



1550nm External Modulation Optical Transmitter

RCI OT5200 Series

Technical Specification



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1.0 PRODUCT DESCRIPTION

1550nm externally modulated optical transmitter is the core equipment in the RFTV network system. RFTV is a unidirectional analogue and digital video broadcast. It adopts high efficiency modulation mode for RF carrier wave and its economy, flexibility and bandwidth validity is beyond comparison of IPTV. By adopting EPON, GEON or P2P access mode to realize triple-play and FTTx, RFTV broadcasting network in 1550nm optical wavelength still plays an important role.

1550nm externally modulated technology for optical transmitter has no laser chirp, low dispersion distortion, and large extinction ratio, with excellent characteristic within 47~862MHz. External Modulator doesn't generate CSO distortion after reasonable bias. It can be followed by amplifier when used in large area coverage of over-long trunk and local networks. Adopting WDM, multi-wavelength optical channels can be transmitted through one fiber. 1550nm optical fiber CATV follows the current development trend of triple-play and fiber to home.

OT5200 that accords with current international industry technique standard is a 1550nm Externally Modulated Optical Transmitter. The whole unit light source adopts narrow bandwidth (0.65MHz), low noise, continuous wave DFB laser, which is propitious to reduce the influence of dispersion. The whole unit signal modulation adopts CATV special LiNbO₃ external modulator of American company and optimized control technology with independent intellectual property, so it can reach high index of back to back CNR \geq 54dB, CTB \leq -65dB, CSO \leq -65dB, SBS:13,16,18dBm adjustable. The whole unit is equipped with perfect RS232 communication interface, SNMP network management, 1+1 back-up power supply, hot-plug function available, chassis temperature auto-control.

OT5200, Standard type externally modulated optical transmitter with its high index, high reliability and excellent cost performance, is applicable for main links and distribution network links in large and middle CATV station

head-end.

- OT5205S: 2 fiber output, each port $\geq 4.5\text{dBm}$, CNR $\geq 53.0\text{dB}$, SBS: 13, 16, 18dBm adjustable.
- OT5207S: 2 fiber output, each port $\geq 7.0\text{dBm}$, CNR $\geq 53.0\text{dB}$, SBS: 13, 16, 18dBm adjustable.
- OT5209S: 2 fiber output, each port $\geq 8.5\text{dBm}$, CNR $\geq 53.0\text{dB}$, SBS: 13, 16, 18dBm adjustable.
- OT5210S: 2 fiber output, each port $\geq 10\text{dBm}$, CNR $\geq 53.0\text{dB}$, SBS: 13, 16, 18dBm adjustable.
- OT5211S: 2 fiber output, each port $\geq 11\text{dBm}$, CNR $\geq 53.0\text{dB}$, SBS: 13, 16, 18dBm adjustable.
- OT5212S: 2 fiber output, each port $\geq 12\text{dBm}$, CNR $\geq 53.0\text{dB}$, SBS: 13, 16, 18dBm adjustable.
- OT5213S: 2 fiber output, each port $\geq 13\text{dBm}$, CNR $\geq 53.0\text{dB}$, SBS: 13, 16, 18dBm adjustable.
- OT5200U: ITU standard wavelength adjustable. User can adjust and set the laser wavelength within $\pm 200\text{GHz}$ ($\pm 1.6\text{nm}$) at $\pm 0.05\text{nm}$ space by LCD menu or buttons on the front panel. Apply to WDM network upgrade and expansion.

2.0 PRODUCT FEATURE

- High performance: Externally modulated technology, no laser chirp, low dispersion distortion, high extinction ratio, with excellent characteristic within 47~862MHz.
- Narrow bandwidth (0.65MHz), lower noise, DFB continuous wave laser, is propitious to reduce the influence of the dispersion.
- The operating bandwidth is up to 47~1000MHz.
- $CNR \geq 53\text{dB}$ and excellent CTB, CSO index.
- SBS: 13, 16, 18dBm adjustable.
- ITU standard wavelength, $\pm 200\text{GHz}$ ($\pm 1.6\text{nm}$) adjustable.
- AGC/MGC mode is optional at spot. OMI can be optimized at spot.
- Perfect RS232 communication interface.
- Advanced SNMP network management function.
- 1+1 power supply backup, switch automatically.
- Casing temperature auto-control.
- Excellent P/P ratio.

3.0 MAIN APPLICATION

- Used in main links and distribution network links in large and middle CATV station head-end.
Analog digital hybrid transmission >200Km (with dispersion compensation).
Pure digital transmission (without dispersion compensation) >400Km,
(with dispersion compensation) >700Km.
- OT5200U ITU wavelength adjustable, applicable to the value-added service of DWDM fiber optic CATV system and CFG dispersion compensation system.
- It can be used in branch FTTH that has high system index demand. Point to Point >65Km, CSO \leq -65dB. It can provide high qualified and reliable value-added service such as RFTV, IPTV and VOD for the secondary users. It can also avoid the limitation of CSO deterioration and transmission distance caused by laser chirp for adopting 1550nm direct modulated optical transmitter.

4.0 TECHNIQUE INDEX

Performance		Index		Supplement	
Optic feature	Operating wavelength	(nm)	1548~1563		OT52xxS
			ITU-TG.692		OT52xxU
	Wavelength ADJ. range	(nm)	$\pm 1.6(\pm 200\text{GHz})$		OT52xxS
	Wavelength ADJ. mode		$\pm 0.05\text{nm}$ stepping		OT52xxU
	Wavelength stability	(Pm/°C)	-1~0		Tc=20~70°C
	Linewidth	(MHz)	Typ.=0.65		FWHM($\Delta\lambda$), (-3dB fullwidth)
	Side mode suppression ratio	(dB)	≥ 45		SMSR
	Equivalent noise intensity		≤ -160		RIN(20~1000MHz)
	Number of output port		2		
	Output power	(dBm)	13, 12, 11, 10, 8.5, 7.0, 4.5		2×5, 2×7, 2×9, 2×10, 2×11, 2×12, 2×13
	Return loss	(dB)	≥ 50		
	Optical connector		SC/APC		Optional FC/APC, LC/APC
	RF feature	Work bandwidth	(MHz)	47~862	
Input level		(dBmV)	18~28		AGC
Flatness		(dB)	$\leq \pm 0.75$		47~862MHz
			$\leq \pm 1.5$		862~1000MHz(Optional)
Return loss		(dB)	>16		
Input impedance		(Ω)	75		
RF port		F-Female			
Link feature	Transmit channel		PAL-D/60CH	PAL-D/99CH	
	CNR1	(dB)	≥ 53.0	≥ 51.5	Back to Back
	CNR2	(dB)	≥ 51.5	≥ 49.5	65Km optical fiber, 0dBm receive
	CTB	(dB)	≤ -65	≤ -65	
	CSO	(dB)	≤ -65	≤ -65	
	SBS restrain	(dBm)	13, 16, 18		Adjustable
General feature	SNMP network management interface		RJ45		
	Communication interface		RS232		

Power supply	(VAC)	90~265	50/60Hz
	(VDC)	-48	30~72VDC
Power consume	(W)	50	Single power works
Work temp.	(°C)	-5~65	Machine temp. control automatically
Storage temp.	(°C)	-40~85	
Relative humidity	(%)	5~95	
size	(")	19×14.5×1.75	S-Type
		19×17.9×1.75	L-Type

5.0 PRODUCT SERIES

Model	Number of output pore	Output power of each port (dBm)	Work wavelength (nm)	SBS Restrain (dBm)	System index(59 routes PAL-D)			
					CNR1	CNR2	CTB	CSO
OT5205S	2	≥4.5	1548~1563	13, 16, 18dBm Adjustable	≥53	≥51.0	≥-65	≥-65
OT5207S	2	≥7.0			≥53	≥51.5	≥-65	≥-65
OT5209S	2	≥8.5			≥53	≥51.5	≥-65	≥-65
OT5210S	2	≥10			≥53	≥51.5	≥-65	≥-65
OT5211S	2	≥11			≥53	≥51.5	≥-65	≥-65
OT5212S	2	≥12			≥53	≥51.5	≥-65	≥-65
OT5213S	2	≥13			≥53	≥51.5	≥-65	≥-65
OT5205U	2	≥4.5	1528~1563nm ITU wavelength adjustable		≥53	≥51.0	≥-65	≥-65
OT5207U	2	≥7.0			≥53	≥51.5	≥-65	≥-65
OT5209U	2	≥8.5			≥53	≥51.5	≥-65	≥-65
OT5210U	2	≥10			≥53	≥51.5	≥-65	≥-65
OT5211U	2	≥11			≥53	≥51.5	≥-65	≥-65
OT5212U	2	≥12			≥53	≥51.5	≥-65	≥-65
OT5213U	2	≥13			≥53	≥51.5	≥-65	≥-65

Test condition:

CNR1: Tx to Rx, 0dBm receiving.

CNR2: 16dBm EDFA (NF4.5~5.5dB), 65km fiber, 0dBm receiving.