

Technical index

BA4100 Series

1550nm Erbium Doped Fiber Amplifier



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1. Product Description

BA4100 series is a C-Band booster EDFA with gain spectrum band within 1528~1565nm. According to the gain flatness feature, this series product can be divided into 2 types: BA4100/SCH: single-channel booster amplifier, do not fix on gain flatness, suitable for the application of single channel or 1~8 continuous ribbon channels (ITU wavelength). BA4100/FXX: gain-flattened booster amplifier, realizing gain flatness (F10, $\leq \pm 0.5\text{dB}$) at gain spectrum $< 1.0\text{dB}$ (Typ. $< 0.8\text{dB}$) within whole C-band, as adopting the high-quality GFF and optimization of optical route. Meet requirement of DWDM system C-band booster amplifier on gain flatness and high output power totally. BA4100/FXX gain flatness divided in three levels for option. Standard type F10: $\text{FL} \leq \pm 0.5\text{dB}$, advanced type F05: $\text{FL} \leq \pm 0.25\text{dB}$, ordinary type F20: $\text{FL} \leq \pm 1.0\text{dB}$. BA4100 adopts the world's top class pump laser and America OFS erbium-doped optical fiber. Perfect APC, ACC and ATC control, excellent design in the ventilation and heat-dissipation ensure the long life and high reliable work of pump laser. RS232 and RJ45 offer serial commutation and SNMP network management port. The LCD at the front panel offers the work index of all equipment and warning alarm. The laser will switch off automatically if optical power is missing, which offers security protection for the laser. All the optical port can be installed in the front panel (also can be in the back panel if customers specify).

2. Product Feature

- Wide operating bandwidth (1528~1565nm)
- Low noise, high-output, high reliability
- BA4100/SCH single channel optical amplifier
- BA4100/FXX gain flatness optical amplifier
- Three gain flatness performance option: $\leq \pm 0.25\text{dB}$, $\leq \pm 0.5\text{dB}$, $\leq \pm 1.0\text{dB}$
- APC, AGC, ACC controlled selection
- Powerful RS232 supervisory instruction
- Optional multi-exterior structure
- Three exterior option: 1U (19" stander), 3D (12.4", 3U, Desk-type) and modulator
- 1U and 3D exterior, offering status appearance and diagnosing fault with LCD, standard RS232 communication interface, SNMP network management function
- Application of 3D models to adapt to laboratory
- Excellent P/P ratio in area.

3. Main Application

- C-Band single channel booster amplification
- C-Band DWDM booster amplification
- WDM fiber CATV system booster amplification
- FTTP, FTTH
- Laboratory application

4. Technical Index

4.1. Optical feature

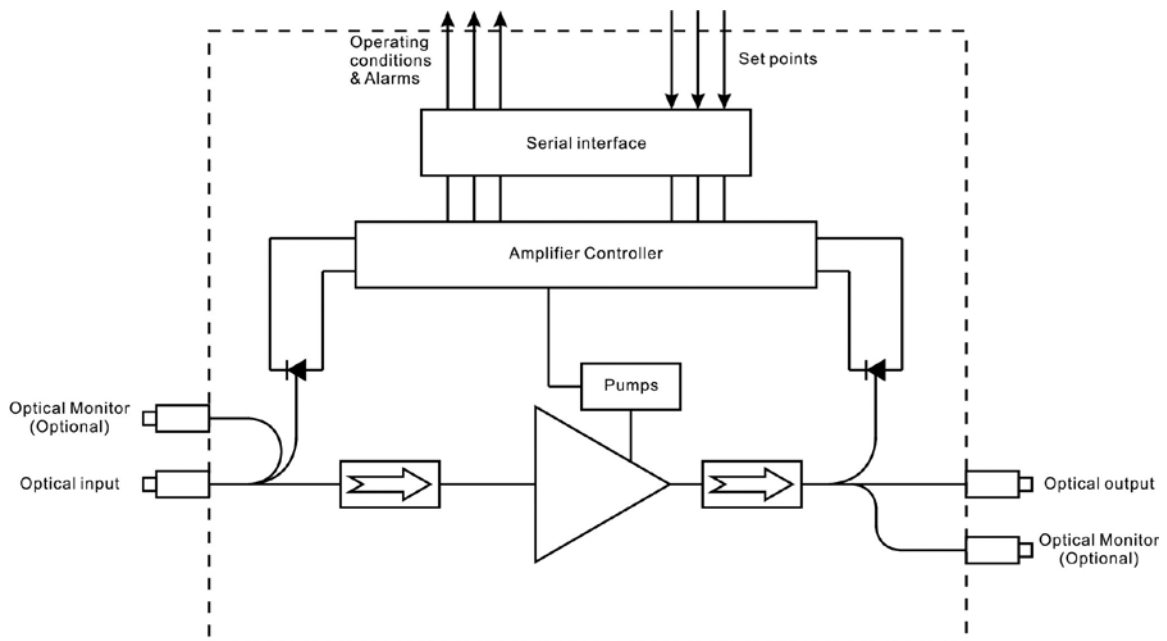
Feature	Units	Index			Supplement
		Min.	Typ.	Max.	
Operating wavelength range	(nm)	1528		1565	C-Band
Input power	(dBm)	-10		+10	
Maximum output power1)	(dBm)			13	BA4113
				17	BA4117
				20	BA4120
				22	BA4122
				23	BA4123
				24	BA4124
				25	BA4125
Output power adjustable range	(dBm)	0		-6	P type
		1		8	FC, SC
Number of output ports		1		16	LC
Difference of each output power	(dB)	-0.5		+0.5	
Gain flatness (Peak-to-peak, Nominal Gain)	(dB)	Single channel		SCH	
			0.4	0.5	F05, $\leq \pm 0.25$
			0.8	1.0	F10, $\leq \pm 0.5$
			1.5	2.0	F20, $\leq \pm 1.0$
Noise figure (Max output, max gain)	(dB)		4.0	4.5	BA4113
			5.0	5.3	BA4117
			5.5	5.8	BA4120
			6.0	6.3	BA4123
			6.5	6.8	BA4126
Polarization dependence loss	(dB)			0.3	
Polarization dependence gain	(dB)			0.5	
Polarization mode dispersion	(ps)			0.3	
Input/output isolation	(dB)	30			
Pump power leakage	(dBm)			-30	
Echo loss	(dB)	40			UPC
		55			APC

4.2. General feature

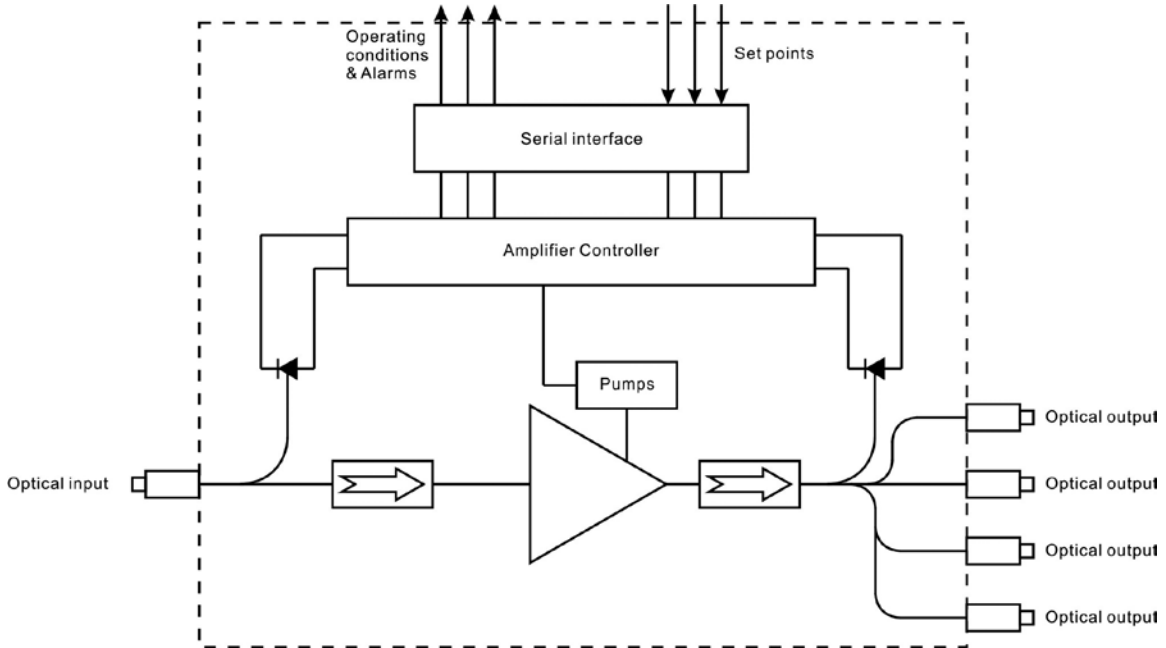
Feature	Units	Index			Supplement
		Min.	Typ.	Max.	
SNMP network management interface		RJ45		1565	
Serial interface		RS232			
Power supply	(V)	90		265	220VAC
		30		72	-48VDC
		23		25	+24VDC
Power consume	(W)			50	
Operating temp.	(°C)	0		65	
Storage temp.	(°C)	-40		80	
Operating relative humidity	(%)	5		95	
			19×14.5×1.75		1RU (19")
Size (W)×(D)×(H)	"		12.4×15.4×5.25		3D (12.4", desk-type)
			150×125×22		Modulator
		(mm)			

5. Optical/electrical schematic

5.1. Optical port mode M4 (with input & output monitor port)



5.2. Optical port mode 04 (four ways optical output)



6. Product Series

Model	Output power Max (dBm)	Gain flatness (dB)	Wavelength (nm)	Function	Optical port mode
BA4113/SCH-PN-M2	13	Single channel	1528~1565	With SNMP network management, output power 0 ~ -6dB adj.	1 way optical input, 1 way optical output
BA4114/SCH-PN-M2	14				
BA4116/SCH-PN-M2	16				
BA4117/SCH-PN-M2	17				
BA4118/SCH-PN-M2	18				
BA4119/SCH-PN-M2	19				
BA4120/SCH-PN-M2	20				
BA4121/SCH-PN-M2	21				
BA4122/SCH-PN-M2	22				
BA4123/SCH-PN-M2	23				
BA4124/SCH-PN-M2	24				
BA4125/SCH-PN-M2	25				
BA4126/SCH-PN-M2	26				

Model	Output power Max (dBm)	Gain flatness (dB)	Wavelength (nm)	Function	Optical port mode
BA4113/F10-PN-M4	13	≤±0.5	1528~1565	With SNMP network management, output power 0 ~ -6dB adj.	4 ports, with input / output monitor port
BA4114/F10-PN-M4	14				
BA4116/F10-PN-M4	16				
BA4117/F10-PN-M4	17				
BA4118/F10-PN-M4	18				
BA4119/F10-PN-M4	19				
BA4120/F10-PN-M4	20				
BA4121/F10-PN-M4	21				
BA4122/F10-PN-M4	22				
BA4123/F10-PN-M4	23				
BA4124/F10-PN-M4	24				
BA4125/F10-PN-M4	25				
BA4126/F10-PN-M4	26				

Notes:

- [1] Gain flatness feature F05 (≤±0.25dB) and F20 (≤±1.0dB) optional.
- [2] Output power adjustable P type optional
- [3] Optical ports M4 optional, with input and output supervise port
- [4] 4 ports, 8 ports, 16 ports and etc multi-ports output Optional

7. Model explanation

BA 4 1 2 0 / 0 N - M 2 - 1 U - F / S A - 2 2

Product series	Operating bandwidth		Product type		Saturation output power		Function		Network management		Number of optical port		Exterior		Optical port position		Connector		Power supply	
Amplifier of communication class	5	1540~1563nm CATV	1	BA	13	13dBm	0	Without	0	Without	M2	2 ports, without input & output monitor	1U	19" 1RU	F	Front panel	FA	FC/APC	22	220VAC
			2	LA	14	14dBm	P	Optical power adj.	N	With	2U	19" 2RU	B	Back panel	FP	FC/UPC	11	110VAC		
	4	C-Band 1528~1565nm	3	PA	15	15dBm	G	Gain adj.			M4	4 ports, with input & output monitor	3D	Desk-type 12.4 x 15.4 x 5.8			SA	SC/APC	48	-48VDC
			4	High Power	16	16dBm											SP	SC/UPC		
	6	L-Band 1570~1610nm	5	VGA	17	17dBm											LA	LC/APC		
			7	MSA	18	18dBm											LP	LC/UPC		
	7	C+L-Band	8	FTTP with CWDM, for FTTx PON	19	19dBm														
	8	Bi-direction EDFA			20	20dBm														
					21	21dBm														
					22	22dBm														
					23	23dBm														
					24	24dBm														
					25	25dBm														
					26	26dBm														