

HDBS 3000 series

950 ~ 2600 MHz

SAT-IF Optical Transmitter & Receiver

Technical index

1.0 PRODUCT DESCRIPTION

HDBS 3000 series, contains optical transmitter and receiver with different specifications and exterior structures, they work in the frequency of 950 ~ 2600 MHz. They can convert all the L-BAND analogue or digital satellite signals (SAT-IF) coming from the satellite antenna LNB into optical signal. Then, high quality, fully transparent and long distance transmission will be realized through fiber. They can be applied in satellite building fiber distribution, satellite L-Band up/down link.

HDBS 3000 products series, covers the best features of satellite L-Band fiber link products. Different specifications, exterior structures and excellent cost price offer more choices for system operators. They are easy and flexible for network construction. HDBS 3000 series products are the best solution with lowest cost in the current market.

2.0 PRODUCT FEATURES

- Many kinds of specifications and outside design to show the elite of satellite L-Band optical fiber link products in current market. It is the most cost-efficient solution in current market.
- 950 ~ 2600 MHz work bandwidth, can transmit all kinds of satellite L-Band analogue or data signal.
- Optical working wavelength: 1310 nm, 1550 nm, CWDM optional. 1550 nm can connect EDFA.
- Output optical power: 0,5 mW ~ 30 mW (1310 nm) optional. Supply the largest output optical power.
- Laser type: A type (with cooling feature), B type (without cooling feature) high linear, with optical isolated DFB laser optional.
- TG type optical transmitter (standard configuration), built-in high linear AGC amplifier.
- TO type optical transmitter (optional configuration), there is no IF amplify inside, allow high level input. Can be used in high level output of L-Band modulator-demodulator.
- Perfect laser APC, ATC control circuit to guarantee laser's long live and high reliable feature.
- HDBS-3100 adopt 1U 19" standard casing, the unit is controlled by microprocessor, LCD on the front panel offers status display and failure diagnosis. Standard RS 232 communicate interface, SNMP network management, they are suitable for projects which requires high index.
- HDBS 3200: table-type with the minimal size casing.
- HDBS 3300: aluminum casing, wall-mounted type.
- HDBS 3900: water-proof type can be installed out-door easily.
- Optical transmitter can supply 13 VDC or 18 VDC to LNB.
- Can choose RF Switch (HRS-201) or Optical Switch (HOSW5000) to realize the switch from main link to backup link automatically.
- Strong ability to anti-electromagnetism, RF and thunderbolt.
- With the best P/P ratio in this area.

3.0 MAIN APPLICATION

- Satellite L-Band fiber optic building distribution system.
- Ocean steamship satellite fiber optic distribution system.
- Satellite L-Band up/down fiber optic link.

4.0 RELATED PRODUCTS

- HDBS 4000CW
- HDBS 4000DW

5.0 SIMILAR PRODUCTS IN THE FIELD

- FOXCOM: 7320, 7000, 7255, 7225, 7225-15, 7490
- ORTEL: 5100
- CT: PCT-MFV-LTX, LRX

Technical index

Performance		Index	Supplement	
Optical feature	TX work wavelength	(nm)	1310	A1310, B1310
			1550	A1550, B1550
			1528 ~ 1563 ITU	D 15XX
			1270 ~ 1610 nm ¹⁾	BXXXX
			1260 ~ 1620	RX
	Side mode suppression ratio	(dB)	>35	A1310, A1550, D15xx
	Equivalent noise intensity	(dB)	≤ -155	A1310, A1550, D15xx
	Wavelength adjustable range		± 1.6 nm (± 200 GHz)	D15xxITU
	Wavelength adjustable mode		± 0.05 nm stepping	D15xxITU
	Tx output power	(mW)	10 ~ 30	A1310
			4 ~ 10	A1550
			0.5 ~ 10	B1310
			0.5 ~ 4	B1550
			2 ~ 3	BxxxxCWDM
RX Input Power	(dBm)	0 ~ -13	HDBS 3013 RX	
Return loss	(dB)	≥ 50		
Optical connector		SC/APC	Option FC/APC, LC/APC	
Laser type		With cooling DFB	A type	
		Un-cooling DFB	B type	
Optical receive tube type		PIN	RX	
SAT-IF feature	Operating bandwidth	(MHz)	950 ~ 2600	
	Input level	(dBm)	-25 ~ -14	TG type, with IF amplification, AGC
			-6 ~ +10	TO type, without IF amplification
	Output level	(dBm)	-15 ~ -40	RX type, standard type
			0 ~ -25	RG type, high-output, MGC
	Flatness	(dB)	0.5	40 MHz
			± 1.0	950 ~ 2600 MHz
	Input impedance	(Ω)	75	Option 50 Ω
	RF return loss	(dB)	12	
	RF connector		F-female	75 Ω
			SM-F	50 Ω
C/IM3 ²⁾	(dB)	≥ 55		
Equivalent	(dB/Hz)	> 115		
Link gain ³⁾	Max.	≥ 25	Link loss = 0 dB	
Link loss	Max.	> 28	Po = 10 dBm, 1310 nm	
	Max.	> 23	Po = 10 dBm, 1550 nm	
	Max.	> 10	Po = - 3 dBm	
General feature	Network interface		RJ 45, R232	Support I.E. & SNMP
	Power supply	(V)	95 ~ 260	
	Power consume	(A)	≤50	
	Operating temp.	(°C)	0 ~ +50	
	Storage temp.	(°C)	-40 ~ 85	
	Operating relative humidity	(%)	5 ~ 95	
			(")	19x10,5x1,75
	Size (W)x(D)x(H)	(mm)	59x98x23	HDBS 3200
117x72x29			HDBS 3300	
150x135x98			HDBS 3900	

Remark:

- 1) CWDM work wavelength: From 1270 nm ~ 1610 nm, interval 20 nm one wavelength, total 8 wavelengths option.
- 2) C/IM3 is defined as the ratio between the peak of carrier signal triple beat (IM3) by using a two-tone test (1.0 GHz and 1.1 GHz).
- 3) -40 dBm RF input test.

6.0 LINK PERFORMANCE

Fiber input (dB)	Link loss (dB)	CNR (dB)	Link gain (dB)	RF output level (dBm/Ch.)
-13	14	30.18	-2	-38
-12	13	32.18	0	-36
-11	12	34.13	2	-34
-10	11	38.59	6	-32
-8	9	40.11	8	-30
-7	8	42.18	10	-28
-6	7	44.24	12	-26
-5	6	45.67	14	-24
-4	5	46.53	16	-22
-3	4	46.76	18	-20
-2	3	46.92	20	-18
-1	2	47.01	22	-16
0	1	47.03	24	-14

Remark:

- 1) Input level typical of digital satellite receiver is -60 dBm ~ -30 dBm.
- 2) TX Output = 1 dB.

7.0 HDBS 3100 PRODUCT SERIES

Model number	Wavelength (nm)	Output power (mW)	Input power (dBm)	Connector
HDBS 3110TG-A1310-SA	1310	10	-	SC/APC
HDBS 3112TG-A1310-SA	1310	12	-	SC/APC
HDBS 3114TG-A1310-SA	1310	14	-	SC/APC
HDBS 3116TG-A1310-SA	1310	16	-	SC/APC
HDBS 3118TG-A1310-SA	1310	18	-	SC/APC
HDBS 3120TG-A1310-SA	1310	20	-	SC/APC
HDBS 3124TG-A1310-SA	1310	24	-	SC/APC
HDBS 3130TG-A1310-SA	1310	30	-	SC/APC
HDBS 3100TG-B1310-SA	1310	0,5	-	SC/APC
HDBS 3101TG-B1310-SA	1310	1	-	SC/APC
HDBS 3102TG-B1310-SA	1310	2	-	SC/APC
HDBS 3103TG-B1310-SA	1310	3	-	SC/APC
HDBS 3104TG-B1310-SA	1310	4	-	SC/APC
HDBS 3106TG-B1310-SA	1310	6	-	SC/APC
HDBS 3108TG-B1310-SA	1310	8	-	SC/APC
HDBS 3110TG-B1310-SA	1310	10	-	SC/APC
HDBS 3106TG-A1550-SA	1550	6	-	SC/APC
HDBS 3108TG-A1550-SA	1550	8	-	SC/APC
HDBS 3110TG-A1550-SA	1550	10	-	SC/APC
HDBS 3100TG-B1550-SA	1550	0,5	-	SC/APC
HDBS 3101TG-B1550-SA	1550	1	-	SC/APC
HDBS 3102TG-B1550-SA	1550	2	-	SC/APC
HDBS 3103TG-B1550-SA	1550	3	-	SC/APC
HDBS 3104TG-B1550-SA	1550	4	-	SC/APC
HDBS 3113RX-SA	1260 ~ 1620	-13	-13	SC/APC
HDBS 3113RG-SA	1260 ~ 1620	-	-	SC/APC

Remark:

- 1) For optical transmitter, HDBS-3100TO optional, without interior IF drives amplify function.
- 2) A: DFB laser with cooling and isolator (14 feet, butterfly type encapsulation).
- 3) B: DFB without cooling (axial type encapsulation).
- 4) For optical transmitter, CWDM wavelength optional; for 1550nm, ITU standard wavelength optional.

8.0 HDBS 3200 PRODUCT SERIES

Model number	Wavelength (nm)	Output power (mW)	Input power (dBm)	Connector
HDBS 3200TG-B1310-SA	1310	0,5	-	SC/APC
HDBS 3201TG-B1310-SA	1310	1	-	SC/APC
HDBS 3202TG-B1310-SA	1310	2	-	SC/APC
HDBS 3203TG-B1310-SA	1310	3	-	SC/APC
HDBS 3204TG-B1310-SA	1310	4	-	SC/APC
HDBS 3206TG-B1310-SA	1310	6	-	SC/APC
HDBS 3208TG-B1310-SA	1310	8	-	SC/APC
HDBS 3210TG-B1310-SA	1310	10	-	SC/APC
HDBS 3200TG-B1550-SA	1550	0,5	-	SC/APC
HDBS 3201TG-B1550-SA	1550	1	-	SC/APC
HDBS 3202TG-B1550-SA	1550	2	-	SC/APC
HDBS 3203TG-B1550-SA	1550	3	-	SC/APC
HDBS 3204TG-B1550-SA	1550	4	-	SC/APC
HDBS 3213RX-SA	1260 ~ 1620	-	-13	SC/APC
HDBS 3213RG-SA	1260 ~ 1620	-	-13	SC/APC

Remark:

- 1) For optical transmitter, HDBS-3200TO optional, without interior IF drives amplify function.
- 2) For optical transmitter, CWDM wavelength optional.
- 3) RRG type is the high output level optical receiver, MGC.

9.0 HDBS 3300 PRODUCT SERIES

Model number	Wavelength (nm)	Output power (mW)	Input power (dBm)	Connector
HDBS 3000TG-B1310-SA	1310	0,5	-	SC/APC
HDBS 3301TG-B1310-SA	1310	1	-	SC/APC
HDBS 3302TG-B1310-SA	1310	2	-	SC/APC
HDBS 3303TG-B1310-SA	1310	3	-	SC/APC
HDBS 3304TG-B1310-SA	1310	4	-	SC/APC
HDBS 3306TG-B1310-SA	1310	6	-	SC/APC
HDBS 3308TG-B1310-SA	1310	8	-	SC/APC
HDBS 3310TG-B1310-SA	1310	10	-	SC/APC
HDBS 3000TG-B1550-SA	1550	0,5	-	SC/APC
HDBS 3301TG-B1550-SA	1550	1	-	SC/APC
HDBS 3302TG-B1550-SA	1550	2	-	SC/APC
HDBS 3303TG-B1550-SA	1550	3	-	SC/APC
HDBS 3304TG-B1550-SA	1550	4	-	SC/APC
HDBS 3313RX-SA	1260 ~ 1620	-13	-	SC/APC

Remark:

- 1) For optical transmitter, HDBS-3300TO optional, without interior IF drives amplify function.
- 2) For optical transmitter, CWDM wavelength optional.

10.0 HDBS 3900 PRODUCT SERIES

Model number	Wavelength (nm)	Output power (mW)	Input power (dBm)	Connector
HDBS 3900TG-B1310-SA	1310	0,5	-	SC/APC
HDBS 3901TG-B1310-SA	1310	1	-	SC/APC
HDBS 3902TG-B1310-SA	1310	2	-	SC/APC
HDBS 3903TG-B1310-SA	1310	3	-	SC/APC
HDBS 3904TG-B1310-SA	1310	4	-	SC/APC
HDBS 3906TG-B1310-SA	1310	6	-	SC/APC
HDBS 3908TG-B1310-SA	1310	8	-	SC/APC
HDBS 3910TG-B1310-SA	1310	10	-	SC/APC
HDBS 3900TG-B1550-SA	1550	0,5	-	SC/APC
HDBS 3901TG-B1550-SA	1550	1	-	SC/APC
HDBS 3902TG-B1550-SA	1550	2	-	SC/APC
HDBS 3903TG-B1550-SA	1550	3	-	SC/APC
HDBS 3904TG-B1550-SA	1550	4	-	SC/APC
HDBS 3913RX-SA	1260 ~ 1620	-	-13	SC/APC

Remark:

- 1) For optical transmitter, HDBS-3900TO optional, without interior IF drives amplify function.
- 2) For optical transmitter, CWDM wavelength optional.

11.0 Order information

HDBS - 3 □ □ □ □ - □ □ □ □ □ - □ □ - □ □ - □ □

Satellite L-Band fiber link products (DBS)	Product type		Product feature		SAT-IF output power		Type		Laser type		TX wavelength		Port position		Connector		Power supply	
	1	5-2700MHz	1	1U standard type	00	0.5mW	TG	TX with IF amplification	A	Cooling DFB laser	1310nm	F	Front panel	SA	SC/APC	48	-48VDC	
2	CATV-RF(47-862MHz) & SAT-IF(950-2200MHz)	2	Small ferrous box, TX adopt uncooling DFB laser direct type. TX with AGC, be used for FTTx	01	1mW	TO	TX without IF amplification	B	Un-cooling DFB laser	1550nm	B	Back panel	FA	FC/APC	22	220VAC		
				02	2mW	RX	Optical receiver	D	Cooling DFB laser 1550nm ITU	15XX ITU	LA	LC/APC	11	110VAC				
3	SAT-IF 950-2500MHz	3	Small aluminum box, TX adopt uncooling DFB laser direct type. TX with AGC, be used for FTTx	04	4mW	RG	High-output MGC			CWDM 1270-1610nm								
4	4×SAT-IF assemble			06	6mW													
5	4×SAT-IF or 1×CATV assemble	9	Aluminum die-casting rainproof type	08	8mW					Coupling Ratio of optical splitter built-in RX								
				RX receive sensitivity						1390	1310nm 90% output coupling ratio							
6	950-6000MHz			08	-8dBm					1590	1550nm 90% output coupling ratio							
				13	-13dBm					3590	1310&1550nm 90% output coupling ratio							