Edge^2 Telemetry Receiver / Processor

Introduction

The Edge^2 is engineered to provide network telemetry processing at the edge in a portable or rack-mountable 2 channel unit. Three Edge^2 appliances may be rack-mounted side-by-side supporting up to 6 channels of RF, BitSync, or Decom processing in a 1U rack space. Each Edge^2 unit provides LED status indicators for; Receiver Status, BitSync Status, Frame Sync Status, Time Status, and Ethernet activity.

RF to Ethernet

The Edge^2 unit when configured with receiver modules provides users with complete single or dual stream RF-to-Ethernet telemetry data processing. Capable of supporting all telemetry frequency bands from 200 MHz to beyond 5.15 GHz, these systems provide complete RF input to TMoIP (IRIG 106 Chapter 10/11 or IRIG 218-20) Ethernet output in a single compact 1U rackmount industrial enclosure.

Features

- TMoIP Output: IRIG 218-20 or CH10 (selectable each channel)
- Optional Tri-band receiver supporting RF to TMoIP (Chapter 10/11 & IRIG 218-20)
- Optional high-performance Bit Syncs
- 1 dB Bit Sync Performance
- Up to 50 Mbps bitrate per channel
- 2-channel, 100 Mbps output via the 1GBps port
- Exceeds Class II embedded channel specifications

- Supports jumbo frames up to 9000 MTU
- < 5.0 dB typical noise figure
- Accepts IRIG A, B, and G, and IEEE 1588 PTP time
- Ingests Chapter 4, 7, and 8 formats
- Integrated OMEGA NExT Real-time data processing, display, data reduction, and data distribution
- Up to 6 channels in 1U rack space

Edge^2 Unit Front and Rear

Parraid RX GUI Software

Software Control

A Windows Graphical User Interface (GUI) provides the user with control of receiver functions, display of receiver status, and use of integrated IF spectrum and time-base displays. The GUI can operate as local control or as remote control over a TCP/IP or UDP network. Full receiver operation, as well as data decommutation, is also integrated within the high-performance OMEGA NExT data processing and display software.

Specifications

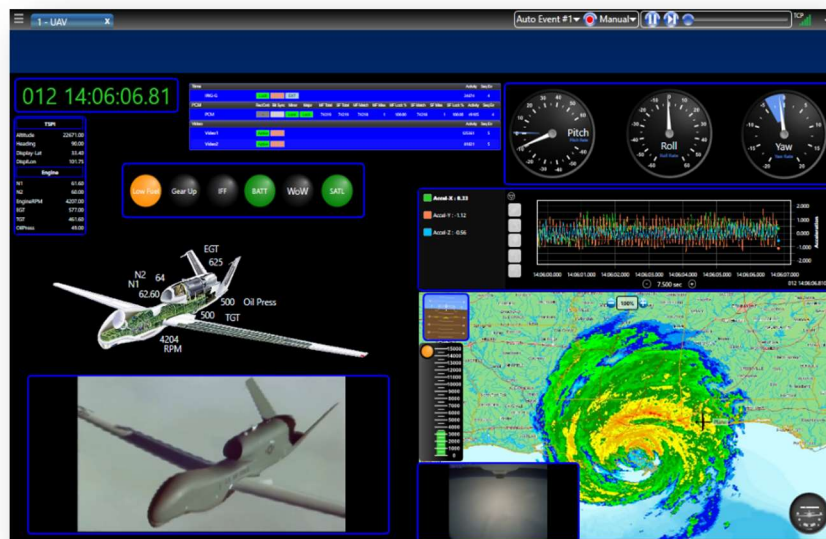| Receiver[1]	Channels	0, 1, or 2, configuration dependent
	RF Frequency	Lower-L band: 1415-1545 MHz
		Upper-L band: 1700-1850 MHz
		S-Band: 2185-2485 MHz
		C-Band Lo: 4400-4940 MHz
		C-Band Mid: 5091-5150 MHz
		P-Band and C-Band IF: 200 – 1150 MHz, Optional
	Resolution	50 kHz
	Input	Single Ended
	Impedance	50Ω
	Dynamic Range	-100 dBm to 0 dBm
	Image Rejection	> -60 dBc
	Noise Figure	6.0 dB (max)
Demodulators[1]	Types	PCM/FM (Tier 0 and Analog), SOQPSK-TG (ARTM Tier I), BPSK
	Data Rates	30 kbps to 20 Mbps (programmable to 1 bps), NRZ codes
	Line Decoding	NRZ-L/M/S, BI0-L/M/S, +15RNRZ-L; programmable
	Loop Bandwidth	0.05, 0.125, 0.25, 0.5, and 1.0%, programmable
	LDPC Decoder	SOQPSK Block Rate: 4096 2/3, 1024 4/5, programmable
Output	Data Polarity	Normal or inverted, programmable
	Clock Phase	0 or 180 degrees; programmable
Auxiliary[1]	Outputs	Video, AGC, AM outputs, programmable, per RF input
Bit Sync[1]	Channels	0, 1, 2, or more, configuration dependent
	Sources & Type	Single-ended and differential, programmable per channel
	Operating Range	3 kbps to 40 Mbps, NRZ codes (50 Mbps option) 3 kbps to 20 Mbps, BIØ codes (25 Mbps option)
	Level	300 mV to 10 VP-P

Bit Sync[1] (cont.)	Impedance	50 ohms, 75 ohms, or 10k ohms (single-ended), 110 ohms (diff)
	Codes	NRZ-L/M/S, BIØ-L/M/S; +/-RNRZ-L randomized codes
	Polarity	Normal or inverted, programmable
	Loop Bandwidth	From 0.02% to 5.00%, programmable 0.02% resolution
Performance	Bit Error Rate	Within 1.0 dB of theoretical to maximum data rate
	Jitter	Jitter not to exceed 0.1% of a bit interval
	Acquisition Range	Up to $\pm$ 5% of programmed data rate
	Acquisition Time	Within 50 bits, average, random data within 0.5% deviation from the programmed data rate, E_b/N_o = 15 dB
	Sync Maintenance	Retains sync at E_b/N_o = 3 dB for NRZ at 50% transition density
Output	Level	+3.3V @50 mA, short circuit protected
	Data	NRZ-L/M/S, BIØ-L/M/S, and RNRZ-L PCM codes, programmable
	Clock	0º or 180º, programmable
	Soft Decision Bits	Internal MSB, LSB, Sign and Clock
Frame Sync	Channels	Two independent data/clock frame sync inputs
	Sources & Type	One single-ended input per channel, external direct NRZ-L / Clock input or internal from bit sync, programmable
	Level	+3.3V at 50 mA, short circuit protected, single-ended input
	Operating Range	3 kbps to 50 Mbps
	Impedance	50 ohms, 75 ohms, 10k ohms, programmable
	Clock Phase	0° or 180°, programmable
	Data Polarity	Normal, inverted, auto, programmable
	Derandomizer	None or +RNRZ15, programmable
	Mode	IRIG Chapter 10 Throughput and Packed, programmable
	Resolution	+/-100ns Time-Data Resolution
	Time	Carrier Input: IRIG A, B, G, programmable
Format	Sync Word	16 to 64 bits, programmable
	Bit Slip	0 to 3 bits, programmable
	Minor Frame	32 to 1,048,560 bits, programmable

Format (cont.)	Major Frame	1 to 4096 Minor Frames per Major Frame, programmable
	SFID Direction	Up or down, programmable
	SFID Min Value	0 or 1, programmable
	SFID Location	17-to-1,048,560-bit location, programmable
	SFID Orientation	MSB or LSB; programmable
Outputs	Ethernet	Ch10 Throughput and Packed, IRIG 218-20 TMoIP; Programmable per channel
	Embedded Audio	Hot Mic, <50mS: CVSD, analog, programmable, +0.477 VPP
	Embedded Serial	IRIG Class II async data/clock, 3.0V @ 50mA
Physical Characteristics	Dimensions	5.73" W x 1.72" H x 15" D
Environmental	Temperature	0° C to 50° C, Operating -20° C to 80° C, Storage
	Humidity	10% to 95%, non-condensing
Power	DC	12 VDC; 2.08 A (max)

¹Optional modules available for each signal input.

Software Introduction – OMEGA NExT High-Performance Processing and Display

This powerful software suite provides comprehensive signal processing, real-time data visualization, raw and processed data storage, and multi-network client support.

- Process hundreds of thousands of parameters from multiple streams
- Create simple and complex derived parameters
- Extensive APIs for customization, integration, processing, and control
- Clarity real-time displays
- Create data products with Insight
- Distribute parameters with Focus
- Simulate data with Origin

Refer to OMEGA NExT Spec Sheet

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Specifications are subject to change without notice.