Tunable Dispersion Compensators

TDCMX-SM

The TDCMX-SM is the only G.652 slope-matched tunable chromatic dispersion compensator on the market that provides adjustable, simultaneous compensation for all channels across the entire C-band, all within a single device.

The revolutionary TDCMX-SM is built on indie's established dispersion-compensation technology that has been providing reliable operation for over 15 years. This "single part number" solution reduces cost-per-bit ($/bit) by enabling customers to use intensity-modulation direct-detection up to 100 Gb/s over distances up to 80 km.

System vendors who serve communication and internet service providers (CSP & ISP) are seeking ways to increase data rates in next-generation DWDM access networks. This is particularly true for data-center interconnect (DCI)/enterprise, fiber-to-the-premises (FTTx), and 5G X-Haul networks operating with intensity modulation direct detection (IMDD) modulation formats such as PAM-4.

Applications

- DV-QKD
- Data-centers Interconnect (DCI)
- DWDM Networks – 100G PAM4
- Entreprise networks
- Utilities networks
- 5G X-haul networks
- Fiber-to-the-premises (FTTx)
- Low-density DWDM networks

Features

- Tunable
- Full C-band coverage
- G.652 Slope-Matched
- Compact
- Low-Lantency

Features Details

- **Tunable:** The TDCMX-SM provides highly accurate, dynamically adjustable chromatic dispersion compensation over a large range of dispersion values (from 0 to 80 km with the same module).
- **Full C-band coverage:** TDCMX-SM features full C-band coverage, either on a 50 GHz or 100 GHz grid.
- **G.652 Slope-Matched:** The TDCMX-SM compensates for the chromatic dispersion slope of the fiber, resulting in a precise, homogeneous residual dispersion for every channel of the C-band.
- **Compact:** The TDCMX-SM has dimensions of only 130 x 22 x 14 mm.
- **Low-Latency:** The TDCMX-SM features a latency of less than 25 ns, a reduction of over 1 000x compared to dispersion compensating fiber (DCF), making it the perfect choice for time-sensitive networks.

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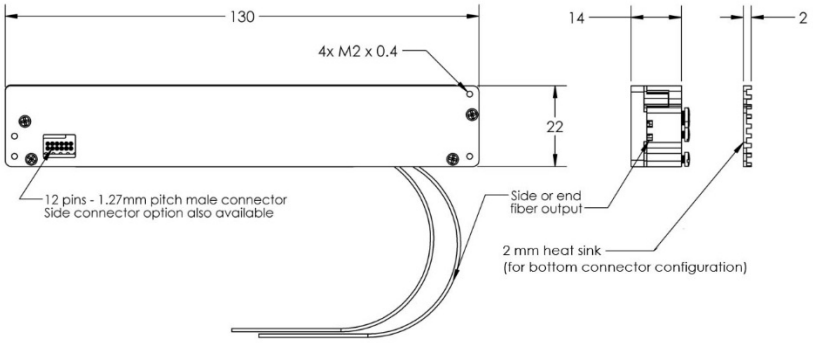
Module Dimensions



50 GHz Versions: 0 to 80 km or ± 40 km

Parameters (1)	Specifications			Units
Channel Grid	50			GHz
Wavelength Range	1529.55 – 1567.54			nm
Compensation Range	0 to 40	40 to 80	-40 to 40	km
Typical -3 dB Bandwidth	34	30	34	GHz
Phase Ripple Std Deviation	≤ 0.1	≤ 0.13	≤ 0.12	rad
Slope-Matching Error	≤ 25	≤ 35	≤ 30	ps/nm
Dispersion Accuracy	≤ 2	≤ 2.5	≤ 2	km

(1) Custom configurations available upon request

100 GHz Version: 0 to 80 km

Parameters (1)	Specifications		Units
Channel Grid	100		GHz
Wavelength Range	1527.99 – 1566.31		nm
Compensation Range	0 to 40	40 to 80	km
Typical -3 dB Bandwidth	68	50	GHz
Phase Ripple Std Deviation	≤ 0.12	≤ 0.15	rad
Slope-Matching Error	≤ 20	≤ 35	ps/nm
Dispersion Accuracy	≤ 2	≤ 3	km

(1) Custom configurations available upon request

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General Specifications

Parameters	Specification	Units
Insertion loss	<6	dB
Polarization-dependent loss	≤0.5	dB
Polarization mode dispersion	≤1	ps
Maximum input power	<27	dBm
Control interface	I^2C	
Voltage	5	V
Typical power consumption	4	W
Operating temperature	-5 to 70	°C
Storage temperature	-40 to 85	°C
Telcordia qualified	GR-468	
RoHS compliant	Yes	

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