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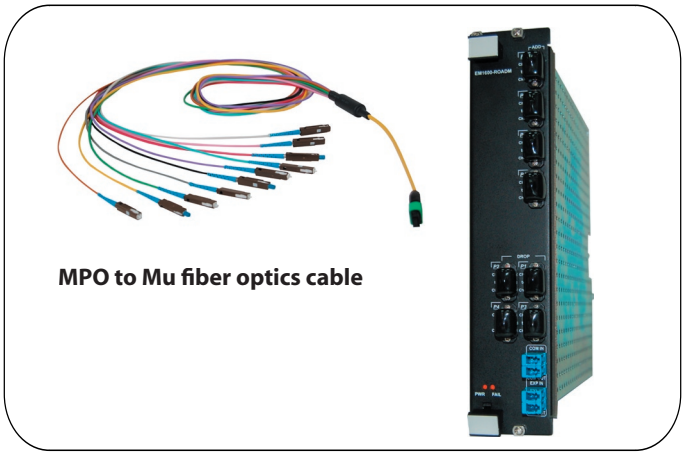
FIBER ACCESS SOLUTIONS

Datasheet

LambdaDriver® 2 Degree ROADM Module (EM1600-ROADM40)



MPO to Mu fiber optics cable

EM1600-ROADM40

Features

- 40-channel, 100 GHz spacing
- Fully reconfigurable optical Add/Express unit
- Fully transparent, protocol and bit-rate independent
- Modular concept with integrated add and drop units
- Independently controlled VOAs for equalization and blocking of all express and add channels
- Integrated per channel optical power monitoring
- Operating wavelength range C-band, L-band optional, ITU grid

Applications

- Fully tunable 40 wavelengths networks
- Ring and Linear OADM topologies

Overview

The LambdaDriver® EM1600-ROADM40 module uses an advanced IPLC technology for Reconfigurable ADD/EXPRESS and ultra-low loss DWDM DROP functionality, based on Arrayed Waveguide Grating (AWG) devices. The ROADM can multiplex/demultiplex up to 40 DWDM C-Band channels (carrier wavelengths/frequencies) spaced 100 GHz apart over a single physical fiber. Each channel is fully independent of the others and can carry data at the same rate as a dedicated physical fiber.

The range of the channels is between 192.00 THz (1561.419 nm) and 195.90 THz (1530.334 nm).

Any of the following actions can be performed on each channel independently:

– ADD: Enable the channel to carry data from local access equipment over the ROADM network.
– DROP: Enable the channel to carry data received from remote access equipment to local access equipment.
– PASS: Enable the channel to carry data received from remote access equipment to another LambdaDriver.
– DARK: Block the channel from carrying data from local or remote access equipment to another LambdaDriver.

The power level of signals on each of the 40 channels can be monitored and attenuated by any value between 0 and 25 dB. In addition, the power level of signals in any group of channels can be equalized to maximize the operating efficiency of optical amplifiers in the network.

Each EM1600-ROADM40 module occupies two slots (among slots 19 to 24) in a LambdaDriver chassis.
All ADD/DROP ports use MPO connectors (10 channels per connector) and all trunk (COM and EXPRESS) ports use LC connectors.

Environmental	
Operating Temperature	- 5 to 45 °C
Storage Temperature	-10 to 70 °C
Relative Humidity	85% maximum, non-condensing
Dimensions (W x H x D)	54.18 mm (2.13 in) x 263.4 mm (10.37 in) x 227.5 mm (8.95 in)
Weight	2.7kg (5.95 lb)
Connector	ADD/DROP-MPO, TRUNK-LC

Technical Specifications

Parameters	Range		
	Min	Max	Unit
Bandwidth (BW)	Measured on average polarization with respect to ITU grid		
EXP IN – COM OUT @ -1 dB	300		pm
ADD – COM OUT @ -1 dB	400		pm
COM IN – DROP	260		pm
Insertion Loss	Attenuators in bright status. Worst case loss, over pass-band, and includes connectors.		
EXP IN – COM OUT	10	12.2	dB
ADD – COM OUT		8.0	dB
COM IN – EXP OUT		2.7	dB
COM IN – DROP OUT		11.5	dB
Insertion Loss Uniformity among channels	Attenuators in bright status. The difference between ILmax and ILmin at ITU grid		
EXP IN – COM OUT		2.1	dB
ADD – COM OUT		1.5	dB
COM IN – DROP		1.5	dB
Center Wavelength Accuracy		+/- 50	pm
Polarization Dependent Loss	Worst case, across the wavelength plan and includes connectors.		
EXP IN – COM OUT @ 0 dB attn.		0.8	dB
EXP IN – COM OUT@ 10 dB attn.		1.1	dB
EXP IN – COM OUT @ 20 dB attn.		1.8	dB
ADD – COM OUT @ 0 dB attn.		0.7	dB
ADD – COM OUT @ 10 dB attn.		1.0	dB
ADD – COM OUT @ 20 dB attn.		1.7	dB
COM IN – EXP OUT		0.3	dB
COM IN – DROP OUT		0.9	dB
Adjacent Channel Isolation	25		dB
Non Adjacent Channel Isolation	33		dB
Return Loss	40		dB
VOA Dynamic Range	25		dB
VOA Setting Resolution		0.1	dB
VOA Setting Accuracy	Worst case, across the wavelength plan, any switch state and includes connectors.		
@ 0 ~ 10 dB attn.	-0.7	0.7	dB
@ 10 ~ 20 dB attn.	-1.0	1.0	dB
VOA Settling Time			
Single channel (90% to 10%)		20	ms
All channels attenuation demand		200	ms
Channel Shut-Off Attenuation	40		dB
Optical Switch Insolation			
Unit powered OFF	40		dB
Optical Switch Settling Time		20	ms

Wavelength Assignment#	Center Frequency (fc) THz	Center Wavelength (c) nm	Wavelength Assignment#	Center Frequency (fc) THz	Center Wavelength (c) nm
1	192.00	1561.419	21	194.00	1545.322
2	192.10	1560.606	22	194.10	1544.526
3	192.20	1559.794	23	194.20	1543.730
4	192.30	1558.983	24	194.30	1542.936
5	192.40	1558.173	25	194.40	1542.142
6	192.50	1557.363	26	194.50	1541.349
7	192.60	1556.555	27	194.60	1540.557
8	192.70	1555.747	28	194.70	1539.766
9	192.80	1554.940	29	194.80	1538.976
10	192.90	1554.134	30	194.90	1538.186
11	193.00	1553.329	31	195.00	1537.397
12	193.10	1552.524	32	195.10	1536.609
13	193.20	1551.721	33	195.20	1535.822
14	193.30	1550.918	34	195.30	1535.036
15	193.40	1550.116	35	195.40	1534.250
16	193.50	1549.315	36	195.50	1533.465
17	193.60	1548.515	37	195.60	1532.681
18	193.70	1547.715	38	195.70	1531.898
19	193.80	1546.917	39	195.80	1531.116
20	193.90	1546.119	40	195.90	1530.334

Order Info

EM1600 -ROADM40	40 ports single side (east or west) ROADM for LD1600, dual long slot
CA-SMS-MPO/LC-1	F/O cable MPO to 10LC 1m, SM
CA-SMS-MPO/MU-1	F/O cable MPO to 10MU 1m, SM