

7706CWDM Series Compact Form Factor Coarse WDM Optical Modules User Manual

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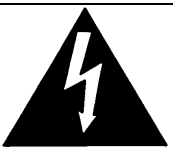

Version 1.0, July 2015

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IMPORTANT SAFETY INSTRUCTIONS

	The lightning flash with arrowhead symbol within an equilateral triangle is intended to alert the user to the presence of uninsulated “Dangerous voltage” within the product’s enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.
	The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (Servicing) instructions in the literature accompanying the product.

- Read these instructions
- Keep these instructions.
- Heed all warnings.
- Follow all instructions.
- Do not use this apparatus near water
- Clean only with dry cloth.
- Do not block any ventilation openings. Install in accordance with the manufacturer’s instructions.
- Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
- Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than other. A grounding-type plug has two blades and a third grounding prong. The wide blade or the third prong is provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
- Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles and the point where they exit from the apparatus.
- Only use attachments/accessories specified by the manufacturer
- Unplug this apparatus during lightning storms or when unused for long periods of time.
- Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.

WARNING

TO REDUCE THE RISK OF FIRE OR ELECTRIC – SHOCK, DO NOT EXPOSE THIS APPARATUS TO RAIN OR MOISTURE

WARNING

DO NOT EXPOSE THIS EQUIPMENT TO DRIPPING OR SPLASHING AND ENSURE THAT NO OBJECTS FILLED WITH LIQUIDS ARE PLACED ON THE EQUIPMENT

WARNING

TO COMPLETELY DISCONNECT THIS EQUIPMENT FROM THE AC MAINS, DISCONNECT THE POWER SUPPLY CORD PLUG FROM THE AC RECEPTACLE

WARNING

THE MAINS PLUG OF THE POWER SUPPLY CORD SHALL REMAIN READILY OPERABLE

FIBER OPTIC DEVICES

Some modules in this product may have fiber optic outputs. The following safety information applies to the optical outputs of these modules. Consult individual chapters for specific safety information for handling fiber optics.

WARNING



Never look directly into an optical fiber. Irreversible eye damage can occur in a matter of milliseconds.

ELECTROSTATIC SENSITIVE DEVICES



The hand symbol within an equilateral triangle is intended to alert the user to instructions related to precautions for handling electrostatic-sensitive devices. See “Electro Static Discharge (ESD) Precautions” section for further details.

INFORMATION TO USERS IN EUROPE

NOTE

CISPR 22 CLASS A DIGITAL DEVICE OR PERIPHERAL

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to the European Union EMC directive. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.



EN60065 Safety
EN55103-1: 1996 Emission
EN55103-2: 1996 Immunity



EN504192 2005
Waste electrical products should not be
disposed of with household waste. Contact
your Local Authority for recycling advice

INFORMATION TO USERS IN THE U.S.A.

NOTE

FCC CLASS A DIGITAL DEVICE OR PERIPHERAL

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

WARNING

Changes or Modifications not expressly approved by Evertz Microsystems Ltd. could void the user's authority to operate the equipment.

Use of unshielded plugs or cables may cause radiation interference. Properly shielded interface cables with the shield connected to the chassis ground of the device must be used.

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REVISION HISTORY

<u>REVISION</u>	<u>DESCRIPTION</u>	<u>DATE</u>
1.0	First Release	July 2015

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Although every attempt has been made to accurately describe the features, installation and operation of this product in this manual, no warranty is granted nor liability assumed in relation to any errors or omissions unless specifically undertaken in the Evertz sales contract or order confirmation. Information contained in this manual is periodically updated and changes will be incorporated into subsequent editions. If you encounter an error, please notify Evertz Customer Service department. Evertz reserves the right, without notice or liability, to make changes in equipment design or specifications.

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1. OVERVIEW

The 7706CWDM's are bi-directional Multiplexors/De-multiplexors that combine/separate up to sixteen different wavelengths over a single fiber. 7706CWDM-M8/D8 series are designed to mux/demux up to 8 wavelengths in the 1470nm to 1610nm spectrum. While the 7706CWDM-M8LB/D8LB are expandable from 8 to 16 channel systems and are designed to mux/demux up to 16 wavelengths in the 1270nm to 1610nm spectrum.. When cascading two CWDM modules together to form a 16 channel system, connect the **COMMON** output from the CWDM-M8 into the **EXPANSION** connector on the CWDM-M8LB module.

Features:

- Bi-directional mux/demux of up to 16 wavelengths in the 1270nm to 1610nm spectrum (ITU-T G.694.2 compliant)
- Expandable from 8 to 16 channel systems
- Passive design for any bit rate
- Low insertion loss to conserve system power
- High optical isolation for low crosstalk
- Compatible with all Evertz series CWDM Mux and Demux (3400CWDM, 3405CWDM, 7705CWDM)
- Compact design occupies only one slot in an Evertz 7700/7800 frame per card Module
- LC/UPC and LC/APC connector options
- Fiber protector to prevent connector damage
- **7706CWDM to be used ONLY in Single Mode Fiber applications*

There are currently four modules in the passive optical 7706CWDM Series family.

MODEL	DESCRIPTION & FUNCTION	SLOT(S)
7706CWDM-M8	8 Channel CWDM Mux (1470nm to 1610nm)	1
7706CWDM-D8	8 Channel CWDM Demux (1470 nm to 1610nm)	1
7706CWDM-M8 & 7706CWDM-M8LB	16 Channel CWDM Mux (1270nm to 1610nm)	2
7706CWDM-D8 & 7706CWDM-D8LB	16 Channel CWDM Demux (1270 nm to 1610nm)	2

Table 1-1: 7706CWDM Series - Passive Optical Modules

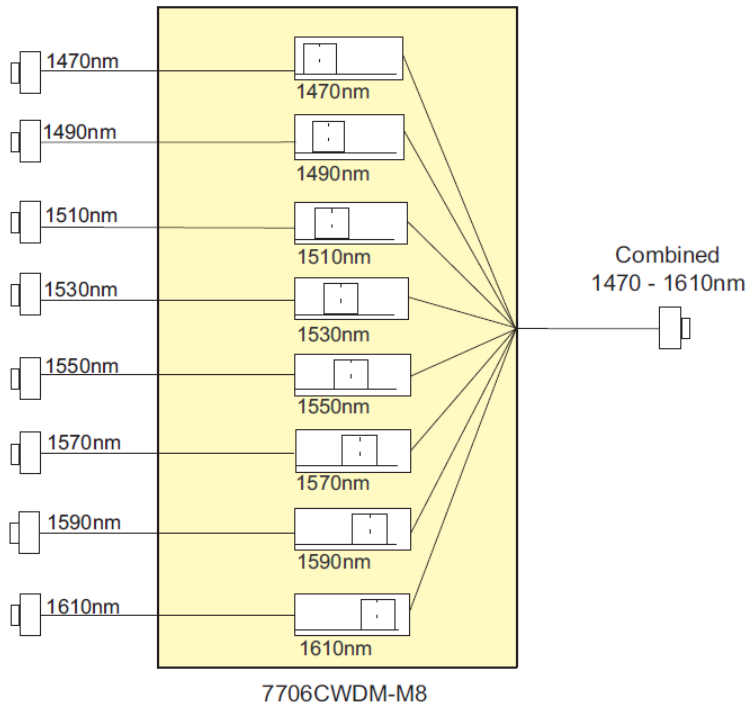


Figure 1-1: 7706CWDM-M8 Block Diagram

Expansion port input (Accepts output of 7706CWDM-M8 to create 16 Channel System)

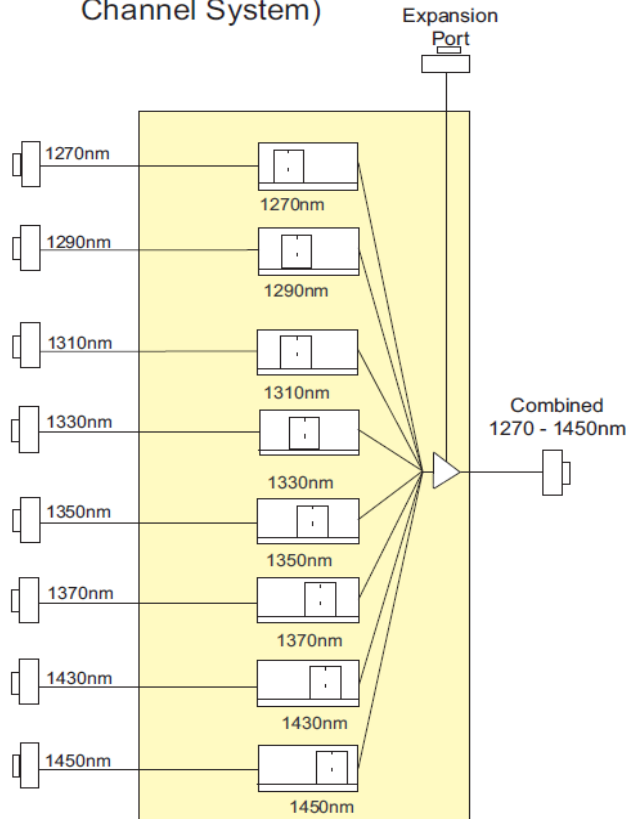


Figure 1-2: 7706CWDM-M8LB Block Diagram

2. GETTING STARTED

2.1. REAR PLATE DESCRIPTION

Each 7706CWDM series module comes with a companion rear plate that house 8 LC/UPC or LC/APC connectors and 9 connectors for the modules with Expansion connector.

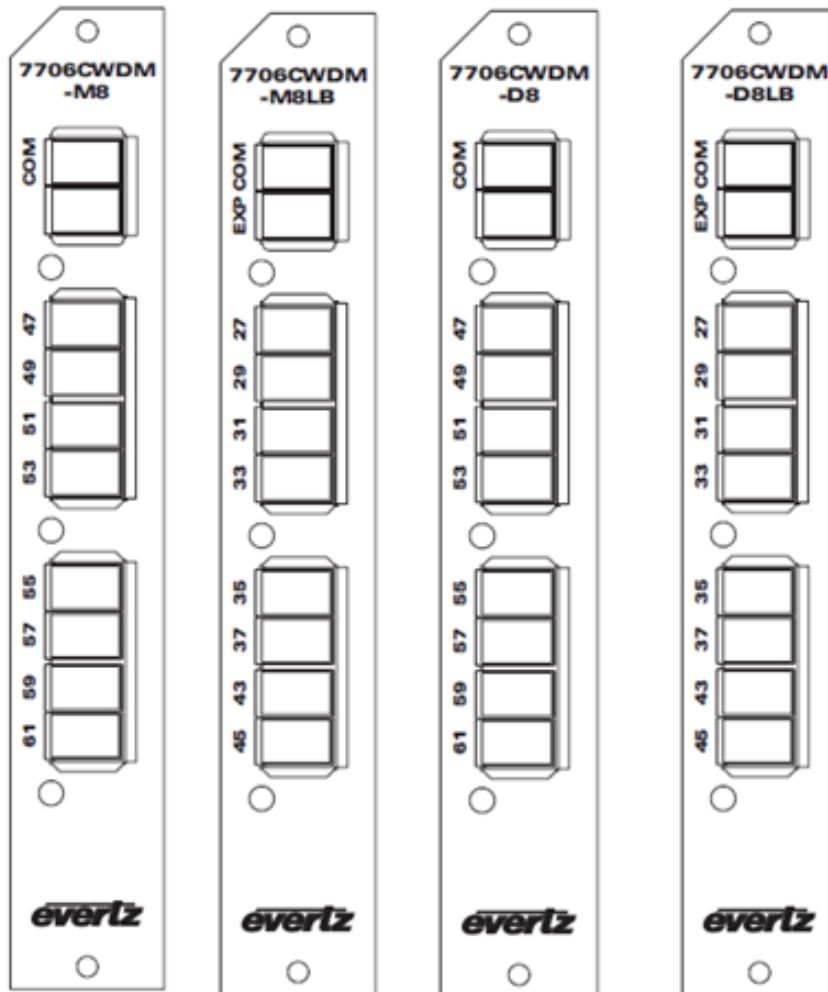


Figure 1-1: 7706CWDM Series Rear Plate Options

2.2. CONNECTORS

2.2.1. 7706CWDM-M8 and 7706CWDM-M8LB

Fiber In: Connectors are labelled with 2 digits corresponding to middle digits of the input wavelength.
(ie 61 corresponds to 1610nm)

EXP: Connector labelled EXP corresponds to the expansion input on the 7706CWDM-M8LB that connects to the COM on the 7706CWDM-M8.

Fiber Out: Connector labelled COM corresponds to the common output on the module.

2.2.2. 7706CWDM-D8 and 7706CWDM-D8LB

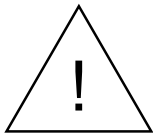
Fiber In: Connectors labelled COM are common fiber inputs.

EXP: Connector labelled EXP corresponds to the expansion output on the 7706CWDM-D8LB that connects to the COM on the 7706CWDM-D8.

Fiber Out: Connectors are labelled with 2 digits corresponding to middle digits of the output wavelengths. (ie 61 corresponds to 1610nm)

2.3. CARE AND HANDLING OF OPTICAL FIBER

2.3.1. Safety



Background color: yellow
Triangular band: black
Symbol: black

2.3.2. Assembly

Assembly or repair of the laser sub-module is done only at Evertz facility and performed only by qualified Evertz technical personnel.

2.3.3. Labelling

Certification and Identification labels are combined into one label, as there is not enough room on the product to place the label it is reproduced here in the manuals.

- There is no date of manufacture on this label as it can be traced by bar code label placed on the Printed circuit board of each Evertz plug-in module.
- The Model number is one of: 2406DVIR-USB, or 2406DVIR-2-USB

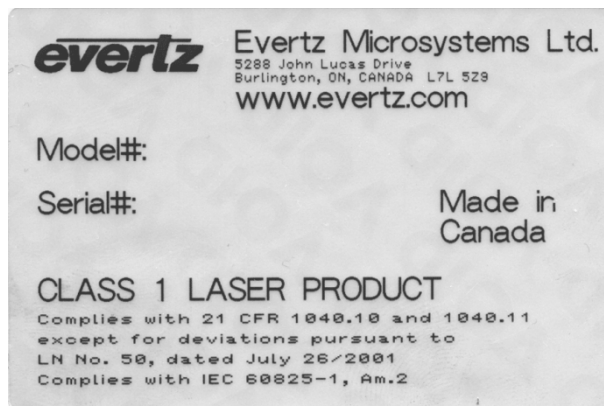


Figure 2-2: Reproduction of Laser Certification and Identification Label

2.3.4. Handling and Connecting Fibers



Never touch the end face of an optical fiber. Always keep dust caps on optical fiber connectors when not connected and always remember to properly clean the optical end face of a connector before making a connection.

The transmission characteristics of the fiber are dependent on the shape of the optical core and therefore care must be taken to prevent fiber damage due to heavy objects or abrupt fiber bending. Evertz recommends that you maintain a minimum bending radius of 5 cm to avoid fiber-bending loss that will decrease the maximum attainable distance of the fiber cable. The Evertz fiber optic modules come with cable lockout devices, to prevent the user from damaging the fiber by installing a module into a slot in the frame that does not have a suitable I/O module.

2.4. INSTALLING THE 7706CWDM

The 7706CWDM modules are available in a Multiplexor and Demultiplexor version. For optimum insertion loss characteristics, it is important to install a Multiplexor version at one end of the fiber link and a Demultiplexor version at the other end.

When cascading two CWDM modules together to form a 16 channel system, connect the **COMMON** output from the 7706CWDM-M8 into the **EXPANSION** connector on the 7706CWDM-M8LB module. To form a 16 channel demultiplexor, connect the **EXPANSION** output on the 7706CWDM-D8LB to the **COMMON** input on the 7706CWDM-D8.

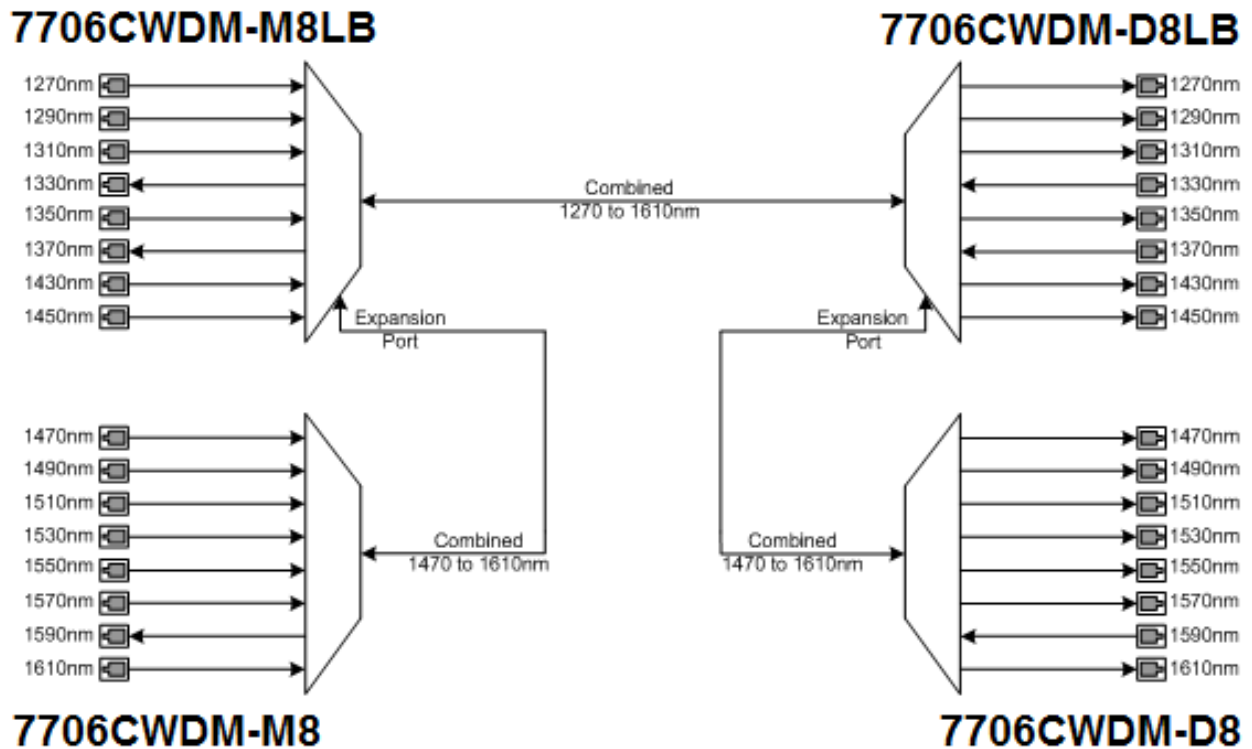


Figure 1-3: 7706CWDM Typical Connection

3. SPECIFICATIONS

3.1. OPTICAL INPUT/OUTPUT

Connector:	LC/PC or LC/APC female housing
Wavelength	
7706CWDM	1470 to 1610 nm
7706CWDM-8LB	1270 to 1450 nm
Channel Spacing:	20nm
Passband @0.5dB	>13nm
Channel Uniformity	<1.5dB
Isolation Adjacent Channel:	>30dB
Directivity:	>50dB
Fiber Size	9µm core/125µm overall
Return Loss:	>45dB

3.2. LINK LOSS WITH MUX AND DEMUX COMBINATION

7706CWDM-8:	< 3dB Maximum Loss
7706CWDM-8LB:	< 3dB Maximum Loss
Expansion Port:	< 3dB Maximum Loss
7706CWDM-8 + 7706CWDM-8LB:	
	< 3dB (1270nm - 1450nm)
	< 6dB (1470nm - 1610nm)

3.3. PHYSICAL (NUMBER OF SLOTS)

350FR,7700FR-C & 7800FR

7705CWDM-D8:	1
7706CWDM-D8LB:	1
7706CWDM-M8:	1
7706CWDM-M8LB:	1

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