We’ll Beat Competitors’ Prices—Call Us!
ANTENNA SYSTEMS

**DX Engineering Verticals—High Performance and Low Cost!**

Introducing a new series of high-performance HF vertical antennas with DX Engineering THUNDERBOLTM 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 full size quarter wave performance! All models feature the market’s strongest fiberglass insulator.

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**DX Engineering Verticals—Why Pay More?**

**THUNDERBOLT™ Dual Band 40/30 Meter High Performance Vertical**
- 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

**Fast Taper – 2 Inch to 1/2 Inch 80m and up**
- 33 ft. vertical radiator
- 6063 T832 corrosion-resistant aircraft aluminum tubing and stainless steel hardware
- Thick stainless steel tilt base
- Easy tuning design—correct length and taper
- No coils or linear loading elements
- Requires DXE-UN-43 UNUN Balun for multi-band use with your wide range tuner

**High Performance 40m Vertical**
- High performance, self-supporting EZ-UP™ vertical antenna system
- 6063 T832 corrosion-resistant aircraft aluminum tubing and stainless steel hardware
- Operates over the entire 40 meter band with an SWR of less than 1.5:1
- Less than 24 feet high
- No coils or linear loading elements
- Easily configured to operate on the 30 meter band

**THUNDERBOLT™ High Performance 30m Vertical**
- Fast Taper – 2 Inch to 1/2 Inch
- 24 ft. tall vertical element
- 6063 T832 corrosion-resistant aircraft aluminum tubing and stainless steel hardware
- Operates over the entire 30 meter band with an SWR of less than 1.5:1
- Full length—no coils or linear loading elements
- Perfect for four-square or phased arrays

**THUNDERBOLT™ 2 1/8 Inch to 1 1/2 Inch 60m Vertical Antenna**
- Fast Taper – 2 1/8 Inch to 3/8 Inch 160 to 10m Multi-Band Vertical
- 43 ft. optimal length vertical radiator
- 6063 T832 corrosion-resistant aircraft aluminum tubing and stainless steel hardware
- Easy tuning design—correct length and taper
- Thick stainless steel tilt base
- No coils or linear loading elements
- Requires DXE-UN-43 UNUN Balun for multi-band use with your wide range tuner

**High Performance 40m Vertical**
- Fast Taper – 2 Inch to 1/2 Inch
- 33-35 ft. tall vertical element
- 6063 T832 corrosion-resistant aircraft aluminum tubing and stainless steel hardware
- Operates over the entire 40 meter band with an SWR of less than 1.5:1
- Full length—no coils or linear loading elements
- Easily configured to operate on the 30 meter band
- 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 75/80m monoband operation

**THUNDERBOLT™ High Performance 30m Vertical**
- Fast Taper – 2 1/8 Inch to 1 1/2 Inch
- 24 ft. tall vertical element
- 6063 T832 corrosion-resistant aircraft aluminum tubing and stainless steel hardware
- Operates over the entire 30 meter band with an SWR of less than 1.5:1
- Full length—no coils or linear loading elements
- Perfect for four-square or phased arrays

**THUNDERBOLT™ 2 1/8 Inch to 1 1/2 Inch 75/80m Vertical Antenna**
- 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

**THUNDERBOLT™ 2 1/8 Inch to 1 1/2 Inch 60m Vertical Antenna**
- Slow taper, 43 ft. vertical radiator
- 6063 T832 corrosion-resistant aircraft aluminum tubing and stainless steel hardware
- Thick stainless steel tilt base
- Full 60 meter coverage with SWR 1.5 or less
- No coils or linear loading elements
- Easily upgradeable to DXE-80VA-3 for 75/80m monoband operation
- Includes impedance matching network

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**THUNDERBOLT™ Accessories**
- DXE-FADP-1P Radial Plate with 20 stainless bolt sets...
- DXE-363-SST Bulkhead Grounded...
- DXE-UN-43 High power UNUN for non-resonant verticals...
- DXE-UN-BRKT UNUN mounting kit for non-resonant verticals...
- DXE-SSWC-2P V-Saddle Clamp for DXE-VFCC-BRKT...

**Build your own 1/4 wave vertical!**

**Telescopic Aluminum Antenna Kit**
- 65 ft. tapering in 6 foot sections from 2” O.D. to 7/8” O.D. at the top
- DXE-ATK65 Telescoping Aluminum Antenna Kit...
- DXE-VE-BASE Vertical Antenna Base...
- DXE-VA-BASE Vertical Antenna Heavy Duty...
Hustler BTV Verticals

The Hustler BTV antenna series delivers good performance, easy assembly, and the best reliability of any multi-band vertical on the market. These antennas offer 2:1 SWR or better at the band edges and up to a 100 kHz bandwidth on 75/80m (5VTV and 6BTV only). Hustler’s exclusive trap design offers the lowest loss possible. Hustler BTV series antennas are a quarter wave-trapped vertical design. The antenna should be ground-mounted with radials or elevated-mounted with tuned radials. Visit the DX Engineering website for more information about radials for quarter wave vertical antennas.

The sealed cover on the traps assures stable tuning in all kinds of weather. There is a wide tuning range designed in the antenna to accommodate differing ground plane conditions. All antenna sections are 1.25 inch heavy wall, high strength aluminum. The traps use a solid 1 inch fiberglass form for the ease of assembly, and the best reliability of any multi-band vertical on the market. These antennas offer 2:1 SWR or better at the band edges and up to a 100 kHz bandwidth on 75/80m (5VTV and 6BTV only). Hustler’s exclusive trap design offers the lowest loss possible.

The traps use a solid 1 inch fiberglass form for optimum electrical and mechanical stability. The base uses an extra heavy duty aluminum mounting bracket with low loss, high strength insulators.

HUS-4-BTV Hustler BTV, 4 band ................................................ $124.95
HUS-5-BTV Hustler BTV, 5 band ................................................ $159.95
HUS-6-BTV Hustler BTV, 6 band ................................................ $189.95

Husky Verticals

The Husky Verticals offer the best performance, easy assembly, and the best reliability of any multi-band vertical on the market. These antennas offer 2:1 SWR or better at the band edges and up to a 100 kHz bandwidth on 75/80m (5VTV and 6BTV only). Husky’s exclusive trap design offers the lowest loss possible.

The Husky BTV series antennas are a quarter wave-trapped vertical design. The antenna should be ground-mounted with radials or elevated-mounted with tuned radials. Visit the DX Engineering website for more information about radials for quarter wave vertical antennas.

The sealed cover on the traps assures stable tuning in all kinds of weather. There is a wide tuning range designed in the antenna to accommodate differing ground plane conditions. All antenna sections are 1.25 inch heavy wall, high strength aluminum. The traps use a solid 1 inch fiberglass form for optimum electrical and mechanical stability. The base uses an extra heavy duty aluminum mounting bracket with low loss, high strength insulators.

HUS-4-BTV Husky BTV, 4 band .............................................. $159.95
HUS-5-BTV Husky BTV, 5 band .............................................. $189.95
HUS-6-BTV Husky BTV, 6 band .............................................. $229.95

Hy-Gain Vertical Antennas

Hy-Gain Vertical Antennas

AV-640 Patriot HF 8-Band, No-Radials Vertical

Hy-Gain’s new AV-640 Patriot HF is the best built, best performing, and best priced multi-band vertical available today. Make full use of your sunspot cycle with the Patriot’s low angle signal. The 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. An effective counterpoise system replaces radials and grounding. Instead of typical lossy can traps, the AV-640 resonators are placed in parallel—not in series. End loading of the lower HF bands allows efficient operation with a manageable antenna height. Maximum Power: 1,500 watts. Overall Height: 25.5 feet.

$439.95

AV-18HT Hy-Tower 5-Band, 50 Foot Vertical

The AV-18HT Hy-Tower is an omni-directional, self-supporting, automatic-bandswitching vertical radiator. It operates on the 10, 12, 15, 17, 20, 30 and 40 meter Amateur bands. No ground radials are required with the AV-18HT. Its design is based on an off-center-fed dipole, sometimes called a “Widom” antenna. High efficiency high-power traps are used to isolate the active sections of the antenna.

The AV-18HT uses a heavy duty, tiltable mast clamp that accepts masts up to 2 1/8” O.D. The entire antenna can be easily raised and lowered for tuning purposes and for use on recreational vehicles (RVs). The AV-18HT’s overall length of 29 feet (8.8 meters) contributes to exceptional bandwidths on 40 and 20 meters. Maximum Power: 750 watts average, 1,500 watts PEP.

$899.95

Guying Kits

Many locations experience winds that can be damaging to antennas, even at ground level. These kits provide 4 ground anchors and plenty of 260 pound, 3/32 inch diameter rope to provide the guying necessary to protect your vertical antenna. The black rope is UV-protected to last for years.

DXE-GUY100-KIT BTV Guying Kit, 100’ of rope ........................................ $29.95
DXE-GUY200-KIT BTV Guying Kit, 200’ of rope ........................................ $37.95
DXE-GUY400-KIT Vertical Guying Kit, 400’ of rope ........................................ $54.95

Accessories for Vertical Antennas

DXE-TB-3P Tilt Base Kit for Hustler BTV.............................................. $62.50
DXE-SSV-2C V-Saddle Clamp, 1” to 2” O.D. .............................................. $11.95
DXE-AOK-7B1193 Wing Nut Tilt Base Add-On Kit, 2 per pack ................ $7.95
DXE-AOK-DCF Direct Coax Feed .......................................................... $22.95
DXE-BCB-6XU2 Low Power DCF Jumper Cable, 2’ ................................ $18.99
DXE-BCB-6XU2 High Power/Low Loss DCF Jumper, 2’ ......................... $24.95
DXE-VFCC-H05-A Vertical Feedline Current Choke ............................... $134.95
DXE-GUY100-KIT BTV Guying Kit with 100’ of rope ............................. $29.95
DXE-GUY200-KIT BTV Guying Kit with 200’ of rope ............................. $37.95
DXE-VFCC-BKRT Insulated Balun Mount .............................................. $19.95

Visit DXEngineering.com for more Hustler and Hy-Gain Products!
**DX Engineering Transmit Four-Square Hybrid Controller—4 Directions plus Omni**

DX Engineering’s TFS4 Series of Four-Square Controllers brings together the highest level of engineering excellence with the practical realities of operator convenience and ease of installation. The TFS4 Series Hybrid Controllers are available in versions for 160, 80/75 and 40 meters.

They allow the operator to receive or transmit with gain in any one of four directions with good front-to-back ratio—or in a single omni-directional pattern with the push of a single switch. This combination is a great tool, which permits you to listen “all-around”—unhindered by pattern nulls—and then select the best direction for signal reception and noise rejection.

The basic concept for a Four-Square array begins with four monoband vertical antennas spaced at the corners of a square that is 1/4-wavelength on a side. The vertical antennas must be resonant in the desired band and directly fed by the coaxial cable phasing lines from the centrally located controller. The verticals must be ungrounded and fed at the base. 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.

The four antennas are connected to the controller by electrical 1/4-wavelength cables constructed of nominal 75 Ω cable with foam dielectric, whose velocity factor is high enough to allow the cable to physically reach the controller. A good cable for this purpose in Belden 8213, an RG-11/U foam dielectric cable with a velocity factor of 84% (0.84). Since the transmit power is divided by the controller, the cable can handle maximum power with ease. Custom length cables may be ordered from DX Engineering Customer Service.

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—easy upgrade
- Proven DX Engineering RF relays—high performance
- RF Shielded weatherproof housing—unique protection

**DXE-TFS4-160** 160 Meter Four-Square Controller with Control Console $499.00

**DXE-TFS4-80** 80 Meter Four-Square Controller with Control Console $499.00

**DXE-TFS4-40** 40 Meter Four-Square Controller with Control Console $499.00

**DXE 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-GWC75-160-4P** Quarter Wave Cable, Belden 75 Ω, 160m set of 4 $645.00
- **DXE-GWC75-80-4P** Quarter Wave Cable, Belden 75 Ω, 80m set of 4 $370.00
- **DXE-GWC75-40-4P** Quarter Wave Cable, Belden 75 Ω, 40m set of 4 $215.00
- **VEC-6L50M** Vectronics DL650M Dummy Load $78.00
- **DXE-PSW-1201A** AC Adapter, 12 Vdc/1000 mA $19.99
- **DXE-CC-4SQR** Control Console, Four-Square $164.95
- **COM-CW4** Control Wire, 4-conductor per foot $0.28
- **DXE-CW9** Shielded Control Wire, 9-conductor per foot $0.29

**Four-Square Transmitting Arrays**

Installation and operation of a four-square array is no mystery when some basic information is considered. First and foremost, a four-square array requires a certain amount of real estate. The area is dependent on the band of operation and is easily defined. The antennas must be placed at the corners of a square that measures 1/4-wavelength on each side. Space must be allowed for the ground radials, which extends the area another 1/4-wavelength in all directions. Including the radials, the square now measures 3/4-wavelength on each side. That translates to roughly 200 by 200 feet on 80 meters and 100 by 100 feet on 40 meters.

Because of the frequency-dependent switching and phasing components, a four-square array is a monoband system. The proper antennas should be identical, single band antennas. While multiband antennas have been used, proper operation occurs only on the band the switching system was designed for. Ideally, the antennas should be identical 1/4-wavelength vertical monopoles, series-fed at the base. Shortened, loaded base-fed antennas may be used as long as they are identical, but performance will be lower.

We cannot overemphasize the importance of a good ground radial system. At least 32 straight radials, about 1/4-wavelength long, are recommended at each of the four vertical antennas. Some of the radials will cross in the middle of the array. These radials can cross if they are well insulated from each other at the crossing points, but it is better if the radials are bonded as pictured and described in the installation section of the manual. Either method will provide suitable performance. What you want to avoid are poor or intermittent connections between radials.

Assembling the system is virtually plug-and-play once the antennas and radials have been installed. The system controller mounts to a centrally located pipe with the supplied clamp and hardware. Carefully tuned 75 Ω quarter wave cables are connected to each antenna, and appropriate lengths of 50 Ω coaxial cable and 4-wire control cable connect to the radio and the control console at your operating position. With careful design, construction, and tuning, no further adjustments of the antenna system should be necessary. On-the-air testing will confirm proper switch operation.

As with any properly installed quarter wave vertical antenna, signals arriving at lower angles of radiation will be enhanced more than very high angle signals. Phasing is optimized for very low wave angles. This means array directional performance will generally be better on more distant low angle and on local ground wave signals.

While greatly dependent on many variables (radial system, angle of arrival of signals, etc.), the gain of a properly designed and installed four-square array will be on the
four-square theory and performance. Reference books such as "ON4UN’s Low Band DXing" for more in-depth discussion of four-square theory and performance.

A Comparison of Phased Array and 4-Square Array Radiation Patterns

The COMTEK SYSTEMS ACB-4 Phased Array System provides 2-element array patterns as shown left in this illustration. Note the clean pattern and 25 dB of front-to-back at low angles. Gain is 4 dB over a single element using a good ground. More gain and better front-to-back and front-to-side ratios are possible using a 4-element array. Four separate verticals are arranged in a square with one vertical element at each corner. The square is one-quarter wavelength on a side. Its pattern is directional across each diagonal of that square. In other words, it beams across opposite corners of the square.

The ACB-4 provides the correct power and phase division between these four vertical elements. A switch matrix allows rotation of the relative powers and phases, providing four separate directions at the flick of a switch from your operating position. You switch 90 degrees at each setting, providing a full 360 degrees of coverage. The exterior switchbox of the ACB-4 contains all the switching and phase and power controls using hybrid toroids. No coax phasing cables are hanging at the switchbox.

For more COMTEK SYSTEMS Products visit www.comtek systems.com

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 10m to 160m. The ACB-4 is band specific—you cannot use an 80m ACB-4 for any band other than 80m.

Power Supply/Switch Control
- One amp (1A @ 12.6V C/T) 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

Accessories
- COM-ACB-160-1 160m Phased Array Switch/Controller, 115 Vac.................. $419.95
- COM-ACB-160-2 160m Phased Array Switch/Controller, 230 Vac.................. $434.95
- COM-ACB-80-1 80m Phased Array Switch/Controller, 115 Vac................... $409.95
- COM-ACB-80-2 80m Phased Array Switch/Controller, 230 Vac................... $424.95
- COM-ACB-40-1 40m Phased Array Switch/Controller, 115 Vac................... $399.95
- COM-ACB-40-2 40m Phased Array Switch/Controller, 230 Vac................... $414.95
- COM-ACB-30-1 30m Phased Array Switch/Controller, 115 Vac................... $399.95
- COM-ACB-30-2 30m Phased Array Switch/Controller, 230 Vac................... $414.95
- COM-ACB-20-1 20m Phased Array Switch/Controller, 115 Vac................... $374.95
- COM-ACB-20-2 20m Phased Array Switch/Controller, 230 Vac................... $389.95
- COM-ACB-15-1 15m Phased Array Switch/Controller, 115 Vac................... $364.95
- COM-ACB-15-2 15m Phased Array Switch/Controller, 230 Vac................... $379.95
- COM-ACB-10-1 10m Phased Array Switch/Controller, 115 Vac................... $364.95
- COM-ACB-10-2 10m Phased Array Switch/Controller, 230 Vac................... $379.95

COMTEK SYSTEMS ANTENNA SYSTEMS

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<thead>
<tr>
<th>Item</th>
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<td>COM-VFA-4</td>
<td>Vertical Feedpoint Assembly, set of 4</td>
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<tr>
<td>COM-RR-1</td>
<td>Aluminum Radial Ring with 60 sets of hardware</td>
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<td>DXE-RAOP-1P</td>
<td>Stainless Steel Radial Plate with 20 bolt sets</td>
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<tr>
<td>DXE-SSVC-2P</td>
<td>V-Saddle Clamp, fits 1” to 2” tube</td>
<td>$11.95</td>
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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 array antennas. 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 System

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 ........................................ $333.95
COM-PVS-160-2 160m Phased Vertical System, 230 Vac ....................................... $348.95
COM-PVS-80-1 80m Phased Vertical System, 115 Vac ........................................... $333.95
COM-PVS-80-2 80m Phased Vertical System, 230 Vac ........................................... $348.95
COM-PVS-40-1 40m Phased Vertical System, 115 Vac ........................................... $333.95
COM-PVS-40-2 40m Phased Vertical System, 230 Vac ........................................... $348.95
COM-PVS-40-3 40m Phased Vertical System, 30m Vac ........................................... $333.95
COM-PVS-30-1 30m Phased Vertical System, 115 Vac ........................................... $348.95
COM-PVS-30-2 30m Phased Vertical System, 30m Vac ........................................... $333.95
COM-PVS-20-1 20m Phased Vertical System, 115 Vac ........................................... $348.95
COM-PVS-20-2 20m Phased Vertical System, 30m Vac ........................................... $333.95
COM-PVS-160-2 160m Phased Vertical System, 230 Vac ....................................... $348.95

Accessories

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

For more COMTEK SYSTEMS Products visit www.comteksystems.com

Two-Element Phased Vertical Arrays

Phased verticals offer excellent performance in a reasonably small area. The distance between the two vertical radiators in a single plane is the defining factor for actual installation. The spacing is about 68 feet on 80 meters and 34 feet on 40 meters.

The PVS-2 Phased Vertical Array lets you switch to a cardiod, uni-directional pattern (end-fired from each direction along the plane of the antennas) or a bi-directional, figure 8 pattern broadside to the plane.

UNI-DIRECTIONAL

BI-DIRECTIONAL

For North American and South American users, the verticals should be placed in a northeast and southwest alignment. Since the majority of DX countries are in Europe and the Pacific, this arrangement will yield the best results. This will provide a broadside figure 8 to northwest and southeast directions.

A good ground radial system is required for optimum performance. The ground system should extend radially a 1/4-wavelength in all directions from each vertical radiator.

The ground radials can cross if they are well insulated from each other at the crossing points, but it is better if the radials are bonded. Either method will provide suitable performance. What you want to avoid are poor or intermittent connections between radials. Assembling the system is virtually plug-and-play once the antennas and radials have been installed. The system controller mounts to a centrally located pipe with the supplied clamp and hardware. Carefully tuned 75 Ω, quarter wave cables are connected to each antenna, and appropriate lengths of 50 Ω coaxial cable and 4-wire control cable connect to the radio and the control console at your operating position. With careful design, construction, and tuning, no further adjustments of the antenna system should be necessary. On-the-air testing will confirm proper switch operation.

While greatly dependent on many variables (radial system, angle of arrival of signals, etc.), the gain of a properly designed and installed two-element phased vertical array will be on the order of 3 dB over a single vertical element. Typical F/B ratios will approach or exceed 20 dB, minimizing interference from the side and rear directions. See various reference books such as “ON4UN’s Low Band DXing” for more in-depth discussion of phased vertical arrays.
Stacked Yagi Switching

Yagi antennas may be vertically stacked and switched to provide increased gain or improve system performance. Stacking Yagis and feeding them in phase will produce increased gain and a correspondingly narrower vertical radiation angle. In itself, this can be a distinct competitive advantage to the contester and DXer.

Signals arrive at your location at various vertical angles depending on propagation mode, distance, number of hops, etc. If you can control the vertical radiation angle of your antenna, you can also optimize your signal along those paths. Since the vertical radiation angle of a horizontally polarized antenna depends on the height of the antenna above the ground, continuously adjusting antenna height is an obvious, but not practical, method of adjusting the vertical angle.

Switching between antennas of differing heights above ground allows a stepped variation of vertical angle, depending on the actual antenna heights. The COMTEK SYSTEMS STACK-2 Antenna Switch is designed for dual antenna systems. It allows selection of either antenna or both in phase. The SYS-3 Antenna Switch allows the stacking of three antennas. You can use a single antenna, all antennas, or a combination of two antennas. This provides a large variation of vertical angles and gain combinations to get the maximum signal.

There is anecdotal data that using a stacked array reduces signal fading. There is also evidence pointing to the reduced effects of constructive and destructive interference when signals are observed from more than one angle of arrival (path). For maximum performance, the versatility of a switchable stacked Yagi system is well worth the effort spent to assemble such a system.

For more in-depth discussion of stacked Yagis, refer to books such as the ARRL Antenna Book.

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 24" D.D. UNIJUN 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.

SYS-3 Stacked Yagi Switch

Based on K3LR’s design, the SYS-3 is designed for monoband 2- or 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’ ACB-4 Series Hybrid Phasing Systems, proven in hundreds of systems since 1990.

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.

Mail: P.O. Box 1491, Akron, OH 44309 • E-Mail: DXEngineering@DXEngineering.com • Web: DXEngineering.com
Maximize Your Signal!

Vertical antenna systems are often thought of as a simple radiator (1/4-wavelength, typical) installed vertically and fed at the base with the center conductor of coaxial cable. And the cable shield is connected to ground (or a ground rod).

To really achieve maximum performance from your vertical antenna, the most important—and most often overlooked—detail is the radial ground system. Unless you are elevating the antenna installation (and using an elevated radial system) there is no need for, or benefit from, having radials cut to resonant lengths. For grounded vertical HF antennas, an excellent radial system can consist of 32 or more radials, each 65 feet long. Very good performance (within 1 db or so) can also be obtained with shorter radials providing you use 20 or more of them. The important consideration is that the radials be extended directly away from the base of the antenna without crossing each other or being bent, coiled, zig-zagged, etc.

Many short radials will outperform a few long radials. Since in-ground radials are not resonant, there is no special length to be concerned with—you just need as much wire in the ground as you can.

DX Engineering provides all the installation accessories you need to make your vertical antenna system become the outstanding performer you expect.

### Vertical Feedline Current Choke

When quarter wave antennas are constructed over a good radial system, they have a feedpoint impedance of about 75 ohms, which is a good match for most antenna loads. If your system is resonant, there is no special length to be concerned with—you want to put as much wire in the ground as you can.

For vertical antennas, the use of an anti-galling compound, such as Anti-Seize, is strongly recommended for the radial system. It will prevent galvanic action, which can interfere with the performance of the antenna. The DX Engineering VFCC is supplied with an insulated mounting shelf to isolate the feedline shield as part of the radial system. This leads to a loss in the efficiency and a higher take-off angle. Often the current introduced on the shield of the feedline causes RFI at the operator position.

### Tilt Base

No more climbing ladders or removing a bracket from the support post. You can now make repairs or tune your vertical easily with a DX Engineering Tilt Base. One person can easily lift the antenna, tilt it to the side and walk it down. The optional DXE-AOK-TB1193 Wing Nut Kit makes for a no-tools fastening of the tilt base. Precision-cut from 3/16 inch 304 stainless steel, the Tilt Base is virtually indestructible and conveniently mounts to the same mast that you use for the antenna radial plate. The Tilt Base is great for installations that need to accommodate CC&R, or for taking down the antenna during severe weather.

Use DXE-TB-3P for Hustler BTV models and DXE-TB-4P for Buttermilk, GAP, Hy-Gain & DXE Verticals. The DXE-TB-4P Tilt Base is intended for quarter wave verticals that have a height of 0.5 inch and a maximum of 2 inch O.D. base, weigh up to 20 pounds, and have a height of no more than 28 ft. Vertical antennas up to 43 ft. must be mounted to a 4x4 or 6x6 post, steel or aluminum pipe up to 2 inches O.D., a fence post, or whatever is supporting your antenna. Purchase the optional V-Saddle Clamp for mounting the plate to pipe up to 2 inches O.D.

The plate assembly has been drilled for an optional SO-239 panel mount or bulkhead mount connector, available from DX Engineering. This will require the shield of your feedline to the radial plate before it goes to the antenna, allowing maximum transfer of ground current directly into your radial system.

Why is our Tilt Base square? Because a square has greater lineal distance around its circumference than the round plates you usually see. This allowed us to put 60 holes in the plate to accept larger bolts for more clamping power without crowding. If you want to go all-out and use 60 to 120 radials, they will fit easily. Remember—the more current that flows through the plate and radials, the stronger your signal is going to be and the better you will hear more DX stations. So, use as many radials as you can.

The DX Engineering Radial Plate is laser cut from tough 304 stainless steel so it has smooth edges, won’t corrode and will always look good, making you proud of your installation! There are similar plates available made of aluminum which will dissolve in the soil—especially salty soil. Our stainless steel plate will look the same—even after being buried for 20 years—it did when you first took it out of the package. Stainless steel construction assures that your signal won’t disappear like a disintegrating aluminum radial plate.

We supply the correct stainless steel bolts, nuts, star washers, flat washers and lock washers to attach the radials. Since we don’t know how many radials you will attach (some experts suggest at least 32 evenly-spaced radials), we include a starter package with the plate that includes 20 sets of hardware. This will allow you to attach 20 radials (or 40, if you double up). If you want to attach more, just order additional hardware sets, part number DXE-RADP-1HMK.

The use of an anti-galling compound, such as Anti-Seize, is strongly recommended for any stainless steel hardware.

### Radial Wire Kits

Bulk Radial Wire Kits

You should install as many radials as possible to achieve optimal performance with a ground-mounted vertical. Our radial wire kits use #14 stranded insulated copper wire that is UV-resistant, hard to see, and lays down easily, unlike the wire that is commonly available at the "big box" stores. It will also last much longer in contact with soil than bare wire.

The DXE-RADW-1000K kit provides a 1,000 ft. spool of wire, 40 lugs and 200 wire radial staples allowing 40 radials that are 25 feet long. The DXE-RADW-500K kit includes a 500 ft. spool of wire, 20 lugs and 100 wire staples allowing 20 radials that are 25 feet long. The "BD" suffix models include new biodegradable staples, which hold the radial wires in place and then completely degrade in a year or two, allowing the lawn or foliage roots to cover over the radials.

### Wing Nut No-Tools Kit for DX Engineering Tilt Base

Use these wing nut knobs for tool-less quick release of the DX Engineering DXE-TB-3P or DXE-TB-4P Tilt Base—handy for lowering the antenna for tuning or daily stealth operation. Simply remove the existing hex nuts and thread on the wing nuts. The old hex nuts store on the bottom of the Tilt Base for future use. Purchase two sets to allow lowering hardware without tools and for extended periods of upright installation and use.

### Pre-Cut Radial Kits

DX Engineering offers pre-cut radial wire kits for the 10, 15, 20, 40 and 80m bands, complete with wire connection hardware, for elevated radial installations. Just strip the wire ends, crimp and solder. Each radial is slightly longer than a quarter wave to allow tuning as necessary.
Build Your Own Antennas!

Black Vinyl Caps

These black vinyl caps are designed to fit over the end of tubing or pipe to keep moisture out. Open vertical tubing serves as a collection point for rainwater. By keeping water out of the tube end, you reduce corrosion and prevent any collected water from bursting the tubing when it freezes. They are also perfect for sealing off booms and Yagi antenna elements. Made from a strong UV-rated material, our caps will withstand the abuse of nature and keep your installation safe and good-looking for years.

DXE-VC-0125 For 1/8” O.D. tube, 20 per pack ........................................$5.25
DXE-VC-0250 For 1/4” O.D. tube, 20 per pack ........................................$5.25
DXE-VC-0275 For 3/8” O.D. tube, 20 per pack .......................................$5.50
DXE-VC-0400 For 1/2” O.D. tube, 20 per pack ..................................$5.75
DXE-VC-0612 For SO-239, 20 per pack ....................................................$5.75
DXE-VPC-0677 For PL-259, 20 per pack .................................................$6.50
DXE-VC-0750 For 3/4” O.D. tube, 10 per pack .......................................$5.25
DXE-VC-0875 For 7/8” O.D. tube, 10 per pack ......................................$5.75
DXE-VC-1000 For 1” O.D. tube, 10 per pack .........................................$6.75
DXE-VC-1250 For 1 1/4” O.D. tube, 10 per pack .................................$6.50
DXE-VC-1312 For 1 5/16” O.D. tube, 10 per pack ..............................$6.75
DXE-VC-1375 For 1 3/8” O.D. tube, 8 per pack ....................................$6.25
DXE-VC-1500 For 1 1/2” O.D. tube, 6 per pack .....................................$6.50
DXE-VC-1750 For 1 3/4” O.D. tube, 4 per pack .....................................$5.50
DXE-VC-1875 For 1 7/8” O.D. tube, 4 per pack .....................................$5.75
DXE-VC-2000 For 2” O.D. tube, 2 per pack .............................................$4.50
DXE-VC-2500 For 2 1/2” O.D. tube, 2 per pack .....................................$5.25
DXE-VC-3000 For 3” O.D. tube, 2 per pack .............................................$5.75

Stainless Steel Element Clamps

Typical elements are built using 0.058 inch wall tubing, which allows successive sizes to slide together with good contact. These clamps are used to hold the telescoping tubing in place at the length that you have chosen. Our clamps are marine grade—they are made entirely of stainless steel, unlike the normal hardware store variety. The high nickel alloy stainless steel meets the demands of severe corrosive environments.

DXE-ECL-1008 Clamp for 0.875” x 0.058”, slit at 1 end ............$1.65
DXE-ECL-1050 Clamp for 0.750” x 0.058”, slit at 1 end ............$1.60
DXE-ECL-1100 Clamp for 0.625” x 0.058”, slit at 1 end ............$1.50
DXE-ECL-1150 Clamp for 0.500” x 0.058”, slit at 1 end ............$1.50

Build Your Own Antennas!

ALUMINUM TUBING

ALUMINUM TUBING

6001-T6 Aluminum Tubing, 0.120” Heavy Wall, 6 Foot Lengths for Booms

DXE-1311 1.500” O.D., no slit ...............................................................$23.85
DXE-1312 1.750” O.D., no slit ...............................................................$28.20
DXE-1323 2.000” O.D., no slit ...............................................................$33.00
DXE-1334 2.250” O.D., no slit ...............................................................$37.45
DXE-1335 2.500” O.D., no slit ...............................................................$42.50
DXE-1336 2.750” O.D., no slit ...............................................................$46.95
DXE-1337 3.000” O.D., no slit ...............................................................$51.40

Telescopic Aluminum Antenna Kits on page 2!

NEW! Heavy 0.120” thick wall tubing
now available in larger diameter sizes

DX Engineering offers high strength, attractive Type 6063 seamless drawn aluminum tubing in 3 and 6 foot lengths for your antenna construction projects. Use the 3 foot lengths for fast taper, low wind resistance applications; the 6 foot slow taper lengths afford the greatest bandwidth. Most sizes are slit on one end for use with DX Engineering Stainless Steel Element Clamps. If unslit ends are required for your application, merely insert the slit end into the next larger size in the stack and use your own attachment method.

Our tubing is available in 1/8 inch increments from 3/8 inch to 2 1/8 inch O.D. The 0.058 inch wall tubing is ideal for a free, yet solid telescoping fit from size to size for vertical or Yagi elements. Greater wall thickness in some larger sizes assures maximum strength at very long assembly lengths. DX Engineering ECL series element clamps are available in a variety of sizes to assure snug, long-lasting connections when fastened together on the slit ends.

Type 6063 aluminum alloy is commonly used in seamless and structural tube and pipe. It provides good resistance to general corrosion, including stress-corrosion cracking. With excellent surface appearance, 6063 is an alloy of choice for aesthetic applications.

• High strength Type 6063-T832 drawn aluminum tubing
• Sections with 0.058 inch wall thickness are perfect for telescoping antenna elements
• Most sizes are pre-slit on one end for element clamps
• Available in 3 and 6 foot lengths

Aluminum Tubing, 3 Foot Lengths

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See the Tools Section for metal working tools!

Mail: P.O. Box 1491, Akron, OH 44309 • E-Mail: DXEngineering@DXEngineering.com • Web: DXEngineering.com
**Highest Quality—Lasting Performance!**

DX Engineering is famous for its Saddle Clamps—the ones with stainless steel U-bolts or V-bolts and matching cast aluminum saddles. The U-bolts are the exact size for inch-sized tubing O.D.; the saddles feature an as-cast roughness that keeps the tube from sliding. Our Super Duty Saddle Clamps are designed for applications where maximum torque is needed to control large or unbalanced antenna arrays, or for other applications where other torque control products have proven inadequate. Our Resin Support Blocks are useful for securely mounting tubing to any flat surface while providing electrical insulation. Whether you are building a Yagi from scratch, refurbishing a well-used “old friend”, or experimenting with a new antenna project, DX Engineering can supply the best hardware for your application. You can find useful tips and complete dimensions for each clamp and bracket type at www.DXEngineering.com.

**DX Engineering U-Bolt Saddle Clamps**

Our U-Bolt Saddle Clamps are ideal for use with round tubing. Unlike common hardware store clamps that are sized to fit pipe, our clamps are designed and sized to fit tubing. The U-Bolt Saddle Clamps come with high strength, 18-8 grade stainless steel U-bolts that are long enough to attach tubing or components to thick mounting plates. The U-bolts are available in 1/4 inch, 5/16 inch and 3/8 inch as listed. Note that the 1 inch, 2.5 inch and 3 inch clamps are available with either 5/16 inch or 3/8 inch U-bolts. The U-Bolt Saddle Clamps are cast from high strength 353 aluminum, which has superior anti-corrosion properties. Unlike stamped or machined types, the saddles’ rippled surface grips tubing closely for a secure fit. The U-Bolt Saddle Clamps are designed for use with mounting plates, which are available separately. The clamps are sold only as a set with aluminum saddle, stainless steel U-bolts, nuts, flat washers and lock washers. The use of a lubricant and sealant, such as Never-Seez, is highly recommended for proper installation. Always use a lubricant such as Never-Seez or Anti-Seize to prevent the stainless steel hardware from seizing.

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*Suggested Hole Size: 0.266" is letter "H" drill bit, 0.332" is letter "Q" drill bit, and 0.397" is letter "X" drill bit. All U-Bolts are formed from premium 18-8 stainless steel. All Saddles are cast 353.0 aluminum. All Saddle Clamp Sets are supplied with 18-8 stainless steel nuts and lock washers. Dimensions shown are in Inches. Note: These are NOT Automotive Muffler Clamps.

**DX Engineering V-Bolt Saddle Clamps**

Our V-Bolt Saddle Clamps are sized to fit ranges of tubing. The V-bolts are long enough to attach tubing or components to thick mounting plates or to retain the bolt spacing. The saddles’ rippled surface will clamp tubing securely to a flat surface. Features:

- 18-8 stainless steel V-bolts with nuts, flat washers and lock washers
- Cast aluminum saddles with rippled surface
- Available in a number of size ranges

**Tubing Recommendations**

DXE-CAVS-1P: fits 1/2 inch to 1 3/4 inch O.D. tubing, 1/4-20 bolt
DXE-CAVS-11P: fits 1/2 inch to 1 3/4 inch O.D. tubing, 5/16-18 bolt
DXE-CAVS-2P: fits 1 inch to 2 inch O.D. tubing, 5/16-18 bolt
DXE-CAVS-3P: fits 2 inch to 3 inch O.D. tubing, 3/8-16 bolt

The clamps are sold only as a set with aluminum saddle, stainless steel V-bolts, nuts, flat washers and lock washers. The use of a lubricant and sealant, such as Never-Seez, is highly recommended to achieve proper torque and prevent galling. High torque load applications where the tubing is subjected to twisting motion, we recommend using our V-Bolt Saddle Clamps.

<table>
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<th>Nominal Size</th>
<th>DXE Part Number</th>
<th>D</th>
<th>L</th>
<th>C</th>
<th>I</th>
<th>T</th>
<th>Suggested Hole Size</th>
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<td>$14.95</td>
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</table>

*All Dimensions are in Inches. Note: DXE-CAVS-1/11/2P saddle material is cast 319.0 aluminum DXE-CAVS-3P saddle material is cast 319.0 aluminum. Suggested Hole Size: 0.266" is letter "H" drill bit, 0.332" is letter "Q" drill bit, and 0.397" is letter "X" drill bit. Note: These are NOT Automotive Muffler Clamps.

Phone: 800.777.0703 • International: 330.572.3200 • Fax: 330.572.3279 • DoD CAGE Code: 3M3H7
DX Engineering Super Duty Saddle Clamps

Our Super Duty Saddle Clamps are designed for applications where maximum clamping ability is needed. Super Duty Saddle Clamp Kits are constructed of two corrosion-resistant A356-T6 cast aluminum saddles with a cast stainless steel reinforcement plate. These clamps are the correct size to fit tubing closely and their rippled surface will grip the aluminum tubing for a secure fit that resists the ravages of weather.

Due to the wide variety of clamping applications where a Super Duty Saddle Clamp would be beneficial, we do not include mounting hardware, but we do offer armor-coated bolt sets separately. Super Duty Saddle Clamps are made to fit 3 sizes of tubing: 2 inch O.D., 2.5 inch O.D. and 3 inch O.D.

The use of a lubricant and sealant, such as Never-Seez, is highly recommended to achieve proper torque and prevent galling.

Bolt and Nut Sets

Armor-Coated Bolt Sets are available in 5 different bolt lengths (4.5 inch, 5 inch, 5.5 inch, 6 inch and 6.5 inch). They include Grade 8 hex head bolts (2), split washers (2), flat washers (2) and nuts (2).

Stainless Steel V-Clamp

This clamp is ideal for fastening a radial plate and antenna mounting to a 1” to 2” O.D. steel pipe. It has a stainless steel saddle with serrated teeth that bite into the tube or pipe surface, providing a strong, secure hold. For this reason, the clamp is not recommended for use with aluminum tubing or pipe. The supplied V-bolt is long enough to attach tubing to thick plates and is made with anti-corrosive properties.

DX Engineering Resin Support Block Clamps

Our Resin Support Block Clamps are ideal for securing mounting brackets or plates to tubing, while also providing electrical insulation. That makes the clamps a good choice for electronic components. The clamps are sturdy and provide a strong, well-insulated mounting that is easy to construct. They are available in many sizes for most any project you might have—see chart below.

The Resin Support Block is shown with an optional stainless steel reinforcement plate. These plates provide additional stiffness and can also be used as sturdy hole-drilling templates.

DXE-SSVC-2P Stainless Steel V-Clamp, fits 1” to 2” O.D. tube/pipe............$11.95

DX Engineering Clamps Have 100’s of Uses!—DX Engineering U-Bolt, V-Bolt, and Band Clamps are very versatile. For example, we’ve seen the ECLS Studded Band Clamps used to fasten merchandise display signs to upright tubing. Have you used DX Engineering clamps for other, non-antenna projects? We’d love to know about it—drop us a note and send pictures if you have them!
ANTENNA HARDWARE

The DXE-BEB-1 is designed to use DX Engineering's Gorilla Grip™ stainless steel boom Element Adaptors to use a 1 inch diameter element with the DXE-BEB-1. brackets and allows use of up to 1.25 inch O.D. element tubing. Use the DXE-ELA-1-2 Element Adaptors to use a 1 inch diameter element with the DXE-BEB-1.

The DXE-BEB-1 is designed to use DX Engineering’s Gorilla Grip™ stainless steel boom clamps that will end all of your concerns about elements rotating on the boom. DX Engineering offers two hardware kits. The standard kit is a direct KLM hardware replacement with #10 fasteners for the elements. It includes Gorilla Grip™ stainless steel boom clamps, stainless steel bolts with nuts and washers to attach clamps to the DXE-BEB-1 element bracket, and stainless steel bolts with nuts and washers to attach elements or adapters to the element brackets. Nuts have nylon inserts and are vibration-resistant. The heavy duty kit uses 1/4 inch bolts and hardware, so it is not a direct replacement for KLM brackets, but is similar in all other respects to the standard hardware kit.

These boom-to-element brackets are made for 3 inch O.D. booms only. For 2 inch booms, please use DXE-BEB-2.

DXE-BEB-1 Insulated Boom-to-Element Bracket, 3" boom $38.95
DXE-BEB-1HKW KLM Direct Replacement Hardware Kit $25.95
DXE-BEB-1HWK Hardware Kit with 1/4" Bolts $25.95
DXE-ELA-1-2 Element Adaptors, 1.25" to 1", for DXE-BEB-1 $9.95

DXE-BEB-2

The DXE-BEB-2 is made from an extremely strong polymer that is also highly UV-resistant. When bolted to your 2 inch boom with our hardware kit, it will easily support a split 20 meter element without a fiberglass centerpiece. It is a convenient, low cost method for the insulated attachment of elements when building Yagi, LPDA or other antennas on 2 inch booms.

It accepts up to a 7/8 inch element, which is suitable for antennas built for 6 meters and 20 meters. This plate can also be used to mount smaller VHF/UHF antennas to a mast using appropriate clamps. The dimensions of the DXE-BEB-58 are 8 inch x 3.5 inch x 0.25 inch. The plate comes pre-drilled for DX Engineering saddle clamps.

For mounting a 3 inch boom use (2) DXE-SAD-300A Clamps
For mounting a 2 inch boom use (2) DXE-SAD-200A Clamps
For mounting a 1 1/2 inch grounded element use (2) DXE-SAD-150A Clamps
For mounting a 1 1/4 inch grounded element use (2) DXE-SAD-100 Clamp
For mounting a 1 inch grounded element use (2) DXE-SAD-075 Clamps

DXE-BEB-58 Fabricated from alloy 6061-T6 aluminum, the DXE-BEB-58 is for the larger 17-15 meter and 20 meter beams. This plate can also be used to mount smaller VHF/UHF antennas to a mast using appropriate clamps. The dimensions of the DXE-BEB-58 are 8 inch x 3.5 inch x 0.25 inch. The plate comes pre-drilled for DX Engineering saddle clamps.

Multi-Purpose Mounting Plates

These universal mounting plates can be used for many applications. They are available in aluminum or non-conductive black polymer and come blank or pre-drilled to accept our standard DXE-CAVS-1P V-Saddle Clamps, which can accommodate tubing or pipe from 1/2 inch to 1 3/4 inch O.D. or pipe. Visit www.DXEngineering.com for the clamps recommended for use with each specific plate.

DXE-UMP-1 Universal Mounting Plate for 2" Saddle Clamp $12.50
DXE-UMP-2 Universal Mounting Plate for 3" Saddle Clamp $15.00
DXE-MMP-P1 Non-Conductive Polymer Plate with pre-drilled mounting holes, 1/4" x 7 1/2" x 11 1/2" $8.00
DXE-MMP-P2 Non-Conductive Blank Polymer Plate, 1/4" x 7 1/2" x 11 1/2" $6.50
DXE-MMP-P3 Non-Conductive Blank Polymer Plate, 1/4" x 7 1/2" x 16" $7.00

Boom Support Systems

As antennas become larger, booms become longer, or the wind speed becomes higher, our 3 inch Boom Support Systems will keep the boom straight. Your antenna will look better, perform better, and survive storms. Many of the individual pieces in these systems are available separately so you can design and build your own support systems.

2 Inch Boom Support Components

DXE-ATBB-2 2" Boom Bracket $10.75
DXE-TCS-1 Truss Bracket $23.50

3 Inch Dual Boom Support System and Components

DXE-BS-DUAL 3" Dual Boom Support System $379.50
DXE-ATBB-3 3" Boom Bracket $12.75
DXE-TCS-1 Truss Bracket $23.50

See DXEngineering.com for more details!
Boom-to-Mast Plates

These are the plates that attach the boom of your antenna to the mast of the tower. As a general rule, the bigger the antenna, the bigger the boom-to-mast plate needs to be in order to keep the antenna stable in the wind. Select the correct size for your application.

DXE-BMP-1 18 Inch x 30 Inch Boom-to-Mast Plate

If your antenna is more than 40 feet long you need this plate to keep the boom from flexing in the middle, even if you have a boom truss and ensure the integrity of the boom-to-mast connection necessary in a large antenna installation. The DXE-BMP-1 is fabricated from 1/4 inch thick 6061-T651 aluminum. It measures 18 inches tall by 30 inches wide and will accept a 3 inch boom. The plate allows you to mount the antenna directly to the side of a Rohn 55 tower or to a 3 inch mast. The plate comes pre-drilled for DX Engineering Saddle Clamps—follow these recommendations:
- For mounting antenna to Rohn 55 use (6) DXE-SAD-150A clamps
- For mounting antenna to a 3 inch mast use (5) DXE-SAD-300A clamps
- For mounting a 3 inch boom use (10) DXE-SAD-300A clamps

Using a large number of boom clamps will provide great clamping power without crushing the boom in the process.

DXE-BMP-1 Boom-to-Mast Plate .............................................. $74.50

DXE-BMP-2 8 Inch x 10 Inch Boom-to-Mast Plate

This Boom-to-Mast Plate is fabricated from 1/4 inch thick 6061-T651 aluminum. The plate measures 8 inches by 10 inches, giving the boom great stability on the mast. The DXE-BMP-2 comes pre-drilled for our saddle clamps, and will accommodate 1 1/2 inch, 2 inch, and 3 inch booms and 1 1/2 inch, 2 inch, and 3 inch masts. The plate comes pre-drilled for DX Engineering Saddle Clamps—follow these recommendations:
- For mounting a 1 1/2 inch boom use (2) DXE-SAD-150A Clamps
- For mounting a 2 inch boom use (2) DXE-SAD-200B Clamps
- For mounting a 2 1/2 inch mast use (2) DXE-SAD-300B Clamps
- For mounting a 3 inch mast use (5) DXE-SAD-300A clamps
- For mounting a 3 inch boom use (10) DXE-SAD-300A clamps

DXE-BMP-2 Boom-to-Mast Plate ............................................. $34.75

Hairpin-Style Driven Element Matching Kits

Most Yagi antennas have a feedpoint impedance of about 50 Ω. Obviously, this will not allow a connection to a 50 Ω feedline without a serious mismatch. There are various ways to match the driven element to the feedline successfully. Gamma, T-Match, and the Hairpin (aka Beta Match) are favorites.

The Gamma match is an unbalanced system that typically distorts the antenna pattern. The T-Match is basically two Gamma match systems on either side of the boom, which corrects the imbalance but is a mechanical nightmare and is difficult to tune correctly. The DX Engineering Hairpin is balanced and easy to tune. It has the correct electrical and mechanical design to allow it to be easily installed and tuned in 10 minutes and has enough capacity for almost any Yagi design.

For use with BEB-2 Insulated Boom-to-Element Brackets

DXE-HMS-1P 2’ Boom .......................................................... $32.95

For use with BEB-3 Insulated Boom-to-Element Brackets and an SEI split element insert

DXE-HMS-2P 1’ to 3’ 3/4” Boom ........................................... $34.95

For use with BEB-1 Insulated Boom-to-Element Brackets

DXE-HMS-4P 3’ Boom .......................................................... $36.95

Yagi Mechanical® Antenna Design Software

Yagi Mechanical® is a tool for anyone who designs their own antennas or is interested in modeling an antenna they already own. Electrical design is first and foremost in crafting a useful antenna, but the mechanical side of things is also critical. After all, what good is a great performing antenna if the wind is going to break the elements when you put it up on a tower? DX Engineering’s Yagi Mechanical Antenna Design Software enables you to analyze your designs and instantly see where a failure could occur. Whether you use it to find weak points in old designs or to start brand new designs with robust mechanical properties, Yagi Mechanical will provide you with the tools you need to test your elements for wind and ice, to balance weight and torque on the boom, and determine if the materials you have selected are up to the task.

Call it good planning for the kind of stress your antennas are going to see. Call it smart design to prevent regular failures and repairs. Call it peace of mind at an affordable price. We call it Yagi Mechanical!

Yagi Mechanical is a Windows® program, so the graphic user interface should be very familiar.

DXE-SOF-YMCH50 Yagi Mechanical® Antenna Design Software .......................................................... $39.95

DXE-SOF-YMKEY Yagi Mechanical® Key Code Only ................................................................................. $39.95

DXE-SOF-YMDISC Yagi Mechanical® Backup CD only ........................................................................... $20.95
Universal Wire Antenna Kits

DX Engineering’s three Universal Wire Antenna (UWA) Kits offer the right combination of parts and hardware to create a wide variety of antenna designs. You can create any type of wire antenna, including single band, multi-band, multi-frequency and folded dipole, doublet and inverted-vee, off-center fed, Windom, Zepp, long wires, rhombic, vee beam, and loop antennas.

The kits feature the new EZ-BUILD™ Center-T insulator and end insulators. The insulators have a unique patented design that features a serpentine wire grip for insulated DX Engineering Antenna Wire and DX Engineering’s high strength, high power 300 Ω ladder line. The serpentine wire connection grip is strong enough to support the antenna wires without looping or wrapping the wire ends. This allows fast and easy field adjustments of antenna length without soldering!

The insulators are made of a light weight, high strength, UV-protected material. The center-T insulator is designed to serve as a feedpoint and strain relief for antennas made with either wire or ladder line, which may be fed with either ladder line or coaxial cable. The Center-T insulator can be the main support point for the antenna feedpoint by using the top center hole to attach a support rope. It also serves as the mounting and support point for any DX Engineering Balun.

The DXE-UWA8X-KIT and DXE-UWA213-KIT kits include a new strain relief bracket to support the antenna wires without looping or wrapping the wire ends. This allows fast and easy field adjustments of antenna length without soldering!

Wire Antennas

DXE-UWA8X-KIT Universal Wire Antenna Kit for RG-8X ..................................$29.95
DXE-UWA213-KIT Universal Wire Antenna Kit for RG-213 .................................$32.95

Ladder Fed Dipole Antennas

The DX Engineering multi-band dipoles are rugged yet lightweight. Each model resonates at the low end of the band specified. They are usable to 30 MHz with a wide range tuner and come complete with the wire elements, ladder feedline, center-T support and end insulators.

- Elements: 14 AWG copper, PVC jacket for flexibility and strength
- Feedline: 100 feet, 18 AWG, 300 Ω ladder line, UV-resistant, 0.88 VF
- Hardware: stainless steel
- Center-T support and end insulators: High impact, UV-resistant material, black
- Power Rating: 1500W

DXE-WA-260 Antenna, 260’ long for 160m and up ..............................................$59.95
DXE-WA-135 Antenna, 135’ long for 80m and up ...................................................$48.95
DXE-WA-070 Antenna, 70’ long for 40m and up .......................................................$48.95

Hy-Gain Center Insulator for Multi-Band Doublets with SO-239

This weatherproof, lightweight, high strength center insulator is used for connecting coaxial feedline to a doublet-type antenna. The insulator can be hung from a supporting mast. It has an SO-239 connector to attach to coaxial cable with a matching PL-259 connector.

HYG-C-1C Center Insulator for multi-band doublets .................................................$28.95

Antenna Support Rope

Synthetic Textile Industries’ double-braided Dacron/Polyester ropes are not weakened by decay or mildew and provide excellent resistance to abrasion. The color-sealed, black polyester yarn used in the braided jacket also protects the cord from damage due to ultra-violet light. It is available in a variety of diameters and lengths.

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See the Baluns & Chokes and Cable Assemblies Sections for additional items!

Premium Antenna Wire

Use DX Engineering antenna wire to achieve top performance and long-life, trouble-free operation. This insulated copper wire is UV-resistant and lays out easily, unlike the wire that is commonly available at the “big box” stores which coils and kinks. It will last much longer in contact with the environment than bare wire. It is available in pre-cut lengths for easy dipole assembly, or in bulk lengths of 500 and 1,000 feet.

- Heavy #14 AWG stranded copper antenna wire
- UV-resistant insulation
- Reduces precipitation static
- Long, reliable life

DXE-ANTW-75 #14 Insulated Antenna Wire, 40m & up, 75’ ....................................$10.95
DXE-ANTW-150 #14 Insulated Antenna Wire, 80m & up, 150’ ...............................$19.95
DXE-ANTW-300 #14 Insulated Antenna Wire, 160m & up, 300’ .............................$37.95
DXE-ANTW-500 #14 Insulated Antenna Wire, multiple antennas, 500’ ...............$56.95
DXE-ANTW-1000 #14 Insulated Antenna Wire, multiple antennas, 1,000’ ............$112.95

STI-DBR-94-1000 5/32” diameter rope, 2,000’ roll

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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 unused antennas! Our switches offer virtually no loss at HF and excellent low-loss performance up to 50 MHz (RR8A-SD) and 150 MHz (RR8A-HP).

DXE-RR8A-SD 10 kW Key-Down RF Switch
- Highest isolation
- 10 kW rating
- Usable to 150 MHz

DXE-RR8A-HP 10 kW Key-Down RF Switch
- Highest isolation
- 5 kW rating
- Usable to 150 MHz

DXE-RR8A-SD-P 10 kW Key-Down RF Switch Package, includes CC-8 controller
- CC-8 stays in place while you are switching.
- The control cable is attached via a modular plug. If you need to rearrange 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 with no disassembly.
- Unused antenna ports can be jumpered for open or shorted to ground.

Remote Antenna Switch
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.

The DX Engineering RR8A Series Switches are designed to provide isolation in the following specifications:
- Excellent Port Isolation: greater than 70 dB at 30 MHz, worst case
- Sealed 20 ampere RF relays
- Power Rating: >7 kW ICAS or 5 kW CCS operation on all modes, with less than 2:1 SWR at 30 MHz and below
- Control Voltage: 10-14 Vdc at 100 mA
- Loss: <0.03 dB below 60 MHz, <0.16 dB below 60 MHz
- Impedance: 50 Ω

This is one location in your station where you need the very best!

Features
- Fully RF-shielded with high strength, UV-resistant cover, stainless steel mounting bracket and hardware
- Lightning protection standard
- Solderless, removable plug for easy installation of control line with no disassembly
- Can be wired without disassembly

DXE-RR8A-HP
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-HP has the following specifications:
- Excellent Port Isolation: greater than 70 dB at 30 MHz, worst case
- Sealed 20 ampere RF relays
- Power Rating: >7 kW ICAS or 5 kW CCS operation on all modes, with less than 2:1 SWR at 30 MHz and below
- Control Voltage: 10-14 Vdc at 100 mA
- Loss: <0.03 dB below 60 MHz, <0.16 dB below 150 MHz
- Impedance: 50 Ω

DXE-RR8A-SD
The DXE-RR8A-SD is the largest switch in the DX Engineering RR8A series. It is designed to switch coaxial lines in high power RF systems operating up to 10 kW continuous duty. The DXE-RR8A-SD has the following specifications:
- Excellent Port Isolation: greater than 60 dB at 30 MHz, worst case
- Sealed 20 ampere high-voltage RF relays
- Power Rating: >10 kW ICAS or 10 kW CCS operation on all modes, with less than 2:1 SWR at 30 MHz and below
- Control Voltage: 10-14 Vdc at 160 mA
- Loss: <0.03 dB below 30 MHz, <0.16 dB below 60 MHz
- Impedance: 50 Ω

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.

DXE-RR8A-HP
- 5 kW Key-Down RF Switch
  - $275.00

DXE-RR8A-SD
- 10 kW Key-Down RF Switch
  - $395.00

DXE-CC8
- Control Console, 8-position
  - $159.95

DXE-RR8A-P
- 5 kW Key-Down RF Switch Package, includes CC-8 controller
  - $375.00

DXE-RR8A-SD-P
- 10 kW Key-Down RF Switch Package, includes CC-8 controller
  - $495.00

Accessories
- 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-7DI Cable, RCS-12C to Kenwood TS-2000, 570, 870
  - $23.95
- AMR-DB-8DI Cable, RCS-12C to Yaesu 8-PIN CAT
  - $23.95
- AMR-DB-8MK Cable, RCS-12C to Kenwood TS-480
  - $23.95
- DXE-CW9 Shielded Control Wire, 9-conductor
  - $0.29
- DXE-CW8 Shielded Control Wire, 8-conductor
  - $0.89
- DXE-CW8-HD Shielded Control Wire, 8-conductor heavy duty
  - $0.39
- AMR-DB-7DI Cable, RCS-12C to Kenwood TS-480
  - $0.39

DXE-RR8A-SD
- 10 kW Key-Down RF Switch
  - $395.00

Mail: P.O. Box 1491, Akron, OH 44309  • E-Mail: DXEngineering@DXEngineering.com  • Web: DXEngineering.com
**Higher Efficiency—Better Mobile Signal!**

DX Engineering Mobile Antennas and accessories provide the highest efficiency under the less-than-ideal environment presented by a mobile antenna installation. Generally speaking, a standard passenger vehicle does not provide an adequate ground plane for HF band operation. It is also a potential noise generator thanks to its multiple electrical systems and computers. Any steps that can be taken to maximize RF current flow in the vertical radiator will pay handsomely in improved signals and more pleasurable mobile operation. Noise reduction will greatly improve receiving as well.

**Hustler Standard and Super Resonators and Parts**

Individual Hustler Resonators are available for 10, 12, 15, 17, 20, 30, 40, 75, and 80 meters. The standard resonators can handle 400 watts Peak Envelope Power (PEP). The Super Resonators can handle 1 kW PEP and have slightly more bandwidth. They are available for 40 and 80 meters.

Use these resonators with Hustler's mounts, mobile masts, and other accessories to build a custom mobile antenna. Use DX Engineering Hot Rodz™ capacity hats and other accessories with these resonators to improve antenna efficiency.

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>HUS-RM-10</td>
<td>10 Meter Hustler HF Resonator, 150-250 kHz</td>
<td>$15.75</td>
</tr>
<tr>
<td>HUS-RM-12</td>
<td>12 Meter Hustler HF Resonator, 100-150 kHz</td>
<td>$15.75</td>
</tr>
<tr>
<td>HUS-RM-15</td>
<td>15 Meter Hustler HF Resonator, 100-150 kHz</td>
<td>$15.75</td>
</tr>
<tr>
<td>HUS-RM-17</td>
<td>17 Meter Hustler HF Resonator, 120-150 kHz</td>
<td>$21.75</td>
</tr>
<tr>
<td>HUS-RM-20</td>
<td>20 Meter Hustler HF Resonator, 80-100 kHz</td>
<td>$21.75</td>
</tr>
<tr>
<td>HUS-RM-30</td>
<td>30 Meter Hustler HF Resonator, 50-60 kHz</td>
<td>$24.75</td>
</tr>
<tr>
<td>HUS-RM-40</td>
<td>40 Meter Hustler HF Resonator, 40-50 kHz</td>
<td>$24.75</td>
</tr>
<tr>
<td>HUS-RM-50</td>
<td>50 Meter Super Hustler HF Resonator, 50-90 kHz</td>
<td>$35.75</td>
</tr>
<tr>
<td>HUS-RM-54</td>
<td>54 Meter Super Hustler HF Resonator, 25-30 kHz</td>
<td>$26.75</td>
</tr>
<tr>
<td>HUS-RM-60</td>
<td>60 Meter Super Hustler HF Resonator, 50-90 kHz</td>
<td>$49.75</td>
</tr>
<tr>
<td>HUS-3774</td>
<td>Replacement Ferrules for Hustler Resonators</td>
<td>$4.95</td>
</tr>
<tr>
<td>HUS-377HD</td>
<td>Replacement Nut and Ferrules for Hustler Resonators</td>
<td>$4.95</td>
</tr>
<tr>
<td>HUS-49-04-4</td>
<td>WH Replacement for DXE-RM-40S Super Resonator</td>
<td>$5.75</td>
</tr>
<tr>
<td>HUS-49-04-8</td>
<td>Replacement Whip/Corona Ball for 75 and 80 Meter Super Resonators</td>
<td>$8.35</td>
</tr>
</tbody>
</table>

**Aluminum Masts and Couplers**

DX Engineering 1/2 inch O.D., 0.084 inch wall aluminum masts are available in lengths from 24 to 72 inches. Both ends are tapped to standard 3/8"-24 threads to fit common accessories. Couple two masts together with our fittings to make your ideal length.

Fittings are available to add resonators or a Hot Rodz™ Capacity Hat to the top of the antenna.

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>DXE-MT-24</td>
<td>24’ Aluminum Mast</td>
<td>$19.95</td>
</tr>
<tr>
<td>DXE-MT-36</td>
<td>36’ Aluminum Mast</td>
<td>$23.95</td>
</tr>
<tr>
<td>DXE-MT-48</td>
<td>48’ Aluminum Mast</td>
<td>$27.95</td>
</tr>
<tr>
<td>DXE-MT-54</td>
<td>54’ Aluminum Mast</td>
<td>$29.95</td>
</tr>
<tr>
<td>DXE-MT-60</td>
<td>60’ Aluminum Mast</td>
<td>$31.95</td>
</tr>
<tr>
<td>DXE-MT-72</td>
<td>72’ Aluminum Mast</td>
<td>$35.95</td>
</tr>
<tr>
<td>DXE-5MTHRF-1</td>
<td>3’ x 24 at both ends</td>
<td>$8.35</td>
</tr>
<tr>
<td>DXE-5MTHRF-2</td>
<td>3’ x 24 at both ends, hex center</td>
<td>$5.95</td>
</tr>
<tr>
<td>DXE-MTBF-1</td>
<td>3’ x 24 at both ends, hex center with shoulder</td>
<td>$6.95</td>
</tr>
<tr>
<td>DXE-5MTHFR-1</td>
<td>3’ x 24 end and smooth end</td>
<td>$4.95</td>
</tr>
<tr>
<td>HUS-QD-2</td>
<td>Hustler Stainless Steel Quick Disconnect, 3/8’x 24’</td>
<td>$21.35</td>
</tr>
<tr>
<td>HUS-MO-2</td>
<td>Hustler 54’ Folding Mast for fender/bumper mount</td>
<td>$31.75</td>
</tr>
</tbody>
</table>

Use the HUS-QD-2 Quick Disconnect to quickly disconnect one mast from another. The HUS-MO-2 Folding Mast allows quick change of Hustler resonators.

**RFI Suppression Beads**

DX Engineering has selected the best RFI suppression beads for reducing cable-conducted ignition, fuel injector, or other electrical noise in your home HF installation. We have observed a 3 S-unit improvement in many cases using these beads. The beads snap around wire or cable, and are useful in your home installation as well. The combo pack has four of the 0.275 inch diameter beads and two each of the 0.525 inch and 0.750 inch diameter beads.

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>DXE-CSB-COMBO</td>
<td>RFI Suppression Beads Combo Pack</td>
<td>$35.95</td>
</tr>
<tr>
<td>DXE-CSB-275P</td>
<td>0.275&quot; RFI Suppression Beads, pack of 10</td>
<td>$23.25</td>
</tr>
<tr>
<td>DXE-CSB-525P</td>
<td>0.525&quot; RFI Suppression Beads, pack of 5</td>
<td>$22.25</td>
</tr>
<tr>
<td>DXE-CSB-750P</td>
<td>0.750&quot; RFI Suppression Beads, pack of 5</td>
<td>$25.80</td>
</tr>
</tbody>
</table>

**Mobile Antenna Mounts**

- **HUS-SSM-2** Heavy Duty Stainless Steel Ball Mount, 2” diameter................. $28.95
- **HUS-SSM-3** Stainless Steel Spring, 3”........................................... $26.95
- **HUS-L-14-144** 12’ RG-58/PL-259 to Lugs, coax to ball mount................. $12.00
- **HUS-VP-1** Tri-Band Adaptor for HF Mobile Antenna........................... $6.95
- **HUS-QD-2** Stainless Steel Quick Disconnect, 3/8’x 24 threads............... $21.35
- **HUS-RSS-2** Stainless Steel “Resonator” Impact Spring........................ $12.95
- **HUS-MBM** Super Magnetic Mount, 16”, coax, 3/8’x24 antenna.............. $21.50
- **DXE-VMB-1** “L” Shaped Vertical Antenna Mounting Bracket.................. $9.50

**Hot Rodz™ Capacity Hat for Hustler Mobile Antennas**

This fully adjustable system attaches directly to your Hustler HF antenna. Hot Rodz improves efficiency, allowing the use of a smaller loading coil for a given frequency band. Other benefits include wider bandwidth and the ability to use a single coil on multiple bands. The Hot Rodz Capacity Hat comes with a precision-machined aluminum hub with stainless steel set screws and six each of 6 inch, 12 inch, and 24 inch stainless steel rods with slide-on ends that reduce wind-generated static.

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>DXE-HR-1P</td>
<td>Hot Rodz Capacity Hat for Hustler mobile antennas</td>
<td>$59.95</td>
</tr>
</tbody>
</table>

**Hot Rodz™ Capacity Hat for Screwdriver Antennas**

This fully adjustable system attaches directly to any screwdriver antenna. Hot Rodz allows you to remove the long whip from your antenna while increasing efficiency, so you can use less coil for any given frequency. The Hot Rodz Capacity Hat comes with a 22 inch tall mast, and six each of the 6 inch, 12 inch and 24 inch stainless steel rods with slide-on ends that reduce wind-generated static.

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>DXE-HR-2P</td>
<td>Hot Rodz Capacity Hat for Screwdriver Antennas</td>
<td>$79.95</td>
</tr>
</tbody>
</table>

**Hot Rodz™ Capacity Hat Components**

Increase the efficiency of your own shortened antenna by building your own Hot Rodz Capacity Hat system. Visit DXEngineering.com for complete details.

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>DXE-HR-HUB-1P</td>
<td>Hot Rodz Hub, smooth bore with set screws</td>
<td>$27.50</td>
</tr>
<tr>
<td>DXE-RODZ-48P</td>
<td>Hot Rodz 48” Stainless Steel Rods</td>
<td>$29.95</td>
</tr>
<tr>
<td>DXE-RODZ-36P</td>
<td>Hot Rodz 36” Stainless Steel Rods</td>
<td>$23.75</td>
</tr>
<tr>
<td>DXE-RODZ-60P</td>
<td>Hot Rodz 60” Stainless Steel Rods</td>
<td>$31.25</td>
</tr>
<tr>
<td>DXE-RODZ-72P</td>
<td>Hot Rodz 72” Stainless Steel Rods</td>
<td>$34.95</td>
</tr>
</tbody>
</table>

**MM-1 Auto-Transformer**

Antenna Auto-Transformer

This unbalanced to unbalanced (UNUN) impedance transformer matches a 50 Ω to 25 Ω or 12.5 Ω connection. Use it to get a better match between a feedline and a typical mobile antenna. Works well with Hot Rodz™ Capacity Hat-equipped antennas.

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>DXE-MM-1</td>
<td>Antenna Auto-Transformer</td>
<td>$109.95</td>
</tr>
</tbody>
</table>

**Exhaust System Grounding Kit**

Many modern vehicles have separate fuel injectors and spark coils for each cylinder. These units can create substantial pulses on the vehicle wiring. Because the exhaust system is bolted directly to the engine and supported by insulated mounts, it can be excited just like an antenna and radiate pulse noise. By using one of our Exhaust Grounding Kits, you may eliminate that last bit of stubborn noise in your mobile installation. The kit includes a stainless steel saddle clamp and stainless steel hardware.

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>DXE-EGK-200</td>
<td>Grounding Kit for 2” exhaust pipe</td>
<td>$20.95</td>
</tr>
<tr>
<td>DXE-EGK-225</td>
<td>Grounding Kit for 2.25” exhaust pipe</td>
<td>$22.95</td>
</tr>
<tr>
<td>DXE-EGK-250</td>
<td>Grounding Kit for 2.5” exhaust pipe</td>
<td>$26.95</td>
</tr>
<tr>
<td>DXE-EGK-300</td>
<td>Grounding Kit for 3” exhaust pipe</td>
<td>$28.95</td>
</tr>
</tbody>
</table>
DX Engineering Baluns with Maxi-Core™ Technology let your antenna perform to its full potential and reduce the stresses on your equipment. Check out these features:

- Allow a better match from the coax impedance to the impedance of the antenna for lowest SWR
- Force equal currents for maximum efficiency and better patterns
- Minimizes transmission line losses caused by SWR
- Overcome a less than optimal ground system
- Reduce noise or unwanted signals picked up by the feedline
- All power goes to the antenna, improving efficiency
- Prevent unwanted RFI by eliminating feedline current and radiation

Only DX Engineering Baluns will deliver the power to your antenna with minimum loss and perform a perfect transition from balanced to unbalanced. This will result in the strongest signal your antenna is capable of producing consistent with the lowest SWR under given conditions. This will result in less stress on your transmitter so the antenna perform to its full potential and reduce the stresses on your equipment.

### Advantages of using DX Engineering Feedline Current Chokes include:

- Including conventional enameled wire or bead baluns.
- High power feeds for high SWR antennas.
- Feedline Current Chokes have significantly higher common mode (RFI) and improve reception.
- A Feedline Current Choke is recommended for any existing 43 foot antenna installation, and is a great replacement for an older UNUN.

#### Maximum Power Transfer—Optimum Balance!

**Balun or Choke Mounting Kit**

This is the same mounting kit supplied with our Vertical Feedline Current Chokes. It consists of a stainless steel bracket and insulated shield, which allows you to mount any DX Engineering Balun or the Feedline Current Choke at the base of any vertical antenna. The polymer mounting plate is isolated from the rest of the vertical ground system for best performance and decoupling. No clamps are necessary if you are mounting to a 4x4 or 6x6 wooden post—simply use two wood screws. A clamp will be needed if you choose to mount your bracket to a rigid pipe—our DXE-CAVS-2P V-Saddle Clamp is recommended for clamping to 1 inch to 2 inch O.D. pipe.

**Balun Dipole Adaptor Bracket**

This mounting kit allows you to mount a DX Engineering Balun to a Yagi antenna mast or a tower leg. The kits include:

- Stainless steel bracket hardware kit
- Aluminum bar mounting bracket
- Stainless steel round member clamps

**Balun Mounting Bracket Kits**

Use one of these Balun Mounting Bracket Kits to mount your DX Engineering Balun to the boom of a Yagi, antenna mast or a tower leg. The kits include:

- Aluminum bar mounting bracket
- Stainless steel bracket hardware kit
- Stainless steel round member clamps

These kits will work with any of our baluns in a formed aluminum enclosure.

<table>
<thead>
<tr>
<th>Part Number &amp; Case</th>
<th>Price</th>
<th>Power</th>
<th>Freq.</th>
<th>Application</th>
</tr>
</thead>
<tbody>
<tr>
<td>DXE-BAL050-H05-A</td>
<td>$94.95</td>
<td>1:1</td>
<td>2/5 kW</td>
<td>Dipole, Yagi</td>
</tr>
<tr>
<td>DXE-BAL050-H10-A</td>
<td>$109.95</td>
<td>1:1</td>
<td>5/10 kW</td>
<td>Dipole, Yagi</td>
</tr>
<tr>
<td>DXE-BAL300-H10-A</td>
<td>$139.95</td>
<td>6:1</td>
<td>5/10 kW</td>
<td>Multi-Band Dipole</td>
</tr>
<tr>
<td>DXE-BAL300-H11-C</td>
<td>$149.95</td>
<td>4:1</td>
<td>5/10 kW</td>
<td>Vertical Loop</td>
</tr>
<tr>
<td>DXE-BAL600-H10-A</td>
<td>$119.95</td>
<td>4:1</td>
<td>5/10 kW</td>
<td>Yagi, LDPA, Horizontal Loop</td>
</tr>
<tr>
<td>DXE-BAL600-H11-C</td>
<td>$144.95</td>
<td>4:1</td>
<td>10+ kW</td>
<td>Yagi, LDPA, Horizontal Loop</td>
</tr>
<tr>
<td>DXE-BAL600-H11-T</td>
<td>$149.95</td>
<td>4:1</td>
<td>10+ kW</td>
<td>Folded Dipole</td>
</tr>
<tr>
<td>DXE-BAL200-H10-A</td>
<td>$139.95</td>
<td>9:1</td>
<td>5/10 kW</td>
<td>Multi-Band Vert/DFC</td>
</tr>
<tr>
<td>DXE-BAL200-H11-C</td>
<td>$149.95</td>
<td>4:1</td>
<td>5/10 kW</td>
<td>Vertical Loop</td>
</tr>
<tr>
<td>DXE-BAL200-H11-T</td>
<td>$149.95</td>
<td>4:1</td>
<td>10+ kW</td>
<td>Multi-Band Vert/DFC</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Part Number &amp; Case</th>
<th>Price</th>
<th>Power</th>
<th>Freq.</th>
<th>Application</th>
</tr>
</thead>
<tbody>
<tr>
<td>DXE-UN-43</td>
<td>$99.95</td>
<td>1:1</td>
<td>1.8-30 Terminated Loop</td>
<td></td>
</tr>
<tr>
<td>DXE-UN-BRKT</td>
<td>$20.95</td>
<td>1:1</td>
<td>1.8-30 Feed Point Connection Kit, UNUN to vertical antenna</td>
<td></td>
</tr>
<tr>
<td>DXE-UN-43R</td>
<td>$139.95</td>
<td>1:1</td>
<td>1.8-30 Multi-Band Dipole</td>
<td></td>
</tr>
<tr>
<td>DXE-BAL300-H10-A</td>
<td>$139.95</td>
<td>9:1</td>
<td>5/10 kW</td>
<td>Dipole, Yagi</td>
</tr>
<tr>
<td>DXE-BAL300-H11-C</td>
<td>$149.95</td>
<td>4:1</td>
<td>5/10 kW</td>
<td>Vertical Loop</td>
</tr>
<tr>
<td>DXE-BAL600-H10-A</td>
<td>$139.95</td>
<td>12:1</td>
<td>5/10 kW</td>
<td>Terminated Loop</td>
</tr>
<tr>
<td>DXE-CR8X-1</td>
<td>$9.50</td>
<td>RG-8X</td>
<td>1:1</td>
<td>2 to 2 O.D.</td>
</tr>
</tbody>
</table>

**Relief Brackets**

- Stainless steel round member clamps
- Stainless steel bracket hardware kit
- Aluminum bar mounting bracket

DX Engineering Balun, Feedline Current Choke, or Vertical Feedline Current Choke in a wire dipole situation. To suspend a formed aluminum dipole, use the Feedline Current Choke at the base of any vertical antenna. The polymer mounting plate is isolated from the rest of the vertical ground system for best performance and decoupling. No clamps are necessary if you are mounting to a 4x4 or 6x6 wooden post—simply use two wood screws. A clamp will be needed if you choose to mount your bracket to a rigid pipe—our DXE-CAVS-2P V-Saddle Clamp is recommended for clamping to 1 inch to 2 inch O.D. pipe.

**DX Engineering Baluns**

- Balanced input uses ceramic insulators with stainless hardware
- Mounted in sturdy aluminum boxes designed for outdoor use
- Handle high power (up to 10 kW per published spec) with minimum energy loss

**DX Engineering Chokes**

- Force equal currents for maximum efficiency and better patterns
- Minimizes transmission line losses caused by SWR
- Overcome a less than optimal ground system
- Reduce noise or unwanted signals picked up by the feedline
- All power goes to the antenna, improving efficiency
- Prevent unwanted RFI by eliminating feedline current and radiation

**DX Engineering Baluns**

- Balanced input uses ceramic insulators with stainless hardware
- Mounted in sturdy aluminum boxes designed for outdoor use
- Handle high power (up to 10 kW per published spec) with minimum energy loss

Pick the correct model for your application and desired impedance transformation.
RECEIVING EQUIPMENT

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 one that you need—it is frustrating to wonder “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 nearly 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 ........................................................ $49.95
DXE-ECM-R470-2 470 Ω, 2-watt resistor, lightning damage-resistant, pack of 10.............................................................. $20.00

Reversible Beverage System

The DXE-RBS-1P allows two Beverage antennas receiving in opposite 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 .................................... $175.95

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 20).

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 ........................................ $349.95
DXE-ARAV2-1 Active Receive Antenna, vertical configuration with relay .......................................... $289.95

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 ................................................ $44.95
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 -30 dB
Available Phase Rotation: >360 degrees between 500 kHz and 15 MHz
Antenna Port Power: 10-30 Vdc @ 300 mA maximum, TX muting available

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

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 .......................... Introductory Price $139.95

Receive Four-Square System

• W&J 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, 1000 feet of F6 flooded cable, connectors and tools
• Package also includes four active vertical antennas with relay protection (DXE-ARRAV2-4P) 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.eham.net/reviews/detail/5336

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

Four-Square Receiving System

102 In. Whips on Active Antennas

Receiving Direction

As Small As:
40m  14 Ft.
80m  28 Ft.
160m  54 Ft.

Optimal signal-to-noise ratio occurs at 1/4 wavelength side length

Mail: P.O. Box 1491, Akron, OH 44309 • E-Mail: DXEngineering@DXEngineering.com • Web: DXEngineering.com
**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 weatherlight 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 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 that 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 Ω receiving system.

**DXE-RFC-1 Receive Feedline Current Choke, 50/75 Ω 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 Sequence. 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 as to 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 settlable 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 Preampifier**

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 Preampifier, 0.3-35 MHz.................................$119.95**

See Cable Assemblies Section on page 24 for 75 Ω flooded cable and connectors!
Outstanding Results—Maximum Protection!

PolyPhaser Surge Protection Products

A power surge can arise 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 $62.70
PPC-IS-50UX-C1 UHF Female, Flange, 375W, 50-700 MHz $65.50
PPC-IS-50NX-C0 N Female, Flange, 2 kW HF, 1.5-400 MHz $62.70
PPC-IS-50NLN-C0 N Female, Bulkhead, 375W, 50-700 MHz $65.50
PPC-IS-50ULC-C0 UHF Female, Bulkhead, 375W, 50-700 MHz $65.50
PPC-IS-50ULC-C0 UHF Female, Bulkhead, 2 kW HF, 1.5-400 MHz $65.50
PPC-IS-50HUL-C0 UHF Female, Bulkhead, 3 kW HF, 1.5-400 MHz $76.00

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 x 12 x 5 1/4 inches 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-light 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 $42.95
DXE-CFT-1P Coax Feed Thru, 6-pack $14.95

Shunt Type Hardwired AC Protectors

The PPC-PSP-120 and PPC-PSP-240 are hardwired power supply shunt-type lightning protectors that employ a high-speed MOV, high-current gas tube combination that is UL 1449 recognized and provides low cost and long life protection. The PSP series must be locally fused and/or breakered.

• Max Surge Current: 35 kA
• Operating Voltage: 120V (PPS-120), 240V (PPS-240)
• Operating Temperature: -40° to +85° C
• Turn-On Voltage: +/- 82 V
• Temperature Range: -40° to +85° C

PPC-PSP-120 AC Power Protector, 120V AC, 1 phase, 2 wires and ground $66.50
PPC-PSP-240 AC Power Protector, 240V AC, 1 phase, 2 wires and ground $66.50
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 to 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 Voltage: 205 Volts
- Turn-on Time: 25 ns
- Operating Voltage: 120/208 Volts
- Phase Quantity: 2
- Voltage Configuration: Bi-phase
- Operating Temperature: +5 to +40°C
- Local Status Indicator: Yes
- Remote Status Capable: 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 PGC-AC/SPG grounding plate and tie the master on/off switch and circuit breaker for added protection. It is capable of handling AC Series.

**Features**

- Power line extension protector
- Multi-strike capability
- Master on/off switch
- NRTL UL 1440 listed NRTL/C LR# 106164-3
- Circuit breaker included for added protection

**Specifications**

- Let Through Voltage: 400 Vpk
- Max Surge Current: 20 kA
- Turn-On Voltage: 200 Volts
- Max Operating Current: 15 A
- Operating Voltage: 120 Volts
- Operating Temperature: +40°C
- Remote Status Capable: No
- Local Status Indicator: No
- NRTL UL 1440 listed NRTL/C LR# 106164-3

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### 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.

**Models**

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

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### 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.

**Models**

- **PPC-58R-112S**
  - Strap to Copper Ground
  - Rod Clamp..........................$30.40

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### Copper Strap to Copper Ground Rod Clamp

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

**Models**

- **PPC-J-1**
  - Wire to Rod Transition Clamp, 1/2" to 1 1/3".................................$14.25
- **PPC-J-2**
  - Wire to Rod Transition Clamp, 1 1/2" to 2 1/4"..............................$19.00

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### 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 mountaintops or other rocky terrain. All copper strap is 2 inches wide and 0.011 inches thick.

**Models**

- **DXE-CS2-25**
  - Copper Strap, 2" by 25’......$54.95
- **DXE-CS-50**
  - Copper Strap, 2" by 50’......$96.95
- **DXE-CS2-100**
  - Copper Strap, 2’ by 100’...$184.95

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### 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.

**Models**

- **PPC-MSC-3**
  - Multi-Strap Clamp..................$14.25

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See pages 24 and 27 for additional ground strap and strap assemblies!
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, 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. These 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 inch. 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 $47.50
PPC-UNI-KIT-2CT Copper to Aluminum Ground Kit $47.50
PPC-UNI-KIT-2TG Aluminum to Copper Ground Kit $47.50
PPC-UNI-KIT-2TT Aluminum to Aluminum Ground Kit $47.50

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 $8.55

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 $31.35
PPC-1C-112S Copper Wire to Strap Bonding Clamp, 1/0 to 6/0 AWG $37.05

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 $28.50

ECLS-Series Band Clamps with Stud
The ECLS-Series clamps are marine grade stainless steel with a 10-24 stud welded to the band. They are ideal for mechanical fastening to round or odd-shaped members. The clamps can be used for electrical connections (including grounding) or for mechanical assembly of components, attachment of signs, etc. Threaded hardware included.

See page 11 for all sizes.

Highest Quality—Best Performance!
Why spend time and effort building coaxial cable and ground strap assemblies when DX Engineering can provide the highest quality products already assembled and tested? High quality Belden coaxial cable assures brand-name performance at reasonable prices while DX Engineering quality, workmanship, materials, and testing assures assembly will provide long-lasting reliability. Our ground strap assemblies are the finest available and will make your shack free from RFI and lightning worries.

If you wish to build your own assemblies, DX Engineering can provide you with the highest quality components and tools to do the job.

See DXEngineering.com for new, lower cost cable assemblies!

50 Ω Cable Assemblies
These DX Engineering cable assemblies use high quality Belden coaxial cable with SilverTeflon® PL-259 (UHF) connectors or male N connectors installed at each end. The PL-259 connector is SilverTeflon with a silver plated center conductor. The N connector is SilverTeflon with a gold center conductor. Connectors are soldered rather than crimped, and adhesive-lined shrink tubing is used to form a weather-resistant bond between the connector body and the coax. Each assembly is then 100% Hi-Pot tested to guarantee a quality cable assembly.

Belden 8267 RG-213/U Coax — 405 Inch O.D., Black Non-Contaminating PVC Jacket

DXE-CBC-213U3 Cable with PL-259 connectors, 3’ $26.95
DXE-CBC-213U6 Cable with PL-259 connectors, 6’ $28.99
DXE-CBC-213U12 Cable with PL-259 connectors, 12’ $39.99

Belden 8214 RG-8/U Foamed Coax — 403 Inch O.D., Black PVC Jacket

DXE-CBC-008U002 Cable with PL-259 connectors for BTV DCF kit, 2’ $24.95
DXE-CBC-008U003 Cable with PL-259 connectors, 3’ $26.95
DXE-CBC-008U006 Cable with PL-259 connectors, 6’ $28.99
DXE-CBC-008U012 Cable with PL-259 connectors, 12’ $39.99

Belden 9258 RG-8X Coax — 242 Inch O.D., Black PVC Jacket

DXE-CBC-8XU2 Cable with PL-259 connectors for BTV DCF kit, 2’ $18.99
DXE-CBC-8XU3 Cable with PL-259 connectors, 3’ $19.99
DXE-CBC-8XU6 Cable with PL-259 connectors, 6’ $21.99
DXE-CBC-8XU12 Cable with PL-259 connectors, 12’ $25.99
DXE-CBC-8XU25 Cable with PL-259 connectors, 25’ $29.50
DXE-CBC-8XU3 Cable with N connectors, 3’ $29.50
DXE-CBC-8XU6 Cable with N connectors, 6’ $28.99
DXE-CBC-8XU12 Cable with N connectors, 12’ $32.99
DXE-CBC-8XU25 Cable with PL-259 and N connectors, 25’ $32.49
DXE-CBC-8XU3 Cable with PL-259 and N connectors, 3’ $24.50
DXE-CBC-8XU6 Cable with PL-259 and N connectors, 6’ $25.49

Contact DX Engineering Customer Support for special length requirements.

Pingtail Cable
This cable is the simplest way to connect Hustler BTV antennas to 50Ω coax. Just use DX Engineering’s DXE-363-SST Bulkhead Connector on a DXE-RADP-1P Radial Plate to mate the pigtail to your feedline. This pigtail is not required if you order the optional DX-VC-05S-A Vertical Feedline Current Choke for connection to the base of a Hustler BTV series antenna, or if you use the DX-ADK-DCF SO-239 Add-On Kit for direct connection of your coaxial cable feedline to the BTV antenna.

DXE-8X19-FT Pigtail Cable, 19’ long $16.95

PL-259 Silver/Teflon® Coax Connector
This superior PL-259 connector uses silver plated outer and inner conductors and a Teflon insulator. The connector has very low loss and high electrical breakdown. It fits directly on RG-8, RG-213, LMR-400, 9913 and other cables with a nominal .400 inch O.D. jacket size. Use a DXE-UG175 reducer with this connector to fit RG-58/U and/or LMR195 coax, and a DXE-UG176 reducer to fit RG-8X coax.

DXE-PL-259 PL-259 Connector $2.75
DXE-UG175S RG-58 Reducer for PL-259, silver plated $0.95
DXE-UG176S RG-8X Reducer for PL-259, silver plated $0.95

Contact DX Engineering Customer Support for special length requirements.

Cable Assemblies

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Mail: P.O. Box 1431, Akron, OH 44309 • E-Mail: DXEngineering@DXEngineering.com • Web: DXEngineering.com
Assemblies with 3/4 Inch Wide Braided Strap

- DXE-TCB05-RT36I 1/4" ring lugs, 3 - $5.90
- DXE-TCB10-RT05 1/4" ring lugs, 5' - $7.90
- DXE-TCB10-RT03 1/4" ring lugs, 3' - $9.95
- DXE-TCB10-RT18I 1/4" ring lugs, 18" - $11.95
- DXE-TCB075-RT03 1/4" ring lugs, 3' - $5.50
- DXE-TCB05-RT18I 1/4" ring lugs, 18" - $7.95
- DXE-TCB05-RT05 #10 ring lugs, 5' - $4.90

where a reliable connection is needed.

- Radial plate, balun, and a vertical antenna to keep current 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 variable oscillator, frequency counter, frequency multiplier, 50 Ω bridge, a twelve-bit A-D converter, and microcontroller. This unit performs a wide variety of useful antenna and RF impedance measurements, including coaxial cable loss and electrical distance to an open or short. Primarily designed for analyzing 50 Ω antenna and transmission line systems, the unit also measures RF impedances between a few ohms and several hundred ohms. It also functions as a signal source and frequency counter. The frequency range is 1.8 to 170 MHz in six overlapping bands. Requires 10 "AA" batteries for portable operation (not included).

- HF/VHF Antenna Analyzer

This battery-powered RF impedance analyzer combines five basic circuits: a variable oscillator, frequency counter, frequency multiplier, 50 Ω bridge, a twelve-bit A-D converter, and microcontroller. This unit performs a wide variety of useful antenna and RF impedance measurements, including coaxial cable loss and electrical distance to an open or short. Primarily designed for analyzing 50 Ω antenna and transmission line systems, the unit also measures RF impedances between a few ohms and several hundred ohms. An easily accessed, user-controlled Z0 setting in the function menu allows changing SWR and other SWR functions (return loss, reflection coefficient, match efficiency, etc.) to any normalized impedance value between 5 and 600 Ω.

- Normal crimping tools or pliers will not work on Snap-N-Seal connectors—an installation tool like DX Engineering’s DXE-SNS-CT1 is required.

- Custom Cable Assemblies available—call for details.

- Grounding a rig, amp, etc. to a copper strap running 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 routed away with heavy copper strap to join any other similarly protected branches for single point grounding (SPG) lightning protection.

- This high-quality bulkhead connector uses silver plated outer and inner conductors and a Teflon® insulation. The connector has very low loss and high electrical breakdown. It comes with two nuts to secure the connector to our Radial Plate and weather resistant feedline connection. The proper shields and an 85% velocity factor. We recommend the coaxial shield as a common ground cable. This low-loss cable features dual normalized impedance value between 5 and 600 Ω.

- On-off switch, wide range of adjustable resistance, signal output for an external display, and precision RF performance. The analyzer also functions as a non-precision signal source and frequency counter. The operating frequency range extends from 1.8 to 170 MHz in six overlapping bands, and includes SWR measurements on 415-470 MHz. Requires 10 “AA” batteries for portable operation (not included).

- HF/VHF/UHF Antenna Analyzer

This compact battery-powered RF impedance analyzer combines five basic circuits: a variable oscillator, frequency counter, frequency multiplier, 50 Ω bridge, a twelve-bit A-D converter, and microcontroller. This unit performs a wide variety of useful antenna and RF impedance measurements, including coaxial cable loss and electrical distance to an open or short. Primarily designed for analyzing 50 Ω antenna and transmission line systems, the unit also measures RF impedances between a few ohms and several hundred ohms. An easily accessed, user-controlled Z0 setting in the function menu allows changing SWR and other SWR functions (return loss, reflection coefficient, match efficiency, etc.) to any normalized impedance value between 5 and 600 Ω.

- The analyzer also functions as a non-precision signal source and frequency counter. The operating frequency range extends from 1.8 to 170 MHz in six overlapping bands, and includes SWR measurements on 415-470 MHz. Requires 10 “AA” batteries for portable operation (not included).

- MFJ-298

HF/VHF/UHF Antenna Analyzer...$237.50

MFJ-99

Accessory Pack—includes Dip Meter Coil (MFJ-66), AC adapter (MFJ-1312D), and carrying pouch (MFJ-29C). $57.95

MFJ-269

MFJ-98

MFJ-998/929/927/925

MFJ-5114Y Yaesu FT1000MP Rig Interface Cable for ICOM......................................$57.95

MFJ-98

MFJ-29C

MFJ-731

MFJ-29C

MFJ-39C

MFJ-39C

MFJ-731

MFJ-39C

MFJ-99

MFJ-98

MFJ-269

MFJ-5114Y4 Yaesu FT2000 Rig Interface Cable for 929/998/927/925 .............................................$18.95

MFJ-5114Y3 Yaesu FT8100MP Rig Interface Cable for MFJ-999/929/927/922/925 .................................$18.95

MFJ-5114Y2 Yaesu FT2000 Rig Interface Cable for 929/998 .............................................................$18.95

MFJ-5124I AutoTuner Radio Interface Cable for Yaesu and compatibles ..................................................$57.95

MFJ-5124Y AutoTuner Radio Interface Cable for Kenwood and compatibles ...........................................$57.95

MFJ-5114Y1 Icom Rig Interface Cable for MFJ-999/929/927/922/925 ..................................................$18.95

MFJ-5114K Kenwood Rig Interface Cable for MFJ-999/929/927/922/925 .................................................$18.95

MFJ-5114Y Yaesu Rig Interface Cable for MFJ-999/929/927/922/925 ......................................................$18.95

MFJ-5114Y2 Yaesu FT2000 Rig Interface Cable for 929/998 .............................................................$18.95

MFJ-5114Y1 Icom Rig Interface Cable for MFJ-999/929/927/922/925 ..................................................$18.95

MFJ-5114Y Yaesu FT1000MP Rig Interface Cable for MFJ-929/998 ......................................................$18.95

MFJ-5114I Icon Rig Interface Cable for MFJ-999/929/927/922/925 ......................................................$18.95

MFJ-66

Dip Meter Coil .................................................$23.95

MFJ-731

Tunable RFI Filter ...........................................$98.95

MFJ-29C

Carrying Pouch for MFJ-299B .................................................$23.95

MFJ-39C

Carrying Pouch for MFJ-269 .................................................$23.95

MFJ-39C

Carrying Pouch for MFJ-269 .................................................$23.95

MFJ-998/929/927/925

MFJ-731

MFJ-39C

MFJ-269

MFJ-39C

MFJ-99

Accessories

MFJ-1312D AC Adapter .................................................$15.50

MFJ-66

Dip Meter Coil .................................................$23.95

MFJ-731

Tunable RFI Filter ...........................................$98.95

MFJ-29C

Carrying Pouch for MFJ-299B .................................................$23.95

MFJ-39C

Carrying Pouch for MFJ-269 .................................................$23.95

Interface Cables for MFJ Tuners

MFJ-5114I Icon Rig Interface Cable for MFJ-999/929/927/922/925 ......................................................$18.95

MFJ-5114K Kenwood Rig Interface Cable for MFJ-999/929/927/922/925 .................................................$18.95

MFJ-5114Y Yaesu Rig Interface Cable for MFJ-999/929/927/922/925 ......................................................$18.95

MFJ-5114Y3 Yaesu FT1000MP Rig Interface Cable for MFJ-929/998 ......................................................$18.95

MFJ-5114Y2 Yaesu FT2000 Rig Interface Cable for 929/998 .............................................................$18.95

MFJ-5124I AutoTuner Radio Interface Cable for ICOM .............................................................$18.95

MFJ-5124K AutoTuner Radio Interface Cable for Kenwood and compatibles ...........................................$57.95

MFJ-5124Y AutoTuner Radio Interface Cable for Yaesu and compatibles ..................................................$57.95
MFJ Antenna Tuners

200 Watt MightyMite IntelliTuner™
At just 6.5" x 2.15" x 2.25", the MightyMite complements today's compact HF transceivers like the IC-706MKIIG, IC-7000, FT-857D, DX-70TH and TS-50S. It can also be used as a stand-alone automatic antenna tuner for any transceiver that has an output power of 2 to 200 watts SSB/CW from 1.8-30 MHz, with antenna impedances from 1 to 1,600 Ω.

MFJ-925 $169.95

200 Watt Automatic Antenna Tuner for HF SSB
This automatic antenna tuner covers the entire HF band from 1.6 to 30 MHz. It handles 200 watts PEP maximum with 10 watts minimum input power. You can use the tuner to directly tune random length wire or aluminum tubing antennas. Use the unit outside the base of your ham station antenna—it has a durable hard plastic cover and chassis plus an inner lip black rubber seal to keep the interior electronics cool and dry for many years of dependable use.

MFJ-926 $389.95

200 Watt IntelliTuner™
The IntelliTuner lets you rapidly tune any antenna—unbalanced or single-wire—automatically. It is a comprehensive automatic antenna tuning center with SWR/wattmeter and antenna tuning network switch for two antennas. The tuner includes a highly efficient switching L-network with wide matching capability, 1.8 to 30 MHz coverage, a radio interface port, and heavy-duty 10 amp/1,000 volt relays. It is rated at 200 watts SSB/CW.

MFJ-929 $209.95

1.8 to 30 MHz Artificial Ground
This artificial RF ground resonates a random length of wire thrown along the floor and produces a tuned counterpoise. This ground effectively places your rig near actual earth ground potential even if it is on the second floor or higher with no earth ground possible. It reduces the electrical length of the ground connection wire to virtually zero by tuning out its reactance. The artificial ground connects between your rig and a random length of wire or a connecting ground wire. It's tuned for minimum ground current using the built-in RF ammeter.

MFJ-931 $104.95

300 Watt Antenna Tuner/Artificial Ground
This unit combines a versatile antenna tuner with an artificial ground. It turns a random wire into an effective antenna that works, it's great for traveling, emergency use, or as a makeshift antenna. The 300 watt, general purpose antenna tuner covers 1.8 to 30 MHz. It features a two range, lighted cross-needle meter that lets you read SWR, forward and reflected power all at a glance, and a 4:1 balun for balanced lines. You also get an efficient airwound inductor, a special high-current/voltage 12 position inductor switch, and two 1,000 volt air-variable capacitors. It tunes all types of antennas and feedlines including random wire, coax and balanced lines.

MFJ-994 $194.95

300 Watt Antenna Tuner
This 300 watt RF output power antenna tuner will match any transmitter or transceiver to virtually any antenna. Peak or average forward and reflected power plus SWR can be read on the illuminated cross-needle meter. The tuner uses a "T" matching network and covers all bands between 160 and 10 meters. This network will tune dipoles, inverted-vees, verticals, mobile whipbs, beams, random wires, and many other antenna types. The tuner has rear panel connectors for coaxial, single wire or two wire feedlines. A built-in 4:1 balun allows the use of balanced open wire, twinlead, or twin-axial feedlines.

MFJ-994 $154.95

2,500 Watt Antenna Tuner with Wattmeter & Antenna Switch
This tuner handles 1,500 watts PEP SSB amplifier input power (300 watts PEP SSB amplifier output power)—ideal for use with Ameritron's best-selling 800 watt AL-811H or 600 watt AL-811 amplifiers! The ultra-compact (10.75" x 4" x 10.875") tuner features an aluminum-skirted knob set with a weighted deluxe spinner knob and a scratch-proof, multi-colored Lexan front panel. Two transmitting tuning capacitors and MFJ's exclusive AirCore roller inductor gives you precise control to get your SWR down to an absolute minimum.

MFJ-982D $259.95

300 Watt Roller Inductor Antenna Tuner
This tuner's AirCore Roller Inductor, gear-driven turns counter, and spinner knob gives you excellent inductance control for absolute minimum SWR. You get the widest matching range, ultra-high-Q, the lowest loss, highest efficiency and highest power handling of any roller inductor in ham radio. Other features include a full size lighted cross-needle SWR/Wattmeter that reads true peak forward power, GRM-Free PreTune, eight-position antenna switch, built-in 50 Ω dummy load, and a heavy-duty 4:1 balun, all enclosed in a tough, attractive cabinet.

MFJ-969 $184.95

1,500 Watt Fully Balanced Antenna Tuner
This is a legal limit, fully balanced antenna tuner. You get superb balance, very wide matching ranges (12,000 Ω), and continuous 1.8 to 30 MHz coverage including all WARC bands! It handles a full 1,500 watts SSB and CW. You can tune any balanced lines including 600 Ω open wire line, 450/522 ladder line, and 300/23 twin lead—shielded or unshielded. You can also tune random wires and coax-fed antennas.

MFJ-976 $479.00

1,500 Watt Antenna Tuner with Dummy Load
This roller inductor tuner is a CW antenna tuner rated to the US amateur legal limit of 1,500 watts. It is designed to match 50 Ω output amplifiers, transmitters, or transceivers to virtually any antenna. Peak and average forward power, reflected power, and SWR are displayed on the illuminated cross-needle meter. The roller inductor "T" matching network continuously tunes all frequencies from 1.8 through 30 MHz. You can match dipoles, inverted-vees, verticals, mobile whipbs, beams, random wires and many other antenna types. The tuner has rear panel connectors for coaxial, single wire or two wire feedlines. A built-in 4:1 balun allows the use of balanced open wire, twinlead, or twin-axial feedlines.

MFJ-989D $749.00

Dual 300/150 Watt IntelliTuner® Automatic Antenna Tuner
This tuner lets you rapidly tune any antenna—balanced, unbalanced, or single-wire—automatically. It is an integral antenna tuning center with SWR/wattmeter and antenna tuning network continuously tunes all frequencies from 1.8 through 30 MHz. A built-in 4:1 balun allows the use of randomized open wire, twinlead, or twin-axial feedlines.

MFJ-993B $319.00

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, backlight LCD display, a port for an accessory remote control, a radio interface port, and heavy-duty 16 amp/1,000 volt relays. It is rated at 300 watts to match 6 to 1,600 Ω antennas (SWR up to 32:1) or 150 watts to match wider range of 6 to 3,200 Ω (SWR up to 8:1).

MFJ-994B $239.00

1,500 Watt IntelliTuner™
The 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 600 watts PEP SSB and 300 watts CW.

MFJ-994B $320.00

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 whipbs, 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-998 $639.00

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 12 to 2,000 Ω 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
Ameritron Power Amplifiers

**AL-811 600 Watt HF Amplifier, Three 811A Tubes**

The AL-811 gives you 600 watts PEP output—nearly 2 full S-units over your barefoot rig. That could mean the difference between hearing “you’re Q5 armchair copy” and “Sorry can’t copy you, too much QRM.” Now you won’t have to stand aside while the “big guns” steal your DX—you’ll be able to log some of those stations first. Going from 600 watts to the full legal limit (1,500 watts) gives you less than one S-unit increase and can cost three or four times more money. Get this amplifier and you’ll get a powerful punch at a price that’s easy on your wallet.

AMR-AL-811 ........................................ $797.00

**AL-811H 800 Watt HF Amplifier, Four 811A Tubes**

This amplifier gives you 800 watts PEP output for that extra punch you need to be heard when a 100 watt output transceiver isn’t enough. Only Ameritron gives you four fully neutralized 811A transmitting tubes. You get absolute stability and superb performance on higher bands that can’t be matched by un-neutralized tubes.

AMR-AL-811H ........................................ $819.00

**AL-572 1,300 Watt HF Amplifier, Four 572B Tubes**

The Ameritron AL-572 is a 1,000 watt CW, 1,300 watt PEP (nominal output power) linear amplifier that operates on all amateur bands from 160 through 15 meters (and WARC and bands with ten meters with reduced performance). It uses four 572B tubes in a class AB2 grounded grid circuit. Features like a high-quality power supply and RF components, an accurate peak-detecting direction coupler, front-panel-adjustable true ALC circuit, and automatic bias switching make this the best-featured and most reliable 572B amplifier available. The amplifier is factory wired for 120 volt, 50/60 Hz AC line voltage. It easily converts to other supply voltages between 90 and 250 volts AC.

AMR-AL-572 Free UPS Ground Shipping! ........................................ $1,519.00

**AL-808 1 kW HF Amplifier, One 3-500Z Tube**

You get up to a full kilowatt PEP output and nearly 70% efficiency from this whisper-quiet desktop linear amplifier. It covers all bands from 16 through 15 meters, including WARC and WARS. You get up to 1,000 watts output in SSB, 800 watts output on CW, and 500 watts output on RTTY. Other features include an extra heavy-duty power supply, a single 3-500Z tube, tuned input, PPL output, current protection, multiple transformer, dual cross-needle meters, and QSK compatibility. Made in the USA, two year warranty. Modification instructions for operation on 10 and 12 meters are available with proof of a valid amateur radio license.

AMR-AL-808 ........................................ $1,274.00

**AL-800 1.25 kW HF Amplifier, One 3CX800 Tube**

The AL-800 is a 1.200 watt PEP output linear amplifier that operates from 160 through 15 meters. It uses a single 3CX800A7 tube in a class AB2 grounded grid circuit. Features include high quality power supply and RF components, an accurate peak-detecting directional coupler, front-panel-adjustable true ALC circuit, electronic grid current and thermal overload protection, and automatic bias switching. The AL-800 is factory-wired for 120 volt, 50/60 Hz AC line voltage. It is easily converted to other supply voltages between 90 and 250 volts AC. Modification instructions for operation on 10 and 12 meters are available with proof of a valid amateur radio license.

AMR-AL-800 Free UPS Ground Shipping! ........................................ $1,839.00

**AL-880H 1.5kW+ HF Amplifier, Two 3CX800 Tubes**

The AL-880H is a 1,500 watt output linear amplifier that operates from 160 through 15 meters. It uses a pair of 3CX800A7 tubes in a class AB2 grounded grid circuit. Features include high quality power supply and RF components, an accurate peak-detecting directional coupler, front-panel-adjustable true ALC circuit, electronic grid current and thermal overload protection, and automatic bias. The AL-800H is factory wired for 240 volt, 50/60 Hz AC line voltage. It is easily converted to other supply voltages between 90 and 250 volts AC. Modification instructions for operation on 10 and 12 meters are available with proof of a valid amateur radio license.

AMR-AL-880H Free UPS Ground Shipping! ........................................ $2,739.00

**AL-1200 1,500 Watt HF Amplifier, One 3CX1200A7 Tube**

The AL-1200 is a 1,500 watt output linear amplifier that operates from 160 through 15 meters. It uses a single 3CX1200A7 tube in a class AB2 grounded grid circuit. CW FM and RTTY efficiency is improved by shifting the bias deeper into class B. The heavy duty power supply and RF components, combined with a forced air system using chimneys, provide long service life. The AL-1200 is factory wired for a 240 volt, 50/60 Hz line voltage. It features a super heavy duty power supply that loads at full legal power—it can deliver more than 2,500 watts PEP two tone output for a half-hour!

AMR-AL-1200 Free UPS Ground Shipping! ........................................ $2,949.00

**AL-82 High Power HF Amplifier, Two 3-500Z Tubes**

The AL-82 is designed to give you years of trouble-free service at the full legal output power limit. It features a 1,800 watt continuous, commercial rated Hyperion transformer with heavy-duty rectifiers and computer capacitors in a full wave bridge supply. Two bias settings allow either high efficiency RTTY and CW operation at 1,500 watts of output at nearly 70% plate efficiency, or low distortion 1,500 watts PEP, SSB, or SSTV output. Silver-plated tank components provide high efficiency operation above 20 meters. The Pi-L tank circuit permits full impedance matching capability over the entire 160 meter band. The tuning capacitors and bandswitch have a 35% safety factor to virtually eliminate tank circuit component failures, even under adverse operating conditions.

The cooling system keeps the components and tubes safely below the manufacturer’s ratings, even while operating at 1,500 watts output with a steady carrier. The filament supply has inrush current limiting to ensure maximum tube life. Shielding and bypassing help prevent TVI and RFI at high power levels.

AMR-AL-82 Free UPS Ground Shipping! ........................................ $2,329.00

**AL-1500 High Power HF Amplifier, One 3CX1500/887 Tube**

The AL-1500 will deliver 1,500 watts CW output with only 65 watts drive. It features the HerexLM 3CX1500/887 tube for continuous, full legal output at 27 dBc IMD. The AL-1500 also features time delay starting to protect the tube and over-current shut off to remove the drive if mis-tuned. A commercial grade, die-cast ball bearing blower provides quiet operation at full rated airflow to maximize tube life.

AMR-AL-1500 Free UPS Ground Shipping! ........................................ $2,949.00

**ALS-500M 500 Watt HF Mobile Amplifier, Remote Ready**

The ALS-500M is a 500 watt PEP output, solid state linear amplifier that uses rugged, conservatively rated bipolar RF devices in the power output section. The ALS-500M operates at full power with continuous frequency coverage from 1.5 through 21.6 MHz (160 through 15 meters). This amplifier requires no tuning adjustments. A broadband five-filters provides output harmonic suppression in excess of 60 dB for all frequencies above 8 MHz, and more than 70 dB on all TV channels.

The amplifier is set up for use with Ameritron’s ALS-500RC remote control unit. A modification kit (AMR-MOD-10M) is available to extend operation to 30 MHz with proof of a valid amateur radio license.

AMR-ALS-500M ........................................ $739.00

**ALS-500MR 500 Watt HF Mobile Amplifier/Remote Combo**

The ALS-500MR combines the ALS-500M amplifier with the ALS-500RC remote control unit. It is a 500 watt PEP output, solid state linear amplifier that uses rugged, conservatively rated bipolar RF devices in the power output section.

AMR-ALS-500MR ........................................ $779.00

**ALS600 600 Watt HF Amplifier with AC Power Supply**

The ALS-600 is a 600 nominal watt output, solid state linear amplifier that features state-of-the-art, high voltage, RF TMOS FET devices in the power output section. The ALS-600 provides continuous frequency coverage from 1.5 through 22 MHz (160 through 15 meters) with no tuning adjustments. Broadband five-f absolutely low pass filters provide output harmonic suppression in excess of all FCC requirements.

The matching AC power supply is factory wired for 120 volt, 50/60 Hz line voltage and is easily converted to other supply voltages between 100 and 240 volts. A modification kit (AMR-MOD-10M) is available to extend operation to 30 MHz with proof of a valid amateur radio license.

AMR-ALS600 ........................................ $1,269.00

**ALS-600S 600 Watt HF Amplifier with Switching AC Power Supply**

The ALS-600S is a 600 nominal watt output, solid state linear amplifier that features state-of-the-art, high voltage, RF TMOS FET devices in the power output section. The ALS-600S provides continuous frequency coverage from 1.5 through 22 MHz (160 through 15 meters) with no tuning adjustments. Broadband five-f absolutely low pass filters provide output harmonic suppression in excess of all FCC requirements.

The matching switching AC power supply is factory wired for 120 volt, 50/60 Hz line voltage and is easily converted to other supply voltages between 100-120 and 230-240 volts. A modification kit (AMR-MOD-10M) is available to extend operation to 30 MHz with proof of a valid amateur radio license.

AMR-ALS600S ........................................ $1,369.00

**AMERITRON®**

Phone: 800.777.0703 • International: 330.572.3200 • Fax: 330.572.3279 • DoD CAGE Code: 3M3H7
### 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.

The Grounding Bracket is an ideal junction point for the coax pigtails that form the tower 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-GCB-150  Coaxial Cable Grounding Bracket, fits 1/2" to 1 1/2" O.D. $14.95

DXE-GCB-200  Dual Shielded Cable Grounding Bracket, fits 1" to 2 1/2" O.D. $14.95

* Requires proof of Amateur License

### Ground Strap

DXE Engineering offers quality tipped 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:

- 3/8 inches wide x 1/32 inches thick
- 1/2 inches wide x .030 inches thick
- 3/4 inches wide x .040 inches thick
- 1 inches wide x .045 inches thick

DXE-TGC-038  3/8" wide ....................per foot $0.40

DXE-TGC-050  1/2" wide ....................per foot $0.60

DXE-TGC-063  3/4" wide ....................per foot $0.80

DXE-TGC-075  1" wide ....................per foot $1.10

DXE-TGC-100  1 1/2" wide .................per foot $1.25

### Hy-Gain Antenna Rotators

**Hy-Gain 45II Metered Rotor with Friction Brake**

- CD-45II handles 8.5 square feet when mounted inside a tower, or 5 square feet with a mast adapter.
- Low temperature grease good to -30° F
- Bell rotor design gives complete weather protection
- Dual 24-ball bearing race for load bearing support.
- Heavy duty, trouble-free gear train with die-cast ring gear and stamped steel gear drive
- North center scale, dual lighted directional meter indicator
- 8-pin plug/socket on control unit, snap-action control switches, low voltage control
- Handles masts up to 2 1/16' O.D.
- MSLD light duty lower mast support adapter included
- Power requirement: 110V, 60Hz

$419.95

**HAM-IV Rotor**

The HAM-IV is the most popular rotor in the world! It is designed for medium-size communications arrays of up to 15 square feet wind load area.

- Low temperature grease permits normal operation down to -30° F
- Alloy ring gear rated up to 100,000 PSI tensile strength for maximum readability
- Dual 98-ball bearing race for load bearing strength
- Electric locking steel wedge brake prevents wind-induced antenna movement
- New indicator potentiometer—no more terminal strips
- Ferrite beads on potentiometer wires reduce RF susceptibility
- Cinch plug connector plus 8-pin plug at control box—no screwdriver required
- North or South center of rotations scale on meter
- Low voltage control
- Handles masts up to 2 1/16' O.D.

$594.95

**HAM-V Rotor with DU-1 Pathfinder Digital Control**

The HAM-V is designed for medium-size communications antenna arrays of up to 15 square feet wind load area. The innovative DU-1 Pathfinder Control Unit is included. The DU-1 gives you automatic operation of your brake and rotor, features computer control with RS-232 passthrough, and is compatible with many logging and contest programs.

- 6 presets, 1 degree heading accuracy, automatic 8-second brake delay, and 360 degree choice for center of rotation.
- Low temperature grease permits normal operation down to -30° F
- Alloy ring gear rated up to 100,000 PSI tensile strength for maximum readability
- New indicator potentiometer—no more terminal strips
- Ferrite beads on potentiometer wires reduce RF susceptibility
- Cinch plug connector plus 8-pin plug at control box—no screwdriver required
- North or South center of rotations scale on meter
- Low voltage control
- Handles masts up to 2 1/16' O.D.

$919.95

### T-2X Tailtweister Series II Rotor

The T-2X Tailtweister Series II is designed for medium-size communications antenna arrays of up to 20 square feet wind load area. The T-2X Tailtweister Series II is designed for medium-size communications antenna arrays of up to 20 square feet wind load area.

- Low temperature grease permits normal operation down to -30° F
- Alloy ring gear rated up to 100,000 PSI tensile strength for maximum readability
- Dual 138-ball bearing race for load bearing strength
- Electric locking steel wedge brake prevents wind-induced antenna movement
- New indicator potentiometer—no more terminal strips
- Ferrite beads on potentiometer wires reduce RF susceptibility
- Weatherproof AMP connectors plus 8-pin plug at control box—no screwdriver required
- North or South center of rotations scale on meter
- Low voltage control
- Handles masts up to 2 1/16' O.D.

$689.95

**HDR-300A Heavy Duty Rotor with Digital Readout**

The HDR-300A Heavy Duty Rotor is for king-sized antenna arrays with up to 25 square feet wind load area. It features a control cable connector, a hardened stainless steel output shaft, North or South centered calibration, ferrite beads on potentiometer wires to reduce RF susceptibility, and a longer output shaft keyway for added reliability. Heavy duty self-centering steel mast clamp and hardware included. The digital display is accurate to one degree.

$339.95

### Accessories

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<td>Control Wire, 8-conductor</td>
<td>$0.39</td>
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<tr>
<td>DXE-CW8-HD</td>
<td>Heavy Duty Control Wire, 8-conductor</td>
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<td>DXE-UBK-HY2</td>
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<td>DXE-UBK-HY2</td>
<td>Replacement U-Bolt (single)</td>
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About Dummy Loads
The dummy load is a device used in place of an antenna when testing a radio transmitter. Also known as a dummy antenna, it is substituted for an antenna so that the transmitter does not interfere with other radio transmissions. The dummy load absorbs transmitter power and presents the proper load to the transmitter output to prevent damage or incorrect adjustment.

The dummy load should be a pure resistance, representing the ideal impedance of the transmitter. Also known as a dummy antenna, it is substituted for an antenna so that the transmitter does not interfere with other radio transmissions. The dummy load absorbs transmitter power and presents the proper load to the transmitter output to prevent damage or incorrect adjustment.

Vectronics Fan-Cooled Dummy Load, 2,500 Watts, 0-150 MHz
Vectronics' dry type, fan-cooled dummy load simulates an accurate 50 Ω antenna up to 54 MHz, enabling you to test your transmitter without radiating a signal on the air. 110 Vac to 12 Vdc adapter is included (DC to 54 MHz).

- Handles short-term RF power up to 2,500 watts
- SWR of less than 1.3:1 at 30 MHz
- Energy Density: 7000 J / inch³ / second
- Compact and lightweight
- SO-239 connector
- Power Dissipation: 2,500 watts average up to 1 minute maximum (fan must be used at high power levels)
- Duty Cycle: 10% with fan
- Voltage Gradient: 10 kV per inch
- Resistor Type: Dispersed carbon particles fired in ceramic matrix

Vectronics Air-Cooled Dummy Load, 1,500W, 0-650 MHz
This dry type, air-cooled resistive dummy load uses a tuned hyperbolic cone that is tunable over the frequency range. This feature allows power measurement up to 1,000 watts. The dummy load is capable of dissipating up to 1,500 watts average from DC to 650 MHz. A reasonable cool down period is needed to protect the resistor from permanent damage (typically 10-20 times the load usage). The dummy load is ideal for terminating a hybrid four-square antenna controller, off-air transmitter testing, or universal use in the ham shack or on the repair bench.

- Impedance: 50 Ω at operating temperature
- SWR: <1.3:1 DC-300MHz; <1.5:1 300-650MHz; <2.0:1 650-1000MHz
- Power Dissipation: 1,500 watts average up to 20 sec. max. (see chart printed on the unit)
- Duty Cycle: 20 seconds on at 1,500 watts with 200-400 seconds off period
- Voltage Gradient: 10 kV per inch
- Resistor Type: Dispersed carbon particles fired in ceramic matrix
- Energy Density: 700 joules per cubic inch

MFJ Digital Wattmeter, 1.8-54 MHz
This SWR/wattmeter/frequency counter can measure up to 1,500 watts. It has three high resolution ranges accurate from 1.8 to 54 MHz. True peak or average forward and reflected watts, SWR, and frequency can be simultaneously displayed. The three high-resolution forward/reflected power ranges are automatically selected: QRP range (25 watts full scale), mid-range (250 watts full scale) and high range (1,500 watts full scale). TrueActive™ peak reading circuit gives true peak or average power on all modes.

The built-in frequency counter gives any transmitter digital frequency readout in continuous carrier mode—perfect for older and QRP rigs with these features. The use of a regulated supply is not mandatory but is recommended for best performance. An optional 12 Vdc power supply is also available.

- MFJ-629B Digital Wattmeter .......................................................... $169.95
- MFJ-1312D Power Supply, 12 Vdc/500 mAmp ............................ $15.50

Vector Sun Communications
5700 Woodland Road
Cleveland, Ohio 44131
Phone: 800.777.0703 • Fax: 330.572.5379  • DoD CAGE Code: 3M3H7
7-Piece Professional Screwdriver Set

This set has all of the screwdrivers you need to handle most jobs. It includes the following:
- 3/8 x 8 inch flathead
- 3/16 x 6 inch flathead
- #2 x 4 inch Phillips
- 1/4 x 4 inch flathead
- 1/8 x 4 inch flathead
- #1 x 3 inch Phillips
- Electrician’s flat thin wall

DXE-W80007 Professional Screwdriver Set $6.95

6-Piece Lighted Ratcheting Screwdriver Set

This ratcheting screwdriver is designed to help you retrieve loose nuts and bolts, two built-in lights to help you work in poorly lit areas, and a black rubber hand grip for comfort. The screwdriver comes with three flathead bits and three Phillips-head bits.

DXE-W937 Ratcheting Screwdriver Set $9.95

SO-239 Connector Installation Tool Kit

This tool is ideal for SO-239 coax connectors. It has crimping, cutting, and stripping features. The kit comes with wire stripper, 2-1/2 inch stripping shears, 6-in-1 screwdriver, and a 3/16 inch wrench.

DXE-900030 Screwdriver Set $4.95

Coax Cable Cutters

These high-quality CHANNELLOCK cable cutters have blades designed to cut coaxial cable cleanly. They will not crush the cable like diagonal side cutters—the cut end of the cable is cleanly cut, ready for stripping and connector assembly. The cutters are made from polished, high carbon drop forged steel, and are carefully balanced with broader riveted joint for smooth action, and plastic-dipped, cushioned handles for comfort.

DXE-CN100  CHANNELLOCK Coax Cable Cutters $19.95

Klein Tools

Wire Stripper/Cutter

The Klein-Kurve wire strippers are ideal for stripping solid (10-18 AWG) and stranded (12-20 AWG) wire cleanly and easily. The 7 1/8 inch strippers also have three triangular blades to neatly cut copper wire, easy-to-read markings on both sides, and extra-long grips and curved handles for comfort.

DXE-11005 Klein-Kurve Wire Stripper/Cutter $18.95

Automatic Wire Stripper/Crimper/Cutter

Our DX Engineering wire strippers are designed to make quick work of wires ranging from 24 to 10 gauge. Just insert the wire, squeeze the handle, and listen for the click. That’s the sound of another perfect wire stripping job performed in about 2 seconds—a fraction of the time it takes your pocket knife to do the same job. An adjustable wire length guide helps you make uniform strips, and the built-in wire cutter and crimper help you complete your wiring job.

DXE-900031 Automatic Wire Stripper/Crimper/Cutter $17.95

DX Engineering offers high quality, reasonably priced tools specifically selected for antenna construction and coaxial cable preparation.

Connector Assembly Tools

These assembly tools allow simple threading of connector sleeves onto the vinyl jacket of RG-8/U, RG-213/U, LMR-400 and other similar size cables. The DXE-UT-80P assembly tool is for PL-259 connectors, and the DXE-UT-80N assembly is for two-piece Type N connectors.

Assembly is simple. Strip the cable with the DXE-UT-8213 Cable Striping Tool, then use the appropriate connector assembly tool and thread the connector body onto the stripped cable end. A visual guide at the end of the tools allows easy viewing of the cable center conductor for proper depth. You get a perfect and easy connector installation every time!

DXE-UT-80P Connector Assembly Tool for PL-259 Connectors $22.95

DXE-UT-80N Connector Assembly Tool for Type N Connectors $22.95

Coax Cable Strippers for 50 Ω Cable

These DX Engineering strippers prepare 50 Ω coax cable for installation of a PL-259 connector.

- Works on foam or solid dielectric cable
- Precision, two-step operation
- No nicks or scratches to conductor
- Premium, long-lasting cutting blades

DXE-UT8213 Coax Cable Stripper For RG-8, RG-213, 9913, LMR-400 $39.95

DXE-UT828X Coax Cable Stripper For RG-8X, Belden 9258 cable $39.95

DXE-UT-RB-HD Heavy Duty Replacement Blades, 2 per pack $18.95

*Also fits cablematic UT-8000
2-in-1 Hacksaw Set
This hacksaw set from Performance Tool features a heavy duty, die-cast aluminum standard hacksaw with 45 and 90 degree blade positioning and a 12 inch blade, plus a small handle for tight areas.

DXE-W735 Hacksaw Set $7.95

Mill/Taper/Half Round File Set
These heat-treated carbon steel files are great for shaping, smoothing, and sharpening all metal surfaces. The half-round file is especially useful for helping deburr the inside of cut tubing ends. This set includes two durable rubber handles with plastic inserts for comfort and convenience.

Files included:
• 6 inch mill file
• 6 inch half-round file
• 8 inch mill file
DXE-W5390 File Set $7.95

Ridgid Tubing Cutter
This high quality cutter will make clean, smooth edges in tubing sections that require minimal deburring. The tool can cut aluminum, copper, and brass tubing as well as thin-wall conduit.
• Adjustable from 1/4 inch to 1 1/8 inch O.D.
• Telescoping feed screw design keeps the cutter at the same length regardless of tubing diameter—ideal in tight spaces
• Enclosed feed screw eliminates clogging and jamming
• Grooved rollers for close-to-flare cuts
• Fold-away reamer
• X-CEL knob and pin for quicker cutting and cutter wheel replacement
• Spare cutter wheel included
DXE-31622 Ridgid Tubing Cutter $37.50

Drill Guide Kit
This easy-to-use drill guide locates exact drilling centers and guides drill bits perfectly perpendicular to the work piece, including round, spherical, and corner edges. It is ideal for making clean, accurate holes in aluminum tubing for mounting hardware. The kit includes 3/16 inch, 1/4 inch, 5/16 inch, 3/8 inch, 7/16 inch, and 1/2 inch drill bushings, a locating pin, and drill bit guide.
DXE-D3206 Drill Guide Kit $13.50

Battery Box Kit
• Ideal for a trunk-mounted second battery
• Kit includes cables and hardware
DXE-G12020A Battery Box Kit $79.95
DXE-G12110 Battery Box only $15.90

Battery Charging System and Monitoring Gauge
The electronic battery charger will recharge a battery more quickly than conventional chargers. It will not over-charge the battery—the charger converts to float charger when it detects the battery is fully charged. The monitoring gauge is an analog voltage gauge. It is ideal for monitoring secondary battery voltage.

DXE-1202CC Supercharger Plus Battery Charger, 12V, 1 amp $28.95
DXE-1206CC Supercharger Plus Battery Charger, 12V, 3 amp $39.95
DXE-1214CC Supercharger Plus Battery Charger, 12V, 7 amp $52.95
DXE-G2939 Analog Voltmeter Gauge, 10-18 Volts, 2 5/8" $20.99

Deburring Tool with Extending Handle
This rugged hand tool features an adjustable length (1/2 to 5 inches) blade holder to allow access to burrs deep inside tubing or other hard-to-reach places. It is ideal for cleaning burrs after cutting or drilling aluminum or steel—the blade can be inserted at 90° for deburring cross holes. One blade for aluminum and steel and one blade for cast iron and brass are included. Replacement blades for aluminum and steel are available separately.

DXE-22600 Deburring Tool $13.95
DXE-22110 Replacement Blades for aluminum/steel, pack of 10 $7.99

Slim Grip Deburring Tool
This deburring tool allows quick and easy removal of burrs left after cutting or slitting aluminum tubing. It is also useful for most other deburring applications involving aluminum or steel. The slim-grip design allows deburring in hard-to-reach locations. The tool includes a handle, one replaceable blade, and a pocket clip. Replacement blades are available separately.

DXE-22166 Slim-Grip Deburring Tool $6.50
DXE-22110 Replacement Blades, pack of 10 $7.99

Scotch® Super 33+ Vinyl Electrical Tape
Scotch Super 33+ is highly conformable and stretchable, suitable for all weather applications. The tape combines a PVC backing with excellent electrical insulating properties to provide primary electrical insulation for splices (up to 600V) as well as protective jacketing. It is recommended as a protective overlap for 3M Tremflex® Rubber Splicing Tape when used for RF connector weatherproofing.

DXE-33PLUS Scotch Super 33+ Vinyl Electrical Tape $5.95

3M Temflex™ 2155 Rubber Splicing Tape
3M Temflex 2155 Rubber Splicing Tape is a conformable, self-fusing rubber electrical insulating tape. Designed for low voltage electrical insulating and moisture sealing applications, the rubber-based tape is capable of operating in temperatures up to 80 degrees C. It is compatible with synthetic cable and wire insulations and is not corrosive to aluminum or copper conductors. For outdoor use, the tape should be protected from UV deterioration with an overlap of Scotch Super 33+ Vinyl Electrical Tape.

DXE-3M2155 3M Temflex 2155 Rubber Splicing Tape $5.95

Liquid Electrical Tape
• Rubberize, insulate and seal your electrical connections
• A dielectric coating which seals out moisture and other contaminates
• Supplied in a 4 oz. brush top can

PlDL-LET14Z01 Black Liquid Tape $6.99
PlDL-LET14Z03 White Liquid Tape $6.99
PlDL-LET14Z07 Red Liquid Tape $6.99

Convoluted Tubing
• Protect and organize your wiring
• Silt for easy wire insertion
• Made from flexible black polyethylene

DXE-38000 Convoluted Tubing Assortment (1/4", 3/8", 1/2", 3/4"), 10 long $13.39
DXE-38180 3/8" Convoluted Tubing, 7' long $3.88
DXE-38580 1/2" Convoluted Tubing, 7' long $3.88
DXE-38780 3/4" Convoluted Tubing, 7' long $3.88
Loctite All-Purpose Spray Adhesive

This spray adhesive bonds lightweight, porous and non-porous surfaces. It allows you to reposition your work and creates a permanent bond when dry. Loctite adhesive dries clear and fast, won’t shrink or bleed, and resists water and humidity. Suggested applications include attaching cloth, carpeting, floor mats, insulation, and kick and silencer pads to metal, wood, or KB board.

LCT-30544 Loctite All-Purpose Spray Adhesive, 10.5 oz spray can...$3.75

*This part is classified hazardous and is limited to domestic UPS Ground shipping only.

Plasti-Dip Multi-Purpose Rubber Coating

• Flexible synthetic coating
• Durable—resists weather, chemicals, impact and abrasion
• Provides safe non-slip comfort and control
• Available in 11 oz. spray can or 14.5 oz. dipping can

PLD-11201-6 Red Plasti-Dip, 11 oz. spray can............$6.99
PLD-11207-6 White Plasti-Dip, 11 oz. spray can...........$6.99
PLD-11202-6 Black Plasti-Dip, 11 oz. spray can...........$6.99
PLD-11204-6 Blue Plasti-Dip, 11 oz. spray can............$6.99
PLD-11209-6 Clear Plasti-Dip, 11 oz. spray can...........$6.99
PLD-11202-6 Yellow Plasti-Dip, 11 oz. spray can...........$6.99
PLD-11603-6 Black Plasti-Dip, 14.5 oz. dipping can...$7.99
PLD-11604-6 Red Plasti-Dip, 14.5 oz. dipping can...$7.99
PLD-11606-6 Blue Plasti-Dip, 14.5 oz. dipping can...$7.99
PLD-11609-6 Clear Plasti-Dip, 14.5 oz. dipping can...$7.99
PLD-11601-6 Yellow Plasti-Dip, 14.5 oz. dipping can...$7.99
PLD-11602-6 White Plasti-Dip, 14.5 oz. dipping can...$7.99

Never-Seez and Anti-Seize—a Must for Stainless

• Prevents galling and galvanic corrosion
• Protects metal parts against rust, corrosion and seizure
• Available in 8 oz. brush top, 1 oz. squeeze tube and 8.5 oz. aerosol

DXE-NSB78 Never-Seez, 8 oz. brush top...$12.95
DXE-NMB78 Never-Seez, marine grade, 8 oz. brush top...$14.95
DXE-81343 Anti-Seize, 1 oz. squeeze tube...$2.99
DXE-81464 Anti-Seize, 8.5 oz. aerosol can...$8.99

Penetrox A

• Keeps parts from seizing
• Helps create a substantial electrical connection between metal parts
• For aluminum-to-aluminum or aluminum-to-copper connections

DXE-P8A Penetrox A, 8 oz. squeeze tube...$11.95

Permatax Neutral Cure RTV Sealant

Have you ever sealed a piece of electronic gear with ordinary RTV sealant, only to open it later to find that the component had become corroded? It wasn’t moisture that caused the corrosion—it was the RTV. Ordinary RTV gives off acetic acid when it cures (that’s the vinegar smell); it’s the acid that causes the corrosion. DX Engineering has located a Neutral Cure RTV that is non-corrosive and safe for sealing baluns and other electronic gear that will be out in the weather. Applies just like “normal” RTV, dries in one hour and cures in 24 hours at 70 degrees F.

DXE-RTV183035 Permatax Neutral Cure RTV Sealant, 3.35 oz tube, black...$6.95

*This part is classified hazardous and is limited to domestic UPS Ground shipping only.

DX Engineering Ball Cap

You built your antenna with the best, now wear the best! Our black ball cap features a full-color DX Engineering logo on the front, and is adjustable to fit most everyone.

DXE-TMA-10010 Ball Cap with DXE Logo...$9.95

DX Engineering T-Shirts

The perfect shirt to wear while building your antenna, DX-ing, or just doing nothing in particular! The 100% cotton shirts feature a full-color DX Engineering logo.

Black T-Shirts
DXE-TMA-10016 Large...$12.95
DXE-TMA-10017 X-Large...$12.95
DXE-TMA-10018 2X-Large...$15.95

White T-Shirts
DXE-TMA-10019 Large...$12.95
DXE-TMA-10020 X-Large...$12.95
DXE-TMA-10021 2X-Large...$15.95

Warranty Statement

All products manufactured by DX Engineering are warranted to be free from defects in material and workmanship for a period of one (1) year from date of shipment. DX Engineering’s sole obligation under these warranties shall be to issue credit, repair, or replace any item or part thereof which is proved to be other than as warranted; no allowance shall be made for any labor charges of Buyer for replacement of parts, adjustments or repairs, or any other work, unless such charges are authorized in advance by DX Engineering.

DX Engineering shall, upon prompt notice thereof, issue shipping instructions for return to DX Engineering (transportation charges prepaid by Buyer).

Every such claim for breach of these warranties shall be deemed to be waived by Buyer unless made in writing.

The above warranties shall not extend to any products or parts thereof which have been subjected to any misuse or neglect, damaged by accident, rendered defective by reason of improper installation, damaged from severe weather including floods, or abnormal environmental conditions such as prolonged exposure to corrosives or power surges, or by the performance of repairs or alterations outside of our plant, and shall not apply to any goods or parts thereof furnished by Buyer or acquired from others at Buyer’s specifications. In addition, DX Engineering’s warranties do not extend to other equipment and parts manufactured by others except to the extent of the original manufacturer’s warranty to DX Engineering. The obligations under the foregoing warranties are limited to the precise terms thereof. These warranties provide exclusive remedies, expressly in lieu of all other remedies including claims for special or consequential damages.

SELLER NEITHER MAKES NOR ASSUMES ANY OTHER WARRANTY WHATSOEVER, WHETHER EXPRESS, STATUTORY, OR IMPLIED, INCLUDING WARRANTIES OF MERCHANTABILITY AND FITNESS, AND NO PERSON IS AUTHORIZED TO ASSUME FOR DX ENGINEERING ANY OBLIGATION OR LIABILITY NOT STRICTLY IN ACCORDANCE WITH THE FOREGOING.
NEWS FLASH! Sunspots Will Return—Are You Ready to Work DX?

DX Engineering HEXX BEAM® Series
Hexagonal 5-Band HF Beam Antenna Kits

The DX Engineering HEXX BEAM kits provide a fast, economical way to build the latest, hottest version of an antenna concept that has been around since the 1980s. HEXX BEAM component packages provide an easy, step-by-step approach for designing your own antenna or upgrading an existing installation. The Total Antenna Packages allow you to build a complete one band or five band (20 through 10 meters) system.

A specially designed, mechanically superior cast aluminum HEXX Hub* features integral V-saddles and stainless steel hardware to properly attach the fiberglass spreaders without crushing them. Top and bottom mast flanges are also cast into the hub. This reduces assembly time and provides a more rugged attachment for the mast. Stainless steel element clamps rigidly hold the telescoping fiberglass sections at the correct lengths without drilling holes that would otherwise weaken them. Exclusive DX Engineering stainless steel element clamps with studs provide secure attachment points for the element feed points. Element floating wire guides allow movement in the wind without undue stress to the radiating elements or spreaders.

The HEXX BEAM design has a number of important advantages over a Yagi:
• Balanced in the wind—HEXX BEAM symmetry reduces torque load on the rotor
• Small turning radius—the HEXX BEAM has a turning radius of 11 feet
• Light weight—less than 25 pounds fully assembled
• Can be turned with a light duty rotor—save money
• Has full length elements—no lossy coils or traps
• Requires no matching network—direct single 50 Ω coax feed
• Low noise results—approaches performance of closed loop antennas
• Performs well at low heights—good results at 20 to 30 feet above ground

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*Patent Pending

Order Today!  DXEngineering.com • 800.777.0703

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