

Data Sheet

1FINITY T700 Transport Blade

Carrier-grade transponder/muxponder designed for programmable 400G transport

1FINITY™ T700 Blade at a Glance

- Modular 1RU blade design
- Maximum 1.6 Tbps capacity per blade
- Up to 16 × 100 GbE (QSFP28) or 4 × 400 GbE (QSFP56-DD) client ports
- 4 × 200/300/400G network ports
- 400 GbE 2 × 200G split lambda transmission
- Fully tunable C- band or L-band options
- High-speed State-of-Polarization tracking
- Virtuora, CLI script, SNMP, and NETCONF management
- Automation-readiness tools



Flexible Transport

By providing industry-leading flexibility, the 1FINITY T700 continues the 1FINITY transport evolution. The blade enables service providers to support the demands of the hyper-connected economy by offering broader deployment options with support for 200, 300, and 400 Gbps line rates over a single wavelength.

The T700's advanced features also offer service providers the flexibility to deploy high speeds in a wider range of environments. For example, high-speed State-of-Polarization (SOP) tracking enables the T700 to transmit 400G rates over fibers deployed close to bridges or railroad tracks where vibrations from truck or train traffic would otherwise trigger burst errors and prevent high speed transmission. Similarly, the option for 2 × 200G split lambda transmission allows operators to deploy 400G service over existing fixed-grid networks.

Product Overview

The 1FINITY T700 Transport blade provides transponder, muxponder and inverse muxponder functionality. This highly flexible blade allows carriers to cost-effectively operate their networks and expand capacity as bandwidth demand grows. The T700 is built for 100 GbE/OTU4 and 400 GbE service delivery over a 1.6 Tbps optical line (4 × 400 Gbps). Designed to meet the strict NEBS Level 3 standard, the T700 can be deployed in challenging operating conditions.

Initially offered with fully tunable, discrete optics in C-band or L-band, the T700 employs sophisticated modulation techniques and variable forward error correction (FEC) to achieve the best mix of reach, capacity and power consumption. Overall, the T700's features, combined with world-class Fujitsu support, reduce total cost of ownership for many network applications.

Increase Capacity, Reduce Power Consumption

The T700's 1RU form factor reduces power consumption and increases rack-space density. Each blade supports two transponder or muxponder plug-in units (PIUs); three redundant, replaceable fan modules; and fixed, redundant DC power supply units. Combined, the PIUs support a maximum capacity of 1.6 Tbps with 16 QSFP28 or four QSFP56-DD clients, resulting in reduced power consumption per bit. These map to four fully tunable Discrete Coherent Optics (DCO) network ports in C- or L-band.

1FINITY: A Revolutionary, Disaggregated Platform

For network operators seeking an open, simple, scalable architecture to meet escalating bandwidth demand, Fujitsu provides 1FINITY, a revolutionary disaggregated platform that delivers unprecedented flexibility, scalability, and efficiency.

Unlike the traditional converged systems other vendors provide, the programmable, blade-centric design of 1FINITY offers a pay-as-you grow approach with low initial investment. Additional benefits include high rack space utilization, evergreen technology design, and open software control.

Ideal for Flexible, Economical Transport Applications

The highly flexible PIUs in the T700 are available as either a 4 × 100G muxponder or as a 1 × 400G transponder. Network operators can mix these PIUs in a single blade to optimize their configuration needs. Each client PIU supports 8 × 100 GbE/OTU4 or 2 × 400 GbE client signals, the latter able to deliver 1 × 400G as 2 × 200G line mode; with support for either C-band or L-band transmission.

Software-selectable DWDM modes enable deployment in networks that employ ITU G.694.1 DWDM flexible grid options. This enables variable capacity up to 25.6 Tbps per fiber.

Simplified Control and Management

The 1FINITY portfolio employs common system software across all its platforms. This software enables machine-to-machine automation capabilities such as LLDP snooping, and security capabilities such as Secure File Transfer Protocol (SFTP).

All 1FINITY blades use a Linux-based operating system, along with SNMP and the NETCONF protocol to provide an easy and accessible way to integrate third party network control and service orchestration platforms. When using the Command-Line Interface (CLI) in a standalone deployment, provisioning consists of simply turning on the interfaces and selecting the wavelength.

With open APIs and YANG models, the T700 easily fits into SDN architecture, such as the Fujitsu Virtuora Cloud solution, which includes network planning and design, dynamic provisioning, path computation, and network management.

Flexible Configuration Options

To further simplify management, control and automation of large sites requiring many transponders or muxponders, the T700 can be connected to the 1FINITY C220 Communications Integrator. The C220

blade can integrate up to 36 T700 blades into a single logical node that presents one IP address to the SDN controller over a single DCN interconnect port. This configuration can be used to automate turn-up provisioning and streamline site configuration pre-planning.

In addition, the T700 can be installed as standalone blade or within the 1FINITY Housing. The Housing is a power bridging frame designed to provide redundant power and reduce capital and operating expenses by finding economies of scale when installing two or more 1FINITY blades at a site. An integrated power distribution unit (PDU) reduces installation costs by distributing -48 VDC to the six available blade positions, avoiding individual power wiring to each blade.

Key Applications

The T700 is ideal for 200G fixed-grid and 300G or 400G flex-grid metro and regional networks. Network operators can deploy the T700 with other 1FINITY blades to provide enhanced solutions. In a ROADM network, the line side of the T700 is compatible with virtually any ROADM platform.

To use the T700 in an Open Line System (OLS), you can streamline alien wavelength planning and design with the Fujitsu Virtuora® OLS Designer. This tool gathers in-service field measurements and uses machine learning, artificial intelligence, and cloud-native microservices to model and analyze existing line systems, accurately predict the performance of the T700, and optimize total network capacity.

Currently the PIU available with the T700 provides high-performance discrete optics. The next PIU will provide ZR/ZR+ pluggable optics on the line side, allowing interoperation with ZR router-equivalent optics.



Client Ports (per PIU):
2 × QSFP56-DD
(400 GbE)

Line Ports (per PIU):
2 × discrete DCO
(200G/300G/400G)

Client Ports (per PIU):
8 × QSFP28
(100 GbE/OTU4)

Line Ports (per PIU):
2 × discrete DCO
(200G/300G/400G)

Management Ports

Technical Specifications

Base System			
System Configuration	1RU Blade		
PIU per Blade	2		
Management Port (LCN)	10BASE-T/100BASE-T/1000BASE-T/1000BASESX/1000BASE-LX10		
Console Port	Ethernet RJ-45		
USB	Version 2.0		
Front LEDs	System, ALM, LCN, Client, Network, Fail/Service		
Fans	3 replaceable		
Power	Dual-feed DC power supplies		
Software OS	Linux		
Line Side			
Line Ports per Blade	4		
Line Rate	200, 300, 400 Gbps		
Optical Module	Discrete, fully-tunable coherent optics		
Nyquist Filtering	Yes		
Optical Modulation and Spectral Width	200G/carrier • 50 GHz: DP-16QAM • 75 GHz: 6b4D-2A8PSK • 87.5 GHz: DP-QPSK	300G/carrier • 75 GHz: 6b4D-2A8PSK + 16QAM	400G/carrier • 87.5 GHz: DP-16QAM • 75 GHz: DP-32QAM
Chromatic Dispersion	200G/Carrier • 50 GHz: DP-16QAM): +/- 90000 ps/nm • 75 GHz: (6b4D-2A8PSK): +/- 90000 ps/nm • 87.5 GHz: (DP-QPSK): +/- 90000 ps/nm	300G/Carrier • 75 GHz: (6b4D-2A8PSK + 16QAM): +/- 68800 ps/nm	400G/Carrier • 87.5 GHz: (DP-16QAM): +/- 25400 ps/nm • 75 GHz: (DP-32QAM): +/- 67000 ps/nm
TX Wavelength	C-band: 1528.68 – 1566.83 nm L-band: 1570.36 – 1607.09 nm		
Rx Wavelength	C-band: 1528.68 – 1566.83 nm L-band: 1570.36 – 1607.09 nm		
State of Polarization Tracking	5 to 400 kHz		
Tx Power Range (C-Band & L-Band)	Min: -5.0 dBm Max: +1 dBm		
C-Band Rx Input Target Signal Power Range:	200G/300G: -22 to +1 dBm/channel 400G DP-16QAM: -20 to +1 dBm/channel 400G DP-32QAM: -15 to +1 dBm/channel		
L-Band Rx Input Target Signal Power Range:	200G/300G: -21 to +1 dBm/channel 400G DP-16QAM: -19 to +1 dBm/channel 400G DP-32QAM: -14 to +1 dBm/channel		
PMD (Average DGD) Tolerance	200G (DP-16QAM): 150 ps 200G (6b4D-2A8PSK): 100p s 200G (DP-QPSK): 90ps 300G (6b4D-2A8PSK + 16QAM): 100 ps 400G (DP-16QAM): 90 ps 400G (DP-32QAM): 100 ps		
PDL Tolerance	200G-400G: 6 dB		
Client Side			
Client Ports	100 GbE/OTU4: 8 per PIU (16 per blade) 400 GbE: 2 per PIU (4 per blade)		
Optical/Electrical Interface	QSFP28, LR4/SR4, 4WDM-40, QSFP-DD FR4		
Support Interfaces	100 GbE, 400 GbE, OTU4		
Performance Monitoring			
Service PMs	24-hour, 15-minute, metered		
OTN PMs	Yes		
Ethernet RMON PMs	Yes		
Thresholds and TCA	Supported		
SOP Monitoring	PM		
Protection			
Y-cable	Yes		
Management			
Virtuora	Yes		
CLI	Yes		
In-band management (GCC)	Yes		
NETCONF/YANG	Yes		
RADIUS	Yes		
TACACS+	Yes		
SNMP	SNMPv2c, SNMPv3		
Communication	SSH, SFTP, FTP, TELNET, HTTP, HTTPS		
Timing	NTP		
OSMINE Support	CLEI		
LLDP Snooping	Yes		

Technical Specifications

Physical Characteristics

Dimensions (H x W x D)	1.75 x 19 x 17.7" (44.5 x 483 x 450 mm)
Weight	29 lbs (13.14 kg) with PIUs fully populated
Rack Compatibility	19" 4-post racks, 23" 4-post racks 19" 2-post racks, 23" 2-post racks Supported rack depth: up to 790 mm

Operating Environment

Operating Temperature	+5° C to +40° C (GR-63 Issue 4 compliant)
Operating Humidity	5 to 85 % (GR-63 Issue 4 compliant)

Power

-48 V DC	-40 V DC to -57 V DC
Power Consumption (Typical at 21 °C)	PIU x 2 (400G x 4: 1.6T): 480.1 W PIU x 1 (400G x 2: 800G): 276.6 W PIU x 2 (100G x 4: 400G): 507 W PIU x 1 (100G x 2: 200G): 303.5 W

Regulatory and Compliance

FCC	Part 15, Class A
UL and CB Safety	UL 60950-1 and IEC 60950-1 UL 62368-1 and IEC 62368-1
RoHS	RoHS10
CE	CISPR 22, 24 and 32
ETSI	ETSI EN 300-386
WEEE	WEEE
RCM	RCM
CDRH	FDA CDRH
Telcordia Safety and Generic	NEBS Level 3

LASER SAFETY
CLASSIFICATION & CAUTION
Compliant with IEC/EN
60825-1, -2 Laser standards

CLASS 1 CAUTION
Invisible laser radiation: Class 1 laser product
Do not view directly with optical instruments
HAZARD LEVEL 1 CAUTION
Hazard level 1 laser radiation
Do not view directly with non-attenuating optical instruments

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