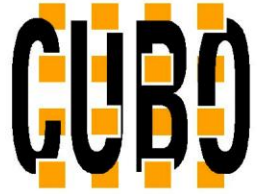


# TRANSPORT CUBE

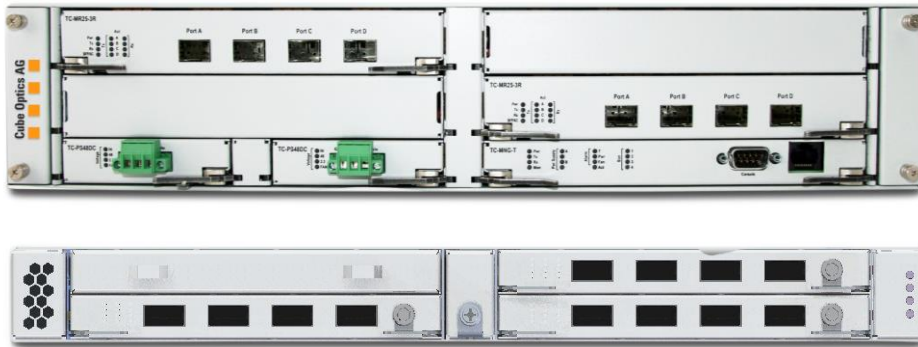
## > Multi-rate Transponder Platform

D-5052-Rev.B



### Overview

- The TRANSPORT CUBE series is a comprehensive carrier grade, cost effective and very modular platform that combines multi-protocol transport for metro applications. The TRANSPORT CUBE enables network operators to implement a wide range of signal boosting and media conversions all in a compact and flexible design.



Repeating &amp; Conversion made simple.



### Applications

- Media (wavelength) conversion.
- Reach extension (repeater).
- Transmission protection (Line protection; equipment protection).
- Ethernet Demarcation.
- Performance monitoring. (Quality of Service)

### Features

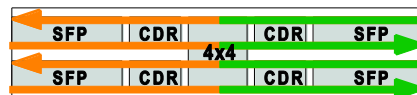
- Multi-protocol transponders from 10Mbps to 10.7Gbps for Ethernet, SDH, Fibre Channel, OTN, digital video, others.
- Configurable operation mode.
- Performance monitoring. Statistics on quality of service according to G.826 (ES, SES, BBE, UAS).
- 3R regeneration with FEC (Reed-Solomon Algorithms) for SDH, Ethernet and Fibre Channel.
- Detection and processing of alarms (LOS, LOF, AIS, RDI, TIM).
- Multiple chassis versions: 2RU and 1RU chassis with 4 slots and 6RU chassis with 12 slots.
- Compact chassis design. Compliant with IEC 60297-2 and ETS 300119-2 (300mm depth).
- Redundant and modular power supplies. AC and DC. In-service replaceable.
- Modular filter and fan unit. In-service replaceable.
- System Management via Web terminal, EMS, NMS. SNMP v2, MIB II.

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## Transponder Configurations

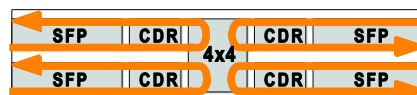
### ■ Media (wavelength) Conversion

Dual channel transponders



### ■ Loop-back

For each transceiver port



### ■ Channel protection switching

- Switch active service to redundant line port
- Triggered by optical signal degradation and/or packet errors.



### ■ Repeater

Dual channel transponders



## Functional Specifications

Interfaces	Pluggable transceiver (line/client)	4x SFP (2.7Gbps linecards) 4x XFP (10Gbps linecards) 3x SFP/XFP (protocol monitoring linecards)
Operative wavelength	Depending on transceivers	850nm MM, 1310/1550nm, CWDM, DWDM
Transmission protocol	Multi-rate (10Mbps - 10Gbps)	SDH/SONET: STM-1/4/16, STM-64, Ethernet: FastEthernet, GigabitEthernet, 10GEthernet Fibre Channel (1/2/8 GFC), OTN: OTU-1/-2, OTU-2 LAN
Functional Modes	Loopback Protection Media conversion Regeneration Port configuration	each port (2.7 Gbps), two ports (10 Gbps) 1+1 port redundancy (2+2 for 4-port transponders) up to 2 channels up to 2 channels any to any (may not apply to all linecards)
Optical specifications	Depending on transceiver	All MSA compliant transceivers
Management	Modular management unit (linecard)	WEB craft terminal, TL1, SNMP v2, MIB II EMS NMS
Indicators/alarms (LED)	LEDs on frontplate (green/yellow/red) Alarm Logging	power status, fan status, switch status, link status, transmission portocol degradation (protocol monitoring cards)

## Module overview

TC04-CH1U	Chassis, 19" High Density (HD)	1RU, 4 slots
TC04-CH2U	Chassis, 19", ETSI	2RU, 4 slots
TC12-CH6U	Chassis, 19", ETSI	6RU, 12 slots
TC-MR25-3R TC-MR25-3R HD	Transponder linecard, multirate 2.7Gbps, dual channel	SDH (STM-1/-4/-16), GigabitEthernet, FastEthernet, OTU-1, SDI, Fibre Channel (1/2GFC) 3R regeneration Protection switching: triggered by optical signal degradation Ports: 4x SFP
TC-MR25-3RM TC-MR25-3RM HD	Transponder linecard, multirate 2.7Gbps, performance monitoring, single channel	SDH (STM-1/-4/-16), GigabitEthernet, FastEthernet, OTU1, SDI, Fibre Channel (1/2GFC) Monitoring parameters: SDH (B1, J0), Ethernet (CRC), alarms (AIS, LOS, RDI) Protection switching: triggered by optical signal degradation, packet errors 3R regeneration with FEC Ports: 3x SFP
TC-MR100-3R TC-MR100-3R HD	Transponder linecard, multirate 11.3 Gbps, single channel	STM-64, 10GbEthernet, OTU2, 10GFC Protection switching: triggered by optical signal degradation 3R regeneration Ports: 3x XFP
TC-MR100-3RD TC-MR100-3RD HD	Transponder linecard, multirate 11.3 Gbps, dual channel	STM-64, 10GbEthernet, OTU-2/OTU-2 LAN, 10GFC 3R regeneration with FEC Accepts tunable XFP Ports: 4x XFP
TC-MR100-3RM	Transponder linecard, multirate 11.3 Gbps, performance monitoring, single channel	STM-64, 10GbEthernet, OTU-2, 10GFC Monitoring parameters SDH (B1, J0, etc) and alarms (OOF, RDI, AIS, LOS, etc), Ethernet (CRC) Protection switching: triggered by optical signal degradation, packet errors 3R regeneration with FEC Ports: 3x XFP
TC-MNG-T TC-MNG-T HD	Management linecard	Configuration, control and monitoring of TC platform SNMP agent for each unit inserted in the rack Ports: 1x RJ45 (Ethernet 10/100BASE-T), 1x RS232
TC-NMG-O	Management linecard	Configuration, control and monitoring of TC platform SNMP agent for each unit inserted in the rack Ports: 2x SFP, 1x RJ45 (Ethernet 10/100BASE-T/-X)
TC-PS48DC	Power supply DC	-48 VDC, modular, in-service replaceable
TC-PS240AC500-R	Power supply unit AC (external, 1RU)	240 VAC, redundant PS modules, in-service replaceable
TC-PSAC300	Power supply module AC	240 VAC, 300 W module for TC04-CH1U, in-service replaceable
TC-PSAC600	Power supply module AC	240 VAC, 600 W module for TC12-CH6U, in-service replaceable
TC04-FAN	Fan unit, modular	for TC04-CH2U, in-service replaceable
TC12-FAN	Fan unit, modular	for TC12-CH6U, in-service replaceable
TC04-FIL	Air flow filter unit, modular	for TC04-CH2U, in-service replaceable
TC12-FIL	Air flow filter unit, modular	for TC12-CH6U, in-service replaceable



2.7 Gbps Multi-rate Transponder TC-MR-25-3R



11.3 Gbps Multi-rate Transponder TC-MR-100-3RD



Management Card TC-MNG-T

## General Specifications

Dimensions	Chassis 1RU	width: 19" / 440 mm depth: 446 mm height: 1RU / 46 mm
	Chassis 2RU	width: 19" / 440 mm depth: 230 mm height: 2RU / 88 mm
	Chassis 6RU	width: 19" / 440 mm depth: 260 mm height: 6RU / 265 mm
Capacity	Chassis 1RU	4 slots for transponder cards 1 slot for management card 2 slots for power supply (AC), redundant
	Chassis 2RU	4 slots for transponder cards 1 slot for management card 2 slots for power supply (DC), redundant
	Chassis 6RU	12 slots for transponder cards 1 slot for management card 2 slots for power supply (DC&AC), redundant
Electrical specifications	Power supply	-48 VDC 110 / 240 VAC
	Power consumption	80 to 100 W (chassis 2RU/1RU) 180 to 450 W (chassis 6RU)
Environmental conditions	Operation	0° to 50°C (non-condensing)
	Storage	-20° to 75°C (non-condensing)