

J-Type Medallion 6000 1550 nm Externally-Modulated Transmitter

emcore®

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CATV



Applications

- High-Performance Supertrunking Links
- High-Power Distribution Networks
- Redundant Ring Architectures
- FTTx Networks
- RFOG Applications
- SAT-IF Transport
- DWDM Node Splitting

Features

- Single or Dual Optical Outputs
- QAM Loading to 1003 MHz
- SAT-IF Loading from 950 to 2800 MHz
- Dual Power Supplies, Redundant & Hot Swappable
- Front Panel RF Test Point
- Vacuum Fluorescent Status Display
- OMI / RF Gain Adjustment
- AGC Select: CW, Video, Manual (No AGC)
- Industry Leading Field Adjustable SBS Suppression

The J-Type Medallion 6000 Series

The J-Type Medallion 6000 series is a family of state-of-the-art high-performance 1550 nm externally-modulated CATV fiber optic transmitters optimized for varying network applications. Packaged in a convenient 1 RU housing, this line of optical transmitters couples high optical output power, up to 10.0 dBm, with low optical line width resulting in unmatched performance. The optical modulator, combined with proprietary pre-distortion circuitry, provides superior CTB and CSO performance with SBS suppression levels of greater than 17 dBm for SAT-IF applications.

The J-Type transmitter's exceptional performance is enabled by EMCORE's proprietary high power, narrow line width CW (Continuous Wave) laser technology. When deployed with one or more EMCORE optical amplifiers, transmissions of 150 km can be achieved. The feature-rich WEB GUI and SNMP interface bring a whole suite of advanced operator monitoring and configuration options to the platform, allowing for secure, simplified and future-ready functionality for the next generation of intelligent networks.

Advanced features such as built-in field adjustable SBS control allow these transmitters to be quickly optimized in the field for any link or application without the need to procure specifically tuned transmitters.

The J-Type series are designed as a high-performance solution for applications where the simultaneous, concurrent fiber optic transport of CATV and Satellite-Intermediate Frequency Signals (SAT-IF) is required. The SAT-IF signals can be applied anywhere in the 950 to 2800 MHz band.

J-Type transmitters are specially designed and optimized to support fiber optic links of up to 150 km for the Japanese marketplace and other markets with similar requirements.

Monitoring and configuration is supported via a convenient front panel display, an RS-232 port, and an Ethernet port with SNMP, Telnet, and Web GUI. The platform is mechanically designed for flexibility and space efficiency including universal rack-mount features, modular front panel design, and optional front and rear port placement. Dual redundant field-replaceable fans and power supplies are standard.

Optical Characteristics

Property Performance (note 1-9)	Units	6000-0JE1 Performance for channel plans with SAT-IF loading			Comments
		NTSC 20+ 60-64 QAM	NTSC 80-Ch	PAL 60-Ch	
Specified Link Length	L (km)	25	25	25	
Channel Plan		NTSC 20+ 60-64 QAM	NTSC 80-Ch	PAL 60-Ch	With 36 QPSK carriers from 950 to 2800 MHz
Optical Output Power	Po (dBm)	8.5/8.5	8.5/8.5	8.5/8.5	Min. 10 dBm version avail. See Chart
Noise Bandwidth	BW (MHz)	4	4	5	
SBS Suppression	(dBm)	11 to 17	11 to 17	11 to 17	Min.
CATV Carrier to Noise Ratio	CNR (dB)	58.5	51.0	51.0	Min.
CATV Composite Second Order	CSO (dBc)	-67	-65	-65	Max. Port 1
CATV Composite Triple Beat	CTB (dBc)	-67	-65	-65	Max. @ +25°C
CATV Composite Triple Beat	CTB (dBc)	-66	-64	-64	Max. @ 0°C to 50°C
SAT-IF Carrier to Noise Ratio	CNR (dB)	27	27	27	Min.
SAT-IF Intermodulation Products	(dBc)	-35	-35	-35	Max. Port 1
SAT-IF Spurious Products	(dBc)	-38	-38	-38	Max.

Property Performance (note 1-9)	Units	6000-0JE1 Performance for channel plans without SAT-IF loading			Comments
		NTSC 20+ 60-64 QAM	NTSC 80-Ch	PAL 60-Ch	
Specified Link Length	L (km)	25	25	25	
Channel Plan		NTSC 20+ 60-64 QAM	NTSC 80-Ch	PAL 60-Ch	
Optical Output Power	Po (dBm)	8.5/8.5	8.5/8.5	8.5/8.5	Min. 10 dBm version avail. See Chart
Noise Bandwidth	BW (MHz)	4	4	5	
SBS Suppression	(dBm)	11 to 17	11 to 17	11 to 17	Min.
CATV Carrier to Noise Ratio	CNR (dB)	58.5	53.0	53.0	Min.
CATV Composite Second Order	CSO (dBc)	-67	-65	-65	Max. Port 1
CATV Composite Triple Beat	CTB (dBc)	-67	-65	-65	Max. @ +25°C
CATV Composite Triple Beat	CTB (dBc)	-66	-64	-64	Max. @ 0°C to 50°C

Notes:

1. Unless stated otherwise all specifications apply over full temperature range with no digital loading.
2. Unless stated otherwise specifications apply for nominal RF input level as defined below, after a 30 minute stabilization period.
3. Specifications separated by a slash are port1 / port 2.
4. Units are tested per the Test / Link Configuration Table
5. Noise figure for the EDFA = 4.5 ~ 5.5 dB
6. Corning SMF-28 single mode fiber
7. Receiver responsivity is 0.95 mA/mW, Equivalent noise current is 7 pA/(Hz)^{1/2}
8. With 36 QPSK modulated SAT-IF signals between 950 ... 2800 MHz. 27 MHz IF bandwidth
9. The lowest frequency of all channel plans shall be > 119.25 MHz. A 2 dB penalty of CNR may occur for channels from 80 to 112.25 MHz

Test/Link Configuration

Property	EDFA	Link	Received Power ²
J-Type	14 dBm	25 Km	0.0 dBm at the receiver

Electrical Specifications

Property	Requirement	Comments
CATV Nominal Input Power	23 dBmV/ch (84 dBuV/ch) 18 dBmV/ch (78 dBuV/ch) 19 dBmV/ch (79 dBuV/ch)	20 NTSC channels + 60 QAM at -10 dB 80 NTSC channels 60 PAL channels
CATV Composite Level	-11.7 dBm	0 dB on FP Display (All Channel Plans)
CATV Input Range	+2/-8 dB from nominal input	Optimal performance at nominal input
CATV RF Gain / OMI Adjustment Range	+2/-8 dB from nominal setting	CATV Performance may vary slightly over range
CATV Frequency Range	45 MHz – 1003 MHz	
CATV Flatness	+/- 0.50 dB	45 MHz – 550 MHz
	+/- 0.75 dB	45 MHz – 1003 MHz
CATV Input impedance	75Ω	
CATV Input Return Loss	16 dB min	45 MHz – 1003 MHz
CATV Front Panel RF Tap	-20 +/- 1 dB down from RF input	
CATV Front Panel RF Tap Flatness	+/- 1 dB	45 MHz – 1003 MHz
SAT Nominal Input Power	27 dBmV/ch (87 dBuV/ch)	36 QPSK SAT-IF channels
SAT Input Range	22 – 32 dBmV/ch (82 – 92 dBuV/ch)	Optimum performance at nominal input
SAT Composite Level	-6.2 dBm	0 dB on FP Display
SAT-IF RF Gain / OMI Adjustment Range	+5 / -5 dB from nominal setting	CATV Performance can vary slightly
SAT-IF Frequency Range	950 MHz – 2800 MHz	
SAT-IF Flatness	+/- 2 dB	
SAT-IF Input impedance	75Ω	
SAT-IF Input Return Loss	10 dB min	950 MHz – 2800 MHz
SAT-IF Front Panel RF Tap	7 +/- 2.5 dBmV/Ch at Nominal OMI/ch	
SAT-IF Front Panel RF Tap Flatness	+/- 1 dB	950 MHz – 2800 MHz

General and Mechanical Specifications

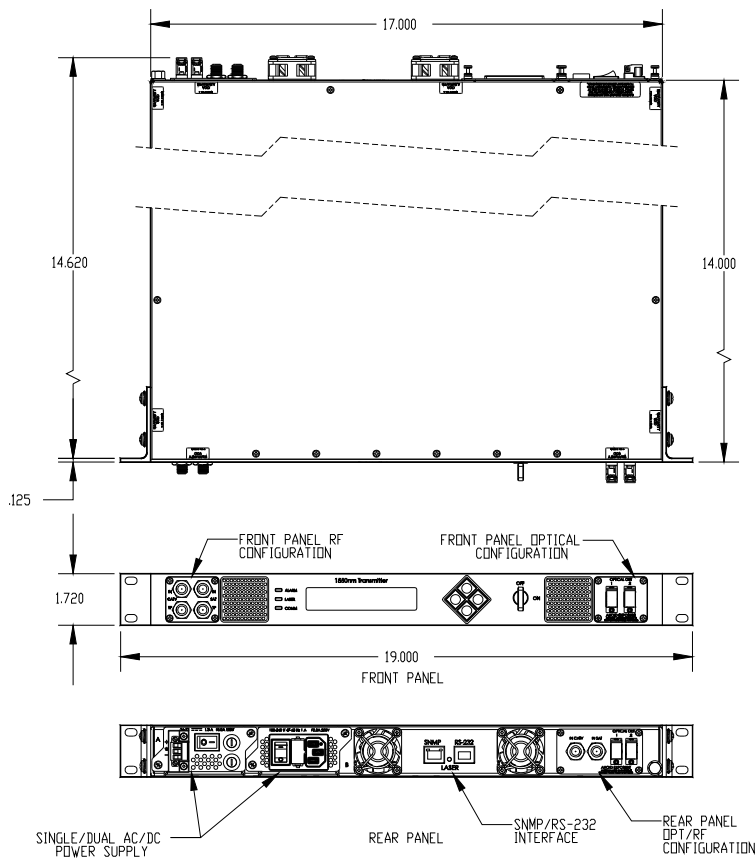
Property	Requirement	Comments
Wavelength	1555+/-5 nm	Various Options + ITU-grid available – see Model Number Information
Channel Plan	Various – See Specification Tables	
Optical Connector	SC/APC	Other styles available
Monitoring Interfaces	100 Base-T Ethernet (SNMP) Rear Panel RS-232 interface VFD Screen Front Panel Controls	VFD- (Vacuum Fluorescent Display)
Operating Temperature	0°C to 50°C	
Storage Temperature	-20°C to 70°C	
Power Consumption	65 W max	

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General and Mechanical Specifications (continued)

Property	Requirement	Comments
Agency Listings	EMI: EN50083-2:2006 (US CATV) EN55022:2006 (US IT) EN61000-3-2 (Harmonics) EN61000-3-3 (Flicker) FCC: Part 15, Subpart B, class "A" Unintentional Radiators ICES-003 (Canada) AN/NZS 3548, Class A (Australia) VCCI, Class A (Japan)	Safety: FDA/CDRH Laser Safety Governed by Code of Federal Regulations Title 21, Volume 8, Part 1040 IEC 60950-1 IEC 60728-11 Laser IEC 60825-1 CB Certification
Transportation Vibration	GR-2853-CORE	In Shipping package
Transportation Shock	GR-2853-CORE	In Shipping package
Operating Humidity	20% to 85%	Non-condensing
Supply Range (VAC) (VDC)	90 to 265 VAC, 50/60 Hz +/- (36 – 72) VDC	
Dimensions	19.0" W x 15.0" D x 1.72" H	(width includes 19" front panel ears, depth includes, connectors, fans & front panel) – see drawing

Outline Drawing



Information contained herein is deemed reliable and accurate as of the issue date. EMCORE reserves the right to change the design or specification at any time without notice. EMCORE is a registered trademark of EMCORE Corporation in the U.S. and other countries.

Model Number Information^{Note 3}

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Logo & Customer Specific	Link Type	Pout (dBm min) <small>Note 1</small>	Loading Type	Optics	RF	Wavelength (nm)	Power Supply
0 – EMCORE Logo	J – 25 km	D – 10/10 <small>Note 4</small>	1 – All Channel Plans	1 – SC/APC, Rear	1 – RF IN Rear, TP Front	00 – 1555+/- 5.0 nm	1 – AC primary, no secondary
1 – no Logo		E – 8.5/8.5		2 – FC/APC, Rear	2 – RF IN Front, TP Front	01 – 1550+/- 5.0 nm	2 – DC primary, no secondary
				3 – E2000/APC, Rear	3 – RF IN Front, TP Rear	xx – ITU Channel +/- 0.1 nm <small>Note 2</small>	3 – AC primary, AC secondary
				4 – SC/APC, Front	4 – RF IN Rear, TP Rear		4 – AC primary, DC secondary
				5 – FC/APC, Front			5 – DC primary, DC secondary
				6 – E2000/APC, Front			

- Note 1: Options available for Indicated types only
- Note 2: ITU grid wavelengths can be specified from channel 18 to 40
- Note 3: Not all configurations are available, contact factory
- Note 4: CSO port 2 degraded by 1dB
- Note 5: Contact Factory for Model type availability

Additional Kits

- G3708-006-001 - Replaceable AC power supply modules
- G3708-005-001 - Replaceable DC power supply modules
- G7914-076-001 - Replaceable Blank power module plate
- G3906-008-001 - Replaceable fans

Laser Safety Information

This product meets the applicable requirements of 21 CFR 1010 & 1040 and is classified as a Class 1M laser product. During use as intended, the laser energy is fully contained within the fiber network such that there is no accessible laser radiation. This product has been issued accession number 0820466-001.

