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# U 911 ... U 946

## Active SAT splitters



# 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:



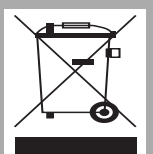
Warning about situations in which electrical voltage and non-observance of the instructions in this manual pose a risk of fatal injuries.



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 satellite splitters U 911...U 946 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 9xx SAT splitter
- Operating manual

#### Front side

- [1] Controller connection
- [2] Signalling
- [3] Remote power on/off switch
- [4] Label field
- [5] Test points

#### Rear side

- [6] Outputs Y
- [7] Outputs X
- [8] Input Y
- [9] Input X
- [10] Bus connector sockets
- [11] Mains power sockets
- [12] Earth terminal

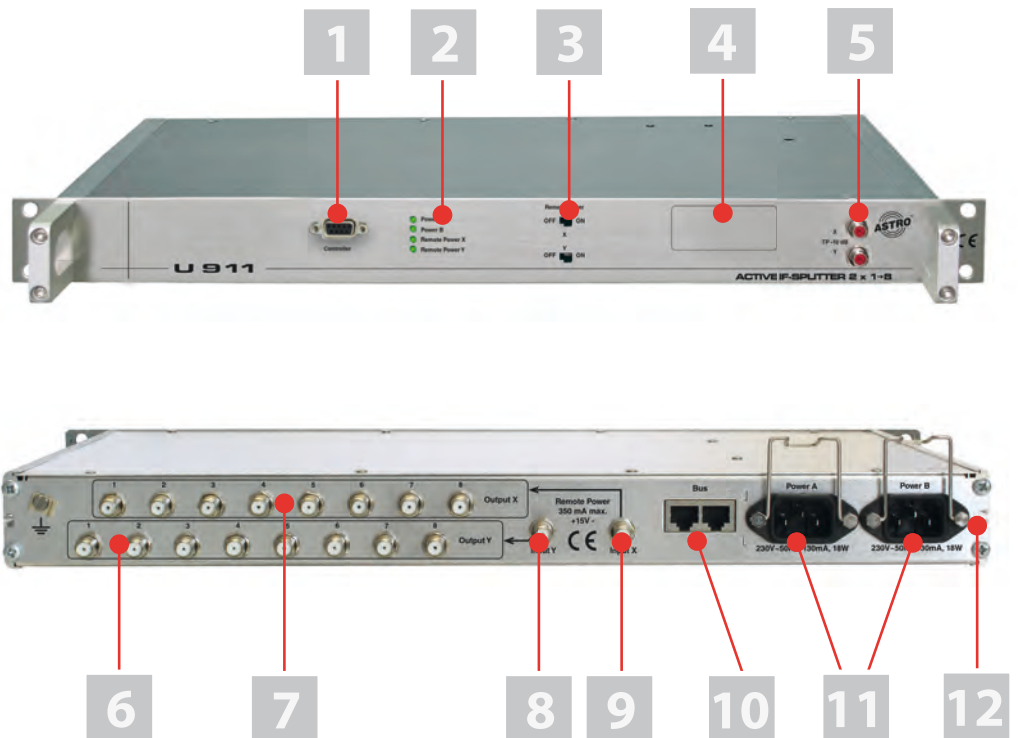


Figure 1: U 911 SAT splitter

The U 911...U 946 SAT splitters feature 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.
- In order to operate the U 100-230 unit (protection class I), it must be connected to mains sockets with a protective earth conductor.
- 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.
- Both mains plugs are used as a mains voltage disconnect unit in the event of servicing and in the event of danger, and must therefore be accessible and be able to be operated at any time. The device is operational as soon as one mains plug is connected to the mains voltage.
- 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.
- The braided line or the contact springs may not be damaged or removed.

#### Maintenance

- The operating display only shows whether the DC current, which supplies the device components, has been disconnected. However, operating displays (on the power supply unit or the device) that are not lit up in no way indicate that the device is completely disconnected from the mains. 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 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 Strobel GmbH apply. You will find these in the current catalogue or on the Internet under “[www.astro-kom.de](http://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 Strobel is a member of the Elektro system solution for the disposal of packaging materials. Our contract number is 80395.



## Performance description

The satellite splitters in the U 9xx series exhibit the following performance features:

Devices with a 75 ohm input impedance and 75 ohm output impedance:

- U 911: 2 x 1 in 8 with 2 power supply units
- U 912: 2 x 1 in 8 with 1 power supply unit
- U 913: 2 x 1 in 8 without a power supply unit
- U 914: 1 x 1 in 16 with 2 power supply units
- U 915: 1 x 1 in 16 with 1 power supply unit
- U 916: 1 x 1 in 16 without a power supply unit

Devices with a 50 ohm input impedance and 50 ohm output impedance:

- U 921: 2 x 1 in 8 with 2 power supply units
- U 922: 2 x 1 in 8 with 1 power supply unit
- U 923: 2 x 1 in 8 without a power supply unit
- U 924: 1 x 1 in 16 with 2 power supply units
- U 925: 1 x 1 in 16 with 1 power supply unit
- U 926: 1 x 1 in 16 without a power supply unit

Devices with a 50 ohm input impedance and 75 ohm output impedance:

- U 931: 2 x 1 in 8 with 2 power supply units
- U 932: 2 x 1 in 8 with 1 power supply unit
- U 933: 2 x 1 in 8 without a power supply unit
- U 934: 1 x 1 in 16 with 2 power supply units
- U 935: 1 x 1 in 16 with 1 power supply unit
- U 936: 1 x 1 in 16 without a power supply unit

Devices with a 75 ohm input impedance and 50 ohm output impedance:

- U 941: 2 x 1 in 8 with 2 power supply units
- U 942: 2 x 1 in 8 with 1 power supply unit
- U 943: 2 x 1 in 8 without a power supply unit
- U 944: 1 x 1 in 16 with 2 power supply units
- U 945: 1 x 1 in 16 with 1 power supply unit
- U 946: 1 x 1 in 16 without a power supply unit



## Connecting the module

Observe all instructions about installation and mains connection described in the section “Important!”.

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”).

## Programming using the HE programming software

### Adding a satellite splitter to a project

You can add one, or several, SAT splitter(s) in the HE programming software under “Project parameters” in the “Planning” menu (see figure 2).

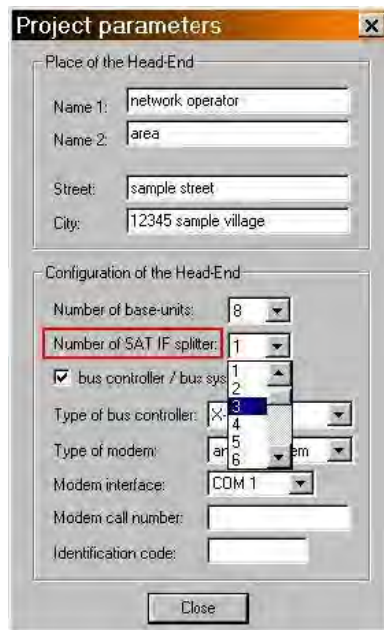


Figure 2: Project data

Once you have entered the required number in the “Number of satellite splitters” drop-down menu, you can access these using the menu item “SAT IF splitter” (see figure 3).

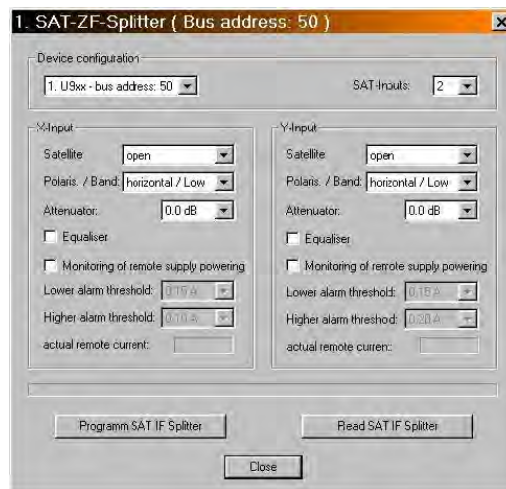


Figure 3: SAT IF splitter

## Programming the satellite inputs

You can assign any of the satellites stored in the SAT database to the SAT inputs (see figure 4). This is demonstrated in the following using the X input as an example.

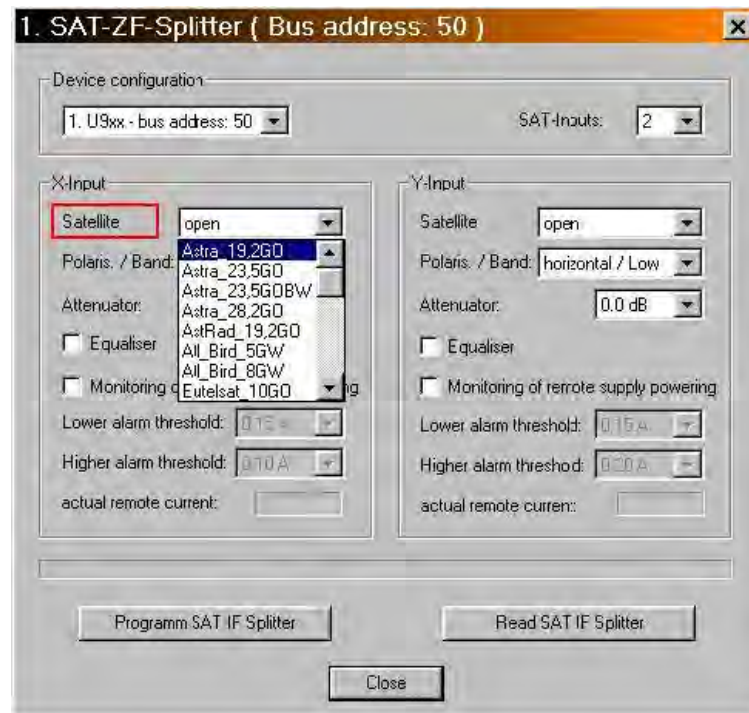


Figure 4: SAT IF splitter, input assignment

Now select polarisation and band from the drop-down menu. The attenuation of the splitter can also be set using the "SAT IF splitter" window. Select the required value from the drop-down menu here as well (see figure 5). The values range from 0 and 16 dB in increments of 0.5 dB.

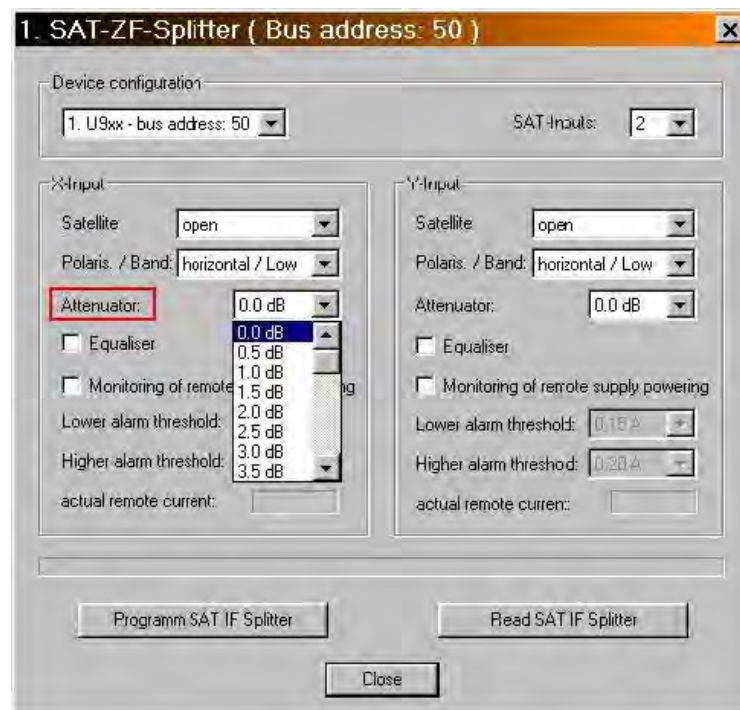


Figure 5: SAT IF splitter, setting the attenuator

Furthermore, you can, when required, activate a 7 dB slope equaliser and monitoring of the LNC remote supply voltage (see figure 6). To do so, activate the respective checkbox. You can select a value between 100 and 700 mA from the drop-down menu for the lower alarm threshold; a value between 200 and 800 mA can be selected for the higher alarm threshold (in increments of 50 mA respectively).

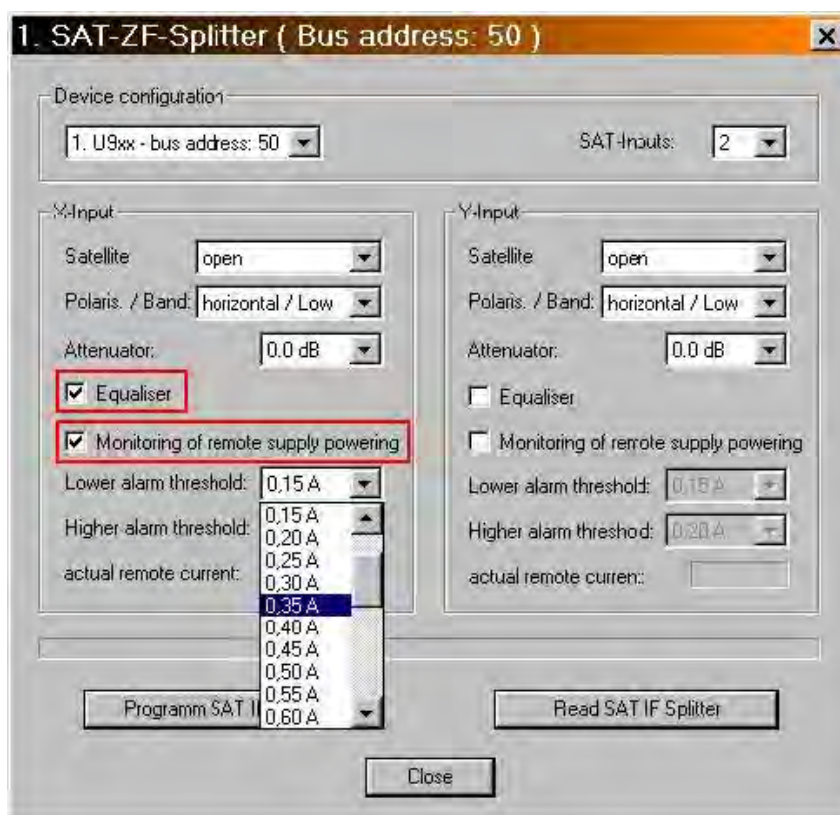


Figure 6: SAT IF splitter, equaliser and LNC remote power monitoring

The actual remote current is displayed after reading out the SAT splitter. Reading it out again allows the value to be updated.

**HINWEIS:** The information on configuration described above for the X input also applies for the Y input.

## Signal indication

Flawless operation of a power supply unit is indicated by a green LED on the front side of the device. The active LNC remote power supply is also indicated by a green LED.

If monitoring of the LNB remote power supply is activated, and the current value fails to remain within the range entered previously, this is indicated by a red LED.

## 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.

## Service tasks

- 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.

**HINWEIS:** *The U 9xx satellite splitters may only be operated using original power supply units!*



**Common data**

Inputs / Outputs		2 x 1 in 8		1 x 1 in 16	
Num. of power suppl. 230 V / 28VA		2	1	2	1
Remote current	[ma]	350	350	350	350
LNB voltage	[V]	16	16	16	16
Input frequency range	[MHz]	950 - 2150			
Input level value	[dBμV]	85			
Through loss	[dB]	0 ± 2			
Isolation	[dB]	> 40			
Level control (0,5 dB steps)	[dB]	0...-15			
Equalizer	[dB]	0 / 7 ± 1			
Frequency range insertion loss in 36 MHz bandwidth	[dB <sub>ss</sub> ]	< 1			
in nominal frequency range	[dB <sub>ss</sub> ]	< 2			
Return loss	[dB]	≥ 12 / ≥ 14			
Inputs / Outputs					
Output isolation	[dB]	> 20			
Testpoints (1 per polarization)					
Value output isolation	[dB]	10			
Return loss	[dB]	12			

\* maximum 1,5 A, depending on power supply and internal securing

**Power data**

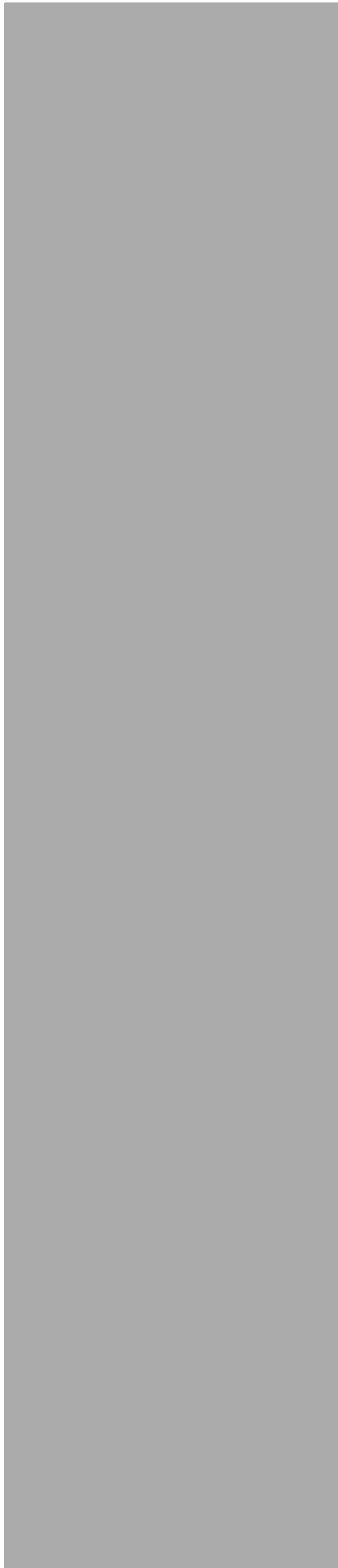
incl. remote feed cir. 600 mA	active power		apparent power	
	Single SNT	Double SNT	Single SNT	Double SNT
207 V	16,3 W	17,0 W	26,8 VA	30,8 VA
230 V	16,8 W	17,5 W	28,3 VA	32,9 VA
253 V	17,3 W	18 W	29,8 VA	35 VA

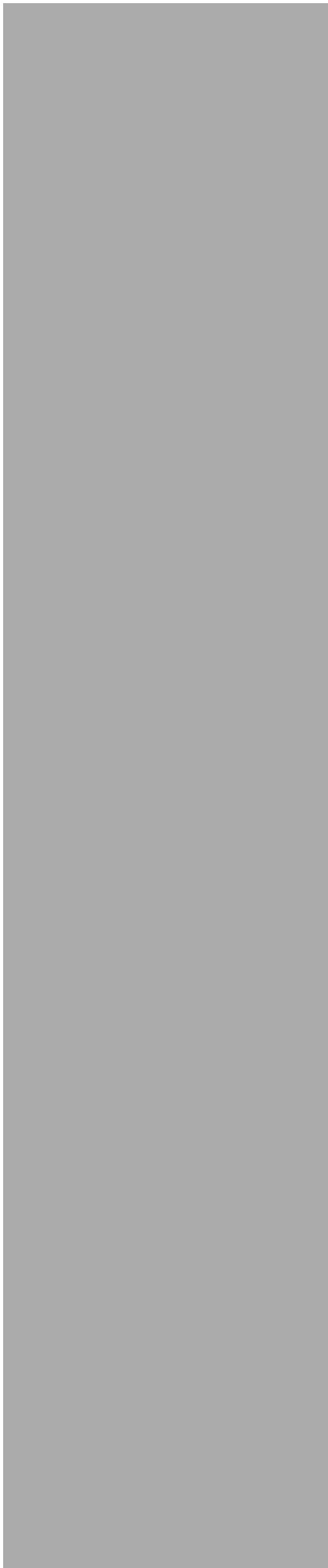
Type	U 911	U 912	U 914	U 915
Order number	380 192	380 212	380 214	380 215
EAN-Code 4026187...	...651435	...002749	...651909	002763
Connectors	[Q]	In- and outputs: F-jacks, 75		

Type	U 921	U 922	U 924	U 925
Order number	380 221	380 222	380 224	380 225
EAN-Code 4026187...	...735180	...002787	...735173	002800
Connectors	[Q]	In- and outputs: SMA-connectors, 50		

Type	U 931	U 932	U 934	U 935
Order number	380 231	380 232	380 234	380 235
EAN-Code 4026187...	...002824	...002831	...002855	...002862
Connectors	[Q]	Inputs: SMA-connectors, 50 & Outputs: F-jacks, 75		

Type	U 941	U 942	U 944	U 945
Order number	380 241	380 242	380 244	380 245
EAN- Code 4026187...	...002886	...002893	...002916	...002923
Connectors	[Q]	Inputs: F-jacks, 75 & Outputs: SMA-connectors, 50		







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