

**FGA4400-FM02 Series**  
**C-Band DWDM FGA Full Function Module**  
**Fixed Gain EDFA Module**

**Technical Specification**

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## **1.0 PRODUCT DESCRIPTION**

Huatai FGA4400-FM02 series is a fixed gain Full Functional EDFA module which is specifically designed for C-Band DWDM optic transmission system, accord with various communication technology requirements of 44 channels DWDM system. It adopts nowadays excellent optical performance, advanced electronic control technology and complete software functionalities. Excellent total integration electronic transient control technology ensures amplifier to achieve the locking of optimal flat gain (OFG) in large dynamic input optical power range.

FGA4400-FM02 Full Functional EDFA module, using  $70 \times 90 \times 15\text{mm}$  , a single set of + 5VDC power supply, low power consumption.

FGA4400-FM02 is suitable for DWDM booster amplifier (BA) and DWDM preamplifier (PA).

## **2.0 PRODUCT FEATURE**

- Accord with the various communication technology requirements of 44 channels DWDM system
- Excellent optical performance
- Excellent total integration electronic transient control technology
- Optimal flat gain (OFG) locking (GF<1.0dB)
- Low noise figure
- Standard RS232 communication interface.
- Low power consumption
- Excellent P/P ratio in area

## **3.0 MAIN APPLICATION**

- C-Band 44 channels DWDM booster amplifier
- C-Band 44 channels DWDM preamplifier
- Long distance trunk network
- MAN or access network
- All kinds of SDH/PDH transmission system
- FTTx PON

#### 4.0 RELATED PRODUCT

- FGA4400-FM04 (100×130×19mm )
- FGA4400-FM05 ( FGA)
- HWA4500 ( VGA )
- HWA4700 ( VGA with MSA )
- HWA4100 ( WBA ),HWA4200 ( WLA ),HWA4300 ( WPA )

#### 5.0 Software Function monitoring and alarm

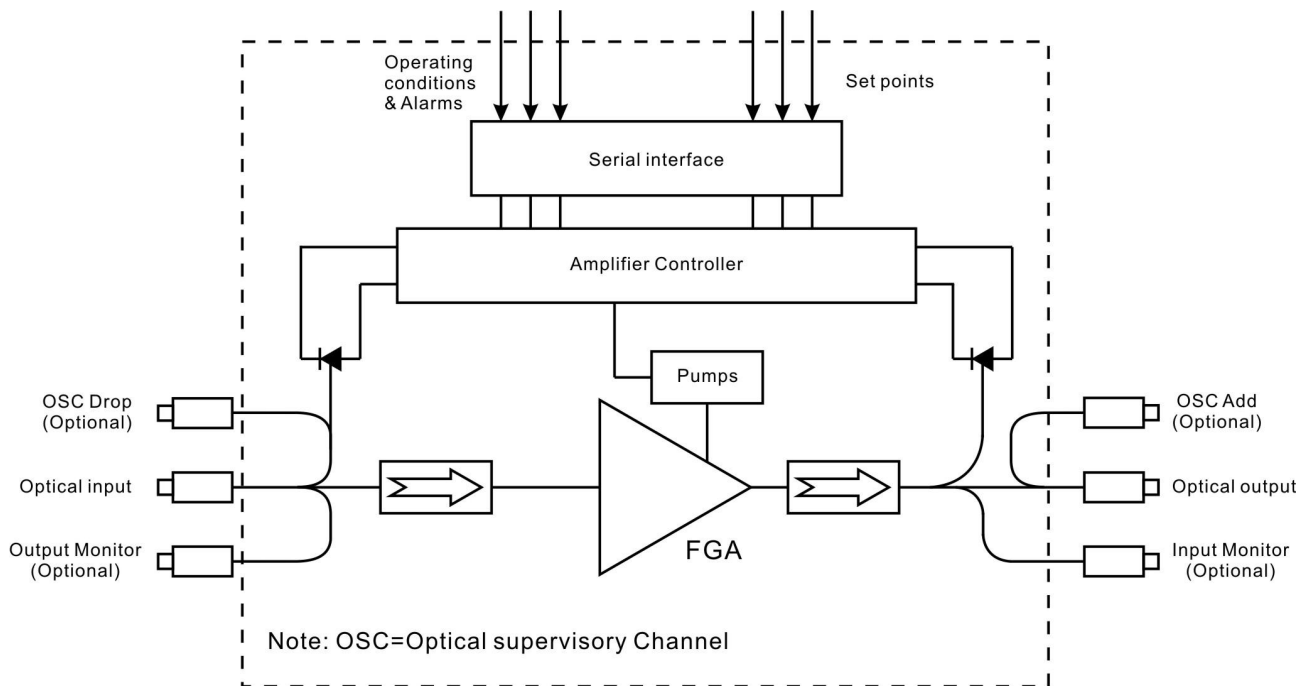
Functions	In-Service Firm ware Upgrades
	Auto Shut Down
	Fixed Gain Control mode and Power limiting
	Output Power Control Mode (APC)
	Pump Current Control Mode (ACC)
	Pump Maximum working Current limit Protection (APC)
Monitors	Total Input Power
	Total Output Power
	Pump Status
	Chassis Temperature
Alarms	Loss-of-Signal Alarm
	Chassis Temperature Alarm
	Pump Temperature Alarm
	Pump Bias Alarm

## 6.0 TECHNICAL INDEX

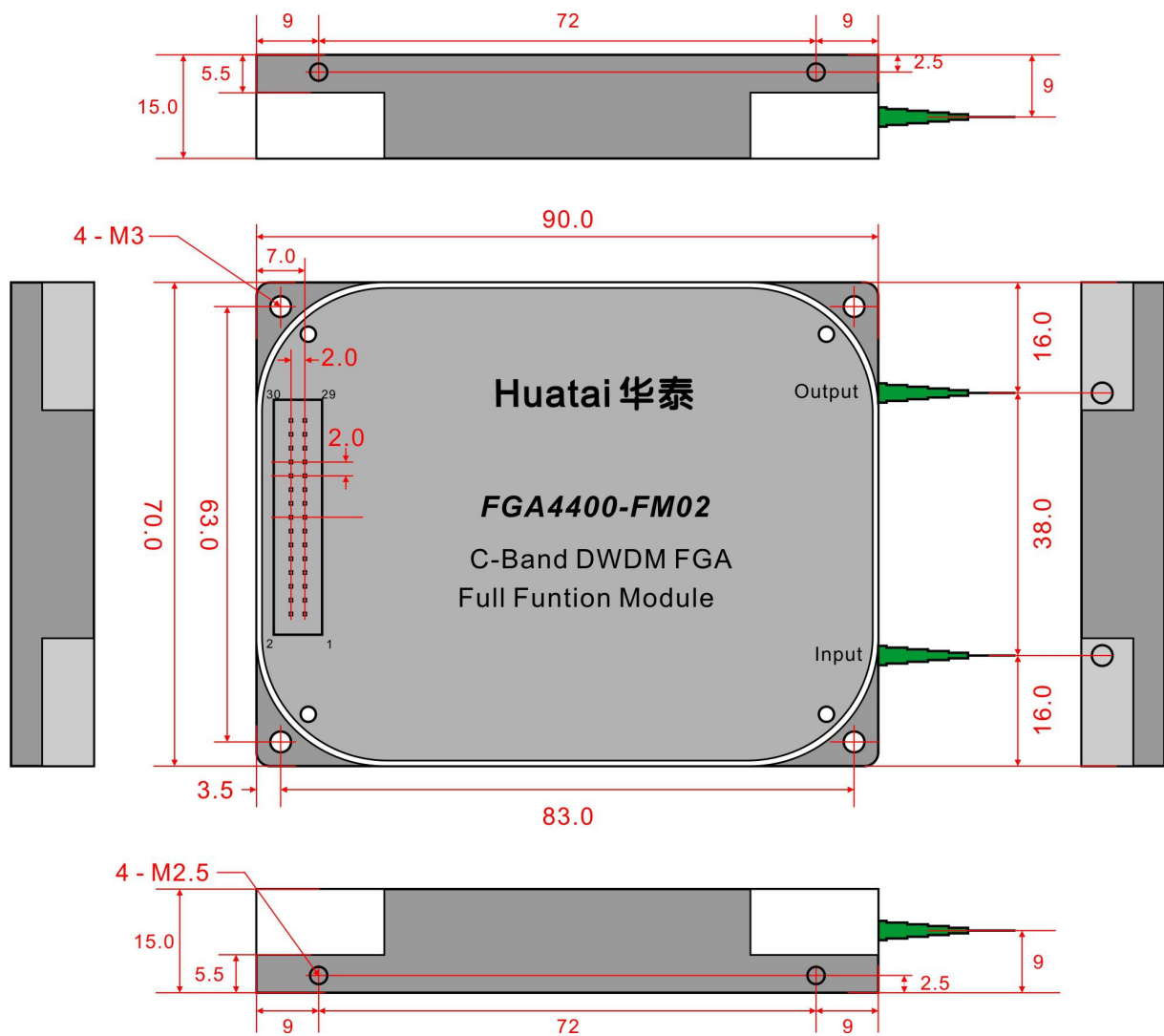
Performance			Index			Supplement
			Min.	Typ.	Max.	
Optical feature	Work wavelength range( $\lambda$ )	(nm)	1529.16		1563.86	ITU 88CH
	No. of Working channel	(CH)	1	44		
	Total input power range (Pi)	(dBm)	-30		+3	
	Saturation Output Power(Po)	(dBm)	14		22	Enhanced version
	Optimal flat gain (OFG) 2)	(dB)	18		33	Enhanced version
	Gain flatness	(dB)		0.7	1.0	Peak to Peak
	Noise figure	(dB)		4.7	5.5	Max gain
	Monitoring accuracy of input optical power	(dB)	-0.5		+0.5	
	Monitoring accuracy of input optical power	(dB)	-0.5		+0.5	
	Average gain accuracy	(dB)	-0.5		+0.5	
	Gain stability	(dB)	-0.25		+0.25	
	Polarization dependence gain	(dB)			0.3	
	Polarization dependence loss	(dB)			0.3	
	Polarization mode dispersion	(ps)			0.3	
	Input/output optic isolation	(dB)	30			
	Pump leakage power	(dBm)			-30	
	Echo loss	(dB)	45			UPC
			55			APC
	Wavelength range of optic management channel	(nm)	1500	1510	1520	
Transient suppression time	( $\mu$ s)			700	15dB Add/Drop	

	Transient Overshoot	(dB)	-1.5		+1.5	15dB Add/Drop
	Transient gain changes	(dB)	-0.5		+0.5	
General feature	Communication interface		RS232			
	Fiber type		Coming SMF-28™ or equivalent			
	Pigtail buffer diameter	(μm)		900		
	Pigtail length	(mm)		1000		
	Power supply	(V)	+4.75	+5	+5.25	220VAC
	Power consumption	(W)			30	
	Working temp.	(°C)	-5		+70	
	Storage temp.	(°C)	-40		+85	
	Working relative humidity	(%)	+5		+95	
	Size (W)×(D)×(H)	(mm)	70×90×15			

## 7.0 OPTICAL/ELECTRICAL SCHEMATIC



## 8.0 FMO2 MODULE CHASSIS SIZE





## 9.0 ELECTRICAL PIN ASSIGNMENTS

Pin	Definition	Pin	Definition
1	+3.3V	2	+3.3V
3	NC	4	NC
5	GND	6	GND
7	Upper computer receive	8	Upper computer transmit
9	GND	10	GND
11	NC	12	NC
13	Amplifier switch (enable) input, (low level enable)	14	NC
15	NC	16	NC
17	NC	18	NC
19	NC	20	NC
21	GND	22	GND
23	NC	24	NC
25	GND	26	GND
27	NC	28	NC
29	+3.3V	30	+3.3V

## 10.0 PRODUCT SERIES

Model	Saturation output optical power (dBm)	Optimal Flat Gain (dB)	Gain flatness (dB)	Optical port monitoring mode	OSC Optical port mode
FGA4414-G □□-FM02	14	18,20,22, 24,27,33 Optional	<1.0	1, MO: With output monitoring 2, MI: With input monitoring 3, MIO: With input and output monitoring	1, OD: OSC / Drop 2, OA: OSC / Add 3, ODA: OSC / Drop & Add
FGA4418-G □□-FM02	18				
FGA4420-G □□-FM02	20				
FGA4422-G □□-FM02	22				

## 11.0 ORDERING INFORMATION

FGA 4 4 □□ - G□□ - FM 02 / □□ - M□□ - O□□

C-Band DWDM Fixed Gain Optical Amplifier Module	Operation wavelength		Product type		Max. Output power		Gain		Module type		Best gain flatness		Connrcrtor		Monitor options		OSC optical port options		
	4	C-Band (1528~1564)	4	Fixed Gain Amplifier(BA)	14	14dBm	18	18dB	FM	Full function module	02	70 x 90 x 15mm	LP	LC/UPC	MO	With output monitor	OD	OSC/Drop	
					18	18dBm	20	20dB					LA	LC/APC					
					20	20dBm	22	22dB			04	100 x 130 x 20mm	SP	SC/UPC	MI	With input monitor	OA	OSC/Add	
					22	22dBm	24	24dB					SA	SC/APC					
								27	27dB					FP	FC/UPC	MIO	With input & output monitor	ODA	OSC/Drop & Add
								33	33dB					FA	FC/APC				