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Multi-Mission Optical Modem

OPTICAL MODEM FOR OPTICAL GROUND STATIONS

The Celestia Multi-Mission Optical Modem is a key component for optical satellite communications. It can be integrated into optical ground stations or used in laboratory test environments. The modem is compatible with multiple standards and is engineered to support data rates up to 10 Gbps.



The Optical Modem is multi-standard compatible, highly flexible and scalable. Switching between standards and/ or settings within a minute is supported for Optical Ground Stations intended to communicate with multiple satellites. When more standards are needed, the Optical Modem supports in-field updating.

The Optical Front End accommodates optical receivers supporting speeds up to 2.5 Gbps, with optional 10 Gbps support, alongside up to four tunable transmitters.

When integrated in an Optical Ground Station, the system can be operated as a “black-box” via the LAN based Control/Status/Data interface. A Local Graphical User Interface is also provided for stand-alone use and supporting integration tests and investigations.

Test functions are available including PRBS/BER Checkers, user data pattern transmission and raw data acquisition. Raw data acquisition is a powerful function for non-standard tests, investigations and offline data processing using Celestia or customer provided software tools.

KEY FEATURES

General

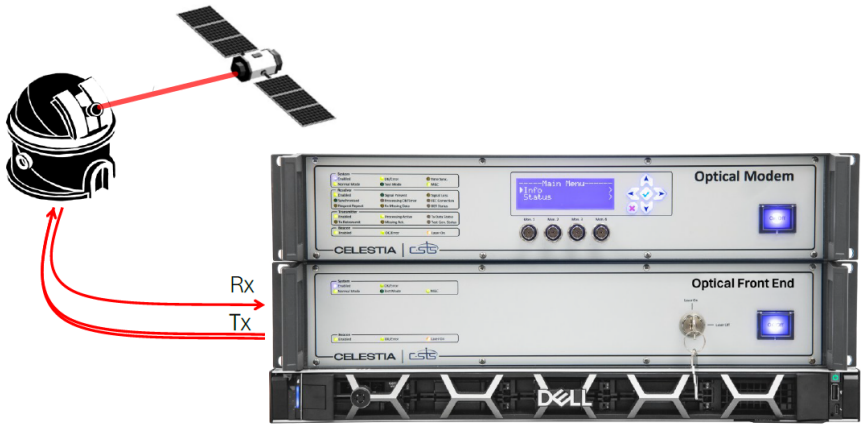
- Standard compatibility: SDA , CCSDS O3K RS Branch, ESTOL 10G, SDA 2.1.2 10G, Custom
- Multiple tunable optical Transmitters
- SMF or MMF Optical Receivers up to 2.5 Gbps and 10Gbps
- 10Gbit LAN for data ingress/egress
- Control and Monitoring software included

Data Processing

- Hardware processing of digital bitstream from optical receiver and uplink generation
- Bitstream coding/decoding, FEC, data extraction/encapsulation, with ARQ support
- Designed for data rates of up to 10Gbits
- Ingest raw data to disc: browse and process
- Internal BER test data generation: PRBS or custom from file

MULTI- MISSION OPTICAL MODEM

The Optical Modem is connected via fibre to the Optical Ground Station's optical bench using the Optical Front End, where it receives, transmits and performs the required processing layers, error correction / ARQ etc.. It offers a 10 Gbps LAN interface for user data ingress and egress, and is built to integrate into the client's OGS system with full remote control.



A pre-installed local GUI allows on-site operation and can also be accessed through Windows Remote Desktop. Custom configurations have been delivered to clients with specific data-handling and optical-characteristic requirements. The device can also be configured as a purely data-receiver/processor without optical components. Back-end software accompanies the modem for control, monitoring, and data storage/archiving.

Optical Front End (OFE) for Optical Modems

- Electrical to optical converter: Multiple tunable optical transmitters
- Optical to Electrical converter: Powerful receiver for very low optical input powers
- Control and Monitoring via Ethernet
- Adjustable squelch
- RSSI output
- Data reception C-Band and L-Band
- Data reception and transmission up to 10 Gbps

Celestia Data Management

- Celestia Control and Management
- Ingest Platform
- Logging
- Data Access

Interface to Telescope (with Optical Front End)	Single Mode Fibre, Multi Mode Fibre	**Dimensions Optical Front End H x W x D**	88 x 448 x 510 mm
Baud Rate	Up to 10 Gbps	**Weight**	<15kg
Monitoring Interfaces	4 x BNC ports	**Input Power Range**	100 - 240VAC 50 - 60Hz
Control Interfaces	Gigabit Ethernet	**Operating Temperature**	+10°C to +40°C
Compatibility	SDA, CCSDS O3K, Custom	**Operating Humidity**	30% - 85% (non-condensing)
10G TCP/IP Data Offload	SFP+ Optical or Copper	**Storage Temperature**	-10°C to +60°C
Dimensions Optical Modem H x W x D	88 x 448 x 510 mm	**Storage Humidity**	Up to 85% (non-condensing)

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Specification subject to change without notice.

Scan the QR code to access the C-STS website for all data sheets and more information

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