Tunable Laboratory Dispersion Compensators

TDCMB

The TDCMB is a tunable, fully integrated emulator / compensator that provides accurate and dynamic control of chromatic dispersion for test and measurement applications.

The instrument features indie's fiber-Bragg grating (FBG) technology, which has a broad dispersion range and operational bandwidth. The TDCMB is available in benchtop and rackmount versions. The control software interface allows for easy integration and minimal setup time for experimental configurations.

The TDCMB combines chromatic dispersion compensation and emulation within a single, easy-to-use instrument. The integration of these features saves space, reduces cost, and simplifies experiment design, making the TDCMB ideal for R&D labs and production floors.

Applications

- Optimization and Testing of Coherent and PAM4 Transceivers
- DV-QKD / Entanglement-Based QKD

Features

- Versatile
- Tunable
- User-Friendly
- Compact

Features Details

- **Versatile:** The TDCMB provides both emulation and compensation of chromatic dispersion within one product, reducing the number of parts needed in a test and measurement setup.
- **Tunable:** The TDCMB provides accurate dynamic control of chromatic dispersion for any channel in a test and measurement application.
- **User-Friendly:** The TDCMB control software interface is easy to install and intuitive to operate.
- **Compact:** The TDCMB is available in either space-saving benchtop or half 1U 19-inch rack-mountable versions.

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Tunable Laboratory Dispersion Management

TDCMB

TDCMB – Any Wavelength, One Channel at a Time

The following devices can compensate or emulate chromatic dispersion on any frequency of the C-band, one channel at a time, in steps of 1 GHz (continuous grid), 50 GHz or 100 GHz.

General Specifications: Continuous Grid

Parameters	TDCMB-C000-J	TDCMB-C000-O	TDCMB-C000-N	Units
Dispersion range	± 900	± 1,600	± 2,000	ps/nm
Operation bandwidth	≥ 40	≥ 45	≥ 35	GHz
Insertion loss	< 5	< 9	< 9	dB
Phase ripple standard deviation	< 0.08	< 0.15	< 0.15	rad
Dispersion resolution	5	5	5	ps/nm

General Specifications: 50 GHz Grid

Parameters	TDCMB-C050-F	TDCMB-C050-N	TDCMB-C050-R	Units
Dispersion range	± 1 200	± 2 000	± 2 400	ps/nm
Operation bandwidth	≥ 45	≥ 45	≥ 35	GHz
Insertion loss	< 5	< 9	< 9	dB
Phase ripple standard deviation	< 0.1	< 0.15	< 0.15	rad
Dispersion resolution	5	10	10	ps/nm

General Specifications: 100 GHz Grid

Parameters	TDCMB-C100-O	Units
Dispersion range	± 1 600	ps/nm
Operation bandwidth	≥ 35	GHz
Insertion loss	< 9	dB
Phase ripple standard deviation	< 0.15	rad
Dispersion resolution	5	ps/nm

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Tunable Laboratory Dispersion Management

TDCMB

Slope-Matched TDCMB: All Channels Simultaneously

Compensate or emulate chromatic dispersion on all channels of the C-band simultaneously thanks to the slope-matched 50-GHz or 100-GHz TDCMB modules.

General Specifications: G.652/G.657 Slope-Matched TDCMB at 50 GHz

Parameters	Standard range 0 to 40 km	Extended range -5 to 80 km	Units
Operation bandwidth	ITU ± 13	ITU ± 11	GHz
Insertion loss	< 6	< 6	dB
Phase ripple standard deviation	< 0.10	< 0.13	rad
G.652/G.657 slope-matching error	≤ 25	≤ 35	ps/nm

General Specifications: G.652/G.657 Slope-Matched TDCMB at 100 GHz

Parameters	Standard range 0 to 40 km	Extended range -5 to 80 km	Units
Operation bandwidth	ITU ± 29	ITU ± 20	GHz
Insertion loss	< 6	< 6	dB
Phase ripple standard deviation	< 0.12	< 0.15	rad
G.652/G.657 slope-matching error	≤ 20	≤ 35	ps/nm

Other Specifications

Parameters		Units
Operating temperature	5 to 65	°C
Storage temperature	-40 to 85	°C
Dimensions	225 x 203 x 45	mm
RoHS compliant	Yes	
Control interface (1)	RS-232	
Input voltage	90-250 VAC 47-63 Hz Max 71 W Fuse T 1.6 A H250 V	

(1) Ethernet port also available upon request

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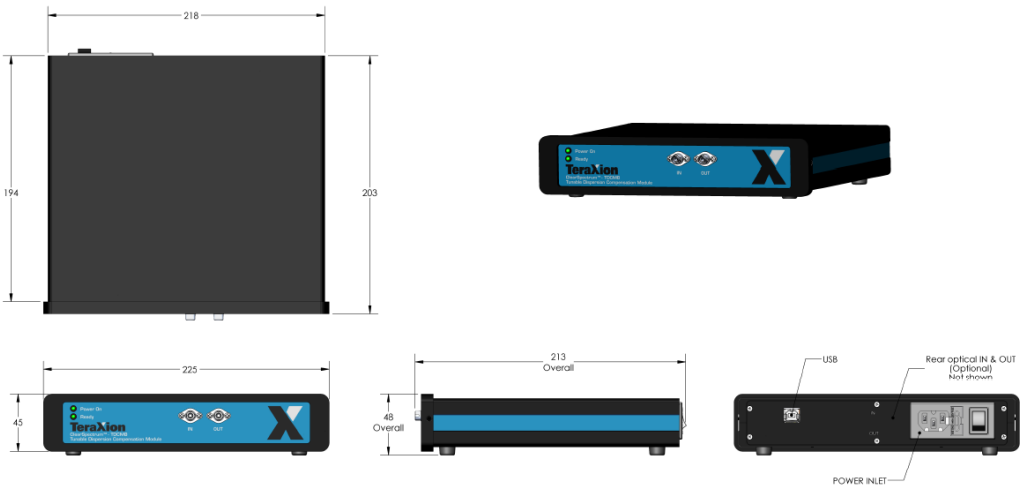
Tunable Laboratory Dispersion Management

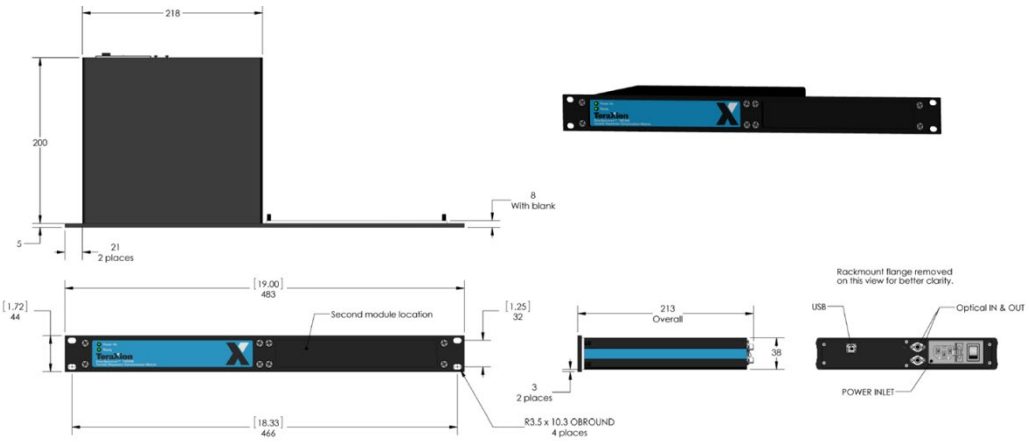
TDCMB

Module Dimensions

Benchtop Module



Rackmount Module



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