

GOING FUTURE TODAY.



U 960

Combining Network



Operating Manual

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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 or operator. 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.



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 combining network U 901, resp. VZN 8 are used exclusively for distributing signals in SAT IF distribution systems.

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 headend 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 persons are not allowed to install and start operation of the device.

Device configuration

Target group for the configuration of the ASTRO headend 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 delivery is comprised of the following parts:

- ☐ U 960 combining network
- ☐ Screws and screw nuts for mounting of the 19 inch housing
- ☐ Operating Manual
- ☐ U 960-4-24-T: Terminating resistors on all outputs except output 1 and on input 4 (pre-installed)

Front
[1] Power LED
[2] Test point
Back
[3] Netzteilbuchse
[4] Output
[5] Inputs

U 960
Version
without
testpoint



U 960
Version with
testpoint



1

Figure 1: U 960 combining network - frontside

Rear side

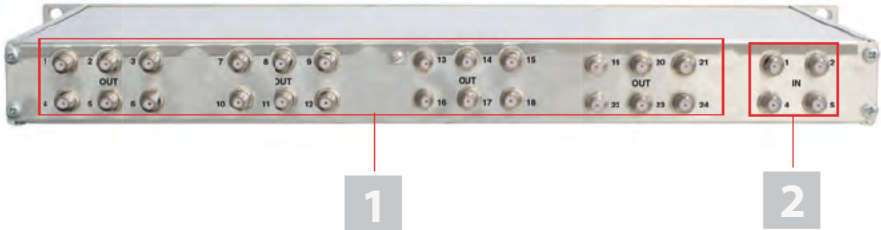
- U 960-4-4-T:
- [1] Output 1
 - [2] Input
 - [3] Output 2
 - [4] DOCSIS Input
 - [5] FM Input
 - [6] PAL Input
 - [7] QAM Input
 - [8] Output 1 - 4

- Other types:
- [1] Inputs
 - [2] Outputs

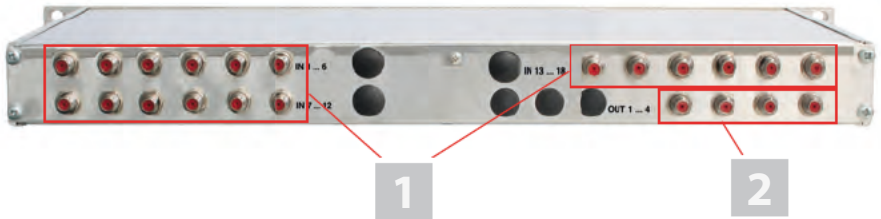
U 960-4-4-TP



U 960-4-24



U 960-18-4-TP



U 960-32-TP

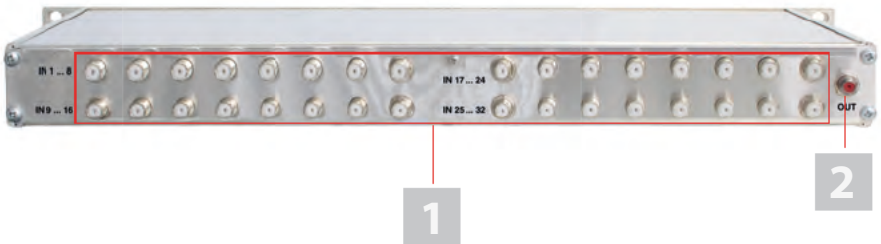


Bild 1: U 960 combining network - rear side



The combining networks U 960 features a CE marking. This confirms that the products comply with the relevant EC directives and adhere to the requirements specified therein.



Important safety information

To avoid any potential risks to the greatest 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.

Installation and operation

- ☐ 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.
- ☐ 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.
- ☐ To avoid damage due to overheating, the device may only be installed on horizontal surfaces. The device is, where possible, intended for operation in metallically conductive 19" racks with sufficient air convection to ensure that the maximum permissible ambient temperature for the device is adhered to. The installation surface should be non-flammable.
- ☐ 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 (minimum interval of 20 cm to other objects). Installing the device in a niche or covering the ventilation openings is not permitted.
- ☐ 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 splash water or drip water, condensation or similar effects of water, as this may impair the isolation from the mains voltage.
- ☐ 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 62368-1.
- ☐ All adhere to all applicable national safety regulations and standards.
- ☐ Do not install the unit in locations with excessive dust formation, as this may impair the isolation from the mains voltage.
- ☐ Excess mechanical loads (e.g. falling, impacts, vibrations) may damage the 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.
- ☐ 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.
- ☐ Disconnect devices with damaged power cables from the mains power (unplug the power supply plug).

Electromagnetic compatibility (EMC)

In order to avoid malfunctions from occurring when operating radio and telecommunications equipment, as well as other operating units or broadcasting services, the following points must be observed:

- ☐ Before installation, the device must be checked for mechanical damage. Damaged or bent covers or housings may not be used.
- ☐ During operation, the device must always be covered by the components provided for this purpose. Operation with an opened cover is not permitted.

Maintenance

- ☐ Read carefully: EN 60728-11, Safety requirements / No service tasks during electrical storms!

Repair

- ☐ Repairs may only be performed by the manufacturer. Improperly performed repairs may result in considerable dangers for the user.
- ☐ Do not start operating devices with a damaged power cable, and instead have them repaired by the manufacturer.
- ☐ 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.



General information

- ☐ Store or use the device in a safe location, well out of reach of small children. It may contain small parts that can be swallowed or inhaled. Dispose of any small parts that are not needed.
- ☐ Plastic bags may have been used for packaging the device. Keep these plastic bags away from babies and children in order to avoid any danger of suffocation. Plastic bags are not toys.
- ☐ Do not store the device near chemicals or in places in which any leakage of chemicals may occur. Organic solvents or fluids in particular may cause the housing and/or cables to melt or disintegrate, presenting a danger of fire or electric shock. They may also cause device malfunctions.
- ☐ Do not connect the mains adapter provided to any other products.

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. This device must be disposed of as electronic waste at designated collection facilities in accordance with the current disposal regulations valid in your district/state/country once the device is no longer in use.

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



Performance description

The U 960 is a passive combining network. The devices are used for extension of existing facilities by connecting additional channels (e. g. a V 16 base unit).

Some types feature a test point for checking the output signal, attenuated by 20 dB.

Connecting the module

Observe all instructions about installation and mains connection described in the section "Important safety information"!

Ensure that the mains voltage, signal sources etc. are properly connected to the device using the corresponding connections. The local mains voltage must be the same as the supply voltage required to operate the device (see section "Technical data").

Connect input and output jacks of the device via F-connectors of the coax cable.

HINWEIS: During operation of the U 960 all unused inputs of the device must be with a 75 Ohm terminating resistor.

Troubleshooting

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

- ☐ Check whether the device has been connected to the required mains voltage (230 V~, 50 Hz).
- ☐ 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!*



- ☐ The operating display only shows whether the DC current, which supplies the device components, has been disconnected from the mains voltage. 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 voltages in the device that are dangerous to touch. You may therefore not open the device.
- ☐ Read carefully: EN 60728-11 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.

Technical data

Type		U 960
Order number		380 195
EAN-Code		4026187680152
Impedance	[Ω]	75
Frequency range	[MHz]	5 - 1000
Screening	[dB]	> 100
Connectors	[dB]	F-jacks

can be assembled with:

2-way splitter		
Through loss	[dB]	3,8 ± 0,5
Isolation	[dB]	> 24
Return loss	[dB]	> 21
3-way splitter		
Through loss	[dB]	6,5 ± 0,5
Isolation	[dB]	> 24
Return loss	[dB]	> 22
4-way splitter		
Through loss	[dB]	7,5 ± 0,5
Isolation	[dB]	> 23
Return loss	[dB]	> 23
8-way splitter		
Through loss	[dB]	11,2 ± 0,5
Isolation	[dB]	> 29
Return loss	[dB]	> 21
Common data		
Housing		19", 1 HE
Ambient temperature	[°C]	0...+50



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All the information contained in this document has been checked in good faith.

The ASTRO company cannot be held liable for any damage or injury arising in connection with the use of these operating instructions.