

HSQ5-EME

5-way adjustable time delay sequencer for EME stations

Description:

Hot switching security during transmit is one of the key features of sequencers, thus we have developed the sequencer you can avoid hot switching with.

Our sequencer disables the front panel H/V polarization switch with a security relay when the sequencer is keyed. This protects the high power RF coaxial relays from hot switching, since hot switching can result in serious damage to these components.

*The HSQ5-EME sequencer is **capable of MAP65** operation as well, to satisfy everyone's needs.*

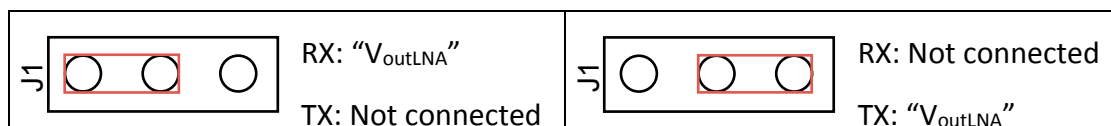
Technical data:

Power supply rated power (output)	65 W
Power supply input voltage range	80-264 VAC
Power supply input frequency range	47-63 Hz
Connectors	10-pin terminal RCA (f)
Maximum current output	2,71A @28V; 2A @12V
Dimensions	223 x 121 x 39 mm
Weight	0.7 kg

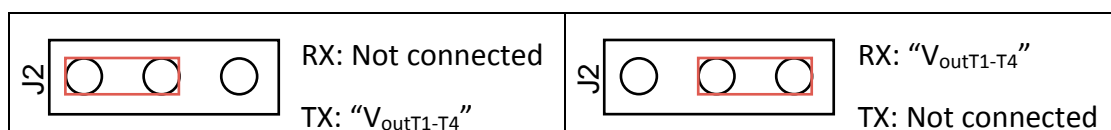
- Time delay can be adjusted by setting the position of DIP rotary switch on PCB. The preprogrammed delay times can be seen in the timing diagram section of the document.
- PTT control indicator LED.
- Recommended time delay for HAMTECH coaxial relays is 50 ms.
- **Pin H/V:** switched 28 or 12VDC to power a Horizontal / Vertical Polarization relay, generally tower- or mastmounted.
- The output voltage of **Pin H/V** will change only when the H / V push button has been activated from the front panel of the sequencer. (The push button is active only in receive mode to avoid hot switching.)
- **Pin GND:** Provides constant GND.
- The following pins have been supplied as customer related outputs. (e.g.: PA Bias Control or other related output can be connected to this terminal.)
 - **Pin 12V:** Provides constant 12VDC output. Can be used to power other equipment.
 - **Pin 28V:** Provides constant 28VDC output. Can be used to power other equipment.

Setting the jumpers:

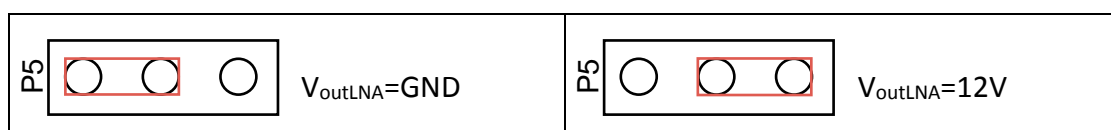
- **Jumper J1** sets **pin LNA** to " V_{outLNA} " voltage or not connected state when the PTT is keyed.



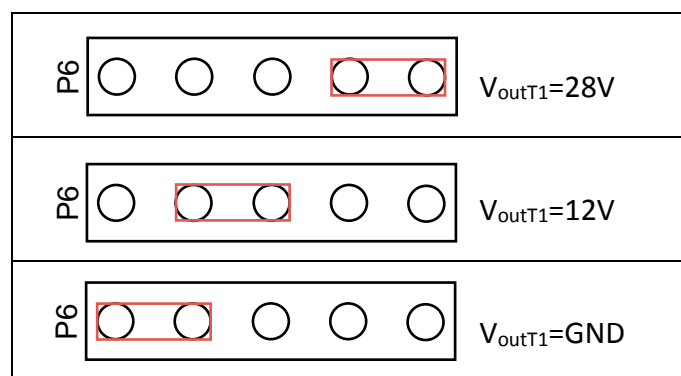
- **Jumpers J2 - J5** set **pins T1 - T4** to " $V_{outT1-T4}$ " voltage or not connected state when the PTT is keyed:



- **Jumper P4 (ISP)** is used solely during production to load program code onto the microcontroller.
- **Jumper P5** sets whether " V_{outLNA} " voltage (see at J1 above) applied on **pin LNA** is 12V or GND. (Factory default: 12V)



- **Jumpers P6 - P9** sets whether " $V_{outT1-T4}$ " voltage (see at J2-J5 above) applied on **pins T1 - T4** is 28V or 12V or GND. (Factory default: 12V)

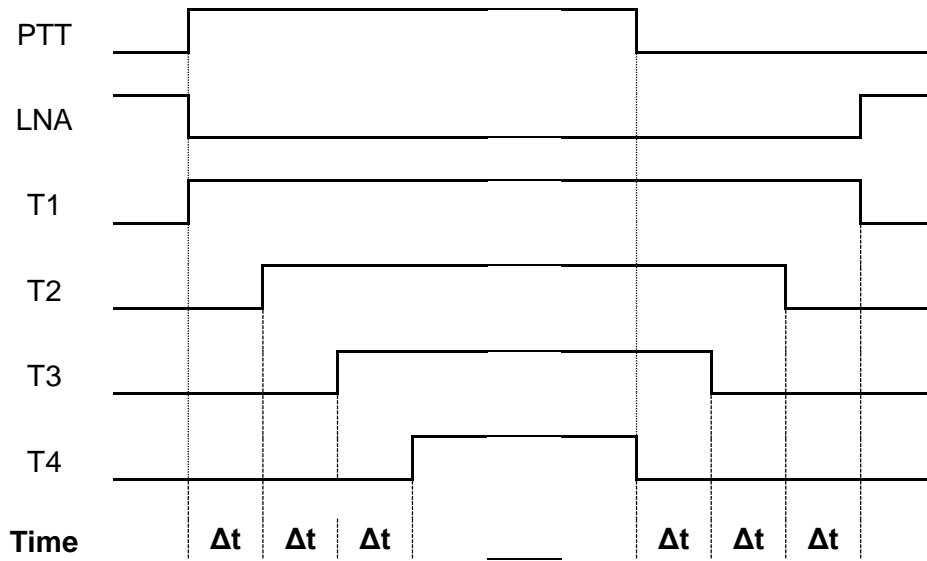


- **Jumper PLNA12V:**
 - If jumper is NOT shorted:
 - If "LNA On/Off" switch is in "=" position, the LNA is turned on in RX state only. (Normal operation mode)
 - If "LNA On/Off" switch is in "0" or "-" position, the LNA is turned off in RX and TX state as well.
 - If jumper is shorted: Indicated by illuminated LNA On/Off LED on front panel.
 - If "LNA On/Off" switch is in "=" position, the LNA is turned on in RX state only. (Normal operation mode)

- If "LNA On/Off" switch is in "0" position, the LNA is turned off in RX and TX state as well.
- If "LNA On/Off" switch is in "-" position, the LNA is turned on in RX and TX state as well.
- **Jumper PTT** to be set according to the control voltage:
 - PTT and +: if sequencer is controlled with 12V.
 - PTT and -: if sequencer is controlled with GND (Default setting).
- **Jumper PV1** sets the output voltage on the H/V pin (12V/28V). Jumper is located next to relay K6 to the right.

MAP65 operation mode:

- The horizontal and vertical coaxial relays to be connected in parallel to **pin T1**.
- **Jumper P6** is used to set voltages applied on the horizontal and vertical relays. See the details above.
- If isolation relay is used, it is to be connected in parallel with the LNA. (If Hamtech coaxial relays are used, the isolation relay is unnecessary, since HCS series relays' isolation is above 60 dB up to 432 MHz, while HTS series relays' isolation is above 60 dB up to 1500 MHz)

Timing diagram:

DIP switch position	1	2	3	4	5	6	7	8	9	0
Δt [ms]	10	20	30	40	50	60	70	80	90	100

