



0.5 to 18GHz High Performance Receiver

The QR035 high performance multi-channel receiver provides a new approach for ESM/ELINT applications incorporating patented features offering wide band synthesised capability from 500MHz to 18GHz, with frequency extensions available up to 40GHz. The QR035 is based upon Teledyne Defence & Space's (TDS) Front End Receiver modular components mounted in an ATR format chassis. The carefully partitioned modular approach allows maximum system versatility for bespoke system functionality tailored to specific applications.

The QR035 offers high preselection selectivity, but without the drawbacks of slow tune speeds and high DC power requirements associated with conventional YIG based receivers. The individual cards within the rack can be factory configured to provide single, dual or triple channel operation.

FEATURES

- Full Band Coverage (options to >40GHz)
- High Spurious Free Dynamic Range
- Low Colouration
- Frequency Selective RF Protection
- User selectable IF attenuation up to 15dB
- Manual/Automated 20dB input attenuator
- Compact, expandable architecture
- Low power consumption
- Fast tune speed
- Additional channel selectable outputs
- External 10MHz reference input

Tune speeds of <200usec are achievable over the full tuning range. Amplitude and group delay characteristics are excellent over the full 500MHz IF bandwidth, with even higher performance over the middle 80% (400MHz) bandwidth. Performance over the central 100MHz is exceptional (better than 1ns group delay), offering the lowest colouration for high quality ELINT signal collection.

A single software configurable master controller is used to control all the RF modules via a unique communications protocol within the Euro-Card backplane. External communication with the master controller is achieved via Ethernet (1Gbit) and RS422 protocols via the front panel connectors.

APPLICATIONS

- Electronic Intelligence (ELINT)
- Electronic Support Measures (ESM)
- Defensive Aids Suites (ECM Set-on)
- Combined ELINT / ESM Sensors
- Ground, Airborne & Naval Environments

ELECTRICAL SPECIFICATION

Parameter	Specification
RF Input Frequency Range:	0.5-18GHz (Optional extensions up to 40GHz)
Maximum Input CW	+18dBm
LO Re-radiation	-90dBm Max
IF Output Frequency Range (IF1)	710-1210MHz & 950-1050MHz (selectable)
IF Output Frequency Range (IF2)	120-200MHz
Gain	25dB nominal (960MHz IF1) 28dB nominal (160MHz IF2)
Gain Variation (500MHz IF1 BW)	±2.5dB typical for any tune frequency and any RF
Gain Variation (100MHz IF1 BW)	±1.25dB typical for any tune frequency and any RF
Group Delay Variation (500MHz IF BW)	5ns over central 80% BW; 10ns over full bandwidth
Input Attenuator	20dB (single step)
IF Attenuator	15dB (1dB step size)
VSWR (RF in/IF out)	2.5:1 max. (typically 1.8:1)
Noise Figure	17dB max (typically 14.5dB)
Input P1dB	-15dBm min.
Input IP3	-5dBm min. (typically -2dBm)
Single Tone SFDR	55dB min. (500MHz BW) (typically 60dB)
In-band 2 Tone SFDR	45dB min. (500MHz BW)
Internally Generated Spurious	-65dBm max. equivalent input power (typically -90dBm)
Channel to Channel Tracking	Amplitude: 4dB max. Phase: ±90° max.
Channel to channel isolation	60dB min.
Tune Speed	200µs max – input tune command to valid IF Output
Tune Accuracy	±15kHz (utilising internal reference source)
Tune Resolution	1MHz (1kHz capable)
Phase Noise (utilising internal reference source)	-88dBc/Hz @ 1KHz offset -90dBc/Hz @ 10KHz offset -95dBc/Hz @ 100KHz offset -95dBc/Hz @ 1MHz offset -114dBc/Hz @ 10MHz offset
Size	3¼ ATR form factor (LxWxH 404.5 x 194.5 x 250.5 not including connectors)
Total Power Consumption	<150W (3 channels)
Input Power Supply	94 – 253 VAC, 47 – 63 Hz
Mass of Tuner System	15.1kg (single channel configuration) 16.3kg (dual channel configuration) 18.5kg (triple channel configuration)
Operating Temperature Range	-40°C to +49°C
Options	<ul style="list-style-type: none"> • Frequency Extension up to 40GHz • Single, Dual or Triple Channels • Digital IFM(s) with hi-POI PDW outputs • Alternative Speed / Accuracy Oscillators • Alternative IF Outputs (Frequency and/or bandwidth) • Alternative rack configurations or individual cards in transit frame for integration in customer rack

See restrictions on published datasheets at www.teledynedefence.co.uk/