



## F616 EDFA ( Erbium-Doped Fiber Amplifier ) Series



EDFA Module Card



1U1S Chassis ( CH01 )



1.25U4S Chassis ( CH04 )



2.5U8S Chassis ( CH08 )



6U16S Chassis ( CH16 )

### Overview

The F616 series of C-Band EDFA Optical Amplifiers is part of the F616 optical multi-service transmission platform solution. Many model options serve all the traditional amplifier applications in an extended optical link: booster, in-line, and pre-amplifier

A **Booster amplifier** operates at the transmission side of the link. It features high input power, high output power, and medium optical Gain. Boosters are designed to amplify aggregated optical input power for reach extension.

An **In-Line amplifier** operates in the middle of an optical link. It features medium to low input power, high output power, high optical Gain, and a low noise figure. In-line amplifiers are designed for optical amplification between two network nodes on the main optical link.

A **Pre-Amplifier** operates at the receiving end of an optical link. It features medium to low input power, medium output power, and medium Gain. Pre-amplifiers are designed for optical amplification to compensate for losses in a demultiplexer located near the optical receiver.

Some EDFA models include an additional mid-stage port designed for insertion of a Dispersion Compensation Management (DCM) unit without its inherent insertion loss. The design of these models maximizes the DCM benefits to increase deployment flexibility. New placement options require fewer amplifiers in the link, and they can open the door to applications that were not possible with older technology.

Some EDFA models include a Red and blue port designed for Single fiber DWDM Solution. The design of these models is used for single-fiber DWDM transmission systems.



## Applications

- Metro DWDM distance extension
- Single wavelength distance extension
- CATV network system
- Long-Haul transmission system

## Features

- Low noise figure : typical 5dB
- Gain Flattening Filters ( GFF ) assure flat Gain ( <1dB variance ) over the entire amplified band
- Multiple operating modes : AGC, APC, ACC
- High performance transient response control to ensure Power, Gain stable without affecting existing signal
- Support customized saturated Output Power range 13 ~ 24dBm
- Support customized Gain variety range 8 ~ 40dB
- Support Red / Blue port for single-fiber DWDM transmission system
- Support Mid-Stage access for insertion of a DCM or OADM unit without it's inherent loss.
- Optional OSC management channel for remote management
- MON own monitoring port, on-line monitoring optical power and OSNR
- Support SNMP, Web, Console management
- Support 1, 8, 16 slot chassis for different capacity requirement



## Specification

Parameter		Min	Typ	Max	Unit
Operating Wavelength		1528		1565	nm
Output Power				22	dBm
Gain		8		33	dB
Input Power	BA	-10		Max.Output -Gain	dBm
	PA/LA	Max.input-25		Max.Output -Gain	
Noise Figure			5.0		dB
Gain Flatness			1.0		dB
Input threshold		-34		Can be adjusted	dBm
Polarization dependence loss				0.3	dB
Polarization dependence Gain				0.4	dB
Polarization mode dispersion				0.5	ps
Pump power leakage				-30	dBm
Return Loss		45			dB
Power Consumption			≤15		W
Size	EDFA model	26.5(W) x 195(D) x 252(H)			mm
	4-slot chassis	482.6(W) x 350(D) x 43.6(H)			
	8-slot chassis	482.6(W) x 360(D) x 109(H)			
	20-slot chassis	482.6(W) x 360(D) x 261.6(H)			
Operating Temperature			-5~60		°C
Storage Temperature			-40~85		°C
Relative Humidity			5~95		RH%



## Ordering Information

F616-□□A□□G□□□□-□-□□

**Wavelength Type**

D- DWDM\* (default)  
 S- Single Channel

**Amplifier Type**

B- Booster Amplifier  
 L- In-Line Amplifier  
 P- Pre-Amplifier

**Max. Total Output Power**

16- 16dBm  
 20- 20dBm  
 22- 22dBm  
 XX- XXdBm

**Power Gain**

12- 12dB  
 16- 16dB  
 20- 20dB  
 25- 25dB  
 XX- XXdB

**OSC Function**

S- with OSC  
 None- without OSC

**VOA Function**

V- with VOA  
 None- without VOA

**Bidi Function**

B- Pass 1528~1543nm ( Ch45~Ch60 )  
 Reflect 1547~1561nm ( Ch21~Ch36 )  
 R- Pass 1547~1561nm ( Ch21~Ch36 )  
 Reflect 1528~1543nm ( Ch45~Ch60 )  
 None- Not Bidi

**Mid-Stage Insertion Loss**

08- 8dBm  
 10- 10dBm  
 None- without Mid-Stage Access



## Common EDFA Modules

Model	Description	Gain (dB)	Max. Output (dBm)	Min. Input (dBm)	Max. Input (dBm)	Typ. NF (dB)
<b>Booster EDFA</b>						
DBA16G12S	DWDM Booster, Max.Output 16dBm, Gain 12dB, with OSC	12dB	16dBm	-10dBm	4dBm	5dB
DBA16G12	DWDM Booster, Max.Output 16dBm, Gain 12dB, without OSC	12dB	16dBm	-10dBm	4dBm	5dB
DBA20G12S	DWDM Booster, Max.Output 20dBm, Gain 12dB, with OSC	12dB	20dBm	-10dBm	8dBm	5dB
DBA20G12	DWDM Booster, Max.Output 20dBm, Gain 12dB, without OSC	12dB	20dBm	-10dBm	8dBm	5dB
DBA20G15S	DWDM Booster, Max.Output 20dBm, Gain 20dB, with OSC	15dB	20dBm	-10dBm	5dBm	5dB
DBA20G15	DWDM Booster, Max.Output 20dBm, Gain 20dB, without OSC	15dB	20dBm	-10dBm	5dBm	5dB
DBA20G20S	DWDM Booster, Max.Output 20dBm, Gain 20dB, with OSC	20dB	20dBm	-10dBm	0dBm	5dB
DBA20G20	DWDM Booster, Max.Output 20dBm, Gain 20dB, without OSC	20dB	20dBm	-10dBm	0dBm	5dB
<b>Bidi Booster EDFA</b>						
DBA16G12S-B	DWDM Bidi Booster, Max.Output 16dBm, Gain 12dB, with OSC, Pass 1528~1543 (Blue), Reflect 1547~1561nm (Red)	12dB	16dBm	-10dBm	4dBm	5dB
DBA16G12-B	DWDM Bidi Booster, Max.Output 16dBm, Gain 12dB, without OSC, Pass 1528~1543 (Blue), Reflect 1547~1561nm (Red)	12dB	16dBm	-10dBm	4dBm	5dB
DBA20G12S-B	DWDM Bidi Booster, Max.Output 20dBm, Gain 12dB, with OSC, Pass 1528~1543 (Blue), Reflect 1547~1561nm (Red)	12dB	20dBm	-10dBm	8dBm	5dB



DBA20G12-B	DWDM Bidi Booster, Max.Output 20dBm, Gain 12dB, without OSC, Pass 1528~1543 (Blue), Reflect 1547~1561nm (Red)	12dB	20dBm	-10dBm	8dBm	5dB
DBA16G12S-R	DWDM Bidi Booster, Max.Output 16dBm, Gain 12dB, with OSC, Pass 1547~1561nm (Red), Reflect 1528~1543 (Blue)	12dB	16dBm	-10dBm	4dBm	5dB
DBA16G12-R	DWDM Bidi Booster, Max.Output 16dBm, Gain 12dB, without OSC, Pass 1547~1561nm (Red), Reflect 1528~1543 (Blue)	12dB	16dBm	-10dBm	4dBm	5dB
DBA20G12S-R	DWDM Bidi Booster, Max.Output 20dBm, Gain 12dB, with OSC, Pass 1547~1561nm (Red), Reflect 1528~1543 (Blue)	12dB	20dBm	-10dBm	8dBm	5dB
DBA20G12-R	DWDM Bidi Booster, Max.Output 20dBm, Gain 12dB, without OSC, Pass 1547~1561nm (Red), Reflect 1528~1543 (Blue)	12dB	20dBm	-10dBm	8dBm	5dB

Model	Description	Gain (dB)	Max. Output (dBm)	Min. Input (dBm)	Max. Input (dBm)	Typ. NF (dB)
<b>Pre-amplifier EDFA</b>						
DPA16G20S	DWDM Pre-amplifier, Max.Output 16dBm, Gain 20dB, with OSC	20dB	16dBm	-29dBm	-4dBm	4.5dB
DPA16G20	DWDM Pre-amplifier, Max.Output 16dBm, Gain 20dB, without OSC	20dB	16dBm	-29dBm	-4dBm	4.5dB
DPA16G20S-08	DWDM Midstage access Pre-amplifier, Max.Output 16dBm, Gain 20dB, with OSC, Midstage insertion loss 8dB	20dB	16dBm	-29dBm	-4dBm	5dB
DPA16G20-08	DWDM Midstage access Pre-amplifier, Max.Output 16dBm, Gain 20dB, without OSC, Midstage insertion loss 8dB	20dB	16dBm	-29dBm	-4dBm	5dB
DPA16G25S	DWDM Pre-amplifier, Max.Output 16dBm, Gain 25dB, with OSC	25dB	16dBm	-32dBm	-9dBm	4.5dB



DPA16G25	DWDM Pre-amplifier, Max.Output 16dBm, Gain 25dB, without OSC	25dB	16dBm	-32dBm	-9dBm	4.5dB
DPA16G25S-08	DWDM Midstage access Pre-amplifier, Max.Output 16dBm, Gain 25dB, with OSC, Midstage insertion loss 8dB	25dB	16dBm	-32dBm	-9dBm	5dB
DPA16G25-08	DWDM Midstage access Pre-amplifier, Max.Output 16dBm, Gain 25dB, without OSC, Midstage insertion loss 8dB	25dB	16dBm	-32dBm	-9dBm	5dB
DPA16G30S	DWDM Pre-amplifier, Max.Output 16dBm, Gain 30dB, with OSC	30dB	16dBm	-32dBm	-14dBm	4.5dB
DPA16G30	DWDM Pre-amplifier, Max.Output 16dBm, Gain 30dB, without OSC	30dB	16dBm	-32dBm	-14dBm	4.5dB
DPA16G30S-08	DWDM Midstage access Pre-amplifier, Max.Output 16dBm, Gain 30dB, with OSC, Midstage insertion loss 8dB	30dB	16dBm	-32dBm	-14dBm	5dB
DPA16G30-08	DWDM Midstage access Pre-amplifier, Max.Output 16dBm, Gain 30dB, without OSC, Midstage insertion loss 8dB	30dB	16dBm	-32dBm	-14dBm	5dB
<b>Bidi Pre-amplifier EDFA</b>						
DPA16G20S-B	DWDM Bidi Pre-amplifier, Max.Output 16dBm, Gain 20dB, with OSC Pass 1528~1543 (Blue), Reflect 1547~1561nm (Red)	20dB	16dBm	-29dBm	-4dBm	4.5dB
DPA16G20-B	DWDM Bidi Pre-amplifier, Max.Output 16dBm, Gain 20dB, without OSC Pass 1528~1543 (Blue), Reflect 1547~1561nm (Red)	20dB	16dBm	-29dBm	-4dBm	4.5dB
DPA16G20S-B-08	DWDM Midstage access Bidi Pre-amplifier, Max.Output 16dBm, Gain 20dB, with OSC, Midstage insertion loss 8dB Pass 1528~1543 (Blue), Reflect 1547~1561nm (Red)	20dB	16dBm	-29dBm	-4dBm	5dB



DPA16G20-B-08	DWDM Midstage access Bidi Pre-amplifier, Max.Output 16dBm, Gain 20dB, without OSC, Midstage insertion loss 8dB Pass 1528~1543 (Blue), Reflect 1547~1561nm (Red)	20dB	16dBm	-29dBm	-4dBm	5dB
DPA16G25S-B	DWDM Bidi Pre-amplifier, Max.Output 16dBm, Gain 25dB, with OSC Pass 1528~1543 (Blue), Reflect 1547~1561nm (Red)	25dB	16dBm	-32dBm	-9dBm	4.5dB
DPA16G25-B	DWDM Bidi Pre-amplifier, Max.Output 16dBm, Gain 25dB, without OSC Pass 1528~1543 (Blue), Reflect 1547~1561nm (Red)	25dB	16dBm	-32dBm	-9dBm	4.5dB
DPA16G25S-B-08	DWDM Midstage access Bidi Pre-amplifier, Max.Output 16dBm, Gain 25dB, with OSC, Midstage insertion loss 8dB Pass 1528~1543 (Blue), Reflect 1547~1561nm (Red)	25dB	16dBm	-32dBm	-9dBm	5dB
DPA16G25-B-08	DWDM Midstage access Bidi Pre-amplifier, Max.Output 16dBm, Gain 25dB, without OSC, Midstage insertion loss 8dB Pass 1528~1543 (Blue), Reflect 1547~1561nm (Red)	25dB	16dBm	-32dBm	-9dBm	5dB
DPA16G30S-B	DWDM Bidi Pre-amplifier, Max.Output 16dBm, Gain 30dB, with OSC Pass 1528~1543 (Blue), Reflect 1547~1561nm (Red)	30dB	16dBm	-32dBm	-14dBm	4.5dB
DPA16G30-B	DWDM Bidi Pre-amplifier, Max.Output 16dBm, Gain 30dB, without OSC Pass 1528~1543 (Blue), Reflect 1547~1561nm (Red)	30dB	16dBm	-32dBm	-14dBm	4.5dB
DPA16G30S-B-08	DWDM Midstage access Bidi Pre-amplifier, Max.Output 16dBm, Gain 30dB, with OSC, Midstage insertion loss 8dB Pass 1528~1543 (Blue), Reflect 1547~1561nm (Red)	30dB	16dBm	-32dBm	-14dBm	5dB





DPA16G30-B-08	DWDM Midstage access Bidi Pre-amplifier, Max.Output 16dBm, Gain 30dB, without OSC, Midstage insertion loss 8dB Pass 1528~1543 (Blue), Reflect 1547~1561nm (Red)	30dB	16dBm	-32dBm	-14dBm	5dB
DPA16G20S-R	DWDM Bidi Pre-amplifier, Max.Output 16dBm, Gain 20dB, with OSC Pass 1547~1561nm (Red), Reflect 1528~1543 (Blue)	20dB	16dBm	-29dBm	-4dBm	4.5dB
DPA16G20-R	DWDM Bidi Pre-amplifier, Max.Output 16dBm, Gain 20dB, without OSC Pass 1547~1561nm (Red), Reflect 1528~1543 (Blue)	20dB	16dBm	-29dBm	-4dBm	4.5dB
DPA16G20S-R-08	DWDM Midstage access Bidi Pre-amplifier, Max.Output 16dBm, Gain 20dB, with OSC, Midstage insertion loss 8dB Pass 1547~1561nm (Red), Reflect 1528~1543 (Blue)	20dB	16dBm	-29dBm	-4dBm	5dB
DPA16G20-R-08	DWDM Midstage access Bidi Pre-amplifier, Max.Output 16dBm, Gain 20dB, without OSC, Midstage insertion loss 8dB Pass 1547~1561nm (Red), Reflect 1528~1543 (Blue)	20dB	16dBm	-29dBm	-4dBm	5dB
DPA16G25S-R	DWDM Bidi Pre-amplifier, Max.Output 16dBm, Gain 25dB, with OSC Pass 1547~1561nm (Red), Reflect 1528~1543 (Blue)	25dB	16dBm	-32dBm	-9dBm	4.5dB
DPA16G25-R	DWDM Bidi Pre-amplifier, Max.Output 16dBm, Gain 25dB, without OSC Pass 1547~1561nm (Red), Reflect 1528~1543 (Blue)	25dB	16dBm	-32dBm	-9dBm	4.5dB
DPA16G25S-R-08	DWDM Midstage access Bidi Pre-amplifier, Max.Output 16dBm, Gain 25dB, with OSC, Midstage insertion loss 8dB Pass 1547~1561nm (Red), Reflect 1528~1543 (Blue)	25dB	16dBm	-32dBm	-9dBm	5dB



DPA16G25-R-08	DWDM Midstage access Bidi Pre-amplifier, Max.Output 16dBm, Gain 25dB, without OSC, Midstage insertion loss 8dB Pass 1547~1561nm (Red), Reflect 1528~1543 (Blue)	25dB	16dBm	-32dBm	-9dBm	5dB
DPA16G30S-R	DWDM Bidi Pre-amplifier, Max.Output 16dBm, Gain 30dB, with OSC Pass 1547~1561nm (Red), Reflect 1528~1543 (Blue)	30dB	16dBm	-32dBm	-14dBm	4.5dB
DPA16G30-R	DWDM Bidi Pre-amplifier, Max.Output 16dBm, Gain 30dB, without OSC Pass 1547~1561nm (Red), Reflect 1528~1543 (Blue)	30dB	16dBm	-32dBm	-14dBm	4.5dB
DPA16G30S-R-08	DWDM Midstage access Bidi Pre-amplifier, Max.Output 16dBm, Gain 30dB, with OSC, Midstage insertion loss 8dB Pass 1547~1561nm (Red), Reflect 1528~1543 (Blue)	30dB	16dBm	-32dBm	-14dBm	5dB
DPA16G30-R-08	DWDM Midstage access Bidi Pre-amplifier, Max.Output 16dBm, Gain 30dB, without OSC, Midstage insertion loss 8dB Pass 1547~1561nm (Red), Reflect 1528~1543 (Blue)	30dB	16dBm	-32dBm	-14dBm	5dB

Model	Description	Gain (dB)	Max. Output (dBm)	Min. Input (dBm)	Max. Input (dBm)	Typ. NF (dB)
<b>In-Line EDFA</b>						
DLA16G20S	DWDM In-Line-Amp, Max.Output 16dBm, Gain 20dB, with OSC	20dB	16dBm	-29dBm	-4dBm	5dB
DLA16G20	DWDM In-Line-Amp, Max.Output 16dBm, Gain 20dB, without OSC	20dB	16dBm	-29dBm	-4dBm	5dB
DLA16G20S-08	DWDM Midstage access In-Line-Amp, Max.Output 16dBm, Gain 20dB, with OSC, Midstage insertion loss 8dB	20dB	16dBm	-29dBm	-4dBm	6dB



DLA16G20-08	DWDM Midstage access In-Line-Amp, Max.Output 16dBm, Gain 20dB, without OSC, Midstage insertion loss 8dB	20dB	16dBm	-29dBm	-4dBm	6dB
DLA20G20S	DWDM In-Line-Amp, Max.Output 20dBm, Gain 20dB, with OSC	20dB	20dBm	-25dBm	0dBm	5dB
DLA20G20	DWDM In-Line-Amp, Max.Output 20dBm, Gain 20dB, without OSC	20dB	20dBm	-25dBm	0dBm	5dB
DLA20G20S-08	DWDM Midstage accessIn-Line-Amp, Max.Output 20dBm, Gain 20dB, with OSC, Midstage insertion loss 8dB	20dB	20dBm	-25dBm	0dBm	6dB
DLA20G20-08	DWDM Midstage accessIn-Line-Amp, Max.Output 20dBm, Gain 20dB, without OSC, Midstage insertion loss 8dB	20dB	20dBm	-25dBm	0dBm	6dB
DLA16G25S	DWDM In-Line-Amp, Max.Output 16dBm, Gain 25dB, with OSC	25dB	16dBm	-32dBm	-9dBm	5dB
DLA16G25	DWDM In-Line-Amp, Max.Output 16dBm, Gain 25dB, without OSC	25dB	16dBm	-32dBm	-9dBm	5dB
DLA16G25S-08	DWDM Midstage accessIn-Line-Amp, Max.Output 16dBm, Gain 25dB, with OSC, Midstage insertion loss 8dB	25dB	16dBm	-32dBm	-9dBm	6dB
DLA16G25-08	DWDM Midstage accessIn-Line-Amp, Max.Output 16dBm, Gain 25dB, without OSC, Midstage insertion loss 8dB	25dB	16dBm	-32dBm	-9dBm	6dB
DLA20G25S	DWDM In-Line-Amp, Max.Output 20dBm, Gain 25dB, with OSC	25dB	20dBm	-30dBm	-5dBm	5dB
DLA20G25	DWDM In-Line-Amp, Max.Output 20dBm, Gain 25dB, without OSC	25dB	20dBm	-30dBm	-5dBm	5dB



DLA20G25S-08	DWDM Midstage accessIn-Line-Amp , Max.Output 20dBm, Gain 25dB, with OSC, Midstage insertion loss 8dB	25dB	20dBm	-30dBm	-5dBm	6dB
DLA20G25-08	DWDM Midstage accessIn-Line-Amp , Max.Output 20dBm, Gain 25dB, without OSC, Midstage insertion loss 8dB	25dB	20dBm	-30dBm	-5dBm	6dB

## Chassis Model

CH16	6U 16-slot Chassis, 1-slot for Management, 15-slot for Service, two -48V DC power supplies
CH16A	6U 16-slot Chassis, 1-slot for Management, 15-slot for Service, two -48V DC power supplies & one 220V AC power supply
CH16AA	6U 16-slot Chassis, 1-slot for Management, 15-slot for Service, two -48V DC power supplies & one 220V AC power supplies
CH08AA	2.5U 8-slot Chassis, 1-slot for Management, 7-slot for Service, two 220V AC power supplies
CH08DD	2.5U 8-slot Chassis, 1-slot for Management, 7-slot for Service, two -48V DC power supplies
CH08AD	2.5U 8-slot Chassis, 1-slot for Management, 7-slot for Service, one 220V AC power supply & one -48V DC power supply
CH04AA	1.25U 4-slot Chassis, 1-slot for Management in the back panel, 4-slot for Service, two 220V AC power supplies
CH04DD	1.25U 4-slot Chassis, 1-slot for Management in the back panel, 4-slot for Service, two -48V DC power supplies
CH04AD	1.25U 4-slot Chassis, 1-slot for Management in the back panel, 4-slot for Service, one 220V AC power supply & one -48V DC power supply
CH01AA	1U 1-slot Chassis, fixed built-in Management, 1-slot for Service, two 220V AC power supplies
CH01DD	1U 1-slot Chassis, fixed built-in Management, 1-slot for Service, two -48V DC power supplies
CH01AD	1U 1-slot Chassis, fixed built-in Management, 1-slot for Service, one 220V AC power supply & one -48V DC power supply