

fiberplex
TECHNOLOGIES, LLC

USER MANUAL

Passive Wave Division Multiplexer

WDP16 / WDP8A / WDP8B

Warning for Your Protection

1. Read these instructions.
2. Keep these instructions.
3. Heed all warnings.
4. Follow all instructions.
5. Do not use this apparatus near water.
6. Clean only with a dry cloth.
7. Do not block any of the ventilation openings. Install in accordance with the manufacturer's instructions.
8. Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
9. Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the 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.
10. Protect the power cord from being walked on or pinched, particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.
11. Only use attachments/accessories specified by the manufacturer.
12. Use only with the cart, stand, tripod, bracket, or table specified by the manufacturer, or sold with the apparatus. When a cart is used, use caution when moving the cart/apparatus combination to avoid injury from tip-over.
13. Unplug this apparatus during lightning storms or when unused for long periods of time.
14. 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.

The apparatus shall not be exposed to dripping or splashing. No objects filled with liquids, such as vases or drink cups, shall be placed on the apparatus.

“WARNING: To reduce the risk of fire or electric shock, do not expose this apparatus to rain or moisture.”

General Installation Instructions

Please consider these general instructions in addition to any product-specific instructions in the “Installation” chapter of this manual.

Unpacking

Check the equipment for any transport damage. If the unit is mechanically damaged, if liquids have been spilled or if objects have fallen into the unit, it must not be connected to the AC power outlet, or it must be immediately disconnected by unplugging the power cable. Repair must only be performed by trained personnel in accordance with the applicable regulations.

Installation Site

Install the unit in a place where the following conditions are met:

- The temperature and the relative humidity of the operating environment must be within the specified limits during operation of the unit. Values specified are applicable to the air inlets of the unit.
- Condensation may not be present during operation. If the unit is installed in a location subject to large variations of ambient temperature (e.g. in an OB-van), appropriate precautions must be taken.
- The unit must not be unduly exposed to external heat sources (direct sunlight, spot lights).

Ambient Temperature

Units and systems by FiberPlex are generally designed for an ambient temperature range (i.e. temperature of the incoming air) of +5...+40 °C. When rack mounting the units, the following facts must be considered:

- The permissible ambient temperature range for operation of the semiconductor components is 0 °C to +70 °C (32 °F to 158 °F) (commercial temperature range for operation).
- The airflow through the installation must allow exhaust air to remain cooler than 70 °C (158 °F) at all times.
- Average temperature increase of the cooling air shall be about 20 °C (68 °F), allowing for an additional maximum 10 °C increase at the hottest components.
- In order to dissipate 1 kW with this permissible average temperature increase, an air flow of 2.65 m³/min is required.
- Example: A rack dissipating P = 800 W requires an air flow of 0.8 * 2.65 m³/min which corresponds to 2.12 m³/min.
- If the cooling function of the installation must be monitored (e.g. for fan failure or illumination with spot lamps), the exhaust air temperature must be measured directly above the modules at several places within the enclosure.

protection against electrical shock hazard (dangerous body currents). Hazardous voltage may not only be caused by defective power supply insulation, but may also be introduced by the connected audio or control cables.

This equipment may require the use of a different line cord, attachment plug, or both, depending on the available power source at installation. If the attachment plug needs to be changed, refer servicing to qualified personnel.

Warranty, Service and Terms and Conditions of Sale

For information about Warranty or Service information, please see our published 'Terms and Conditions of Sale'. This document is available on fiberplex.com, or can be obtained by requesting it from clients@fiberplex.com or calling 301.604.0100.

Disposal

Disposal of Packing Materials

The packing materials have been selected with environmental and disposal issues in mind. All packing material can be recycled. Recycling packing saves raw materials and reduces the volume of waste. If you need to dispose of the transport packing materials, recycling is encouraged.

Disposal of Used Equipment

Used equipment contains valuable raw materials as well as substances that must be disposed of professionally. Please dispose of used equipment via an authorized specialist dealer or via the public waste disposal system, ensuring any material that can be recycled has been. Please take care that your used equipment cannot be abused. After having disconnected your used equipment from the mains supply, make sure that the mains connector and the mains cable are made useless.

Disclaimer

The information in this document has been carefully checked and is believed to be accurate at the time of publication. However, no liability is assumed by FiberPlex for inaccuracies, errors, or omissions, nor for loss or damage resulting either directly or indirectly from use of the information contained herein.

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Introduction

Infrared light has a frequency of approximately 400 Terahertz (400,000 Gigahertz). That is about 125,000 times higher than the data rate of a typical 3 Gigabit SFP, which means a large proportion of the bandwidth of a fiber optic cable is wasted. The current state of the art does not allow utilizing all of that bandwidth, but we can recover some of it by a technique called “Coarse Wave Division Multiplexing,” or “CWDM.”

Essentially, it is the simple technique of taking each channel and using it to modulate a different frequency in that 400 Terahertz bandwidth. This is done through a series of optical filters and combiners, along with lasers and photodiodes tuned to a particular infrared center frequency. Historically, however, optics are referred to, not by their frequency, but by their wavelength, which is the speed of light divided by the frequency.

The FiberPlex WDP is a rack-mountable passive 8 or 16 channel coarse wavelength division multiplexer. Unlike the similar FiberPlex products in the WDM series, this unit is passive and all connected fiber optic modules must be externally adapted to specific wavelengths. Being a passive unit, the WDP requires no external power and occupies a smaller 1U rack space. Fiber optic inputs and outputs are connected via singlemode duplex mating sleeves in the rear of the unit.

Key Features

- 16 (or 8) Channel Passive Wave Division Multiplexer
- Bi-Directional, includes both Mux and De-Mux in one package
- Combines 16 (or 8) optical channels into a single fiber pair
- Compact, fits in a 1U rack space
- Does not require external power, so reliability is not a concern

Differences between WDP16, WDP8A, and WDP8B

The functional and physical characteristics of the WDP16, WDP8A and WDP8B are largely identical. The single differentiator is the number of Wave Division channels and the associated internal wavelengths that are supported. The chassis dimensions remain identical.

The WDP16 supports all of the 16 standard CWDM wavelengths of 1311-1611 nm, whereas the WDP8 units support only 8 of those channels, so the installation can be scaled to the appropriate size. The WDP8A supports the upper 8 wavelengths 1471-1611 nm and the WDP8B supports the lower 8 wavelengths 1311-1451 nm.

When only 8 channel point to point functionality is desired, the WDP8A should be the model of choice.

Model	Channels	Constituent Wavelengths
WDP16	16	1311-1611 nm
WDP8A	8	1471-1611 nm
WDP8B	8	1311-1451 nm

Getting Started

Initial Inspection

Immediately upon receipt, inspect the shipping container for damage. The container should be retained until the shipment has been checked for completeness and the equipment has been checked mechanically and electrically. If the shipment is incomplete, if there is mechanical damage, or if the unit fails to operate notify FiberPlex and make the shipping materials available for the carrier's inspection.

Chassis Mounting

Mount the chassis using fasteners appropriate to your standard 19" rack enclosure. All four (4) mounting points **MUST** be utilized. The chassis should be located in an environment where an ambient temperature between -5° and 65° C can be maintained.

Features

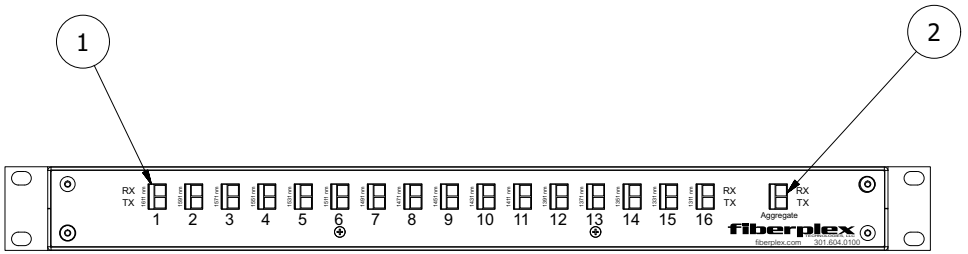


Figure 1: WDP-16 Rear

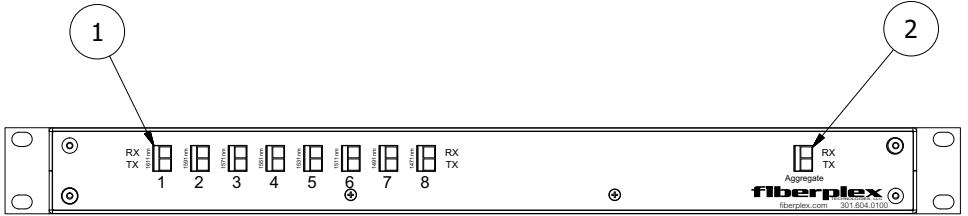
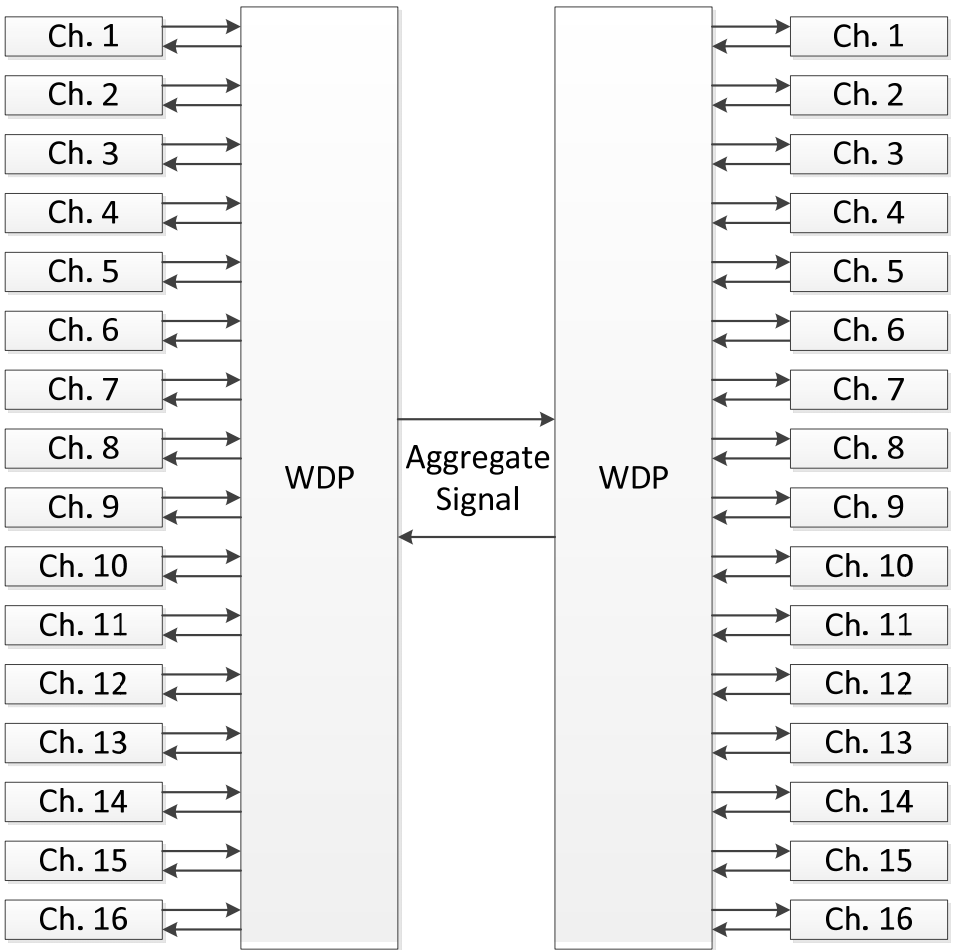


Figure 2: WDP-8A Rear

- 1 Signal Ports** – These LC/PC Duplex fiber optic ports handle the individual constitutive signals. The input signals must within ± 5 nm of the corresponding wavelength for each channel, printed in the specifications table as well as on device next to each channel connector. Optical inputs (RX) are the top connector and optical outputs are the bottom (TX).
- 2 Aggregate Signal Port** – This LC Duplex fiber optic port handles the multiplexed input and output signals. The Aggregate Signal Ports of WDPs at each end should be connected together. Optical inputs (RX) are the top connector and optical outputs are the bottom (TX).

Block Diagram



Specifications

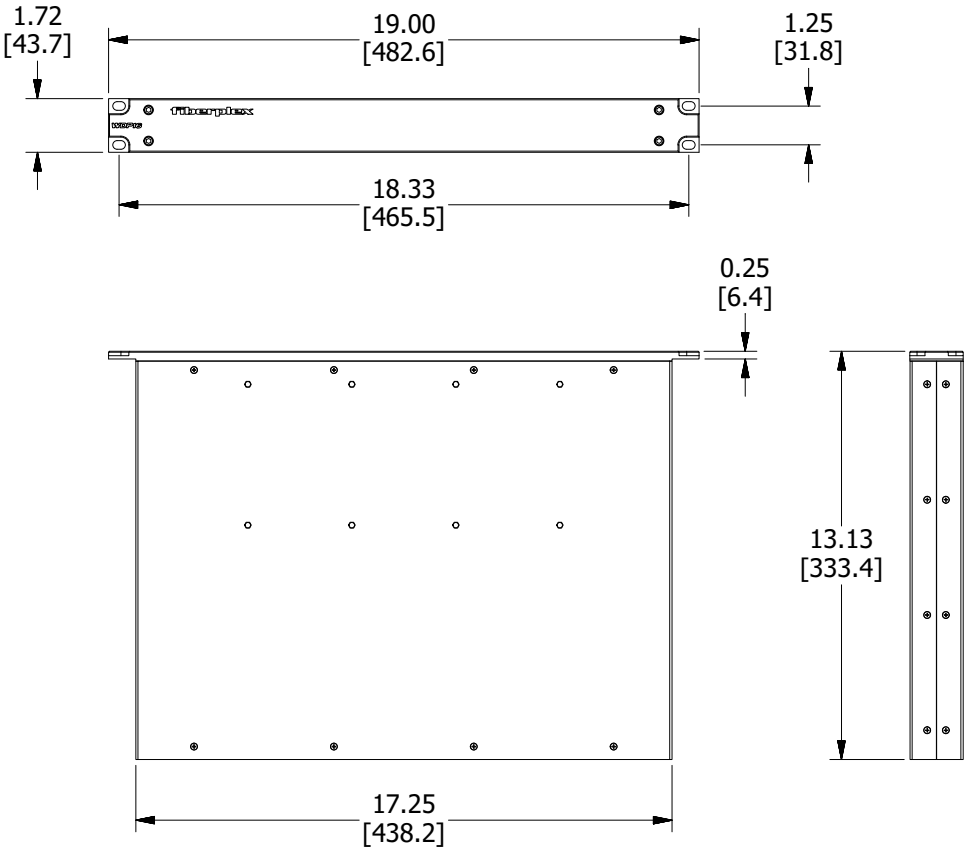


Figure 3: WDP Chassis Dimensions

OPTICAL SPECIFICATIONS

Parameter	Min	Typ	Max	Unit
Insertion Loss	-	-	2.8 (8-channel) 3.8 (16-channel)	dB
Isolation (adjacent channel)	30	-	-	dB
Isolation (non-adjacent channel)	45	-	-	dB
Optical Power Handling	-	-	300	mW
CWDM Wavelengths	WDP16			
	WDP8A		WDP8B	
	Ch1 - 1611nm		Ch9 - 1451nm	
	Ch2 - 1591nm		Ch10 - 1431nm	
	Ch3 - 1571nm		Ch11 - 1411nm	
	Ch4 - 1551nm		Ch12 - 1391nm	
	Ch5 - 1531nm		Ch13 - 1371nm	
	Ch6 - 1511nm		Ch14 - 1351nm	
	Ch7 - 1491nm		Ch15 - 1331nm	
	Ch8 - 1471nm		Ch16 - 1311nm	

PHYSICAL SPECIFICATIONS

Case Dimensions	Length	Width	Height	Weight
WDP16 1U Rack mount	13 in (330 mm)	19 in (482 mm)	1.75 in (45 mm)	6.4 lbs

ENVIRONMENTAL SPECIFICATIONS

WDP-8A/8B/16	Min	Typ	Max	Unit
Storage Temperature	-40	-	85	°C
Operating Temperature	-5	-	65	°C



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