

MULTI-CHANNEL DATA RECEPTION & GENERATION

The WizardLink Front-End (WLFE) provides multi-channel data reception and generation capabilities with data rates as high as 2Gbps per channel (2.5Gbps link rate). The WLFE provides up to four bi-directional WizardLink channels supporting both data reception and generation. The WLFE is part of the suite of latest generation EGSE products from Celestia Satellite Test & Simulation (C-STs)



The WLFE provides all electrical, data extraction, protocol handling and status annotation functions. The recovered data (or data to be generated) is offloaded from the WLFE using a 10Gbit TCP/IP streaming interface (SFP+, optical or copper) to a commercial server platform for data storage (or replay) to local disk.

KEY FEATURES

General

- Modular Implementation
- Gigabit LAN for Control and Monitoring via TCP/IP (using RJ45)
- 10Gbit LAN for Data Streaming via TCP/IP (using SFP+)
- External PPS input for time synchronisation
- Post-processing of received data with C-STs Level-0 Processing Software (LZP)

WizardLink Channels

- Up to 4 WizardLink Channels in Parallel (up to 8Gbps in and 8Gbps out)
- WizardLink Channels implemented using the TI TLK2711A or TLK2711-SP Chipset
- TLK Chipset clock programmable from 80 to 125MHz in 1Hz steps:
 - Stability ± 20 ppm (typ.)
 - Total Jitter 30ps PP (typ.)
- SMA-F Connectors for all WizardLink VML In/Outputs
- All VML In/Outputs provide fail-safe protection of transceivers in power-off state
- LVDS Flow Control (TIA/EIA-644-A Compliant) for all input and output channels
- Data or RAW (K- and D-Codes) recording modes supported
- On-The-Fly User Protocol Customisation using K-Codes
- Hardware timestamping of received data blocks
- Timed acquisition of data and release of data for transmission
- All interfaces are FMEA compliant.

EXAMPLE APPLICATIONS

- Instrument / Payload Data Acquisition and/or Simulation
- Mass Memory Unit Testing and/or Simulation

WizardLink Front-End

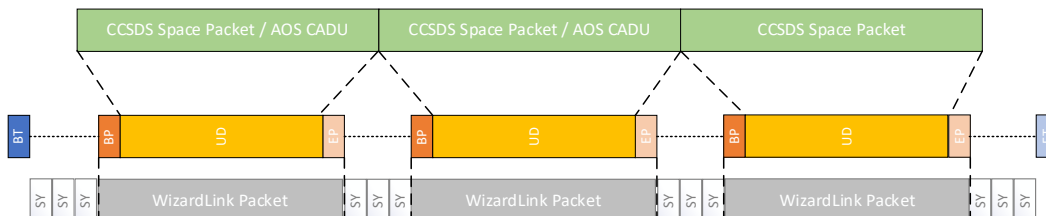
WIZARDLINK FRONT-END

The WLFE supports up to four (4) WizardLink channels in parallel. The channels can operate in either bi- or unidirectional mode. Each WizardLink channel supports optional LVDS flow-control signals (in/out) to provide pushback functions if required.



The WizardLink chipsets are clocked from a local low-jitter oscillator that is programmable between 80 and 125MHz in 1Hz steps. All VML and LVDS in- and outputs toward the S/C provide satellite level fault voltage emissions and tolerances. The unit is provided with an FMEA report. Using the available time synchronisation inputs (PPS and IRIG), the WLFE maintains an accurate hardware time (CUC) that is used to timestamp all recorded data, or to release data for transmission. The WLFE can be programmed with custom protocols to support the needs of the program/project, such as CADU/SP extraction using low-weight K-code driven protocols.

EXAMPLE CONTROL FLOW CHARACTER PROTOCOL



DATA STORAGE INTERFACE

The back-end interface is implemented using a low-latency 10G TCP/IP and MAC implementation directly within the hardware, capable of providing >9Gbps sustained data streaming bi-directional. This provides back-end independence, allowing commercial servers with standard 10G ethernet cards to be used. The WLFE is delivered with back-end software (Windows Server) for data storage and replay as well as Archive Browser software for visualising and exporting recorded data.

ENVIRONMENTAL AND PHYSICAL SPECIFICATIONS

Dimensions (H x W x D)	88.9mm x 435mm x 400mm
Weight	5.3kg
Input Power Range	100-240VAC 50-60Hz
Max Power Consumption	113W
Operating Temperature Range	+10°C to +40°C
Operating Humidity	30% to 85% (non-condensing)
Storage Temperature	-20°C to +60°C
Storage Humidity	Up to 85% (non-condensing)