

CPI Electron Device Business - Tracking Radar Transponders

The ultra-miniature, solid-state, lightweight transponder is designed for use as a tracking radar enhancement device in airborne applications such as missiles, unmanned air vehicles or manned aircraft operating at instrumented ranges.

CPI EDB radar transponders are traditionally used by the manufacturers of target drones, missiles and test range operators where a common standard is desired. They provide a safe environment for equipment development trials and in-service training exercises. CPI transponders provide a real-time solution that enhances any object's radar signature.



The 258G ultra-miniature, solid-state lightweight transponder

FEATURES:

- Single antenna port for receive and transmit
- Transmit and receive frequencies preset within the 5.4 to 5.9 GHz band
- Synthesised transmit frequency source
- Typical transmitter peak power of 50 W
- Sensitive receiver, -65 dBm
- Preset single or double pulse code setting
- Displacement volume of 140 cm³ / 8.5 in³
- Typical weight of 280 g / 9.9 oz
- Factory set to operate from either 12 VDC or 28 VDC

Specification

Receiver

Type	RF amplifier
Frequency range	5500 to 5800 MHz
Tuning	Preset to a specified frequency via a three-port preselector filter
Duplexer	Circulator
Sensitivity	-60 dBm min. at 90 % reply -65 dBm typical
Max. signal input	+20 dBm (Pulse interrogation) +15 dBm CW
Stability	± 3 MHz
Bandwidth (3dB)	11 ± 4 MHz
Pulse width	0.3 to 1.0 μ s
Interrogation mode	Preset to either single-pulse or double-pulse
Double-pulse range	3.0 to 12.0 μ s Preset to a specified value
Double pulse accept	± 100 ns
Double pulse reject	± 250 ns
False triggers	5 Hz max

Transmitter

Type	PLL Solid-state
Frequency range	5500 to 5800 MHz
Tuning	Preset to a specified frequency
Stability	± 1 MHz typical ± 3 MHz max
Peak power	50 W typical
Pulse width	500 ns nominal

Spectral purity

Amplitude of 1st lobe	≤ -11 dB typical ≤ -7 dB max
Depth of the 1st null	≤ -20 dB typical ≤ -9 dB max
Repetition rate	2500 Hz nom
Recovery time	< 25 μ s
Delay range	2.0 To 15.0 μ s Preset to a specified value
Delay variation	< 100 ns p to p (0 dBm to -50 dBm)
Jitter at -40 dBm	< 15 ns p to p

Power Requirements

Voltage	28 VDC range 20 - 32 VDC
Current at 28 V (standby)	60 mA max. 50 mA typical
Current at 28 V (at 1 KHz)	100 mA max. 85 mA typical
Current at 28 V (at 2.5KHz)	160 mA max. 130 mA typical

Mechanical

Displacement volume	140 cm ³ / 8.5 in ³ (Transponder chassis)
Form	Rectangular
Overall dimensions	See page 4 for details
Weight	280 g / 9.9 oz nominal

Connectors

Antenna	SMA female (OSM 208A)
Power	MS27476Y8D35P, standard

Pin out of connector:

PIN	FUNCTION
1	+V in
2	0V in
3	RSSI
4	Code space select
5	Chassis GND
6	NC

Environmental

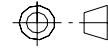
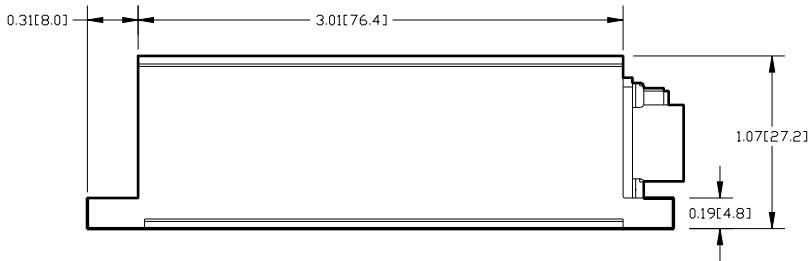
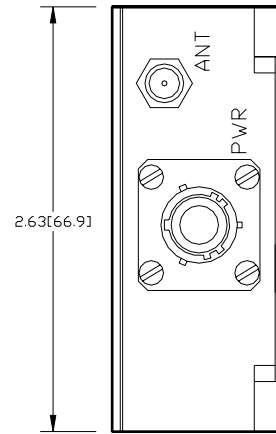
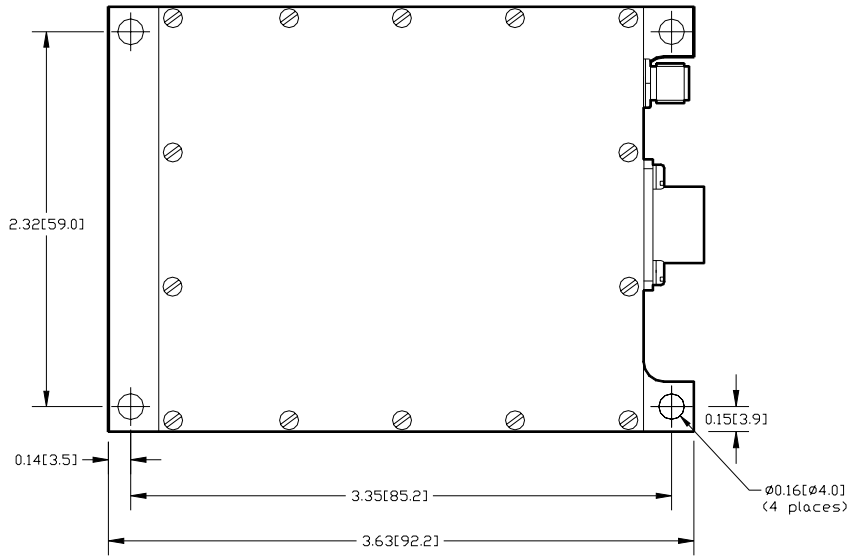
Operating temperature	-40° C to + 80° C
Storage temperature	-40° C to + 85° C
Altitude	Unlimited
Shock	100 g for 6 ms half sine, each direction on each axis
Vibration	100 to 1000 Hz, 16g rms
Humidity	100%, condensing
Acceleration	30 g applied along any axis for 1 minute
RFI/EMI	Designed to meet MIL-STD-461B

Telemetry output characteristics

Number of channels	1 (power connector pin 3)
Assignment	RSSI (received signal strength indication)
Signal format	DC voltage output proportional to receive signal strength for a PRF range of 160 to 2400 Hz
Output voltage range	0 to 5.0 V
Scale	No valid interrogation input results in 0.00V ± 50mV

Output	RSS input	DC voltage output
	-65dBm	0.80V ± 160mV
	-60dBm	1.28V ± 160mV
	-50dBm	2.16V ± 160mV
	-40dBm	3.00V ± 230mV
	-30dBm	3.84V ± 590mV
	-20dBm	4.11V ± 760mV
	-10 to +10dBm	4.16V ± 810mV

Output source impedance 1 Ohm



All dimensions in inches [mm].
Drawing not to scale.