RLS-2 with two DXE-RBS-1P Reversible Beverage Antenna Systems and select four directions using a single main feedline. Install one or more DXE-RLS-2s to expand larger Beverage arrays and share the feedline back to the operating position.

Applying a nominal 12 Vac or DC control voltage through the feedline activates transfer to port 2. Use DX Engineering's DXE-FVC-1 Voltage Coupler to supply the control voltage through the feedline.

### Benefits

- Metal housings used for superior shielding and improved life
- High quality components
- Reliable CATV type F connectors standard
- Broad 0.3 to 30 MHz operating range with 75 Ω systems
- Jumper-selectable—control voltage pass-through to the selected port

DXE-RLS-2	Receiving Antenna Switch .....	<b>\$79.95</b>
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## Splitter/Combiner

Use the DX Engineering DXE-RSC-2 to combine two receiving antennas to form an array or to split the signal from an antenna to feed two receivers. The DXE-RSC-2 reduces problems and performance shortfalls caused by impedance errors in less-than-perfect antenna systems.

### Benefits

- High quality components
- Reliable weathertight connectors
- Broad, 0.3 to 30 MHz operating range
- Metal housings used for superior shielding and improved life
- Economical solution to potential impedance errors
- Spark gaps minimize damage from lightning

### Combining

Use the DXE-RSC-2 to combine, with negligible loss, two antenna systems into a single feedline. Some examples are two antennas forming an in-phase (broadside) receiving array, Cross-fire Echelon Beverage array, or any type of array with fixed phasing.

There are a number of advantages of using the DXE-RSC-2 for combining antenna systems over a standard parallel connection.

- The DXE-RSC-2 matches the entire antenna system to the cable impedance
- Unlike quarter wave matching sections that only work on one band, the DXE-RSC-2 has an extremely wide bandwidth
- With antennas connected directly in parallel, if either one develops a high impedance open, becomes shorted, falls down or has a feedline problem, the entire antenna system may become unusable. By using the DXE-RSC-2, only the problem antenna is unusable—the antenna on the other port can still be used. Due to the built-in isolation and balancing, the DXE-RSC-2 limits the total signal loss to approximately 6 dB
- The DXE-RSC-2 provides very high isolation between ports 1 and 2. This prevents either antenna from interfering with the other during normal operation

### Splitting

Use the DXE-RSC-2 to split an antenna signal in two, typically to feed two receivers.

Typical signal level reduction through the DXE-RSC-2 when used as a splitter is just over 3 dB per port. This is because each port receives half the available input power, and the DXE-RSC-2 has some very small additional loss in internal components.

As with any system, losses are based on source and load impedances being equal. The DXE-RSC-2 normally provides equal power, voltage, and current to matched loads on ports 1 and 2.

The primary advantage of the DXE-RSC-2, when feeding multiple receivers from one antenna, is each individual receiver will not seriously affect the signal level of the other receiver. This prevents receiver band filters attached to one port from “shorting” or loading the signal of another receiver tuned to a different band. In addition, any spurious signals generated in one receiver are greatly attenuated by the other DXE-RSC-2 before reaching the second receiver.

DXE-RSC-2 2-Port Splitter and Combiner .....\$49.95



## Receive Feedline Current Choke

The Receive Feedline Current Choke (RFCC) is the most effective solution to common-mode noise or unwanted signal ingress in receiving systems available. It provides thousands of ohms isolation between the input and output coaxial shield connections while passing desired signals, including DC or low frequency AC control signals. The RFCC has extremely high isolation impedance, which effectively blocks common-mode noise or unwanted signals, even in the presence of very poor grounding. The RFCC is effective from 300 kHz to 30 MHz. It comes with standard type F female connectors, although it can be used in any 50 to 75  $\Omega$  receiving system.

DXE-RFCC-1 Receive Feedline Current Choke, 50/75  $\Omega$ , 0.3-30 MHz.....\$64.95



## Feedpoint Voltage Coupler

- Inject control voltages onto feedline
- Injects +/- 12 Vdc or 12 Vac
- For use with DXE-RBS-1P Reversible Beverage System or Remote 2-Position Switch DXE-RLS-2
- AC supply included

DXE-FVC-1 .....\$84.95



## Time Variable Sequence Unit

Protect your active antennas, transmit/receive relays and other equipment with the DX Engineering Sequencer. You have full control of the timing between your rig and amplifier.

This microprocessor-controlled device provides 0-30 milliseconds of delay in 2 millisecond steps to as many as five outputs tied to the key-in line. You can sequence the switching of critical devices such as the transmit/receive relay, amplifier and exciter.

In addition, the DXE-TVSU-1 has an internal side tone generator for CW. You listen to what you are keying while it is being held in the bucket brigade delay for transmit after the programmed delay. The side tone is adjustable from 300 to 1,000 Hz in 50 Hz steps.

### Benefits

- Control timing on PTT turn-on, hang delay of PTT, hang delay of amplifier, hang delay of antenna relay, and turn-on delay of auxiliary output
- Dip switch settable delays of 0-30 milliseconds in 2 millisecond steps
- Side tone generator that follows input of keyer or hand key not transmitter
- Side tone can be programmed for 300-1,000 Hz in 50 Hz steps, adjustable volume
- Supports CW full break in

• **Allows use of our Active Receive Antennas in close proximity to transmit antennas**

DXE-TVSU-1 Time Variable Sequence Unit.....\$199.95



## Receiver Preamplifier

This is the best HF low noise amplifier available. The DXE-RPA-1 is optimized for a 0.3-35 MHz operating range. The push-pull amplifier design and robust components enable it to withstand high signal levels and operate when you need it most. The dynamic range of the DXE-RPA-1 is better than most receivers.

The DXE-RPA-1 is suitable for indoor or outdoor installation, with the option of being powered through the coaxial feed. The metal housing provides shielding and improved lifespan. The unit uses an RCA type phono jack and a Type F connector for the input and output connections, and has a relay that automatically bypasses the amplifier when DC power is removed.

### Benefits

- Push-pull operation eliminates harmonic distortion
- High quiescent current increases ability to handle strong signals without distortion or overload
- Meticulous craftsmanship and durable components provide superior dynamic range
- RCA type phono jack and type F connector ease installation
- Simplified switching—automatic bypass relay eliminates gain when DC power is off
- 10-18 Vdc power through coaxial feed or separate supply jack
- 10-18 Vdc through coax enables remote operation at antenna

### Specifications

- Gain: 16 dB, 0.3-35 MHz (+1.5/-1.5 dB over this range)
- Output Third Order Intercept: 43 dBm
- Noise Figure: 3.5 dB
- One dB Compression: +26 dBm (~0.4 W output)
- 500 Hz BW IM3 Dynamic Range: 110 dB or greater
- Power Requirement: 10-18 Vdc @ 140 mA maximum
- Dimensions: 5.75 x 3.875 x 1.375 inches (WxDxH)

DXE-RPA-1 Receiver Preamplifier, 0.3-35 MHz.....\$119.95



**See page 30 for  
75  $\Omega$  flooded cable and connectors!**

## DX Engineering Transmit Four-Square Hybrid Controller—4 Directions plus Omni

DX Engineering's TFS4 Series Four-Square Controllers combine a high level of engineering excellence with attention to operator convenience and ease of installation. The controllers are available for 160, 80/75, and 40 meters. They allow the operator to receive or transmit with 5.5 dB gain in any one of four directions with 20+ dB front-to-back ratio for interference reduction from unwanted directions. You can also switch to a single omni-directional pattern with the push of a single button.

This combination permits you to listen "all-around"—unhindered by pattern nulls—and then select the best direction for signal reception and noise rejection.

The TFS4 controllers are designed for use with a four monoband vertical antenna array spaced at the corners of a square that is 1/4-wavelength on a side. The vertical antennas must be ungrounded and resonant in the desired band, and should be directly base-fed by coaxial cable phasing lines from the centrally located controller. DX Engineering has vertical antennas that are well suited for this application. Above all, a properly designed and installed radial system is necessary for top antenna performance, whether a single vertical or a full array.

DX Engineering strongly recommends our optional QWC Series 1/4-wavelength cables. They are constructed of the highest quality Belden 8213, an RG-11/U foam dielectric cable with a velocity factor of 84% (0.84). These cables are cut to a precise electrical length based on your choice of center operating frequency. They are terminated with hand-soldered Silver-Teflon PL-259 connectors and weather-sealed with shrink tubing. Finally, each cable is tested for high voltage breakdown for maximum reliability and power handling.

If you already have a Four-Square array with a hybrid controller (such as COMTEK SYSTEMS, etc.) and would like to upgrade to improved performance and the Omni feature, the DX Engineering TFS4 Series is a direct transplant. BCD logic switching allows the use of a four-wire control cable to perform the necessary switching functions when powered by the included DXE-CC-4SQR Control Console.

### Features

- Classic Hybrid Design—easy to install
- 5 kW CW Power Rating—high reliability
- Hot Switching Lock-Out—disables amplifier while switching
- Drop-In Replacement for COMTEK SYSTEMS—easy upgrade
- Proven DX Engineering RF Relays—high performance
- Stainless Steel Weatherproof Housing—unique protection

DXE-TFS4-160	160 Meter Four-Square Controller with Control Console .....	<b>\$393.95</b>
DXE-TFS4-80	80 Meter Four-Square Controller with Control Console .....	<b>\$383.95</b>
DXE-TFS4-40	40 Meter Four-Square Controller with Control Console .....	<b>\$373.95</b>

**DX Engineering Customer Support personnel will be happy to help you select all the components necessary for a complete installation.**

*Contact Us for New Antenna Products and System Recommendations!*



### Accessories

DXE-QWC75-160-4P	Quarter Wave Cable, Belden 75 $\Omega$ , 160m, set of 4 .....	<b>\$645.00</b>
DXE-QWC75-80-4P	Quarter Wave Cable, Belden 75 $\Omega$ , 80m, set of 4 .....	<b>\$370.00</b>
DXE-QWC75-40-4P	Quarter Wave Cable, Belden 75 $\Omega$ , 40m, set of 4 .....	<b>\$215.00</b>
VEC-DL650M	Vectronics DL650M Dummy Load .....	<b>\$79.95</b>
DXE-PSW-12D1A	AC Adapter, 12 Vdc/1000 mA .....	<b>\$19.99</b>
DXE-CC-4SQR	Control Console, Four-Square .....	<b>\$199.95</b>
COM-CW4	Control Wire, 4-conductor .....	per foot <b>\$0.28</b>
DXE-CW9	Shielded Control Wire, 9-conductor .....	per foot <b>\$0.29</b>



New!

## COMTEK SYSTEMS ACB-4 Phased Array Systems for 2- or 4-Element Vertical Arrays

COMTEK SYSTEMS uses state of the art design and technology to produce the most advanced antenna systems possible. These Phased Array Systems are affordable, simple to install, and easy to use. A phased array consists of two or more elements fed in a phase relationship and power ratio to obtain a directional pattern. COMTEK SYSTEMS' phased array switchboxes can be used with 2- or 4-element horizontal or vertical arrays to provide the greatest directivity.

We offer the ACB-4 for all amateur bands from 10 meters to 160 meters. The ACB-4 is band specific—you cannot use an 80 meter ACB-4 for any band other than 80 meters.

### Power Supply/Switch Control

- One amp (1A @ 12.6VCT) transformer for reliable 115 Vac operation
- 200 PIV full wave bridge rectifier
- Primary and secondary voltages fused
- Heavy duty one amp diodes with Sprague RF bypass caps
- Custom USA-made switch permits 360° rotation in either direction with no stops
- Current limiting resistor protection for each LED
- Chassis and cover custom manufactured to COMTEK SYSTEMS specifications
- Lexan label for recording favored directions
- Compact size: 2" H x 6" W x 4 5/8" D



### 90 Degree Hybrid-Relay Matrix

- 15 amp gold-plated contact relays with dust covers
- Belden Teflon® silver stranded wire over 3M Fiberglass tape-wound toroids
- Sprague 5% balanced temperature, frequency, and voltage stable capacitors
- Laboratory analyzed for improved performance
- Double-sided printed circuit board
- 2 kW conservative rating for Amateur Radio Service
- Harris MOVs for lightning surge protection with Sprague RF bypass caps
- Brushed aluminum Z-chassis and cover with riveted seams
- Size: 4" H x 6" W x 8 1/2" D



COM-ACB-160-1	160m Phased Array Switch/Controller, 115 Vac .....	<b>\$459.95</b>
COM-ACB-160-2	160m Phased Array Switch/Controller, 230 Vac .....	<b>\$474.95</b>
COM-ACB-80-1	80m Phased Array Switch/Controller, 115 Vac .....	<b>\$449.95</b>
COM-ACB-80-2	80m Phased Array Switch/Controller, 230 Vac .....	<b>\$464.95</b>
COM-ACB-40-1	40m Phased Array Switch/Controller, 115 Vac .....	<b>\$439.95</b>
COM-ACB-40-2	40m Phased Array Switch/Controller, 230 Vac .....	<b>\$454.95</b>
COM-ACB-30-1	30m Phased Array Switch/Controller, 115 Vac .....	<b>\$429.95</b>
COM-ACB-30-2	30m Phased Array Switch/Controller, 230 Vac .....	<b>\$444.95</b>
COM-ACB-20-1	20m Phased Array Switch/Controller, 115 Vac .....	<b>\$419.95</b>
COM-ACB-20-2	20m Phased Array Switch/Controller, 230 Vac .....	<b>\$434.95</b>
COM-ACB-15-1	15m Phased Array Switch/Controller, 115 Vac .....	<b>\$409.95</b>
COM-ACB-15-2	15m Phased Array Switch/Controller, 230 Vac .....	<b>\$424.95</b>
COM-ACB-10-1	10m Phased Array Switch/Controller, 115 Vac .....	<b>\$364.95</b>
COM-ACB-10-2	10m Phased Array Switch/Controller, 230 Vac .....	<b>\$379.95</b>

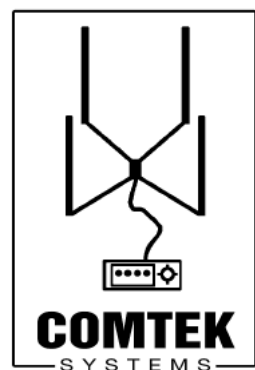
### Accessories

COM-H11-160-P	RG-11 Hybrid Array Phasing Cable, 160m, set of 4 .....	<b>\$439.95</b>
COM-H11-80-P	RG-11 Hybrid Array Phasing Cable, 80m, set of 4 .....	<b>\$259.95</b>
COM-H11-40-P	RG-11 Hybrid Array Phasing Cable, 40m, set of 4 .....	<b>\$169.95</b>
COM-H11-30-P	RG-11 Hybrid Array Phasing Cable, 30m, set of 4 .....	<b>\$144.95</b>
COM-H11-20-P	RG-11 Hybrid Array Phasing Cable, 20m, set of 4 .....	<b>\$129.95</b>
COM-H11-15-P	RG-11 Hybrid Array Phasing Cable, 15m, set of 4 .....	<b>\$119.95</b>
COM-H11-10-P	RG-11 Hybrid Array Phasing Cable, 10m, set of 4 .....	<b>\$114.95</b>
COM-CW4	4-Conductor Control Cable .....	per foot <b>\$0.28</b>
COM-VFA-1	Vertical Feedpoint Assembly .....	<b>\$15.95</b>
COM-VFA-4	Vertical Feedpoint Assembly, set of 4 .....	<b>\$56.95</b>
DXE-RADP-1P	Stainless Steel Radial Plate with 20 bolt sets .....	<b>\$54.50</b>
DXE-SSVC-2P	V-Saddle Clamp, fits 1" to 2" tube .....	<b>\$11.95</b>

## The Experts in Phased Antenna Systems!

COMTEK SYSTEMS Hybrids are used worldwide by serious contesters, DXers, and hams. With properly installed arrays and our hybrid couplers, you can achieve gain and impressive F/B at a lower cost than most low band beams at proper heights.

Vertical antenna arrays offer inherently better DX performance than common horizontal antennas. COMTEK SYSTEMS knows how to provide optimum performance from phased antenna arrays. Stacked horizontal arrays can be combined for selective vertical angle switching. Combined with DX Engineering quality and technical support, you are assured that your engineered system will deliver top results.



## COMTEK SYSTEMS PVS-2 Two-Element Phased Vertical Systems

For those who do not have space for a Four-Square phased vertical array, COMTEK SYSTEMS offers the superior PVS-2 two-element phased vertical system. Quality components are used throughout, yet the system is very affordable.

- Three direction switching includes selectable end-fire and broadside directions
- Typical 18 dB front-to-back rejection and 3 dB gain
- Rated at 3 kW continuous Amateur Service duty
- <.05 dB insertion loss
- Includes a custom, in-house wound UNUN and a 90 degree toroid
- Includes MOVs for maximum ESD protection
- Amphenol silver tip SO-239s and Potter & Brumfield relays
- A 4-conductor control line is required

COM-PVS-160-1	160m Phased Vertical System, 115 Vac.....	<b>\$333.95</b>
COM-PVS-160-2	160m Phased Vertical System, 230 Vac.....	<b>\$348.95</b>
COM-PVS-80-1	80m Phased Vertical System, 115 Vac.....	<b>\$333.95</b>
COM-PVS-80-2	80m Phased Vertical System, 230 Vac.....	<b>\$348.95</b>
COM-PVS-40-1	40m Phased Vertical System, 115 Vac.....	<b>\$333.95</b>
COM-PVS-40-2	40m Phased Vertical System, 230 Vac.....	<b>\$348.95</b>
COM-PVS-30-1	30m Phased Vertical System, 115 Vac.....	<b>\$333.95</b>
COM-PVS-30-2	30m Phased Vertical System, 230 Vac.....	<b>\$348.95</b>
COM-PVS-20-1	30m Phased Vertical System, 115 Vac.....	<b>\$333.95</b>
COM-PVS-20-2	30m Phased Vertical System, 230 Vac.....	<b>\$348.95</b>

### Accessories

COM-P213-160-P	RG-213 Phasing Cable, 160m, set of 2.....	<b>\$189.95</b>
COM-P213-80-P	RG-213 Phasing Cable, 80m, set of 2.....	<b>\$119.95</b>
COM-P213-40-P	RG-213 Phasing Cable, 40m, set of 2.....	<b>\$89.95</b>
COM-P213-30-P	RG-213 Phasing Cable, 30m, set of 2.....	<b>\$69.95</b>
COM-P213-20-P	RG-213 Phasing Cable, 20m, set of 2.....	<b>\$59.95</b>
COM-CW4	4-Conductor Control Cable .....per foot	<b>\$0.28</b>

**For more COMTEK SYSTEMS Products visit [www.comteksystems.com](http://www.comteksystems.com)**

## COMTEK SYSTEMS Antenna Switches

### STACK-2 Yagi Antenna Switch

New, affordable, 2-high stack switch for tribanders, log periodics, or monobanders from 40 to 10 meters. Amphenol silver tip connectors, MOVs (a COMTEK SYSTEMS standard since 1994), Potter & Brumfield relays, and a 2.4" O.D. UNUN provide reliability at 3 kW maximum power levels. Simply run two equal lengths of 50 Ω coax from the switch to each antenna and a 3-conductor control line and enjoy increased performance in contests or chasing DX.

COM-STACK-2-1	2-Stack Antenna Switch System, 115 Vac.....	<b>\$259.95</b>
COM-STACK-2-2	2-Stack Antenna Switch System, 230 Vac.....	<b>\$269.95</b>
COM-CW4	4-Conductor Control Cable.....per foot	<b>\$0.28</b>



### Stack-3 Stacked Yagi Switch

Based on K3LR's design, the SYS-3 is designed for monoband 3-stack Yagis. You can select any one antenna, all antennas, or any combination of two antennas. Indicator lights for each antenna tell you at a glance which antennas are selected. Features include a double-sided printed circuit board, Amphenol SO-239s, and MOV protection for all six control cable lines. The SYS-3 incorporates the same USA-made, gold-plated DPDT relays used in COMTEK SYSTEMS's ACB-4 Series Hybrid Phasing Systems, proven in hundreds of systems since 1990.

COM-STACK-3-1	3-Stack Yagi Switch System, 115 Vac .....	<b>\$399.95</b>
COM-STACK-3-2	3-Stack Yagi Switch System, 230 Vac .....	<b>\$414.95</b>
COM-CW6	6-Conductor Control Cable .....	per foot <b>\$0.36</b>

### 50 and 75 Ω Choke Baluns

Choke baluns ensure that RF does not flow on the outside shield of feedlines, phasing lines, etc. COMTEK SYSTEMS' baluns feature 100 Amidon beads on a length of RG-400 Teflon® double-shielded silver coax terminated with Silver Teflon PL-259 UHF connectors. Assembled baluns are covered with 3M heat shrink tubing. RF bead kits are available if you wish to assemble your own chokes.



COM-CFC-50	50 Ω Balun, assembled .....	<b>\$93.90</b>
COM-CFC-50K	50 Ω Balun, kit .....	<b>\$72.85</b>
COM-CFC-75	75 Ω Balun, assembled.....	<b>\$95.90</b>
COM-CFC-75K	75 Ω Balun, kit .....	<b>\$74.85</b>
COM-RFB-160	RF Choke Bead Kit, 160m.....	<b>\$124.90</b>
COM-RFB-80	RF Choke Bead Kit, 80m.....	<b>\$64.80</b>
COM-RFB-40	RF Choke Bead Kit, 30 and 40m.....	<b>\$47.95</b>
COM-RFB-20	RF Choke Bead Kit, 10, 15 and 20m .....	<b>\$38.95</b>

### Accessories

DXE-RADP-1P	Stainless Steel Radial Plate with 20 bolt sets.....	<b>\$54.50</b>
DXE-SSVC-2P	V-Saddle Clamp, fits 1" to 2" tube.....	<b>\$11.95</b>

## VFA-1 Vertical Feedpoint Assembly

The VFA-1 Vertical Feedpoint Assembly for vertical antennas eases the task of attaching a coaxial cable to your aluminum tubing. Silver SO-239s and stainless hardware ensure long life and reliability. The assembly is available in a set of four for 4-square arrays.

COM-VFA-1	Vertical Feedpoint Assembly ....	<b>\$15.95</b>
COM-VFA-4	Vertical Feedpoint Assembly, set of 4 .....	<b>\$56.95</b>

### Accessories

COM-CW3	Control Wire, 3-conductor .....	per foot <b>\$0.25</b>
COM-CW4	Control Wire, 4-conductor .....	per foot <b>\$0.28</b>
COM-CW6	Control Wire, 6-conductor .....	per foot <b>\$0.36</b>



# DX Engineering Verticals— High Performance/Low Cost!

Introducing a new series of high-performance HF vertical antennas with DX Engineering THUNDERBOLT™ antenna technology! Models include monoband and multi-band verticals utilizing both fast taper 3-foot tubing sections for lowest wind resistance and slow taper 6-foot tubing sections for greatest bandwidth.

**Designed with corrosion-resistant 6063 aluminum tubing and stainless steel hardware, these antennas are both durable and attractive. The fast taper models can be shipped affordably via postal service.**

The DX Engineering Multi-Band HF antennas are high-performance vertical antenna systems designed with engineering excellence and performance in mind. Three models are available to operate over the entire 160 through 10 meter range, or 80 through 10 meters with an optional DX Engineering UNUN and your wide range antenna tuner.

Various monoband models are available to operate over an entire band with an SWR of less than 1.5:1. They can be made multi-band-capable with optional DX Engineering accessories. Our antennas offer fullsize quarter wave performance! All models feature the market's strongest fiberglass insulator.



**AUTO TUNE  
43 FEET  
90 MPH  
NO GUYS**

**\$679<sup>00</sup>**  
Includes  
Auto-Tuner



### 60 Meter Full Size

- Slow taper, 43 ft. vertical radiator
  - Thick stainless steel tilt base
  - Full 60 meter coverage with SWR of 1.5 or less
  - No coils or linear loading elements
  - Easily upgradeable to DXE-80VA-3 for 75/80 meter monoband operation
  - Includes impedance matching network
  - 6063 T832 corrosion-resistant aircraft aluminum tubing and stainless steel hardware
- |                                |                 |
|--------------------------------|-----------------|
| DXE-60VA-1P .....              | <b>\$349.50</b> |
| DXE-GUY400-KIT Guying Kit..... | <b>\$54.95</b>  |

### THUNDERBOLT™ Multi-Band High Performance Vertical Antenna (Tuner Required)

#### 160 to 10 Meters

- Slow taper, heavy duty tubing—optimal 43 ft. vertical radiator
  - 6063 T832 corrosion-resistant aircraft aluminum tubing and stainless steel hardware
  - Easy tuning design
  - No coils or linear loading elements
  - Thick stainless steel tilt base
  - 5 kW continuous/10kW CW/SSB rating
  - Includes special DXE-UN-43 UNUN for multi-band use with your wide range tuner
  - Easily upgradeable to DXE-80VA-3 for 75/80 meter monoband operation
- |                                |                 |
|--------------------------------|-----------------|
| DXE-MBVA-1UP .....             | <b>\$449.50</b> |
| DXE-GUY400-KIT Guying Kit..... | <b>\$54.95</b>  |

**80/40 DUAL BAND  
55 FEET—NO GUYS  
BIG SIGNAL**



**5KW TRAP**

**Dual Band  
\$899<sup>00</sup>**

**75/80 Meter  
\$799<sup>00</sup>**



### THUNDERBOLT™ Dual Band High Performance Vertical Antennas

#### 80/40 Meters

- Full band coverage on 40 and 300 kHz on 80 meters with SWR under 2:1—no outboard tuner needed
- Tunable above and below 7 MHz range for MARS and CAP frequencies
- Maximum legal power handling
- Optimum 53 ft. overall height
- Self-supporting design withstands 50 MPH wind without guying—easy raising and lowering with optional winch kit

DXE-8040VA-1 Antenna .....	<b>\$899.00</b>
DXE-VRW-1 Manual Winch Kit .....	<b>\$169.99</b>
DXE-7580-THK CW Optimizer Capacity Hat.....	<b>\$59.95</b>

#### 40/30 Meters

- Full band coverage on 40 and 30 meters with SWR under 1.5:1—no tuner needed
- 40m bandwidth greater than 750 kHz with SWR under 2:1
- Tunable above and below 7 MHz range for MARS and CAP frequencies
- Maximum legal power handling
- Optimum 30 ft. overall height
- Self-supporting design withstands 60 MPH wind without guying

DXE-4030VA-1 .....	<b>\$299.50</b>
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### THUNDERBOLT™ Single Band High Performance Vertical Antennas

#### 80/75 Meters

- 300 kHz bandwidth with SWR under 2:1—no outboard tuner needed
- Tunable for CW or SSB—change base coil tap for segment
- Maximum legal power handling
- Optimum 53 ft. overall height
- Self-supporting design withstands 50 MPH wind without guying—easy raising and lowering with optional winch kit

DXE-7580VA-1 Antenna .....	<b>\$699.00</b>
DXE-VRW-1 Manual Winch Kit .....	<b>\$169.99</b>
DXE-7580-THK CW Optimizer Capacity Hat.....	<b>\$59.95</b>

#### 80 Meter with Performance-Enhancing Top Hat

- Slow taper, 43 ft. vertical radiator
- 6063 T832 corrosion-resistant aircraft aluminum tubing and stainless steel hardware
- 12 ft. diameter capacity hat—resonant on 3.5-4.0 MHz
- Thick stainless steel tilt base
- 300 kHz wide below 2:1 SWR
- No coils or linear loading elements
- 5 kW continuous/10kW CW/SSB rating
- Includes impedance matching network

DXE-80VA-3 .....	<b>\$499.50</b>
DXE-GUY400-KIT Guying Kit.....	<b>\$54.95</b>