

Time Variable Sequencer Unit

DXE-TVSU-1B

DXE-TVSU-1B-INS Rev 0b



© DX Engineering 2017 1200 Southeast Ave. - Tallmadge, OH 44278 Phone: (800) 777-0703 · Tech Support and International: (330) 572-3200 Fax: (330) 572-3279 · E-mail: DXEngineering@DXEngineering.com



Table of Contents

Introduction	3	
Features	4	
	-	
Typical Applications	4	
Compensating for Slow Power Amplifier Relays	4	
Protecting Receiving Equipment	4	
Detuning a Transmitting Antenna	4	
Protective Timing to Transverters	5	
Panel Connectors and Controls	5	
Connections	6	
Operation	10	
Transmit Sequence	10	
Receive Sequence	10	
VOX	11	
Time Delay Settings	11	
CW Sidetone Audio Levels	12	
Sequencer Timing Diagram (Figure 4)	13	
Appendix A - Typical Connection Configurations		
Icom 756 Pro III	14	
Kenwood TS-2000	15	
Yaesu FT-2000	16	
Optional Items	17	
Technical Support and Warranty		

Introduction

The DX Engineering **TVSU-1B** Time Variable Sequencer Unit is a microprocessor-based transmit/receive control signal delay unit. It provides 0-30 ms of delay programmable in 2 ms increments to as many as five outputs tied to the CW keying or push-to-talk (PTT) lines. By controlling the receive-to-transmit (and back) timing of linear amplifiers, preamplifiers, and other sensitive equipment, damage caused by improper switching can be eliminated. This sequencer improves CW performance by eliminating annoying leading edge chopping or truncating of Morse characters. This is especially important in contests or pileups where sending accuracy is critical.

The **TVSU-1B** includes a CW sidetone generator. This tone generator follows CW input in real time even though CW throughput to the transmitter is delayed. The tone is selectable from 300 to 1000 Hz in 50 Hz increments and has adjustable volume. The **TVSU-1B** supports full break-in operation.

When used with the DX Engineering Active Receive Antennas, this unit provides properly sequenced antenna power. This allows active antennas to be placed closer to transmit antennas (1/10-wavelength at the lowest operating frequency) without risking RF damage.

The **TVSU-1B** uses common RCA-style phono jacks for most inputs and outputs. The main POWER and PRE AMP POWER inputs and outputs use a 2.1 mm power jack. The PTT and TONE use a 1/8" (3.5 mm) stereo jack. Three 2.1 mm power plugs and two 1/8" (3.5 mm) stereo plugs are included with the **TVSU-1B**.

Note: Do not connect a voltage source to the PRE AMP OUT jack.

To prevent damage, spurious signals, or to optimize performance, transceivers and other equipment must switch from transmit to receive and back in a certain order. RF output must be delayed until all external devices switch to the transmitting position. RF output must stop before external devices return to the receive position.

Many transceivers switch without adequate RF output delay. For example, the linear amplifier control line on the transceiver may not fully activate the amplifier (or other external devices) before RF output power from the transceiver appears. Some amateur amplifiers require up to 15 ms to fully settle in the transmit mode. Then, when switching to receive, the control line might not hold the amplifier (or external devices) on long enough, allowing them to switch back to the receive state while RF from the transceiver is still present.

This is known as "hot switching" and can result in arcing of relay contacts during the transition, damaging the relays or causing other components to arc, be damaged or destroyed. The leading edges of CW characters can be truncated or clipped, changing what is sent.

The **TVSU-1B** adds a programmable delay to the CW or PTT input signal, but repeats that signal perfectly after the delay. By adding a known delay on the appropriate output, external relays and other components can switch into transmit mode before RF appears at the transceiver output. The

"hang-time" delay on the CW, PPT and AMP lines, along with the RADIO input from the transceiver, allows time for the transmitter output power to subside before switching back to receive.

Features

- Control timing of PTT turn-on, hang delay of PTT, amplifier hang delay, external antenna relay hang delay and turn-on delay of auxiliary output
- Dip switch settable delays of 0-30 milliseconds in 2 millisecond steps
- Sidetone generator that follows input of keyer or hand key not transmitter
- Sidetone pitch can be programmed from 300 to 1000 Hz in 50 Hz steps, front panel headphone jack with adjustable volume
- Supports CW full break in
- Can control external power to our Active Receive Antennas and permit operation in closer proximity to transmit antennas

Typical Applications

Compensating for Slow Power Amplifier Relays

Occasionally, CW signals truncate or miss the first part of a Morse code element. A "W" might become an "M", a "K" might become a "U", and many other similar changes might occur. Even if the leading element is just slightly shortened, it can cause problems in rapid exchanges or when signals are weak. The **TVSU-1B** will delay the CW signal to the transmitter, allowing even the slowest relays to fully transfer before the radio transmits. This sequencer will completely eliminate truncating of leading elements by slow external relays, as well as extend equipment life.

Protecting Receiving Equipment

Receiving equipment must be completely disabled before transmitter RF appears. The very fast relays used in the DX Engineering **AVA-2** series of receiving amplifiers, used for the active antennas, require 2 ms of switching time. Some radios provide adequate time at the linear amplifier keying port, but many do not. Because of this, we recommend using the **TVSU-1B** in all receiving systems using the Active Antennas, such as a Receive Four Square or phased vertical system. The **TVSU-1B** will turn off the receiving antennas before allowing the transmitter to come on, and only turn the receiving antenna back on after the transmitting signal is gone.

The **TVSU-1B** can also be used with other receiving systems by using a small external relay in the receiver path. Power is removed and the receiver path can be shorted to ground when transmitting.

Detuning a Transmitting Antenna

Transmitting antennas always reradiate signals. When a receiving antenna is near a resonant transmitting antenna, a transmitting antenna can receive and re-radiate noise and signals quite efficiently. This almost always decreases receiving system performance.

Detuning a transmitting antenna requires changing the resonant frequency of the antenna when receiving, and restoring it when transmitting. This requires a relay. Typical inexpensive relays for transmitting are too slow to fully transfer before RF appears. A slow relay can damage the transmitter system or cause severe signal quality issues. The **TVSU-1B** will allow virtually any

relay to work without causing problems. Examples of how to de-tune an antenna can be found in ON4UN's book "Low-Band DXing".

Protective Timing to Transverters

Stand-alone transverters/converters are used for VHF/UHF or EME communications. Some are used for receive-only, and must be bypassed or turned off prior to transmitting. The **TVSU-1B** can switch-off the power or provide an auxiliary timed delay to the equipment.

T/R PRE-AMP POWER SEQUENCE UNIT TVSU-1A TIP-IN POWER VOL AUX OUT RING-OUT AMP SLEEVE-COM RADIO 12 VDC TONE OUT IN IN +12 Vdc **POWER** Operating voltage for the **TVSU-1B**. Requires 10-20 Vdc @ 250 Center Positive mA. 2.1 mm jack with center positive. (included with the TVSU-1B) TONE Provides an audio sidetone that follows the CW IN port key closures. Pitch is adjustable from 300-1000 Hz in approximately 50 Hz increments. 1/8" [3.5 mm] stereo plug. (Included with the TVSU-1B) VOL Sidetone volume adjustment. Maximum power output is 1/2 watt into 8 ohms (2.1 volts RMS) or 7.5 volts peak-to-peak into an open circuit. AUX Auxiliary **OUT** with adjustable on delay after CW or PTT closure, no off delay. RCA phono jack. CW Key or keyer **IN** with internally adjustable delay to **OUT**. Precisely repeats input signal but with adjustable time lag up to 30 ms. RCA phono jack.

PRE AMP PWR - IN - center positive, 9-30 Vdc. 2.1 mm female jack, **OUT -** center positive, 500 mA max load. 2.1 mm female jack. The **OUT** jack mirrors the voltage supplied from the IN jack. **DO NOT** apply voltage to the **OUT** jack. Voltage from the **OUT** jack drops immediately upon CW or PTT closure. The voltage returns, after an adjustable delay, on release. Used to control the power to active antennas, pre amps, etc. (included with the TVSU-1B)

Panel Connectors and Controls

PTT	<i>TIP</i> is <i>INPUT</i> , <i>RING</i> is <i>OUTPUT</i> . <i>Plug SLEEVE</i> is <i>COMMON</i> . Adjustable "on" delay from the INPUT to OUTPUT. Accepts input from independent PTT hand or foot switch. Output connects to the transceiver PTT input line. Low = Transmit. 1/8" [3.5 mm] stereo plug, (included with the TVSU- 1B).		
T/R AMP	Amplifier keying output. This line pulls low (to ground) with no delay upon PTT or CW key closure. The opening off-time delay (hang time) is programmable. RCA phono jack.		
T/R RADIO	Failsafe connection from transceiver: Amplifier Relay Control or Amplifier T/R line (low = transmit) from the transceiver. The transceiver's amplifier keying output must be connected to the T/R Radio jack to keep the Pre-Amp Out and the T/R Amp keyed when the radio is keyed. No delays or hang time available. Prevents PTT or CW keying to the radio from releasing while radio is in a transmit mode. Ensures receiving antennas and amplifier are not switched back to receive while the transceiver is in transmit mode. RCA phono jack.		

The PRE AMP output is limited to 30 Vdc. All inputs except PRE AMP are positive voltage open, pulled to ground when closed.

> Included with the TVSU-1B: 3 each 2.1 mm Power Connector Plugs 2 each 1/8" [3.2 mm] Stereo Plugs

Connections

Connect a 12 Vdc supply capable of at least 250 mA to the **TVSU-1B** via the 2.1 mm **POWER** jack. Make sure the center pin is positive.

NOTE: Every radio and amplifier manufacturer's specifications are different for input/output control signals. Please verify these requirements in the respective user manuals.

Connect the linear amplifier keying line (contact closure) from the transceiver to the RADIO port.

Connect the keying line from the linear amplifier to the **AMP** port. Voltage must be positive and not exceed 50 volts open voltage and 200 mA closed current.

If you have external devices such as preamps, active antennas, or external relays that need to have power removed during transmit, connect a 9-30 Vdc (500 mA max) power source to the **PRE AMP POWER** IN jack. Connect the devices requiring control to the **PRE AMP POWER** OUT jack. You should normally use a well-filtered supply for these devices.

Note: Power supplied through the PRE-AMP "IN" jack always appears at the PRE-AMP POWER "OUT" jack except during closure or keying events. If power to the **TVSU-1B** unit itself is removed, PRE-AMP POWER through the "IN" and "OUT" connectors will be continuous; closure or keying events will have no effect.

CAUTION: Applying external voltage to the PRE AMP POWER "OUT" jack may damage the unit.

The AUX OUT jack can be used for other special applications. It delays the closure signal, but not the release.

For **PTT** operation, wire the included 1/8" [3.5 mm] stereo plug so the tip connects to a foot switch or other external PTT switch. The ring should connect to the transceiver PTT input (usually an RCA-style jack). The sleeve is the common ground connection. A stereo Y-adapter that offers separate connections to the tip and ring of the 1/8" [3.5 mm] stereo connector/plug cable could also be used to convert the 1/8" [3.5 mm] stereo mini-plug into two RCA mono style connectors. An example of this type of Y-adapter is a Hosa Products model YRA-154 (reference: www.hosatech.com).

Do not use a Y-adapter that combines the tip and ring of a 1/8" stereo into both RCA mono connectors. Be certain you are using a 'breakout' type Y-adapter or cable that provides for individual connectors for tip and ring connections.

For CW operation, connect the hand key or keyer to the RCA-style CW IN jack. Connect the CW OUT jack to the CW key input on the transceiver. Side-tone audio for a speaker or headphones is available at the **TONE** jack. (Monaural audio, but uses both stereo channels.)

Determine the delays required for each output. All delays begin at closure or open points. The delay time increments work independently and are not additive. Program the delay settings for each function and set the CW side-tone pitch (page 12).

The optional **DXE-DCPC-24** is specifically used in a DX Engineering receiving antenna phasing system between the "PRE-AMP POWER OUT" port on the **DXE-TVSU-1B** Time Variable Sequence Unit, and the "ANT PWR" power input on the **DXE-NCC-1** Receive Antenna Phasing Controller. The **DXE-DCPC-24** is a 24 inch red and black stripe power cable that features TWO 2.1 mm DC power connectors known as "barrel", "concentric" or "tip" connectors, one at each end. This special cable is used in applications where DC power is supplied from one device to another.



- 8 -



Operation (Refer to **Figure 4** for Sequencer Timing Diagram)

Transmit Sequence

- 1. Upon keying the **CW IN** or **PTT IN** (low or grounded), **PRE AMP POWER** (receive systems) is instantly turned off.
- 2. **T/R AMP** (Linear amplifier) is instantly activated. An external amplifier could take up to 15 ms to fully transfer.
- 3. Transceiver **CW** keying or **PTT** OUT closure appears after a programmed delay, activating the transceiver.
- 4. AUX OUT pulls low after programmed delay.

NOTE: DX Engineering **ARAV3** or **ARAH2** active receive antenna systems require approximately 2 ms to mute. Other receive systems may take longer. Program sufficient delay in the PTT or CW delay to ensure the receive antenna, linear amplifier or any other switched devices are fully activated or deactivated before sending PTT closure or CW keying signals to the transceiver.

Receive Sequence

- 1. **CW** IN from key or **PTT** IN released (high or open on CW or PTT).
- 2. **PTT** or **CW** OUT to transceiver released (goes high) after programmed delay. This starts the rest of the RX sequence.
- 3. AUX OUT drops without delay.
- 4. **T/R AMP** (Linear amplifier) released after the programmed hang time if the transceiver has released the T/R radio control line.
- 5. **PRE AMP POWER** OUT is restored after programmable delay.

This sequencing controller automatically adds the PTT or CW input delays to user programmed hang time delays at all device outputs. Those outputs are the **AUX (auxiliary)**, the **PRE AMP POWER**, and the **T/R** AMP outputs. It accomplishes this by considering the sequencer's PTT or CW output ending as the official input signal end point, rather than following the actual **CW** or **PTT** IN openings. This ensures the transceiver input is fully released before external devices begin to switch back to the receive mode.

Once the keying or PTT input is removed from a transmitter some time passes before RF output fully decays. This is because CW signals must have a gradual fall time, and because transmit/receive switching systems in the radio have limited speed. Hang delays set with the internal switches labeled **PREA** (**PREA**mp) and **LIN** (**LIN**ear amplifier) must equal or exceed the longest possible transmitter RF hang or run-on time.

NOTE: The **T/R** RADIO input connects to the transceiver's amplifier control or T/R output line. This input prevents release on the **T/R** AMP line to the amplifier while the transceiver is calling for external devices to be in a transmitting mode. The **T/R** RADIO input locks the **PRE-AMP POWER** OUT off when in the transmit position.

VOX

You *cannot* use VOX on voice transmissions with the **TVSU-1B** while the receiving antennas are being used, the PTT keying line must be used. VOX operation activates the rig internally, eliminating the possibility of a sequenced turn-on by the **TVSU-1B**. The same applies to using a hand mike unless you operate the **TVSU-1B** from the microphone PTT wire, and use the sequencer's PTT output to operate the radio PTT. The normal PTT on the radio microphone connection cannot be used.

Time Delay Settings

Remove power from the unit before changing switch positions. To access the delay adjustment switches, remove the two screws on each side of the **TVSU-1B** cover. The delay adjustments are grouped in a series of four DIP switches per function. They are labeled on the circuit board as shown in **Figure 3**. Pushing the rocker style switch so the flat part is oriented to the "OPEN" side of the switch equates to a "1" in **Table 1** and will add delay time.



Factory default for all DIP Switches = All switches closed, which is all zeros. All of the rocker switches are pressed down toward the numbers.

- **PTT:** Closure Delay from PTT IN to PTT OUT. Delay repeats on Key Up
- CW: Key Down Delay from CW IN to CW OUT. Delay repeats on Key Up
- AUX: Keying Delay of AUX OUT after PTT or CW Closure
- **PREA:** Pre Amp Power OUT (Hang-Time) Delays power on after CW or PTT Key Up
- LIN: T/R AMP Off (Hang-Time) Delays un-keying of amplifier after CW or PTT Key Up
- TONE: Adjusts CW Side-tone Frequency

Refer to **Figure 4** which diagrams the keying sequences and the delays that are available.

When Switch is pressed toward Open = One

When Switch is pressed toward a Number = Zero



Figure 3 - Circuit Board DIP Switch Labeling

Delay adjustments are grouped in four DIP switches per function. Each function can be programmed for the desired delay time in milliseconds using **Table 1** below. The TONE Freq function adjusts the CW side tone frequency in Hz noted in the far right column in **Table 1**.

	DIP Switch		Sidetone
	Settings	Delay Time	Frequency - Hz
	OPEN=1	Milliseconds	TONE Only
	4321		
	0000	0	300
	0001	2	347
	0010	4	393
	0011	6	440
0	0100	8	487
	0101	10	533
	0110	12	580
1	0111	14	627
	1000	16	673
	1001	18	720
	1010	20	767
	1011	22	813
	1100	24	860
	1101	26	907
	1110	28	953
	1111	30	1000



Note: The delay time increments work independently and are not additive.

Typical Switchover Times:

- Linear Amplifier: 5 to 15 ms
- DX Engineering Active Antennas (using the AVA-2 amplifier): 2 ms
- Tube Transceivers: 5 to 30 ms
- Solid State Transceivers: 3 to 15 ms
- Receiving pre amplifiers: 3 to 30 ms
- Large Open-Frame Relays: 15 ms

CW Sidetone Audio Level

There are two jumper headers on the **TVSU-1B** circuit board labeled **HD1** and **HD2**. These jumpers are located directly behind the TONE audio jack. If the TONE audio output is excessive, even with the VOL adjustment fully counterclockwise, removing both jumpers will reduce the output. Both jumpers should be set the same. Normally, these jumpers do not need to be changed.









- 15 -



Figure A-3 - Yaesu - FT-2000

Optional Items

DXE-ARAV3-1P - Active Receive Antennas w/ Internal Disconnect Relay

DX Engineering's Active Receive Antenna system offers excellent receiving performance from 100 kHz to 30 MHz using a whip antenna element 102 in. long. DX Engineering's unique design makes it vastly superior to traditional active antennas in both strong signal handling and feedline decoupling. You get significantly better weak signal reception due to lower spurious signal interference and reduced noise. This antenna system is ideal for Amateur Radio or Shortwave Listening.

The ARAV3-1P active vertical antenna grounds the antenna element when power is turned off. These active antennas are used in installations when spacing from transmit antennas is less than 1/2 wavelength but more than 1/10 wavelength (on the lowest frequency). A sequencer such as the DXE-TVSU-1B should be used to ensure the correct transmit to receive switching. Two active antennas can be used with the DXE-NCC-1 Noise/Phase Controller to make a steerable vertical array. The NCC can also provide power for the active antennas and the proper transmit power-off sequencing.

This compact receiving antenna system operates over a very wide bandwidth with superior strong signal performance. The output Third Order Intercept (TOI) is approximately +30 dBm, which is significantly better than most aftermarket amplifiers and receivers, making this one of the cleanest active antennas on the market. This exceptionally high Third Order Intercept (TOI) reduces or eliminates spurious signals.

Feedline decoupling, absent in some other popular designs, is also exceptionally good. Decoupling the shield greatly reduces feedline conducted noise and unwanted signal interference. **Features**

- Close Spacing from Transmit Antennas element grounded at power-off
- 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 exceptional feedline shield isolation
- Long Life high quality stainless and brass mounting hardware, metal enclosure
- Compact stainless steel tapered element has low visual and environmental impact
- Easy Mounting and Installation Flexibility pre-drilled mounting plate and universal V-saddle clamps

DXE-RFS-TS3P - Complete Receive Four Square Array Package for Close Spacing to Transmit Antennas

Complete Receive Four Square Array package for Close Spacing to Transmit Antenna

- W8JI design
- Operates from 100 kHz to 30 MHz
- 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

Complete Receive Four Square Array Package for Close spacing to transmit antenna includes:

- (1) DXE-ARAV3-4P Package of 4 Active Receive Vertical Antennas w/ Internal Antenna Disconnect Relays
- (1) DXE-RFS-2 Receiving Four Square Antenna Switch
- (1) DXE-CC-8A 8 Position Control Console
- (1) DXE-TVSU-1B Time Variable Sequence Unit
- (1) DXE-F6-1000 CATV F-6 Style Coax, 75 ohm, F6 Flooded for Direct Burial, 1000' Spool
- (25) DXE-SNS6-25 Snap-N-Seal 75 ohm Coax Connectors for CATV F-6 Cable
- (1) DXE-SNS-CT1 Crimp Tool for Snap-N-Seal 75 ohm Coax Connectors
- (1) DXE-CPT-659 CATV F-6, RG-6 and RG-59 Coax Cable Stripper, Includes 1 Replacement Blade





DXE-CC-8A - Control Console, 8 Position

The **CC-8A** Control Console is a flexible, 8-position controller used to control the DX Engineering RR8 series antenna switches, the **RFS-2P** Receive Four Square controller or any product that uses a 12 or 24* Vdc 1-of-8 or BCD control format. The attractive metal housing is powder-coated and features an ON/OFF switch, ergonomic selector knob and eight front-panel LED's, with adjustable brightness, to indicate switch position.

The rear panel external plug allows the control cable to be easily unplugged during weather events or if the shack needs to be rearranged. We suggest unplugging the **CC-8A** control leads when severe weather is expected. The use of a lightning protector on the control lines, such as the PolyPhaser **PPC-IS-RCT**, available from DX Engineering, is prudent as well.

Shielded CAT-5 type cable can be used for the control cable. (8 conductors plus ground). **DXE-CW9S** is a top quality 9-conductor stranded, shielded cable for best results.

For most applications requiring 12 Vdc switching, your existing transceiver power supply or the accessory **DXE-PSW-12D1A** can be used.

Features

- Switching positions: 8
- Input voltage: 12/24 Vdc, user supplied
- Output voltage: 12/24 Vdc *
- Protection: Dual internal automatic reset fuses
- Output format: 3-bit BCD or standard 1-of-8
- Dimensions: 8 x 5 x 2.75" (203.2 x 127 x 69.85 mm) (WxDxH) *Dependent on user-supplied dc input power source.

DXE-DCPC-24 DC Power Cable, 2.1 mm plug both ends

The DXE-DCPC-24 is a 24 inch red and black stripe power cable that features TWO 2.1 mm DC power connectors known as "barrel", "concentric" or "tip" connectors, one at each end. This unusual patch cable may be used for interconnecting devices, one of which offers a power output 2.1 mm jack, and the other requiring a nominal DC voltage input to a 2.1 mm jack. This cable may be used on devices up to 2 A @ 12 Vdc.

Length:	24 inches (61 cm) from connector to connector
Connectors:	2.1 mm power barrel plugs (aka concentric or pin plugs)
Wire:	Red and Black stripe zip cord (small)
Rating:	Nominal 2 A @ 12 Vdc

This special cable is used in applications where DC power is supplied from one device to another. The DXE-DCPC-24 is specifically used in a DX Engineering receiving antenna phasing system between the "PRE-AMP POWER OUT" port on the DXE-TVSU-1B Time Variable Sequence Unit, and the "ANT PWR" power input on the DXE-NCC-1 Receive Antenna Phasing Controller.

DXE-F6 - 75 ohm F-6 Style, Direct Bury Coaxial Cable Full Spool or Custom Cable Assemblies

DX Engineering recommends using a high quality 75 Ω "flooded" F6 type coaxial cable. Flooded style cables have the distinct advantage of automatically sealing small accidental cuts or lacerations of the jacket. Flooding also prevents shield contamination and can be direct-buried. This low-loss cable features dual shields and an 85% Velocity Factor. **DXE-SNS6** Snap-N-Seal connectors are recommended for use with this coaxial cable to ensure a high quality and weather resistant feedline connection. The proper tool **DXE-SNS-CT1** must be used to install these connectors.

Custom cable assemblies are available, Call DX Engineering for details.







DXE-CPT-659 - Coax Cable Stripper for CATV F-6, RG-6 and RG-59 coaxial cable.

Coax Cable Stripper for CATV F-6, RG-6 and RG-59 coaxial cable.

Includes 1 Replacement Blade - DXE-CPT-659

Prepares CATV F-6, RG-6 and RG-59 coaxial cable for the installation of an "F" type connector - Onestep cutting motion

- Precision cut
- No nicks or scratches to conductor

DXE-SNS6-25 - Watertight Coaxial Connector, Snap-N-Seal for CATV F-6 Cable, 25 pieces

Snap-N-Seal is an environmentally sealed CATV F coaxial connector system for harsh environments. The connectors have a unique, 360 degree radial compression system that offers the signal leakage protection required for high performance receive systems.

- Quad sealed system prevents moisture from migrating into the connection
- 360 degree radial compression provides superior RF integrity (-95 dB typical, 60% bonded foil cable)
- Easy cable preparation
- Connector to cable retention of 40 lbs minimum
- Superb impedance match to 1 GHz
- Manufactured of high quality 360 brass, cadmium plated with yellow chromate coating for maximum corrosion resistance
- UV-resistant plastic and O-rings provide a reliable environmentally sealed connector

An installation tool, such as the **DXE-SNS-CT1** is required to install the connectors. Normal crimping tools or pliers will not work.

DXE-SNS-CT1 - Compression Tool for Snap-N-Seal 75 ohm Coaxial Connectors

Ratchet compression tool for installing **DXE-SNS6** Snap-N-Seal coaxial connectors. Ordinary pliers will not install these connectors properly.







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.

This unit is RoHS (Reduction of Hazardous Substances) compliant. The components, including the solder used are all lead free. If you decide to do any modifications or internal repairs, you should use only lead free solder and lead free soldering tools. Lead free solder melts approximately 100 degrees higher than the old leaded solder, so you may need to upgrade your current soldering system.



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.

©DX Engineering 2017

DX Engineering®, DXE®, DX Engineering, Inc.®, Hot Rodz®, Maxi-Core®, DX Engineering THUNDERBOLT®, DX Engineering Yagi Mechanical®, EZ-BUILD®, TELREX®, Gorilla Grip® Stainless Steel Boom Clamps, Butternut®, SkyHawkTM, SkyLark™, SecureMount™, OMNI-TILT™, RF-PRO-1B®, AFHD-4® are trademarks of PDS Electronics, Inc. No license to use or reproduce any of these trademarks or other trademarks is given or implied. All other brands and product names are the trademarks of their respective owners.

Specifications subject to change without notice.