ASCENT
Communication Technology

A1600E DCI Optical Transport Platform

Datasheet

Revision 2F

ACT A1600E DCI Optical Transport Platform Datasheet

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Datasheet Revision 2F

This document is produced to assist professional and properly trained personnel with installation and maintenance issues for the product. The capabilities, system requirements and/or compatibility with third-party products described herein are subject to change without notice.

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Revision History

Revision	Date	Reason for Change
2C	12/12/2024	New Format Update
2D	06/17/2025	Update content of Dual Channel QDD 400G TMUX Card
2E	06/25/2025	Update content of Raman Optical Amplifier(RFA)
2F	06/28/2025	Update note of Raman Optical Amplifier(RFA) and 1604E/1608E chassis model type

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A1600E DCI Optical Transmission Platform

A1600E data center interconnect (DCI) series products are new generation optical transmission platforms supporting high capacity, multi services connection. It bears advantages of high service integration, high terminal density, multi services, flexible configuration etc, it supports C/S graphic management interface based on SNMP protocol, showing clear bug position for maintenance team and saving maintenance cost.

A1600E DCI platforms are widely used in Telcos, Broadcast & TV, Power grid, Education, Cloud computing, IT security. Catering for fully optical networks, they are applied in national/provincial/inter-city trunk lines.

The platforms deliver independent & clear services, multiplex different channels, save fiber optic resources, are secure and reliable. They can facilitate customers to build optical transmission network featuring long haul, high reliability, flexibility, disaster proof. They are optimum solution for current shortage of fiber optic resources

A1600 1U, 2U platforms are highly integrated, compact in size. It features standard 19" 1U, 2U chassis, power supply (AC/DC optional), 1+1 backup, ready to install. 1U, 2U, transmission platforms support max 4, 8 slots, mixed different interface modules (hot pluggable), in-band and out- of-band network management, flexible bandwidth per channel, remote update, easy maintenance.

1U DCI transmission platform (A1604E series)

2U DCI 200G/400G/800G Transponder platform (A1608E series)

A1604E DCI 1RU 100/200/400G Series

1U DCI Box Chassis

The DCI-BOX series is a high-speed WDM transmission product developed by Ascent®. The service card supports multi-service and large-capacity transmission networking applications. It is mainly positioned for the interconnection of data center computer rooms of operators and Internet companies, and can also be applied to (local network) various transmission applications of MAN convergence layer and access layer long-distance network. The advanced hardware architecture is adopted to improve the ventilation and heat dissipation capacity of the equipment; It supports a maximum service capacity of 3.2Tbps, providing users with various transmission solutions with different capacities, different transmission distances, and intelligent service applications.

A1604E DCI 1RU with NMU (A1604E- CHAS-1UM)

- Modular design: The single card adopts hot-swappable design, supports smooth upgrade, and can flexibly expand or delete services according to needs.
- 3.2T capacity design: It supports up to 16*100G client-side access, 8*200G and 4*400G line-side transmission, and realizes a bidirectional 1.6Tbps service transmission capacity. Through device stacking, the transmission capacity can be effectively expanded to single fiber 19.2Tbps (single lambda 200G*96CH) or 25.6Tbps (single lambda 400G*64CH)
- 7nm chip technology: Based on the most advanced single-carrier 7nm coherent DSP and photonic integration technology, including CFP2-DCO and terminal optical technology, it achieves ultra-low energy consumption 12W/100G, which is much better than the industry's general level (25W/100G).
- Super Channel technology: supports multi-carrier Super Channel technology, which greatly improves spectrum utilization, and can seamlessly interact with high-performance long-distance optical transmission platform Vispace1000 series equipment or any other third-party optical layer transmission system to realize optoelectronic decoupling.
- Standard DCI rack design: It has a reasonable height, width and depth design, front air and rear air cooling design, supports dual power supply 1+1 hot backup, AC and DC power supply, and meets the server rack requirements of the data center computer room.
- With a complete network management protocol: Support various mainstream interfaces: WEB, SNMP, CLI, TLI and other network management interfaces.
- Support SDN architecture network management design: Based on the SDN design concept, the device can provide an open Netconf/Yang model, which can meet the Netconf/Yang interface requirements of China Unicom, China Telecom and other customers.

Parameter	Technical Index
Maximum Capacity	3.2 Tbps
Line Side Modulation Mode	DP-QPSK@100G DP-16QAM@200G; DP-8QAM@200G; DP-QPSK@200G DP-16QAM@400G
Line Side Protocol	SD-FEC/ Open ROADM /OpenZR+
Service Access Type	100GE, 100GE KR4, OTU4, FlexE, OTUCn
Standard Network Management Function	Support alarm real-time and historical query; support real-time monitoring of performance, real-time monitoring of coherent optical performance parameters and OSNR, adjustable VOA optical power, 100G_200G_400G multi-service access and free switching, automatic laser shutdown function (ALS), any channel spacing adjustable technology, up to 96CH (@100G, @200G) or 64CH (@400G), etc.
Enhanced Optional Features	Support 1000+ alarm real-time and historical query; support 1000+ performance real-time monitoring and 15-minute and 24-hour performance statistics function, support Ethernet bidirectional disconnection function, Ethernet RMON statistical function, support LLDP monitoring function, support DM delay test function, support PRBS error code test function
Physical Network Topology	Chain, star, ring
Network Management Method	SNMP, CLI, WEB, SDN, Netconf/Yang, NMS
Operating Temperature	-5 °C to +45 °C
Storage Temperature	-40 °C to 85 °C
Relative Humidity	5 % to 95 % non-condensing
Dimensions (W×H×D)	440 mm × 44 mm × 534.7 mm
Power Requirements (Nominal)	220V/AC, 50Hz; -48V/DC and 280V HVDC power supply (optional)
Safety and EMC	Comply with FCC, UL, CE, TUV, CSA standards
Power Consumption	<800 W

DCI BOX 1U NMU Main Control Card

The NMU main control card is used to connect to the host of the management device. Through the host, each card in the chassis can be monitored, configured and managed in real time. The NMU main control card adopts a high-speed ARM processor, which can provide powerful data processing capabilities, provide command line CLI, browser (WEB), graphical (NMS) and other management interfaces for the device, and provide server version and stand-alone version and other methods. , suitable for network deployments of various scales, and can build suitable network management solutions for network management operators and enterprise users at all levels.

A1604E DCI 1RU NMU (A1600E-1U-NMU)

- Dual network management hot backup function: It provides dual network port backup, which can automatically and manually switch network management functions to ensure reliable network management
- Hot swap and software and hardware watchdog functions: Ensure the reliability, controllability and credibility of the network management.
- Support online upgrade: It can be upgraded locally or remotely without affecting the function of the service card
- Perfect network management platform: Supports multiple network management platforms, and the network management methods include SNMP, CLI, Web, NMS (graphical interface) and Netconf/Yang model
- Abundant network management interfaces: Provide 2 optical + 2 electrical management interfaces and a local interface (Console port)
- Provides powerful multi-level network topology management functions to realize fast and automatic discovery of network topology and generate intuitive and vivid graphics
- Following the TMN specification, it realizes functions such as device management, monitoring and deployment, software upgrade management, configuration file management, alarm and performance management, and realizes all-round network management from the device level to the network level.

Parameter	Technical Index
Interface	Optical port: 2 SFP optical ports Electric port: 2 RJ45 ports Serial port: 1 console interface
Network Management Method	NMS, Web, CLI, SNMP, Netconf/Yang
Operating Temperature	-5 °C to +45 °C
Storage Temperature	-40 °C to +85 °C
Relative Humidity	5 % to 95 % non-condensing
Dimensions (W×H×D)	94 mm × 20 mm × 192 mm
Safety and EMC	Comply with FCC, UL, CE, TUV, CSA standards
Power Consumption	<15 W

A1608E DCI 2RU 100/200/400G Series

The A1608E DCI series is a high-speed WDM transmission product developed. The service card supports multi-service and large-capacity transmission networking applications. It is mainly positioned for the interconnection of data center computer rooms of operators and Internet companies, and can also be applied to (local network) various transmission applications of MAN convergence layer and access layer long-distance network. The advanced hardware architecture is adopted to improve the ventilation and heat dissipation capacity of the equipment; It supports a maximum service capacity of 6.4Tbps, and provides users with various transmission solutions with different capacities, different transmission distances, and intelligent service applications.

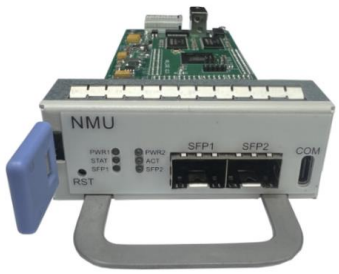
A1608E DCI 2RU with NMU (A1608E-CHAS-2UM)

- Modular design: The single card adopts hot-swappable design, supports smooth upgrade, and can flexibly expand or delete services according to requirements.
- 6.4T capacity design: Maximum support for 32*100G client side, 8*200G and 8*400G line side access, to achieve a bidirectional 3.2Tbps service transmission capacity. Through device stacking, the transmission capacity can be effectively expanded to a single fiber 25.6Tbps (single lambda 400G*64CH)
- 7nm chip technology: Based on the most advanced single-carrier 7nm coherent DSP and photonic integration technology, including CFP2-DCO and terminal optical technology, it achieves ultra-low energy consumption 12W/100G, which is much better than the industry's general level (25W/100G).
- Super Channel technology: supports multi-carrier Super Channel technology, which greatly improves spectrum utilization, and can seamlessly interact with high-performance long-distance optical transmission platform Vispace1000 series equipment or any other third-party optical layer transmission system to realize optoelectronic decoupling.
- Standard DCI rack design: It has a reasonable height, width and depth design, front air and rear air cooling design, supports dual power supply 1+1 hot backup, AC and DC power supply, and meets the server rack requirements of the data center computer room.
- Complete network management protocol: Supports various mainstream interfaces: WEB, SNMP, CLI, TLI, NMS and other network management interfaces.
- Support SDN architecture network management design: Based on the SDN design concept, the device can provide an open Netconf/Yang model, which can meet the Netconf/Yang interface requirements of China Unicom, China Telecom and other customers.
- Support customized development of network management protocols: Various network managements can be flexibly customized according to customer needs.

Parameter	Technical Index
Maximum Capacity	6.4Tbps
Line Side Modulation Mode	DP-16QAM@400G; PCS-16QAM@400G
Line Side Protocol	Open ROADM /OpenZR+/CFEC
Service Access Type	100GE, 100GE KR4, OTU4, FlexE, OTUCn
Standard Network Management Function	Support alarm real-time and historical query; support real-time monitoring of performance, real-time monitoring of coherent optical performance parameters and OSNR, adjustable VOA optical power, 100G_200G_400G multi-service access and free switching, automatic laser shutdown function (ALS), any channel spacing adjustable technology, up to 96CH (@100G, @200G) or 64CH (@400G), etc.
Enhanced Optional Features	Support 1000+ alarm real-time and historical query; support 1000+ performance real-time monitoring and 15-minute and 24-hour performance statistics function, support Ethernet bidirectional disconnection function, Ethernet RMON statistical function, support LLDP monitoring function, support DM delay Test function, support PRBS error code test function
Physical Network Topology	Chain, star, ring
Network Management Method	SNMP, CLI , NMS, WEB, SDN, Netconf/Yang
Operating Temperature	-5°C to 45°C
Storage Temperature	-40°C to 85°C
Relative Humidity	5% to 95% non-condensing
Dimensions (W×H×D)	440 mm × 88 mm × 530 mm
Power Requirements (Nominal)	220V/AC, 50Hz; -48V/DC and 280V HVDC power supply (optional)
Safety And EMC	Comply with FCC, UL, CE, TUV, CSA standards
Power Consumption	<800W

A1608E 2U NMU Main Control Card

The NMU main control card is used to connect to the host of the management device. Through the host, each card in the chassis can be monitored, configured and managed in real time. The NMU main control card adopts a high-speed ARM processor, which can provide powerful data processing capabilities, provide command line CLI, browser (WEB), graphical (NMS) and other management interfaces for the device, and provide server version and stand-alone version and other methods suitable for network deployments of various scales, and can build suitable network management solutions for network management operators and enterprise users at all levels.



A1608E DCI 2RU NMU (A1600E-2U-NMU)

- Dual network management hot backup function: It provides dual network port backup, which can automatically and manually switch network management functions to ensure reliable network management
- Hot swap and software and hardware watchdog functions: Ensure the reliability, controllability and credibility of the network management.
- Support online upgrade: It can be upgraded locally or remotely without affecting the function of the service card
- Perfect network management platform: Supports multiple network management platforms, and the network management methods include SNMP, CLI, Web, NMS (graphical interface) and Netconf/Yang model
- Abundant network management interfaces: Provide 2 optical + 2 electrical management interfaces and local interfaces (2 SFP optical ports, 2 RJ45 electrical ports and 1 Console serial port)
- Provides powerful multi-level network topology management functions to realize fast and automatic discovery of network topology and generate intuitive and vivid graphics.
- Following the TMN specification, it realizes functions such as device management, monitoring and deployment, software upgrade management, configuration file management, alarm and performance management, and realizes all-round network management from the device level to the network level

Parameter		Technical Index
Interface		Optical port: 2 SFP optical ports Electric port: 2 RJ45 ports Serial port: 1 Console interface
Network Management Method		NMS, Web, CLI, SNMP, Netconf/Yang
Environmental Requirements	Operating Temperature	-5°C to 45°C
	Storage Temperature	-40°C to 85°C
	Relative Humidity	5% to 95% non-condensing
Size		73.5 (W) × 28.4 (H) × 195 (D) (mm)
Safety and EMC		Comply with FCC, UL, CE, TUV, CSA standards
Power Consumption		<15W

A1600E DCI Series Network Management

Management Ports:

- 2 x RJ-45 LAN port 10/100MBase-T
- 2 x SFP MNG ports 100/1000MBase-X
- 1 x USB Type-C port

Protocols:

- SNMP, HTTP, HTTPS, Telnet

Management:

- Web browser over HTTP/HTTPS
- Ascent NetRiver NMS or third party NMS over SNMP
- CLI over RS-232 or CLI over Telnet

OAM:

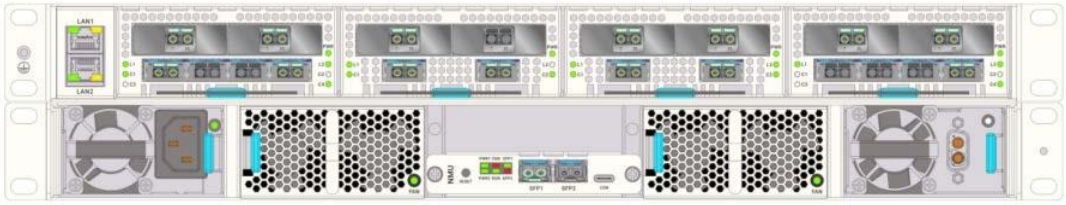
- Facility loopback (client and line interfaces), terminal loopback, PRBS, event log, alarms
- Automatic laser shut-down (ALS)

Performance Monitoring:

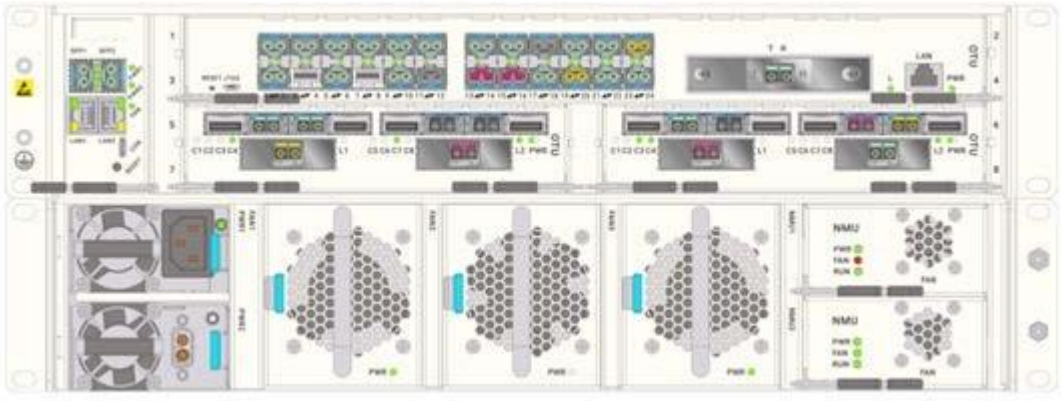
- Optical power Tx & Rx levels for all optical ports

Visual Indicators:

- LED status indicators for client and line ports, management and LAN ports, amplifier/s, system critical/major/minor and power supply



1U DCI BOX



2U DCI BOX

Software Upgrade:

- Hitless traffic

A1600E Single-Channel 4*100G 400G TMUX Card

The 400G TMUX card is used for 400G service access of optical fiber links, which can realize 4*QSFP28 100G to CFP2 400G, and the wavelength of CFP2 coherent optical modules is tunable, and cooperate with DWDM multiplexer/demultiplexer to realize wavelength division multiplexing transmission, to provide a high-quality solution for solving the shortage of optical fiber resources and transmission lines with large loss of optical fiber lines.

4*100G to 400G coherent CFP2 Muxponder (A1600E-CFP2-400G)

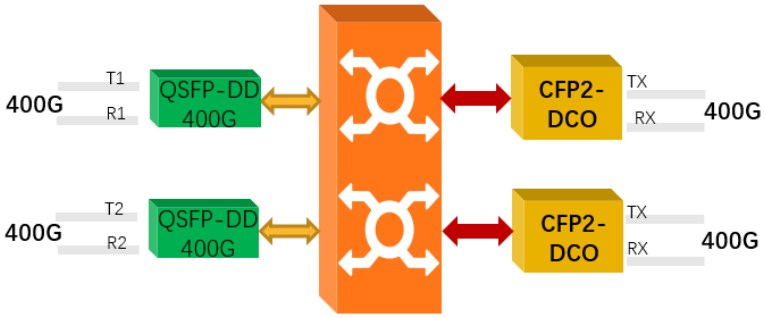
- The single card supports 4*100G to 400G coherent transmission, which can realize single-channel 400G line-side transmission.
- The wavelength is tunable, supporting up to 400G 64CH, 100G/200G 96CH.
- With flexible coherent modulation technology: DP-16QAM, DP-8QAM, DP-QPSK.
- With a variety of FEC error correction technologies: oFEC, CFEC, SCFEC, SDFEC.
- Support flexible service access: 100GE, 100GE KR4, OTU4 and 100G FlexE.
- Supports comprehensive performance monitoring and statistical functions.
- Supports Ethernet RMON performance statistics, LLDP monitoring, constellation diagram monitoring, DM delay and PRBS detection functions, OTN PM and SM performance statistics, etc.
- Support high-precision real-time monitoring of card-level temperature, voltage, current and Power consumption.
- The client side supports multiple access: 100G SR4/CWDM4/LR4/PSM4.
- Support unified network management platform, network management mode SNMP, CLI, Web, NMS (graphical interface) and Netconf/Yang model interface.

Parameter	Technical Index
Maximum Capacity	4*100G bidirectional transmission 4*100G unidirectional transmission
Wavelength (Frequency) Range	DWDM: 1529.16nm-1567.14nm (191.3THz-196.05THz)
Modulation	DP-QPSK@100G; DP-16QAM@200G; DP-8QAM@200G; DP-QPSK@200G; DP-8QAM@300G;DP-16QAM@400G
Line Side Protocol	Open ROADM /OpenZR+/SCFEC
Dispersion Tolerance	±40000ps/nm@100G
OSNR Tolerance	<11.5dB@100G DP-QPSK; <18.5dB@200G DP-8QAM; <21.5dB@200G DP-16QAM; <14dB@200G DP-QPSK;
Service Access Type	100GE, 100GE KR4, OTU4 and 100G FlexE
Size	100(W) × 40(H) × 266(D) (mm)
Operating Temperature	-5°C to 45°C
Storage Temperature	-40°C to 85°C
Relative Humidity	5% to 95% non-condensing
Safety And EMC	Comply with FCC, UL, CE, TUV, CSA standards
Power Consumption	<80W

A1600E Dual-Channel 2*QDD 400G TMUX Card

A1600E Dual-Channel QDD 400G TMUX Card. This OTU card enables dual channel high-speed 400G services by converting dual channel 400G QSFP-DD signals into dual channel 400G CFP2 DCO coherent optical outputs. The tunable-wavelength CFP2 DCO module supports DWDM multiplexing, optimizing fiber utilization and reducing latency for long-haul and large optical fiber line loss networks.
Designed for efficiency in fiber-constrained environments, it provides a cost-effective solution for high-capacity transport, ensuring reliable performance in dense wavelength division multiplexing (DWDM) systems.

2*400G QDD to coherent CFP2 Muxponder (A1600E-CFP2-402G)



- The Card supports 2-way 200G/400G QSFP-DD to 200G/400G CFP2 DCO coherent transmission
- The wavelength is adjustable and supports up to 400G 64 wavelengths
- Coherent modulation technology: PCS-16QAM
- Equipped with FEC error correction technology: oFEC
- Supports flexible service access function: 4x100GE and 400GE
- Supports comprehensive performance monitoring and statistics functions
- Supports Ethernet RMON performance statistics, LLDP monitoring and other functions
- Supports high-precision Card-level temperature, voltage, current and power consumption real-time monitoring
- The client side supports multiple module interface types: 400G SR8, 400G LR4, 400G DR4, etc
- Support unified network management platform, network management methods include SNMP, CLI, Web, NMS (graphical interface) and Netconf/Yang model interface

Client Port Function

Item	Technical Parameters
400G Interface Requirements	The Card has no fan-out and only needs module support. It supports QSFPDD packaging and supports module types including 400G LR4, 400G DR4, 400G SR8, etc Support 4x100GE, 400GE and other service access
LLDP	Ethernet support
Ethernet Requirements	Ethernet RMON monitoring functions, such as sent and received packets/bytes/port utilization/CRC/error packets
Telemetry	Ethernet performance, optical module transceiver power, bias current, etc
Automatic Laser Shutdown (ALS)	Support
Loopback	Support
Local Fault	Inserting Local Fault to the downstream of the client side when Ethernet input is lost or WDM side fails, and supports transparent transmission of Local Fault and Remote Fault

Line Side Port Functionality

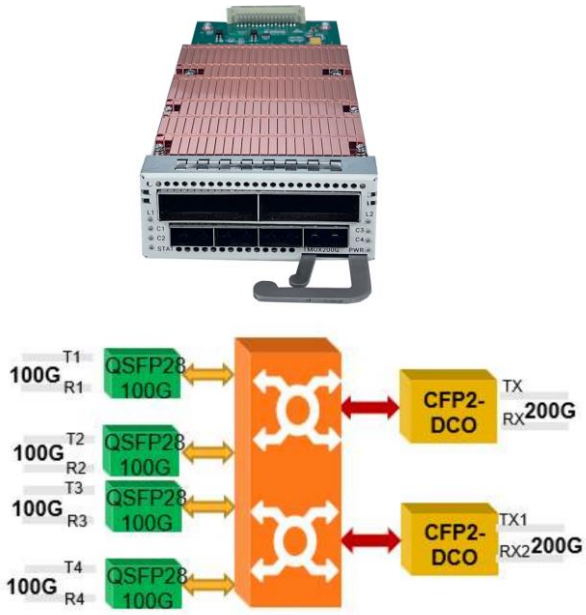
Item	Technical Parameters
L1-L2	CFP2-DCO Module
Wavelength (Frequency) Range	DWDM：1528.77nm-1567.13nm（196.1THz - 191.3THz）
Wavelength Tunable Function	Support 75/100GHz adjustable interval
Modulation Mode	PCS-16QAM@400G
Line side Protocol	oFEC
Dispersion Tolerance	±20000ps/nm@400G (determined by CFP2 module)
OSNR Tolerance	<22dB@400G PCS-16QAM；
Telemetry	Transmit and receive power, pre-error correction bit error rate (Pre-FEC), laser bias current, laser operating temperature, etc.
Loopback	Support
Protection Function	Switching completed within 50ms

Physical Characteristics

Item		Technical Parameters
Size		100.5 (W) x 40.3 (H) x 267 (D) (mm)
Environment Requirement	Operating Temperature	-5°C to 45°C
RF Connectors	Storage Temperature	-40°C to 80°C
Dimensions (W x H x D)	Relative Humidity	55% to 95% no condensation
Safety and EMC		Comply with FCC, UL, CE, TUV, CSA standards
Power Consumption		<80W
Weight		0.86KG (excluding optical module)

A1600E Dual-Channel 2*100G 200G TMUX Card

The 200G TMUX card is a card for 200G service access of optical fiber links, which can realize dual-channel 2*QSFP28 100G to dual-channel CFP2 200G, and the wavelength of CFP2 coherent optical modules is tunable, and it can be realized with DWDM multiplexer/demultiplexer wavelength division multiplexing transmission provides a high-quality solution to solve the shortage of optical fiber resources and transmission lines with large loss of optical fiber lines.



Dual 2*100G to 200G coherent CFP2 Muxponder (A1600E-CFP2-200G)

- The single card supports 2-channel 2*100G to 2-channel 200G coherent transmission, which can realize 2-channel 200G line-side transmission
- The wavelength is tunable and supports up to 96CH
- With flexible coherent modulation technology: DP-16QAM, DP-8QAM, DP-QPSK
- With a variety of FEC error correction technology: oFEC, SCFEC, SDFEC
- Support flexible service access: 100GE, 100GE KR4, 100G OTU4, 100G FlexE and OTUCn
- Support comprehensive performance monitoring and statistical functions
- Support high-precision real-time monitoring of card-level temperature, voltage, current and Power Consumption
  The client side supports multiple access: 100G SR4/CWDM4/LR4/PSM4
- Supports Ethernet RMON performance statistics, LLDP monitoring, constellation diagram monitoring, DM delay and PRBS detection functions, OTN PM and SM performance statistics, etc
- Support unified network management platform, network management mode SNMP, CLI, Web, NMS (graphical interface) and Netconf/Yang model interface

Parameter	Technical Index
Maximum Capacity	Dual 2*100G bidirectional transmission
Wavelength (Frequency) Range	DWDM: 1529.16nm-1567.14nm (191.3THz-196.05THz)
Modulation	DP-QPSK@100G; DP-16QAM@200G; DP-8QAM@200G; DP-QPSK@200G
Line Side Protocol	Open ROADM /OpenZR+/SCFEC
Dispersion Tolerance	±40000ps/nm@100G
OSNR Tolerance	<11.5dB@100G DP-QPSK; <18.5dB@200G DP-8QAM; <21.5dB@200G DP-16QAM; <14dB@200G DP-QPSK;
Service Access Type	100GE, 100GE KR4, OTU4 and 100G FlexE, and OTUCn
Size	100(W) × 40(H) × 266(D) (mm)
Operating Temperature	-5°C to 45°C
Storage Temperature	-40°C to 85°C
Relative Humidity	5% to 95% non-condensing
Safety And EMC	Comply with FCC, UL, CE, TUV, CSA standards
Power Consumption	<75W

A1600E 20*10G 200G TMUX Card

The 200G TMUX card can realize 10*10G SFP+ plus 1*100G QSFP28 to 200G CFP2 DCO or 2*100G QSFP28 to 200G CFP2 DCO, the CFP2 DCO coherent optical module is tunable wavelength, and cooperates with DWDM multiplexer/demultiplexer to realize wavelength division multiplexing transmission, provides a high-quality solution to solve the shortage of optical fiber resources and transmission lines with large loss of optical fiber lines.

20*10G SFP+ to 200G CFP2 DCO Transponder (A1600E-CFP2-20x10G)

- Single card supports 10*10G +1*100G or 2*100G service access, which can realize 1 channel of 200G line side transmission
- The wavelength is tunable and supports up to 96CH
- Support comprehensive performance monitoring and statistical functions
- With flexible coherent modulation technology: DP-16QAM, DP-8QAM, DP-QPSK
- With a variety of FEC error correction technology: oFEC, SCFEC, SDFEC
- Support flexible service access: 100GE, 100GE KR4, 100G OTU4, 100G FlexE and OTUCn
- Support high-precision real-time monitoring of card-level temperature, voltage, current and power consumption
- Support Ethernet RMON performance statistics, LLDP monitoring, constellation diagram monitoring, DM delay and PRBS detection functions, OTN PM and SM performance statistics, etc.
- Support unified network management platform, network management mode SNMP, CLI, Web, NMS (graphical interface) and Netconf/Yang model interface

Parameter	Technical Index
Maximum Capacity	a) 10*10G bidirectional transmission + 1*100G bidirectional transmission b) 2*100G bidirectional transmission
Wavelength (Frequency) Range	DWDM: 1529.16nm-1567.14nm (191.3THz-196.05THz)
Modulation	DP-QPSK@100G; DP-16QAM@200G; DP-8QAM@200G; DP-QPSK@200G
Line Side Protocol	Open ROADM /OpenZR+/SCFEC
Dispersion Tolerance	±40000ps/nm@100G
OSNR Tolerance	<11.5dB@100G DP-QPSK; <18.5dB@200G DP-8QAM; <21.5dB@200G DP-16QAM; <14dB@200G DP-QPSK;
Service Access Type	100GE, 100GE KR4, OTU4 and 100G FlexE
Size	100(W) × 40(H) × 266(D) (mm)
Operating Temperature	-5°C to 45°C
Storage Temperature	-40°C to 85°C
Relative Humidity	5% to 95% non-condensing
Safety And EMC	Comply with FCC, UL, CE, TUV, CSA standards
Power Consumption	<75W

A1600E 10*10G +100G 200G TMUX Card

The 200G TMUX card can realize 10*10G SFP+ plus 1*100G QSFP28 to 200G CFP2 DCO or 2*100G QSFP28 to 200G CFP2 DCO, the CFP2 DCO coherent optical module is tunable wavelength, and cooperates with DWDM multiplexer/demultiplexer to realize wavelength division multiplexing transmission, provides a high-quality solution to solve the shortage of optical fiber resources and transmission lines with large loss of optical fiber lines.

10*10G SFP+ plus 100G to 200G CFP2 DCO Transponder (A1600E-CFP2-10x10G)

- Single card supports 10*10G +1*100G or 2*100G service access, which can realize 1 channel of 200G line side transmission
- The wavelength is tunable and supports up to 96CH
- Support comprehensive performance monitoring and statistical functions
- With flexible coherent modulation technology: DP-16QAM, DP-8QAM, DP-QPSK
- With a variety of FEC error correction technology: oFEC, SCFEC, SDFEC
- Support flexible service access: 100GE, 100GE KR4, 100G OTU4, 100G FlexE and OTUCn
- Support high-precision real-time monitoring of card-level temperature, voltage, current and power consumption
- Support Ethernet RMON performance statistics, LLDP monitoring, constellation diagram monitoring, DM delay and PRBS detection functions, OTN PM and SM performance statistics, etc.
- Support unified network management platform, network management mode SNMP, CLI, Web, NMS (graphical interface) and Netconf/Yang model interface

Parameter	**Technical Index**
Maximum Capacity	a) 10*10G bidirectional transmission + 1*100G bidirectional transmission b) 2*100G bidirectional transmission
Wavelength (Frequency) Range	DWDM: 1529.16nm-1567.14nm (191.3THz-196.05THz)
Modulation	DP-QPSK@100G; DP-16QAM@200G; DP-8QAM@200G; DP-QPSK@200G
Line Side Protocol	Open ROADM /OpenZR+/SCFEC
Dispersion Tolerance	±40000ps/nm@100G
OSNR Tolerance	<11.5dB@100G DP-QPSK; <18.5dB@200G DP-8QAM; <21.5dB@200G DP-16QAM; <14dB@200G DP-QPSK;
Service Access Type	100GE, 100GE KR4, OTU4 and 100G FlexE
Size	100(W) × 40(H) × 266(D) (mm)
Operating Temperature	-5°C to 45°C
Storage Temperature	-40°C to 85°C
Relative Humidity	5% to 95% non-condensing
Safety And EMC	Comply with FCC, UL, CE, TUV, CSA standards
Power Consumption	<75W

A1600E Optical Amplifier Card

EDFA optical amplifier card is an optical amplifier module developed for long-distance transmission of digital optical fiber communication. The core device uses a high-reliability pump laser, the unique ATC (automatic temperature control) circuit and ACC (constant pump current control) circuit make the output power stable and reliable. Professionally designed GFF (gain flattening filter), combined with excellent optical path design, optimizes both flatness and noise. Realize APC (automatic power control) and AGC (automatic gain control) functions.

A1600E EDFA amplification Card (Booster AMP: A1600E-EDFA-B-V-M; Pre AMP: A1600E-EDFA-P-V-M; Line AMP: A1600E-EDFA-L-V-M)

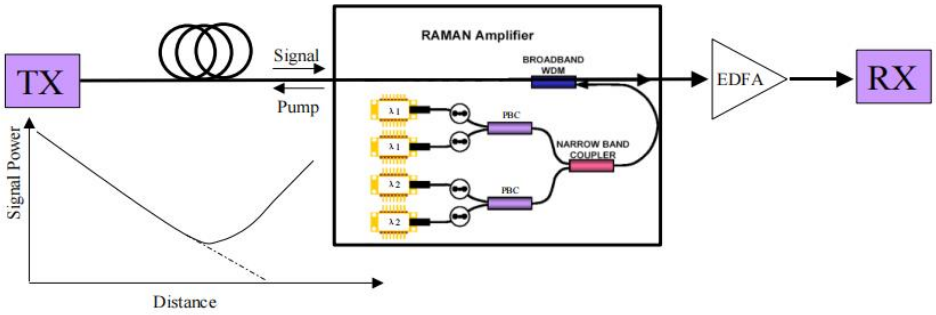
- Support C-band DWDM system optical amplification
- Support with OSC signal input amplification function
- Support maximum saturated output power +23dBm, minimum input power -35dBm
- Supports power amplification, line amplification (secondary optical amplification), and preamplification
- Can monitor: Pump drive current, pump output power, pump switch, pump temperature, input optical power, output optical power, module temperature
- Support setting pump switch, AGC mode and APC mode (input and output optical power adjustable)
- Support optical monitoring port (MON)
- Support unified network management platform based on SNMP, network management mode CLI (telnet and console), Web

Parameter	Technical Index
Wavelength Range	1528nm to 1563nm
Input power Range	Power amplification (BA): -23 to +10dBm Line amplification (LA): -35dBm to -7dBm Pre-amplification (PA): -34 to -1dBm
Output Power Range	≤ +23dBm
Gain Range	10dB to 30dB
Noise Figure	4.5dB to 6dB
Gain Flatness	1.0dB
I/O Isolation	30dB
Input/Output Return Loss	45dB
Output Pump Leakage	<-30dBm
Polarization Dependent Loss	0.5dB
Polarization Mode Dispersion	0.5ps
Size	100(W) × 40(H) × 266(D)(mm)
Operating Temperature	-10°C to 50°C
Storage Temperature	-40°C to 80°C
Relative Humidity	5% to 95% non-condensing
Safety and EMC	Comply with FCC, UL, CE, TUV, CSA standards
Power Consumption	<25W

A1600E Raman Optical Amplifier

The RFA Raman amplifier board is a high-power Raman amplifier board suitable for low-noise, large-span, high-speed optical transmission systems. Using transmission optical fiber as the gain medium can form distributed amplification, reduce system noise, and obtain the best gain and noise figure.

A1600E Raman Amplifier Card (Raman AMP: A1600E-EDFA-R-V-M-T/ A1600E-EDFA-R-V-M-R)



- Support distributed low-noise amplification
- Compatible with single channel, DWDM multiplexing or C+L band
- Equipped with intelligent temperature control system
- Monitoring: Working mode, reflected output optical power, output optical power, module temperature, pump temperature, pump current, pump TEC current
- Support adjustable gain
- Support forward Raman and backward Raman (optional)
- Support unified network management platform, network management methods include SNMP, CLI, Web, NMS (graphical interface)

Backward Raman Parameters

Parameter	Symbol	Unit	Min.	Typ.	Max.	Note
Wavelength	λc	nm	1525	1550		
Pump Wavelength	λp	nm	1425	-		
Input Power	Pi	dBm	-42	-30		
Pump Output Power	Po	mW	-	400		
On/off Gain	G	dB	10	12		
Flatness	FL	dB	-	-		1
Polarization-Dependent Gain	PDG	dB	-	-		
Polarization Mode Dispersion	PMD	ps	-	-	0.3	
Noise Figure	NF	dB	-	-	0	

Note1: Parameter requirements of multi-wave system.

Forward Raman Parameters

Parameter	Symbol	Unit	Min.	Typ.	Max.	Note
Wavelength	λc	nm	1525	1550	1565	
Pump Wavelength	λp	nm	1425	-	1505	
Input Power	Pi	dBm	0	-	15	
Pump Output Power	Po	mW	700	--	800	
On/Off Gain	G	dB	6	8	10	
Flatness	FL	dB	-	-	2	1
Polarization-Dependent Gain	PDG	dB	-	-	0.3	
Polarization Mode Dispersion	PMD	ps	-	-	0.3	
Noise Figure	NF	dB	-	-	0	

Note1: Parameter requirements of multi-wave system.

Physical Parameters

Parameter		Symbol
Card Size		202(W) × 40(H) × 266(D)(mm)
Environmental Requirements	Operating Temperature	-5°C to 45°C
	Storage Temperature	-40°C to 80°C
	Relative Humidity	5 % ~ 95 % non-condensing
Safety and EMC		Comply with FCC , UL , CE , TUV , CSA standards
Power Consumption		< 40W
Weight		< 1.5KG

A1600E TFF DWDM 4 Channel Card

The TFF card is an optical communication device that uses thin-film filtering technology. It is suitable for wavelength division multiplexing (WDM) systems and is used to separate and multiplex optical signals of different wavelengths.

A1600E TFF DWDM 4 Channel Card (A1600E-DWDM-2-04)

- High-precision filtering: Adopting advanced thin-film filtering technology to ensure high-precision separation and multiplexing of optical signals of specific wavelengths
- High reliability: The compact structural design and high-quality material selection ensure that the card has high reliability in various working environments
- Low insertion loss: Optimizing the optical design to reduce the loss of optical signals during transmission and improve system performance
- Wide operating temperature range: Adapting to different environmental temperature changes to ensure that the card can work stably under various working conditions

Function Description

The TFF card is mainly used for wavelength separation and multiplexing in optical communication systems and supports the simultaneous transmission of optical signals of multiple wavelengths. Through the thin-film filter on the card, optical signals of different wavelengths can be separated or combined to realize the multiplexing and demultiplexing functions of optical signals.

Performance Indicators

Operating wavelength: it supports the optical channels of D/A 16: C16 (191.60THz/1564.68nm), D/A 17: C17 (191.70THz/1563.86nm), D/A 18: C18 (191.80THz/1563.05nm), and D/A 19: C19 (191.90THz/1562.23nm) for the separation and multiplexing of optical signals of these wavelengths.

Parameters	Technical Index
Insertion Loss	(Exp In to Sig Out) ≤ 3dBm (Sig In to Exp Out) ≤ 2dBm (Add to Sig Out) ≤ 2dBm (Sig In to Drop) ≤ 2dBm
Channel Spacing	100GHz
VOA Setting Range of EXP Port	0 to 30dBm
Operating Temperature Range	0°C to +45°C
Storage Temperature Range	-40°C to +80°C
Card Size	100 (W) x 40 (H) x 266 (D) (mm)
Power Consumption	<2W
Safety and EMC	FCC、UL、CE、TUV、CSA standards

A1600E OTDR Card

The OTDR optical time domain reflector card is used in the monitoring system of optical communication network maintenance. It uses the backscattered light generated when light propagates in the optical fiber to obtain attenuation information, It can be used to measure fiber attenuation, connector loss, fiber fault point location and understand the loss distribution of fiber along the length, etc. It is an indispensable tool in the construction, maintenance and monitoring of fiber optic cables.

A1600E OTDR Card (A1600E-OTDR)

- Large dynamic range.
- Event dead zone and attenuation dead zone are low.
- High test accuracy.
- Real-time test refresh rate in milliseconds.
- Fast data transmission based on Ethernet interface.
- Automatic monitoring of communication light.
- Support unified network management platform based on SNMP, network management mode CLI (telnet and console), Web.

Parameters	Technical Index
Dynamic range (SNR=1) at 25°C	24-35dB (typical value, pulse width 20μs)
Dynamic range (SNR=1) at -5°C to 55°C	22-33dB (typical value, pulse width 20μs)
Wavelength	1310 ±20nm, 1550±20nm, 1625±10nm
Test fiber	10μm/125μm single-mode fiber (ITU-T G.652)
Pulse	3, 5, 10, 30, 50, 100, 275, 500, 1000, 5000, 10000, 20000 ns
Test Range	0.5, 2.5, 5, 15, 40, 80, 120, 160, 200km
Event dead zone	≤3m
Attenuation dead zone	≤15m
Sampling interval	0.125 to 2m
Sampling point	128000
Reflectance setting range	1.30000 to 1.80000
Test distance uncertainty	±(1+0.005%×distance+sampling resolution)
Linearity	±0.05dB/dB
Return loss test accuracy	±2dB
Automatic testing	Test items: total loss, distance per event point, link loss, return loss or reflectivity Threshold: Link Loss: 0.01 to 9.99 dB Reflectivity: -14 to -70 dB ; End: 1 to 99 dB

	Number of event detections: up to 99 Automatic settings: distance range, pulse, average count
Manual testing	Test items: transmission distance, 2 points method, link loss, reflectivity
Laser safety	IEC 60825-1:2007: CLASS 1, 21 CFR 1040.10
Power supply	+12±1V, max 1.5A
Interface	Ethernet interface: 20pin to 10/100M RJ45 interface Serial port: RS-232C: 115.2kbps (set IP address through RS-232C interface)
Size and weight	177×40×225mm, less than 0.5kg
Operating temperature	-5°C to +55°C
Humidity	≤95% (non-condensing)
Storage temperature	-40°C to +70°C
EMC	EN61326-1, EN61000-3-2

A1600E Optical Channel Monitoring Card

The OCM optical channel monitoring card can monitor the central wavelength, power value, signal-to-noise, and optical wavenumber of optical signals online in the system. And report the monitored wavelength, power value and optical wave number to the main control card for processing; it can monitor channels at different points in the system, making it easier and more convenient for the system to locate alarms and faults.

A1600E Optical Channel Monitoring Card (A1600E-OCM-08)

- OCM supports spectral analysis of 1/4/8 channel signals.
- Complete channel monitoring, analyze channel status data, and generate wave-add and wave-drop alarms.
- Complete the monitoring and reporting of the optical power, center wavelength, signal-to-noise ratio and channel number of the channel.
- Communicate with the main control card and receive control instructions from the main control card.
- Use the optical switch to select the direction of the optical path.

Parameters	Technical Index
Wavelength range	1528nm -1568nm
Channel spacing	50Ghz
Signal rate supported	100G, 200G, 400G bit/s
Absolute wavelength accuracy	±50pm
Channel power range	-40dBm - 10dBm
Absolute Power Accuracy	±0.8dBm
Relative Power Accuracy	1dBm
Power resolution	0.1dBm
Single lambda power detection range	-40dBm - 10dBm
Power Detection Accuracy	±1.5dBm
Non-adjacent channel power divergence	10dB
Scan time	1000ms
Number of detection ports	1/4/8
Size and weight	177 (W) × 20 (H) × 225 (D) (mm) , less than 0.5kg
Operating temperature and	-5°C to +55°C
Humidity	≤95% (non-condensing)
Storage temperature	-40°C to +70°C

A1600E 9D WSS Card

Nine-dimensional WSS card is a reconfigurable optical add-drop multiplexing card, which is a device used in dense wavelength division multiplexing (DWDM) system. Its function is to dynamically add to the road through remote reconfiguration or the wavelength of the downlink service. That is to say, in the middle of the line, the wavelength of the add and drop services can be assigned arbitrarily according to the needs, so as to realize the flexible scheduling of the services.

A1600E Optical Channel Monitoring Card (A1600E-OCM-08)

- Twin 1x9 191.3-196.1Thz supports Flex grid.
- Reconstruction time ≤ 3s.
- Automated optical alignment and assembly (high throughput, multi-parameter optimization, high accuracy/repeatability, operator independence).
- An optional integrated PLC provides per-channel power control based on OCM.
- Equalize, attenuate, block, switch/route any or all wavelengths.
- Flat wide passband, low dispersion cascading.
- Support unified network management platform based on SNMP, network management mode CLI (telnet and console), Web.

Parameters	Description
Channel spectral width	N*12.5GHzGHz
Wide tuning range of signal spectrum	1528.773 to 1566.73Nm
Insertion loss (Add 1 to 9 to BA In or PA Out to Drop1 to 9)	≤7.5 (typical) dB
The maximum difference in insertion loss of each channel	≤2.5dB
Port isolation	>25dB
Extinction ratio	≥25GHz
Polarization dependent loss	≤1.5dB
Attenuation range per wavelength	0 to 15dB
Decay setting step Size	0.2dB
Attenuation accuracy per wavelength	≤1.5dB
Refactoring time	≤3s
1dB minimum spectral width	>50GHz
3dB minimum spectral width	>75GHz
20dB maximum spectral width	<150GHz
Mon split ratio	16 to 23dB

A1600E Optical Line Protection Card

The OLP optical protection card is a protection system developed for optical fiber line backup. It uses an advanced optical path automatic switching module. The signal status of the optical path of the main and backup systems can be switched instantaneously, so as to ensure the normal operation of the system and improve the service quality of the operator when the main optical cable is blocked. OLP optical line protection card is widely used in the main and backup protection of various trunk lines and various optical path switching networks. Its advantage is that the optical signal can be directly converted and utilized in the optical line, and it is small in Size, economical and safe, and is widely used in many optical transmission fields.

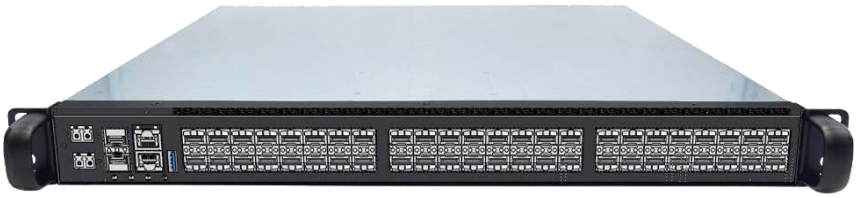
A1600E Optical Line Protection Card (A1600E-OLP)

- Support single-mode and multi-mode optical line protection.
- Support dual-fiber bidirectional and single-fiber bidirectional protection.
- Support 1+1 (dual TX and selective RX), 1:1 (selective TX and selective RX) protection methods.
- It has a wide optical power monitoring range: -50dBm to +25dBm.
- It has a short optical path protection switching time: ≤20ms.
- Support unified network management platform based on SNMP, network management mode CLI (telnet and console), Web.

System Parameters	Description
Protection method	1+1
Working wavelength	1528 to 1568
Transmitting insertion loss	≤4
Receiver insertion loss	≤1.5
Input power range	-35 to +23
Optical power detection accuracy	± 1
Optical power resolution	0.1
Switching time	<5
Polarization dependent loss	≤0.1
Isolation	>50
Return loss	>45
Switching times	(10)^7
Relative threshold setting	3 to 8
Absolute threshold setting	>-15
Optical port type	LC/UPC

Integrated WDM Equipment

Integrated WDM equipment is specially designed for DCI optical transmission network, its advantage is: clear transmission, low latency, high capacity, low consumption, easy operation, reliability and stability. Maximum service 1.2T is supported. Data rates 10G/100G/200G, applicable to SDH, SAN, SONET, ETHERNET, OT, DCI etc. It is innovative solution to tight fiber resource and high dissipation optical route.



- 10G *48CH or 100G*12CH converged fiber optic transmission.
- Ultra-high integration, front and rear ventilation, 1+1 protection, physical terminal isolation, clear transmission.
- Multi inputs:8GFC/10GE/100G Base-SR4/CWDM4/LR4/PSM4/OTU4
- SNMP unified network management platform, CLI, Web, NetRiver.
- CDR, optimize output, DDM, Automatic switch off without signal.
- Shut down terminal by software.

Item	Description
Max Capacity	12*100G bidirectional or 48*10G bidirectional
Wavelength	DWDM: C-Band (100 GHz or 50 GHz)
Service Type	SDH, SAN, SONET, ETHERNET, OTN
Transmission Reach	10 km, 40 km, 80 km (optional)
Network Protection	Line side 1+1 protection
Network Management	CDR (DDM), Automatic switch off without signal, unidirectional or bidirectional service, in-band and out-of-band network management
Network Management Type	CLI, NetRiver, Web
Dimensions (W×H×D)	482.6 mm × 44 mm × 600 mm
Operating Case Temperature	-10 °C to +70 °C
Storage Temperature	-40 °C to 80 °C
Relative Humidity	5 % to 95 % (non-condensing)
Safety and EMC	Compliant with FCC, UL, CE, TUV, CSA
Power Supply	AC 90V to 264V 50/60HZ DC -36V to 60V
Power Consumption	<200W

DWDM Open Line System

Ascent's A1600 Series is a true open line DWDM networking platform designed by Ascent specifically for modern data center interconnect (DCI). It works with any combination of PAM4 and coherent DWDM interface types and offers an unparalleled level of plug and play simplicity regardless of traffic type and network application. It has the same form factor and simple plug and play usability of a passive multiplexer, but unlike a passive multiplexer it monitors the traffic, amplifies the signals for longer distances and can handle higher data rate protocols. A best of both worlds approach to DCI networking. This is because it has all the features usually reserved for the more complex DWDM platforms fully integrated in to a simple plug and play 1U module. No separate amplifier, management, dispersion compensation and traffic cards to configure. No messy wiring between modules. No additional knowledge or spares handling usually associated with the bigger systems. Instead, it provides the traffic transmission with OLP protection, it provides everything required for an open line networking system for all protocol types.

System Parameter	Description
Maximum Capacity	40 channels DWDM bidirectional transmission
Wavelength Range	DWDM: 1529.16nm to 1567.14nm
Service Access Types	1/10/25/100/200/400G Ethernet 32/16/8G Fiber Channel
Transmission Distance	Support transmission distance: 0.1KM to 120KM, etc.(optional)
Network-Level Protection	Line side 1+1 protection
Dimensions (W×H×D)	440mm*44mm*600mm
Working Temperature	-10°C to 70°C
Storage Temperature	-40°C to 80°C
Relative Humidity	5% to 95% no condensation
Safety and EMC	Compliance with FCC, UL, CE, RoHS, TUV, and CSA standards
Power Supply	AC power supply (AC) voltage range: support 90V to 264V 50/60HZ DC power supply (DC) voltage range: support -36V to 60V
Power Consumption	200W

Product Feature

- Any combination of DWDM inputs: PAM4 and coherent transceivers, transponders, muxponders
- Industry defining 1U open-line networking system
- Ultra-high integration design, front-to-back airflow, 1 + 1 protection
- Intelligence and distance extension in a 40 or 80 channel DWDM multiplexer
- Automatic fiber distance measurement and dispersion compensation setting
- Complete zero-touch automatic optical setup, just like using a passive multiplexer
- High speed multi-protocol DCI
- Unprecedented level of cost efficiency and ROI for 100G DCI
- Network management supports industrial standard SNMP, HTTP, HTTPS, Telnet, etc

Ordering Information

Product Name	Variable	Options
A16XXE-Y-Z	XX = Chassis	04: 1RU chassis, 4-slots
		08: 2RU chassis, 8-slots
		CHAS: Chassis
	Y = CHAS	
	Z = System Configuration	1U: 1U 4-slots & 1U 3-slots
		2U: 2U 8-slots
		I: Integrated case
		C: Compact case
		CHAS
A1600E-X-NMU	X = System Type	
A1600E-X-Y (TMUX)	X = Form Factor	Muxponder:
		CFP
		CFP2
		SFPP
	Y = Data Rates	2.5G: 155M to 2.5G
		10G: 10G
		100G: 100G
		200G: 200G
		400G: 400G
A1600E-EDFA-X-Y-Z	X = Amplification	P: Pre-amplifier
		L: Line amplifier
		B: Booster amplifier
		R: Raman amplifier
	Y = Enhanced	V: VOA
	Z = System	M: Monitor
A1600E-DWDM-X-YY	X = Mux/Demux	D: Mux & Demux card
	YY = Channels	08: 8-channel Mux & Demux
A1600E-DCM-X	X = Reach to Compensate	XX: km
A1600E-TDC-X	X = Connector	L: LC connector
		S: SC connector
		F: FC connector

Product Name	Product Description
A1600E-CFP2-400G	Supports 4x100G QSFP28 to 400G CFP2 bidirectional access
A1600E-CFP2-200G	Supports 2 groups of 2x100G QSFP28 to 2x200G CFP2 bi-directional access
CFP2-400G-LP-DM	DCO CFP2 100G/200G/400G DWDM transceiver module, tunable wavelength, LC interface
CFP2-200G-LP-DM	DCO CFP2 100G/200G DWDM transceiver module, tunable wavelength, LC interface
A1600E-EDFA-R-V-M-T	Pluggable forward raman amplifier card, input power range 0dBm~15dBm, gain +12dB, LC/UPC
A1600E-EDFA-R-V-M-R	Pluggable backward raman amplifier card, input power range -25dBm~-42dBm, gain +12dB, LC/UPC
A1600E-DWDM-2-04	DWDM multiplexing and demultiplexing card, milky white, 100GHz 2*4CH, dual-fiber bidirectional, LC/UPC interface, with expansion port

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Specifications and product availability are subject to change without notice.

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