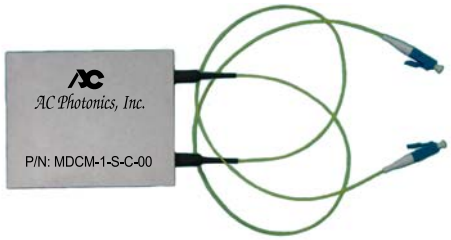
MDCM-1-S-C-00



Features

- Up to ±1200ps/nm Dispersion Range
- Supports 10Gbps RZ/NRZ/ODB Formats
- Channel Spacing Support for 25GHz, 33GHz
- Full C-band Coverage
- Low Power Dissipation
- High Power Handling
- Small Form Factor
- 3.3v Single Power Supply
- Integrated Control Circuitry
- Samtec 30 pin Connector
- I2C and RS232 Interface
- Compliant with I^2C 300-pin MSA Interface Rev4
- Conforms to Telcordia GR 468
- Compact Size 3.27” x 2.64” x 0.62”

General Description

The MDCM-1-S-C-00 is an integrated Tunable Optical Dispersion Compensation Module for 10Gbps RZ and NRZ submarine and terrestrial applications. It can be used as a DCF replacement for a pre or post compensation of a single channel.

The MDCM-1-S-C-00 is based on AC’s standard 16PIN butterfly sealed packaged TODC that contains Gires-Tournois (GT) etalons cascaded in free-space.

The MDCM-1-S-C-00 supports 25GHz and 33GHz spacing in the same device. The device can tune itself either to 25GHz or 33GHz by using the incoming ITU information given by the user. The MDCM-1-S-C-00 module is used to compensate for chromatic dispersion values ranging from -1200ps/nm to +1200ps/nm with operating bandwidth of 30GHz suitable for 10Gbps RZ and NRZ modulation. The MDCM-1-S-C-00 introduces a low insertion loss, low power consumption and small size Dispersion Compensation Module. Using a CPU and software commands over I2C or RS232, the MDCM-1-S-C-00 allows remote management of dispersion, reduction in in-line amplification requirements while using a single part number as a substitute for multiple DCF’s.

1. Absolute Maximum Ratings

Parameter	Symbol	Min	Max	Units
Storage Case Temperature	Ts	-40	85	ºC
3.3V Supply Voltage	V_{DD}	-0.5	4	V
Static Discharge Voltage	ESD		500	V
Relative Humidity	RH		85	%
Maximum Input Power	Pin		+27	dBm

2. Operating Conditions

Parameter	Symbol	Min	Typical	Max	Units
Operating Temperature	Tcase	-5		70	ºC
Power Consumption	Pmax		3	7	W
3.3V Supply Voltage	V_{DD}	3.13	3.3	3.47	V
VDD Current	I_{DD}		1.5	3.2*	A

*VDD Current at Transient Condition

Back to Product List

3. Detailed Block Diagram

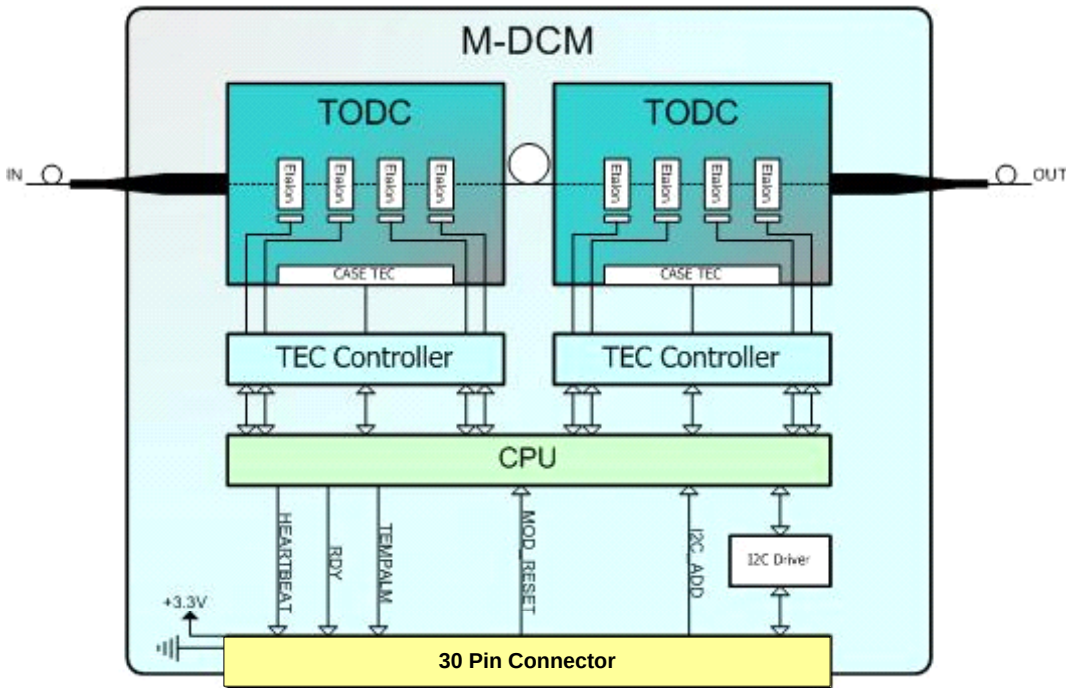


Figure 1: MDCM detailed block diagram

AC's MDCM consists of 8 independent GT-Etalons housed in two butterfly packages. Each individual etalon is attached to a separate TEC (Thermo Electric Cooler) controlled and monitored by a TEC controller. In addition, there are two TECs connected to the cases, for maintaining the butterfly package in a certain range of temperature. The TEC controllers are operated and monitored by the CPU hosted inside the MDCM package. The CPU holds a matrix table including all the required information for setting the etalons temperature for each dispersion and channel. Controlling the M-DCM as a module is made possible using the RS232 or I2C interface which is hardware and software compliant to the 300PIN MSA I2C rev 4. The MDCM supplies three monitor signals: over temperature alarm (TEMPALM), dispersion setting is ready (RDY) and a simple heart-beat for life pulse indication (HEARTBEAT). The MDCM is operated using a single power supply of 3.3v.

Back to Product List

6. I2C Interface

The MDCM supports I2C interface with compliance to 300PIN MSA as described in clause 2.1 and 2.2 in "MSA_10G_40G_TRX_I2C_PUBLIC_DOCUMENT_04.1_FINAL.DOC"

7. LVTTL DC Specification

Parameter	Symbol	Min	Typ	Max	Units
Output Voltage High	V_{OH}	2.4		Vdd	V
Output Voltage Low	V_{OL}			0.4	V
Input Voltage High	V_{IH}	2.0		Vdd	V
Input Voltage Low	V_{IL}	0		0.8	V
Input Current	I_I			400	mA

Table 2: LVTTL DC specifications

8. MDCM Pins Truth Table

8.1. Control inputs

Pin Name	Logic Function	Description
MOD_RESET	0 – Module Reset Active 1 – Normal Operation	CPU Reset
RDY	0 – Module not stable 1 – Module ready	Dispersion stability alarm
HRB	1Hz Blink - Normal Operation Steady 0 or 1 – Module hang	Module heart beat
TEMPALM	0 – Temperature alarm 1 – Normal operation	Indicates if M-DCM case temp is out of range

Table 3: MDCM alarms and controls

Back to Product List