



## DEM TRS, TRSK and TRSCK Transmit / Receive Sequencer

### Specifications

Operating Voltage:	+8 - 16 VDC
Sequenced Steps:	4
Full Sequenced Time:	≅ 500 ms, User adjustable
Outputs Sink or Source: 2	Amps max./ @ 30VDC or less 0.6 A @ 125VAC, 0.5 A @ 150VDC
Outputs:	8
Keying:	PTT-L (Ground) Sinks 1 ma. PTT-H (+1.5-16 VDC) Source 2 ma.
Connectors on Enclosure (assembled or CK) :	RCA Phono
Size:	6"x 3"x 3" PCB: 2.6" x 4.9"

### Operation:

The DEM TRS, TRSK, and TRSCK is based on a design by W5LUA. It is a time delay generator / sequencer that is intended to be used with any lash-up that requires separate sequenced switching circuits to control pre-amps, TR relays, transmitters, and power amps. The sequencer is activated by either a push to talk to ground (PTT - L) or by applying a + 1.5 - 16 VDC (PTT-H). At the time of activation, a R/C timing circuit in combination with a voltage divider network, begins to turn on each individual op-amp, (LM324D has 4 total), 1<sup>st</sup> through 4<sup>th</sup> in sequence. The op-amps in turn drive their respected switching transistor and relay circuits. When the PTT circuit is released, the sequencer moves back to the resting state in the reverse order, 4<sup>th</sup> through 1<sup>st</sup>. Each of the 4 sequenced stages have 2 separate outputs (8 total) that may be wired to produce a voltage, a connection to ground or an open circuit in either transmit, receive, or both. This provides many switching functions and output combinations that should fit any requirement. The outputs may be changed or altered at any time if your station's requirements change. Provisions have been made in all versions to incorporate external supplies such as negative voltage biasing, +28 volt relays, or even AC switching.

The assembled TRS comes complete with its custom matrix to enable you to install it in your system quickly. A blank copy of the matrix is included with the product description that may be filled in with your requirements if you wish to order a assembled version built to your specifications. A blank copy of the matrix is also included with the kit versions so you can keep a record of your assembly and lash up.

The TRSK is a PC board kit version only. When assembled, it is a complete working circuit board that is ready to be installed and be lashed up in any system. The TRSCK is a complete kit version that includes the TRSK with an enclosure and all connectors necessary for a finished stand alone unit. The blank PCB is also available. As a kit or assembled, this is truly the most versatile sequencer on the market today. By changing the R/C time constant, the sequencer's switching speed may be altered. The TRSK is useful in a home-brew VHF-UHF-Microwave station where multiple Gain stages, both RX and TX, need to be wired to a common DC supply. If you plan on using some sort of DC power control, why not sequence it.



Future plans include specific interfaces for popular VHF/UHF transceivers. In a properly sequenced system involving a transceiver, the sequencer must key the transceiver last. A transceiver can not start the sequence by keying the sequencer the same time it sends RF out the coax connector. The relays and pre-amps need to be switched before the transmitted signal gets there.

**Sequencer Matrix**

The matrix below indicates what signal will be on the specified connector during receive (RX) or transmit (TX). The sequencer in its resting state will be in RX. Applying a PTT signal will transfer the sequencer to the TX state in the order shown, 1<sup>st</sup> through 4<sup>th</sup>. Removing the PTT signal will allow the sequencer to go back to the RX or resting state in reverse order, 4<sup>th</sup> through 1<sup>st</sup>. "L" or low, indicates a connection to ground, "H" or high, indicates a connection to +13.8VDC, and "O" indicates an open or floating connection that is neither High or Low. A second copy of the matrix form is available if you change the configuration at a later date.

1 <sup>st</sup>		2 <sup>nd</sup>		3 <sup>rd</sup>		4 <sup>th</sup>	
CONNECTOR RX	CONNECTOR TR	CONNECTOR NO1	CONNECTOR NO2	CONNECTOR NC1	CONNECTOR NC2	CONNECTOR TX1	CONNECTOR TX2
<b>RECEIVE</b>		<b>RECEIVE</b>		<b>RECEIVE</b>		<b>RECEIVE</b>	
L	L	L	L	L	L	L	L
H	H	H	H	H	H	H	H
O	O	O	O	O	O	O	O
<b>TRANSMIT</b>		<b>TRANSMIT</b>		<b>TRANSMIT</b>		<b>TRANSMIT</b>	
L	L	L	L	L	L	L	L
H	H	H	H	H	H	H	H
O	O	O	O	O	O	O	O