# FMT17BA-EDFA Data Sheet

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## Product Overview

The FMT series booster amplifier is a low-noise, gain-flattened C-band optical erbium-doped fiber amplifier (EDFA) designed to cost-effectively extend the optical link power budget for building long-distance DWDM solutions. The EDFA provides amplification for a range of optical solutions starting from single wavelength, up to full ITU C-band 80 DWDM wavelengths. It is designed for maximum configuration flexibility, with pluggable modules that plug directly into the 1U FMT managed chassis, each module occupying one slot.

The module can facilitate an integrated cost-effective and flexible optical layer solution by incorporating a variety of optical layer boards, such as OEO/DCM/MUX/OSW/OLP/R/B. FMT EDFA can be used different types of point-to-point applications, OADM applications, active/passive ring applications, DWDM dual-fiber and optical cable monitoring systems. And it can amplify the optical signal, supporting long-distance transmission over 120 km.

## Features and Benefits

- 4.5dB Low Noise Figure Ensures High OSNR, Improving Transmission Quality
- Enable to Cascade Several EDFAs to Form an Amplified OTN Link over Long Distances
- Achieve Optical Power Attenuation used with FS-VOA-C
- Facilitate an Integrated Optical Layer Solution by Incorporating OEO/DCM/MUX/OSW/OLP/R/B
- Suitable for Long-haul LANs and MANs, Single or Dual Fiber Solutions
- Support Basic Web-based Management and Enhanced AmpCon-T Management
- Fit into One Slot of the FMT Managed Chassis

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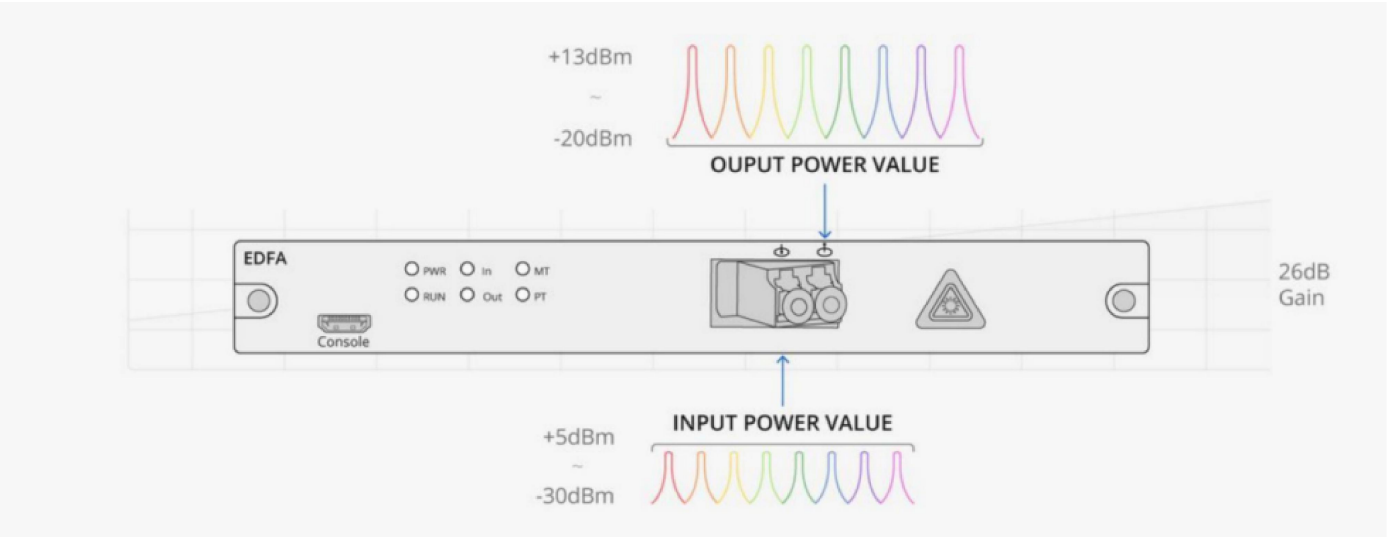
## Flexible and Versatile EDFA

EDFA utilizes erbium ion-doped optical fibers to amplify the passing optical signals, and it supports the AGC ( Auto matic constant gain) operation mode, the AGC function will be automatically activated when the input optical power changes, so that the output optical power of the amplifier varies with the input optical power, and the gain of the channel is always kept constant. Ports In&Out are paired, the data signal enters from port In and is retransmitted out from port Out.

Note: The Work Gain is the current gain of EDFA card, which is the same as the default gain when output power is lower than or equal to saturated output power.




## EDFA Ports: Communication Port and Fiber Port (In/Out)

### Communication Port

| Port Name | Note | Port Type |
|---|---|---|
| Console | Debugging & upgrading port | Micro USB |

### Fiber Port

| Port Name | Note | Port Type |
|---|---|---|
| In | Optical signal input port | LC/UPC |
| Out | Optical signal output port | LC/UPC |

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## EDFA Indicators: PWR, RUN, In, Out, MT, PT

| Indicator | Note | Normal State | Alarm State |
|---|---|---|---|
| PWR | Board Power | Green light | Light off |
| RUN | Board Run | Green light flashes every second | Light off or flashes irregularly |
| In | Input Optical Power Alarm | Green light flashes every second | Red light (lower input power) |
| Out | Output Optical Power Alarm | Green light flashes every second | Red light (lower output power) |
| MT | Module Temperature Alarm | Green light flashes every second | Red light (higher temperature) |
| PT | PUMP Temperature Alarm | Green light flashes every second | Red light (higher temperature) |

**Note:** Please do not set input power alarm threshold, output power alarm threshold, default gain, lest the device come to error alarm and affect normal work.

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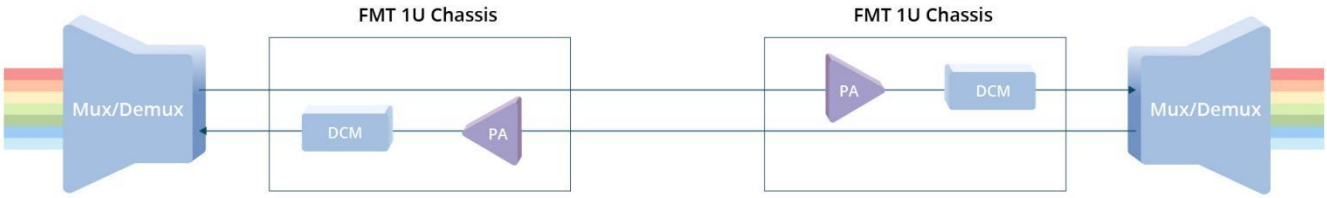
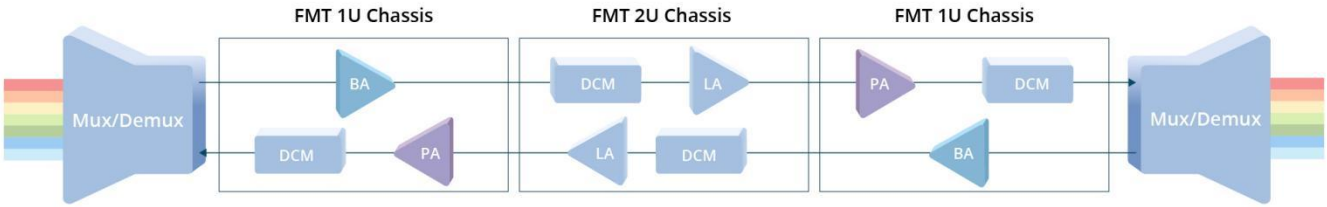
## Applications

The FMT series booster amplifier is a low-noise, gain-flattened C-band optical erbium-doped fiber amplifier (EDFA). The module can facilitate an integrated cost-effective and flexible optical layer solution by incorporating a variety of optical layer boards, such as DCM/MUX/OSW/OLP/R/B. FMT EDFA can be used in different types of point-to-point applications, OADM applications, active/passive ring applications, DWDM dual-fiber and optical cable monitoring systems. And it can amplify the optical signal more than 120km long distance transmission scenarios.

**1. Dual-fiber Bidirectional 10G DWDM 80km Transmission**




**2. Dual-fiber Bidirectional 10G DWDM 240km Transmission**

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# Product Specifications

| | | | |
|---|---|---|---|
| **Amplifier Type** | Booster Amplifier | **Operation Wavelength** | 1528nm-1564nm |
| **Optical Gain** | 17dB | **Gain Flatness** | 1dB (Typical) |
| **Input Power** | -23dBm~+12dBm | **Saturated Output Power** | ≤17dBm |
| **Single Channel Input Power** | -13dBm (Typical) | **Single Channel Output Power** | 1dBm (Typical) |
| **Noise Figure** | 4.5dB (Typical) | **Power Consumption** | ≤15W |
| **Optical Connector** | LC/UPC | **Management Type** | AmpCon-T, SNMP, Monitor Online, Simple Management Tool |
| **Operation Mode** | AGC | **Operating Humidity** | 10%~90%(Non- condensing) |
| **Operation Temperature** | –10 to 60°C (14 to 140°F) | **Storage Temperature** | –20 to 75°C (68 to 167°F) |
| **PDG ( Polarization Dependent Gain)** | 0.5dB | **PMD ( Polarization Mode Dispersion)** | 0.5ps |
| **Visual Indicators** | Status LED Power & Alarm status<br>Line LED: Line In/Out | **Weight (not including clam shell)** | 0.42kg/0.93lbs |
| **Cooling** | Left to right | **Laser Class** | Class IIIB |

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## Layout and Dimensions

- Height: 44.50mm (1.75")
- Width: 482.6mm (19")
- Depth: 300mm (11.81")

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# Ordering Information

| Mux Demux & OADM | | |
|---|---|---|
| DWDM MUX DEMUX | FMU-D402160M | 40 Channels DWDM Mux Demux, 100GHz C21-C60, with Monitor Port, 3.0dB Typical IL, LC/UPC, Dual Fiber, FMU 1U Rack Mount#33485 |
| | FMU-D402160M3 | 40 Channels DWDM Mux Demux, 100GHz C21-C60, with Monitor and 1310nm Port, 3.5dB Typical IL, LC/UPC, Dual Fiber, FMU 1U Rack Mount#35887 |
| | FMU-D162136EM3 | 16 Channels DWDM Mux Demux, 100GHz C21-C36, with Monitor, Expansion and 1310nm Port, 4.4dB Typical IL, LC/UPC, Dual Fiber, FMU 1U Rack Mount#72430 |
| | FMU-MD085360EM3 | 8 Channels DWDM Mux Demux, 100GHz C53-C60, with Monitor, Expansion and 1310nm Port, 3.0dB Typical IL, LC/UPC, Dual Fiber, FMU Plug-in Module#72433 |
| | FMU-FD402160M3 | 40 Channels DWDM Mux Demux, 100GHz C21-C60, with Monitor and 1310nm Port, 4.5dB Typical IL, LC/UPC, Dual Fiber, FMU 1U Rack Mount#84492 |
| | FHD-D82128EM3 | 8 Channels DWDM Mux Demux, 100GHz C21-C28, with Monitor, Expansion and 1310nm Port, 2.4dB Typical IL, LC/UPC, Dual Fiber, High Density, FHD Plug-in Module#126899 |
| | FMT-OMD | FMT-OMD, Customized DWDM Dual-fiber Mux/Demux for FMT Managed Chassis#317057 |
| | FMT-OMD-SF | FMT-OMD-SF, Customized DWDM Single-fiber Mux/Demux for FMT Managed Chassis#317055 |
| CWDM MUX DEMUX | FMU-C182761M | 18 Channels CWDM Mux Demux, 1270-1610nm, with Monitor Port, 5.0dB Typical IL, LC/UPC, Dual Fiber, FMU 1U Rack Mount#33489 |
| | FMU-MC042733 | 4 Channels CWDM Mux Demux, 1270-1330nm, 1.0dB Typical IL, LC/UPC, Dual Fiber, FMU Plug-in Module#42972 |
| | FMU-MC09B | 9 Channels CWDM Mux Demux, 1290-1610nm, 2.4dB Typical IL, LC/UPC, Single Fiber, Side-B, FMU Plug-in Module#43699 |
| | FMU-MC09A | 9 Channels CWDM Mux Demux, 1270-1590nm, 2.4dB Typical IL, LC/UPC, Single Fiber, Side-A, FMU Plug-in Module#43711 |
| | FMU-MC084761EM | 8 Channels CWDM Mux Demux, 1470-1610nm, with Monitor and Expansion Port, 2.0dB Typical IL, LC/UPC, Dual Fiber, FMU Plug-in Module#78163 |
| | FMU-C182761M | 18 Channels CWDM Mux Demux, 1270-1610nm, with Monitor Port, 2.2dB Typical IL, LC/UPC, Dual Fiber, FMU 1U Rack Mount#123533 |
| | FHD-C84761EM | 8 Channels CWDM Mux Demux, 1470-1610nm, with Monitor and Expansion Port, 2.0dB Typical IL, LC/UPC, Dual Fiber, High Density, FHD Plug-in Module#126902 |
| | FHD-C82745EM | 8 Channels CWDM Mux Demux, 1270-1450nm (Skip 1390, 1410nm), with Monitor and Expansion Port, 2.0dB Typical IL, LC/UPC, Dual Fiber, High Density, FHD Plug-in Module#126903 |
| LWDM MUX DEMUX | FMU-L042930A | 4 Channels LAN-WDM Mux Demux, 1295.56-1309.14nm, 2.7dB Typical IL, LC/UPC, Single Fiber, Side A, FMU Plug-in Module#244657 |
| | FMU-L042728B | 4 Channels LAN-WDM Mux Demux, 1273.55-1286.66nm, 2.7dB Typical IL, LC/UPC, Single Fiber, Side B, FMU Plug-in Module#244655 |
| Customized Mux Demux | MUX-DWDM | Customized Dual and Single Fiber DWDM Mux Demux#322911 |
| | MUX-CWDM | Customized Dual and Single Fiber CWDM Mux Demux#70410 |
| | MUX-CCWDM | Customized Dual and Single Fiber Low-loss Compact CWDM Mux Demux#73961 |
| OADM | DOADM-EAW | Customized Dual and Single Fiber DWDM OADM, East and West#70427 |
| | DOADM-EOW | Customized Dual and Single Fiber DWDM OADM, East or West#73795 |
| | COADM-EAW | Customized Dual and Single Fiber CWDM OADM, East and West#70425 |
| | COADM-EOW | Customized Dual and Single Fiber CWDM OADM, East or West#73794 |
| Chassis | FMU-1UFMX-N | FMU 2-Slot 1U 19" Rack Chassis Unloaded, Holds up to 2 Units FMU Plug-in Module#30408 |
| | FHD-1U-CMP400 | FHD High Density 1U Rack Mount Modular Enclosure Unloaded, Rear Cable Managers, Holds up to 4 x FHD® Cassettes or Panels, 144 Fibers (LC)#70419 |

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| | | |
|---|---|---|
| **TRANSPONDERS & MUXPONDERS** | | |
| **25G** | FMT4DL-OEO25GSFP28 | FMT4DL-OEO10GSFP, 4 Channels WDM Transponder (Converter) for FMT Managed Chassis, 8 SFP/SFP+ Slots#30515 |
| **10G** | FMT4DL-OEO10GSFP | FMT4DL-OEO25GSFP28, 4 Channels 25G WDM Transponder (Converter) for FMT Managed Chassis, 8 SFP28/SFP+ Slots#92056 |
| **OPTICAL LINE SYSTEM** | | |
| **Amplifiers** | FMT20PA-EDFA | FMT20PA-EDFA, 20dB Gain C-band DWDM EDFA Pre-amplifier for FMT Managed Chassis, 13dBm Output#72284 |
| | FMT26PA-EDFA | FMT26PA-EDFA, 26dB Gain C-band DWDM EDFA Pre-amplifier for FMT Managed Chassis, 16dBm Output#36524 |
| | FMT17BA-EDFA | FMT17BA-EDFA, 17dB Gain C-band DWDM EDFA Booster Amplifier for FMT Managed Chassis, 17dBm Output#72283 |
| | FMT26PA-51EDFA | FMT26PA-51EDFA, 26dB Gain Extended C-Band DWDM EDFA Pre-amplifier for FMT Managed Chassis, 20dBm Output#248135 |
| | FMT17BA-51EDFA | FMT17BA-51EDFA, 17dB Gain Extended C-Band DWDM EDFA Booster Amplifier for FMT Managed Chassis, 20dBm Output#248133 |
| | FMT-EDFA | Customized C-band DWDM EDFA Amplifier for DWDM Solution#322907 |
| | FMT-ARRAY-OA | Customized Multiports DWDM Array EDFA Amplifie#322909 |
| | FS-SOA | Customized 1310nm Semiconductor Optical Amplifier (SOA) for FMT Managed Chassis#69350 |
| | HPA | Customized FTTx PON High Power 1550nm EYDFA for FMT Managed Chassis#65789 |
| **Dispersion Compensation** | FMT40-DCM | FMT40-DCM, C-Band 40km DCF-based Passive Dispersion Compensation Module for FMT Managed Chassis#65781 |
| | FMT80-DCM | FMT80-DCM, C-Band 80km DCF-based Passive Dispersion Compensation Module for FMT Managed Chassis#65779 |
| | FS-DCM | Customized C-Band DCF-based Dispersion Compensation Module for FMT Managed Chassis#65783 |
| | FS-TDCM | Customized C-band Tunable Dispersion Compensation Module (TDCM) for FMT Managed Chassis#72427 |
| **Red/Blue Filter** | FSBR-1x2 | FSBR-1x2, Customized 1x2 Single Fiber DWDM Splitter Red/Blue C-band Filter#65981 |
| **Line Protection** | FMT-OLP2 | FMT-OLP2, 1+1 Optical Line Protection Switch for FMT Managed Chassis#66010 |
| | FMT-OLP | FMT-OLP, 1:1 Optical Line Protection Switch for FMT Managed Chassis#192620 |
| | FMT-BDSplitter | FMT-BDSplitter, Optical Splitter for FMT Managed Chassis#73324 |
| | FS-OLP | Customized Optical Line Protection Switch (OLP) for FMT Managed Chassis#34720 |
| | FMT-BDOLP | Customized 1+1 BIDI Optical Line Protection Switch (OLP) for FMT Managed Chassis#72700 |
| **Fiber Monitoring** | FMT-OPD | FMT-4OPD, 4 Channels 1550nm Optical Power Detection OPD (AIU) for FMT Managed Chassis#78568 |
| | FMT-OPM | FMT-OPM, Optical Performance Monitoring (OPM) for FMT Managed Chassis#71586 |
| | FMT-OPD | Customized Optical Power Detection OPD (AIU) for FMT Managed Chassis#70941 |
| | FMTOSW-1x16 | Customized 1x16 Multi-Channel MEMS Optical Switches with Adjustable Channels Control for FMT Managed Chassis#73287 |
| | FMT-OTDR | Customized Optical Time Domain Reflectometer (OTDR) for FMT Managed Chassis#73281 |
| | FMT-LSU | Customized LSU Light Source Unit, Pluggable Module for FMT Multi-Service Transport Platform#78469 |

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## OPTICAL LINE SYSTEM

| | | |
|---|---|---|
| **VOA Units** | FS-VOA-C | Customized Variable Optical Attenuator, LC/UPC for FMT Managed Chassis#65271 |
| **Chassis** | FMT04-CH1U | FMT04-CH1U, 4 Slots 1U Managed Chassis Unloaded Platform, Redundant AC PSUs, Support SNMP V3 Network Management#39214 |
| | FMT-CH | FMT-CH, Customized 4/8/16 Slots 1U/2U/4U Managed Chassis Unloaded Platform, Redundant AC/DC PSUs, Support SNMP Network Management#70413 |
| | FMT04-CH1U | Customized FMT04-CH1U, 4 Slots 1U Managed Chassis Platform, Redundant AC PSUs, Support SNMP Network Management#190253 |

## WDM TRANSCEIVERS

| | | |
|---|---|---|
| **100G/200G CFP2** | CFP2-DCO-200G-M | C14 1566.31nm CFP2-DCO 100G/200G DWDM C-band Tunable 96Chs ITU CH13-CH60 50GHz 80km DOM Duplex LC/UPC SMF Optical Transceiver Module for Transmission#120128 |
| **25G SFP28** | DW-SFP25G10-17 | Cisco C17 DWDM-SFP25G-63.86 Compatible SFP28 25G DWDM 1563.86nm 100GHz 10km DOM Duplex LC/UPC SMF Optical Transceiver Module for Transmission#87000 |
| | CW-SFP25G30-27 | Cisco CWDM-SFP25G-1270-30 Compatible SFP28 25G CWDM 1270nm 30km DOM Duplex LC/UPC SMF Optical Transceiver Module for Transmission#100112 |
| | CW-SFP25G10-27 | Cisco CWDM-SFP25G-1270-10 Compatible SFP28 25G CWDM 1270nm 10km DOM Duplex LC/UPC SMF Optical Transceiver Module for Transmission#76003 |
| | LW-SFP25G40-86 | Cisco LWDM-SFP25G-86.66 Compatible SFP28 25G LWDM 1286.66nm 40km DOM Duplex LC/UPC SMF Optical Transceiver Module for Transmission#93786 |
| **10G SFP+** | DW-SFP10G80-21-I | Cisco C21 DWDM-SFP10G-60.61-I Compatible SFP+ 10G DWDM 1560.61nm 100GHz 80km DOM Duplex LC/UPC SMF Optical Transceiver Module for Transmission (Industrial)#113562 |
| | DW-SFP10G40-21-I | Cisco C21 DWDM-SFP10G-60.61-I Compatible SFP+ 10G DWDM 1560.61nm 100GHz 40km DOM Duplex LC/UPC SMF Optical Transceiver Module for Transmission (Industrial)#113511 |
| | CW-SFP10G80-47 | Cisco CWDM-SFP10G-1470 Compatible SFP+ 10G CWDM 1470nm 80km DOM Duplex LC/UPC SMF Optical Transceiver Module for Transmission#19367 |
| | CW-SFP10G40-27-I | Cisco CWDM-SFP10G-1270-I Compatible SFP+ 10G CWDM 1270nm 40km DOM Duplex LC/UPC SMF Optical Transceiver Module for Transmission (Industrial)#112392 |
| **1G SFP** | DWDM-SFP1G-EZX | Cisco C17 DWDM-SFP-6386 Compatible SFP 1000BASE-DWDM 1563.86nm 100GHz 100km DOM Duplex LC/UPC SMF Optical Transceiver Module for Transmission#54150 |
| | DWDM-SFP1G-ZX | Cisco C17 DWDM-SFP-6386-80 Compatible SFP 1000BASE-DWDM 1563.86nm 100GHz 80km DOM Duplex LC/UPC SMF Optical Transceiver Module for Transmission#47697 |
| | CWDM-SFP1G-ZX | Cisco CWDM-SFP-1270 Compatible SFP 1000BASE-CWDM 1270nm 80km DOM Duplex LC/UPC SMF Optical Transceiver Module for Transmission#33234 |

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