

## Spectra-Tac micor receiver PLM supplement

by Karl Shoemaker

### PLM: (Overview)

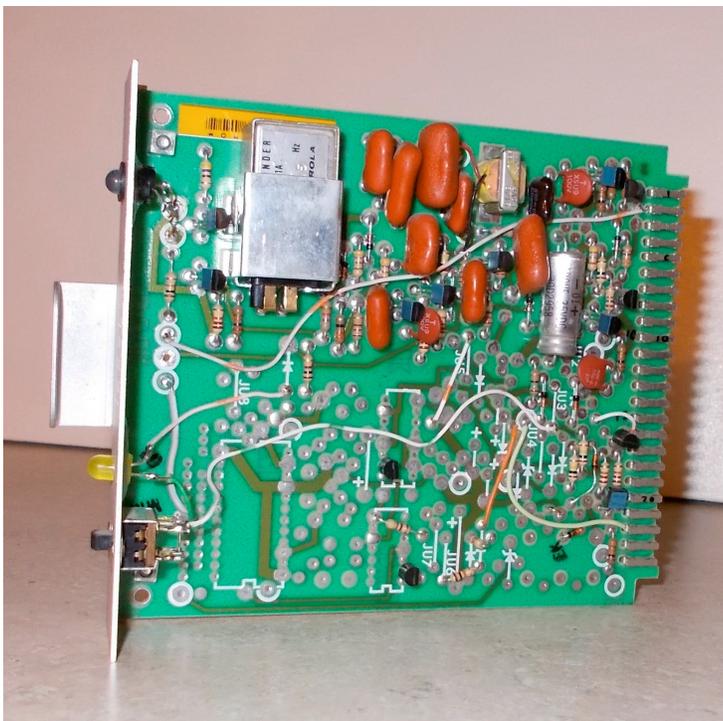
Tone squelch receivers use the PL module (PLM) TRN6083A in the Spec-Tac shelf. It processes the receiver's sub-audio (below 300 Hz) into a PLI (voltage) to drive either external equipment or the cor card on the same shelf. It uses the normal OEM vibrasponder reeds, TLN8381A or KLN 6209A. A valid decode drives 2 PLI outputs however, there's little control between that and the PL disable function and indications. In this document PLI will now be called SDI, for Signaling Decoder Indicator (or Input).

### Modifications: (for indicators and better control)

Remove DS1 (red LED) and it's resistor and wires. Replace it with a blue one. Install a (long) jumper from the collector of Q9 to R69. Some blue LEDs are too bright. If this is the case, change R69 to about 10K. Next, drill a 13/64" hole down by S1 and install a (new) yellow LED with a 1K resistor for it; if it's the normal brightness (old style). This is now DS2. Glue both LEDs in place.

For better control verify JU1 is in, JU2 is out and JU3 is out. Move the wire going to CR13 cathode over to the lower hole of JU3, towards R27. Now, the two PLI outputs on pins, 16 and 21 are separated. The PL indicator (PLI) is now Q11 (on pin 21) and controlled by a valid tone decode. The PL disable (PLD) output is now Q10 (on pin 16) and controlled either by S1 or an external "low" on pin 22. The disable lines are moved to one side of S1. DS2's 1K resistor provides a strong "pull-up". If the external device is affected by this you can either use the other poles of S1 (get away from the pull-up) or install a diode in series to isolate it. These separate controls and indicators can greatly improve the maintenance experience.

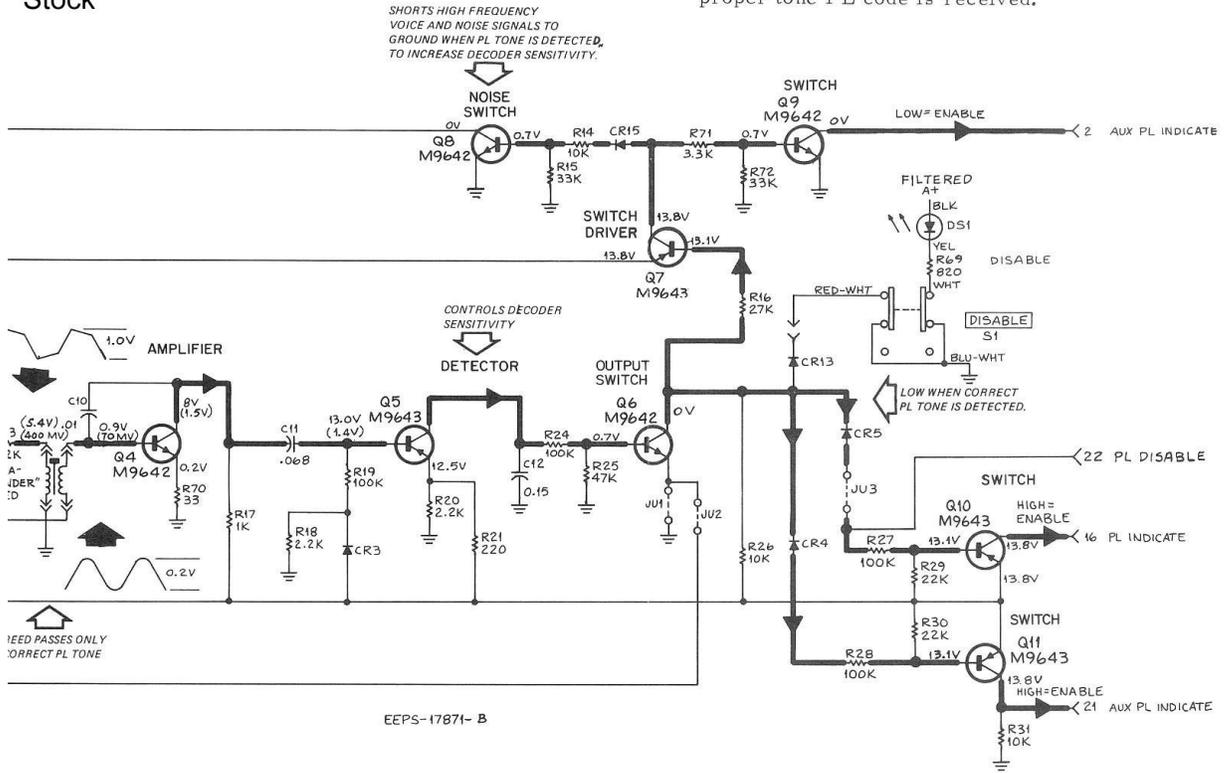
The OEM drawing on the next page shows the DC voltages in an active decode and/or PL disable status (rather confusing). Therefore, we will study the "standby" state. The DC output switch Q6, is normally off during standby (or no decode) with it's collector a logic "1" due to the pull-up resistor R26. During a decode Q6 turns on, going low, causing Q11 to turn on to output a (forced) active high to pin 21. It also turns on Q7, Q8 for detector shaping. Q7 also turns on Q9 to drive DS1. The PLD is controlled with S1 or an external controller with DS2 across this line as in indicator. In this event Q10 turns on with an active high to pin 16.



The two outputs Pin 16 & 21) are processed further. The left image shows two additional transistors, Q12, Q13 (and resistors) as an OR gate, in the lower, middle part. There's more about this, later in this document.

TRN6083A ( PLM )  
Stock

Provides outputs to enable receiver audio when proper tone PL code is received.



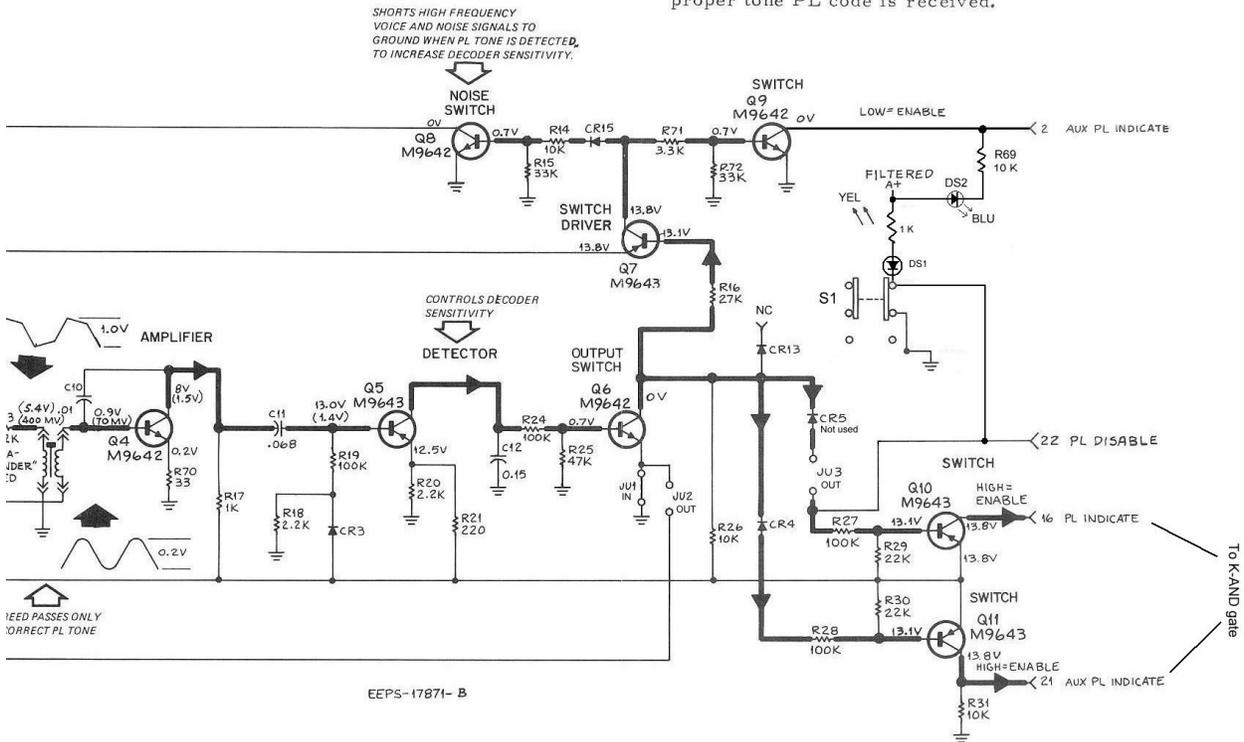
SRG

Modification ver 3  
Voltages shown in decode condition

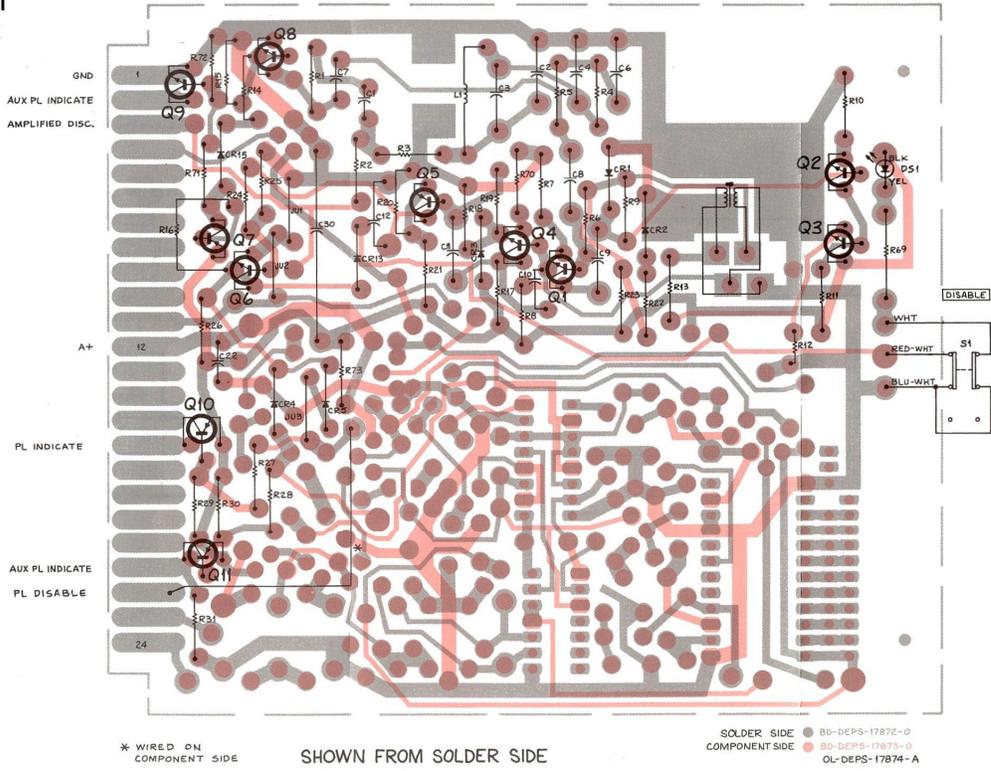
MODEL TRN6083A

FUNCTION

Provides outputs to enable receiver audio when proper tone PL code is received.



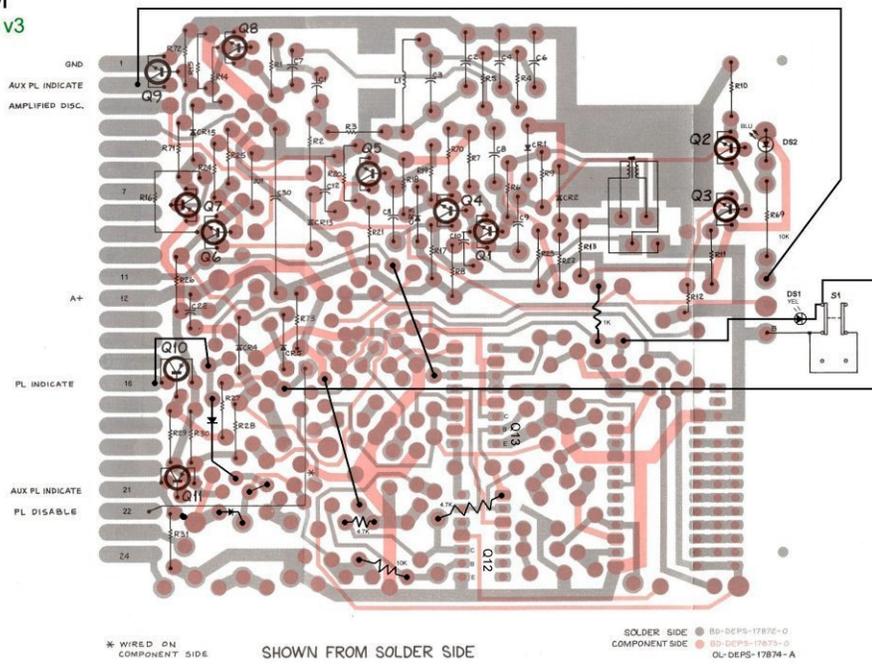
PLM  
Stock



68P81026E26-B

S1 shown in disable position

PLM  
SRG v3



68P81026E26-B

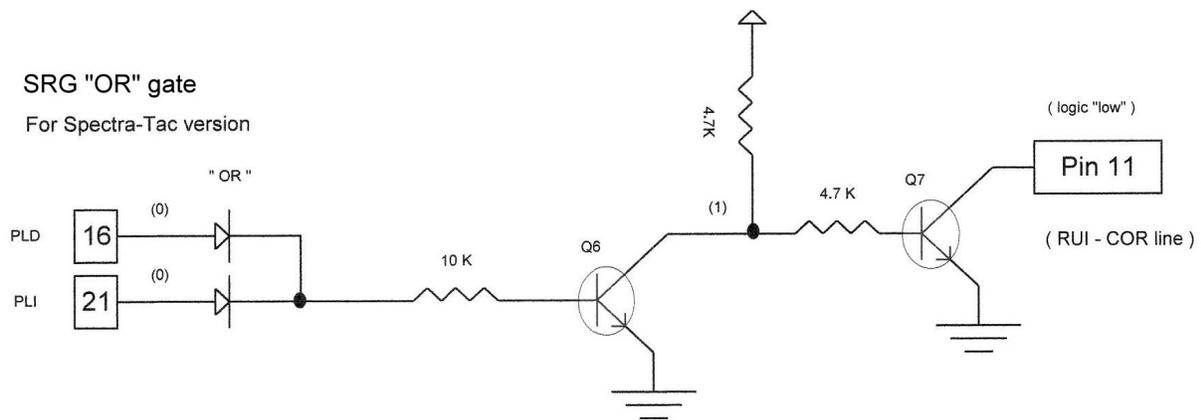
July 2023

S1 shown in disable position (CS)

## “AND” squelch control:

Motorola standard for squelch control for most equipment is a closed loop to ground. Activity lifts the loop from ground. As mentioned earlier, a new circuit is added to the PLM. It's an “OR” gate to activate from a logic “high” from either pins 16, 21, or both. During standby Q12 is off, causing Q13 to conduct its collector output to a forced low; thus, keeping the cor line low. Q13 and the RUI line (from the squelch IC) are tied together via the back plane's pin 11. This creates an “AND” gate to the cor board's input (carrier + tone required) keeping it in a “low” condition during standby. In the event there is carrier activity without a tone decode the cor line won't go high.

Activity from either the SDI (Signaling Decoder Indicator) or PLD (PL Disable) will turn on Q12 causing Q13 to turn off and relax its collector disabling the “AND” gate. The ACM provides carrier indication. If there is carrier activity now, the cor line will go to a “high”. This will cause the cor card to activate.



If you need to change the receiver (unit) back to carrier squelch either throw S1 to the right, pull the PLM or (externally) control (to a low condition) the mode at pin 22 (PLD) of the back plan which cancels the “AND” squelch. Pin 22 goes to a screw terminal for easy connection to a controller or other external device. The yellow indicator will light from either action.

This way the receiver is not depended on another card such as the PLM to operate on carrier squelch for operational change or just testing. The thinking process is, if you need a tone squelch unit you will be adding such PLM thus, controlling the type of squelch desired.

Note:

Some of the drawings shown before are the modified section of the PLM. For the complete (stock) TLN6083 decoder drawing seek the Spec-Tac manual 68P81039E45-x.

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Document setup notes: Font: arial 10, margins: top: .7", bottom: .9, left and right 1.0, header: .2, footer: .7"; portrait. Images: float over text and most are square positioning. AK2O with updates on March 2018, April 2018, May 2018, Jan 2020, July 2023.