Part of axing group

HKM-4002

HDMI | DVB-C/T encoder/modulator

Table of contents

⚠ WARNING

Safety instructions:

- The installation of the device and repair work on the device must be carried out only by a professional in accordance with the applicable VDE directives. In case of incorrect installation, no liability is assumed.
- Never open the device. There are no parts to be maintained by the user inside the device, however, lethal voltages are present. This also applies to cleaning the device or working on the connections.
- Use only the mains cable connected to the device or the enclosed power supply unit. Never replace any parts or make any modifications to the mains cable and the power supply unit. Otherwise, there is a risk of death.
- If a replaceable fuse is available, pull out the mains plug before replacing the fuse. Replace defective fuses only by standardized fuses with the same nominal value.
- If you intend not to use the device for a longer period of time, we recommend you to completely disconnect the device from the mains for safety reasons and for saving energy by pulling out the mains plug.
- Let the device adjust to the room temperature before commissioning, in particular if condensation is present on the device, or if it was exposed to large temperature fluctuations.
- The device must be operated only in moderate climate.
- The device must be operated only in dry rooms. In damp rooms or outdoors, there is a risk of short-circuits (attention: risk of fire) or electrical shocks (attention: risk of death).
- Plan the mounting or installation location such that you can easily reach the mains plug and interrupt the electric circuit in dangerous situations. Select the mounting or installation location such that children cannot play near the device and its connections without supervision. The mounting or installation location must allow a safe installation of all connected cables. Power supply cables and supply cables must not be damaged or squeezed by any objects.
- Select a mounting or installation location which meets the requirements of the IP 54 protection class. Operate the device only on a flat, firm surface and protect it against unintentional movements.
- Never expose the device to direct solar irradiation and avoid direct vicinity of heat sources (e.g. heaters, other electrical appliances, fireplace, etc.). It must be always ensured that devices with cooling elements or ventilation slots are not covered or obstructed. In addition, ensure generous air circulation around the device. This will prevent possible damage to device and risk of fire due to overheating. It must be always ensured that cables are not located near heat sources (e.g. heaters, other electrical appliances, fireplace, etc.).
- The device is intended for transmission of audio and video signals via LAN cable. Misuse of the device is expressly prohibited.
- In particular, the warranty and liability shall be excluded for the consequences of incorrect use, in case of incorrect modifications or repair work carried out by the customer. Use the device only as described in the operating instructions and in particular according to the state-of-the-art.

- The antenna system must be installed and grounded according to the current DIN EN 60728-11 standard.
- The product complies with the directives and standards for CE labeling.

Product description

General

- 4 x HDMI into 1 × DVB-C/T or 2 × DVB-C/T
- Web-based configuration | Remote maintenance
- Can be used for wall mounting or as a 19" unit
- Built-in power supply

Scope of delivery

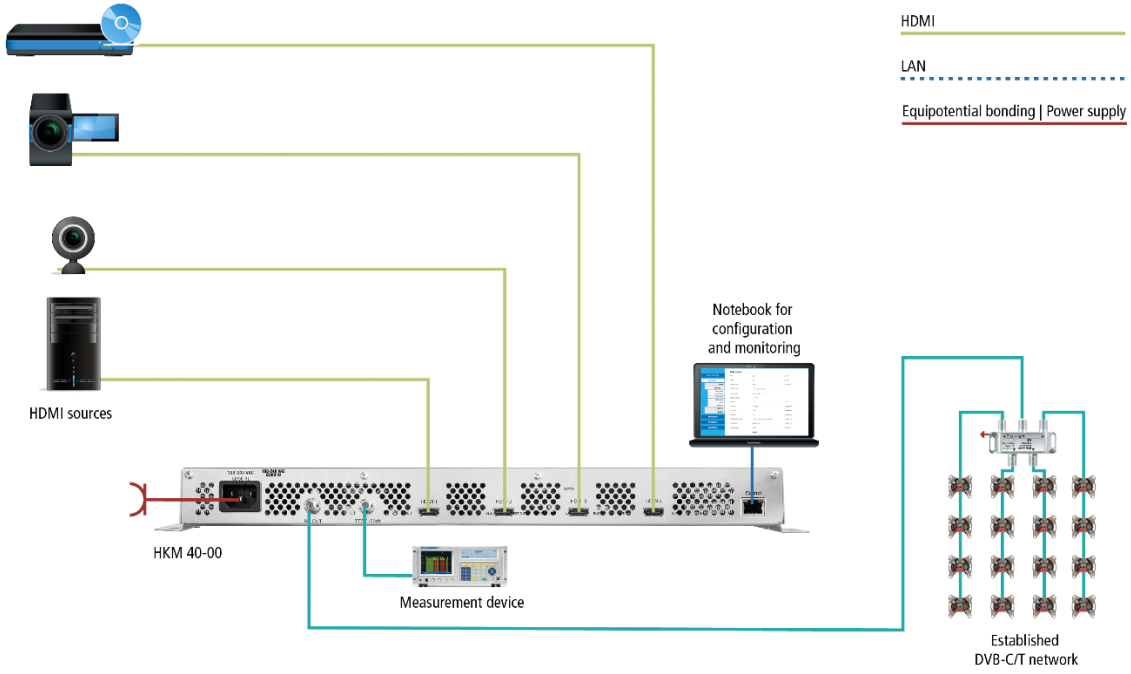
1 × Encoder/Modulator

1 × AC power cord

1 × Quick start guide

Inputs

The HKM-4002 has four HDMI inputs. Connect them to four HDMI sources.



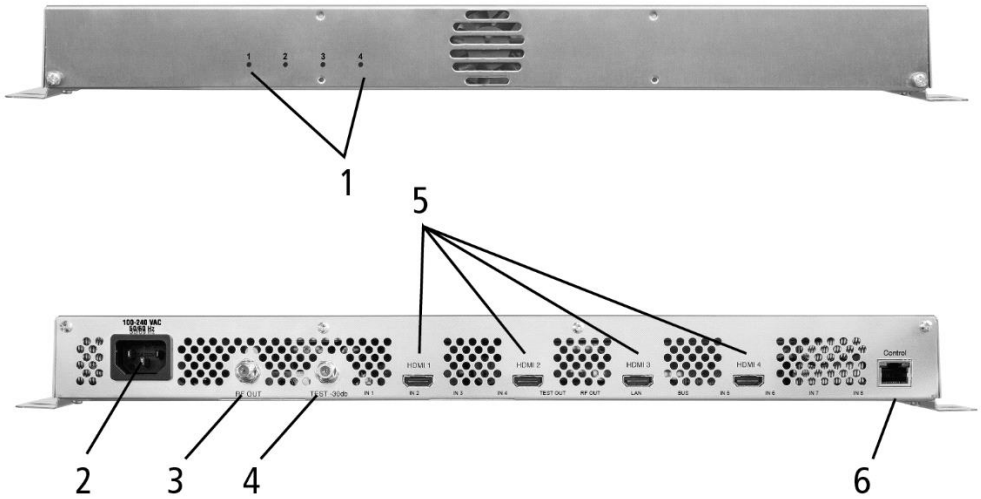
Output/modulators

The **HKM 4002** has four output modulators. Theese will be streamed in **one or two output channels** (DVB-C / DVB-T).

- ## Graphical user interface

The settings can be changed via the graphical user interface. To access the user interface and thus configure the devices, you need a standard PC/laptop with a network interface and the actual version of the installed web browser.

- ## Display elements and connectors



1. LED indicators
2. Mains connection
3. RF output
4. Test port
5. HDMI inputs
6. RJ45 Ethernet connector

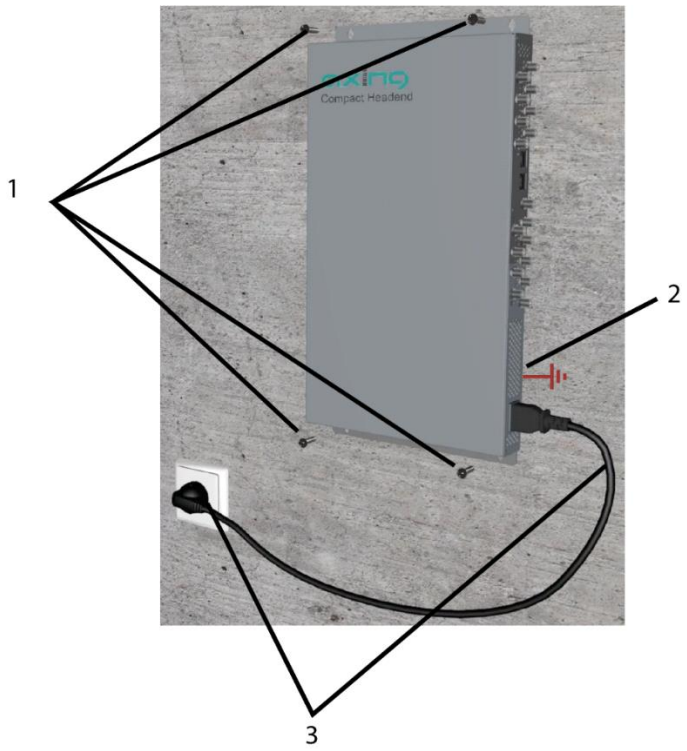
Mounting and Installation

- Installation must be performed by authorized and skilled electricians only.
- Before mounting and installation, pull the mains plug!

The HKM-4002 can be mounted on either at the wall or be mounted in a 19 "rack.

Wall mounting

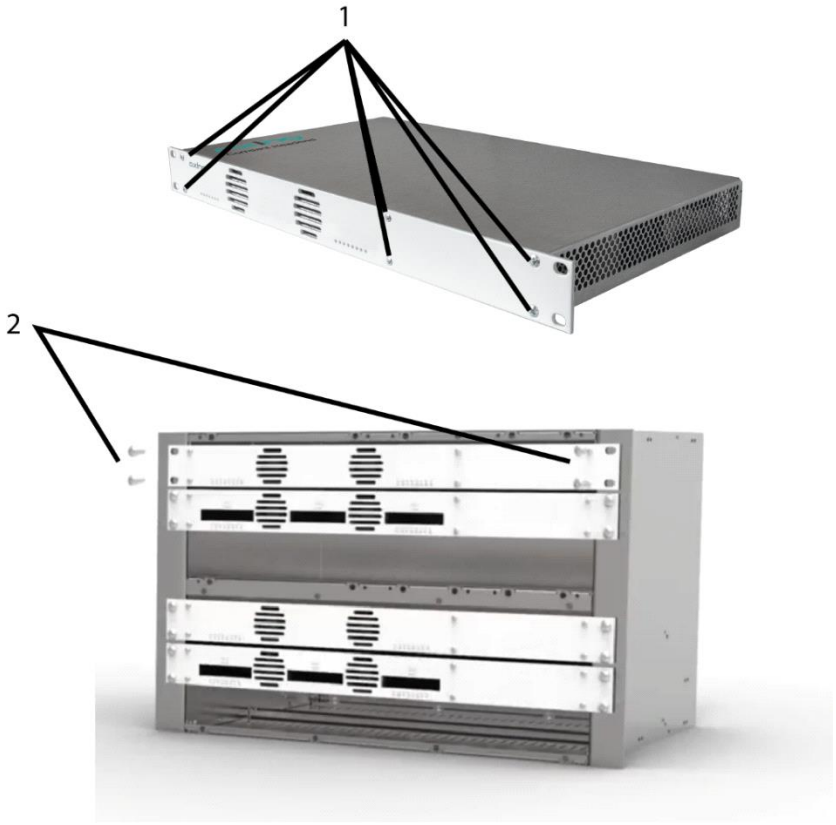
The HKM-4002 are factory-fitted with wall brackets.



- The installation must be carried out on an even and vertical surface (any unevenness must be compensated).
- Fix the HKM-4002 with 4 screws appropriated for the installation surface (1).
- The HKM-4002 must be connected to the equipotential bonding according to EN 60728-11 (2).

- ## Mounting in a 19“ rack

- Remove the wall bracket from the housing of the HKM-4002.
- Mount the front plate HKZ 1-00 onto the HKM-4002 (1).



- Slide the HKM-4002 into the 19 "rack.
- Fix the HKM-4002 with four screws (2).
- Maintain the EN 60728-11.

- ## HDMI installation

The HKM-4002 has four HDMI inputs. Connect them to four HDMI sources.

- ## RF Output

Connect the output of the HKM-4002 to the existing DVB-C / DVB-T distribution. Use shielded coaxial cables with F connectors. You can find suitable cables and connectors in the current AXING catalog or at www.axing.com.

If you are using more than one HKM-4002, the outputs must be connected with suitable combiner.

- ## Power supply

⚠ CAUTION

The HKM-4002 have a built-in power supply (100 ... 240 VAC / 50 ... 60 Hz).

- Do not connect the device unit until all assembly and installation work has been completed.
- Use the supplied power cord.

- Connect the power cord to an appropriate wall outlet.

- # Configuration

The device is configured via the graphical user interface of the integrated web interface.

To access the user interface, you need a standard PC/laptop with a network interface and the actual version of the installed web browser. To connect the network interface of the device to the computer, you need a commercially available network cable.

The HTTP protocol is used for communication allowing a worldwide remote maintenance of the systems at various locations via the Internet. Access protection is implemented by means of the password prompt.

The following values are preset ex factory:

- IP address: 192.168.0.168
- Subnet mask: 255.255.255.0.

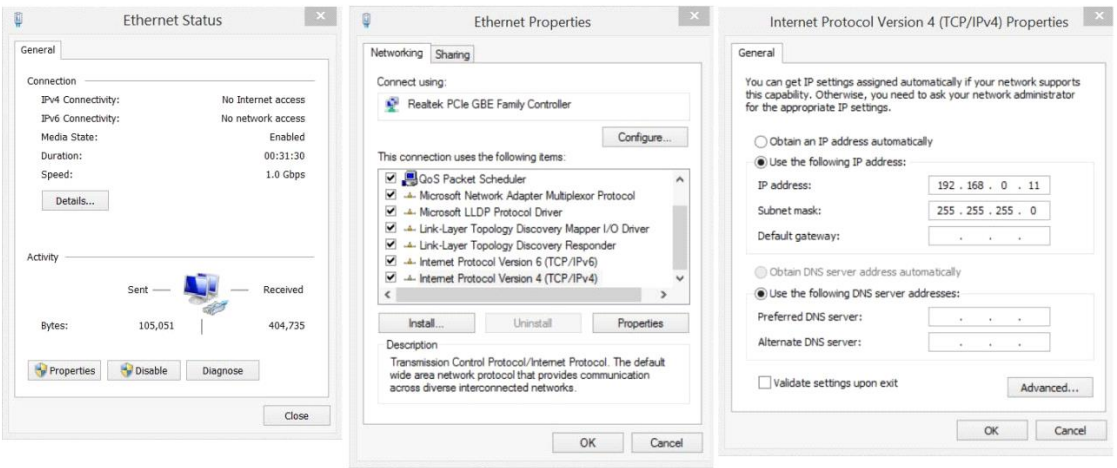
The computer and the headend must be in the same subnetwork. The network part of the IP address of the computer must be set to 192.168.0. and the subnet mask must be set to 255.255.255.0.

The host part of the network address is required for the identification of the devices and can be assigned in the subnetwork only once. You can allocate to the computer any not allocated host address between 0 and 255.

Hint:

Change the IP address and the subnet mask of your computer accordingly. (e.g.: IP address:192.168.0.11 and subnet mask: 255.255.255.0)

Control panel > Network connections > LAN connection >Properties > Internet protocol version 4 TCP/IPv4 > Properties > Use the following IP address:



- Click OK to save.

- ## Login

- Start your web browser and enter the IP address of the device: 192.168.0.168.

The web-based user interface is protected against unauthorized access. When accessing the user interface, the first thing is the password request.

- Enter the default password: *Ramsen8262.*

Changing the password:

- Please change the password immediately after the first commissioning and choose a sufficiently safe password. Keep this password at a safe place.
- Menu item: **System** > **Set password** (see 3.6.6 on page 20).

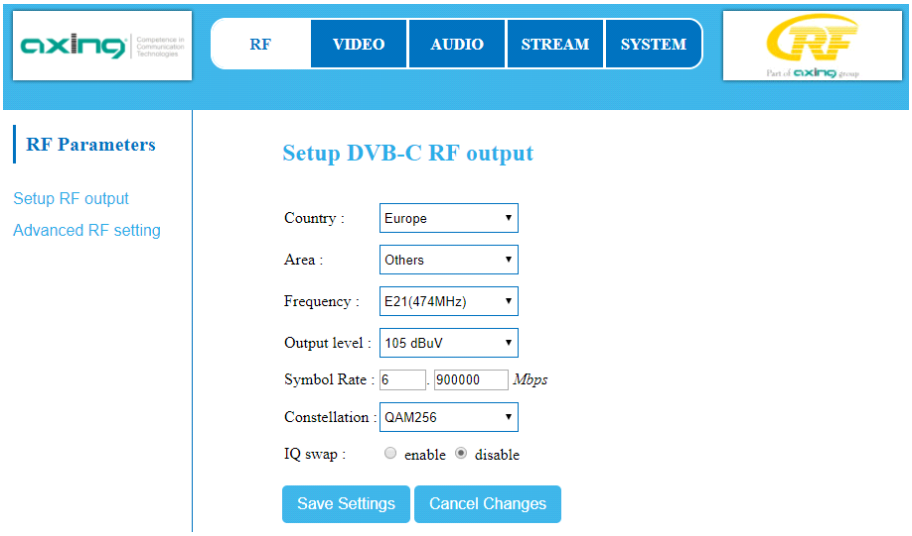
Notes:

- If the browser is closed while you are still logged in, an automatic logout occurs 2.5 minutes later.
- If the browser window stays open, there is no automatic logout. It allows monitoring the installation via the web browser.

- ## RF settings

- Click **RF** on the main menu.
  Depending on the modulator selected, the **RF PARAMETERS** for DVB-C or DVC-T are displayed.
- How to select the modulator type is described under 3.6.7 Modulator Type on page 20.

- **DVB-C**

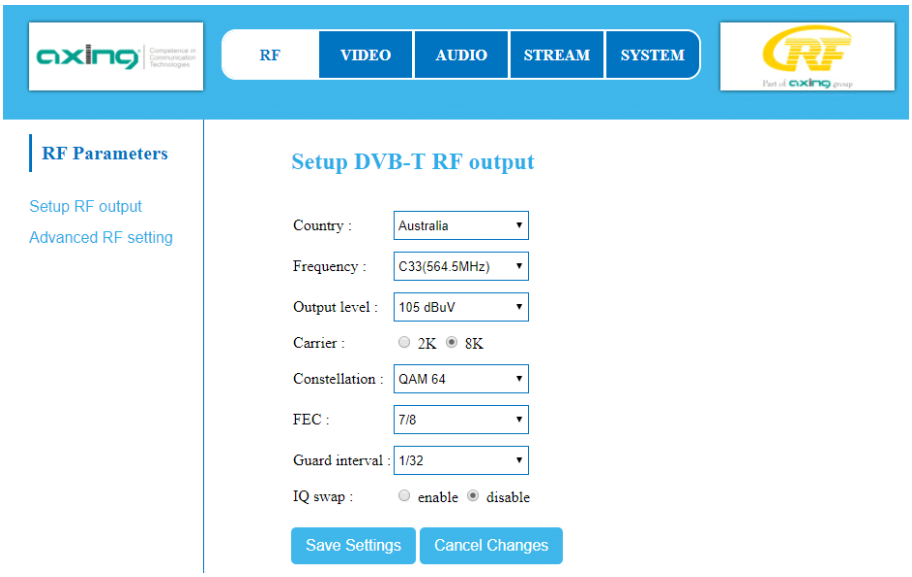


- Make a pre-selection using the **Country** and **Area** menus.
  Depending on the selection made, the country-specific channels are displayed in the Frequency field.
- Select an output level of 85 ... 105 dBµV in the **Output level** selection field.
- The symbol rate between 1000 and 7500 can be freely set in the **Symbol Rate** field. The default value is 6900. Some networks also work with 6875. If working with only 7MHz bandwidth, a symbol rate of 6111 is in use.

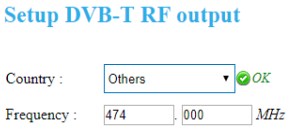
- In the **Constellation** selection field, select the desired output modulation (QAM 16/32/64/128/256).
  QAM256 provides the highest data transfer rate, but also requires the best network quality.
- The **IQ swap** option enables or disables the inverse phase rotation of the IQ signal by exchanging the I and Q inputs.

- Click **Safe Settings** to save your settings.

- **DVB-T**



- Make a pre-selection using the **Country** and **Area** menus.
  Depending on the selection made, the country-specific channels are displayed in the Frequency field.
- If you select **Others** in the **Country** field, you can set the frequencies freely.



- Select an output level of 85 ... 105 dBµV in the **Output level** selection field.
- In the **Constellation** selection field, select the desired output modulation (QAM 16/64).
  QAM64 allows the highest data transfer rate, but also requires the best network quality.
- In the **FEC** selection field, select the FEC factor (1/2, 2/3, 3/4, 5/6 7/8).
  By changing the FEC factor, the proportion of the FEC data is changed in relation to the user data. (FEC ½ = low data rate but strong error protection, FEC 7/8 - high data rate but low error protection).
- In the **Guard Interval** field, select the protection interval from 1/32, 1/16, 1/8, 1/4. This protection interval avoids the symbol overflow during DVB-T transmission. The guard interval expresses the ratio of the transmission pauses to the useful data transmission time. A very long protection interval (eg 1/4) leads to a very low data rate. When transmitting in a faultless coaxial distribution network, a very small protection interval is sufficient (1/32).

- The **IQ swap** option enables or disables the inverse phase rotation of the IQ signal by exchanging the I and Q inputs.

- Click **Safe Settings** to save your settings.

- **Advanced RF settings**

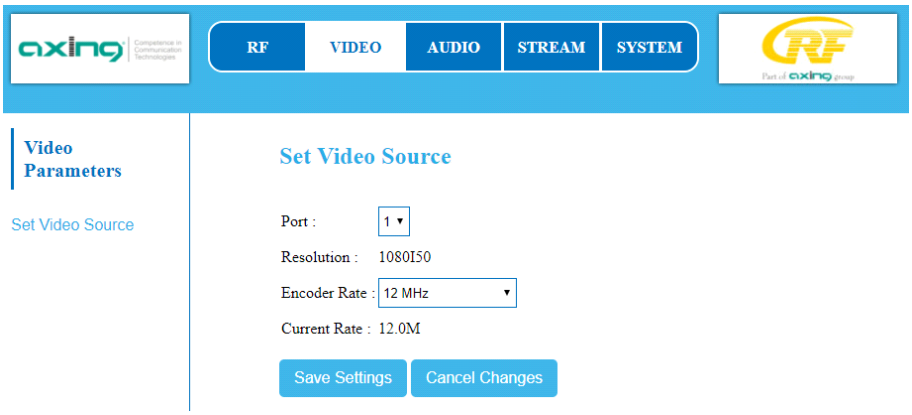
- The **RF Output** option can be used to switch 1 or 2 muxes output or off the output signal.
- If necessary, enter the fine adjustment of the output channel in 250 kHz steps in the **Frequency offset** field.

- Click **Safe Settings** to save your settings.

- **Video Source**

- On the main menu, click **Video**.

The settings for the video source can be made for each of the four input ports.



- In the **Port** selection field, select video source **1** to **4**.
- For each video source, set the **Encoder Rate** to **Auto** or select a value between **4 ... 14 MHz**.

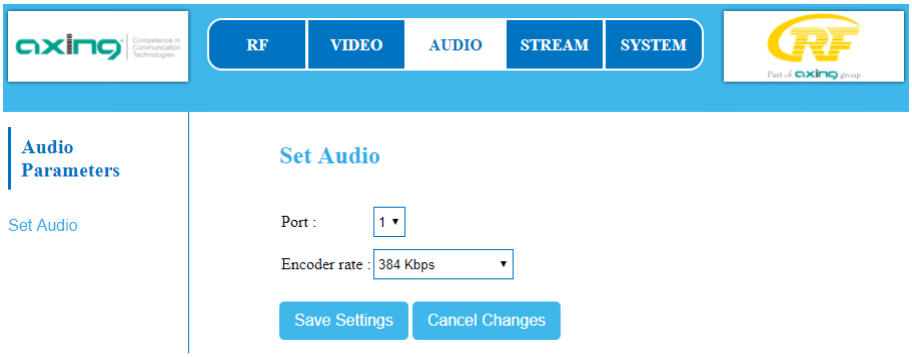
The **Resolution** and **Current Rate** fields indicate the resolution and bit rate of the connected video source.

- Click **Safe Settings** to save your settings.

- ## Audio Source

- On the main menu, click **Audio**.

The settings for the audio source can be made for each of the four input ports.



- In the **Port** selection field, select **1** to **4**.
- Set the bit rate to **128**, **256** or **384 Kbps** for each audio source in the **Encoder Rate** field.

- Click **Safe Settings** to save your settings.

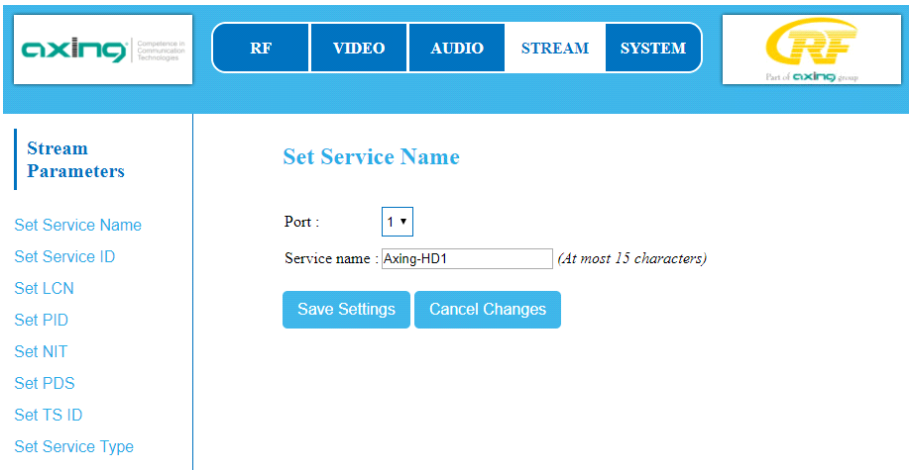
- ## Stream

- On the main menu, click **Stream**.

Settings can be made for each of the four output streams.

- ### Service Name

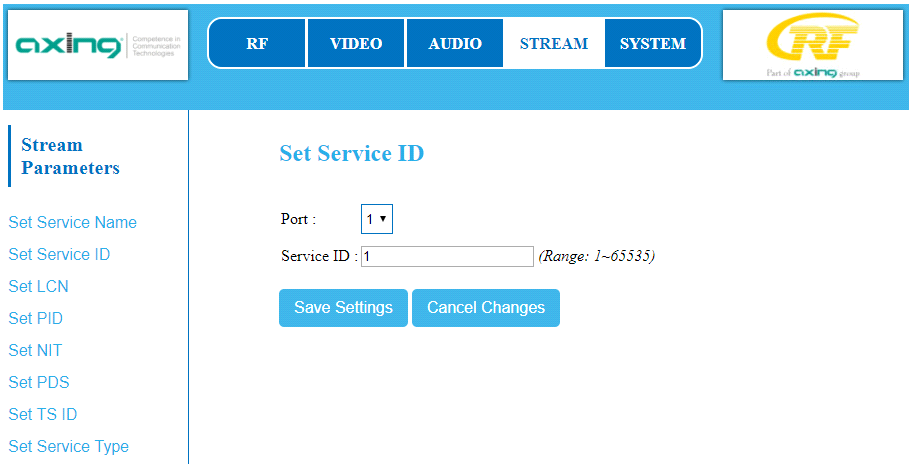
The names of the four output streams are defined here. These are displayed as program names in the TV set after the programm scan.



- In the **Port** selection field, select **1** to **4**.
- Enter a maximum 15-character program name in the **Service name** field.

- Click **Safe Settings** to save your settings.

- **Service ID**



- In the **Port** selection field, select **1** to **4**.
- In the **Service ID** field, type an ID between 1 and 65535.
  The service IDs of all streams in your network must be unique.

- Click **Safe Settings** to save your settings.

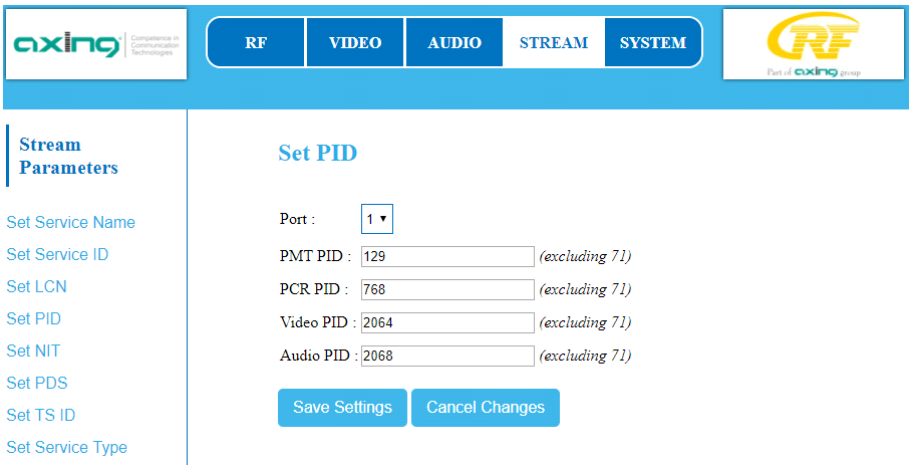
- **LCN**

- In the **Port** selection field, select **1** to **4**.
- In the LCN field, enter a logical channel number between 1 and 1023.
  If the connected TVs support LCN, the respective stream is stored there under the entered program location.

- Click **Safe Settings** to save your settings.

- **PID**

Packet identifier changes should only be performed by experienced users.



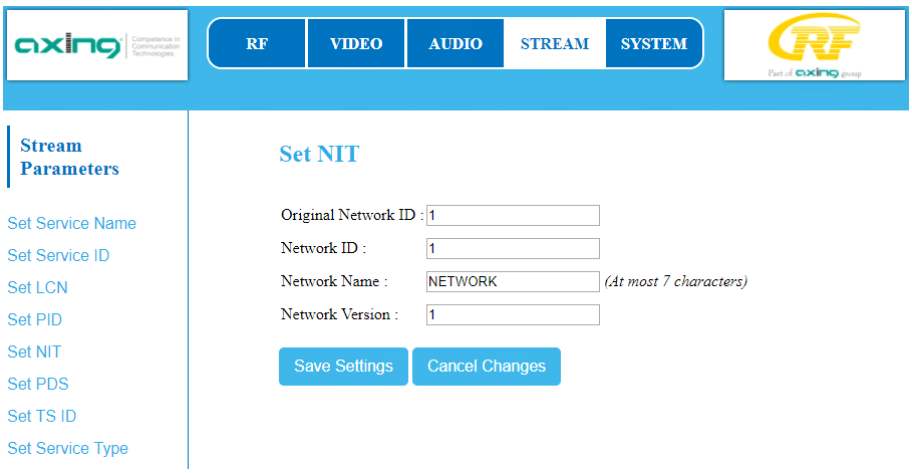
- In the **Port** selection field, select **1** to **4**.

Enter the **PMT PID** (Program Map Table), **PCR PID** (Program Clock Reference), **Video PID** and **Audio PID** in the appropriate fields.

- Click **Safe Settings** to save your settings.

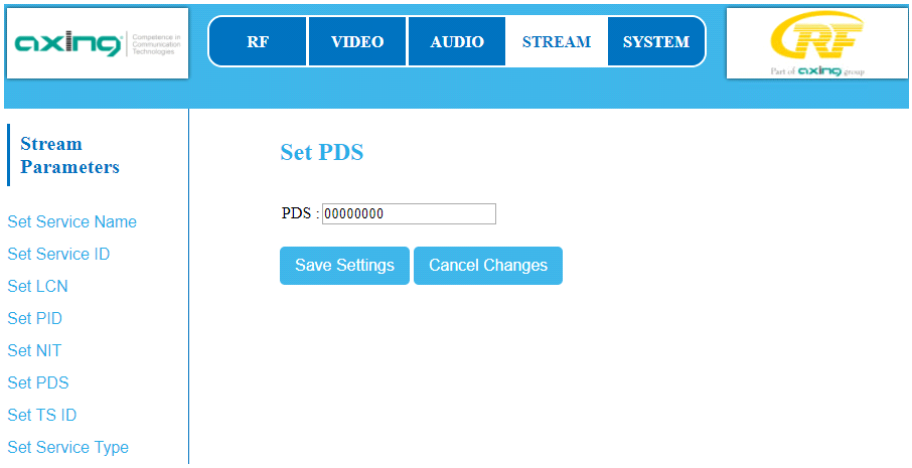
- **NIT**

The NIT setting must only be changed in large networks. Changes should only be carried out by experienced users.



- Click **Safe Settings** to save your settings.

- **PDS**

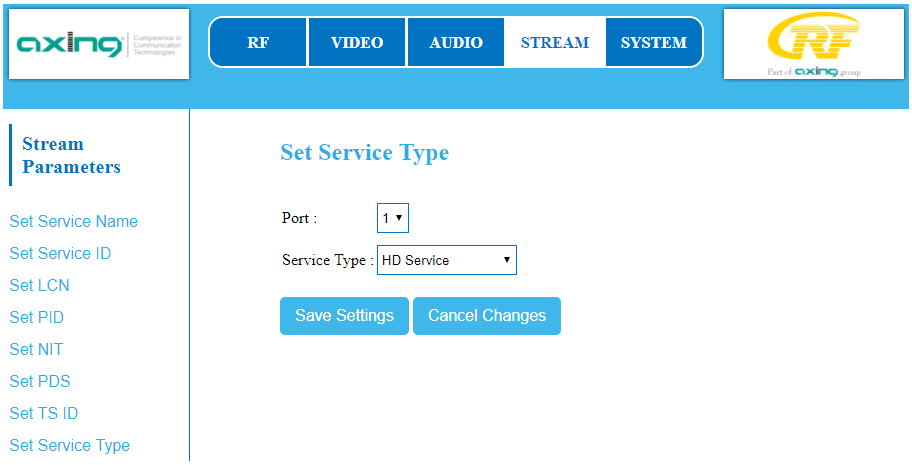


- **Transporstream ID**

The **TS ID** (Transportstream ID) must be unique for each transportstream. If further transport streams occur in your DVB-C / T network, you may have to assign a different ID here.

- Click **Safe Settings** to save your settings.

- **Service Type HD or SD**



- In the **Port** selection field, select **1** to **4**.
- In the **Service Type** selection field, select for each stream whether it is output in **HD** or **SD**.

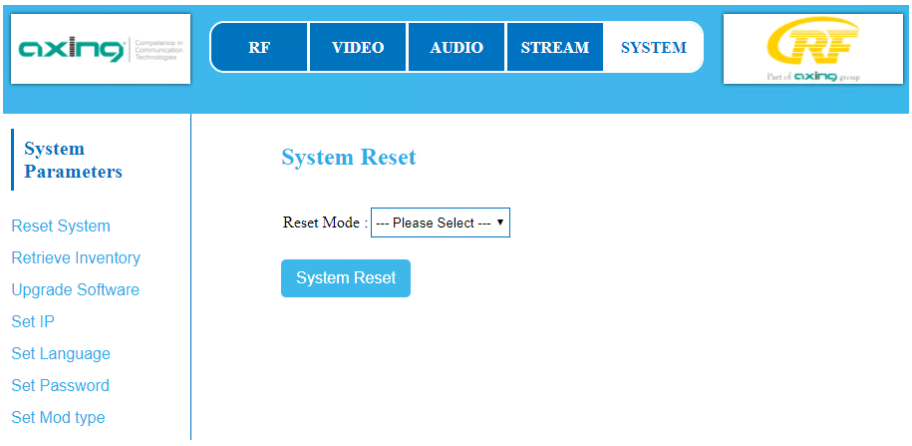
- Click **Safe Settings** to save your settings.

- # System

- On the main menu, click **System**.

In the **System** menu item, the system can be reset, a software update is carried out, the IP address changed, a new password assigned.

- **Reset**



- In the **Reset Mode** field, select whether you want to perform a hardware reset, a software reset, or whether you want to reset the HKM-4002 to its factory settings.
- Click on **System Reset** to perform the reset.

- **Retrieve Inventory**

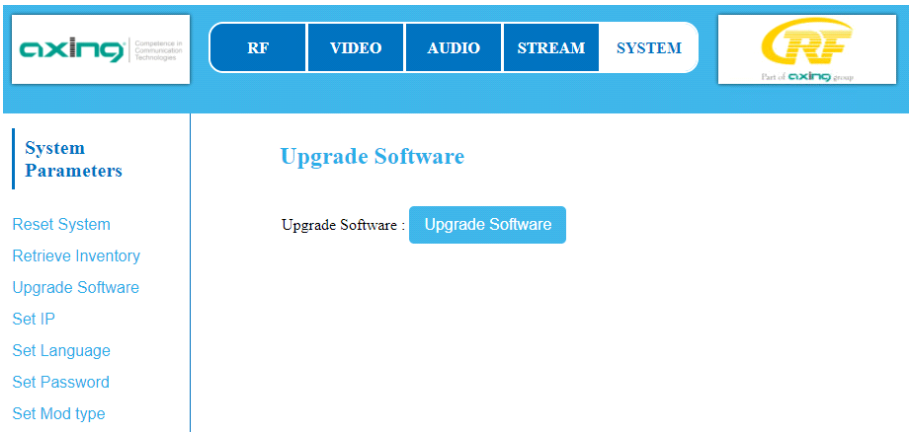
Under **Retrieve Inventory** you will find the current version of the HKM 40-00.

- **Upgrade Software**

Under **Upgrade Software** a new software for the interface can be installed.

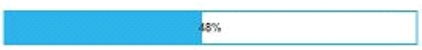
Software updates are available at www.axing.com Downloads.

- Download this to your PC.



- Click **Upgrade Software** to install a new software.
- Click "Browse ...".
- Browse for the software file on your PC and confirm.

The file is loaded into the device. The upload progress is displayed.



The device is then upgraded. The remaining time is displayed.

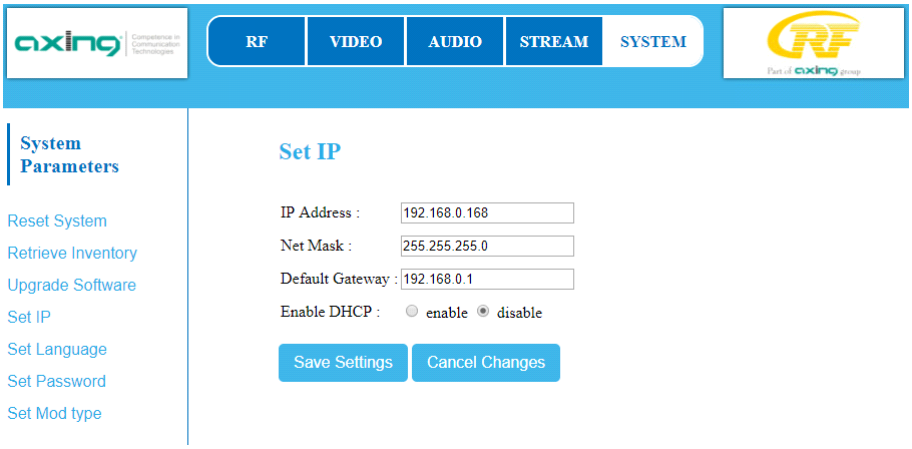
- **IP Adress**

Dynamic IP address

- For **Enable DHCP**, select **enable** to include the device in a network with a DHCP server.

Static IP address

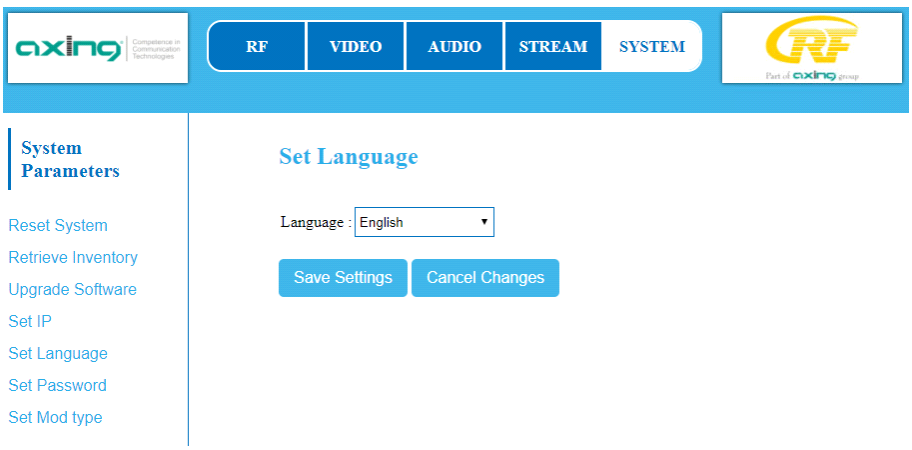
- For **Enable DHCP**, select **disable** to link the device to a network with a fixed IP address. The IP address, Net mask and Default Gateway can be changed here.



- Click **Safe Settings** to save your settings.
- After the changes have been saved, the HKM-4002 is restarted automatically.
- After restarting, you must enter the new IP address in the browser and log in again.

- **Language**

Here you can select the language of the interface.

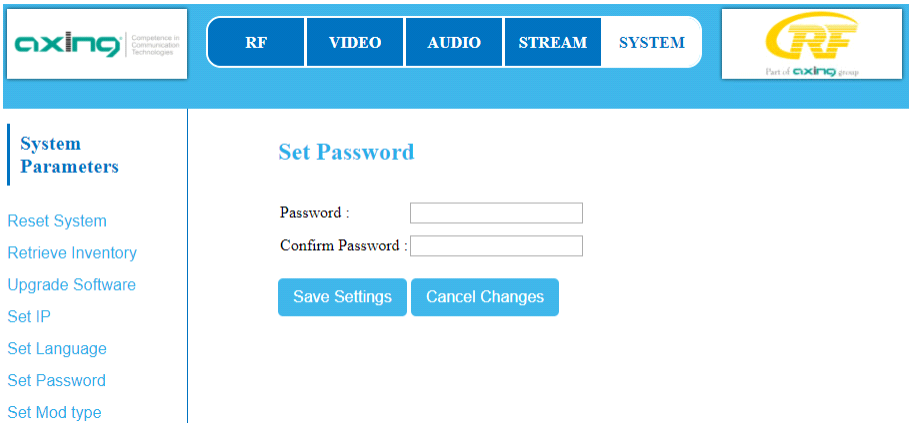


- Click **Safe Settings** to save your settings.

- **Password**

The factory-set password is: Ramsen8262.

After the first commissioning of the cassette, the factory-set password should be changed immediately.

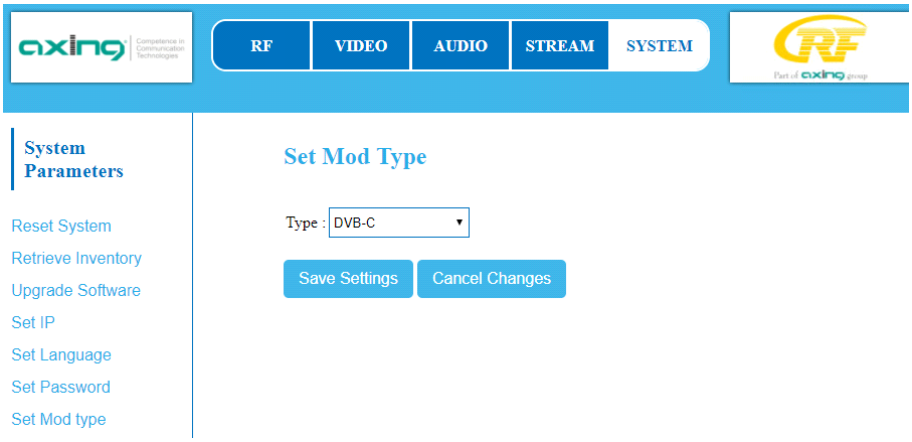


- Enter a new password with 8 to 10 characters and / or numbers.
- Re-enter the password.

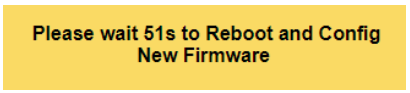
- Click **Safe Settings** to save your settings.
- After the changes have been saved, the start page is displayed, you must log on again.

- **Modulator Type**

Depending on the configured modulation method, the output signals are modulated in DVB-C or DVB-T.



- Select a modulation method in the **Type** field.
- Click **Safe Settings** to save your settings.
- The modulation method is changed. The remaining time is displayed.



- # Technical specifications

Inputs	4 × HDMI
Video encoder	H.264, MPEG-2
Max bit rate per channel	16 Mbit/s
Video solution	1080p@60 Hz
Audio encoder	MPEG1 audio layer II
Output TV channels	1 or 2 × DVB-C/DVB-T
Output frequency range DVB-C | DVB-T	45.....862 MHz
Output channels DVB-C | DVB-T	E2.....E69
Output level adjustable	85…105 dBµV
Output modulation DVB-C | DVB-T	QAM 16/32/64/128/256 | QAM 16/64
Output transmission symbol rate	1-7,5 M‘Symbol sec
MER DVB-C | DVB-T	≥ 40 dB | ≥ 36 dB
FEC DVB-T	1/2, 2/3, 3/4, 5/6, 7/8
Output guard interval DVB-T	1/4, 1/8, 1/16, 1/32
Output connector, female	1 × F
Test port output, female	1 × F | -30 dB
Data interface	1 × RJ45
Operation voltage	100…240 VAC/50…60 Hz
Power consumption	50 W
Ambient temperature range (acc. to EN 60065)	-10°C…+50°C
Dimensions (W × H × D) appr.	480 × 253 × 47 mm


Part of axing group