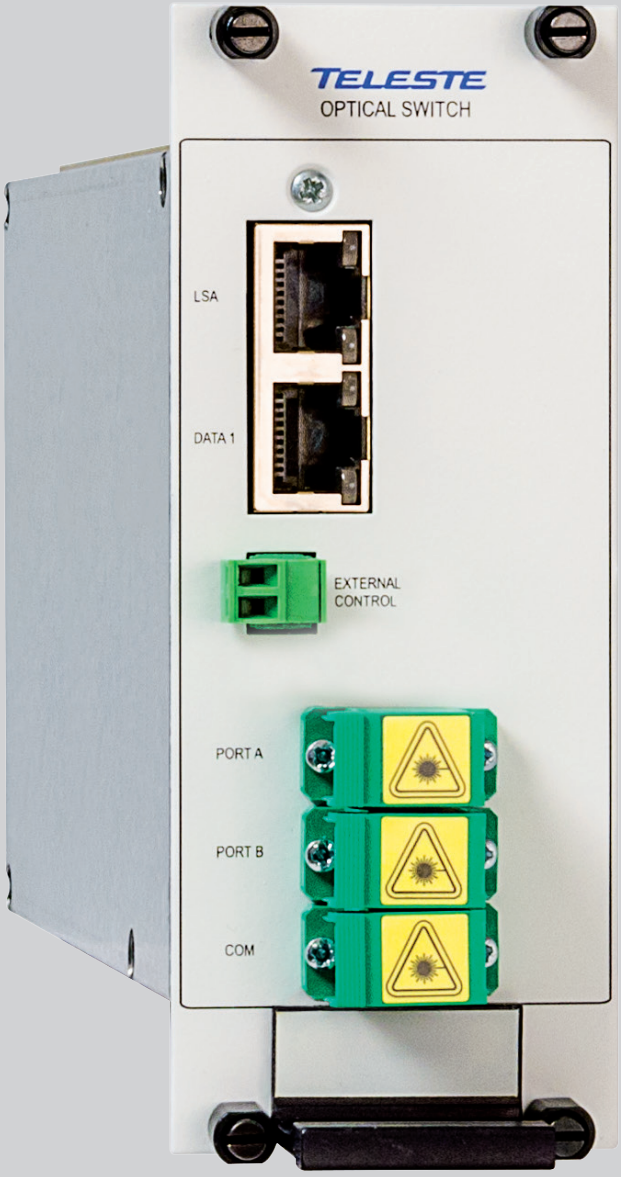
User manual

Optical switch 1x2 for singlemode fibre

An essential part of complete CFO Fibre Optic Platform are the COM series accessories. Among several different COM models the optical switches offer an easy way to provide a redundant fibre optic operation.

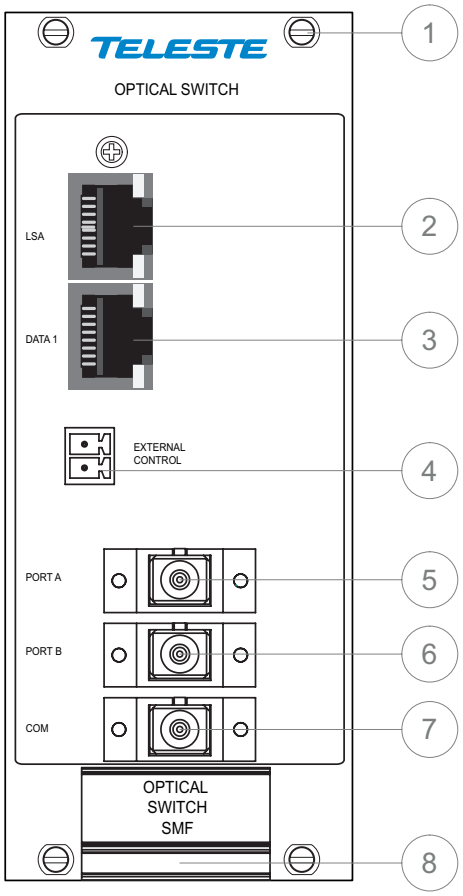


For CFO series (CEV/x61/x91)

Contents

Optical switch introduction

Optical switch for CEV and CFOx61/x91 series video modems.



Optical switch, front view.

1. Locking screw (4 pcs)
2. LSA connector
3. Loopthru connector
4. External control connector
5. Port A
6. Port B
7. Common port
8. Handle (with unit information)

LSA and DATA1 port connectors are of type RJ-45 female.
All optical port connectors are of type SC/APC female (8°).

See further information on dedicated sections.

Welcome, and thank you for purchasing Teleste's CFO Products.

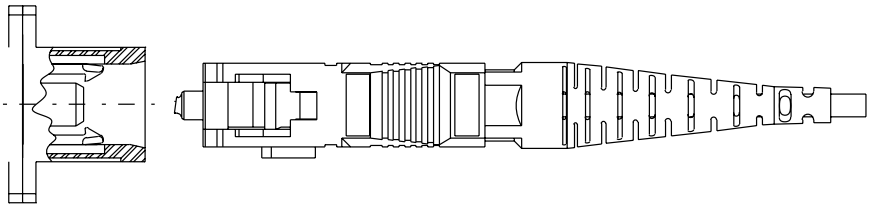
General

Optical switch is compatible with CEV / CFOx61/x91 series video modems and is used to achieve the fibre path redundancy. The optical bandpass covers CWDM wavelenghts 1460...1620 nm and standard 1310 nm window. Fully bi-directional optical operation is allowed.
When optical switch is used in conjunction with a CEV / CFOx61/x91 video modems, the optical switching can be automatic when it is controlled by the Link Loss Alarm (LSA) available from these video modems. Alternatively the optical switch can be configured to operate in case of system power loss or to have remotely controlled switching by means of an external I/O control. The switching component itself is a durable 1 x 2 type non-latching switch with a low insertion loss. The unit is 10HP wide.

Fibre connection

When installing the fibre optic cable, do not exceed the minimum bending radius when connecting cable to the system.
For correct optical operation ensure that:

> Protect opened connectors always with dustcaps
> Only 8° angle polished SC/APC connectors are allowed
> Clean all connectors before mating by using metyl or isopropyl alcohol and dry connectors by compressed air



SC/APC 8° optical connection.

Frame installation

The unit is to be pushed along the guide rails into the installation frame (e.g. **CSR216** or **316** series) and secured with the four locking screws. The unit can be freely positioned in any slot in the frame. The empty positions in the frame should be blanked off with cover plates.The supply voltage is to be provided by a **CPS384** or **CPS390** power supply unit.

Stand-alone installation

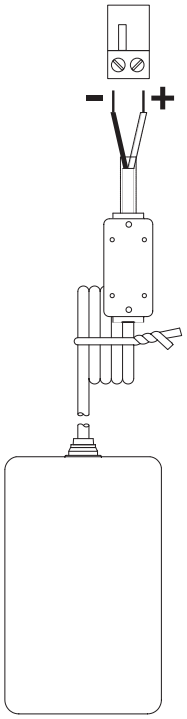
The units can be installed for stand-alone use by using a **CMA025** (installation for 10HP wide CFO series units) module adapters. To insert a CFO card unit into the module adapter, push the unit along the guide rails into module until the unit is firmly attached. Secure the plug-in unit with the upper and lower locking screws.. The stand-alone unit should be mounted to a vertical surface.

The 12V DC supply voltage is supplied by the means of a separate mains adapter with a regulated output, (e.g. **CPS251**). *Please refer to separate documention for module adapters and mains adapters.*

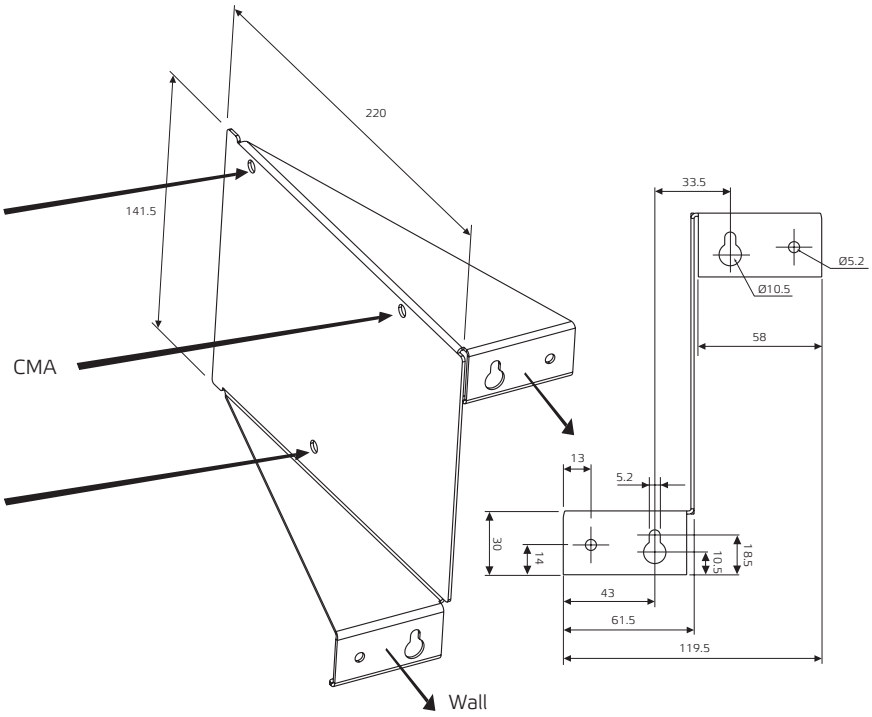
By using an optional mounting kit (item code CIK002) a rear side mounting is enabled (below CIK002 rear mounting kit dimensions).

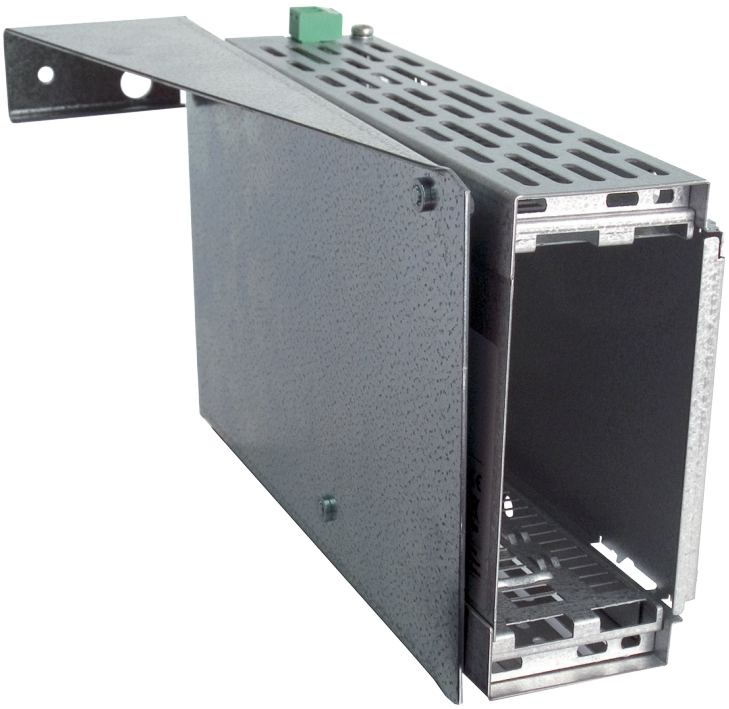
CMA025 module adapter.

CPS251 12VDC Mains adapter.



Power supply connection.





For limited space installation the CMA module adapters can be rear-mounted by means of an optional installation kit CIK002.

CMA025 module adapter with CIK002 rear mounting kit.

Operation

Link Source Alarm (LSA)

CEV / CFOx61/x91 series video modem's (transmitter and receiver) contact closure output can be used to control optical switch when the video modem's LSA (Link Source Alarm) mode is enabled. When operating with LSA, a connection cable is required between the optical switch and video modem.

***Note!** Enabling LSA (LSA ON) overrides all other functions of video modem's CC output.*

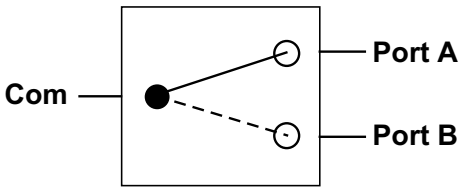
When LSA is enabled, video modem's contact closure input and data 1 connections are normally available via optical switch's DATA 1 (loopthru) connector when using a connection cable between CEV / CFOx61/x91 series video modem and optical switch. The recommended connection cable is Teleste **CIC702** (RJ-45/RJ-45).

LSA commands

CEV / CFO16x/19x series video modem includes a command line interface (CLI) for configuration purposes. With help of CLI commands you can configure the LSA settings. See CEV / CFO16x/19x series video modem's user manual for more details how to use the CLI.

LSA on / off : Enables/disables LSA monitoring on the device
LSA delay : Displays or sets the link source alarm switching delay (in seconds). Delay defines how long the device will wait for the optic link to get up before operating the switch for the first time
LSA holdtime : Displays or set the link source alarm hold time (in seconds). Holdtime defines the waiting time to ensure the recovery of the optical link
LSA reset : Resets device source alarm to it's initial state (see page 5 for switching logic flow chart)

Switch port positions and indicator leds



COM port positions.

The optical switch's initial state is always port position A, except when using system power switching mode, at that control mode the switch's initial state is position B.

When the switch is not activated (initial state), the com port is connected to port A, and all front panel RJ-45 connectors leds (1-4) are dark.

When the switch is activated (alarm state), the com port is connected to port B and all front panel RJ-45 connectors leds (1-4) are green.

The switching can be controlled by the following ways:

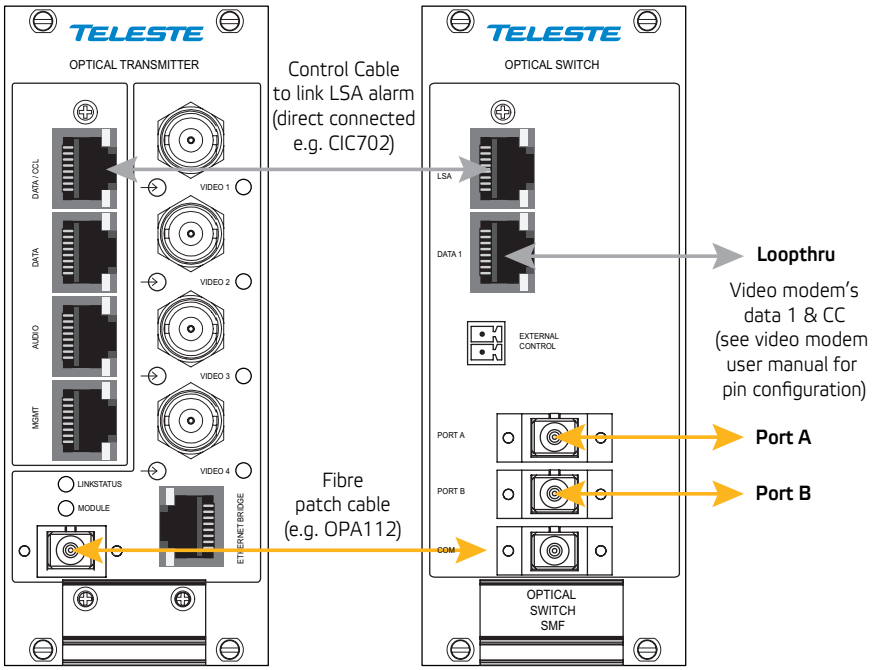
- LSA (contact closure output at video modem)
- System power fail (rack power supply)
- External control open (pins open)
- External control closed (pins closed)
- Remote controlled via video modem link (normal contact closure operation, see note on the right)

***Note!** When using LSA control, the optican switch operates automatically with the logic descripted in page 5.*

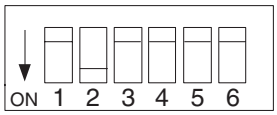
Settings

Wiring example

When the connection cable is connected between video modem and optical switch, the video modem's DATA 1 and contact closure connections are available via the optical switch's DATA 1 (loopthru) connector.



Wiring example with four channel video transmitter.



DIP swithes are located on the bottom of unit.

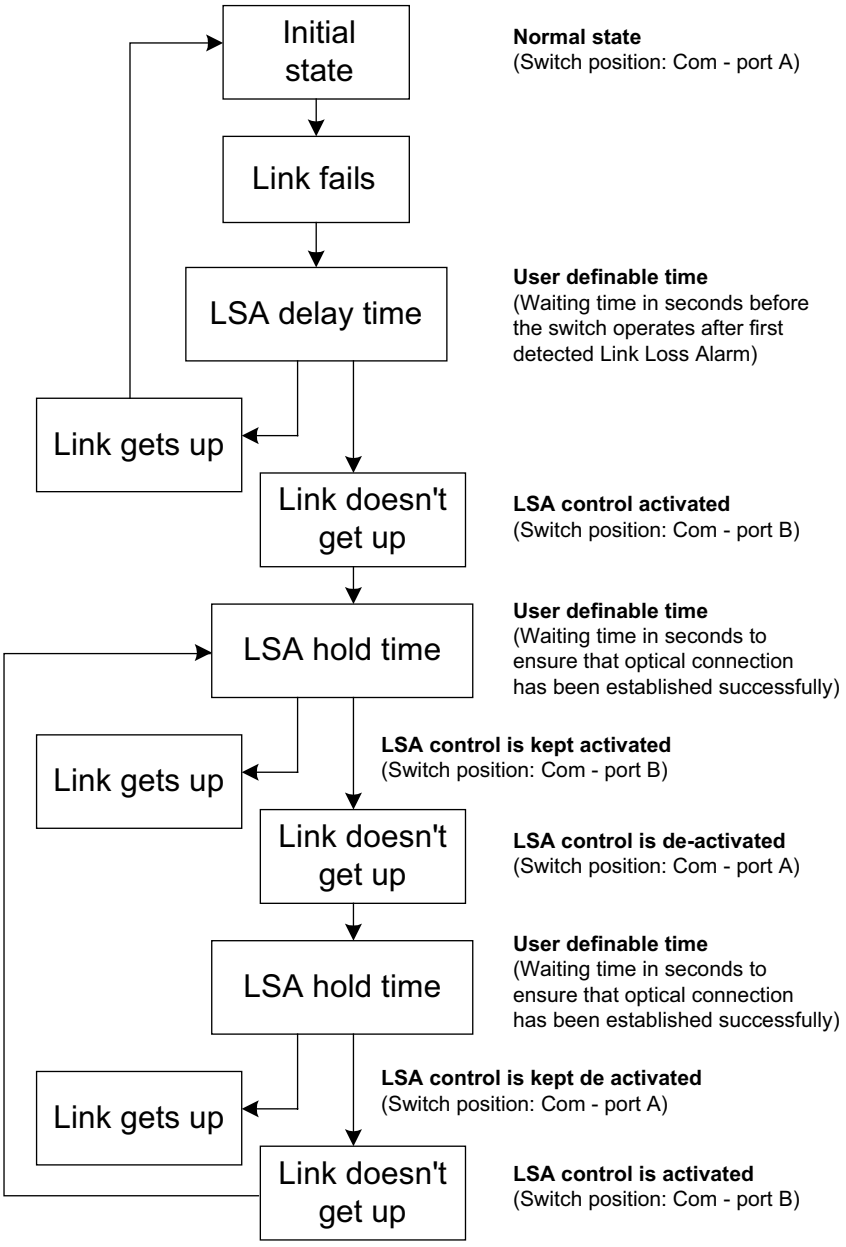
Note! *When the optical switch is configured to LSA mode, there is an alternative possibility to control the switch remotely. At the video modem configuration session (CLI) the LSA function can be disabled and the contact closure channel is returned back to normal CC usage.*
This enables a possibility to control the CC channel from the remote end of the fibre link and therefore to control the optical switch operation as well.

DIP switch settings

There are several ways to control optical switch. The desired control mode can be selected by the means of DIP switches (see settings below). The default factory setting is **LSA controlled**.

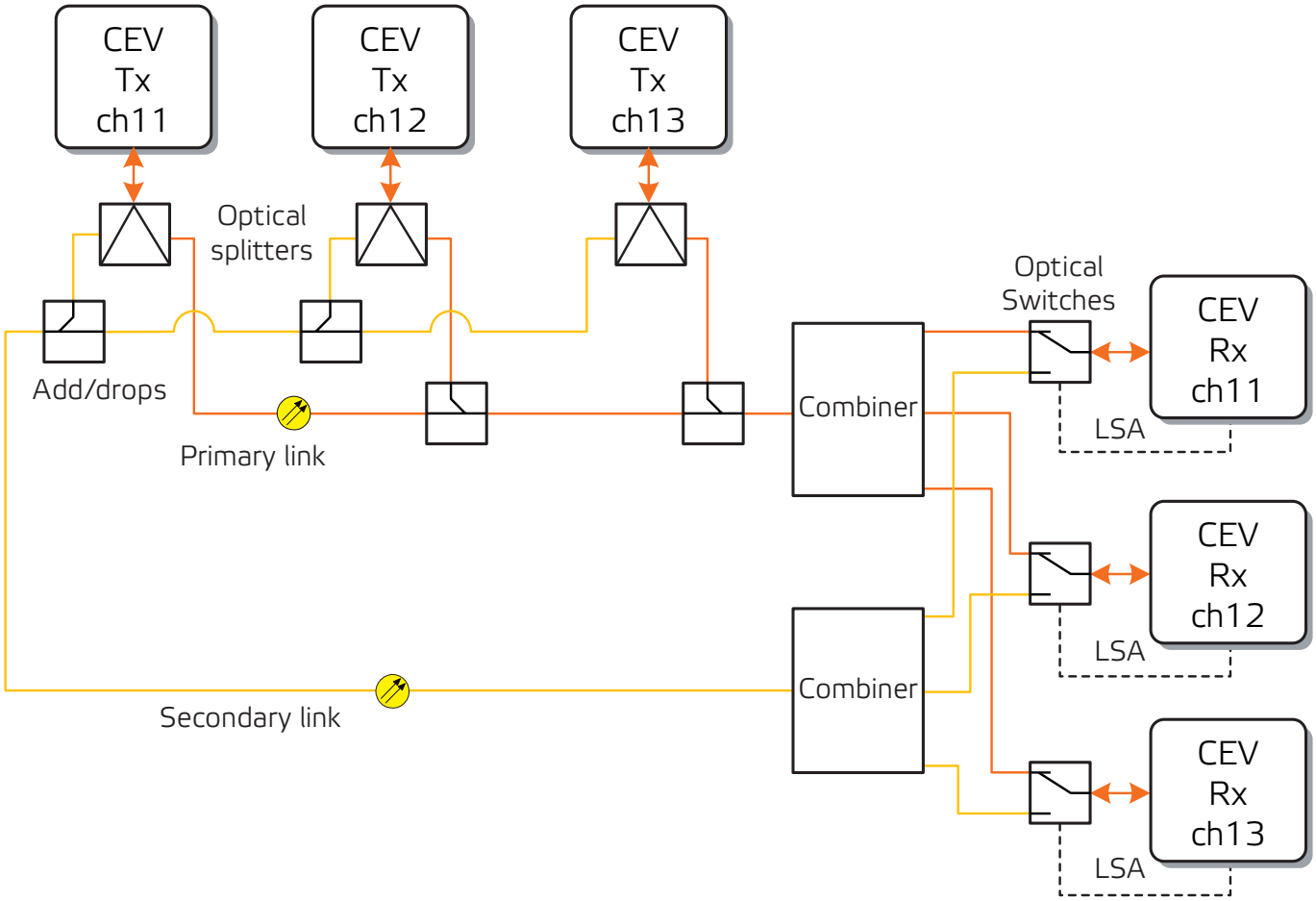
DIP switch	LSA con-trolled	EXT mode A	EXT mode B	System power
1	OFF	ON	OFF	OFF
2	ON	OFF	OFF	OFF
3	OFF	OFF	OFF	OFF
4	OFF	OFF	OFF	OFF
5	OFF	OFF	ON	ON
6	OFF	OFF	ON	OFF
Switch posi-tion	LSA active COM -> port B	EXT closed COM -> port B	EXT closed COM -> port A	Power ON COM -> port B
	LSA inactive COM -> port A	EXT open COM -> port A	EXT open COM -> port B	Power OFF COM -> port A

LSA switching logic



To return the switch back to the initial state, use CLI with a command **lsareset** to reset the LSA.

Application example



Technical specifications

Optical		
Wavelenght range	1310 ±50 and 1460...1620 nm	
Insertion loss	1.0 dB	max
Return loss	60 dB	
Switching type	1x2	non-latching
Switching time	8 ms	
Cross-talk	60 dB	min
Switching speed	10 Hz	max
Durability	10 million cycles	min
Optical power handling	1000 mW	
Connectors	3 x SC/APC 8° female	

General		
Supply voltage	12 V / 30 mA	
Power consumption (max)	400 mW	
Dimensions (H x W x D)	3U • 10HP • 190 mm	without CMA
Weight	0.5 kg	
Connectors		
External control	2 -pin screw terminal	(closed/open I/O)
For CEV and data troughput	2 x RJ-45	
Operating temperature	-34...+74 °C	
Storage temperature	-40...+85 °C	
Humidity	0...95 %	non condensing

Notes

Typical values unless otherwise stated

Notes

Notes

Legal declarations

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