HWA4700

C-Band DWDM

Variable Gain EDFA with Mid-Stage Access

Technical Specification

CONTENT

1.0 PRODUCT DESCRIPTION

Huatai HWA4700 series is a next-generation variable gain EDFA, which with the most excellent performance and most completes 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.

HWA4700 is a device with 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 and add-drop multiplexing amplifier.

2.0 PRODUCT FEATURES

- Next-generation Variable Gain Amplifies

- With 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

- Mid-stage versions can be set as independent pre-amplifier and booster amplifier

- Saturation output power optional: 18dBm, 20dBm, 23dBm, 24dBm

- AGC, APC, ACC working mode

- Optical monitoring channels optional: OSC Add/Drop

- Carrier-class security and reliability, and network management function

- The LCD, LED at the front panel offers the work index and warning alarm of all equipment.

- Standard RS232 communication interface.

- 10/100M Ethernet interface supports SNMP and WEB remote network management.

- 1+1 powers supply back up optional, hot-plug function available

- Low power consumption

- Excellent P/P ratio in area

3.0 MAIN APPLICATION

- OADM

- DCM in over long trunk

- ASON

- Reconfigurable optical add/drop multiplexer (ROADM)

- Long-distance or ultra-long haul network between the city

- Line amplifier, Pre-amplifier, Booster, Add/Drop amplifier

4.0 TECHNICAL INDEX

Performance		Index			Supplement
		Min.	Typ.	Max.	
Operating wavelength range (λ)	(nm)	1529.16		1563.86	ITU 88CH
Input power range	(dBm)	-35		+3	HWA4718
		-35		+3	HWA4720
		-40		0	HWA4723
		-40		0	HWA4724
Gain range	(dB)	13		21.5	G21Typ
		18		30	G30Typ
		23		35	G35Typ
		29		41	G40Typ
		12		24	G25Typ
Mid-stage loss range 3)	(dB)	0		8	HWA4718
		0		10	
		0		12	
Max. output power	(dBm)			18.5	HWA4718
				20	HWA4720
				23	HWA4723
				24	HWA4724
Gain flatness	(dB)		0.7	1.0	Peak-to-peak
Noise figure	(dB)		5.5	5.9	Max gain
Polarization dependence loss	(dB)			0.3	
Polarization dependence gain	(dB)			0.3	
Polarization mode dispersion	(ps)			0.3	
Pump power leakage	(dBm)			-30	

Optical feature (row label spanning left side of table)

	OSC wavelength ranges [1]	(nm)	1500	1510	1520	
	Return loss [2]	(dB)	40			UPC
	Transient over /under shoot	(dB)	-1.5		1.0	16dB Add/Drop
	Transient offset	(dB)			0.5	
General feature	SNMP interface		RJ45			
	Serial interface		RS232			
	Power supply	(V)	90		265	220VAC
			30		72	-48VDC
	Power consume	(W)			25	
	Operating temp.	(°C)	-5		+70	
	Storage temp.	(°C)	-40		+85	
	Operating relative humidity	(%)	5		95	
	Size (W)×(D)×(H)	(mm)	483×205×44			

Note: 1, 2, 3, 4: these optic performance are typical application, can be customized according to customers' requirements.
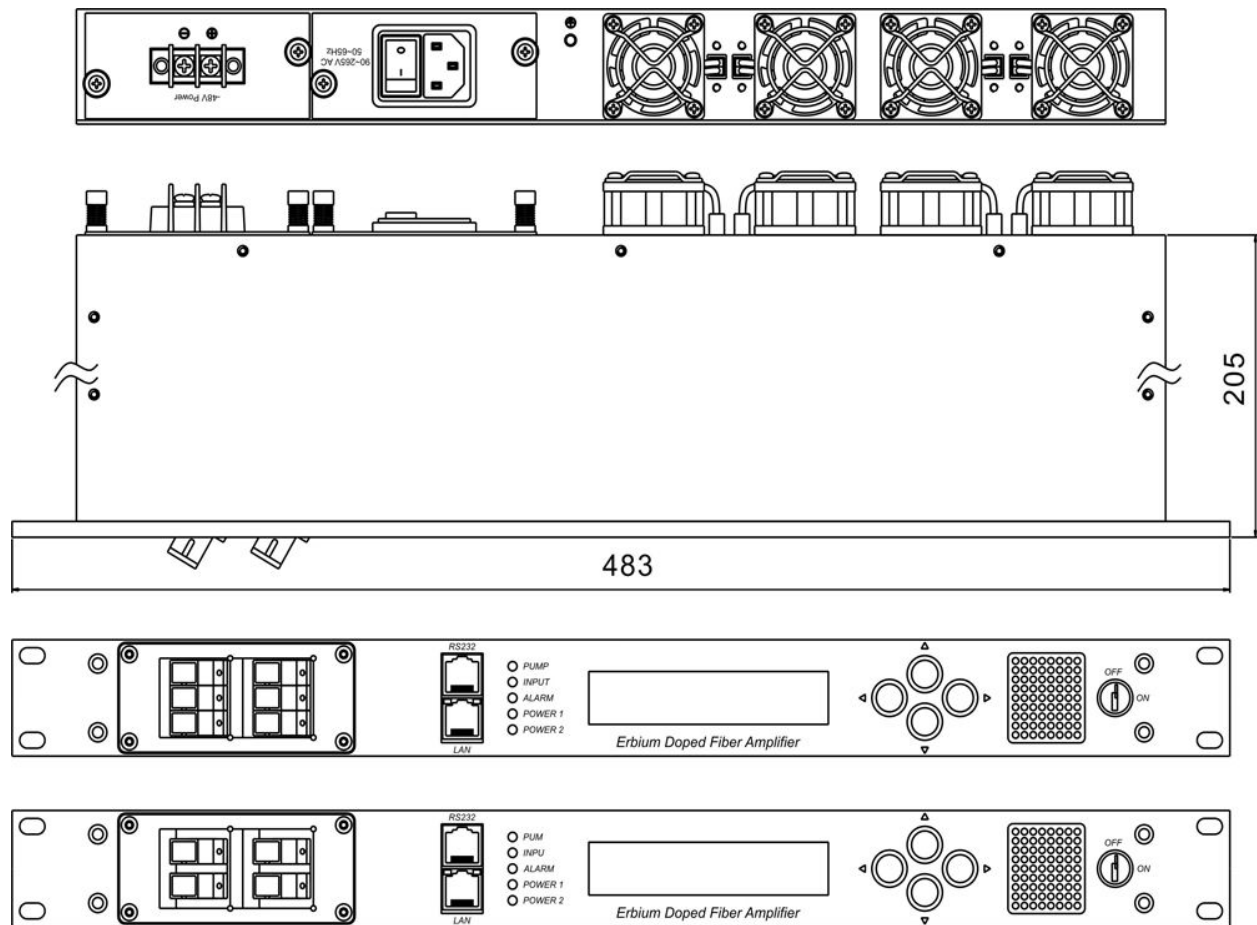5: APC optional, return loss>50dB

5.0   OPTICAL ELECTRICAL SCHEMATIC
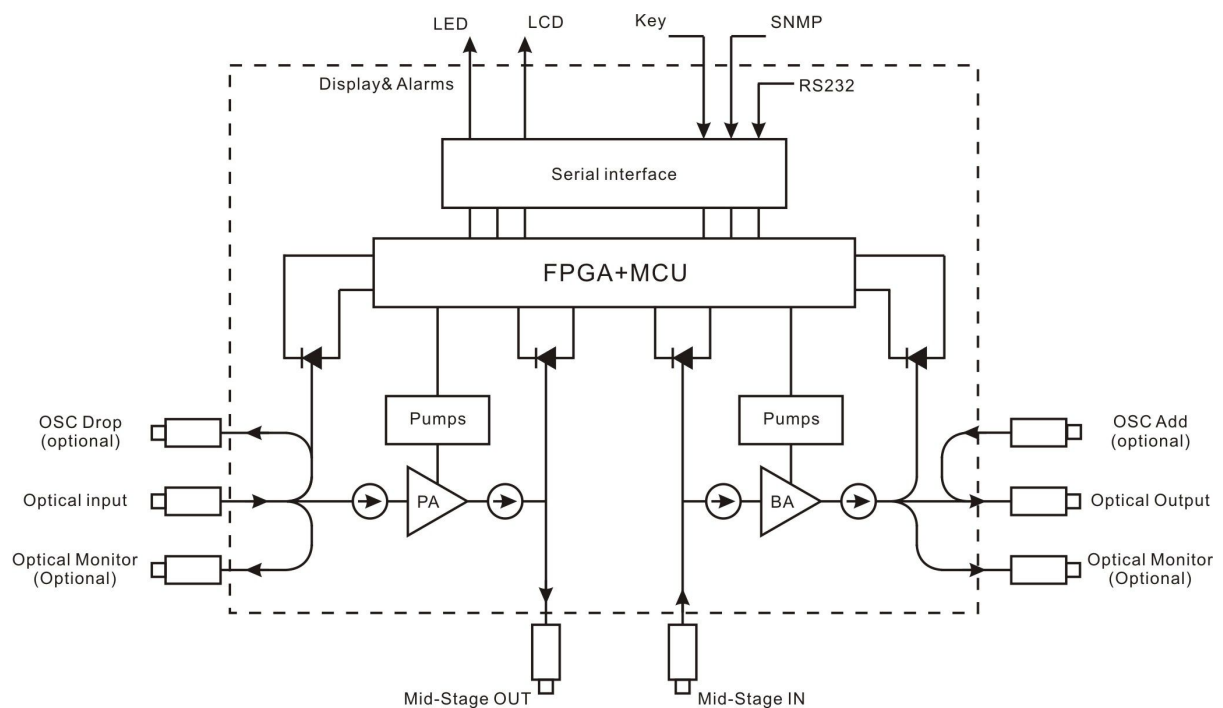
6.0 SOFTWARE FUNCTIONS, MOITORS AND ALARMS

Functions	In Service Firmware Upgrades
	Auto Shut Down
	Gain Control Mode with Automatic Power limiting(VGA)
	Gain tilt Control
	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
	Chassis Temperature
Alarms	Loss-of-Signal Alarm
	Low Output Power Alarm
	Chassis Temperature Alarm
	Pump Temperature Alarm
	Pump Bias Alarm
	Excess Backreflection Alarm (Optional)

7.0 CHASSIS LENGTH

205

483

RS232
PUMP
INPUT
ALARM
POWER 1
POWER 2
LAN
Erbium Doped Fiber Amplifier
OFF
ON

RS232
PUM
INPU
ALARM
POWER 1
POWER 2
LAN
Erbium Doped Fiber Amplifier
OFF
ON

8.0 PRODUCT SERISE

Model	Max. Output power	Gain range	Input power range	Mid-stage loss	Optical power monitorin	OSC optical monitorin
HWA4718-G21-M00-S00	18.5	13~21.5	+3~-30	0~8	Without	Without
HWA4718-G30-M00-S00		16~28	+3~-35	0~10		
HWA4718-G35-M00-S00		23~35	0~-35	0~12		
HWA4718-G40-M00-S00		28.5~40.5	+3~-30			
HWA4720-G30-M00-S00	20	18.5~30.5	+3~-35	0~12		
HWA4720-G35-M00-S00		23~35	0~-35			
HWA4720-G40-M00-S00		29~41	+3~-35			
HWA4723-G30-M00-S00	23	19~31	0~-35	0~12		
HWA4723-G35-M00-S00		25~37	0~-37			
HWA4723-G40-M00-S00		29~41	0~-40			
HWA4724-G35-M00-S00	24	25~37	0~-37	0~12		
HWA4724-G40-M00-S00		30.5~42.5	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)

9.0 MODEL EXPLANATION

HWA 4 7 □□ – G□□ – D20 – □□ – □ / □□ – M□□ – O□□

Telecom DWDM EDFA	Operation wavelength		Product type		Max.Output power(dBm)		Gain Range Typ(dB)		Chassis Length		Connector		Power Mode		Power Supply		Monitor Optical ports options		OSC optical port options mode	
4	4	C-Band (1528~1564)	7	VGA with MSA	18	18.5	21	13~21.5	D20	205mm	LP	LC/UPC	S	Single PS	22	220VAC	M00	Without Monitor optical ports	O00	Without OSC
					20	20	30	18~30	D25	250mm	SP	SC/UPC	P	Dual PS Hot Plug	48	-48VDC			OD	OSC/Drop
			5	VGA without MSA	23	23	35	23~35	D30	300mm	LA	LC/APC			42	-48VDC &220VAC	MO	With output optical ports monitor	OA	OSC/Add
					24	24	40	29~41			SA	SC/APC							ODA	OSC/Drop & Add
							25	12~24									MI	With input optical port monitor		
																	MIO	With input,output optical ports monitor		