

VGA4500-FM06

Variable Gain EDFA Module (without MSA)

C-Band DWDM VGA Module without MSA

Technical Specification

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1.0 PRODUCT DESCRIPTION

Huatai VGA4500-FM06 series is a next generation variable gain optical amplifier module, which with the most excellent performance and most complete functions in the market. It adopts nowadays most excellent optical performance, most advanced electronic technology and most complete software functions. Remarkable transient suppression control technology and heat management control technology let many complicated optical functions achieved. It is the most versatile multifunction optical amplifier in the market.

This next generation variable gain amplifier module is composed with two stages amplifier: variable gain pre-amplifier (PA) and variable gain booster amplifier (BA). The gain of these two stages amplifier can be independently set in a certain range. There is a connector between the two stages amplifier, which used for mid-stage access, such as optical Add-Drop module (OADM), dispersion compensation module (DCM) and others optical modules.

VGA4500-FM06 adopts 130×212×19.5mm (including heat sinks) ultra-thin appearance; signal unit +5VDC power supply, low consumption.

VGA4500-FM06 is a device without Mid-stage Access, which according with various communication technology requirements of C-Band 44 or 88 channels DWDM system, widely used in long distance and ultra-long distance transmission network. Since its complete functions, it can be used as line amplifier, pre-amplifier, booster amplifier.

2.0 PRODUCT FEATURE

- Nest-generation Variable Gain Amplifies Module
- Without Mid-stage Access Version
- Accord with the various communication technology requirements of C-Band 44 or 88 channels DWDM system
- Adopt latest total integration electronic transient control technology
- Adopt digital control technology which can adapt to heat management.
- Saturation large output power optional: 18dBm, 20dBm, 23dBm,24dB
- AGC, APC, ACC working mode
- Optical monitoring channels optional: OSC Add/Drop
- Carrier-class security and reliability
- Ultra-thin appearance 130×212×19.5mm(including heat sinks)
- Low power consumption
- Excellent cost performance in area

3.0 MAIN APPLICATION

- Long distance and Ultra-long distance network among the cities
- Line amplifier, pre-amplifier, booster amplifier

4.0 Related product

- VGA4700-FM06 (With MSA Variable Gain EDFA Module)
- HWA4500 (Without MSA Variable Gain EDFA)
- HWA4700 (Without MSA Variable Gain EDFA)
- HWA4400(Fixed Gain Amplifier)

5.0 Technique index

Performance			Index			Supplement
			Min.	Typ.	Max.	
Optic feature	Wavelength work range(λ)	(nm)	1529.16		1563.86	ITU 88CH
	Input power range ¹⁾	(dBm)	-35		+3	VGA4518-FM06 Typ.
			-35		+3	VGA4520-FM06 Typ.
			-40		0	VGA4523-FM06 Typ.
			-40		0	VGA4524-FM06 Typ.
	Gain range ²⁾	(dB)	18		30	G30 Typ.
			23		35	G35 Typ.
			29		41	G40 Typ.
			12		24	G25 Typ.
	Max. output power ³⁾	(dBm)			18	VGA4518-FM06
					20	VGA4520-FM06
					23	VGA4523-FM06
					24	VGA4524-FM06
	Gain flatness	(dB)		0.7	1.0	Peak-to-peak
	Noise figure	(dB)		5.0	5.9	Max gain
Polarization dependence loss	(dB)			0.3		
Polarization dependence gain	(dB)			0.3		
Polarization mode dispersion	(ps)			0.3		
Pump leakage power	(dBm)			-30		
Return loss ⁴⁾	(dB)	40			UPC	
Optical supervisory channel wavelength ranges	(nm)	1500	1510	1520		
feature Transient	Transient setting time	(μ s)			500	16dB Add/Drop
	Transient overshoot	(dB)	1.5		1.0	16dB Add/Drop
	Transient gain changes	(dB)			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	(VDC)	+4.75	+5	+5.25	
	Power consumption	(W)	14		20	
	Work temp.	(°C)	0		+70	
	Storage temp.	(°C)	-40		+85	
	Working relative humidity	(%)	5		95	
	Size(W)×(D)×(H)	(mm)	130×212×19.5			

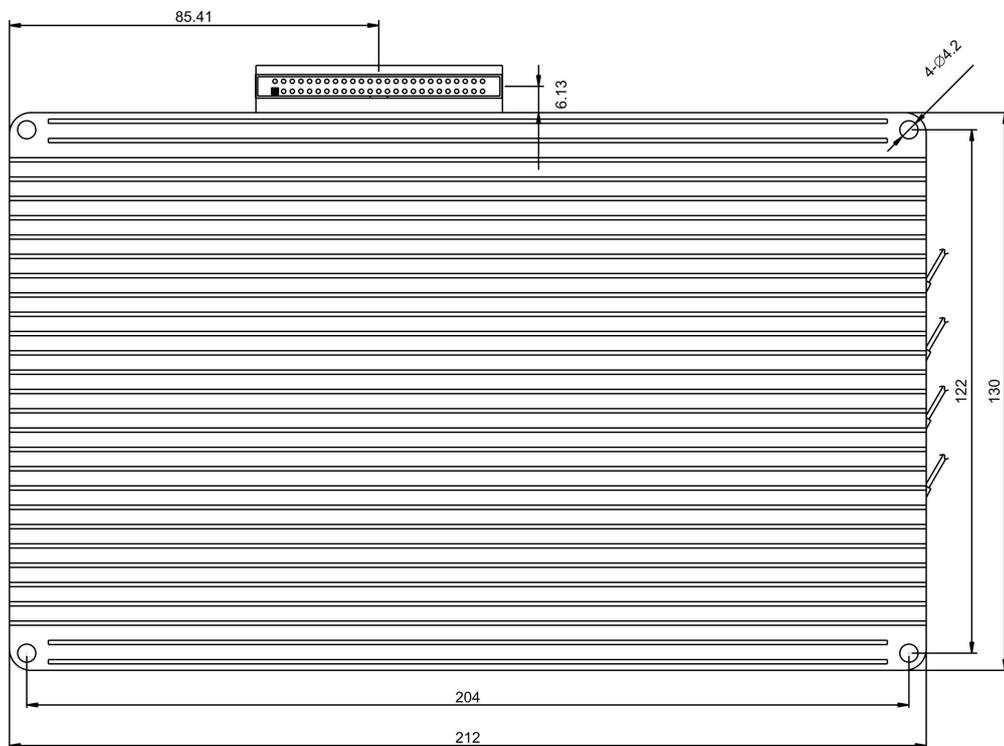
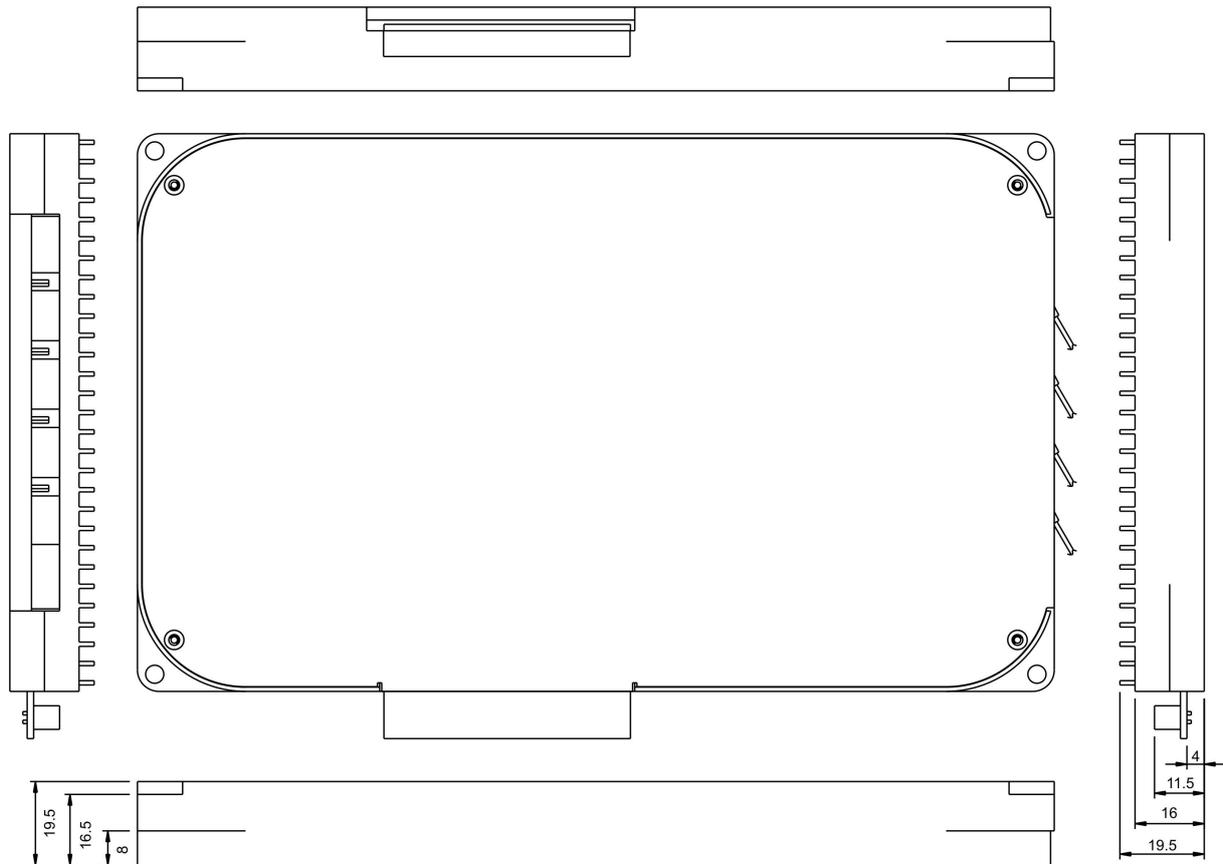
Note: 1, 2, 3: these optic performance are typical application, can be customized according to customers' requirements.

4: APC optional, return loss>50dB

6.0 SOFTWARE FUNCTION MONITORING AND ALARM

Functions	In-service firmware upgrades
	Auto shut down
	Gain control mode with automatic power limiting(VGA)
	Independent stage mode (on variants with Mid-stage access)
	Output power control mode
	Pump current control mode
	Eye-safe power mode
	Non-volatile event log
Monitors	Total input power
	Total output power
	Optical backreflection
	Pump status
	Module temperature
Alarms	Loss-of-signal Alarm
	Low output power Alarm
	Module temperature Alarm
	Pump temperature Alarm
	Pump bias Alarm
	Excess backreflection Alarm (Optional)

8.0 MODULE CHASSIS SIZE



9.0 50 PIN Interface DEFINATION

Pins	Description	Pins	Description
1	Power supply	2	Power supply
3	Power supply	4	Power supply
5	Power supply	6	Power supply
7	Ground	8	Ground
9	Ground	10	Ground
11	Reserved (do not connect)	12	Output Reflection Alarm
13	Ground	14	Resent input
15	Serial input	16	Serial output
17	Pump Current Alarm	18	Stage 1 input LOS alarm
19	Ground	20	Ground
21	Reserved (do not connect)	22	Reserved (do not connect)
23	Reserved (do not connect)	24	Reserved (do not connect)
25	Ground	26	Reserved (do not connect)
27	Stage 2 input LOS alarm	28	Ground
29	Stage 2 output/Gain alarm	30	Ground
31	Ground	32	Ground
33	Case temperature alarm	34	Stage 1 output / Gain alarm
35	Pump temperature alarm	36	Pin is absent (Polarization key)
37	Amplifier disable input	38	Output Power mute input
39	I2C SCL (Optional)	40	I2C SDA (Optional)
41	Ground	42	Ground
43	Ground	44	Ground
45	Power supply	46	Power supply
47	Power supply	48	Power supply
49	Power supply	50	Power supply

10.0 PRODUCT SERIES

Model	Max.output optical power (dBm)	Gain range (dB)	Input power range Typ.(dBm)	Mid-stage insertion loss (dB)	Monitor optical port mode	OSC optical port mode
VGA4518-G30-FM06-M00-S00	18	16~28	+3~-35	NC	Without	Without
VGA4518-G35-FM06-M00-S00		23~35	0~-35			
VGA4518-G40-FM06-M00-S00		28.5~40	+3~-30			
VGA4520-G30-FM06-M00-S00	20	18.5~30	+3~-35			
VGA4520-G35-FM06-M00-S00		23~35	0~-35			
VGA4520-G40-FM06-M00-S00		29~41	+3~-35			
VGA4523-G30-FM06-M00-S00	23	19~31	0~-35			
VGA4523-G35-FM06-M00-S00		25~37	0~-37			
VGA4523-G40-FM06-M00-S00		29~41	0~-40			
VGA4524-G35-FM06-M00-S00	24	25~37	0~-37			
VGA4524-G40-FM06-M00-S00		30.5~42	0~-40			

Note: 1), Optical port monitoring mode options:

- 1, MO (With output monitoring optical port)
- 2, MI (With input monitoring optical port)
- 3, MIO (With input and output monitoring optical port)

2), OSC optical port mode of optical management channel:

- 1, OD (OSC/Drop)
- 2, OA (OSC/Add)
- 3, ODA (OSC/Drop & Add)

11.0 Model explanation

VGA 4 5 □□ - G□□ - FM 06 - □□ - M□□ - O□□

NGB Variable Gain EDFA Module	Wavelength		Product type		Max. Output power(dBm)		Gain Range Typ(dB)		Module type		Module size No.		Connector		Optical port Monitoring optional		OSC Optical port optional	
	4	C-Band (1528~1564)	5	VGA without MSA	18	18	30	18~30	FM	Full function module	06	130 x 212 x 19.5mm	LP	LC/UPC	M00	Without optical port monitoring	O00	Without OSC
			7	VGA with MSA	20	20	35	23~35					SP	SC/UPC			OD	OSC/Drop
					23	23	40	29~41					LA	LC/APC	MO	With output optical port monitoring	OA	OSC/Add
					24	24	25	12~24					SA	SC/APC			ODA	OSC/Drop & Add
															MI	With input optical port monitoring		
															MIO	With input, output optical port monitoring		