OMEGA-NExT

Real-time Telemetry Processing Software

Overview

OMEGA NExT (Network EXtensible Telemetry) is the next generation of the OMEGA real-time telemetry processing software application. Drawing on 30 years of telemetry processing heritage, OMEGA NExT offers an unmatched blend of power, ease of use, flexibility, and affordability. Designed from the ground up as a native 64-bit IRIG 106 CH10 packet processing application, the OMEGA NExT software suite performs real-time telemetry acquisition, processing, archiving, distribution, and display. OMEGA NExT supports the full range of telemetry processing applications from simple quick-look portable applications to complex many-user control rooms.

Powerful

OMEGA NExT is built on a 64-bit Multi-Threaded / Multi-Core foundation with a Service Oriented Architecture (SOA) to leverage the power of modern computing platforms. With the ability to spread processing over any number of CPU cores, OMEGA NExT establishes new benchmarks for speed in real-time and post processing domains. Parameter processing supports multilevel processing, syllable definition up to 64 bits, and incorporates a number of standard processing functions: trigonometric, logarithmic, conditional if/then/else, mathematical, binary, and logic.

Easy to Use

The OMEGA NExT user interface is designed for ease of use by telemetry users for telemetry users. All mission definition is integrated into the OMEGA NExT GUI and presented in a straight forward logically categorized manner such that users don't need to be "experts" to successfully define, navigate, and execute their missions. OMEGA NExT provides several import and export options and tools to quickly migrate mission, stream and parameter definitions from legacy platforms and other sources. OMEGA NExT includes standard telemetry-specific algorithms that users can assign to parameter processing using a simple drag and drop interface.

Flexible

Whether it's the backbone of a simple portable telemetry processing system or a complete ground station, OMEGA NExT is the solution to support the mission. OMEGA NExT provides built in support for Parraid X-5000 network appliances, legacy PCM Data Bricks, Series 5000 real-time systems, and IMUX G2 recorders. OMEGA NExT also provides built-in support for 3rd party recorders via Chapter 10 UDP broadcast and 3rd party USB Decoms. This support includes custom Ethernet and UART data source inputs. OMEGA NExT – File is available as a low cost solution for Mission Definition, File Playback, and Standalone Post Mission Processing. For the utmost in flexibility, a variety of software APIs are available with OMEGA NExT to seamlessly customize OMEGA NExT to your specific needs.

OMEGA-NExT Client Software

OMEGA NExT is the data processing engine at the core of a complete suite of telemetry specific software applications. The OMEGA NExT suite of telemetry specific software applications includes:

- Focus – real-time parameter distribution to network clients.
- Clarity – parameter display.
- Clarity Builder – display builder application.
- Insight – post mission data processing client.
- Origin – data simulation client.

OMEGA-NExT Features

Software Foundation for Parraid Telemetry Products

- IMUX G2
- Series 5000 products
- ODE Data Mining
- Legacy Data Brick

Input Sources:

- CH10 Ethernet: TCP and UDP
- IMUX G2 CH10 Recorder
- G3 Network Processor
- X-5000 Network Receiver / Decom
- Custom Ethernet and UART
- Series 5000 Front-End
- CH10 and BIN data files
- Legacy PCM Databrick
- Third party USB decoms
- Custom User Defined sources

Stream Types:

- IRIG Time
- PCM
- Mil-Std-1553
- CH8 1553
- Arinc-429
- IEEE 1394
- IRIG 106 Chapter 7
- Video
- Analog
- UART
- Ethernet
- TSPI / CTS
- User Defined

Parameter Processing

- Access the value of a parameter at any point in the processing chain in real-time.
- Over 135 built in data conversion functions.
  - Audio
  - Bit Masking and Shifting
  - Compression
  - Conditionals
  - Data Conversions
  - Format Conversions
  - Filter Functions
  - Limit Checking
  - Math Functions
  - Position Functions
  - States (Enumeration)
  - Time Functions
  - Create your own built in functions using the included API.
  - Custom Equation Functions with support for external code.

Output

- IRIG 106 Chapter 10 archive
- Parameter Archive (CSV)
  - Output Interval or Parameter driven.
- USB and Ethernet DAC
- Custom (Focus)

Display

- Client Displays
  - Clarity client
  - Focus client IADS output
- Integrated Diagnostic Displays
  - PCM
  - 1553
  - A429
  - Parameter Status
  - Quick Look - Tabular and Stripchart

Real Time Processing and File Playback

- Supports multiple input sources
- Real-time and File Playback operating modes
- Native CH10 packet processing
- Built in Telemetry Specific Algorithms
- Derived Parameter Processing
- IRIG 106 CH7 unwrap

APIs

- C# programming language
- User Defined Processing Instructions
- User Defined Equations and External Functions
- Real-time user application data input and output
- Mission definition, remote control and logging

Architecture

- Native 64-bit
- Native IRIG Chapter 10
- Service Oriented Architecture
- Scalable

Database Definition

- TMATS, XLSX spreadsheet, and zipped database Mission Import\Export
- Stream Types
- Stream Copy, Export, Import

Diagnostic Displays (Real-Time or Playback mode)

- Stream Status
- Parameter View
- Raw Stream Views

Archive

- Raw: IRIG 106 CH10 format
- Processed: CSV format
- Complete mission logging

Post Processing

- Insight post-archive file processing.
- OMEGA NExT missions and archive data supported by Parraid Omega Data Environment (ODE) distributed data mining and processing software.

Software	Foundation (NExT-FND-01)	Standard (NExT-STD-01)	Professional (NExT-PRO-02)	File (NExT/FILE-02)
NExT	Included	Included	Included	Included
Clarity	Included	Included	Included	Included
Clarity Builder	Included	Included	Included	Included
Focus			Included	Included
Insight			Included	Included
Origin			Included	
OMEGA NExT Options	**Foundation (NExT-FND-01)**	**Standard (NExT-STD-01)**	**Professional (NExT-PRO-02)**	**File (NExT/FILE-02)**
PCM Streams	Included	Included	Included	Included
Receiver Control	Included	Included	Included	Included
Hot Mic-Audio Control	Included	Included	Included	Included
User Input Streams			Included	Included
CH7 Unwrap			Included	Included
UART Streams			Included	Included
Ethernet Streams			Included	Included
A429 Streams			Included	Included
1553 Streams			Included	Included
1394 Streams			Included	Included
CH8 1553 Streams		Included	Included	Included
Video Streams		Included	Included	Included
Analog Streams		Included	Included	Included
Calibration Utility			Included	Included
Data Sources	Up to Eight	Up to Eight	Up to Eight	One (File Only)
Vendor specific Data Sources		Included	Included	Included (File Only)
Ethernet Sources		Included	Included	
Parameter Processing	RAW only	Full	Full	Full
API Connections		Two	Eight	Eight
Focus Connections			Eight	Eight
Focus Frame Formatted Messages			Included	Included
Focus Message Formatted Messages			Included	Included
Focus IADS Formatted Messages			Included	Included
Focus KLV Formatted Messages			Included	Included
DataViews Displays		Included	Included	Included
Managed Applications		One	Eight	Eight
OMEGA SERV Conversion Utilities		Included	Included	Included

Date: Dec 2019

Specifications are subject to change without notice.
Please contact Parraid for most current information.

IMUX-G2e PBN – 2U Telemetry Recorder

System Introduction

Parraid is proud to offer a low cost four-channel telemetry recorder/reproducer with no reduction in performance from our classic IMUX-G2. This G2e system is designed to satisfy the rigorous needs of a telemetry ground system requiring only a limited number of channels.

System Features

- 2U 18.9-inch Rack-mountable
- IRIG-106 Chapter 10 Compliant PCM
- 10/100/1000 Ethernet Equipped
- 19-inch Flip-up Display / Keybrd Available
- Removable Media
- DVD-R/W / CD-R/W Optical Drive
- Four Channels PCM Record/Reproduce
- IRIG Time, A/B/G Input/Output
- Data/Clock & Noisy Data-only inputs
- High-Performance Bit Synchronizers and Receivers (Both Optional)
- G2 Graphical User Interface Software
- Simult. Record/Playback (SPAR)
- TPM 2.0
- Optional RAID Support
- Optional Best Data Engine (BDE)
- Optional NExT Decom Data Processing

Chassis Specifications (min)

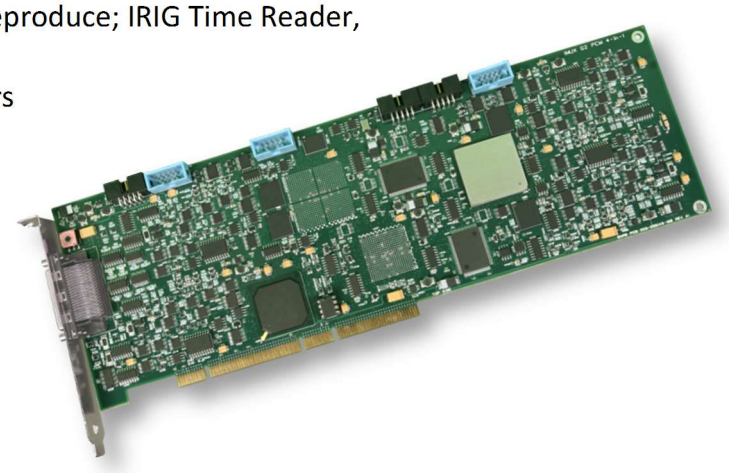
- 500 GB SSD System Drive
- 4 TB SSD Archive Drive
- R/W DVD Drive
- USB 2.0 and 3.1 Ports (2ea)
- 1 Gb Ethernet Ports (2)
- RS232 port
- Audio ports (2.5 mm Stereo)
- 5.25” Drive Bay: Up to four 2.5” Drives
- Dual-monitor Display Support
- Dimensions: 3.5” (H) x 19” (W) x 18.9” (D)

Minimum Processing Capability (min)

- I7 – 9700K (8-core), 3.6GHz/4.9GHz
- 64 GB RAM / 12MB Processor Cache

PCM Features

- 4 Channels with Frame Sync, and 4-Ch PCM Reproduce; IRIG Time Reader, and Reproducer
- Optional Bit Syncs and/or Multi-band Receivers
- Operation to 40 Mbps (Option to 50 Mbps)
- Records in Throughput and Packed Modes
- Reproduces Throughput, Packed, and Unpacked Data File
- Accepts All IRIG PCM Codes
- Accepts IRIG A, B, and G Time Codes
- 1 dB Bit Sync Performance
- <5.0 dB Typical Receiver Noise Figure



PCM Introduction

The IMUX-G2e PCM Input/Output board combines the advanced capabilities of bit synchronization, PCM input, and PCM output/reconstruction, along with an embedded IRIG Time module into a single PCI slot.

Optional Bit Synchronizer Function

A multi-featured, digital process controller provides state-of-the-art bit error rate performance. The bit sync input excels in harsh noise conditions, with superior signal-to-noise capabilities. The patented phase-lock loop and tracking features enable the bit sync to attain the performance levels of box-level bit synchronizers with equal performance.

Programmability includes selection of source and impedance, input code type, de-randomization, polarity, bit rate, loop and tracking bandwidths, and output code and clock phase.

Time Code Input/Output Functions

IRIG time code inputs are translated to digital time setups with a nanosecond resolution every 100 nanoseconds. Time stamps are provided for each data transfer in Packed, Unpacked, or Throughput modes via direct memory addressing (DMA) block transfers over the PCI bus.

Data Reproduction

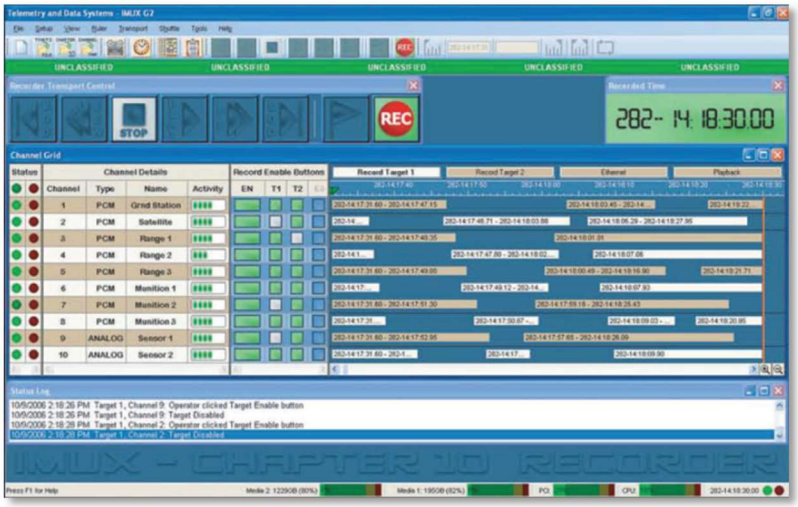
A variable rate, on-board numerically controlled oscillator (NCO) resides on the PCM card. It is slaved to the data reproduction and can faithfully reproduce PCM data to within 1 microsecond inter-channel time skew, relative to other recorded channels.

PCM Specifications

Optional Bit Sync Input	Number Channels	Up to four independent data synchronization and clock generation channels
	Programmability	Each PCM input channel programmed independently
	Sources & Type	One single-ended and one differential input per channel
	Level	300 mV to 10 VP-P
	Impedance	50 ohms, 75 ohms, or 10 k-ohms (single-ended), programmable; 110 ohms (differential)
	Operating Range	3 kbps to 30 Mbps, NRZ codes 3 kbps to 15 Mbps, all non-NRZ codes
	Codes	NRZ-L/M/S, BIØ-L/M/S; additionally, plus and minus randomized codes for NRZ-L
	Derandomizer	Forward & reverse; 5 lengths: 9, 11, 15, 20, 23; programmable
	Polarity	Normal or inverted, programmable
	Tracking / Dev	Programmable up to 20% of data rate
	DC Offset	DC offset plus peak signal plus noise $\leq$ 10V
	Loop Bandwidth	Continuously programmable with 0.02% resolution from 0.02% to 5.00%
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
	Acq 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 Maint	Retains sync at E_b/N_o = 3 dB for NRZ at 50% transition density
	Bit Slippage	Maintains phase with BIØ codes at E_b/N_o = 12 dB with over 2,000 continuous ones or zeroes and at E_b/N_o = 0 dB for random data
	Baseline Variation	No degradation beyond 1 dB from theoretical performance curve with a superimposed wave form equal to 100% of the peak-to-peak signal input at 0.1% of the bit rate, BIØ codes
Output	Level	+3.3V @50 mA, short circuit protected
	Codes	Programmable PCM output codes, (R)NRZ-L/M/S, BIØ-L/M/S
	Clock	0º or 180º, programmable
G2e PCM Input	No. Channels	Four independent PCM data/clock record channels
	Programmability	Each PCM input channel programmed independently
	Sources & Type	One single-ended input per channel, external direct input or internal from bit sync, programmable
	Level	TTL Levels at 50 mA, short circuit protected, single-ended – direct data/clock input
	Impedance	75-ohm; single-ended (factory adjustment for 50 ohm or 10 k-ohm)

Software Introduction

G2e GUI



This state-of-the-art software makes setup, record, and playback fast and easy. Snapshots of your data and lock indicators take the guesswork out of knowing if you are getting the data you expect. The ability to turn channels on and off independently are a unique feature for the G2. Multiple data targets as well as UDP broadcast make getting your data robust and easy. Also unique, is Simultaneous Playback and Record (SPAR) capability, a useful function for system and network self-test.
The additional Best Data Engine (BDE), and UDP DEMUX options can make the G2 one of the more powerful telemetry recorders on the market, at a cost far lower than most competitors.

OMEGA-NExT

This powerful suite of software provides Decom, real-time data visualization, and external message that works absolutely seamlessly with the IMUX-G2 PBN.

Decom and display up to hundreds of thousands of parameters and derived parameters from multiple streams, display them in real time, and create files; broadcast selected data to UDP or TCP/IP or create parameter files for easy analysis.

Includes Clarity Display, and Focus Data Distribution, real-time and playback. Includes Insight Post-Mission Processing and Origin Data Simulation clients.

Example configurations -

G2eC-4P-001*	G2e Recorder System: 4-ch PCM Input/Output w/ Bit Sync and IRIG Time Code Trans. Includes Simultaneous Playback and Record Self-test.
G2eC-PBN-4PP-001*	G2e Recorder System: 4-ch PCM Input/Output w/ Bit Sync and IRIG Time Code Trans. Includes Simultaneous Playback and Record Self-test. Includes OMEGA-NExT Professional level Data Processing software.

*Portable, 4U Industrial and Rugged rack-mount configurations available supporting up to 32 streams.

Specifications are subject to change without notice.

X-5000 Unit
Multi-band Telemetry Receiver-Decom

Features

- Multi-band Coverage
  - L: 1429-1545, 1700 – 1850 MHz
  - E/S: 2185-2485 MHz
  - C: 4400-4940, 5091-5250 MHz
  - C-IF: 400-1150 MHz, Option
- <5.0 dB Typical Noise Figure
- ARTM Trellis Demodulators
- IF Bandwidth, 50 kHz to 30 MHz
- RF to Chapter 10 (11) Ethernet
- Integrated Bit Synchronizer(s)
- Integrated Spectral Analysis Display
- Integrated Decommutation, 2-ch
- Integrated IRIG Time Code Trans

RF to Ethernet

The receiver modules embedded within the X-5000 unit provide users with complete dual stream RF-to-Ethernet telemetry data access. Capable of supporting all telemetry frequency bands from 200 MHz to beyond 5.25 GHz, these systems provide complete RF input to IRIG 106 Chapter 10 (11) Ethernet output in a single compact rack-mountable 1U size enclosure. The X-5000 may also be configured with a Pre-D Diversity Combiner instead of the 2-ch Decom. The Receiver-Decoms or Receiver-Combiners may be operated as stand-alone telemetry systems integrated in the ruggedized rack-mount 4U chassis, with touch-panel display, instead of the portable X-5000 unit.

Multi-band Tuner

The X-5000-REC modules are designed to include the most popular telemetry bands: L-Band, S-Band, and C-Band frequencies. Multi-band and single-band modules can be configured to meet customer specific requirements.

Please contact Parraid LLC for custom frequency requirements.

Digital Filters

The 25 Digital IF filters, from 50 kHz to 30 MHz, minimize signal insertion loss and include the 12 standard IRIG IF filter bandwidths. User-defined filters are also available.

Multimode Demodulator

The Multimode Demodulator provides user-selectable multi-symbol trellis PCM/FM, SOQPSK-TG, and demodulation modes. Additional receiver and demodulator options include FM/BPSK/AM demodulation modes, with individual demodulation mode options available to meet specific customer requirements. All models include a unique feature that allows additional demodulator options to be included as field programmable upgrades.

AGC and AM outputs

Optional Automatic Gain Control (AGC) and Amplitude Modulation (AM) outputs are compatible with auto-tracking antenna systems. AGC modes include manual gain control, automatic gain control, AGC Freeze, and AGC Zero. AGC output operates 0 to +5V, providing 20 dB per volt.

Software Control

A Windows Graphical User Interface 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 network. The TCP/IP remote control interface includes a Receiver TCP/IP Server and Application Programming Interface (API) with programming examples for creating custom embedded remote-control applications. Full receiver operation, as well as data decommutation, is also integrated within the high-performance OMEGA-NExT data processing and display software.

RF Tuner	Frequency Range	L-Band 1429 – 1850 MHz S-Band 2185 – 2485 MHz C-Band 4400 – 4940, 5091 – 5250 MHz C-IF Band : 400-1150 MHz, Option
	Tuning Resolution	50 kHz steps
	Dynamic Range	Threshold to -10 dBm
	Image Rejection	> 70 dB S-Band, >60 dB L and C-Bands
	Nominal Impedance	50 ohm
	Spurious Rejection	>60 dB
	AFC Tracking	+/- 500 kHz
	AGC Control	ON, OFF, and manual control
	AGC Time Constant	5 selectable time constants from 0.1 to 1000 ms
Demodulator	Types	ARTM Tier 0 (PCM/FM) ARTM Tier I (SOQPSK-TG) Analog FM and BPSK
	Data Rates	ARTM Tier 0: 30 Kbps – 20 Mbps ARTM Tier I: 30 Kbps – 20 Mbps Analog FM, PM, and BPSK (Legacy option) up to 20 Mbps
	IF Filter Bandwidth	Presets provided for 25 IF filter settings: *Others are available.** • 50 kHz • 100 kHz • 150 kHz • 300 kHz • 375 kHz • 500 kHz • 750 kHz • 1 MHz • 1.3 MHz • 1.5 MHz • 2 MHz • 2.4 MHz • 3 MHz • 3.3 MHz • 4 MHz • 5 MHz • 6 MHz • 7.5 MHz • 10 MHz • 12 MHz • 15 MHz • 20 MHz • 22 MHz • 25 MHz • 30 MHz
Outputs	Demodulator Output	Standard module provides serial TTL Data / Clock and IRIG Ethernet TCP/IP Data/Time outputs
	IF output	Standard module provides buffered 70 MHz output
	Auxiliary (AUX) Outputs (optional)	AUX Option provides AM AGC, and Video outputs AM: AC coupled, 4V p-p @50% modulation AGC: 0 to +5 V (1V/20 dB) Video: Maximum 5V p-p programmable output level
Connectors	RF Input	SMA
	IF Output	SMA
	Data and Clock Output	SMA
	AUX Outputs	D-type: BNC Break-Out Cable
Environmental	Temperature	0 to + 50˚C, operating -20 to + 60˚C, non-operating
	Humidity	0–90%, non-condensing
Ordering Codes	X-5000-2RxDA-001	2-ch Receiver-Decom Unit w/IRIG Time Code Trans: Serial and TCP/IP Outputs; Auxiliary Antenna Control Video, AGC, AM Signal Outputs. Includes Receiver Control and Spectral Display software.
	X-5000-RxD-001	1-ch Receiver-Decom Unit w/IRIG Time Code Trans: Serial and TCP/IP Outputs. Includes Receiver Control and Spectral Display software.

Specifications are subject to change without notice.

Telemetry Simulation Software

Origin

Overview

Origin is Parraid's telemetry simulation software application. Origin is a standalone application which provides support for the Parraid PSIMe Two-stream PCM simulation boards for serial PCM and Time outputs.Users can also create multiple channel IRIG 106 CH10 data files or multiple channel UDP network output containing Chapter 10 data packets. Origin provides an intuitive, easy to use GUI including an interactive PCM frame map for selecting word locations for value generation.

Powerful built-in value generators allow custom value generation that extends beyond the boundaries of PCM Frames. Wave form value generators provide user-customizable frequencies and value bounds. The Lookup file value generator gives users full control over the values output for each word sample, giving the user the ability to introduce error values on intervals spanning any number of data frames.

Features

	Description	Specification
General	Output Types	File - IRIG 106 Chapter 10 format
		Ethernet packet - IRIG 106 Chapter 10 UDP Unicast
		Parraid PSIMe PCM Simulator Card
	Channel Types	IRIG Time: A, B, or G
		PCM Data
PCM Simulation	Bit Rate	3000 to 60,000,000 bits per second
	Data Alignment	16 or 32 bit
	Data Polarity	Normal, Inverted, or Auto
	PCM Code	NRZ-L, +RNRZ15
	Word Orientation	MSB, or LSB
	PCM Packet Type	Throughput
	Common Word Length	4 to 64 bits
	Minor Frames Per Major	1 to 4096
	Minor Frame Length	32 to 1,048,560 bits
	Frame Sync Length	4 to 64 bits
Value Generators	Included Value Generators	Word Number Alternating 1's and 0's Fixed Value Frame Counter Fixed Ramp Year Day Of Year Seconds in Day Microseconds in Day Custom Ramp Sine Wave Cosine Wave Square Wave Triangle Wave Lookup File

Specifications are subject to change without notice. Please contact Parraid for most current information. *Date: January 2020*

Product Support

One year of Product Support is included with all new software deliveries providing periodic updates and protection against software defects. Product Support includes telephone and email assistance on applications, operational and integration questions relating to installed software including product behavior relating to specific use case requirements.

Warranty

Three years of Warranty is included with every delivery of product hardware. Includes repair of any system component or module, separate or integrated, comprising the delivered product hardware having failed through normal operational use. Warranty Support is provided, with factory-based repair and minimal turn-around time.

Extended Warranty & Support

Tailored to customer-specific configurations – can be acquired throughout the delivered products' lifetime.

Customization

Offering extensive customization support to meet the needs of product operators. Fielded equipment can be upgraded to meet changing operational and technology requirements.

Training

Comprehensive training is offered for both new and experienced users. The depth and breadth of both Operations and Applications training criteria are tailored to the needs of the equipment operators and programmers.

Partnerships

Parraid maintains professional partnerships with the most recognized and current technology industry leaders.

Client Mission Commitment

Parraid is committed to ensuring the highest levels of customer satisfaction and has structured its organization around the programs and technologies it supports to provide optimal and seamless operations. We have maintained a reputation for excellence, supporting Department of Defense, Federal agency, and commercial mission-critical customer requirements. Some major DoD clients include:

- ★ U.S. Army
- ★ U.S. Navy
- ★ U.S. Air Force
- ★ U.S. Marine Corps
- ★ Special Operations Command

Parraid, LLC

44150 Smartronix Way, Suite 100

Hollywood, MD 20636

Phone: 301-690-0690

Fax: 301-690-0095

www.parraid.com

parraid

TELEMETRY • DATA • COMMUNICATIONS

A small **products-oriented business**, Parraid is wholly devoted to design, engineering, sales, and support of **telemetry data** systems and tactically oriented mission-critical **communications** solutions.

Rooted in 25+ years of experience, we are proudly headquartered in Hollywood, MD, with a great team, great products, and great clients.

Company Overview

Parraid, LLC is a highly regarded, U.S. based technology and engineering company specializing in product solutions for aerospace and ground tactical applications. Our product offerings include Telemetry Data Systems (TDS), deployable tactical systems, and net-centric Everything over IP (EoIP) products. From expedited acquisition to rapid fielding and execution, our mission-critical solutions enable our customers to transform, evolve, and modernize.

Parraid's mission is to provide world class aerospace system solutions for RF telemetry receiving, decommutation and parameter processing, compliant Chapter 10 recording, data archiving, and post mission data mining for domestic U.S. military test ranges, partner government defense contract groups, and industry clients on six continents with strict adherence and compliant interoperability to RCC IRIG 106 requirements. Our current TDS capabilities and products include: RF Receivers and Combiners, IMUX Data Recorder/Reproducer, OMEGA NExT Real Time PCM & TMoIP Data Processing Software, software integrated Best Data Engine (BDE), software user friendly (Clarity) parameter widget display, software (Focus) customer defined output message format to drive common mission parameter displays, (Origin) software for C10 simulation capability using our PSIMe module, and post process OMEGA Data Environment (ODE). We support telemetry test stands for deployable, remote, portable, and fixed command center environments. We are currently the only company to offer an "All-in-One" TM Ground Station solution. Our capabilities support virtually any telemetry processing needs of the most challenging flight test programs.

Headquartered in Maryland, Parraid is committed to ensuring the highest levels of customer satisfaction and has maintained a reputation for excellence, supporting the missions of our Department of Defense, Federal Government, Fortune 500, and commercial customers. Parraid products offer our customers unmatched performance and exceptional value backed by global engineering, sales, service, and support.

Design • Build • Support

Telemetry Data Systems

Receivers & Combiners

STAND-ALONE AND INTEGRATED

- 5dB Typical Noise Figure
- L, S, and C/C-IF Band Support
- IRIG time code translation and Data Decommutation

Series/X-5000

PORTABLE OR RACKMOUNT; REAL-TIME

- Multiple PCM streams; IRIG A/B/G Time Code Trans
- PCM-embedded Serial; Hot Mic Audio Out
- IRIG Ch10 Ethernet and Ch10 File Outputs
- Optional Receivers and 1dB Bit Syncs

IMUX G2/G2e

HIGH-SPEED MULTI-CHANNEL IRIG CH 10

- Portable/Rackmount; Industrial & Rugged
- PCM, Video, 1553/16PP194, 429, Ethernet, RS-Serial
- Removable Local/RAID Media, w/ NAS and SAN Storage

G3 Network Processor

HIGH CAPACITY/PERFORMANCE REAL-TIME TMOIP

- Multi-thread NExT-PRO Software; multiple TMoIP Sources; Multi-TB RAID Ch 10 Data Storage
- High-speed 2U Many-Core Platform; 10G & 1G Ethernet; GPS & IRIG A/B/G Time Code Translator

OMEGA NExT

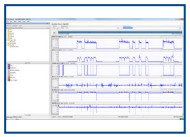
64-BIT MULTI-THREADED, NATIVE CH 10/11

- Multi Input real-time SW incl. Ch10 UDP broadcast
- Intuitive UI w/ drag-n-drop
- APIs for Command/Control, Parameter processing

OMEGA Data Environment (ODE)

MULTI-USER, POST TEST, TIME-SERIES DATA

- Data Mining with Parametric Value Search
- Controlled/Secure Access to all Published Data; Active Directory
- Data Format Agnostic: Flexible APIs for Input & Output Formats



Communications Products

Network Radio Gateway

EVERYTHING OVER IP (EOIP)

- Provides Voice over IP(VoIP)/Radio over IP(RoIP) conferencing
- Converges voice, data, and remote radio programing
- Standalone network appliance
- Rugged compact design

Radio Data Adapter (RDA)

LIGHTWEIGHT, MULTIFUNCTION, SMART

- Simplifies radio operations
- Combines Sync Async HPW RRP
- Speed, low cost, simple to use
- Battle tested

Rugged USB 2.0 and 3.0 Hubs

SEALED USB, SERIAL, POWER PORTS

- Available in two form factors RUH2.0 / RUH3.0
- Four Self-powered Ports
- Wide Range of uses cases; fly, launch, roll or float
- MIL-STD-810 / 461 Certified

Rugged USB Repeater

COMPACT, TOUGH, EXTENDS USB

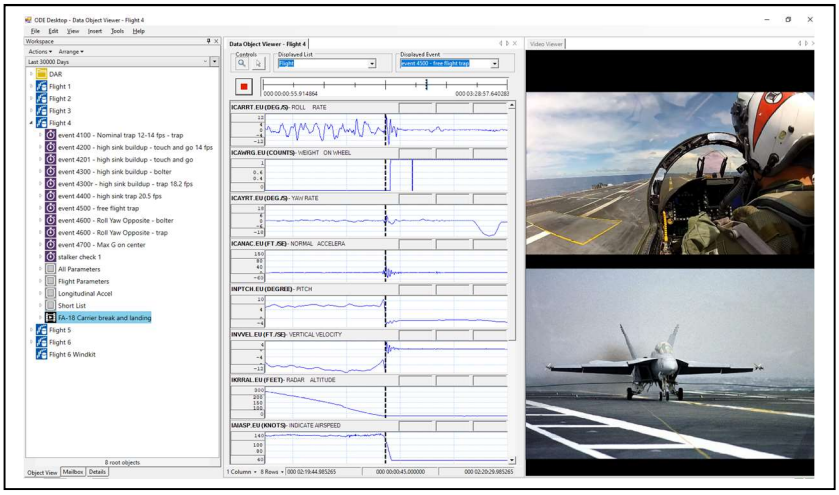
- Extends USB up to 5 meters each
- Can Daisy-chain up to 20 meters
- Compact and Lightweight Directly powered from USB Host
- MIL-STD-810 / 461 Certified

LEARN MORE AT www.parraid.com

OMEGA Data Environment (ODE)

Key Features

- Secure access to all recorded data sets
- Data format agnostic
- Telemetry data mining
- Automatic data merging and alignment from any data source
- Visualize entire archive duration of all parameters regardless of sample rate
- Video and Audio correlation



Overview

OMEGA Data Environment (ODE) is the only Post-Mission telemetry processing solution that provides a distributed, format-agnostic processing platform leveraging Parraid's Stat-Pack technology to deliver on-demand processing, analysis, and time-series data mining directly to the ODE Desktop Client over existing network infrastructure. Parraid's unique Stat-Pack technology utilizes automatically generated parametric metadata to index any time-series data format providing an unprecedented level of efficiency in processing time-series data. Parraid's Stat-Pack technology also provides the core components of ODE's data mining capability making rarely occurring events the fastest and easiest event to find. ODE Desktop Client provides a secure and simple interface, full of tools to assist the end user in identifying and defining time periods of interest for data product creation in the format of their choice. ODE Server provides secure linked access to all data sets in your existing direct attached or network attached storage devices. ODE easily integrates with your existing Windows based Server and Client hardware platforms and provides Active Directory integration for secure access to data using your existing Active Directory Infrastructure. ODE is also available in a standalone version which provides a complete post-processing solution in a portable package, or for applications where distributed processing is not required.

Format-Agnostic, Object-Oriented Architecture

ODE is built on a format-agnostic, object-oriented architecture where the data presented to the clients is normalized to the parameter level. All data presented to the end users is presented in the same manner regardless of the input file format. ODE uses a component-based processing interface to both the raw archived data and the processed output data. ODE Input components allow ODE to process from your legacy archive data formats, modern data formats, and any data formats that you may use in the future, while ODE output components allow ODE to create data products in any output format required for further analysis, plotting, or display. ODE includes several input and output components

Parraid, LLC • 44150 Smartronix Way, Suite 100 • Hollywood, MD 20636 • www.parraid.com
Tel 301.690.0690 • sales@parraid.com • Fax 301.690.0095 • international_sales@parraid.com

which work with the most common telemetry formats in use today and provides APIs for end users to custom develop input or output components as required. Due to this flexible architecture, ODE users only need to learn a single tool to process data in any format. Normalization to the parameter level allows ODE users to work directly with parameter values and not have to concern themselves with any complex stream or bus processing that may be contained within specific input file formats.

On-Demand Processing, Data Mining, and Display

ODE leverages Stat-Pack technology to efficiently process raw, engineering unit processed and derived parameters on-demand directly from the original raw archive file. Stat-Packs provide file indexing and parametric metadata such that individual parameters can be processed on-demand from any time period within the raw archive data file while maintaining the accuracy of the parameter data at any point in the file. This allows ODE users to instantly view parameter values spanning the entire duration of the archive on a time-series plot and analyze each parameter's performance over the entire duration of the test or drill down to the individual sample level for detailed analysis. Stat-Packs allow ODE users to perform time-series data mining on single or multiple data sets by defining specific conditions based on specific parameter values and object level metadata. ODE uses Stat-Packs to quickly identify all areas in each data set where the search condition is found, and processes only the required information from those areas identified to provide accurate search results.

Features

- **Operating System Compatibility**
  - Windows 7 (64-bit)
  - Windows 10 Enterprise (64-bit)
  - Windows Server 2012 SE (64-bit)
  - Windows Server 2012 R2 SE (64-bit)
  - Windows Server 2016 SE (64-bit)
- **Input File Format Support**
  - IRIG 106 Chapter 10 / 11
    - OMEGA NExT
    - OMEGA SERV
    - TMATS
  - Binary
    - OMEGA SERV Archive
    - SMS 20xx
    - SSR 100
    - Merlin SSR
    - BUFFile
    - DAR
  - ASCII
    - CSV
  - Input Component API
    - Support for user-defined formats
- **Data Product Format Support**
  - CSV
    - Time Driven
    - Data Driven
    - Sampled
  - MATLAB HDF5
    - Time Driven
  - Audio
    - WAV
  - Video
    - TS file format
  - Output Component API
    - User defined output formats
- **Viewers**
  - Data Object View (Stripchart)
    - View parameter values for entire recorded duration
    - Zoom to individual sample level.
  - Event Viewer (Stripchart)
  - Bulk Data Product Request
  - Current Jobs
  - RAW 1553 stream viewer
  - RAW A429 stream viewer

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- **Reports**
  - Printable Strip chart Report
  - Parameter Statistics Report
    - Max / Min
    - Average
    - Std Deviation
    - Slope
    - Last / First Value
    - Number of Samples
- **Time Offsets**
  - Offset parameters in time definable to the individual parameter level
- **Data Fusion**
  - Merge parameter data from any number of input files into single time aligned output file
- **Data Mining**
  - Parameter value-based conditions with or without Metadata Support
    - Search all recorded data
      - Filtered Subsets
    - Search single dataset
    - Save or Tag results
- **Video / Audio correlation**
  - Correlate Video channels with data
    - Embedded CH10 channels
    - External video files
  - Correlate Audio with data
    - Embedded CVSD audio parameter
- **Import / Export Events and Parameter Lists**
  - CSV Event file
  - XML Event file
  - IADS Event file
  - ASCII Parameter file

Omega Data Environment Options	Standalone (ODE-SINGLSERV-PERPETUAL)	Workgroup (ODE-WRKGRPSERV-PERPETUAL)	Department (ODE-DEPTSERV-PERPETUAL)
Included Clients	1	3	5
Included Client Types	Fixed	Fixed	Floating
Additional Client Support	-	**Fixed** (ODE-FIXED-PERPETUAL)	**Floating** (ODE-FLOATING-PERPETUAL) **Named** (ODE-NAMED-PERPETUAL)

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