

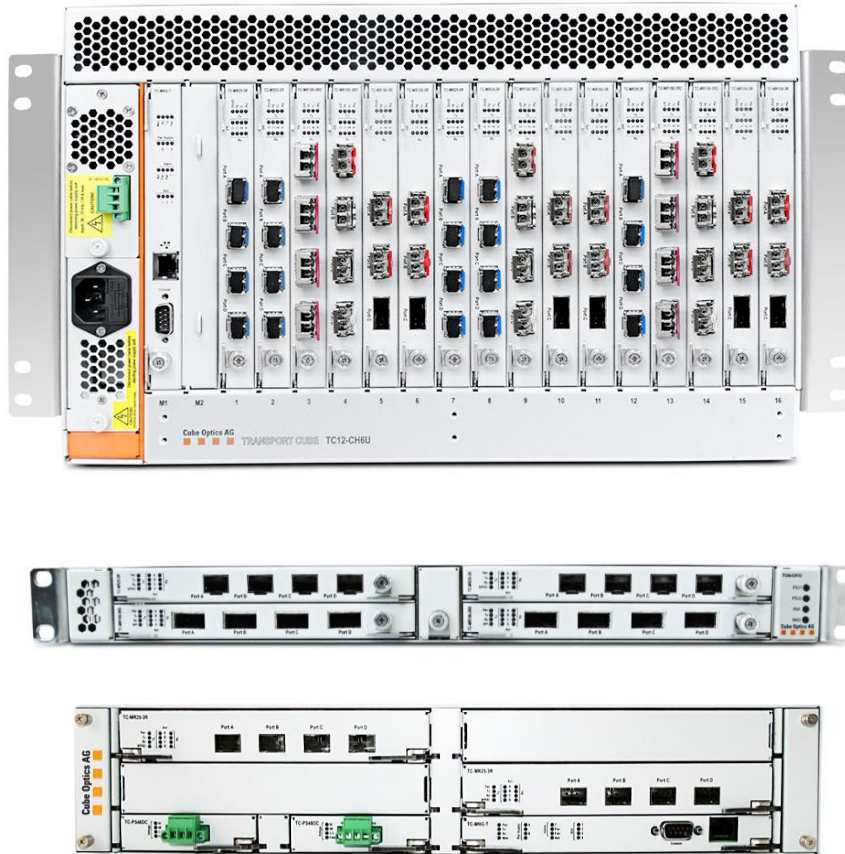
TRANSPORT CUBE

> Multi-rate Transponder Platform

D-5052-Rev.C

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.



Applications

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

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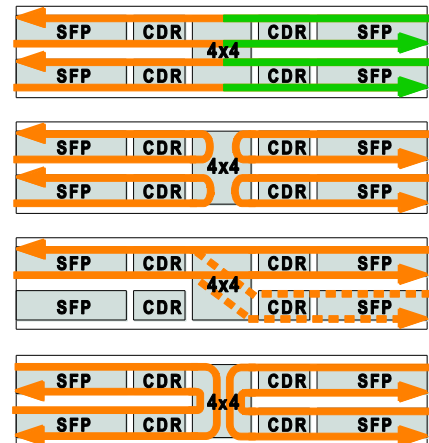
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Features

- 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 secure Web terminal, EMS, NMS. SNMP v2, MIB II.

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)

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Module overview

TC04-CH1U	Chassis, 19" High Density (HD)	1RU, 4 slots
TC04-CH2U	Chassis, 19", ETSI	2RU, 4 slots
TC12-CH6U	Chassis, 19", High Density (HD)	6RU, 12 slots. Discontinued (not available for new orders)
TC16-CH6U	Chassis, 19", High Density (HD)	6RU, 16 slots
TC-MR25-3R TC-MR25-3R HD	Transponder linecard, multirate 2.7Gbps, dual channel	SDH (STM-1/-4/-16), Gigabit Ethernet, Fast Ethernet, OTU-1, SDI, Fiber Channel (1/2GFC) 3R regeneration Protection switching: triggered by optical signal degradation Ports: 4x SFP
TC-MR25-3RM¹ TC-MR25-3RM HD¹	Transponder linecard, multirate 2.7Gbps, performance monitoring, single channel	SDH (STM-1/-4/-16), Gigabit Ethernet, Fast Ethernet, OTU1, SDI, Fiber 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, 10Gb Ethernet, OTU2, 10G FC 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, 10Gb Ethernet, OTU-2/OTU-2 LAN, 10G FC 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, 10Gb Ethernet, OTU-2, 10G FC 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-OPS HD	Optical Protection Switch linecard	1+1 full optical line protection Latching switch mode (switch retains its current state at el. power loss); Switching time < 10 ms; Insertion loss < 2.4 dB (dual switch option) Connector Type : LC/PC
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 HD¹	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 & TC16-CH6U, in-service replaceable
TC-PSDC600	Power supply module DC	48 VDC, 600 W module for TC12-CH6U, TC16-CH6U and TC04-CH1U, in-service replaceable
TC04-FAN	Fan unit, modular	for TC04-CH2U, in-service replaceable

¹ On special request. Availability to be confirmed.

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TC12-FAN	Fan unit, modular	for TC12-CH6U & TC16-CH6U, in-service replaceable
TC04-FIL	Air flow filter unit, modular	for TC04-CH2U, 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	16 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)
Enviromental conditions	Operation	-5° to 50°C (non-condensing)
	Storage	-20° to 70°C (non-condensing)

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is certified according to ISO 9001.

WAIVER

It is exclusively in written agreements that we provide our customers with warrants and representations as to the technical specifications and/or the fitness for any particular purpose. The facts and figures contained herein are carefully compiled to the best of our knowledge, but they are intended for general informational purposes only.

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