GOING FUTURE TODAY.

OFN45C-BLC
OFN45C-BSC
OFN45C-WD-ALC

Mini Fibre Nodes

DRAFT VERSION

Operating manual

Version 05-2022A

Before operating the device

HINWEIS: *Read this operating manual through carefully! 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 can be downloaded 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 to the specifications, the operation of the device and the operating manual without prior notice.

Contents

Symbols and conventions used

Symbols used in this manual

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.

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 disposal.

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

Intended use

The OFN45C-BLC, OFN45C-BSC, resp. OFN45C-WD-ALC Mini Fibre Node is designed exclusively for scheduling RF overlay in unidirectional TV broadcasting networks using GPON/EPON or PtP Data Services.
Modification of the devices or use for any other purpose is not permitted and will immediately void any guarantee provided by the manufacturer.

Intended audience for this manual

Installation and starting operation

The target group for installation and starting operation of the ASTRO optical transmission technology products are qualified experts who have training enabling them to perform the work required in accordance with EN 60728-11 and
EN 62368-1:2014. Unqualified persons are not permitted to install and operate the device.

Device configuration

Target group for the configuration of the optical receivers are persons who have received instructions and have training enabling them to perform a configuration. Knowledge of EN 60728-11 and EN 62368-1:2014 is not necessary for configuration.

Device description

The device packaging contains the following:

- ☐ Mini Fibre Node OFN45C-BLC, OFN45C-BSC or OFN45C-WD-ALC
- ☐ Plug-in power supply unit (see links)
- ☐ Operating manual

[1] Connection for RF cable
[2] Connection socket for power supply unit
[3] Connector for optical fibre
[4] Suspension bracket

Fig. 1: Mini Fibre Node OFN45C-BLC, OFN45C-BSC and WD-ALC similar

The Mini Fibre Node OFN45C-BLC, OFN45C-BSC resp. OFN45C-WD-ALC has a CE marking. This confirms that the product complies with the relevant EC directives and adheres to the requirements specified therein.

Important safety information

To avoid any potential risks to the greatest extent possible, you must observe the following safety information:

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

Intended use

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

Before operating the device

HINWEIS: Read this operating manual through carefully! 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 can be downloaded on the ASTRO website (there may be a more recent version).

- ☐ Check the packaging and the device for transport damage immediately. Do not operate a device that has been damaged.
- ☐ Carrying the device by the power supply cable may damage the power supply cable or the strain relief and is therefore not permitted.

Danger of optical radiation

This is a laser class 1M product (according to IEC 60825-1 Safety of Laser Products). Therefore, a number of safety measures must be taken..

HINWEIS: The OFN45-BLC does not have a built-in laser and therefore does not emit optical radiation itself. However, it should be noted that the fibres to be connected to the unit may emit optical radiation and appropriate precautions must be taken as described below. Even if no radiation is visible to the human eye, it may be present and pose a hazard.

- ☐ Class 1M laser radiation may be emitted from open connectors or connected fibreoptic cables. Do not look in the direction of open fibreoptic connectors or connector ends when working

with or performing maintenance on optical equipment. Do not look into open connectors or fibre ends of connected optical equipment using optical instruments. Always ensure that optical fibres or connectors to be inspected are free of optical radiation.

- High levels of optical radiation and improperly made fibreoptic connections on optical equipment can pose risks to operating and maintenance personnel. Access to optical equipment must therefore be limited to specially trained personnel only.
- Never look directly or with the aid of optical inspection aids into the end of a fibre connected to a connected optical transmitter or amplifier. Optical radiation above the permissible limit can cause irreparable eye damage.

HINWEIS: Make absolutely certain that optical fibre cables are free of optical radiation during the connection work! Optical radiation above the permissible limit can cause irreparable eye damage.

Installation, operation, maintenance

- The device may only be installed and operated by qualified persons (in accordance with EN 62368-1:2014) or by persons who have been instructed by qualified persons. Maintenance work may only be carried out by qualified service personnel.
- The device may only be operated when fully assembled and with the original or specified power supply unit.
- An installation site must be provided that prevents children from playing with the device and its connections.
- The electrical connection conditions must correspond to the specifications on the device type plate.
- The electrical system supplying current to the device, such as a building installation, must incorporate protective devices against excessive currents, earth faults and short-circuits in accordance with EN 60950-1.
- 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 splash water or drip water, condensation or similar effects of water, as this may impair the isolation from the mains voltage.
- Do not install the unit in locations with excessive dust formation, as this may impair the isolation from the mains voltage.

- The power supply plug functions as a mains disconnect and must therefore be accessible and functional at all times. The power supply connection should be accessible at all times. Once the electrical connections between the device and the power supply unit, as well as to the mains, have been made, the device is operational and the multicolour LED is constantly lit.
- The subscriber network must be earthed in accordance with EN 60728-11 and must remain earthed even when the device is removed.
- 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 insulate the mains voltage may be damaged.
- To avoid damage due to overheating, the device may only be installed on vertical surfaces. The installation basis should be level and non-flammable. Operating position: Device vertical, with connections at the bottom.
- The device and its cable may only be fitted and operated away from radiant heat and other sources of heat.
- To avoid trapped heat, ensure there is good ventilation on all sides (minimum interval of 20 cm to other objects). Installing the device in recesses or covering the installation location, for example using curtains, is not permitted. Ventilation openings must not be covered.
- If the device is installed in a cabinet, ensure adequate air convection is possible to avoid exceeding the maximum permitted ambient temperature.
- No objects may be placed on the device.
- If there is no information about the intended use (e.g. operating site, ambient conditions), or the operating manual does not include the corresponding information, you must consult the manufacturer of this device to ensure that the device may be installed. If you do not receive the required information from the manufacturer, do not operate the device.
- Excess mechanical loads (e.g. falling, impacts, vibrations) may damage the insulation used to insulate the mains voltage.
- High excess currents (lightning strikes, surges in the power utility grid) may damage the insulation used to provide protection from the mains voltage.
- Adhere to all applicable national safety regulations and standards.

Maintenance

- The power indicator (LED) only shows whether a DC current, which supplies the device components, has been disconnected. If the operating display (for the power supply unit or the device) does not light up, this does not mean that the device has been fully disconnected from the mains voltage. There may still be voltage in the power supply unit and device that is dangerous to touch.
- The OFN45-BLC and the original plug-in power supply unit form a functional unit and can only be sent in for repair together. Devices sent in without the original plug-in power supply unit cannot be processed.
- Read carefully: EN 60728-11 – Part 1, Safety requirements/No service work during electrical storms!

Repair

- 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.

Warranty conditions

The general terms and conditions of ASTRO Strobel GmbH apply. They can be found in the current catalogue or on the Internet under “www.astro-kom.de”.

Performance description

- Optical Forwards Mini Fibre Node for CATV
- Extended optical input range for AGC -12 dBm to 0 dBm
- Block Filter (pass 1540 - 1560 nm)
- GPON XG PON XGS PON loop through port (only OFN45C-WD-ALC)
- RF frequency range 45 - 1006 MHz (OFN45C-WD-ALC: 45 - 1218 MHz)
- RF frequency range 45 - 1006 MHz
- Plug-in power supply unit with +12 VDC
- low power consumption

Disposal

All of our packaging materials (cardboard boxes, inserts, plastic film and bags) are 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 Strobel is a member of the Elektro system solution for the disposal of packaging materials. Our contract number is 80395.

Fitting options

VORBEREITUNG:

Before assembling the individual parts of the device, you should first attach the lower housing section to the selected fitting location. There are three options for mounting the node:

- ☐ Securing to a standard flush-mount box
- ☐ Fitting on a perforated plate inside a mounting cabinet
- ☐ Direct wall fitting

Depending on the selected type of fitting, please use suitable screws.

The following describes how to install the device:

Fasten two screws horizontally to the fitting base at the distance required for hanging the device.
Then hang the Mini Node at the back using the elongated holes and slide it down to secure it.

ERGEBNIS:

The device is now attached and you can begin connecting the cables.

Connection and start-up

HINWEIS: *Make absolutely certain that optical fibre cables are free of optical radiation during the connection work! Optical radiation above the permissible limit can cause irreparable eye damage!*

1. Connect the optical input of the node to the optical fibre cable connector. To do this, use the cable permanently attached to the metal housing and the coupling included in the scope of delivery (see left). This is attached to the middle part of the housing with an adhesive strip when delivered.

2. Now connect the RF output socket of the node to the F connector of an RF cable.

3. Connect the cable of the plug-in power supply unit to the node.

ERGEBNIS:

The device is now connected and can be used. Plug the power supply unit into a socket.

Troubleshooting

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

- ☐ Check whether the device is connected to the required mains voltage (100 VAC - 240 VAC, 50-60 Hz).
- ☐ Check whether the coaxial cable and the optical cable are connected correctly, and that there are no breaks or short circuits in the connectors.

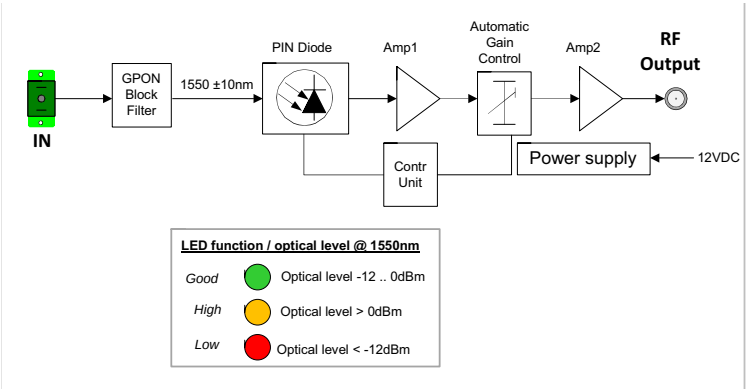
If the problem cannot be resolved, please contact ASTRO customer service.

Maintenance and repair

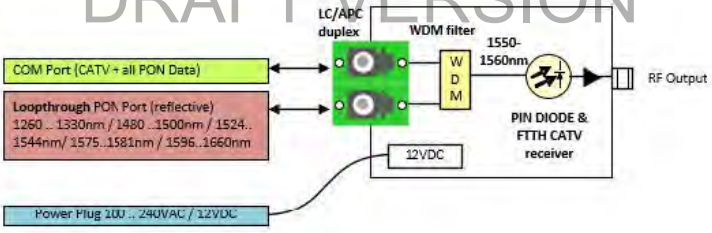
ACHTUNG: ***It is essential that the following safety information be observed when performing maintenance and repair work. Failure to observe this safety information may result in physical injury due to electrical and thermal dangers!***

- ☐ The power indicator (LED) only shows whether a DC current, which supplies the device components, has been disconnected. If the operating display (for the power supply unit or the device) does not light up, this does not mean that the device has been fully disconnected from the mains voltage. There may still be voltage in the power supply unit and device that is dangerous to touch.
- ☐ 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.

Block diagram



Block diagram OFN45C-BLC and OFN45C-BSC



Block diagram OFN45C-WD-ALC

Technical data

Type		OFN45C-BLC	OFN45C-BSC
Order number		212 138	212148
EAN-Code		4026187195847	4026187195878
Housing		compact	compact
Connector type		LC/APC	SC/APC
Optical parameters			
Optical input wavelength	[nm]	1540…1560	
Optical input power	[dBm]	-15…+2*	
Nominal optical input power (AGC range)	[dBm]	-12…+0	
Multicolor LED		green: -12 dBm…+0 dBm redt: < -12 dBm yellow: > 0 dBm	
Optical return loss	[dB]	> 45	
Fibre type		Single Mode Fibre 9/125	
RF parameters			
Frequency range	[MHz]	45 … 1006	
Flatness	[dB]	±0.75	
RF level (OMI 3,5 %)*	[dBµV]	76 ± 2 (@ Pin -12 dBm…0 dBm within AGC, QAM 256)	
Output return loss	[dB]	≥ 16 @ 45 MHz	
Output impedance	[Ω]	75	
Common data			
Power supply voltage	[VDC]	12 (with external supply unit; inner diameter 2,5 mm, outer diameter 5,5 mm)	
Power consumption	[W]	≤ 1,8	
Dimensions (L x W x H)	[mm]	136 x 136 x 40	
Ambient temperature	[°C]	-20 ... +55 (OFN45) -10…+55 (Power supply unit)	
Relative humidity	[%]	maximum 95, not condensing	

*) ? = 1550 nm, Pin in the range -12.0 dBm … 0 dBm (within AGC), QAM 256 signal level, out of AGC the RF signal changes by 2 dB for each change of 1 dB of the optical level

Type		OFN45C-WD-ALC
Order number		212 199
EAN-Code		4026187210939
Housing		compact
Connector type		LC/APC
Optical parameters		
Optical input wavelength	[nm]	1550…1560
Loopthrough operating wavelength; GPON / XG(S)-PON / NG-PON2 (WDM reflective channel)	[nm]	1260 .. 1330 / 1480 ..1500 / 1524…1544 / 1575…1581 / 1524…1544 / 1596…1660
Isolation CATV (pass channel) to 1310 nm to 1490 nm to 1577 nm	[dB]	 35 35
Optical input power	[dBm]	-12…+2
Nominal optical input power (AGC range)	[dBm]	-8…+2
Multicolor LED		green: -8 dBm…+2 dBm red: > +2 dBm yellow: < -8 dBm
Isolation PON Port to 1550 nm	[dB]	18
Insertion loss CATV Port on filter	[dB]	< 1,0
Insertion loss PON Port on filter	[dB]	< 1,0
Optical return loss	[dB]	> 40
Fibre type		Single Mode Fibre 9/125
RF parameters		
Frequency range	[MHz]	45 … 1218
Flatness	[dB]	±0,75 (258 MHz .. 862 MHz) ±1,5 (> 862 MHz)
RF level (OMI 3,5 %)*	[dBµV]	≥ 76 (258 MHz .. 86 2MHz) (@ Pin -8,0 dBm..+2,0 dBm within AGC)
Output return loss	[dB]	≥ 18
Output impedance	[Ω]	75
RF connector type		F-jack
Common data		
Power supply unit	[VDC]	Primary: 100 .. 240 VAC - 50/60 Hz - 0,5 A Secondary: +12,0 VDC / 0,5 A Max. operating temperature: 55 °C
Power consumption	[W]	≤ 2
Dimensions (L x W x H)	[mm]	120 x 90 x 35

Ambient temperature	[°C]	0…+55
Relative humidity	[%]	maximum 95, not condensing

DRAFT VERSION

ASTRO Strobel Kommunikationssysteme GmbH

These operating instructions have been written by:
ASTRO Strobel Kommunikationssysteme GmbH
Olefant 3, D-51427 Bergisch Gladbach (Bensberg)
Tel.: +49 2204/405-0, Fax: +49 2204/405-10
eMail: kontakt@astro.kom.de
Internet: www.astro-kom.de