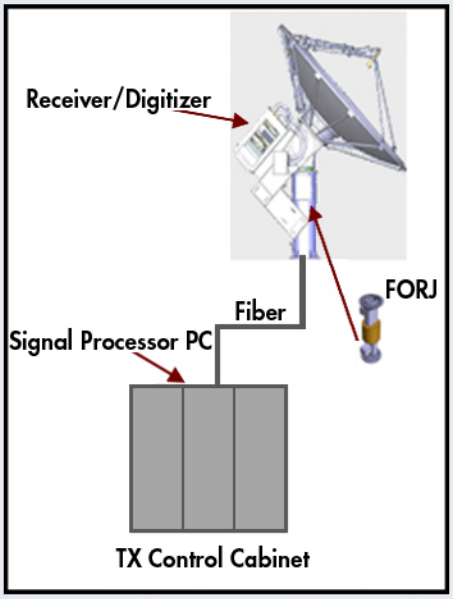
IQ2 Receiver Signal Processor

The Enterprise Electronics Corporation (EEC) IQ2-RSP (Receiver Signal Processor) is the latest and most innovative integrated receiver / signal processor configuration on the market. The IQ2 RSP employs cutting edge hardware and software technology to achieve the highest weather radar data resolution and system control accuracy. EEC Engineers developed the best RSP available in the industry today.

Key Benefits Include:

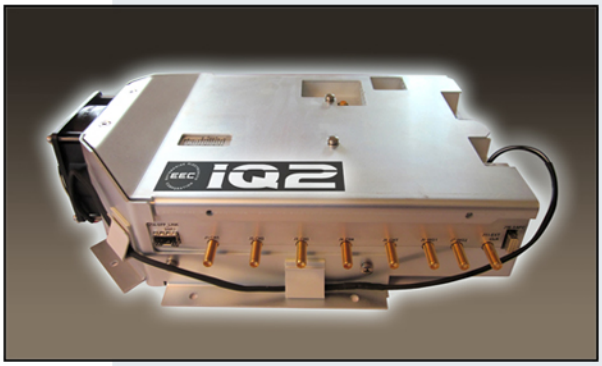
- Digital Automatic Frequency Control (DAFC), IFD supported – No AFC required on Magnetron systems
- All digital IF and signal processing functions hosted on open Linux PC hardware
- 16-bit digital sampling
- Up to 8000 Range Bins - Highest resolution in the industry
- High Speed Serial Angle Tag Bits (Parallel Tag Bits are Optional) – No complex wiring
- Fiber optic interfaces provide real-time I&Q data recording (10 GB/Sec)
- Open API allows for customer developed signal processing algorithms



The IQ2-RSP (Receiver Signal Processor) consists of:
-IQ2-IFD (Intermediate Frequency Digitizer)
-IQ2-DSP (Digital Signal Processor)

The IFD supports Digital Automatic Frequency Control (DAFC). The frequency of the IF is no longer controlled by adjusting the STALO frequency, the input frequency of the 4-data channels is now adjusted to match the IF frequency while supporting traditional AFC control.

IQ2-Intermediate Frequency Digitizer



Digitizer is encased in a machined aluminum housing - mechanically robust & stable
Provides high inter-channel isolation and external EMI isolation
Four signal channel A/D converters with 16-bit sampling up to 100MHz
Maximum number of range bins= 8000
Minimum Range Resolution= 15 meters
16 bit TX channel A/D - waveform flexibility
Dynamic range ≥ 110 dB (± 1.0dB)
BandWidth = 0.5MHz (at IQ2-IF input)
IF bandwidth = 0.1MHz ÷ 10 MHz
RoHS compliant
IIR clutter filter
DFT clutter filtering
DFT processing
Pulse Repetition Frequency = 10 Hz-24 KHz
Number of Pulse widths - 4 with independent configurable matched filters (up to 1280 taps)
Dual PRF Stagger Modes - None, 2/3, 3/4, and 4/5

IQ2-Digital Signal Processor - Minimum Computer Specifications

Processor: Intel Xeon quad-core 5520 or superior
Memory: 8GB DD3
Disk: 160GB minimum
Two Gigabit Ethernet ports
Operating System: Linux

Output Data

Simultaneous Horizontal/Vertical Transmit

Corrected reflectivity H/V	Zh, Zv [dBZ]
Uncorrected reflectivity H/V	UZh, UZv [dBZ]
Radial Velocity H/V	Vh, Vv [m/s]
Spectral width H/V	Wh, Wv [m/s]
Cross correlation coefficient	RHOHV
Differential phase	PHIDP [°]
Differential reflectivity	ZDR [dB]
Clutter power H/V	CCORh CCORv [dB]
Signal quality index H/V	SQIh, SQIv
Signal Noise Ratio	SNRh.SNRb [dB]
Inphase/Quadrature signalH/V	Ih, Iv, Qh, Qv
Power spectrum H/V	

Horizontal Transmit

Corrected reflectivity	Zh [dBZ]
Uncorrected reflectivity	UZh [dBZ]
Radial velocity	Vh [m/s]
Spectral width	Wh [m/s]
Depolarization Ratio	LDR [dB]
Signal Noise Ratio	SNRh [dB]
Signal quality index H	SQIh
Clutter power H	CCORh

Vertical Transmit

Corrected reflectivity	Zv [dBZ]
Uncorrected reflectivity	UZv [dBZ]
Radial velocity	Vv [m/s]
Spectral width	Wv [m/s]
Depolarization Ratio	LDR [dB]
Signal Noise Ratio	SNRv [dB]
Signal quality index V	SQIv
Clutter power V	CCORv

Enterprise Electronics Corporation

128 S. Industrial Blvd
Enterprise, AL 36330
P: 334.347.3478
F: 334.393.4556
sales@eecradar.com
www.eecradar.com

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SIDPOL™ Radar is patented technology, covered by U.S. Patent No. 6,859,163 B2, U.S. Patent No. 7,049,997, U.S. Patent No. 7,439,899, 13041 (OAPI Region), 13040 (OAPI Region), 13694 (OAPI Region), 009250 (Eurasia) and 009249 (Eurasia).

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