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AOSPLC-xx-IP series

Splitters for optical and IP signals

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Operating Manual

Version 04-2022A

Contents

Before starting operation of the device....page 03
Symbols and conventions used....page 03
Proper use....page 03
Target group for this manual....page 04
Device description....page 04
Important safety information....page 06
Description of performance....page 08
Warranty conditions....page 08
Disposal....page 08
Troubleshooting....page 09
Maintenance and repair....page 09
Service tasks....page 09
Block diagram....page 10
Technical data....page 12

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Before starting operation of the device

HINWEIS: Read this operating manual attentively! It contains important information about installation, ambient conditions and maintenance of the device. Keep this operating manual for future use and for handover in the event of a change of owner. A PDF version of this manual is available to download on the ASTRO website (there may be a more recent version).
The ASTRO company confirms that the information in this manual was correct at the time of printing, but it reserves the right to make changes, without prior notice, to the specifications, the operation of the device and the operating manual.

Symbols and conventions used

Symbols used in these instructions

Pictograms are visual symbols with specific meanings. You will encounter the following pictograms in this installation and operating manual:

Warning about situations in which electrical voltage and non-observance of the instructions in this manual pose a risk of fatal injuries.

Warning about various dangers to health, the environment and material.

Warning about thermal damages (risk of burns).

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Warning about high laser radiation emitted from a device, connector or adapter (risk of eye damage).

Recycling symbol: indicates components or packaging materials which can be recycled (cardboard, inserts, plastic film and bags). Used batteries must be disposed of at approved recycling points. Batteries must be completely discharged before being disposed of.

This symbol indicates components which must not be disposed of with household rubbish.

Proper use

The modules of the AOSPLC series can only be used for splitting optical and IP signals of analogue modulated TV and Data services via optical fibre networks.
Modification of the devices or use for any other purpose is not permitted, and will immediately void any guarantee provided by the manufacturer.

Target group of this manual

Installation and starting operation

The target group for installation and starting operation of the ASTRO optical transmission technology are qualified experts who have training enabling them to perform the work required in accordance with EN 60728-11 and EN 62368-1. Unqualified person are not allowed to install and start operation of the device.

Device configuration

Target group for the configuration of the ASTRO transmitters are persons who have received instructions and have training enabling them to perform a configuration. Knowledge of EN 60728-11 and EN 62368-1 is not necessary for configuration.

Device description

The scope of delivery includes:

- ☐ Optical splitter AOSPLC-XX-IP
- ☐ Operating manual

[1] COM Input for CATV and Data
[2] 8 x In-/Output CATV+Data (LC/APC)
[3] 8 x In-/Output Data (1 x MPO/APC female 12 GF - 8 inner fibres connected)

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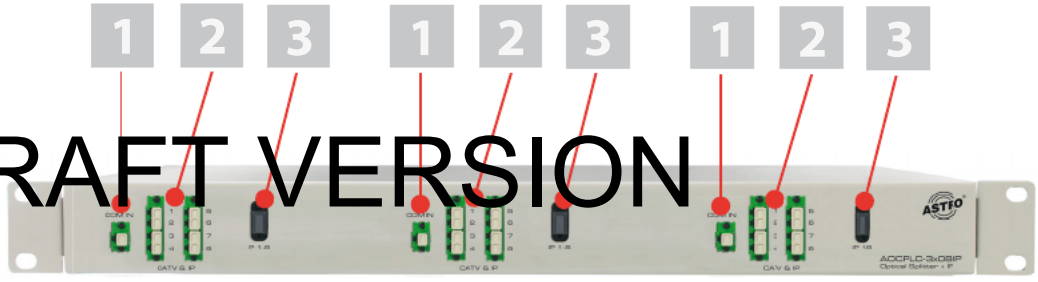

Figure 1: AOSPLC-3X08-IP

[1] COM Input for CATV and Data and 1 x IP uplink port before splitting for extracting WAN Up-link (LC/APC)
[2] 24 x In-/Output CATV+Data (LC/APC)
[3] 24 x In-/Output Data (3 x MPO/APC female 12 GF - 8 inner fibres connected)

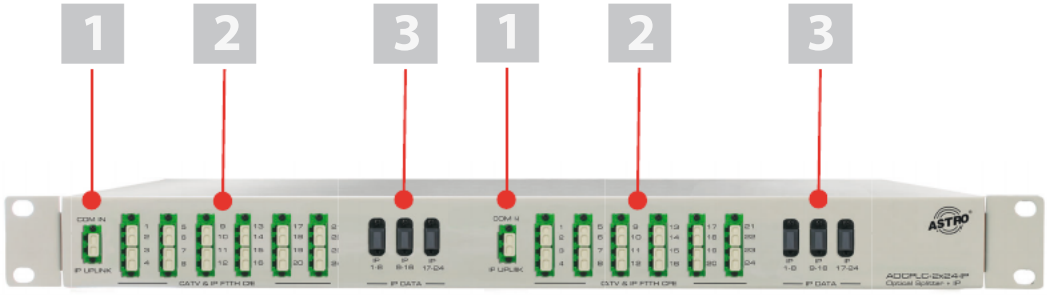

Figure 2: AOSPLC-2X24-IP

[1] COM Input for CATV and Data and 1 x IP uplink port before splitting for extracting WAN Up-link (LC/APC)
[2] 32 x In-/Output CATV+Data (LC/APC)
[3] 32 x In-/Output Data (4 x MPO/APC female 12 GF - 8 inner fibres connected)

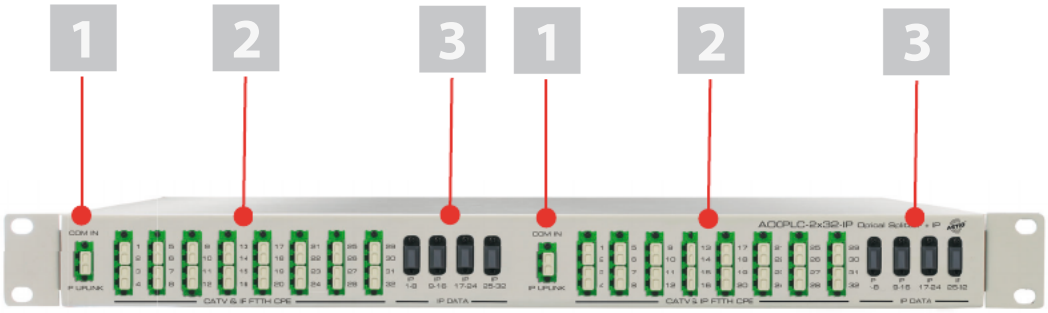

Figure 3: AOSPLC-2X32-IP

[1] COM Input for CATV and Data and 1 x IP uplink port before splitting for extracting WAN Up-link (LC/APC)
[2] 64x In-/Output CATV+Data (LC/APC)
[3] 64x In-/Output Data (8 x MPO/APC female 12 GF - 8 inner fibres connected)

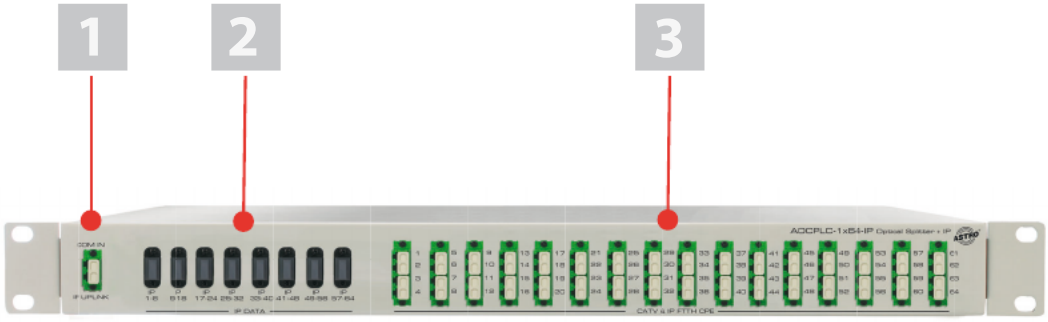

Figure 4: AOSPLC-1X64-IP

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The AOSPLC-IP modules feature a CE marking. This confirms that the product conforms to the relevant EC directives and adheres to the requirements specified therein.

Important safety information

To avoid any hazardous situations to the extent possible, you must adhere to the following safety information:

ACHTUNG: Failure to observe this safety information may result in personal injury due to electrical and thermal dangers!

Proper use

- ☐ Only use the device at the approved operating sites and in the ambient conditions allowed (as described in the following), and only for the purpose described in the section “Proper use”.

Before starting operation of the device

HINWEIS: Read this operating manual attentively! It contains important information about installation, ambient conditions and maintenance of the device. Keep this operating manual for future use and for handover in the event of a change of owner or operator. A PDF version of this manual is available to download on the ASTRO website (there may be a more recent version).

- ☐ Check the packaging and the device for transport damage immediately. Do not start operation of a device that has been damaged.
- ☐ Transporting the device by the power cable may damage the mains cable or the strain relief, and is therefore not permitted.

Danger of optical radiation

This product is laser class 1M (according IEC 60825-1 Safety of Laser Products) and therefore several safety precautions must be applied.

- ☐ Exposure to class 1M laser radiation is possible on open connectors or connected fibre patch cords. Do not view exposed fibre or connector ends when handling or maintaining optical equipment. Do not view with optical instruments into open connectors or fibre ends on switched on devices. Make sure all wherever a fibre inspection is required, that the inspected fibre or connector is completely optical radiation free.
- ☐ Due to the high optical radiation and improper handling of optical fibre connections and devices, there could be risks for the operating and service personnel. Access should be restricted to trained personnel only.
- ☐ Never look directly or with optical inspection tools into the end of a fibre which is connected to a transmitter or optical amplifier and which is in operation. If the eyes are exposed to optical radiation, which are above the acceptable maximum, this could cause permanent damage to the eye.

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Installation, operation, maintenance

- ☐ The device may only be installed and operated by qualified persons (in accordance with EN 62368-1)) or by persons who have been instructed by qualified persons. Maintenance work may only be carried out by qualified service personnel.
- ☐ The installation site must be planned in a way that prevents children from playing with the device and its connections.
- ☐ Dangerous voltages and the threat of optical laser radiation are present within the powered on unit at all times.
- ☐ Always replace protective caps on optical connectors and patch cords when not in use to avoid dust intake. Before connecting clean connectors with lint free cloth and pure alcohol or with any professional tools for cleaning connectors and adapters. The typical connectors fitted are SC/APC 8° or LC/APC 8° (green couplers).
- ☐ The electrical connection conditions must correspond to the specifications on the device type plate.
- ☐ The ambient temperatures specified in the technical data must be complied with, even when climatic conditions change (e.g. due to sunlight). If the device overheats, the insulation used to isolate the mains voltage may be damaged.
- ☐ The device and its cable may only be operated away from radiant heat and other sources of heat.
- ☐ To avoid trapped heat, ensure there is good ventilation on all sides. Installing the device in recesses or covering the installation location, e.g. with curtains, is not permitted. Ventilation openings may not be covered.
- ☐ If the device is installed in a cabinet, ensure adequate air convection is possible to avoid exceeding the maximum ambient temperature permitted for the device.

- No objects may be placed on the device.
- The subscriber network must be earthed in accordance with EN 60728-11, and must remain earthed even when the device is removed. Furthermore, the earth connection on the device can be used. Devices within hand's reach must be integrated into the potential equalisation together. Operating the device without an earth conductor, without earthing the device or without using device potential equalisation is not permitted.
- The device does not feature protection against water and may therefore only be operated and connected in dry rooms. It must not be exposed to spraying or dripping water, to condensation, or to similar sources of moisture.
- The electrical system supplying current to the device, e.g. a house installation, must incorporate safety devices against excessive current, earth leakages and short-circuiting in accordance with EN 60950-1.
- To operate the device (protection class I), it must be connected to mains power sockets with a protective earth conductor.
- All adhere to all applicable national safety regulations and standards.
- Excess mechanical loads (e.g. falling, impacts, vibrations) may damage insulation used to provide protection from mains voltage.
- High excess currents (lightning strike, surges in the power utility grid) may damage insulation used to provide protection from mains voltage.
- Do not insert any objects through the ventilation slots.
- If there is no information about intended use (e.g. operating site, ambient conditions), or the operating manual does not include the corresponding information, then you must consult the manufacturer of this device to ensure that the device may be installed. If you do not receive any information on this from the manufacturer, do not start operating the device.

Maintenance

- Read carefully: EN 60728 - Part 1 Safety requirements: No service work during thunderstorms.

Repair

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- Repairs may only be performed by the manufacturer. Improperly performed repairs may result in considerable dangers for the user.
- If malfunctions occur, the device must be disconnected from the mains and authorised experts must be consulted. The device may need to be sent to the manufacturer.

Description of performance

The modules of the AOSPLC-IP series feature the following characteristics:

- optical service combiner for 1550nm CATV in combination with PtP Ethernet optical data traffic
- COM input for CATV and Data (LC/APC)
- IP uplink port before splitting for extracting WAN Up-link (LC/APC), 64x in/out CATV+Data (LC/APC)
- In-/Outputs for CATV+Data (LC/APC)
- In-/Outputs for Data (8 x MPO/APC female 12 GF - 8 inner fibres connected)
- Wavelengths CATV:1539 ..1565 nm / IP: 1260…1350 nm & 1480…1505 nm & 1575…1620 nm
- 19 inch housing (one hight unit)

Warranty conditions

The general terms and conditions of ASTRO Bit GmbH apply. You will find these in the current catalogue or on the Internet under “www.astro-kom.de”.

Disposal

All of our packaging material (cardboard boxes, inserts, plastic film and bags) is completely recyclable. Electronic devices must not be disposed of with household waste, but rather – according to DIRECTIVE 2012/19/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL from 4 July 2012, on waste electrical and electronic equipment – must be properly disposed of. When it is no longer of use, please bring the device for disposal to one of the public collection points for this purpose.

ASTRO Bit is a member of the Elektro system solution for the disposal of packaging materials. Our contract number is 80395.

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Troubleshooting

If the device is not functioning correctly, please perform the following checks:

- ☐ Check whether the signal cable is connected correctly, and that there are no breaks or short circuits in the connectors.

If the problem cannot be resolved, please contact the ASTRO customer service.

Maintenance and repair

ACHTUNG: The following safety information must be observed when performing maintenance and repair work. Failure to observe this safety information may result in personal injury due to electrical and thermal dangers!

- ☐ Read carefully: EN 60728 - Part 1 Safety requirements: No service work during thunderstorms.
- ☐ A defective device may only be repaired by the manufacturer to ensure that components with the original specification are used (e.g. power cable, fuse). Improperly performed repairs may result in considerable dangers for the user or installer. If malfunctions occur, the device must therefore be disconnected from the mains and authorised experts must be consulted. The device may need to be sent to the manufacturer.

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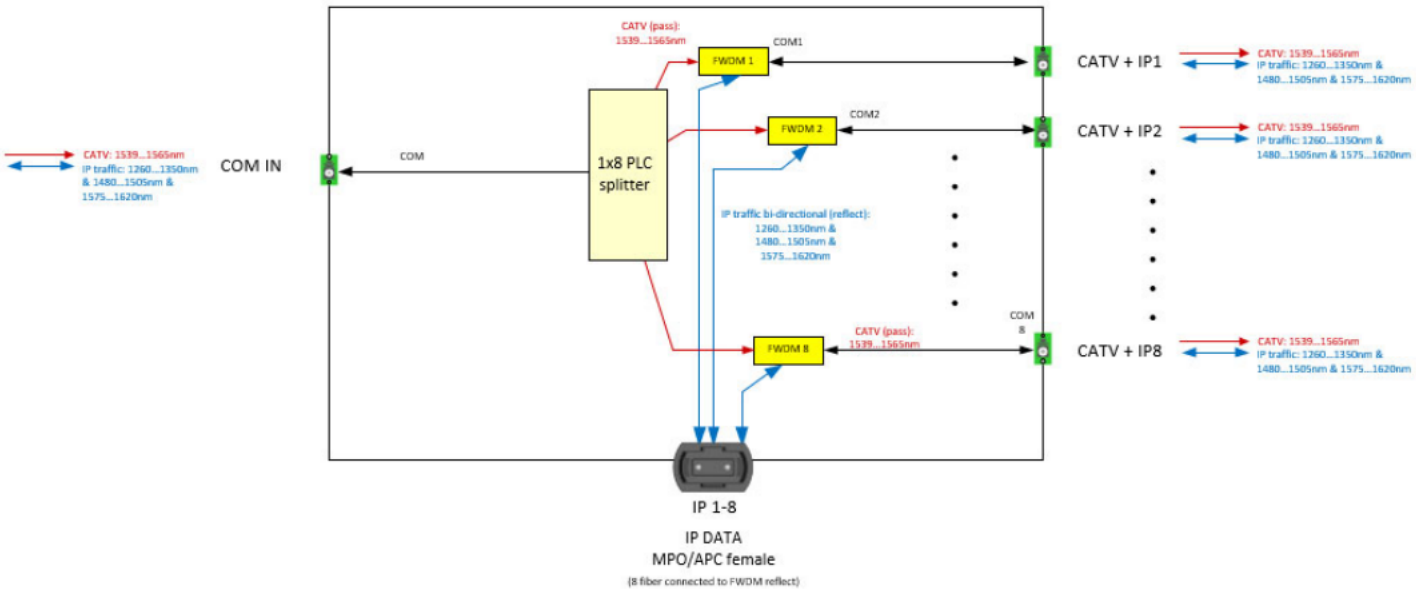
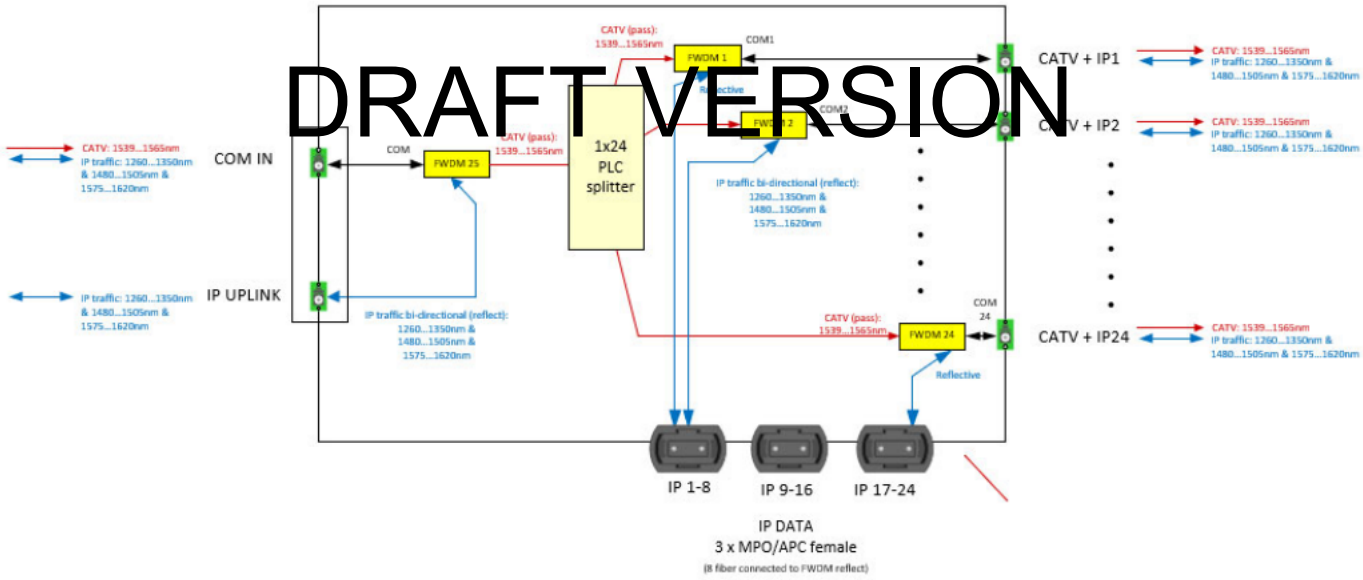
Block diagrams

AOSPLC-3x08-IP:



AOSPLC-2x24-IP:



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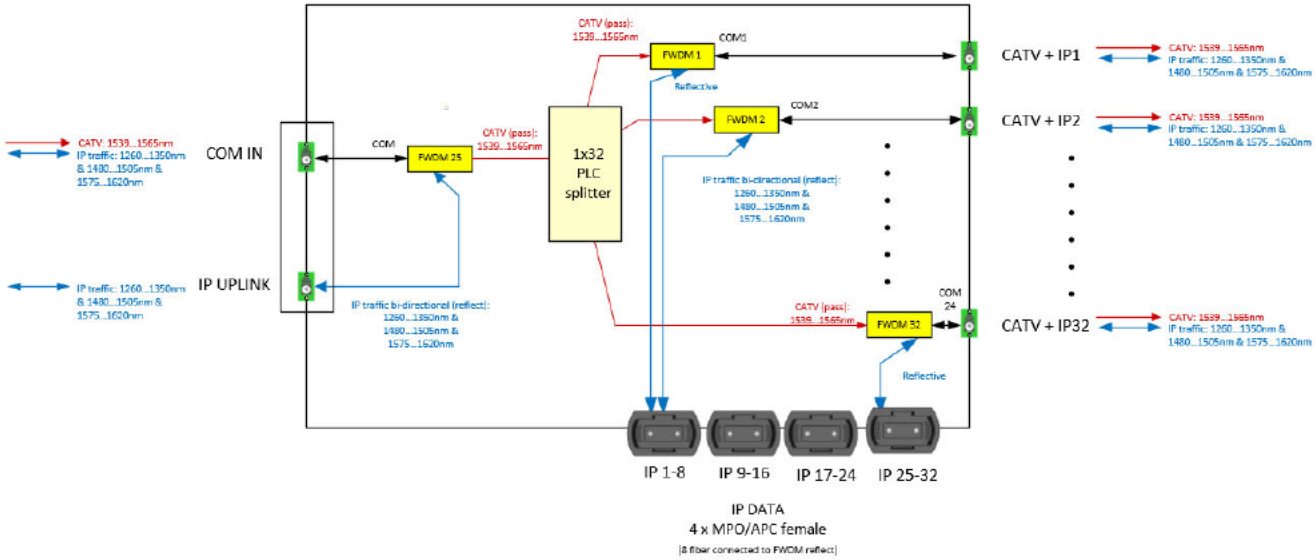
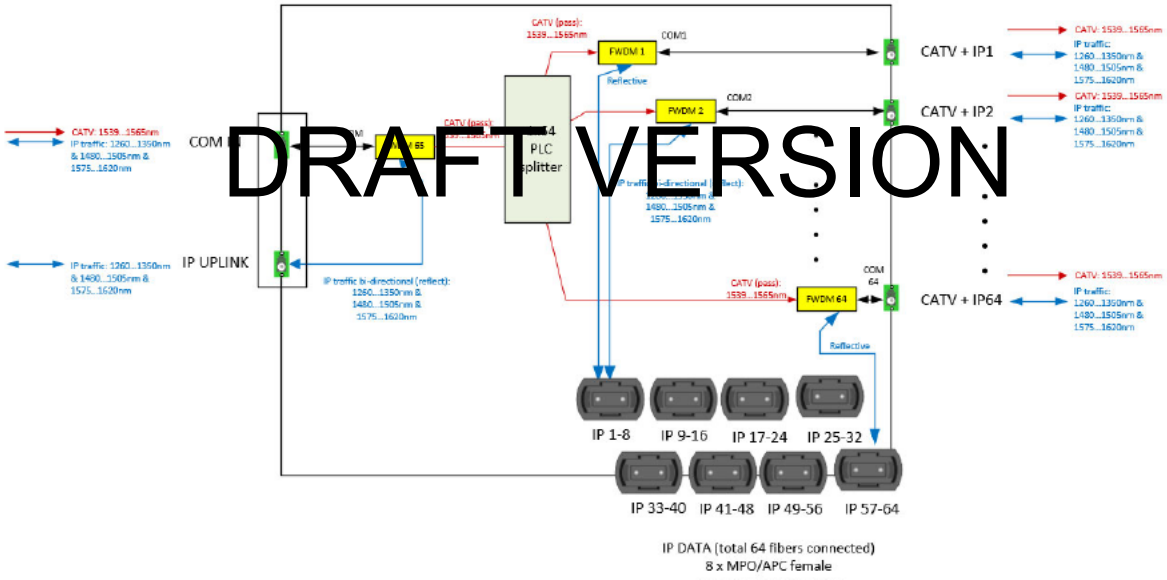
AOSPLC-2x32-IP:



AOSPLC-1x64-IP:



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Technical data

Type		AOSPLC-3x08-IP	AOSPLC-2x24-IP	AOSPLC-2x32-IP	AOSPLC-1x64-IP
Order number		212 705	212 706	212 707	212 708
EAN-Code 4026187…		240967	240974	240981	240998
		3 optical splitters 1 x 8 with FWDM on each port in one 19” box	2 optical splitters 1 x 24 with FWDM on each port in one 19” box	2 optical splitters 1 x 32 with FWDM on each port in one 19” box	optical splitter 1 x 64 with FWDM on each port in one 19” box
Inputs / Outputs		1 x COM input for CATV and Data (LC/APC) 8 x out CATV+Data (2 x LC/APC QUAD) 8 x in/out for Data (1 x MPO coupler)	1x COM input for CATV and Data (LC/APC upper part of duplex) 1 x IP uplink port for extracting WAN IP link (LC/APC lower part of duplex) 24 x out CATV+Data (6 x LC/APC QUAD) 24 x in/out for Data (3 x MPO coupler)	1 x COM input for CATV and Data (LC/APC upper part of duplex) 1 x IP uplink port for extracting WAN IP link (LC/APC lower part of duplex) 32 x out CATV+Data (8 x LC/APC QUAD) 32 x in/out for Data (4 x MPO coupler)	1 x COM input for CATV and Data (LC/APC upper part of duplex) 1 x IP uplink port for extracting WAN IP link (LC/APC lower part of duplex) 64 x out CATV+Data (16 x LC/APC QUAD) 64 x in/out for Data (8 x MPO coupler)
Optical parameters					
? COM IN (LC/APC upper half of duplex connector)	[nm]	CATV:1539 ..1565 and IP: 1260…1350 and 1480…1505 and 1575…1620			
? IP UPLINK (reflect / LC/APC lower part of duplex connector)	[nm]	-	IP: 1260…1350 and 1480…1505 and 1575…1620		
Suppression of CATV (1539..1565 nm) at IP UPLINK	[dB]	-	> 40		
? COM1..N (NxQUAD LC/APC)	[nm]	CATV:1539 ..1565 and COM1-N: 1260…1350 and 1480…1505 and 1575…1620			
? IP1 .. N (reflect, Nx8 fiber MPO/APC female)	[nm]	IP1-N: 1260…1350 and 1480…1505 and 1575…1620			
Insertion loss COM IN ? COM1..N at 1539 ..1565 nm	[dB]	max. 21,4 / typ. 20,4	max. 17,7 / typ. 16,6	max. 18,4 / typ. 17,4	max. 22,4 / typ. 21,4
Insertion loss IP1 ..N <--> COM1..N	[dB]	< 1,8			
Uniformity (port to port)	[dB]	≤ 1,9			
Return Loss typ.	[dB]	≥ 45			
Directivity	[dB]	≥ 50			
Max. PDL	[dB]	0,45			
Maximum Optical Power	[mW]	300			
Common data					
Storage temperature	[°C]	-45…+75			
Ambeint temperature	[°C]	-5…+65			
Humidity	[%]	0 - 90, not condensed			
Dimensions		19 inch, 1 HU, maximum depth 220 mm			

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