



RR8B-HP

8-Port Remote Antenna Switch

DXE-RR8B-HP-INS-Revision 2c



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Introduction

The **DXE-RR8B-HP** is an 8-port switch designed to switch coaxial lines in low to medium-power RF systems. Enclosed relays provide exceptional performance and are moisture resistant. The **RR8B-HP** can be used to simultaneously select multiple output ports as well as conventional one-of-eight antenna switching. This allows the **RR8B-HP** to be used in complex antenna phasing and stacking systems as well as traditional switching arrangements. The **RR8B-HP** also uses a removable screw terminal control cable plug. The removable plug greatly simplifies installation by eliminating the need for soldering. Disassembly is not required for control wiring access.

The **RR8B-HP** also offers the following features:

- RF Shielded Weatherproof Housing - unique protection
- Excellent Port Isolation; greater than 70dB at 30 MHz, worst case.
- High-RF tolerant, silver-PTFE UHF connectors
- Shorted or open selection of unused antenna ports
- Enclosed 20-ampere RF relays
- Safe 12-volt relay operation
- MOV surge protection on control lines



Specifications

Power Rating: 7kW ICAS all modes, under 2:1 SWR, 5 kW CCS all modes, under 2:1 SWR

Control Voltage: 10-14 Vdc at 100 mA

Port-to-Port Isolation: >70 dB below 30 MHz, >55 dB below 60 MHz

Loss: <0.1 dB below 60 MHz

Impedance: 50 ohms

Dimensions: 10.375" x 9.875" x 4.375" and the mounting flange hangs down 2.25"

Control Line: Control lines can normally use good quality CAT5e cable (4 twisted pairs of 24 AWG wire) for runs up to 1000 feet. Typical DX Engineering control lines requirements are +12 VDC at 25 milliamps. Depending on the number of control lines needed (usually 3 or 4) you can double up the twisted pairs of CAT5e cable, or use control wire that is at least 22 AWG, allowing runs up to 1500 feet. If you use a cable with more conductors, it is a good idea to tie the unused conductors to ground. For longer runs of control cable, use a line loss calculator to ensure you supply the proper control levels needed.

Approximate Control Line Lengths.

Minimum Copper Wire Gage (AWG)	Length
24	1,000 feet
22	1,500 feet
20	2,000 feet

Theory of Operation

The **RR8B-HP** uses a star arrangement of 16 relays to select one or more of eight output ports when voltage is applied from an 8-wire control line. The 16 relays provide greatly improved power handling and SWR over conventional switches and allows port-to-port connections between any of the eight output ports.

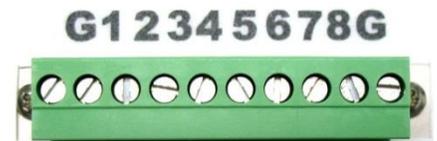
Installation

1. Secure the switching unit using the included **DXE-SSVC-2P** V Saddle Clamp. For outdoor installations or in moist environments, connectors must face downward.
2. Fasten all cables to the mounting mast or tower to relieve strain, and gently droop the cables to form a drip loop (do not use tight bends with coaxial cable). Install the **RR8B-HP** with the connectors facing down and use gradual bends or loops in heavy wires. If the **RR8B-HP** is mounted to a wooden pole or building, a wide copper flashing or heavy wire or strap should be connected from the mounting bracket to a good ground.



Caution: *Never switch antennas while transmitting. Hot switching with power will create a sustained arc that damages relay contacts. When switching ports, allow 15 ms before transmitting to avoid damaging the switch. This type of damage is NOT covered under warranty.*

3. Wire the plug making a note of wire colors at each pin. Write them in the *Connector Wire Reference Table* below. Either "G" is ground. We recommend following standard resistor color codes, using ascending order by color. The color code is black 0, brown 1, red 2, orange 3, yellow 4, green 5, blue 6, violet 7, gray 8, and white 9.



The green connector is in two parts and the top part can be removed by pulling it straight off. This will allow easier wire replacement or servicing as needed. When pushing the connector back in place, ensure you press straight inward.



DXE-CW9 Shielded CAT5 cable can be used. The shield is used as the signal ground return. Adhering to a logical standard allows people unfamiliar with a system to troubleshoot with minimal difficulty.

For **DXE-CW9** shielded CAT5 cable we suggest working your way up through the pairs by ascending color: brown, brown/white, orange, orange/white, green, green/white, blue, and blue/white.

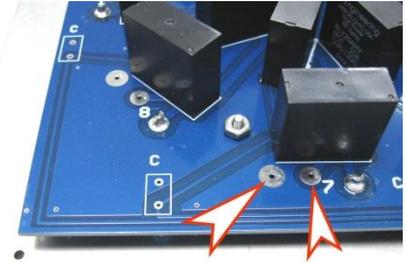
Connector Wire Reference Table									
G	1	2	3	4	5	6	7	8	G

The ground wire can be omitted if the **DXE-EC-8** control console or the **DXE-CC-8A** control console or other switching voltage source is grounded to the feedline. The feedline shield and equipment grounds provide the ground path. **Note: The total loop resistance of the control cable path must be under 30 ohms for reliable operation.**

Note: *Do not seal the connectors! The connectors are recessed inside a drip edge that prevents water from getting into connectors. The cover-to-connector plate junction is not sealed so the unit can "breathe" and eliminate condensation.*

Grounding Ports

To ground an inactive port, usually for phased array systems, solder a jumper wire between the foil traces for that port as shown. Installing the jumper does not enhance lightning protection and is not recommended for normal antenna selection applications.



Port 7 shown as an example

Optional Item

DXE-CW9S - Shielded Control Wire, 9 conductor stranded, per foot

DXE-CW9S is a high quality shielded outdoor cable. It features 9 #24 AWG stranded conductors with aluminum foil shielding plus a #24 stranded tinned copper drain wire. This gives you 8 switch positions plus common ground - plus the separate shield. It has a gray PVC jacket. This cable is ideal for DX Engineering Remote Antenna Switches and Four Square arrays, and should be considered for any low-current custom remote switching application you have - such as receiving antenna arrays. Order by the foot in the length you require. A nice feature is the "rip cord", which allows for easy stripping of the heavy jacket without worry about nicking or accidentally cutting the conductors.



Technical Support

If you have questions about this product, or if you experience difficulties during the installation, contact DX Engineering at (330) 572-3200. You can also e-mail us at:

DXEngineering@DXEngineering.com

For best service, please take a few minutes to review this manual before you call.

Warranty

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, adjustment or repairs, or any other work, unless such charges are authorized in advance by DX Engineering. If DX Engineering's products are claimed to be defective in material or workmanship, 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.

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