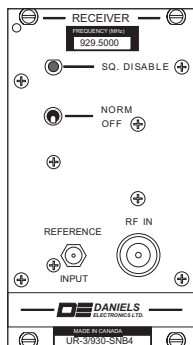


MT-3 Radio Systems**TN290 UR-3/900 UHF 900 MHz Low Current Receiver**

The UR-3/900 receiver is a low standby current, synthesized FM receiver capable of operating in 12.5 KHz (narrowband) or 25 kHz (wideband) channels. The UR-3/900 receiver operates in one of three frequency bands: 896 to 902 MHz, 928 to 935 MHz, or 935 to 960 MHz. A modular design allows each of the receiver's three internal modules, 45 MHz FM IF/Audio Main Board, FE3 Front End, and OS-3/900 Synthesizer, to be individually assembled and tested. This facilitates construction, tuning and maintenance as well as troubleshooting procedures. The synthesizer module can be programmed to have up to 16 channels exclusive to one frequency band.

Specifications

Frequency Bands	896 - 902 MHz / 928 - 935 MHz / 935 - 960 MHz
Channel Spacing	12.5 KHz or 25 KHz
Receiver Switching Range	Unlimited
Reference Sensitivity (12 dB SINAD)	< -116 dBm (.350 μ V)
Adjacent Channel Rejection (Selectivity)	> 55 dB (narrowband) / > 60 dB (wideband)
Spurious Response Rejection	> 85 dB
Intermodulation Rejection	> 70 dB
Hum & Noise Ratio (20 KHz Low Pass Filter)	> 35 dB
L.O. Frequency Stability	\pm 1.0 ppm (-30 $^{\circ}$ C to +60 $^{\circ}$ C) (-40 $^{\circ}$ C to +60 $^{\circ}$ C optional)
Modulation Type	11K0F3E (FM) or 16K0F3E (FM)
Audio Distortion	< 2.0% @ 25 $^{\circ}$ C (< 5.0% @ -40 $^{\circ}$ C to +60 $^{\circ}$ C)
Receiver Attack Time	< 10 ms
Receiver Closing Time	< 10 ms
Squelch Threshold / Hysteresis	-123 to -105 dBm, adjustable from 2 dB to 20 dB
Audio Output (600 Ω Balanced or Unbalanced)	+3.0 dBm De-emphasis/Flat
Input Impedance	50 Ω (Type N Connector)
Operating Temperature	-30 $^{\circ}$ C to +60 $^{\circ}$ C (-40 $^{\circ}$ C to +60 $^{\circ}$ C optional)
Operating Current (Squelched)	< 80 mA

Models Available

UR-3/900-SWB400	Low Current Synthesized, 25 KHz Bandwidth, 896 - 902 MHz
UR-3/900-SNB400	Low Current Synthesized, 12.5 KHz Bandwidth, 896 - 902 MHz
UR-3/930-SWB400	Low Current Synthesized, 25 KHz Bandwidth, 928 - 935 MHz
UR-3/930-SNB400	Low Current Synthesized, 12.5 KHz Bandwidth, 928 - 935 MHz
UR-3/950-SWB400	Low Current Synthesized, 25 KHz Bandwidth, 935 - 960 MHz
UR-3/950-SNB400	Low Current Synthesized, 12.5 KHz Bandwidth, 935 - 960 MHz

Receiver Operating Frequency

The receiver is initially aligned at the factory for the frequency stamped on the 'Factory Set Operating Frequency' label on the front panel. For any frequency change, no re-alignment of the receiver may be required. To align and / or adjust the receiver the outer cover needs to be removed, the receiver needs to be plugged into the subrack via a cable and / or extender card and power must be applied to the system.

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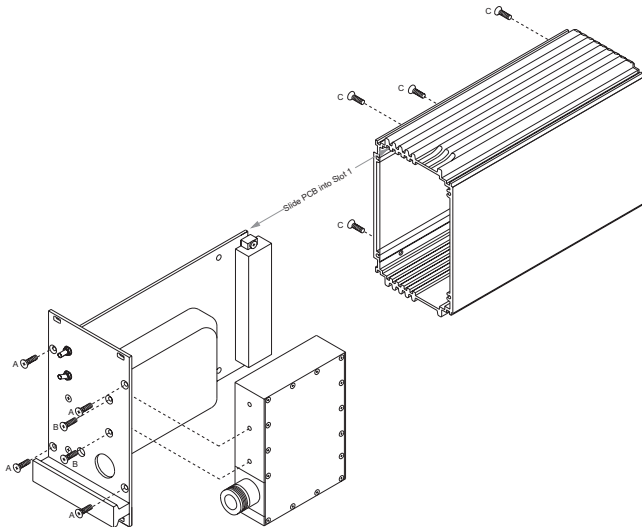
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Receiver Alignment Procedures



Remove the four front panel screws (A) and four side panel screws (C) to slide the receiver outer cover off and expose the IF / Audio Main Board, Local Oscillator and Front End Assemblies. Remove the two front panel screws (B) to remove the Front End.

Front End Alignment:

The Front End is aligned at the factory for maximum receiver SINAD across the band. Alignment of the Front End is not required when changing frequency. Alignment for the Low Current Front End consists of setting the bias for the GaAs FET, and peaking two trimmer capacitors for maximum receiver SINAD. Access to adjustments and test points is achieved by removing the RF amplifier front cover screws (15). The Johanson 4192 tuning tool is required for variable capacitor adjustment. Monitor TP1 and adjust potentiometer R2 for approximately +4.96 Vdc. Monitor the receiver audio output (B26, Z26) and inject the desired RF signal to the RF input connector at a level of -118 dBm. Adjust the capacitors C12 and C13 for best receiver SINAD (>-118 dBm).

Synthesizer Alignment:

No synthesizer alignment is required.

Squelch Adjustments:

Receiver squelch action is factory set to establish a squelch hysteresis window of 6 dB centred about the point of receiver 12 dB SINAD sensitivity. eg. If the receiver sensitivity point is -116 dBm the receiver should be set to unsquelch at -113 dBm and squelch at -119 dBm. Adjustment to the squelch circuitry should be the last receiver alignment step performed. Rotate the squelch hysteresis adjust potentiometer (R115) fully counter clockwise. Rotate the squelch threshold potentiometer (R88) fully clockwise. Inject a standard signal at the desired unsquelch level. Slowly adjust the squelch threshold potentiometer (R88) counter clockwise until the receiver unsquelches. Advance R115 (hysteresis) clockwise until sufficient hysteresis prevents any oscillating COR action at the squelch threshold point. Cycle the RF source off and on while adjusting R88 (threshold) until squelch triggering occurs at the desired signal level. Adjust R115 (hysteresis) clockwise to increase the squelch hysteresis window. Slowly lower the RF source signal level and monitor the point at which the receiver squelches. Increase or decrease R115 (hysteresis) to achieve the desired hysteresis window.

Note: For complete alignment procedures, refer to the instruction manual. These notes are for reference only.

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