FUJITSU

Data Sheet
1FINITY L100 Lambda Blade

Scalable ROADM-on-a-blade for agile optical networking

1FINITY™ L100 Blade at a Glance

- Twin 1 × 9 WSS ROADM-on-a-blade
- Colorless, Directionless (CD) add/drop architecture for any degree and wavelength
- Supports up to eight ROADM degrees
- Up to 144 C-band CD add/drop channels per blade when combined with 1FINITY L110 and L120
- Supports C-band fixed and flexible grid pattern specified in ITU standards
- Optimized for 100G and above wavelengths

Product Overview

The 1FINITY L100 is a ROADM-on-a-blade that provides wavelength multiplexing, amplification, and switching. The L100's stackable, compact form factor is highly suited to metro and regional networks. One L100 blade is deployed for each ROADM degree, for up to eight degrees. SDN control and management is enabled through management ports on the blade. The L100 provides support for Fujitsu-specific application programming interfaces (APIs) with up to four ROADM degrees, in addition to Open ROADM APIs with up to eight ROADM degrees.

The L100 blade supports fixed and flexible grid patterns with Colorless/Directionless (CD) add/drop. The blade supports up to 96 C-band 50 GHz fixed channels, or 128 flex-grid channels per ROADM degree. Maximum capacity is 25.6 Tbps (200 Gbps × 128 channels) per degree.

ROADM Configurations

The L100 supports multiple ROADM configurations in combination with other blades in the series. When paired with the L110 optical channel add/drop management blade to add/drop colorless, directionless channels into ROADM nodes up to four degrees. Furthermore, combining both the L100 and L110 with the 1FINITY L120 expansion WSS blade adds support for up to eight degrees.

1FINITY L100 Series Overview

The 1FINITY L100 Series, Fujitsu's disaggregated optical layer, provides flexible ROADM functionality that easily accommodates rapid bandwidth growth. The series features compact, 1RU globally compliant enclosures and a functionally modular design. These blades provide the building blocks for an open, simple, scalable physical ROADM architecture.

Blades in the Series

The series currently consists of three types of blades:

- **L100** – A twin 1 × 9 wavelength selectable switch (WSS) ROADM-on-a-blade
- **L110** – An optical channel management blade for coupler/splitter plug-in units supporting channel add/drop
- **L120** – An expansion WSS for nodes beyond four degrees

L100 series blades can be deployed in combination with other 1FINITY blades, including the L200 Inline Amplifier, in addition to blades in the Switch and Transport Series.

Equipped to handle any provider's SLA requirements, L100 series blades incorporate dual-feed, fixed DC power supplies and robust, field-replaceable fans. Blades are compatible with various physical installation environments, including 19″ or 23″ standard racks (two- or four-post), as well as the 1FINITY Housing.

CD-ROADM Nodes for New and Existing Networks

Supported Solutions and Applications

Fujitsu applications and solutions supported by the L100 blade incorporate certified and tested performance characteristics, SDN provisioning and management, and optical design tool functions.

The L100 blade can be deployed in either new or existing optical networks by pairing it with the 1FINITY L110 and L120 blades to create various ROADM node configurations.

In greenfield scenarios, this node can connect to 1FINITY transport blades to provide an agile network at 200G and higher.

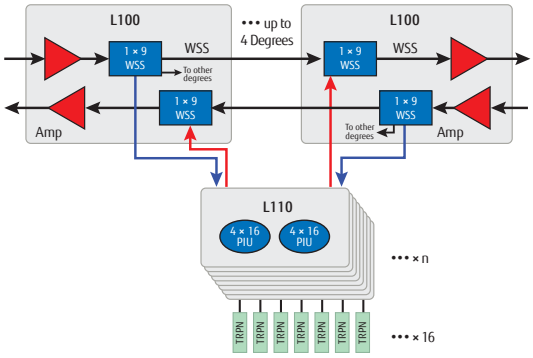
In brownfield scenarios, this node can be added as a spur to a FLASHWAVE 9500® multihaul ROADM ring to create a hybrid 10G/100G+ network that extends the life of the existing platform and protects capital investment.

The L100 is approved for deployment under the Open ROADM Multi-Source Agreement (MSA) that defines interoperability specifications among different vendors, thus enabling optical layer flexibility and software control.

Device Management and Control

1FINITY L100 series blades are supported by the Fujitsu Virtuora® software platform, including Virtuora WDM Planning and Design; Virtuora Network Management; Virtuora WDM Control Applications; and Virtuora NC (network controller).

For easier management and simpler deployment of high-capacity ROADM configurations, the 1FINITY L100 series blades also work with the 1FINITY C200 Series Communications Integrator. Each C200 unit provides sufficient management ports for up to 35 individual blades, consolidating multiple IP addresses and DCN connections into a single logical node for the SDN controller.



Up to 4-degree CD-ROADM node configuration with transponders (TPR)

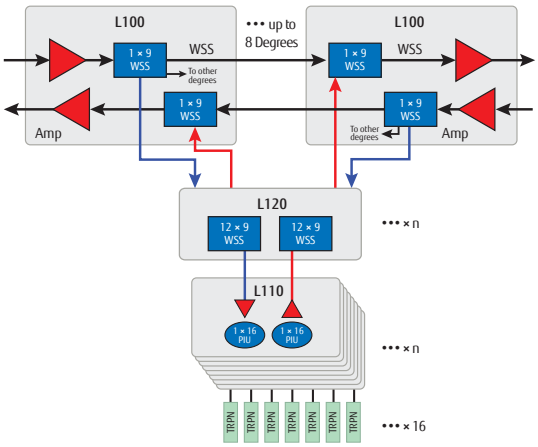
Up to 4-Degree CD-ROADM Node

Lambda blades:

- L100: One ROADM-on-a-blade per degree
- L110: One or more management blades for 4 × 16 add/drop PIU

Capabilities:

- Up to 128 clients



Up to 8-degree CD-ROADM node configuration with transponders (TPR)

Up to 8-Degree CD-ROADM Node (Open ROADM API Only)

Lambda Blades:

- L100: One ROADM-on-a-blade per degree
- L110: One or more management blades for 4 × 16 add/drop PIU
- L120: One or more twin 12 × 9 WSS blades

Capabilities:

- Up to 480 clients

Technical Specifications

Base System	
System Configuration	1RU ROADM-on-a-blade with twin WSS
Local Management Port (LMP)	1 ×10/100 Mbps Ethernet RJ-45
Management Port (LCN)	4 × GbE SFP (T, SX, LX, EX, ZX)
Front LEDs	System Status, Severity, Port
Fans	3 replaceable fans
Power Supply	Dual-feed, fixed DC power supply
Software OS	Linux
Line Interface	
Line Ports per Blade	1 Network, 1 OSC
Line Rates	100 Gbps, 200 Gbps, Future 400 Gbps
Tx Wavelength	1528.77–1566.72 nm
Rx Wavelength	1528.77–1566.72 nm
Performance Monitoring	
Service PMs	24-hour, 15-min
Thresholds and TCA	Support (user assignable)
Management	
Virtuora NC	Yes
Web GUI	Yes
CLI	Yes
NETCONF / YANG	Yes
SNMP	SNMP v1, v2c
Communications	SSH, SFTP, FTP, Telnet, HTTP, HTTPS
Timing	NTP
In Band Mgmt	OSC (1511 nm)
OSMINE Support	CLEI
Physical Characteristics	
Blade Physical Dimensions (H × W × D)	1.75" × 19" × 17.72" (44.45 × 483 × 450 mm) W = 19" or 23" with mounting rails D < 23.6" (600 mm) with fiber management
Rack Compatibility	19" and 23", 2- and 4-post
Supported in Housing	Yes
Weight	Blade: 17.857 lbs (8.10 kg)
Operating Environment	
Operating Temperature	+5 to +40 °C
Short-Term Temperature	-5 °C to +50 °C
Operating Humidity	5% to 85%
Power	
Power Supply	Dual-feed, fixed DC power supply
120 V AC	No
-48 V DC	-40V DC to -57V DC
Power Consumption	180 W
Regulatory and Compliance	
FCC	FCC Part 15, Class A
NEBS	NEBS Level 3
UL/CSA	UL/CSA 60950-1
CE	CE
RoHS	RoHS
CISPR	CISPR 24 & CISPR 32
ETSI	EN 300-019, EN 300-132, EN 300-753, EN 300-386
WEEE	WEEE
RCM	RCM
CDRH	FDA CDRH
ROADM Capacity and Functions	
Configuration	• Colorless, Directionless (CD) ROADM • Colorless 8-channel ROADM option
ROADM degrees	• Up to 4 degrees with L110 • Up to 8 degrees with L110 and L120 (Open ROADM)
Topology	Point-to-point, linear, ring, mesh
Wavelengths	100G, 200G, future 400G and above
Wavelengths Range	1528.77–1566.72 nm
Maximum Number of Channels per Degree	96 (50 GHz ITU-T fixed grid) 128 (37.5 GHz flex-grid)
Maximum System Capacity	25.6 Tbps (200G × 128 channels) per degree
Span Loss	0–35 dB
Optical Supervisory Channel (OSC)	OC-3, 100 Mbps Ethernet, GbE

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

CLASS 1M CAUTION
Invisble laser radiation
Do not view directly with optical instruments
Class 1M laser product

HAZARD LEVEL 1M CAUTION
Hazard level 1M laser radiation
Do not view directly with non-attenuating optical instruments

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