RFA6000 L-Band Separate Raman Amplifier

PRODUCT DESCRIPTION

1. Erbium-doped Fiber Amplifier, due to the multiple cascades and the accumulation of noise caused by spontaneous emission, will reduce the system CNR greatly and thus it will limit the transmission capacity and distance of the system. Raman Amplifier is a newly designed fiber amplifier based on Stimulated Raman Scattering (SRS) effect. Raman amplifier is considered as the core technology of new generation DWDM fiber over-long communication. Compared with Erbium-Doped Fiber Amplifier, Raman amplifier has the advantage of low Noise Figure (NF), wider gain bandwidth, flexible gain spectral region and stable temperature. It is the only device that can operate in 1300~1600 nm.

2. The gain medium of EDFA is Erbium-doped Fiber (EDF) . It is a separated amplifier and its signal light can only be amplified after putting into EDFA. The gain medium of Distributed Raman Amplifier is Single Mode Fiber (SMF) which is for signal light transmission . Raman amplifier gain area is distributed at long transmitting fiber that is 25km from the output end. That is to say, the signal light is amplified 25km before it reaches the output end of the transmitting fiber.

3. Raman amplifier low noise figure marks the super advantages as following:

① During Single Mode Fiber(G.652) transmission, adopting Distributed Raman Amplifier, it can reduce the loss for 5.5dB (Typical value) at effective cross-distance . Compared with EDFA, it equals that the effective distance is reduced for 25km, (fiber loss is calculated as 0.22dB/km). Therefore, the input power to the fiber is reduced and the damage of fiber non-linearity effect (SBS) is weakened.

② In OSNR calculation, the Equivalent Noise Figure of distributed backward pump Raman Amplifier is 0dB, typical value 0~-2dB, which has remarkable help for improvement of cross-band length, increase system OSNR and transmission distance.

4. RFA distributed Raman Amplifier is a series of products, with different Raman Gain and Gain bandwidth to meet differential needs. The unit adopts Japanese Fitel Raman pump laser, built-in perfect laser APC, AGC, ATC closed-looped circuit ensuring long life and stable operation of the pump laser.

PRODUCT FEATURES

▶Perfect laser APC, AGC, ATC closed-looped circuit ensuring long life and stable operation of the pump laser.

▶Low noise figure and flat gain.

▶Adopts famous Fitel Raman pump laser.

▶Gain bandwidth: L-Band (1570~1604nm).

MAIN APPLICATION

▶Fiber CATV system, extra-long trunk that is inconvenient for building relay station.

Relay distance > 60Km.

Single span distance > 80Km.

▶DWDM, CATV extra-long trunk optical transmission system.

▶Submarine optical transmission system.

TECHNICAL INDEX

Performance			Index			Supplement
			Min.	Typ.	Max.	
Optic feature	Wavelength	(nm)	1570		1604	RFA6000 L-Band
	Pump optic transmission power	(mW)	400			
	Raman switch gain	(dB)	7	8	9	RFA6008
			9	10	11	RFA6010
			11	12	13	RFA6012
			13	14	15	RFA6014
			15	16	17	RFA6016
	Gain flatness	(dB)		1.0		RFA6000/F (With GFF)
				2.0		RFA6000 (Without GFF)
	Noise flgure	(dB)			0	
	Polarization mode dispersion	(ps)			0.2	
	Polarization dependence gain	(dB)			0.4	
	Polarize related loss	(dB)		0.1		
General feature	Work voltage	(V)	90		265	-48VDC optional
	Power Consume	(W)		30		
	Work temp	(℃)	0		60	
	Storage temp	(℃)	-40		+85	
	Relative humidity	(%)	5		95	
	Size (W)×(D)×(H)	(mm)	483×368×44			1U
			483×368×88			2U

Notes: work wavelength and pumping optical power can be tailored according to the customer's request.

PRODUCT SEREIS

Model	Work wavelength (nm)	Gain flatness (dB)	Raman Switch gain (dB)
RFA6008/0	1570~1604	<±2	8±1.0
RFA6010/0	1570~1604	<±2	10±1.0
RFA6012/0	1570~1604	<±2	12±1.0
RFA6014/0	1570~1604	<±2	14±1.0
RFA6016/0	1570~1604	<±2	16 (-1 ~ +0.5)
RFA6008/F	1570~1604	<±1	8±1.0
RFA6010/F	1570~1604	<±1	10±1.0
RFA6012/F	1570~1604	<±1	12±1.0
RFA6014/F	1570~1604	<±1	14±1.0
RFA6016/F	1570~1604	<±1	16 (-1 ~ +0.5)

Notes: 1. Distributed optical raman amplifier with opposite phase PUMP (phasing back PUMP).

2. F model, built-in gain flatness filter GFF.

MODEL EXPLANATION

RFA 60 □□ / □

Guangtai Raman Optical Amplifier		Wavelength		Raman Switch Gain		Gain flatness	
RFA	Separate Raman optical amplifier	40	CATV	08	7~8.5dB	O	Without GFF <±2.0
HFA	Hybrid Raman/Er-doped optical amplifier	50	C-Band	10	9~10.5dB		
		60	L-Band	12	11~12.5dB	F	With GFF <±1.0
DRA	Separate dispersion compensation Raman optical amplifier	70	C+L-Band	14	13~14.5dB		
				16	15~16.5dB		