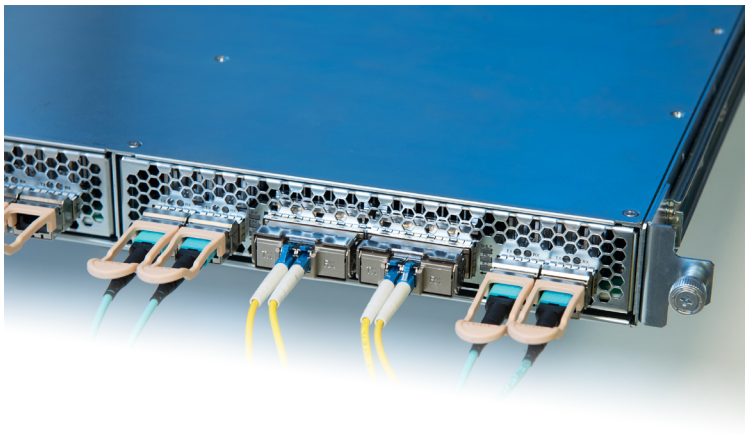
FUJITSU

Data Sheet
1FINITY T100 Transport Blade

High-density transponder purpose-built for metro data center interconnect

1FINITY™ T100 Blade at a Glance

- Modular 1RU blade design
- 100 GbE to 100G or 200G transponding
- 8 × 100 GbE client interfaces and 4 × 100G/200G narrowband network interfaces
- DP-QPSK and DP-16QAM modulation modes
- CLI script, SNMP, RESTCONF, or NETCONF API management



The Everything Pluggable Platform: A New Paradigm

With the 1FINITY platform, Fujitsu has implemented DP-QPSK and DP-16QAM technologies to achieve 100 and 200 Gbps per wavelength with a dense yet simple disaggregated architecture. The T100 metro DCI blade incorporates this new architecture. With its innovative, modular, stackable 1RU form factor, the 1FINITY T100 is an everything-pluggable platform, with an on-board, universal CPU as its only integrated component. The platform's fans, power supplies, and network function cards all take the form of modular plug-in units (PIUs).

The modular design enhances availability by minimizing mean time to repair (MTTR), allowing most sources of failure to be repaired quickly. Additionally, the system is future-proof and evergreen: new modules can be deployed as technology becomes available.

The low-cost, universal CPU provides a management interface for programming PIU and shelf functions. For operational efficiency, there's support for both current and future PIUs in any combination, and there's no need to upgrade system software. The PIUs are designed as fully functional systems to allow faster development, speed time to market, and reduce development costs without upgrades or changes to the universal CPU software.

Each PIU can be developed, tested, and brought up independently, basically decoupling shelf management from PIU control.

Metro Applications

Metro Data Center Interconnect (mDCI) is the primary application of the T100. With 4 × 100G/200G transponding, the T100 platform provides cost-efficient optical connections between data centers, or from a data center to an Internet exchange point for peering.

The 1FINITY T100 can be deployed in combination with other 1FINITY blades to provide enhanced solutions. For example, by connecting the 1FINITY S100 Switch to the client side of the T100, you can provide aggregation for 10 GbE to 100 GbE Ethernet. If a ROADM network is required, the line side of the T100 is compatible with the 1FINITY Lambda blade family of DWDM products.

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 operational convergence, as well as open pluggable optics, open APIs, and open protocols.

Dense Capacity, Low Power Consumption, Compact Footprint

Simplified Network Operations

The 1FINITY T100 employs a Linux-based operating system and is simple to manage using RESTCONF, NETCONF, SNMP, a Command-Line Interface (CLI), or CLI scripts. When using a CLI in a stand-alone deployment, provisioning consists of simply turning on the interfaces and selecting the wavelength. With the software control revolution solidly underway, the 1FINITY T100 easily fits into an SDN management architecture such as the Fujitsu Virtuora Network Management Suite.

The T100 offers an innovative real-time power performance measurement that data center operators can use to monitor power usage. Additionally, to simplify operations and maintenance activities, the T100 has a blue "Find Me" LED on the front panel that helps technicians easily identify units in densely populated racks.

Capabilities that Support Day-to-Day Efficiency

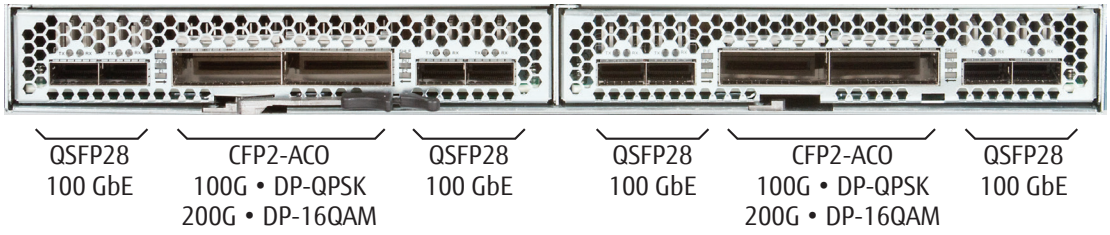
The 1FINITY T100 is equipped with several features that improve data gathering and monitoring and provide a basis for increased operational automation:

- Nyquist filtering supports C-band 37.5 GHz channel spacing
- Ethernet Link Layer Discovery Protocol (LLDP) snooping enables the T100 to support automated network discovery to help identify network topology.
- Zero-touch provisioning is a suite of capabilities that enable a node to automatically self-load a specific configuration.
- Streaming telemetry support provides a mechanism for gathering large amounts of Performance Metrics (PMs) without degrading the performance of Element Management Systems (EMSs). Devices are able to push PMs directly into a collector database, leaving the EMSs free to carry out element management functions.
- Line-side OTN Layer 1 encryption using Advanced Encryption Standard (AES-256) for each 100 GbE client.

Pluggable Options for Line Optics

The T100 supports two PIUs: the TRC1 and the TRC2. Both PIUs have the same port count and support the same modulation schemes. The TRC2 offers additional features for specific customer needs, as included in the table below.

Feature	TRC1	TRC2
GCC0	No	Yes
Layer 1 Encryption	No	Yes
Nyquist Filtering	Yes	Yes
Zero-Touch Provisioning	Yes	Yes
LLDP Snooping	No	Yes
Ethernet RMON PMs	No	Yes



Cost-efficient, pluggable optical connection options

Technical Specifications

Base System	
System Configuration	Modular 1RU blade
PIU per Blade	2
Local Management Port (LMP)	None
Management Port (LCN)	2 × 10/100/1000 Mbps Ethernet RJ-45
Front LEDs	System Status, Severity, and Port Blue: "Find Me"
Fan	2 replaceable fans
Power Supply	Dual replaceable AC or DC power supplies
Software OS	Linux

Line Optics for TRC1 and TRC2 PIU

Note: *Line optics specifications for the TRC2, where they differ from the TRC1, are shown in brackets.*

Line Ports per Blade	4	
Line Rate	**100 Gbps**	**200 Gbps**
Optical Module	CFP2-ACO	CFP2-ACO
Nyquist Filtering	Yes	
Optical Interface	96 C-band tunable ITU channels (50 GHz)	
	128 C-band tunable ITU channels (37.5 GHz)	
Modulation	DP-QPSK	DP-16QAM
Chromatic Dispersion	<55,000 ps/nm	
Minimum Required OSNR	12 dB	22.5 dB [22 dB]
Tx Wavelength	1528.77–1566.72 nm	
Rx Wavelength	1528.77–1568.76 nm	
Tx Output Power Range	Max:1 dBm	
Rx Input Power Range	Min: –22 dBm Max: 0 dBm	Min: –22 dBm Max: 0 dBm
PMD Tolerance	33 ps	
Reach w/ SMF-28 ULL Fiber (terrestrial)	3215 km	550 km [600 km]

Client Optics	
Client Ports per Blade/PIU	8
Optical/Electrical Interface	QSFP28
Supported Interfaces	LR4, CWDM4, SR4, CR4

Performance Monitoring	
Service PMs	24-hour, 15-minute, 1-week, and 1-month bins
OTN PMs	Yes
Ethernet RMON PMs	Yes (TRC2 only)
Streaming Telemetry	Yes
Real-Time Power Usage	Yes
Thresholds and TCA	Supported (fixed values)

Management	
Virtuora	Yes
Web GUI	Yes
CLI	Yes
GCC0	Yes (TRC2 only)
NETCONF/YANG	Yes
RESTCONF	Yes
RADIUS	Yes
TACACS+*	Yes*
SNMP	SNMPv2, SNMPv3
Communication	SSH, SFTP, FTP, TELNET, HTTP, HTTPS
Timing	NTP
OSMINE Support	CLEI
LLDP	Yes (TRC2 only)

** Supported in R2.3*

Technical Specifications

Physical Characteristics	
Dimensions H × W × D	1.75 × 19 × 24" (44.45 × 483 × 610 mm)
Weight	24.7 lb (11.2 kg)

Operating Environment	
Operating Temperature	0 to +40 °C
Humidity	5% to 95% operating

Power	
Power Supply	Dual Replaceable Power Modules
120 V AC	100 V AC to 240 V AC
–48 V DC	–42 V DC to –56 V DC
Power Consumption (typical)	600 W (TRC1), 700 W (TRC2)

Regulatory and Compliance	
FCC	FCC Part 15, Class A
NEBS	No
UL and CB Safety	UL 60950-1 and IEC 60950-1
DPoE	No
RoHS	RoHS
CE	CE
CISPR	CISPR 24 and 32
ETSI	EN 300–386
WEEE	WEEE
RCM	RCM
CDRH	FDA CDRH

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

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