

MR21 (40KHz~18GHz)
Low Cost Microwave Broadband PIN
Pre-Amp Receivers

Technical Specification

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1.0 PRODUCT DESCRIPTION

Guangtai MR21 series microwave broadband optical receiver, adopts High linear PIN diode and Low noise pre-amplifier IC, within bandwidth of 40KHz~18GHz, they are featured with excellent linearity, high responsibility and superior flatness of the RF response in both, power and phase. They provide an outstanding linearity fiber optical communication for analogue wideband microwave application. Due to avoidance of using expensive coaxial cable or wave guide, there will be no limitation in transmission distance, which improves the signal quality and reliability of the microwave communication. They can be widely applied in microwave communication system such as remote wireless, timing and reference signal distribution, telemetry, measurement and delay line etc as well as 10Gb/s and 18Gb/s high speed communication system.

MR21 series adopts PIN photodiode, with pre-amplifier, low cost, flexible application in networks

MR21 Four exterior structures available:

MX: module type, RS232 is an option, suitable for OEM, exterior structure and size of the module as well as the PIN description can be specified by customers.

2D: desk top, with RS232 and LCD display, suitable for laboratory use

1U, 3U: 19" casing, with RS232, SNMP and LCD display, suitable for direct use in networks.

2.0 PRODUCT FEATURE

- Wide bandwidth 40KHz~18GHz
- Maximum frequency 6GHz, 10GHz, 15GHz, 18GHz
- Superior flatness of RF response
- High responsibility
- High sensitivity, -20.5dB typical
- Low capacitance high speed InGaAs PIN detector
- Low Noise GaAs Pre-amplifier IC
- Full-transparency operation mode, suitable for all kinds of signal code, communication standard and network protocol
- Powerful RS232 communication interface, perfect SNMP function, LCD status display.
- Electromagnetic, RF, thunderbolt assistance
- Four exterior structures available
- Superior P/P ratio

3.0 MAIN APPLICATION

- Antenna Remoting
- Military communications
- Tracking, telemetry and control
- Phased arrays
- Delay lines
- Microwave RF optical links
- High speed lightwave characterization
- 10Gb/s, 12.5Gb/s communication systems

4.0 Technical index

Performance			Index			Supplement
			Min.	Typ.	Max.	
Operating wavelength range		(nm)	1260		1620	
Responsibility	R13	(A/W)	0.85	0.95		1310nm
	R15		0.85	1.0		1550nm
	R16			0.85		1610nm
Dark current		(nA)		1.0	5	
Minimum sensitivity		(dBm)		-20.0	-18.0	
Maximum overload		(dBm)	0	+2.0		
Optical return loss		(dB)	40			
Optical connector			SC/APC			Option FC/APC, LC/APC
High frequency (cutoff -3dB)		(GHz)	6.0			MR21-06
			8.0			MR21-08
			10.0			MR21-10
			13.0			MR21-13
			15.0			MR21-15
			18.0			MR21-18
-3dB Low frequency		(KHz)		40		
In-band ripple		(dB)			±1.5	≤10GHz
					±2.5	>10GHz
AC trans impedance		(Ω)	400		4000	
RF return loss		(dB)	8			
RF output coupled				AC		
RF connector			SMA-F or K-connector			
Communication interface			RS232			MX, P3
SNMP interface			RJ45			Network management
Power supply	220VAC	(V)	90	220	265	1RU, 3RU, 2D
	-48VDC		-30	-48	-72	1RU, 3RU
	+12VDC		+11	+12	+12.5	MX
Power consume		(W)			5	MX
Operating temp.		(℃)	-40		+65	
Storage temp.		(℃)	-40		+85	
Relative humidity		(%)	5		95	
Size	1U	(")	19×11.0×1.75			19" stander
	3U		19×14.5×5.25			
	2D		12.4×13.0×3.5			Desk-top
	M1	(mm)	145×75×28			With RS232
	M2		70×45×16			Without RS232

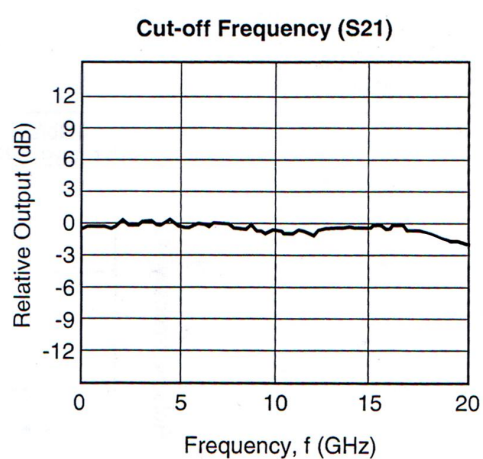
5.0 PRODUCTS SERIES

Model number	Highest frequency	RF output port	RF Connector	Structure	Optical connector
MR21-08-K	8.0GHz	Single port AC coupling output	SMA-F or K-connector	1U, 3U, 2D, MX, 3P optional	SC/APC, optional FC/APC, LC/APC
MR21-10-K	10.0GHz				
MR21-13-K	13.0GHz				
MR21-15-K	15.0GHz				
MR21-18-K	18.0GHz				

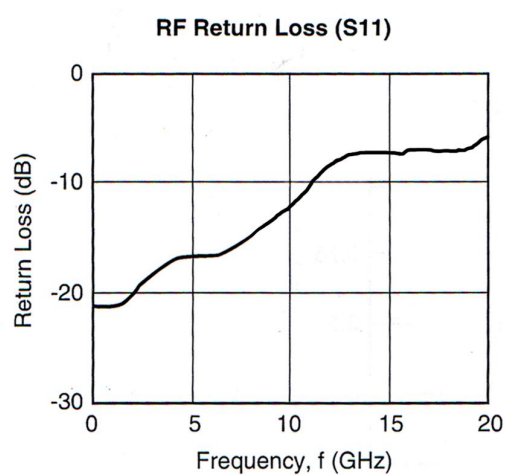
Remark: please refer to ordering information for ordering

6.0 Typical performance

1、MR21-20 Cut-off Frequency (S21)



2、MR21-20 RF Return loss (S11)



7.0 ORDERING INFORMATION

7.1 1U, 3U, 2D ordering information

MR 2 1 - □□ - K / □□ - F / S A - 2 2

Product series		Optical feature		RF feature		High frequency		RF connector		Exterior		Optical port location		Connector		Power supply
MR	Microwave optical receiver	1	APD	0	Without RF Amp	06	6GHz	G	GPO	2D	Desk-top 2U	F	Front panel	FA	FC/APC	22 220VAC
		2	PIN			08	8GHz	S	SMA-F	1U	1RU	B	Back panel	SA	SC/APC	11 110VAC
MT	Microwave optical transmitter	3	High-power PIN	1	With RF Pre Amp	10	10GHz	K	K-connector	3U	3RU			LA	LC/APC	48 -48VDC
		4	High-power PIN with Pre-EDFA			13	13GHz			MX	Modular					
				2	With RF Limiting Amp	15	15GHz									
						18	18GHz									

7.2 Module type ordering information

MR 2 1 - □□ - K / □□ / □ - □□ / □ - 2 / 0 5

Product series		Optical feature		RF feature		High frequency		RF connector		Module class		RS232		Connector		Connector type		Leads to fiber diameter		Leads to fiber length
MR	Microwave optical receiver	1	APD	0	Without RF Amp	06	6GHz	G	GPO	M1	No.1	Y	With	FA	FC/APC	E	Enamel	1	Φ1mm	05 0.5m
		2	PIN			08	8GHz	S	SMA-F	M2	No.2	0	Without	SA	SC/APC	T	Tie-in	2	Φ2mm	10 1.0m
MT	Microwave optical transmitter	3	High-power PIN	1	With RF Pre Amp	10	10GHz	K	K-connector	M3	No.3			LA	LC/APC			3	Φ3mm	15 1.5m
		4	High-power PIN with Pre-EDFA			13	13GHz													
				2	With RF Limiting Amp	15	15GHz													
						18	18GHz													