

# **X-5 twin / B / BA / AV**

## **Operating Instructions**

# 1 Illustrations

## X-5 Basis twin/AV X-5 Basis twin/BA

10 (Sub-D) AV – inputs

LNB remote current supply max. 250 mA  
 SAT intermediate frequency input  
 920–2150 MHz

Y  
 X

HF output  
 87,5–862 MHz

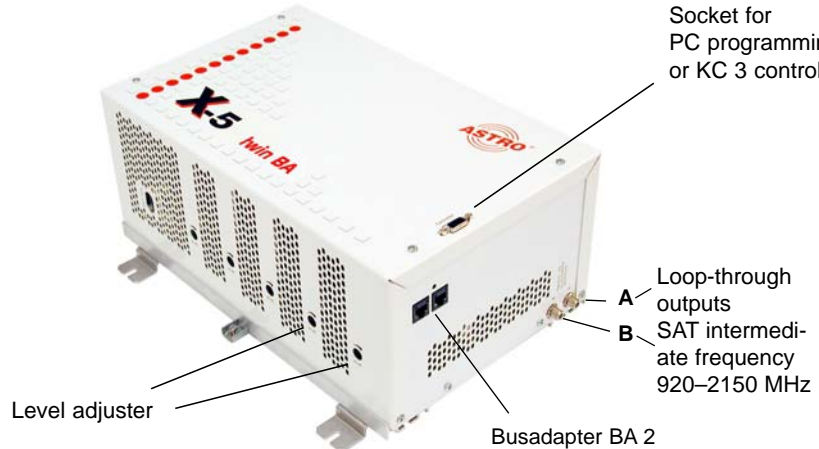
External inputs  
 47–2150 MHz

EX1  
 EX2  
 up to  
 EX10



Socket for  
 PC programming  
 or KC 3 controller

## X-5 Basis twin/B or X-5 Basis twin/BA



Loop-through  
 outputs  
 A  
 B  
 SAT intermedi-  
 ate frequency  
 920–2150 MHz

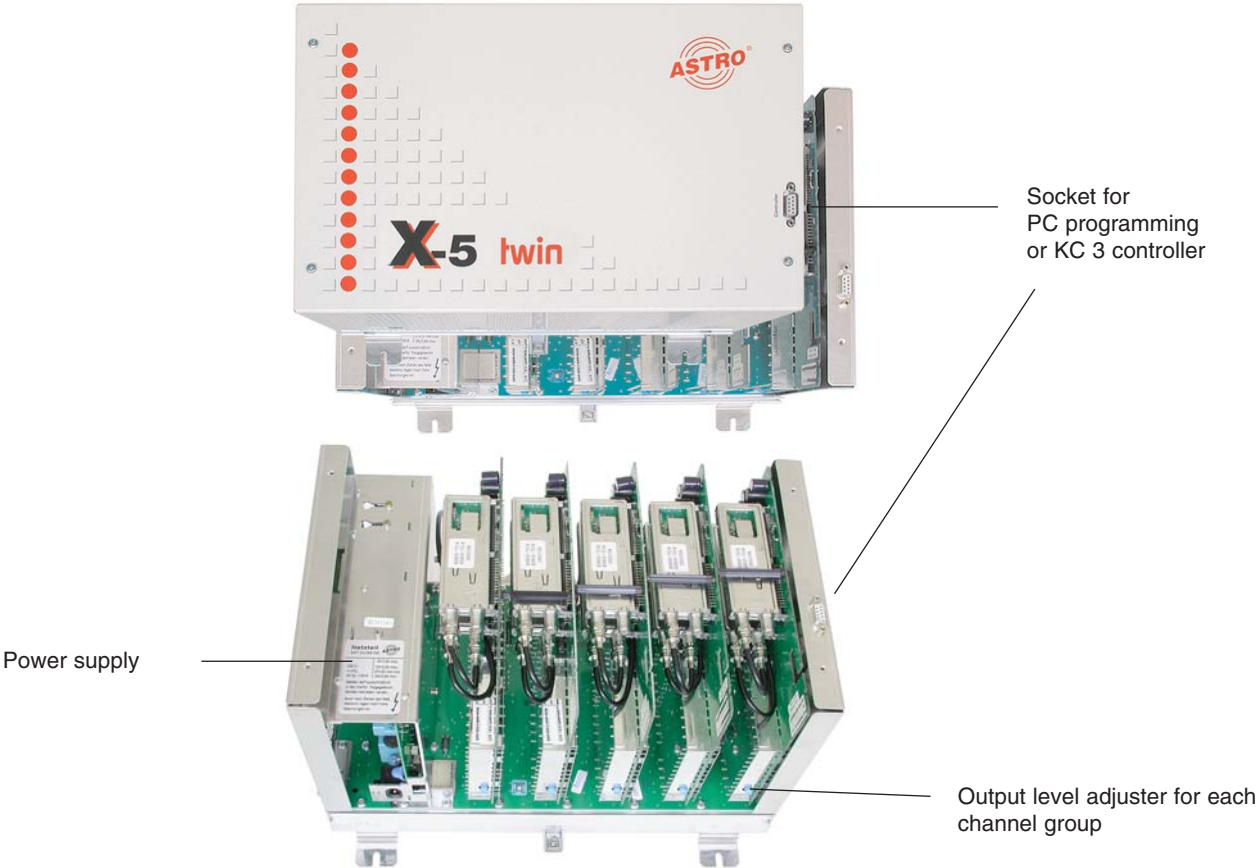
Level adjuster

Busadapter BA 2



The X – 5 twin is CE certified and complies with all relevant EN standards. Changes and printing errors reserved. Version: May 2004

1 Illustrations



**Read carefully: Hazard and safety information** .....Page 5/6

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## 2 Pictograms and safety information

Pictograms are icons with specific meanings. The following pictograms are used in the installation and operating instructions:



**Warns** about situations in which there is **danger of lethal injury** due to hazardous electrical voltage and non-compliance with these instructions.



Warns about various hazards to health, environment and materials.

This is a general information symbol.



Recycling: All of our packaging materials (packaging, identification sheet, plastic foil and bag) are fully recyclable.



Electrical scrap must not be placed in household refuse; it must be disposed of by means of a special waste recycling company. If you have any questions about waste disposal, your local environmental agency would be glad to give you further information about recycling.

### Hazard and safety information:

#### Power supply:

- Check the 230V operating voltage of the equipment with the mains supply present.
- Install the power cable so that it cannot be tripped over.

#### Installation location:

The permissible ambient temperature is **0 ... 50°C**

## 2 Hazard and safety information

Installation is permitted **only** in rooms that maintain the permitted ambient temperature even in changing climatic conditions (away from heat radiation and other heat sources).



The device must not come into contact with splashing or dripping water. Containers with liquid must not be placed on the device.

Install on vertical surfaces only.

Keep vents free (30cm above and below).



The equipment must be well ventilated (installation in unventilated cabinets or alcoves is not permitted). It is therefore important that the vents are never covered.

If there is condensation, wait until the device is completely dry.

If auxiliary fans are used with the X-5 twin for convection to maintain the permitted ambient temperature range, it must be ensured that in the event of fan failure the device is disconnected from the power supply by means of appropriated measures in order to prevent damage to the device.



### Effects of heat

Exposure to excessive heat, the accumulation of heat, or operating the device above the permitted ambient temperature negatively influences the service life of the device and is a source of danger (fire hazard!).



## 2 Hazard and safety information



### Opening the housing or changing plug-in cards:

Danger from electrically live elements  
There is also danger of injury after disconnecting the power supply due to electrically live elements.  
Danger of damage to or destruction of components

### Before opening the housing:

Be sure to disconnect the power plug.  
**Do not service during thunderstorms.**

### Read very carefully:

DIN VDE 0701, Part 1 and 200, Repairs EN 50 083 – Part 1, Security Requirements

The device must only be opened by authorized personnel.  
The device must be repaired only by authorized personnel or by sending the device to ASTRO with an exact description of the fault.



### For your safety:

Read the above regulations and advices carefully. Install the SAT equipment according to the safety requirements.  
Observe regulations concerning grounding and potential equalization (EN 50083 Part 1). Replace the power cables only with an original part power cable. Replace fuses only with those of the same type, value and melt characteristics.  
T 630 mA L IEC 60127-2 / III.

The mains fuse is located on the power unit plug-in card and can be removed only if this card is first removed from the device.

### Observe all safety instructions carefully!



### Warning:

When the device is installed in places such as storage areas and roof trusses, it must be ensured that the permitted maximum ambient temperature of **50°C** is maintained. Beware of condensation!

Because of fire hazard due to lightning, it is recommended that all mechanical parts (e.g. X-5 twin, equipotential busbars, distributors, etc.) be mounted on a **non-combustible base**. Combustible materials include wooden beams, wooden boards, plastics, etc.

### Operating safety:

The ambient temperature must not exceed 50°C.  
Maximum LNB current supply: 250 mA

#### Description of X-5 twin

The X-5 twin device consists of a motherboard with sockets for a power unit and up to 5 plug-in cards.

The input and output distribution field is integrated on the motherboard. The required input polarization / band (X or Y) is assigned to each card by a software command. The input signals are available at the SAT loop-through outputs for further X-5... processing units.

Additionally, ten further polarizations / bands can be connected to the external inputs "EX 1" to "EX 10". To do this, you have to disconnect the tuner connecting cable of the twin cards concerned from the motherboard and connect it to the external input "EX 1" to "EX 10".

**Warning! LNC current supply for "EX 1" to "EX 10" must be connected separately.**

#### Features

##### HSAX-5 twin basis device:

- Processing of up to 10 channels per base unit, which means **space saving for installation**
- 12 inputs, 2 of them switchable, for individual input signal processing
- Combination of single and twin cards possible
- Future – proof, because a hybrid operation of digital, analog and terrestrial cards in a single basis unit is possible.

##### HSAX-5 twin / B basis device:

- Processing of up to 10 channels per base unit, which means **space saving for installation**
- 12 inputs, 2 of them switchable, for individual input signal processing
- including bus adapter BA 2
- Combination of single and twin cards possible
- Future – proof, because a hybrid operation of digital, analog and terrestrial cards in a single basis unit is possible.

##### HSAX-5 twin / AV basis device:

- Processing of up to 10 channels per base unit, which means **space saving for installation**
- 12 inputs, 2 of them switchable, for individual input signal processing
- 10 AV – inputs (Sub-D)
- Combination of single and twin cards possible
- Future – proof, because a hybrid operation of digital, analog and terrestrial cards in a single basis unit is possible.

##### HSAX-5 twin / BA basis device:

- Processing of up to 10 channels per base unit, which means **space saving for installation**
- 12 inputs, 2 of them switchable, for individual input signal processing
- 10 AV – inputs (Sub-D)
- including bus adapter BA 2
- Combination of single and twin cards possible
- Future – proof, because a hybrid operation of digital, analog and terrestrial cards in a single basis unit is possible.

In all cases, the great advantage is that **suited, existing tree structures** in the buildings can **continue to be used**.

No special network structures and therefore construction measures are required.

Digital reception is possible only with a cable SET-TOP BOX (e.g. ASTRO ASR 530).

### Configuration software

Using the optionally available configuration software (Windows-compatible, including connection cable and adapter), all headend parameters can be set simply and clearly and then saved.

Laborious searching for the right input SAT intermediate frequency is no longer necessary because all program parameters of the commonest satellites are stored in a database. The user only has to enter the satellite, the LNC oscillator frequency, the desired program and the output channel. All other parameters are read from a database. The user can update the databases or download the latest data from the ASTRO server via the Internet.

### 5

### Connecting to SAT equipment

#### Cabling:

- Connect the SAT signals from the LNB to inputs X and Y.
- The internal distribution field routes the input signals without noticeable transmission loss to the SAT loop-through outputs (forwards SAT signals to the next X-5... device). Because of the signal quality, maximum 3 base units should be cascaded
- Additional feed of 10 polarizations / bands via inputs "EX 1" to "EX 10".

#### Note:

- There is no LNB supply voltage at inputs "EX 1" to "EX 10"!
- Use quality SAT components and SAT compatible coaxial cable.
- Install the F-connectors carefully and correctly.
- If not used, close the SAT loop-through outputs with 75-Ohm terminal resistance.

#### Important:

The above advice is very important. Many errors are often due to incorrect cabling and have a strong influence on any subsequent cascading



### 5.1

### LNB supply

- Switching on/off the LNB power supply via software (chapter "Programming")

**The total current must not exceed 250 mA.**

- LNB power supply is short-circuit-proof.
- Exceeding the maximum feed current results in a forced switch-off of the LNB supply voltage.
- Switch-off of power supply of cascaded devices (LNB OFF)
- Inputs "EX 1" to "EX 10" have no LNB power supply option.

## Internal cabling of X-5 twin ...

**Important****Installation sequence of the HSA X-Plug-in cards:**

Tuner inputs of the plug-in cards, which are installed nearest to the power supply, have to be connected decreasingly, starting with “EX10”. The tuner input of the following plug-in card has to be connected in order to “EX9”, so that the furthest to the power supply plug-in card is connected to “EX1”!

If plug-in cards have an indentation for cable run, the “EX”-input cables have to be led through them.

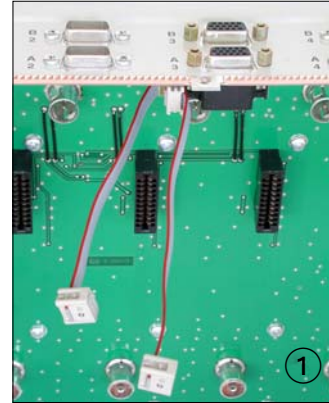
Guide the cables to the “EX1”- to “EX10”- positions tight along the left side wall. Therefore, if possible, you have to wind up the cable close to the respective tuner input. The cable has to be stabilized with the cable straps, added to the plug-in card.

**Warning:**

Cables **never** might get into the openings of the power supply, or become pushed into the openings.

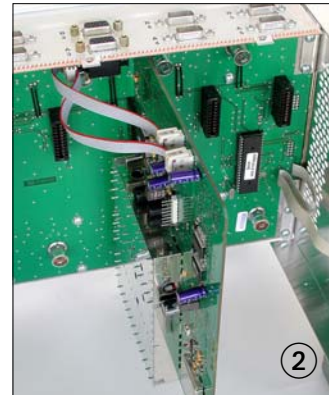
**Note:**

**Changing the modules may be done only by authorized personnel according the regulations. The hazard and safety information in these installation instructions and the safety regulations in accordance with DIN VDE Directive 0701, Part 1 and 200 (repairs) must be observed.**

**Modulator cards:**

With the X-5 basis twin / AV and the X-5 basis twin / BA, there is the possibility to connect modulator- and demodulator-cards. They are connected via Sub-D socket. The installation and connection of such a card is described below:

1. Remove the dummy covering of the respective slot and fit in the sockets, delivered with the cards.



2. Plug-in the modulator- or demodulator-card and put on the sockets considering the correct direction.

### 5.3 Grounding

- The equipment must be correctly **grounded** and installed in compliance with **EN 50 083 Part 1**.

### 6 Connecting to subscriber network

#### Cabling:

- Integrated coupling field in X-5 twin... routes the 5 channel pairs to the HF output socket.
- Connect the X-5 twin... devices together using distributor set components.
- Connect to subscriber network.

#### Note:

- Connect plugs carefully and correctly.
- Use only quality components.

### 7 Connecting and commissioning



#### Check:

- All safety instructions in Chapter 2 observed (p. 4)
- Installation and grounding as in Chapter 5 (p. 8)
- Connecting to SAT equipment as in Chapter 6 (p. 9)
- Connection to distributor network as in Chapter 7 (p. 10)
- After connecting the mains cable to the power supply, the device is in operation.

### 8 Programming

#### Connecting the KC 3 programming device:

- Plug-in KC 3 programming device via Sub-D connection
- After approx. 10 seconds, the start menu appears on the display

The KC 3 software is separated in 3 main sections:

#### 1. Version number:

The menu "version number" is displayed only after the KC 3 device is connected. **Please specify this number when contacting our service staff.** You can reach this menu only after disconnecting and reconnecting the KC 3. Start input by pressing the ← or → - keys.

#### 2. Main menu:

##### • Setting the LNC – power supply:

Select line 2 with the ↑ or ↓ - arrow – keys; use the ← or → - arrow keys to switch on / off the LNB power supply and then save your settings.

##### • Changing the bus address:

Select line 3 with the ↑ or ↓ - arrow – keys; use the ← or → - arrow keys to change the address sequentially or use the keypad.

##### • Password function:

Select line 4 with the ↑ or ↓ - arrow – keys; use the ← or → - arrow keys to activate / deactivate the password function.

##### • Selecting a slot:

Select line 1 with the ↑ or ↓ - arrow – keys; use the ← or → - arrow keys to move to the next slot

#### 3. Submenu of the plug-in cards:

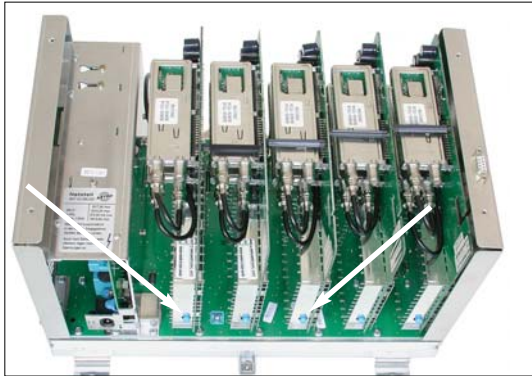
In the submenu of the plug-in cards, the type of card, the chosen tuner, the input parameters and the output parameters of the installed card are displayed. All important parameters can be adjusted. Follow the operating instructions of the respective plug-in card

### Level adjustment

The optimal output level (measured at the output of the base device) is as follows:

- 100 dB $\mu$ V for PAL channels
- 90 dB $\mu$ V for QAM channels
- 96 dB $\mu$ V for radio (FM) channels

To enable the setting, the level regulators of the individual plug-in cards are set accordingly.



level adjustment



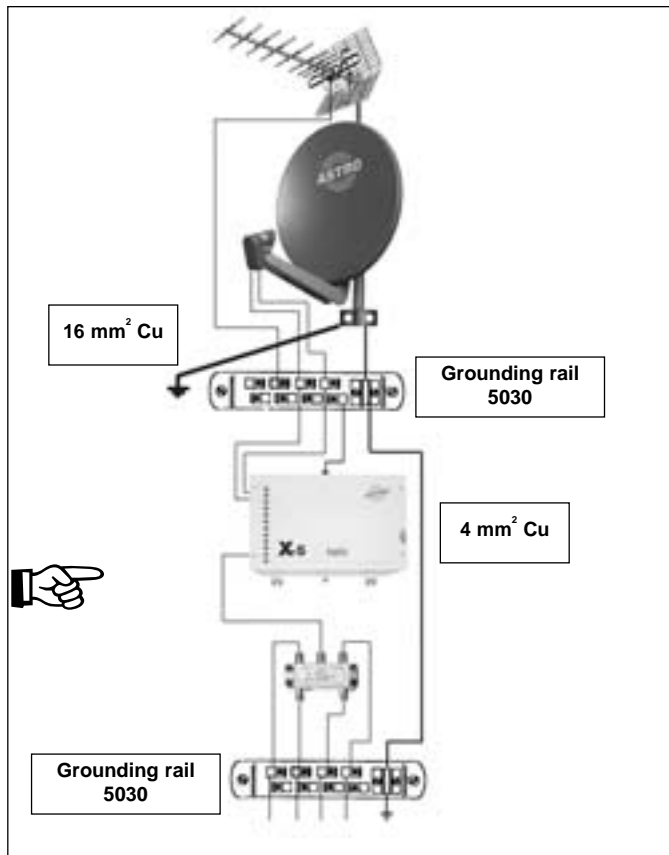
#### Note:

Under no circumstances should a skewed position be set to compensate outgoing cable attenuation by means of different level adjustment of the plug-in cards! For this purpose use output coupling field U-901 (order no. 380 190) or VZN 8 (order no. 380 191).

## 10 Grounding example

### Grounding example

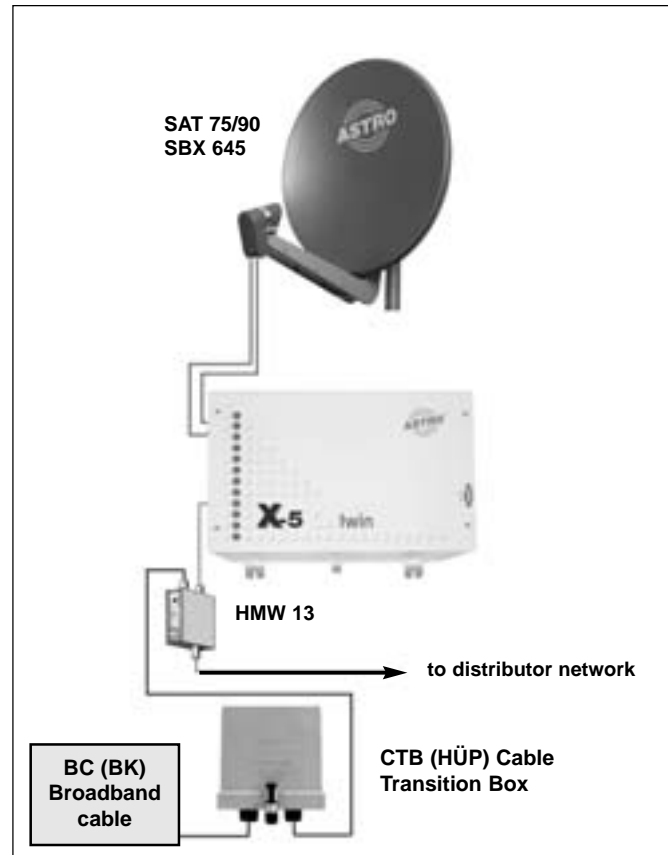
or installation and grounding accessories, see the ASTRO catalog



## 11 Sample configurations

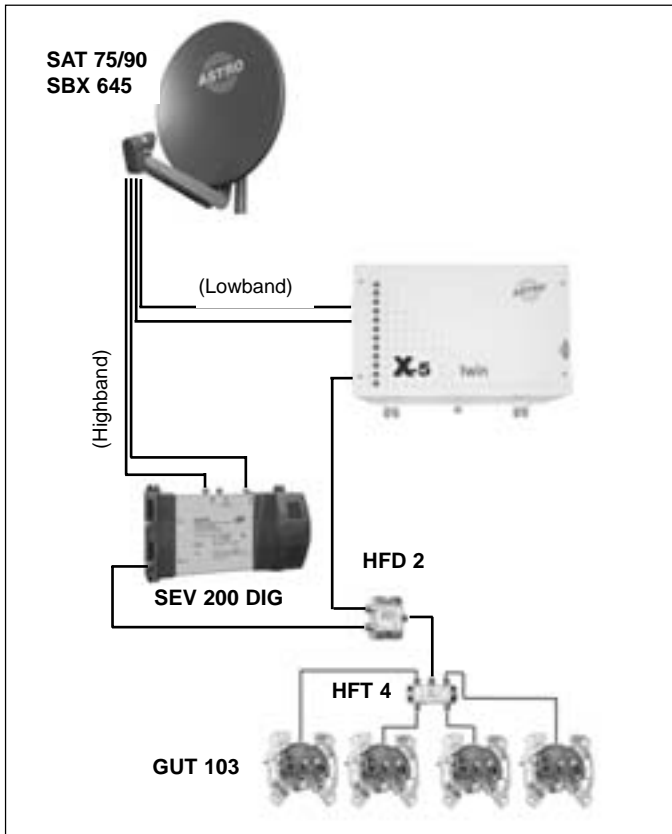
### Example I

Additional feed of foreign programs (EUTELSAT) into the cable network



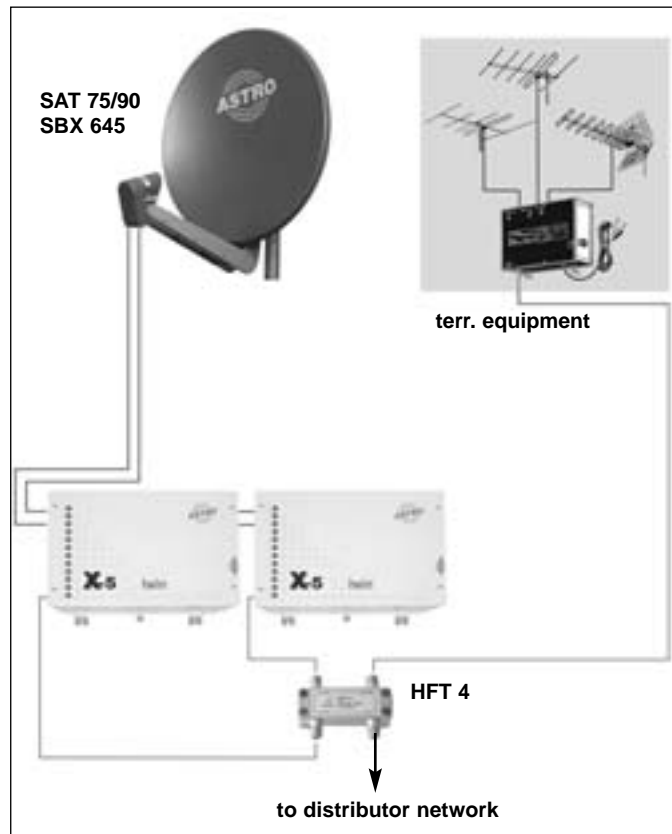
**Example II**

xtension 1 Cable Solution



**Example III**

New installation, 20 channels + terrestrial feed



## 12 Technical data for basic devices

Type		X-5 twin	X-5 twin B	X-5 twin AV	X-5 twin BA
Order number:		330 461	330 840	330 680	330 690
<b>SAT - Inputs</b>					
switchable inputs		2	2	2	2
external inputs		10	10	10	10
polarizations		12	12	12	12
AV - inputs		—	—	10	10
Busadapter BA 2		—	1	—	1
<b>common data</b>					
LNC - supply	[V]	14/18, max. 250 mA via SAT-input X bzw. Y			
Voltage supply	[V~]	230, 50/60 Hz			
Power consumption	[VA]	95			
temperature range	[°C]	0 ... +50			
Dimension (BxHxT)	[mm]	372 x 276 x 167			

## X-BC ... Buscontroller

### X- BC 1

The headend bus controller is for centrally setting all bus-capable headend devices via PC. Maintenance and e-programming of already set up headends can be done via modem.

#### Operation is only possible with the HE programming software!

- Control of up to 240 bus-capable headend devices
- Can be individually set, from ring tone to call reception (i.e. parallel operation with other terminals is possible)
- 8-digit identification code protects against unauthorized remote access
- Internal monitoring timer protects against excessive telephone charges (automatic hang-up if there is no communication within five minutes)
- Operating software can be updated via serial interface (i.e. software updates without installation work)

#### X-BC 2 – additional features

- Remote control via GSM modem
- Error messaging via SMS (alarm messaging to max. 3 phone numbers)
- 4 time partitions can be set (for each time partition 6 switching times can be defined)

Typ		X-BC 1	X-BC 2
Order no.		330401	330400
Supply voltage	[DC]	6 V through plug-in power supply unit (230V~/50Hz)	
Current consumption	[mA]	35	
Permitted ambient temp.	[°C]	-15 ... +50	

**KC 3 external programming unit** for programming all setting parameters (order no.: 330 650)



X- BC 1



X- BC 1 Rückseite/



KC 3

## HE programming software

The HE programming software (**order no. 330 630**) facilitates programming X-5...V16 headend systems with a PC or laptop computer. The user can store all headend parameters in the office prior to commissioning, for example:

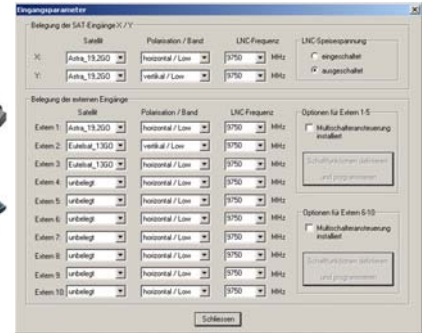
- received satellite
- SAT programs
- output channel
- program video and audio parameters on PC or laptop and save to storage media.

The user also has the option of remotely programming and maintaining headend devices via modem. These added features save the network operator service costs, for example when changes occur in transponder assignments. They mean rapid response in the event of processing card failure (replacement signal switching).

**The software supports the replacement signal switching.** To activate replacement signal switching, the network operator only needs to select the “failed module” and the replacement module (redundancy).” Manually reconfiguring the operating parameters or the redundancy module is not required. The following processes are performed automatically:

- deactivating (HF) the failed module.
- copying all operating parameters of the failed module to the redundancy module.
- activating (HF) the redundancy module.

With the HE programming software up to twenty X-5...V16 headend devices can be saved in a configuration file. From the menu item “Display unit” the user has the option of accessing the program parameters of an already existing headend and can then easily edit and modify. Current program satellite assignments are stored in their own “SAT program files.” The user can update and change these files when needed. ASTRO offers updating program assignments of the most common satellites via the Internet.



On - site – during the commissioning –

the configuration data just have to be transferred to the headend-system via delivered zero-modem cable and PC-X-5/10-adapter, or via optional bus-system.

So the configuration of many programs is perfectly possible during several seconds.





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