# CUBOsystem
## Active Transport

**HUBER+SUHNER**

# CUBOsystem

The HUBER+SUHNER CUBO system is an active processing platform based on modular line cards that can be inserted and integrated into different indoor or outdoor form factors.

In addition to the active line cards, passive modules such as optical multiplexers are also available for the CUBO system platform.

This flexible and unique platform can be used in countless different applications. It plays its strong points in demanding optical access applications such as small cell, macro cell, enterprise access and last mile backhaul.



Protection Switch

Optical Mux

Transponding

Dispersion Comp.

Amplification

Enclosures

Universal Transponder

Element Management

# CUBOrack
## Chassis enclosures

### 3RU Chassis

- 19" 3RU chassis
- 9 slots for line cards (any combination)
- 2 slots for PSU – fully redundant (AC or DC)
- Modular management module
- All modules hot swappable
- Industrial temperature range (-40°C to +55°C)



### 1RU Chassis

- 19" 1RU chassis
- 2 slots for line cards (any combination)
- 2 ext. PSU – fully redundant (AC or DC)
- Modular management module
- All modules hot swappable
- Industrial temperature range (-40°C to +55°C)



# CUBOoutdoor
## Outdoor enclosures

### Standard Outdoor

- 100% passively cooled with IP65
- Up to 2 line cards
- Dual PSU (AC or DC)
- Integrated management module
- Compact size (H/W/D) 340/270/135 mm - 13.39/10.63/6.02 inch
- Operating temperature range (-40°C to +65°C)



### Slim Outdoor

- 100% passively cooled with IP65
- 1 line card
- Single PSU (AC or DC)
- Integrated management module
- Super compact size (H/W/D) 295/158/124 mm - 11.61/6.22/4.88 inch
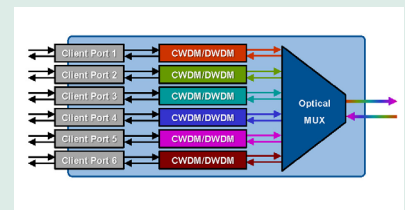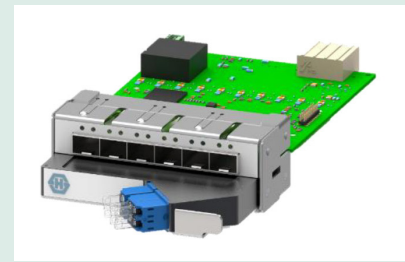- Operating temperature range (-40°C to +65°C)

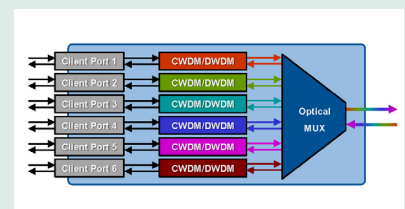# CUBOsystem
## Active Modules

### 10G Transponding Multiplexer

- 6 independent services
- Client transceiver type: SFP+
- Rates and protocols per lane
  - Ethernet (1G to 10G)
  - CPRI (Options 1-8)
  - eCPRI (10G)
  - OBSAI
  - Fiber Channel Protocol (FCP) 4G/8G
- Integrated multiplexer
  - CWDM or DWDM version
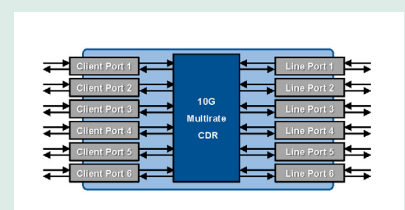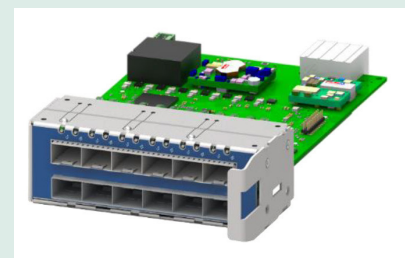  - Dual or single fibre version





### 25G Transponding Multiplexer

- 6 independent services
- Client transceiver type: SFP28 / SFP+
- Rates and protocols per lane
  - Ethernet (10G / 25G)
  - CPRI (Options 7-10)
  - eCPRI (10G / 25G)
  - O-RAN
  - nFAPI
  - Fiber Channel Protocol (FCP) 10G/16G/32G
- Integrated multiplexer
  - CWDM or DWDM version
  - Dual or single fibre version CWDM





### Universal 10G Transponder

- 6 independent services
- Client transceiver type: SFP+
- Rates and protocols per lane
  - Ethernet (1G to 10G)
  - CPRI (Options 1-8)
  - eCPRI (10G)
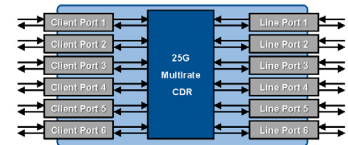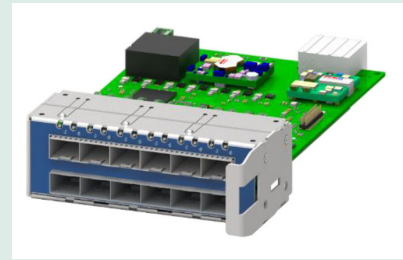  - OBSAI
  - Fiber Channel Protocol (FCP) 4G/8G
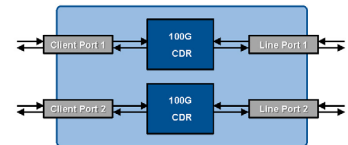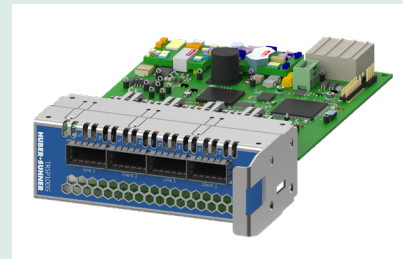
# CUBOsystem
## Active Modules

### Universal 25G Transponder

- 6 independent services
- Client/Line transceiver type: SFP28 / SFP+
- Rates and protocols per lane
    - Ethernet (10G to 25G)
    - CPRI (Options 7-10)
    - eCPRI (10G / 25G)
    - O-RAN
    - nFABI
    - Fiber Channel Protocol (FCP) 10G/16G/32G
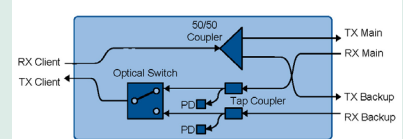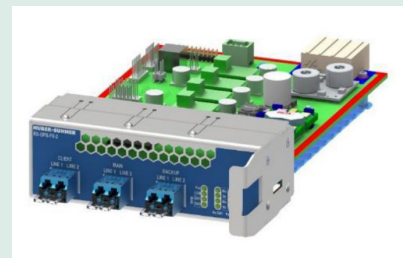




### Universal 100G Transponder

- 2 independent 100G services
- Client/Line transceiver type: QSFP28 / QSFP
- Each port can support up to 8W power consumption (3W more than specified by MSA)
- Port Loopback for each service
- Port deactivation for each QSFP28 port
- Support OTU4 (4x 28G)
- Supports 40G MSA compliant QSFP transceiver
- Combine with CUBO mini 100G ODD





### Optical Protection Switch (OPS)

The main feature of the OPS linecard is the protection of a point-to-point link. It automatically switches from the main optical line to the backup optical line when the main input signal is disrupted.

- Automatic, semi-automatic, manual switching modes
- Single or dual fibre versions available
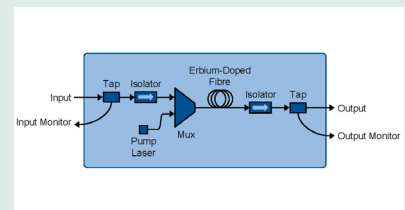- User-defined threshold for automatic and semi-automatic modes

# CUBOsystem
## Active Modules

### Erbium Doped Fibre Amplifier (EDFA)

The EDFA line card amplifies the incoming optical signals in the range from 1528 to 1563 nm and therefore is ideal for DWDM applications.
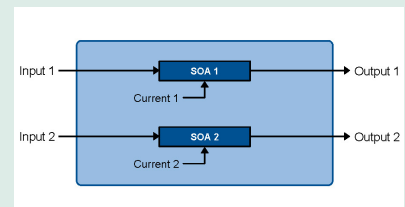
- Amplifier modes
    - Automatic Current Control (ACC)
    - Automatic Gain Control (AGC)
    - Automatic Power Control (APC)
- Available Gain Block Types
    - Booster (17dBm, 23dBm)
    - Pre-Amp (17dBm, 15dBm)





### Semiconductor Optical Amplifier (SOA)

The SOA line card amplifies the incoming optical signals in the range from 1290 to 1330nm and therefore is ideal for 100G and 40G LR4 (1310nm) applications.
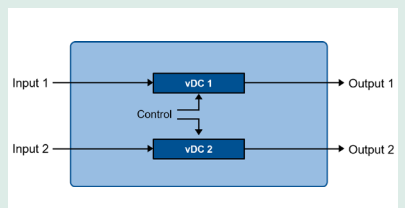
- Adjustable SOA current
- Manual activation/deactivation of SOA
- Adjustable expected operating temperature
- Dual or single version available
- Operating wavelength 1290nm to 1330nm





### Variable Dispersion Compensation (vDCU)

The tunable Dispersion Compensation Module enables the operator to tune the chromatic dispersion of a fiber link to exactly the required value by adding negative dispersion to the line as needed.

- Adjusting the chromatic dispersion of fiber links
- Combine with passive DCU to further extend the transmission range
- Single or dual fiber DCU option
    - Dual version 2x vDCU or 1x vDCU + fixed passive DCU
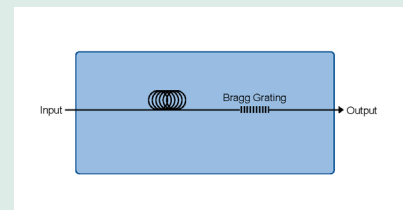- Operating temperature range (-5° to +70°C)
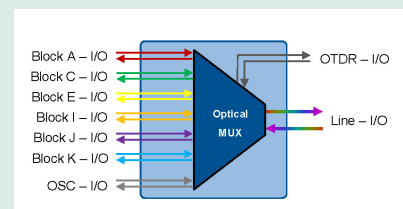
# CUBOsystem
## Passive Modules

## Dispersion Compensation

- Slope-matched (SMF-28 / G.652 standard) Dispersion Compensation
- Compliant with
    - ITU-T G.694.1
    - Telcordia GR1221
- Available for 100GHz Band
    - C-Band (1527.22 to 1567.13)
    - C-Band + 50GHz (1527.60 to 1567.54)
- Compensation for different lengths
    - 10, 20, 40, 60, 80, 100km
- Operating temperature range (-5°C to +70°C)





## Terminal Multiplexer

- Terminal optical multiplexer
- Channel grid designed for 10G/25G Transponding Multiplexer DWDM modules
- Dedicated OSC channel
- OTDR channel
- Dual or single fibre versions
- Operating temperature range (-40°C to +75°C)

# CUBOsystem
## Management
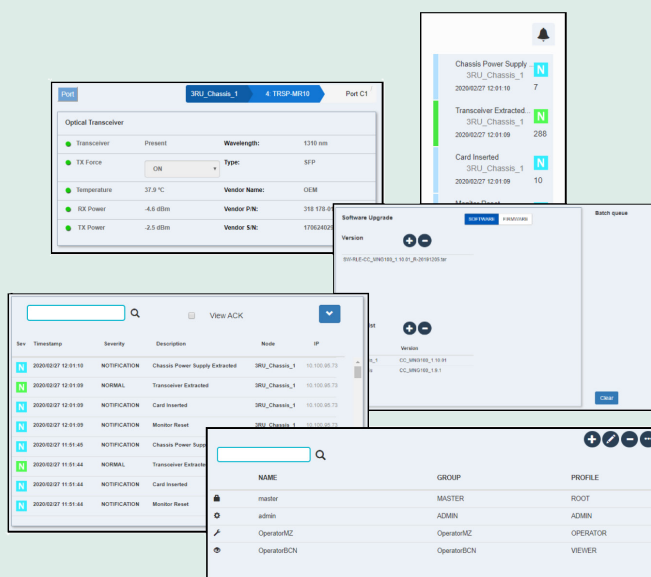
## Management Module

- Intuitive WebGUI
  - Monitoring and control
  - Event Log
- Update Management
- User Management
- For CUBO rack enclosures
- Remote control and monitoring via SNMP
- 1x SFP Port
- 2x RJ45 Ports
- Hot Swappable



## EMS

The CUBO EMS is a central management system to monitor and control the CUBO Active Transport platform. The intuitive graphical user interface makes managing large and complex systems simple.

- Manage and control more than 1000 elements down to the last parameter
- Clear Event shortlist showing the last 5 events issued by the system
- Detailed event list with intelligent filter options and shortcut to the elements and devices that issued the event
- Centrally manage SW and FW updates of the connected elements and devices in batch process
- User management to restrict read and write permissions
- Backup of the complete EMS configuration for the master user



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