Part of axing group

IPHE-800 | IPHE-1600 | IPHE-2400
IPQAM/COFDM

IPHE 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 MIE is modular. Each module has its own configuration interface.

Default IP address of module A:	192.168.0.145
Subnet mask:	255.255.255.0
Default IP address of module B:	192.168.0.148
Subnet mask:	255.255.255.0

The expansion module MIM 3-02 also has its own IPTV address:

Default IP address of the expansion module:	192.168.0.148
Subnet mask:	255.255.255.0

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

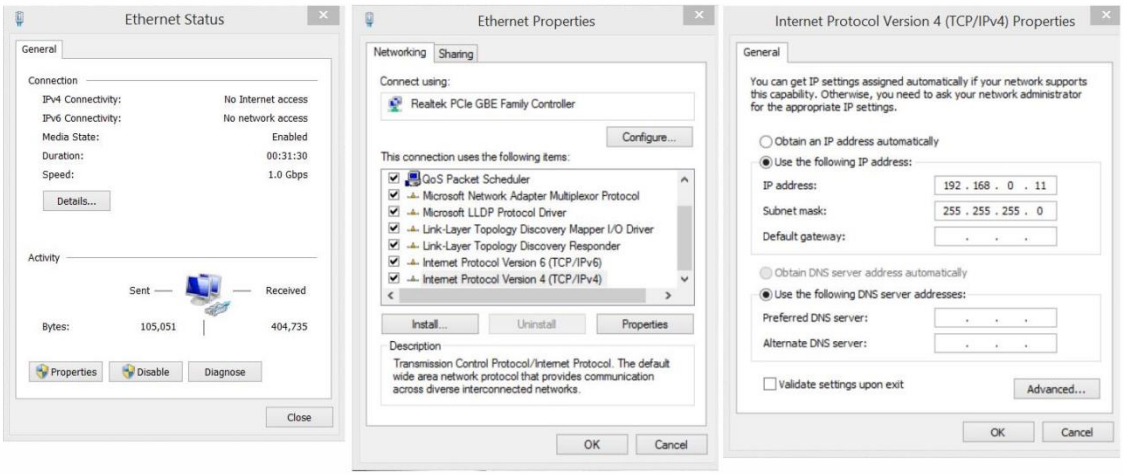
The host part of the network address is required for the identification of the devices and can be assigned in the subnetwork only once. You can allocate to the computer any not allocated host address between 0 and 255.

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:



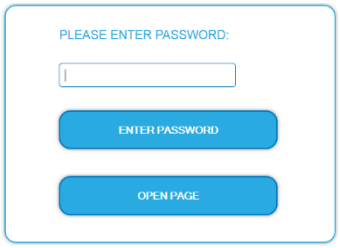
Click OK to save.

Connect the PC to the RJ-45 Ethernet connector **Control**.

Start your web browser and enter the IP address of the connected module: e.g.: 192.168.0.145.

Login and logout

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

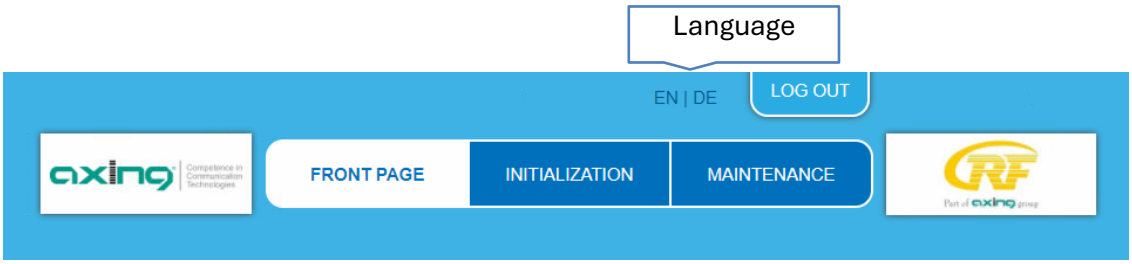


➔ Enter the default password: *Ramsen8262*

➔ Click ENTER PASSWORD.

➔ If you are not automatically forwarded to the start page, click OPEN PAGE.

The standard language of the user interface is English. In the header, the the language of the user interface can be changed. The chosen language applies until the end of the session.



➔ To log out, click LOG OUT.

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.

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: MAINTENANCE > SET NEW PASSWORD (see 0 on page 33).

Changing the IP address:

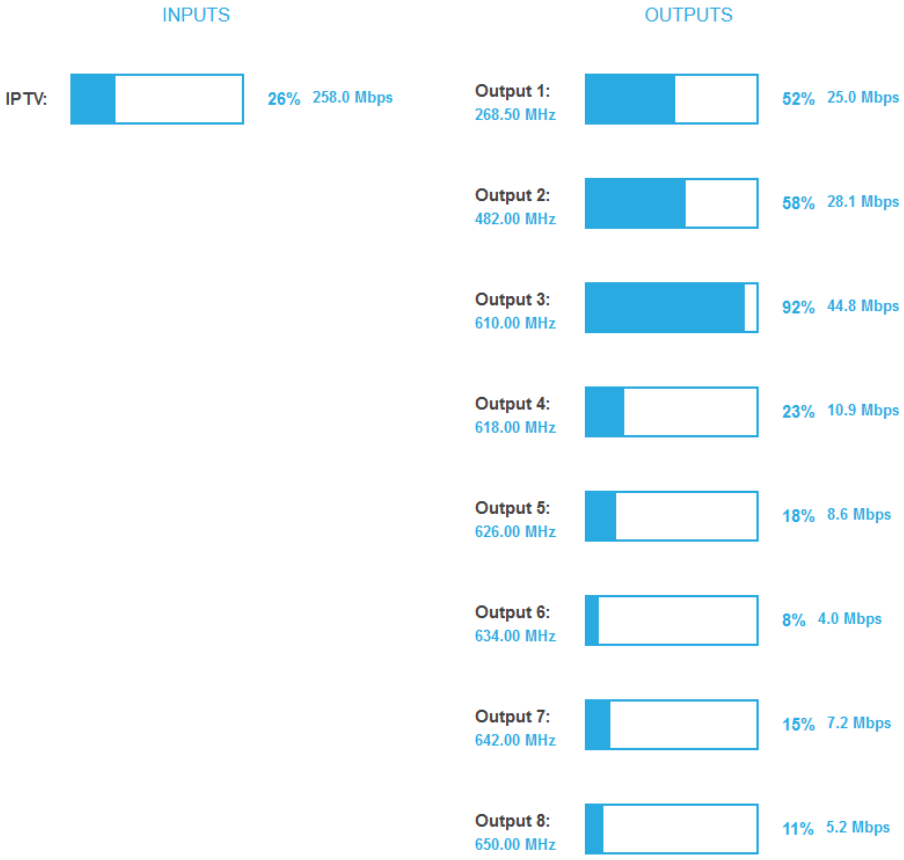
If needed, the devices can be integrated in a network. For this application, some changes must be applied to the network configuration.

➔ Menu item MAINTENANCE > SYSTEM.

Front page

Input

The data rate of the IPTV- input ist shown.



Input port redundancy

If the CAS interface is used as a redundant IPTV input and the MIE has switched to this input, this is displayed on the front page (CAS port used).

Outputs

The fill level of all modulators is shown. The number of chosen programmes and the configuration of the modulators have an influence to the fill level. If the current fill level exceeds the maximal fill level, it may cause image disturbances, e.g. mosaic images.

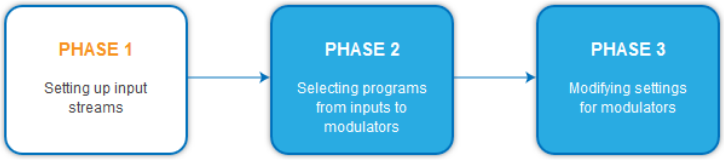
To ensure an undisturbed reception, a reserve must absolutely be observed. **We recommend you to set the maximal fill level to 90%.**

From a fill level of 99%, this is indicated in red.

Initialization - phase 1

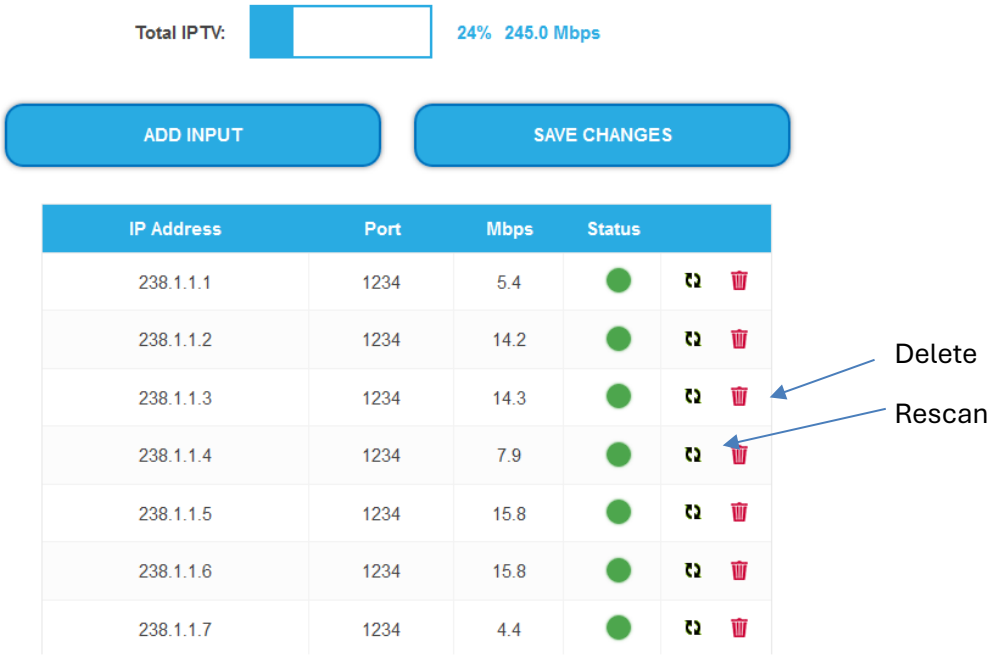
Choose INITIALIZATION from the main menu.

The initialization starts with PHASE 1.



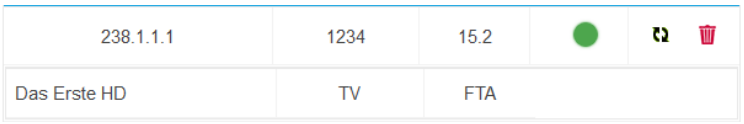
Input streams

In Phase 1, the **IP address**, **port**, data rate in **Mbps**, and **status** of the input streams are displayed in a table.



Click on a stream.

Further information, such as the program name, is displayed.

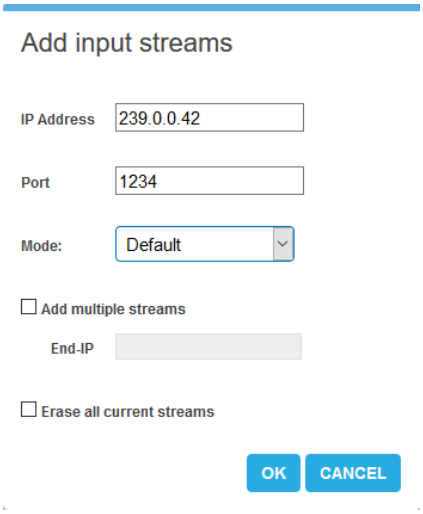


➔ You can rescan a stream or delete a stream.

Add one or multiple input streams

Click **Add Input**.

The **Add input streams** dialog opens.



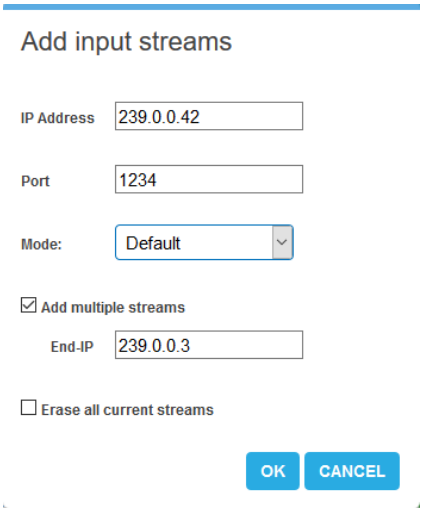
Enter the **IP address** of the stream and its **port**.

Click **OK**, the stream will be added and scanned.

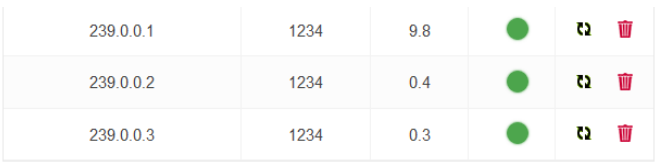
To add multiple streams:

Activate the option **Add multiple streams**.

Enter the **End IP**.



Streams are created between the **IP Address** and the **End IP**
(in the example 239.0.0.1, 239.0.0.2 and 239.0.0.3).

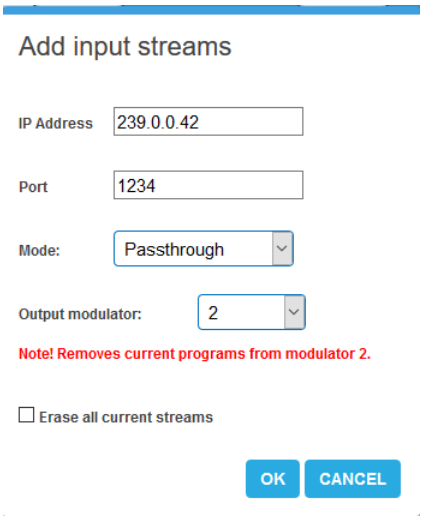


If desired, activate the option **Erease all current streams**.

IMPORTANT: All previous configured input streams will be deleted. Only the newly created ones are available.

Assigning input transport streams directly to a modulator

With the "Passthrough" mode, the programs of an input transport stream can be forwarded 1:1 to a modulator.



Select the Passtrough mode.

Select the desired modulator.

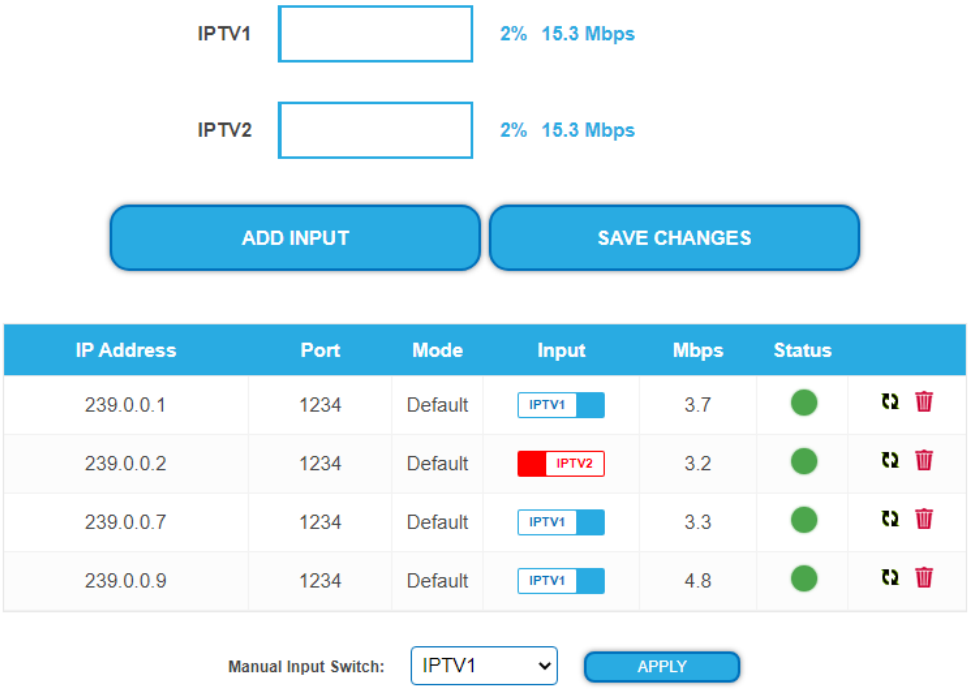
Click OK, the stream will be added and scanned

The channels of the stream will be directly assigned to the selected modulator.

Programs that were previously assigned to the modulator will be removed.

Redundant Input Transport Streams

Both IPTV IN1 and IPTV IN2 receive all input transport streams in parallel. By default, only the input transport streams received at IPTV IN1 are processed. However, if an input stream from IPTV IN1 fails, then for this stream it is automatically switched to IPTV IN2. If the stream is available again at IPTV IN1, then it is automatically switched back to IPTV IN1.

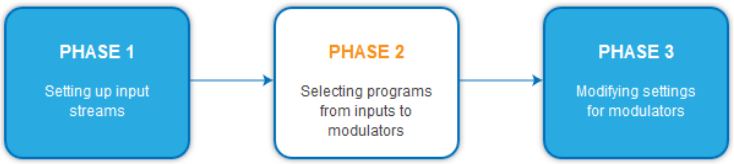


The status of the individual input streams displayed in the Input column. In the following illustration, stream 239.0.0.2:1234 is received from IPTV IN2, all other input streams from IPTV IN1.

The input port for a single stream or for all streams can also be switched manually. If the user switches the input port manually, the automatic switch-back for this stream is deactivated until the restart.

Initialization - phase 2

Click on PHASE 2, to select programs.



The **TS IDs** (transport stream IDs), the **Network ID** and the **Network Name** can be changed. If you use several MIE in a network, then the network IDs must be the same and the network name should also be the same. Transport stream IDs, on the other hand, may only be assigned once in the network.

Different LCN standards can be selected with the drop down menue **Region**.

Assigning programmes

Every tuner is assigned to a modulator. The programmes of the tuner can only be assigned to the associated modulator.

➔ For example, click on M1.

The program is assigned to modulator 1. The button of the modulator is highlighted in color (a new click on a modulator allow the assignment to be canceled. The modulator fades then again).

Chosen programs for modulators 1 to 8

Modulator	LCN	Program Name	Type	Encryption	Input
M1		Das Erste HD	TV	FTA	238.1.1.1:1234
M2		arte HD	TV	FTA	238.1.1.2:1234
M3		SWR BW HD	TV	FTA	238.1.1.3:1234
M4		SWR RP HD	TV	FTA	238.1.1.4:1234
M5		ZDF HD	TV	FTA	238.1.1.5:1234
M6		zdf_neo HD	TV	FTA	238.1.1.6:1234
M7		RTL Television	TV	FTA	238.1.1.7:1234
M8		RTL2	TV	FTA	238.1.1.8:1234

➔ Click on SAVE CHANGES.

The assignment is saved to the device.

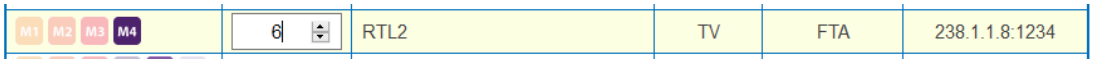
Modulator fill level

The modulator fill level is displayed in a status overlay. This status overlay can be moved on the page.

The **X** button hides the status overlay. The **Save** button saves configuration changes and then displays the new modulator fill level.

LCN (Logical Channel Numbering)

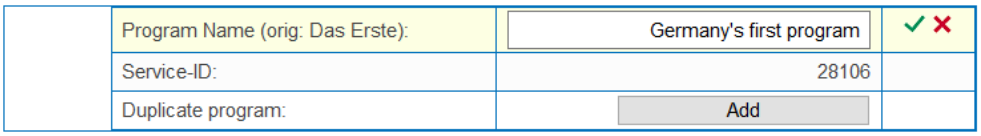
The LCN function enables channel allocation for the station scan of the TV devices.
The TV device must support the LCN function.
Different LCN standards can be set with the Region selection field. The selected LCN standard must match the connected devices for LCN to work.
An LCN can only be entered for programs assigned to a modulator.
Click on the **LCN** column for the corresponding program.



Enter the LCN with the keyboard or increase / decrease the LCN with the arrow buttons right of the number.
Enter a own LCN for each desired program.
To erease the LCN, enter 0 in the LCN column.
Click SAVE CHANGES.
The LCNs of the channels are saved.

Changing Program Name

The name of a program can be changed. The entered program name will later appear in the channel list of the connected TV sets.
Click on one of the programs.
The table with the Information opens.



Click right of the field **Program Name**.
Enter an individual program name and click on the green check mark.
This first completes the entry.
After you have changed the desired program name(s), click SAVE CHANGES.
The entered program name(s) are stored in the headend.

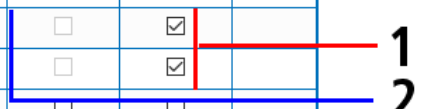
PID Filtering

The transport streams consist of packets that are identified by PIDs (Packet Identifier). Individual packets can be filtered from the transport stream if required.

Click on one of the programs.

The table with the packages contained in the program is opened.

Stream type	IN PID	OUT PID	FIXED	BLOCK
PMT	100	100	☐	☐
MPEG2 Video	101	101	☐	☐
MPEG1 Audio (deu)	102	102	☐	☐
MPEG1 Audio (mis)	*103*		☐	☑
Teletext (deu)	*104*		☐	☑
AC-3 Audio (deu)	106	106	☐	☐
Private data	84	84	☐	☐
Subtitles (deu)	105	105	☐	☐
DSM-CC	1176	1176	☐	☐
Private data	2070	2070	☐	☐
DSM-CC	2171	2171	☐	☐



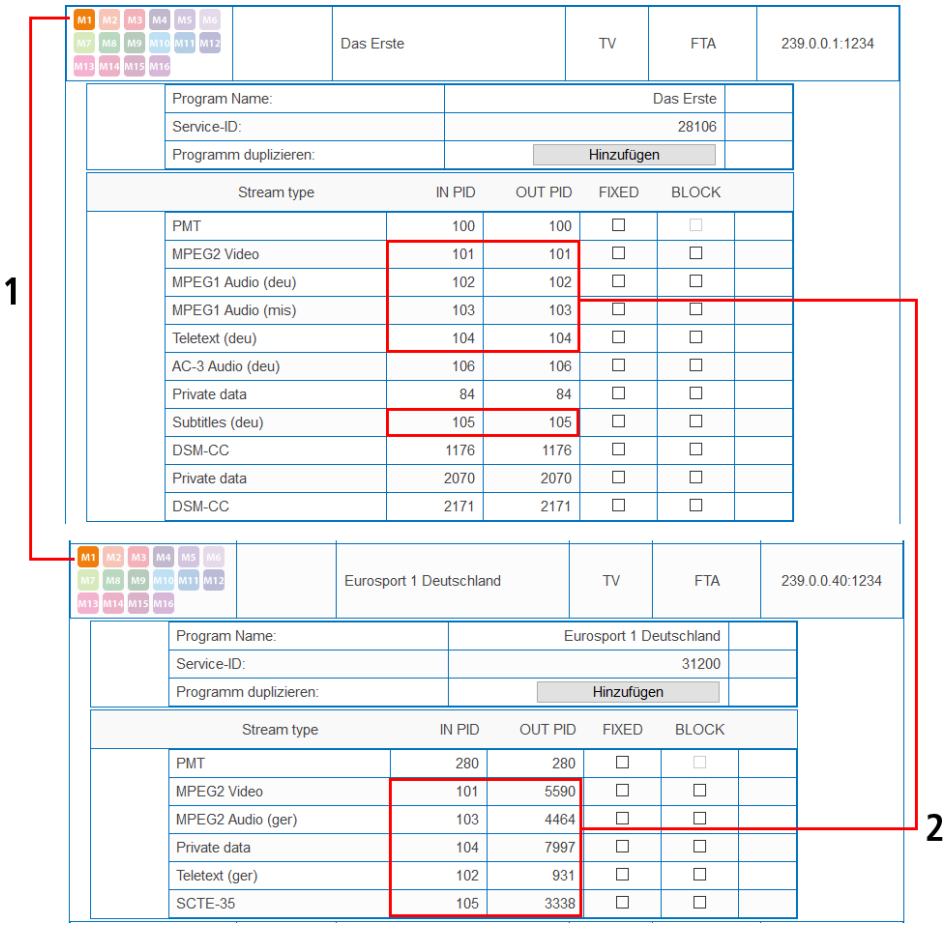
For the PIDs that you want to filter out of the transport stream, place a checkmark in the BLOCK column (1).

The package is no longer transferred in the transport stream. The OUT PID column is empty for these PIDs (2).

PID-Remapping

Automatic PID remapping

If several programs within an output modulator contain packets that have the same PID, this can cause interferences. Therefore these PIDs are re-mapped automatically.



In the example, both programs are assigned to modulator M1 **(1)**. The IN PIDs 101 to 105 are identical for both the upper program „Das Erste“ and the lower program „Eurosport“. Therefore, the PIDs are re-mapped in the lower program and other IDs are automatically entered in the OUT PID column **(2)**.

Fixing PIDs

Fixing a PID prevents PIDs from being re-mapped.
Click on one of the programs.

The table with the packages opens.

Stream type	IN PID	OUT PID	FIXED	BLOCK
PMT	280	280	☐	☐
MPEG2 Video	101	101	☑	☐
MPEG2 Audio (ger)	103	103	☐	☐
Private data	104	104	☑	☐
Teletext (ger)	102	102	☐	☐
SCTE-35	105	105	☐	☐

For the PIDs that you want to fix, set the check mark in the FIXED column.

Click SAVE CHANGES.

The fixed PIDs are saved in the headend.

Re-mapping PIDs by hand

If packets should get a very specific OUT PID, this can be entered manually.

Stream type	IN PID	OUT PID	FIXED	BLOCK	
PMT	280	280	☐	☐	
MPEG2 Video	101	110	☐	☐	✓ ✗
MPEG2 Audio (ger)	103	103	☐	☐	
Private data	104	104	☐	☐	
Teletext (ger)	102	102	☐	☐	
SCTE-35	105	105	☐	☐	

Click in the OUT PID column of the program.

Enter the PID with the keyboard or increase/decrease the PID with the arrow keys.

Click on the green check mark.

This will complete the entry first.

Click SAVE CHANGES.

The entered PIDs are saved in the headend.

Duplicating a program

Programs can be duplicated in phase 2. This allows, for example, to offer a program in two different languages at the output (arte DE/arte FR).

Click on the program to be duplicated.

The table with the program information and contents opens.

Program Name:	arte	
Service-ID:	28724	
Duplicate program:	Add	

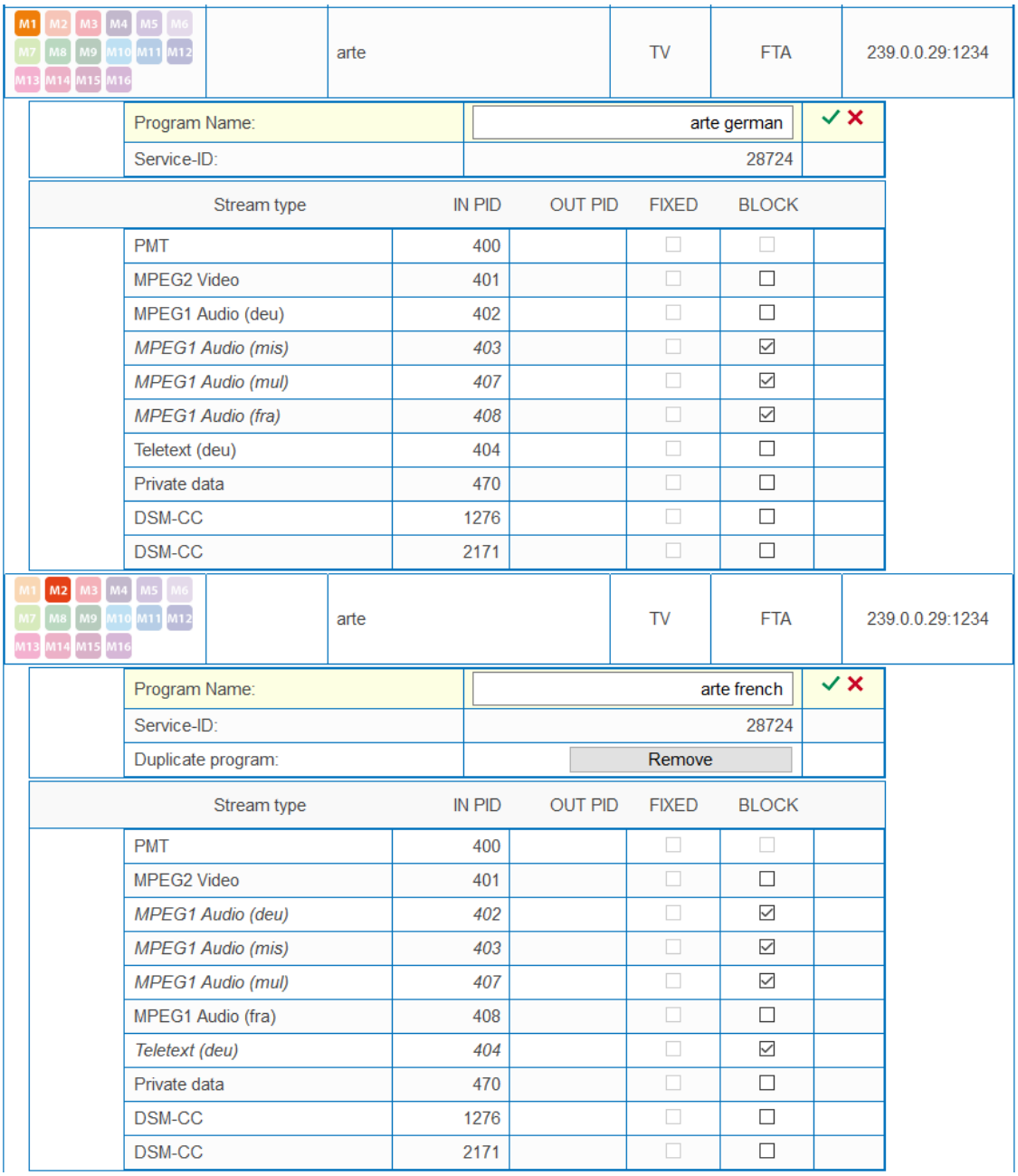
Click on **Add**.

The program is duplicated 1:1. It has the same name and the same input stream ID. It is not yet assigned to any modulator.

M1 M2 M3 M4 M5 M6 M7 M8 M9 M10 M11 M12 M13 M14 M15 M16		arte	TV	FTA	239.0.0.29:1234
M1 M2 M3 M4 M5 M6 M7 M8 M9 M10 M11 M12 M13 M14 M15 M16		arte	TV	FTA	239.0.0.29:1234

Assign the duplicated program to a different modulator than the modulator of the original program. The original and duplicated programs can now be configured differently.

In the following example two programs are configured. In one, only the German audio streams are transmitted to the output modulator, in the other the French audio streams.

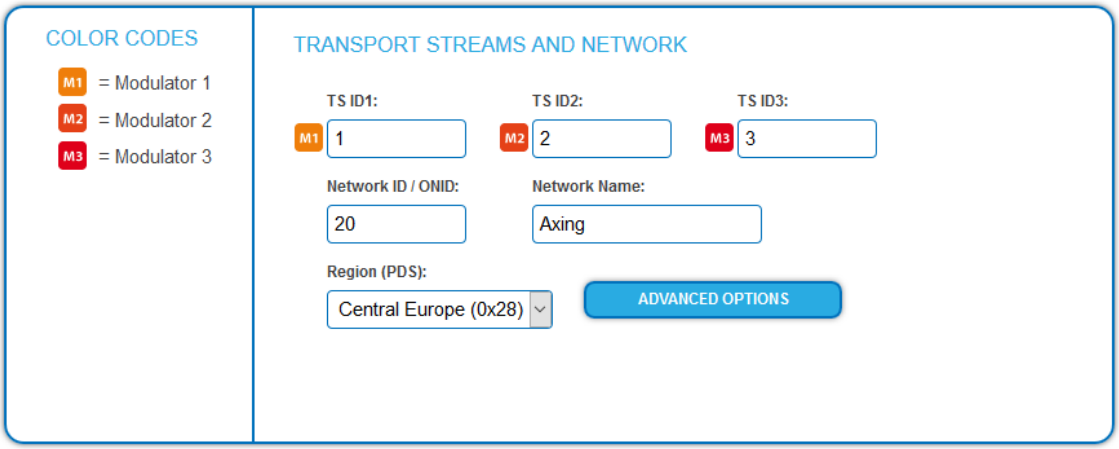


If you want to remove a duplicated program, click on **Remove**.

Notes:

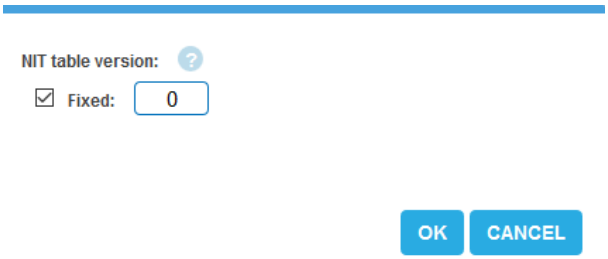
A program can only be duplicated once. After duplicating, the **Add** button disappears from the original program. Only a duplicated program can be removed again. The original program has no **Remove** button.

"Freeze" NIT version



Click on ADVANCED OPTIONS.

A dialog with options will open.



If programs change, then the NIT is recreated. In most countries, the end user does not notice, because the receivers automatically read in the new NIT. However, in some countries (eg France) end users are asked to start a channel search.

If it comes to the case that one or more stations are weak to receive, then the NIT changes frequently and the end users are always unnecessarily prompted to start a channel search.

In this case, the NIT version can be "frozen" (recommended for use in France).

Under NIT version, select Fixed.

Enter a version between 1 and 31.

Note: If the station list really changes, the channel search must be done manually.

OTA upgrade

To enable an **Over-the-Air** upgrade, two functions are available in the configuration:
Non-referenced PIDs can be manually added to the output modulators
Custom descriptors can be added to the NIT

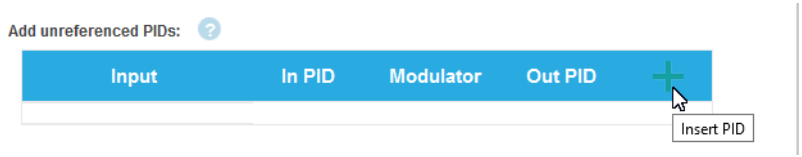
Both are located in PHASE 2 under ADVANCED OPTIONS.

Note: The function requires a valid license for “PID-Filtering” (see 0 on page 38).

Add non-referenced PIDs

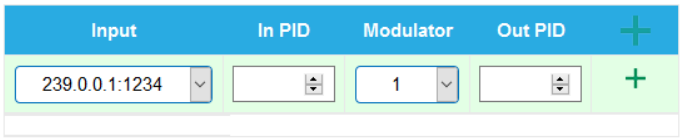
Requirement: In PHASE 1 a transport stream must already be selected which contains the unreferenced PID/PIDs.
Click in PHASE 2 on ADVANCED OPTIONS.

A dialog with options will open.

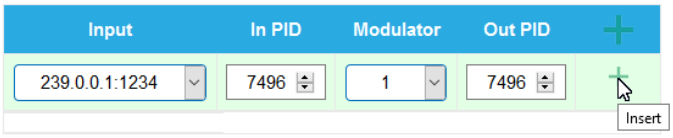


Under **Add unreferenced PIDs**, click the **green plus sign** in the table header.

A line for entering the PID is inserted.

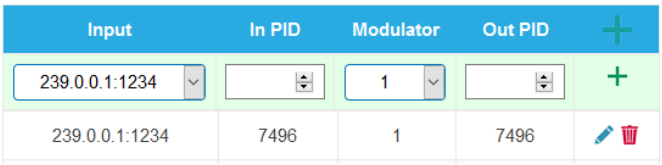


Under **Input**, select one of the available input streams.
Under **In PID**, enter an unreferenced PID.
Select the output **Modulator**.
Under **Out PID**, enter the output PID. The output PID can be the same or different from the input PID.



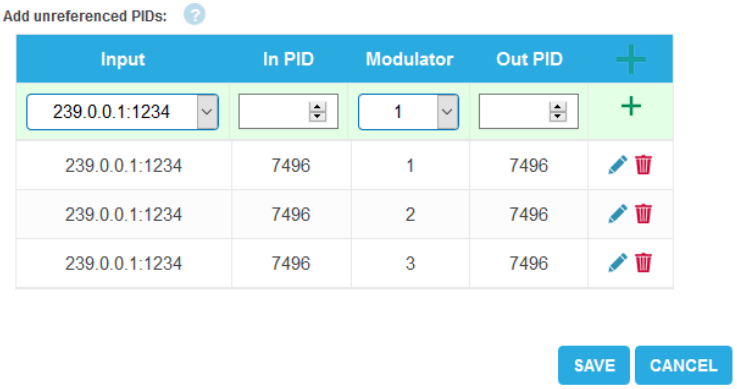
Click on the **green plus sign** next to the line.

The entered data are inserted.



If necessary, enter additional non-referenced PIDs.

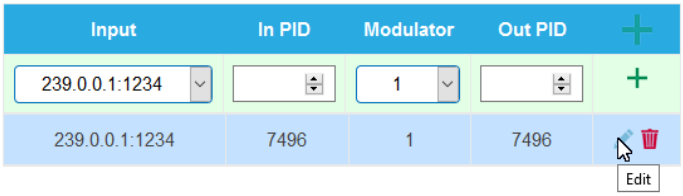
The same input PID can be added to multiple outputs if needed. Output PID value can be set separately for each output. In the example below, PID 7496 from the input stream 239.0.0.1:1234 is added to three outputs.



Click SAVE after completing the entries.

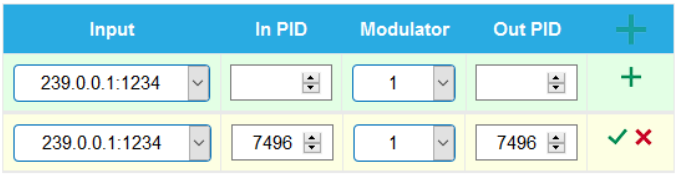
This saves the entries in the headend.

Editing or deleting entries



Click on the **pencil icon** to the right of the line.

You can now change **Input**, **In PID**, **Modulator** and **Out PID**



Then click on the **green check mark**.

The changes are accepted.

To delete, click on the **trashcan icon** to the right of the line.

The line is deleted.

Click SAVE.

This changes the entries in the headend.

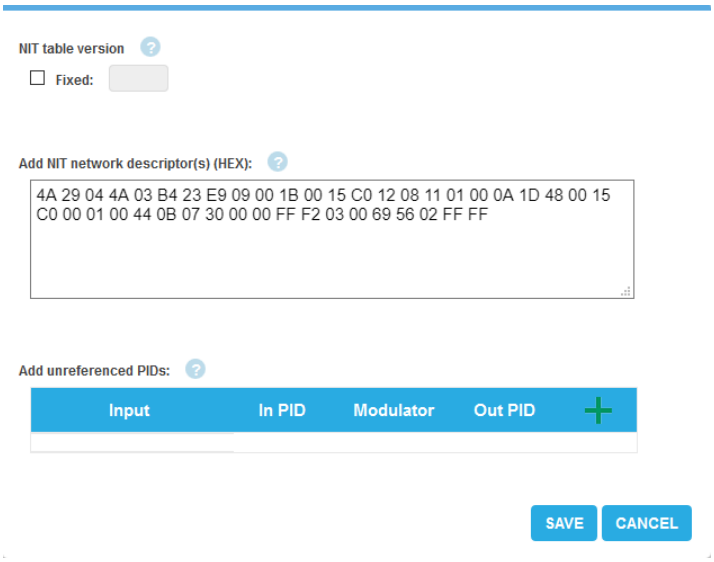
Add custom descriptors to NIT

Click in PHASE 2 on ADVANCED OPTIONS.

A dialog with options will open.

Under **Add NIT network descriptor (s) (HEX)** add Descriptor(s) in hexadecimal format and bytes separated by space.

In the example below, a custom linkage descriptor is added to the NIT.



Note: The MIE validates only the descriptor length. Incorrect entries, e.g. those that do not correspond to the DVB standard, can possibly lead to disturbances in the network.

Click SAVE after you have finished entering your data.

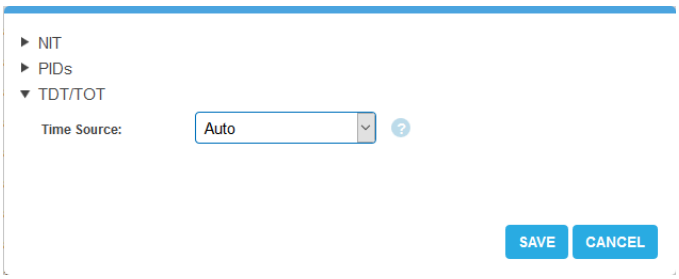
This saves the entries in the headend.

Setting options for TDT and TOT

The Time and Date Table (TDT) contains the current time in UTC format. The Time Offset Table (TOT) contains both the time in UTC and the offset to the local time zone. Both are transmitted within the transport stream to the receivers of the mobile devices in packets intended for this purpose. The source of the TDT/TOT and various options can be defined.

Click on ADVANCED OPTIONS in PHASE 2.

Open the TDT/TOT option.



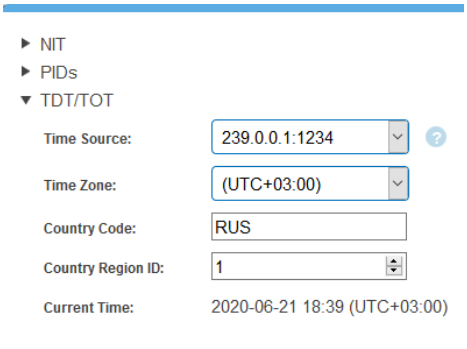
Time Source: Select the source for the time information.

Auto[1]**:** For the output modulators, the device automatically selects an IPTV input stream containing the TDT/TOT. These tables are redirected to the output modulators.

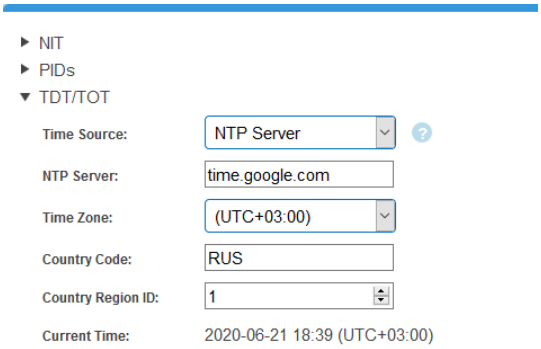
Fixed input stream (e.g. 239.0.0.1:1234): A specific input stream is used as a time reference for the output modulators. Local time zone, country code and region ID in TOT can be set with this option.

NTP Server: An NTP server is defined. The device connects to this NTP server to receive UTC time. The device generates the TDT/TOT using this time reference. This option is useful if none of the input streams contain TDT/TOT tables.

Options for a **fixed input stream**



Options for an **NTP server**



NTP server: Enter the IP address or host name of the NTP server to which the device should connect. By default, the device connects to "time.google.com".

Time Zone: Select the time zone.

Country Code: Enter the 3-digit country code. This must match the settings in the receivers.

Country Region ID: If a country has several time zones (Russia, USA, Australia, etc.), enter the region ID 1-60. If there are no different local time zones, the value 0 is used.

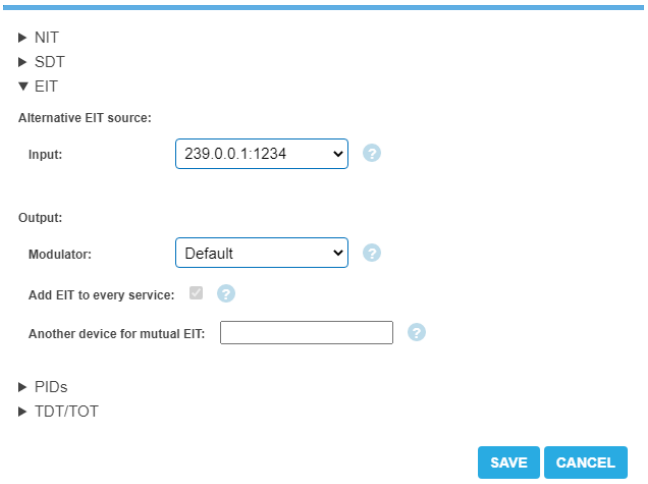
Click **Save**.

Current Time shows the time that the headend sends to the DVB network.

[1] If at least one IPTV input stream contains a TDT/TOT, the Auto option is in most cases suitable.

EIT configuration

If the SPTS/MPTS input streams do not contain all the EIT information (Event Information Table), then the EIT can be provided from a alternative EIT source.
Click on ADVANCED OPTIONS in PHASE 2.
Open the EIT option.



Select under **Alternative EIT Source**:

Input: First select the input stream that will provide the EIT.

Output/Modulator: Select an output modulator so that it passes the EIT for all.

Add EIT to every service: In the **Default** setting, each output modulator provides only the EIT information of the programmes that the output modulator contains. Select an output modulator so it provides the EIT for all programmes.

Another device for mutual EIT: If there is another MIE device on the same network, EIT information from another MIE can be added to this device (changes to the configuration are transferred to the other device within one minute).
This function has the following requirements:
The alternative EIT source must contain EIT for both MIE devices.
The MIE devices must be able to communicate with each other via the Ethernet port "Control".
Both MIE devices must have the same user password.

Initialization - phase 3

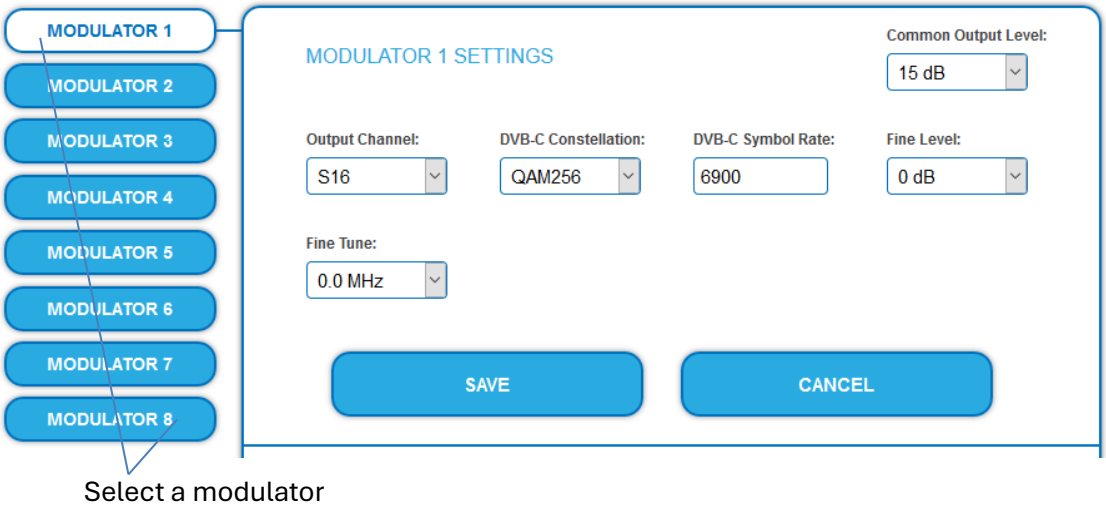
Click on PHASE 3, to modify the setting of the modulators.

The MIE 8-00, MIE 16-00 and MIE 32-00 can be changed between DVB-C and DVB-T in maintenance (see 0 on page 31).

The MIE 4-02, MIE 8-02, MIE 3-02 and MIE 6-02 modulate the output signals in DVB-T2.

MIE 8-00, MIE 16-00 and MIE 32-00 (DVB-C)

Configuration of the modulators



Select a modulator from MODULATOR 1 to MODULATOR 8 on the left.

Make the required changes.

Click SAVE for each modulator.

Only then the changes will be saved, **otherwise the changes will be lost.**

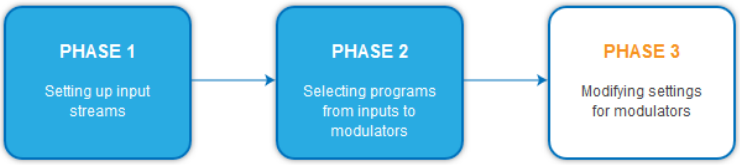
Parameters:

Common Output level	The *Common Output Level* option include a general attenuation of all modulator outputs. The highest output level is reached with a setting of 20 dB, the lowest level with a setting of 0 dB.
Output Channel	The modulators can be set to any output channel between S2 and CH 87. **No output channel may be selected more than once!**
DVB-C Constellation:	With DVB-C modulation, you can choose between 32QAM, 64QAM, 128QAM and 256QAM. 256QAM enables the highest data transmission rate, but it also requires the best network quality.
DVB-C Symbol Rate:	The DVB-C symbol rate can be freely set between 1000 and 7500. The standard value is 6900. Some networks also work with 6875. When working with a bandwidth of 7 MHz, 6111 is customary.
Fine Level	The level fine adjustment attenuates the output level of each individual modulator output separately from 0 to -3 dB.

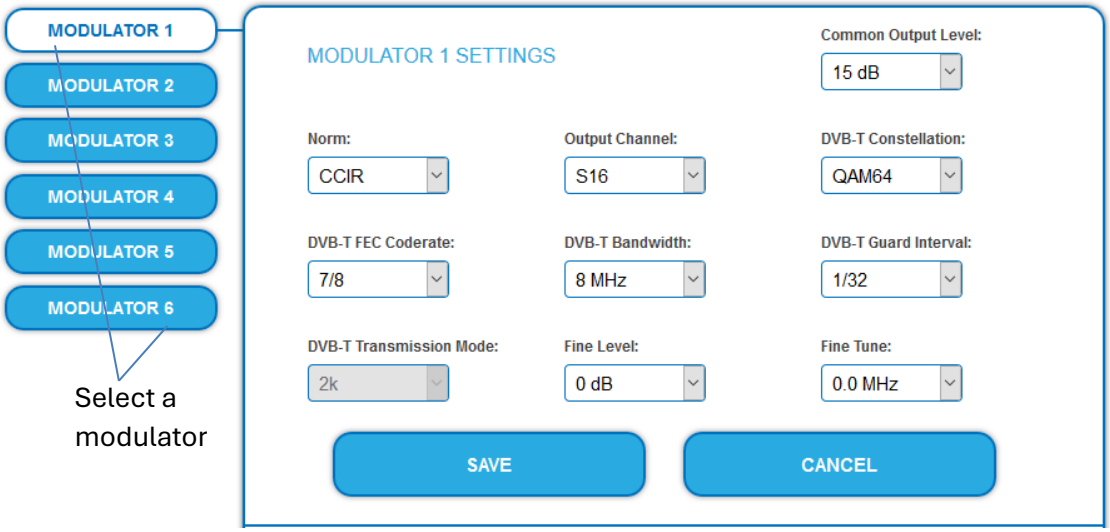
	In addition, each modulator output can be disabled (Off option).
Fine Tune	The *Fine Tune* adjustment of the output channel is performed in 0.5 MHz steps.

MIE 8-00, MIE 16-00 and MIE 32-00 (DVB-T)

Click on PHASE 3, to modify the setting of the modulators.



Configuration of the modulators



Select a modulator from MODULATOR 1 to MODULATOR 6 on the left.

Make the required changes.

Click SAVE for each modulator.

Only then the changes will be saved, **otherwise the changes will be lost.**

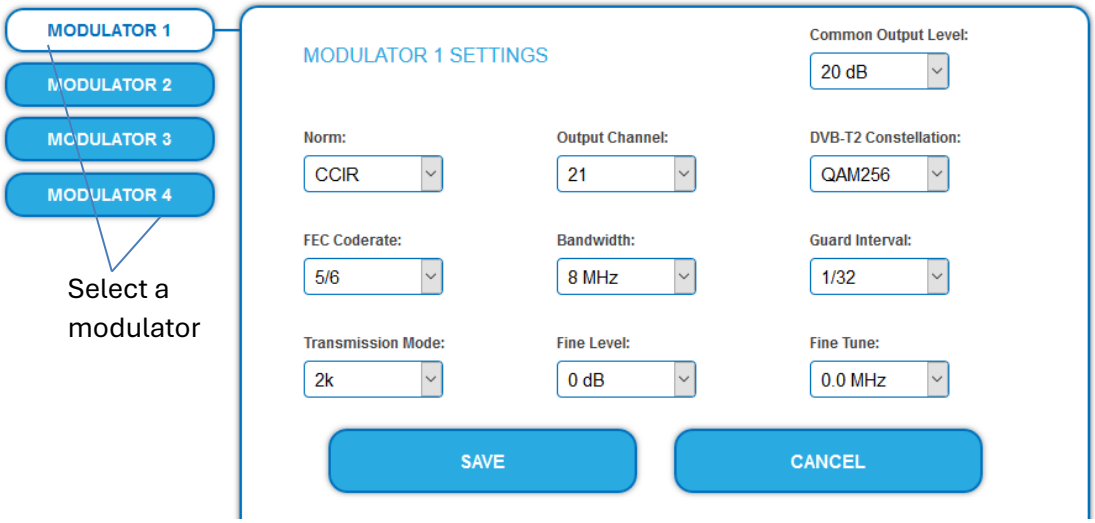
Parameters:

Common Output Level	The *Common Output Level* option include a general attenuation of all modulator outputs. The highest output level is reached with a setting of 20 dB, the lowest level with a setting of 0 dB.
Norm	In this selection field, you can set the norm for the output channel spacing. Note: Changing the norm works now according to following rules: CCIR-->Australia : all modulators forced to 7MHz Australia-->CCIR : all modulators forced to 8MHz, however with following exception: low channels S2-S20 are 7MHz only, so those remain in 7MHz
Output Channel	Each of the modulators can be set to any output channel. **No output channel may be selected more than once!**

DVB-T Constellation	The constellation can be set on QPSK, on QAM 16 or on QAM 64. The QPSK-setting provides the smallest data rate to the output channel. The QPSK-modulation process is used in bad distribution networks because of its robustness against disturbances and of its safe transmission. The QAM-modulation process allow reaching higher data rates, so that more programmes can be transmitted on a channel. The QAM 64-modulation gives the highest data rate. QPSK (2 bit) – small data rate – very robust signal. QAM 16 (4 bit) - middle data rate. QAM 64 (6 bit) - high data rate.
DVB-T FEC Coderate (forward error correction)	Thanks to the error correction, errors resulting from high-disturbed transmission routes can be balanced by restoring data. The data required to restore the signal are included in the transmitted FEC bits. Changing the FEC factor modifies the part of the FEC data in relation to the application data. A higher part of FEC data means an higher transmission redundancy. But this reduces the bandwidth for the useful data too. A FEC of 7/8 means the highest rate for the useful data and the smallest transmission redundancy. FEC 1/2 - small data rate - strong protection against errors. FEC 7/8 - high data rate - weak protection against errors.
DVB-T Bandwidth	If CCIR is selected as the **Norm**, the bandwidth of the channels can be changed. With a larger bandwidth, more data can be transmitted in one channel. By adjusting the bandwidth, the channels no longer correspond to the channel grid specified by the **Norm**.
DVB-T Guard Interval	A guard interval is transmitted between the transmitted symbols of the useful signal. The guard interval protects against inter-symbol interferences. A very long guard interval (e.g. 1/4) leads to a very low data rate. A small guard interval is usually sufficient for transmission in a coaxial distribution network.
DVB-T Transmission Mode	2k is fix
Fine Level	The level fine adjustment attenuates the output level of each individual modulator output separately from 0 to -3 dB. In addition, each modulator output can be disabled (Off option).
Fine Tune	The fine Tuning of the output channel is performed in 1 MHz steps.

MIE 4-02 and MIE 8-02 (DVB-T2)

Configuration of the modulators



Select a modulator from MODULATOR 1 to MODULATOR 4 on the left.

Make the required changes.

Click SAVE for each modulator.

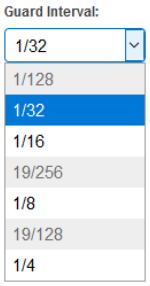
Only then the changes will be saved, **otherwise the changes will be lost.**

Parameters:

Common Output level	The *Common Output Level* option include a general attenuation of **all** modulator outputs. The highest output level is reached with a setting of 20 dB, the lowest level with a setting of 0 dB.
Norm	In this selection field, you can set the norm for the output channel spacing. Note: Changing the norm works now according to following rules: CCIR-->Australia : all modulators forced to 7MHz Australia-->CCIR : all modulators forced to 8MHz, however with following exception: low channels S2-S20 are 7MHz only, so those remain in 7MHz
Output Channel	Each of the modulators can be set to any output channel. **No output channel may be selected more than once!**
DVB-T2 Constallation	The modulation can be adjusted to the following methods: QPSK (2 bit) – small data rate – very robust signal. QAM 16 (4 bit) - low data rate. QAM 64 (6 bit) - middle data rate. QAM 256 (8 bit) - high data rate.
FEC Coderate	Thanks to the error correction, errors resulting from high-disturbed transmission routes can be balanced by restoring data. The data required to restore the signal are included in the transmitted FEC bits. Changing the FEC factor modifies the part of the FEC data in relation to the application data (1/2, 3/5, 2/3, 3/4, 4/5, 5/6). A higher part of FEC data means an higher transmission redundancy. But this reduces the bandwidth for the useful data too. FEC 1/2 - small data rate - strong protection against errors. FEC 5/6 - high data rate - weak protection against errors.

Bandwidth	If CCIR is selected as the **Norm**, the bandwidth of the channels can be changed. With a larger bandwidth, more data can be transmitted in one channel. By adjusting the bandwidth, the channels no longer correspond to the channel grid specified by the **Norm**.
Guard Interval	A guard interval is transmitted between the transmitted symbols of the useful signal. The guard interval protects against inter-symbol interferences. A very long guard interval (e.g. 1/4) leads to a very low data rate. A small guard interval is usually sufficient for transmission in a coaxial distribution network.
Transmission Mode	The transmission mode can be set between 1k and 4k. 4k allows the shortest guard interval and the highest data transmission.
FEC length	An FEC frame with 64k FEC length or a (short) one with 16k FEC length can be configured.
L1-Post Constellation	The L1 post signaling contains parameters that provide information to the receiver. Constellation types BPSK, QPSK, QAM16 and QAM64 can be configured for L1 post signaling. L1 pre-signalling is always BPSK modulated.
Pilot Pattern	Depending on the Guard Interval and the transmission mode, Pilot Pattern PP1 to PP8 can be selected.
Fine Level	The level fine adjustment attenuates the output level of each individual modulator output separately from 0 to -3 dB. In addition, each modulator output can be disabled (Off option).
Fine Tune	The fine tuning of the output channel is performed in 0.5 MHz steps.

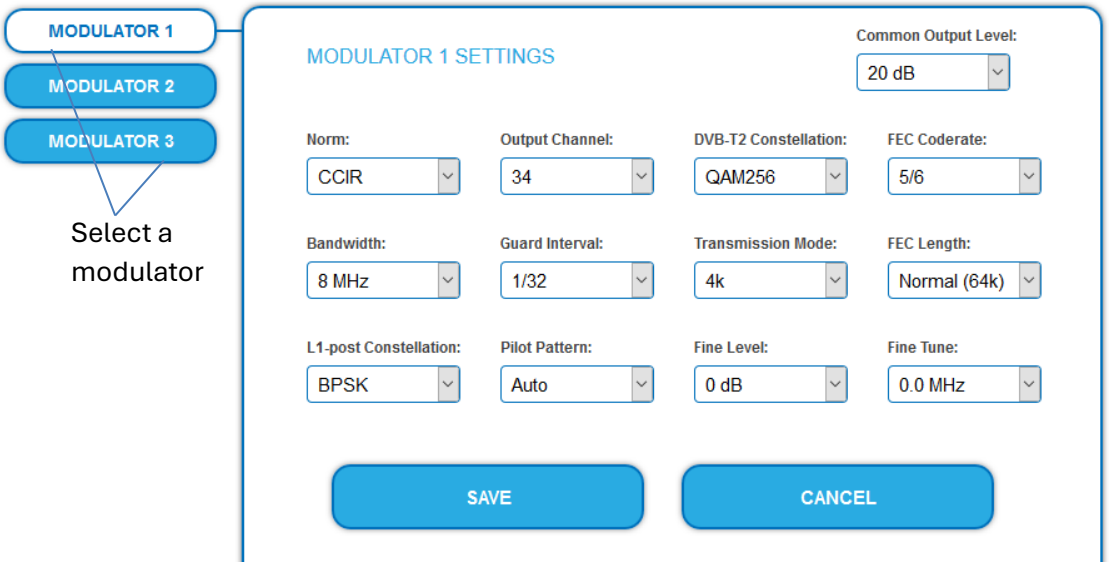
Note



Some configuration options are dependent on each other. In this case, selectable values are highlighted in white, non-selectable values in gray.

MIE 3-02 and MIE 6-02 (DVB-T2)

Configuration of the modulators



Select a modulator from MODULATOR 1 to MODULATOR 3 on the left.

Make the required changes.

Click SAVE for each modulator.

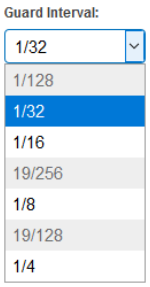
Only then the changes will be saved, **otherwise the changes will be lost.**

Parameters:

Common Output level	The *Common Output Level* option include a general attenuation of **all** modulator outputs. The highest output level is reached with a setting of 20 dB, the lowest level with a setting of 0 dB.
Norm	In this selection field, you can set the norm for the output channel spacing. Note: Changing the norm works now according to following rules: CCIR-->Australia : all modulators forced to 7MHz Australia-->CCIR : all modulators forced to 8MHz, however with following exception: low channels S2-S20 are 7MHz only, so those remain in 7MHz
Output Channel	Each of the modulators can be set to any output channel. **No output channel may be selected more than once!**
DVB-T2 Constallation	The modulation can be adjusted to the following methods: QPSK (2 bit) – small data rate – very robust signal. QAM 16 (4 bit) - low data rate. QAM 64 (6 bit) - middle data rate. QAM 256 (8 bit) - high data rate.
FEC Coderate	Thanks to the error correction, errors resulting from high-disturbed transmission routes can be balanced by restoring data. The data required to restore the signal are included in the transmitted FEC bits. Changing the FEC factor modifies the part of the FEC data in relation to the application data (1/2, 3/5, 2/3, 3/4, 4/5, 5/6). A higher part of FEC data means an higher transmission redundancy. But this reduces the bandwidth for the useful data too. FEC 1/2 - small data rate - strong protection against errors. FEC 5/6 - high data rate - weak protection against errors.

Bandwidth	If CCIR is selected as the **Norm**, the bandwidth of the channels can be changed. With a larger bandwidth, more data can be transmitted in one channel. By adjusting the bandwidth, the channels no longer correspond to the channel grid specified by the **Norm**.
Guard Interval	A guard interval is transmitted between the transmitted symbols of the useful signal. The guard interval protects against inter-symbol interferences. A very long guard interval (e.g. 1/4) leads to a very low data rate. A small guard interval is usually sufficient for transmission in a coaxial distribution network.
Transmission Modes	The transmission mode can be set between 1k and 8k (ext). 8k (ext) allows the shortest guard interval and the highest data transmission.
FEC length	An FEC frame with 64k FEC length or a (short) one with 16k FEC length can be configured.
L1-Post Constellation	The L1 post signaling contains parameters that provide information to the receiver. Constellation types BPSK, QPSK, QAM16 and QAM64 can be configured for L1 post signaling. L1 pre-signalling is always BPSK modulated.
Pilot Pattern	Depending on the Guard Interval and the transmission mode, Pilot Pattern PP1 to PP8 can be selected.
Fine Level	The level fine adjustment attenuates the output level of each individual modulator output separately from 0 to -3 dB. In addition, each modulator output can be disabled (Off option).
Fine Tune	The fine tuning of the output channel is performed in 0.5 MHz steps.

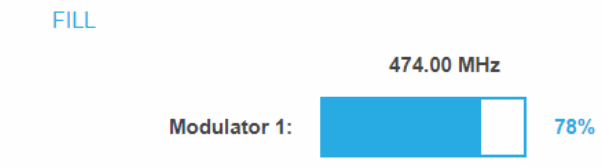
Note



Some configuration options are dependent on each other. In this case, selectable values are highlighted in white, non-selectable values in gray.

Fill level

The data rate of the sender may vary depending on the image contents and on the transmission quality. To ensure an undisturbed reception, a reserve must absolutely be observed.



We recommend you to set the maximal fill level to 95%.

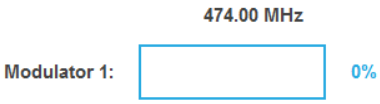
If the current fill level exceeds the maximal fill level, it may cause image disturbances, e.g. mosaic images.

If the net data rate of the signal exceeds the net data rate of the output channel, the modulator overflows. This overflow leads to disturbances. If the modulator overflows, the status LED on the front side of the device lights in red.

Filtering the programmes reduces the net data rate of the input signal. Subsequently, the net data rate of the output signal is also reduced. The data rate depends furthermore on:
channel bandwidth (7 or 8 MHz)
error correction rate (FEC)
modulation rate
guard interval
transmission mode

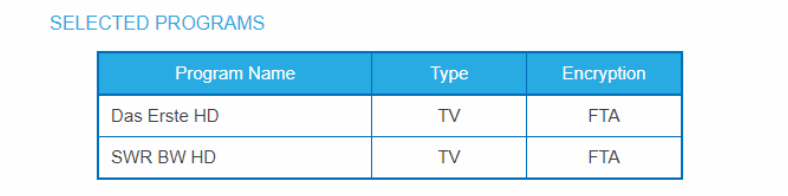
Device Redundancy

If a device is used as a **backup device** for another device, it will indicate that the modulators are disabled and no levels will be displayed.



Selected Programmes

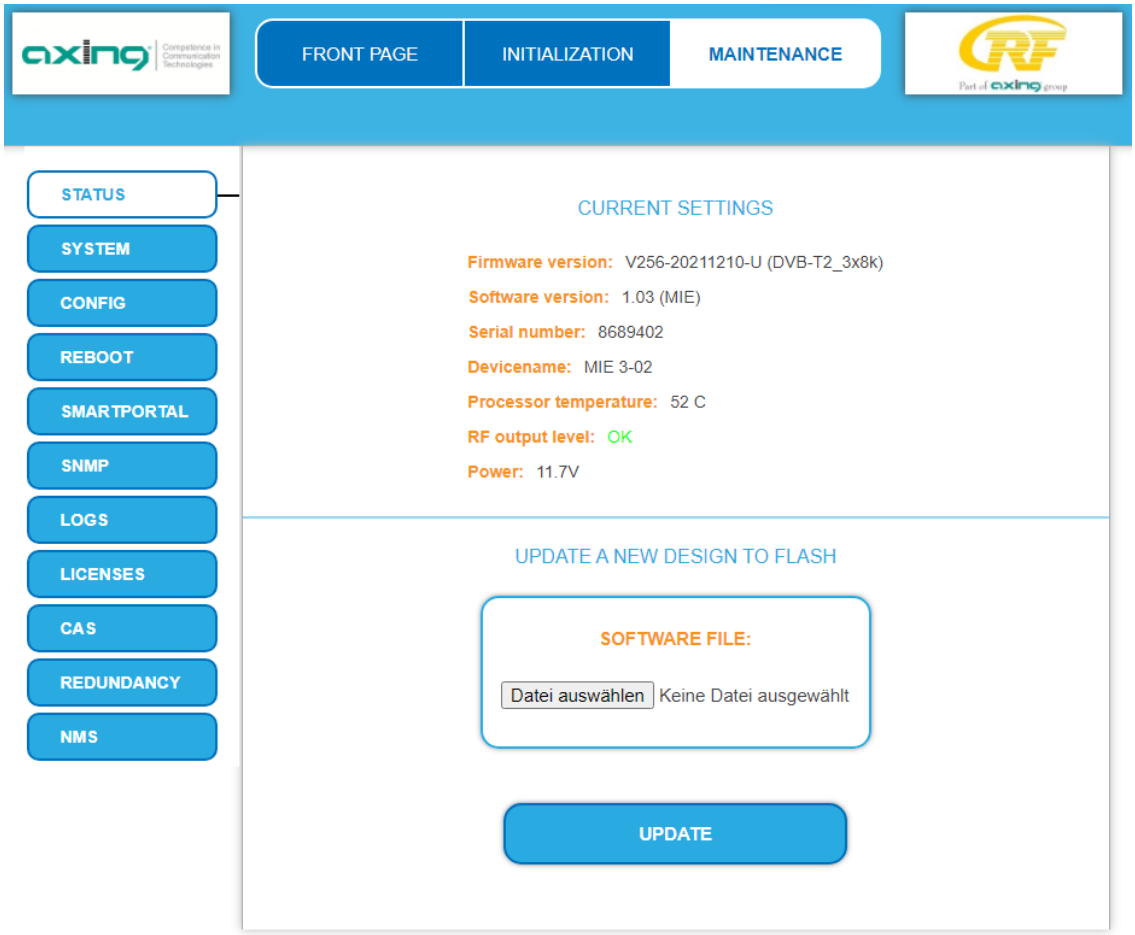
The programme table SELECTED PROGRAMS shows the programmes that were activated in phase 2.



Maintenance

The menu entry MAINTENANCE enables software updates, changing the IP address, changing the password, restarting the device and much more.

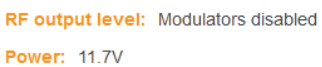
Status



Under Current Settings, you will find the following information:
Firmware version: Displays the firmware version and the output modulation type.
Software version: Displays the version of the interface
Serial number of the device
Device name
Some important technical data

Device Redundancy

If a device is used as a **backup device** for another device (see **Virhe. Viitteen lähdettä ei löytynyt.** on page **Virhe. Kirjanmerkkiä ei ole määritetty.**), it will indicate that the modulators are disabled.



Updating software

NOTICE

After an update, initialization data saved with older Software versions can be loaded into the device with a newer Software version.

Initialization data saved with the current Software versions can **not be loaded** into devices with an **older Software** version.

Therefore, if possible, make a Software update of all devices.

We recommend the AXING SMARTPortal for easier handling and overview.

Download

You can find software updates by entering the article in the search field at www.axing.com.

Download the current version of the file to your computer and unpack it.

Update

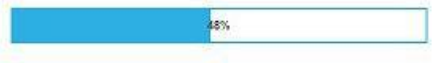
New software for the graphical user interface can be installed under SOFTWARE FILE.

Click under SOFTWARE FILE on „Browse…“.

Browse for the file on your computer.

Click on UPDATE.

The file will be uploaded to the device.



After this the update of the device begins, the remaining time ist shown as a countdown.

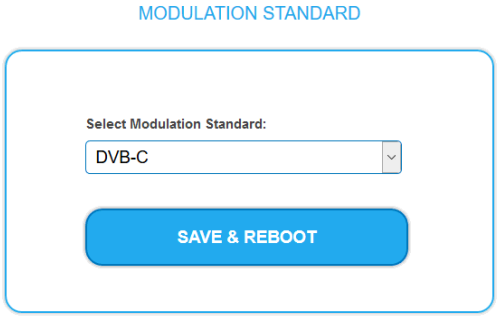
The device will be automatically rebooted after an update. The enter password dialog will be displayed.

After the Update, log in again.

Output (MIE 8-00, MIE 16-00 and MIE 32-00 only)

Modulation standard

Depending on the modulation standard the output signals are modulated into DVB-C or DVB-T.



Select a **Modulation Standard**.
Click SAVE & REBOOT.

The changing of the modulation standard begins, the remaining time ist shown as a countdown.

The headend will be automatically rebooted, the enter password dialog will be displayed.
Enter the password again.
Check especially the modulator settings and their fill level.

System

Changing the IP addresses

The network options are configured under the menu item MAINTENANCE> SYSTEM OPTIONS.

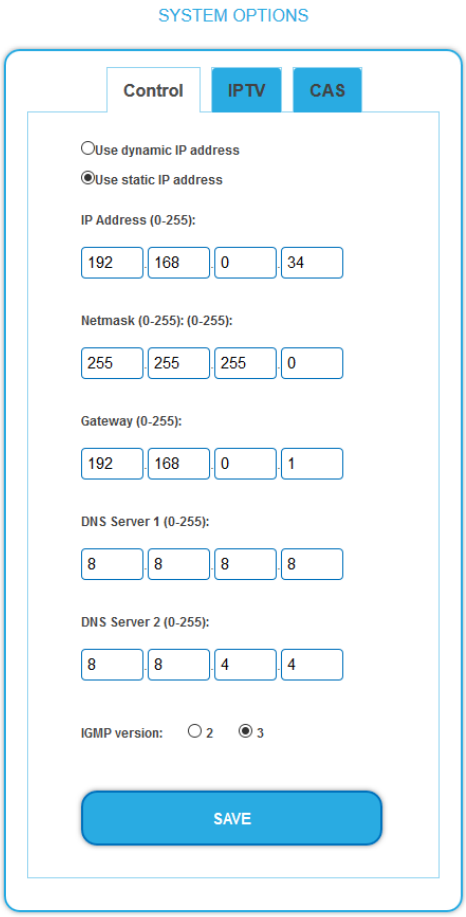
There you will find the following tabs:
Control: IP address of the Configuration interface
IPTV: IP address of the IPTV input interface
CAS: IP address of the access to a CA Simulcrypt server[2]

Dynamic IP adress

Use dynamic IP address to connect the device to a network with a DHCP server.

Static IP adress

Use a static IP address to connect the device to a network with a fixed IP address. The IP address, netmask and the gateway can be changed here. In addition, DNS server 1 and DNS server 2 can be entered.



Click SAVE to confirm and save the changes.

If the IP address of the Control or CAS port is changed, then this will not interrupt the IPTV signal. If the IP address of the IPTV port is changed, the IPTV signal is interrupted for 1 to 2 seconds.

IGMP version

IGMP version 3 is set at the factory. If necessary, IGMP version 2 can be selected.

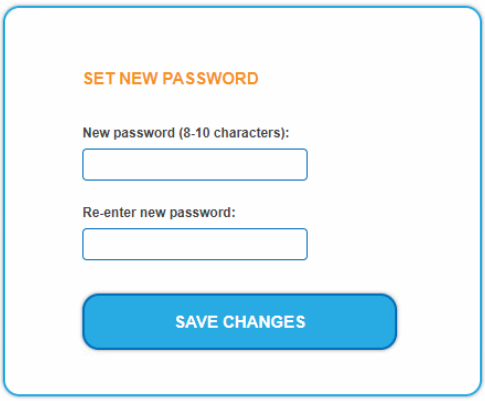
---

[2] available later

Changing the password

The default password is: *Ramsen8262*.

The default password should be changed right after commissioning the device.



Type an new password with 8-10 characters (letters and/or digits).

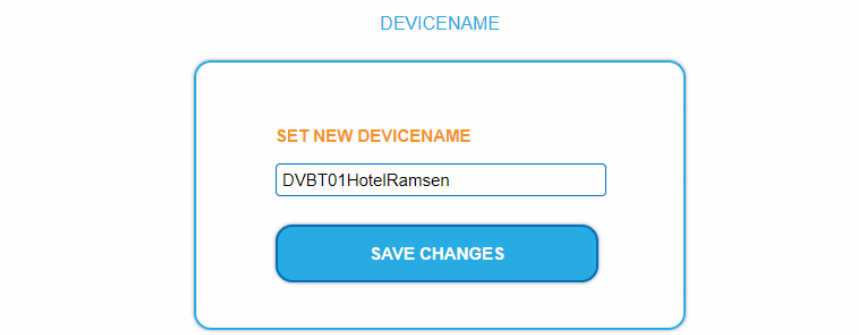
Re-enter the password.

Click SAVE CHANGES to confirm and save the changes.

When the changes are saved, the frontpage will be shown.

Device name

In the section DEVICE NAME you can set a new device name for the device.



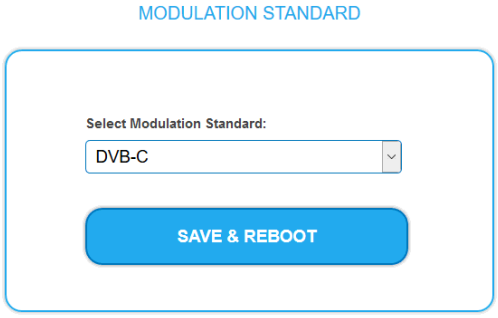
Enter a name in the field SET NEW DEVICE NAME.

Click on SAVE CHANGES.

The new device name is shown at the login.

Modulation standard

Depending on the modulation standard the output signals are modulated into DVB-C or DVB-T.



Select a **Modulation Standard**.

Click SAVE & REBOOT.

The changing of the modulation standard begins, the remaining time ist shown as a countdown.

The device will be automatically rebooted, the enter password dialog will be displayed.
Enter the password again.

Check especially the modulator settings and their fill level.

Config

Erasing service data

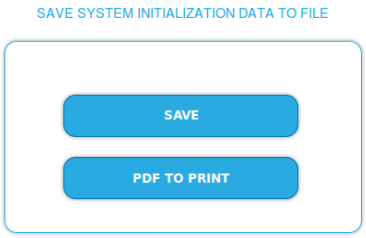
In the section ERASE SERVICE DATA you can erase the settings of phase 1 and phase 2. The input streams and the selection of programs are deleted.

Click on erase.

The frontpage will be shown.

Save initialization data

In the section SAVE SYSTEM INITILIZATION DATA TO FILE you can save the current initilization data from phase 1 to 3 into a file on your computer.



Click on SAVE.

The data will be saved in a file called config.dat at the download folder on your computer.

Click on PDF TO PRINT.

A PDF will be generated and saved in a file called config.pdf at the download folder on your computer.

Note: Password and IP adress will not be saved.

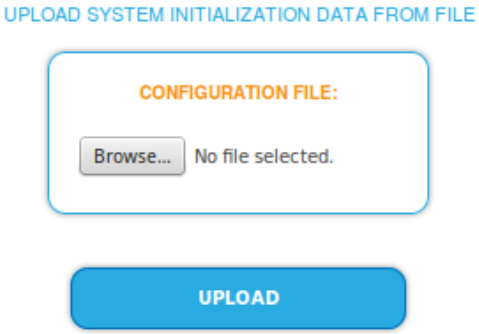
Upload initialization data

In the section UPLOAD SYSTEM INITILIZATION DATA FROM FILE you can upload the initiaization data from a file to the modul.

NOTICE

After an update, initialization data saved with older software versions can be loaded into the device with a newer Software version.

Initialization data saved with a newer software versions can **not be loaded** into devices with an **older Software** version.



➔ Choose a configuration file.

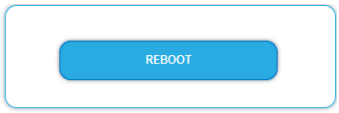
➔ Click on UPLOAD.

The upload will take a few seconds.

Reboot

Rebooting

Under REBOOT THE SYSTEM the device can be rebooted.



Click on REBOOT.

After rebooting, the password must be entered again.

SMARTPortal

Access to SMARTPortal

If you are a registered user of the SMARTPortal, then you can remotely control the device via the SMARTPortal and, if necessary, receive support from AXING.

Prerequisite is an internet connection for the device.

In the **State** field, select **Enabled**.

Activate, if required, the option **AXING support allowed**.

In the field **Location**, enter a name for the location of the device. This name will appear later in the SMARTPortal to help you identify the device.

In the field **Email address**, enter the e-mail address with which you are registered at SMARTPortal.

In the field **User key**, enter the user key that you received when registering at SMARTPortal.

Click on SAVE & REBOOT. The data is saved, the device is rebooted and the connection to the SMARTPortal is established.

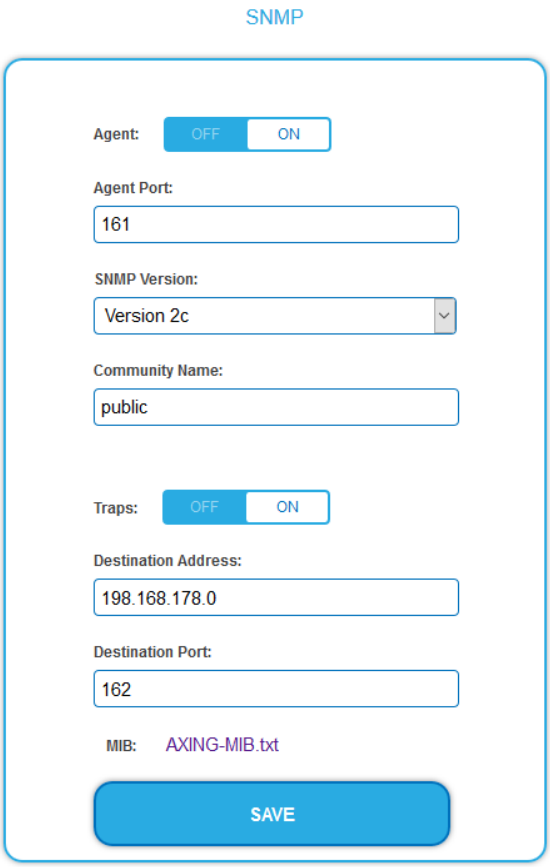
Where required, you have to adjust the connection data (see 0 on page 32).

SNMP

SNMP (Simple Network Management Protocol)

The Simple Network Management Protocol (SNMPv1 or SNMPv2c) is supported. With the help of a Network Management Station (NMS) information can be read or alarms can be received.

Supported SNMP message types are GET-REQUEST, GETNEXT-REQUEST and TRAP.



SNMP Agent

Set the **Agent** switch to **ON** to use GET-REQUEST and GETNEXT-REQUEST.

The **Agent Port** is by default 161, if necessary enter another port.

In the **SNMP Version** field, select version SNMPv1 or SNMPv2c. SNMPv2c is recommended.

The **Community Name** (the SNMP "password") is public by default, if necessary enter a different community name.

Traps

Traps can also be output independently of the SNMP agent.

If traps are to be transmitted from the device, then set the **Traps** switch to **ON**.

Enter the **Destination Address** of the NMS receiving traps.

Enter **Destination Port** of NMS, by default 162 is used.

MIB object definition

The MIB object definition is stored in the device.

Click AXING-MIB.txt to open the definition.

If you are connected to the device in the network, then you can download the file from the device.
URL = [IP address of device] /MIB/AXING-MIB.txt
For example: 192.168.0.145/MIB/AXING-MIB.txt

Notes on support for OpManager and Paessler PRTG Network Monitor

When adding a device, check that the credentials ("password") has been used.

By default, the MIE supports the "SNMP v1/v2 Public" profile (community name "public").

The following SNMP settings must be changed to also display the CPU load:
Select Axing Device → Settings
Scroll down to "SNMP Compatibility Options".
Disable "Inherit from".
Change the Walk Mode value to: "Use GETNEXT requests".
Click Save.

LOGS

Log entries

Under LOGS you can see the log entries of the headend.
The system log is written to the flash memory, so it is still available after rebooting the headend.
The status log is written to RAM and is empty after rebooting the headend.
Choose **Statuslog**.

The entries of the status log are displayed.

Choose **Systemlog**.

The entries of the system log are displayed.

Click SAVE LOG to save the respective log entries as a txt file.
Click on ERASE LOG to delete the respective log entries.

Licenses for Software Extensions

Software extensions can be used to extend the functions of a headend. You require a license for a software extension.

Purchase licenses

You can purchase a license by ordering the appropriate software extension from AXING. When ordering, you must provide the serial number of the headend. A license file will be generated for you to match exactly this serial number.
Important: The license is bound to the serial number and is not transferable to other devices!

Load license file

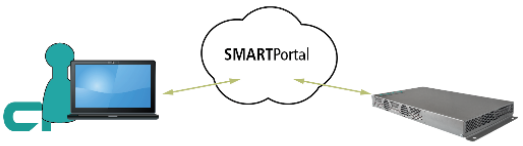
Licenses can be loaded onto the headend in different ways:

By AXING support via remote maintenance software (e.g. TeamViewer):

- The headend must be connected to a PC/notebook via Ethernet.
- The notebook requires Internet access.
- You need a valid software license and the current version of the remote maintenance software.

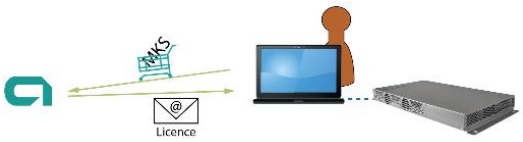
By the user or AXING support via SMART Portal:

- The headend must be integrated into the SMART Portal and requires Internet access.
- If AXING support should upload the license file, the option Allow AXING support must be activated for the headend.



By the user in the configuration interface:

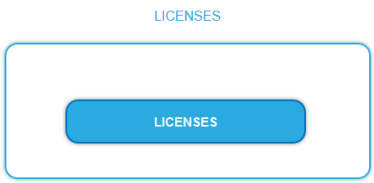
- You have ordered a software extension and received a license file by e-mail.
- You upload the license file (SN.lic) in the configuration interface of the headend under MAINTENANCE>LICENSES.



Note: The new function is only available after a restart of the headend.

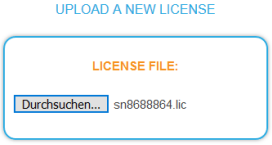
Click on LICENCES.

The dialog ACTIVATED LICENSES will be opened.

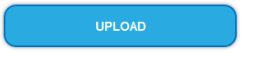


- The already activated licenses and their expiration date are displayed (permanent means that the license never expires).

Under UPLOAD A NEW LICENSE, select a LICENSE FILE.

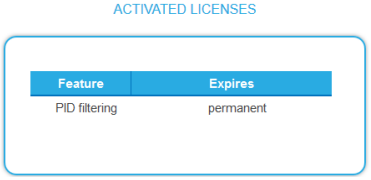


Click on UPLOAD.



The upload will take a few seconds.

The new license is listed in the ACTIVATED LICENSES dialog.

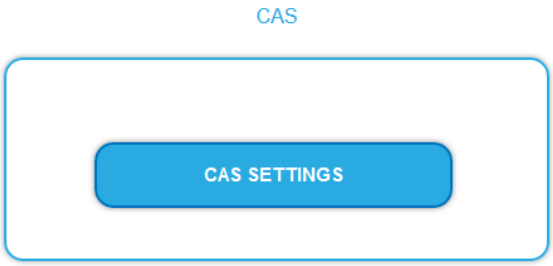


Reboot the device and log in again. **The new function is only available after a restart of the headend.**

CAS Simulcrypt (with MKS 1-02)

The setup for the conditional access system requires the installation and configuration of a CAS server, which generates ECMs and EMMs, among other things. Setting up a CAS server is not described in this document.

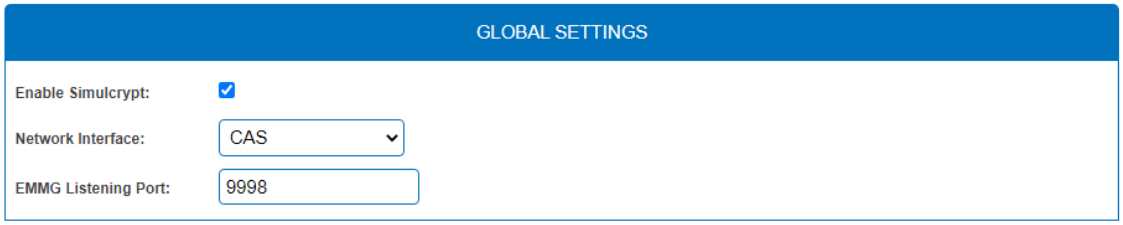
To configure the settings for the headend unit, you must have a corresponding licence (see 0 on page 38). If this licence is activated in the headend, the necessary settings can be made under CAS.



Click on CAS SETTINGS.

Several fields and tables for the CAS settings are displayed.

Global Settings



Enable Simulcrypt: Enable or disable Simulcrypt (license needed to activate).

Network interface used for all simulcrypt-related network traffic, option values:
Control (Configuration port)
IPTV (IPTV input)
CAS (CAS port)

The IP address of the port must be configured for EMMG (CAS server), see 0 on page 32.

EMMG Listening Port: TCP port configured in EMMG (CAS server) to connect the headend.

CAS List

The table is used to assign readable names to CAS-IDs in order to be able to assign them more easily in the following tables.

CAS LIST

Name	CAS ID	Sub ID
Conax	0x0B00	0x0001
Test	0x1234	0x5678
Verimatrix	0x5604	0x0000

Add here all connected CA-Systems. Each CA-System is identified by two IDs, the “CA system id” (**CAS ID**) and “CA subsystem id” (**Sub ID**)[3].

Scrambling Control Groups (SCG)

This table lists all Scrambling Control Groups used in the device. Programs connected to the same SCG are scrambled at the same time with the same control word (encryption key). Each SCG can contain one or more program. Programs are connected to SCGs at page Phase2 (see 0 on page 44).

SCG LIST						
Name	Algorithm	Scrambling Policy	Fallback	Crypto Period (sec)	Status	+
Conax 2501	DVB-CSA-1	All ECMGs	Keep last CW	15	●	✎ 🗑
Conax 2504	DVB-CSA-1	All ECMGs	Keep last CW	15	●	✎ 🗑
Conax 2511	DVB-CSA-1	All ECMGs	Keep last CW	15	●	✎ 🗑
Conax 2521	DVB-CSA-1	All ECMGs	Keep last CW	15	●	✎ 🗑
Conax 2531	DVB-CSA-1	All ECMGs	Keep last CW	15	●	✎ 🗑
Conax 2505	DVB-CSA-1	All ECMGs	Keep last CW	15	●	✎ 🗑

Name: Only used in GUI to easily identify the scrambling groups. Therefore groups should have descriptive names to enable easy identification at Phase2 when connecting programs to SCGs.
Algorithm (scrambling algorithm) option values:

disabled : scrambling for this SCG is actually disabled
DVB-CSA-1 : common scrambling algorithmus with reduced entropy, 48 bit keys
DVB-CSA-2 : common scrambling algorithmus with full length keys, 64 bit keys
DVB-CISSA : common IPTV software-oriented scrambling algorithm
ATIS-IDSA : ATIS – IIF default scrambling algorithm
AES-ECB : advanced encryption standard electronic code book mode
AES-CBC : advanced encryption standard cipher block chaining mode

Scrambling Policy option values:

All ECMGs : Programs connected to this SCG are scrambled only if all ECMGs are connected
Any ECMG : Programs connected to this SCG are scrambled as long as at least one ECMG is connected
Always : Programs are scrambled always. If all ECMG connections are lost, no one is able to descramble.

Fallback: (Fallback rule) in case Scrambling Policy (defined above) is not fulfilled. Option values:

Revert to clear : Stop scrambling. Subscribers will receive programs as unscrambled. Also non-subscribers are able to view the content.
Keep last CW : Scrambling is continued using the last CW and the last received ECM. Subscribers are able to continue the descrambling.

Crypto Period (sec) Min. period in seconds for one control word (encryption key). Also ECM generator can specify a minimum period it supports and in this case larger of these two values is used.

[3] Sometimes both values can be seen combined to a single “Super CAS ID”.

Status (scrambling status) shown as traffic lights, to provide a quick visual feedback.

ECM Generators

ECM generator is provided by CAS supplier to produce ECM messages.

ECM GENERATOR LIST						
Name	Channel ID	Remote IP	Port	CAS	Status	+
Conax	1	192.168.0.100	8007	Conax	●	✎ 🗑

Name: Only used in web interface to easily identify separate ECMG servers
Channel ID <optional>: 'ECM_channel_id' used when communicating with ECMG. Some ECMGs require a specific value for this ID (info if necessary from the CAS supplier). If left empty, device uses some unused random ID.
Remote IP: IP address of the ECMG server to connect to.
Port: Port of the ECMG server to connect to.
CAS: CA system of this ECMG (name from the CAS table)
Status: ECMG server connection status shown as traffic lights

ECM List

ECM contains CAS supplier private information which carries the control word (encryption key) in a secure manner and private entitlement information. Each ECM entry corresponds to one generated ECM stream. Each SCG requires at least one ECM stream, otherwise nobody is able to descramble.

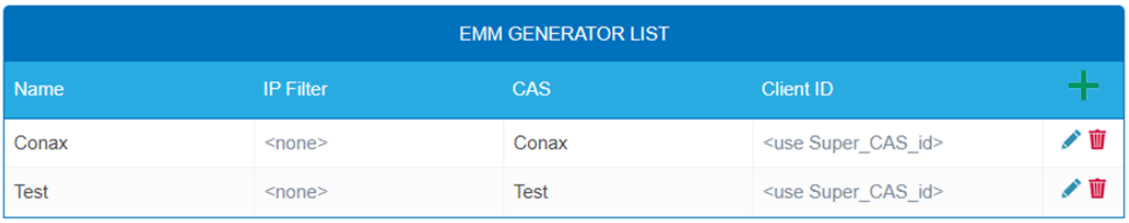
ECM LIST						
ECM Generator	ECM ID	SCG	Access Criteria	Private Data	Status	+
Conax	2501	Conax 2501	00 00 09 C5	<empty>	●	✎ 🗑
Conax	2504	Conax 2504	00 00 09 C8	<empty>	●	✎ 🗑
Conax	2505	Conax 2505	00 00 09 C9	<empty>	●	✎ 🗑
Conax	2521	Conax 2521	00 00 09 D9	<empty>	●	✎ 🗑
Conax	2511	Conax 2511	00 00 09 CF	<empty>	●	✎ 🗑
Conax	2531	Conax 2531	00 00 09 E3	<empty>	●	✎ 🗑

ECM Generator: ECM generator responsible for generating this ECM stream (value from ECM Generator list)
ECM ID <optional>: 'ECM_id' used when communicating with ECMG. Some ECMGs may require a specific value for this (info from CAS supplier). If left empty some random ID is used.
SCG: Scrambling Control Group whose control words are transmitted by this ECM (value from SCG table)
Access Criteria: Arbitrary binary data transmitted to the ECMG. Typically used to tell the ECMG which clients should be able to decode the ECMs. Format and value is given by CAS supplier.
Private Data: Arbitrary binary data included as 'private_data' in the CA_descriptor of the PMT associated to this ECM (info from CAS supplier).
Status: ECM stream status shown as traffic lights.

EMM Configuration

EMM contains CAS supplier private information which for example specifies the authorization levels of subscribers or groups of subscribers. EMM generator is an external server from CAS supplier which produces EMM messages and repeatedly sends them to the headend.

EMM configuration is divided to two tables: **EMM Generator List** and **EMM List**.



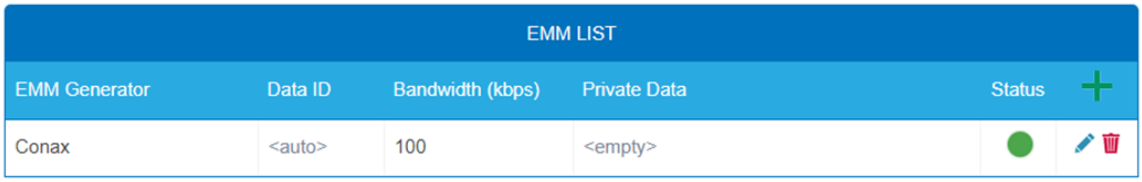
EMM Generator List:

Name: Only used in web interface to easily identify separate EMMG servers

IP filter <optional>: By default different EMM generators are separated by Client ID and this cell can be left empty. But if IP address is entered, only connections from this address are allowed.

CAS: CA-System from the CAS List.

Client ID <optional>: The value EMMG uses to identify itself (info from CAS supplier). Often 'Super_CAS_id' is used as 'client_id', so can be left empty and device automatically uses 'Super_CAS_id' of the selected CAS.



EMM List:

EMM Generator: Name from EMM Generator List

Data ID <optional>: EMMG identifies separate streams by Data ID. If left empty, all Data Ids will be accepted.

Bandwidth: Allocated bandwidth (kbps) for this EMM stream. It is responsibility of the EMMG to actually maintain the bitrate.

Private Data <optional>: Arbitrary binary data included as 'private_data' in the CA_descriptor for this EMM.

Status: EMM receiving status shown as traffic lights.

Program Scrambling (at Phase2)

Programs will be connected to SCGs at Phase2:

Click the desired program to view its details.

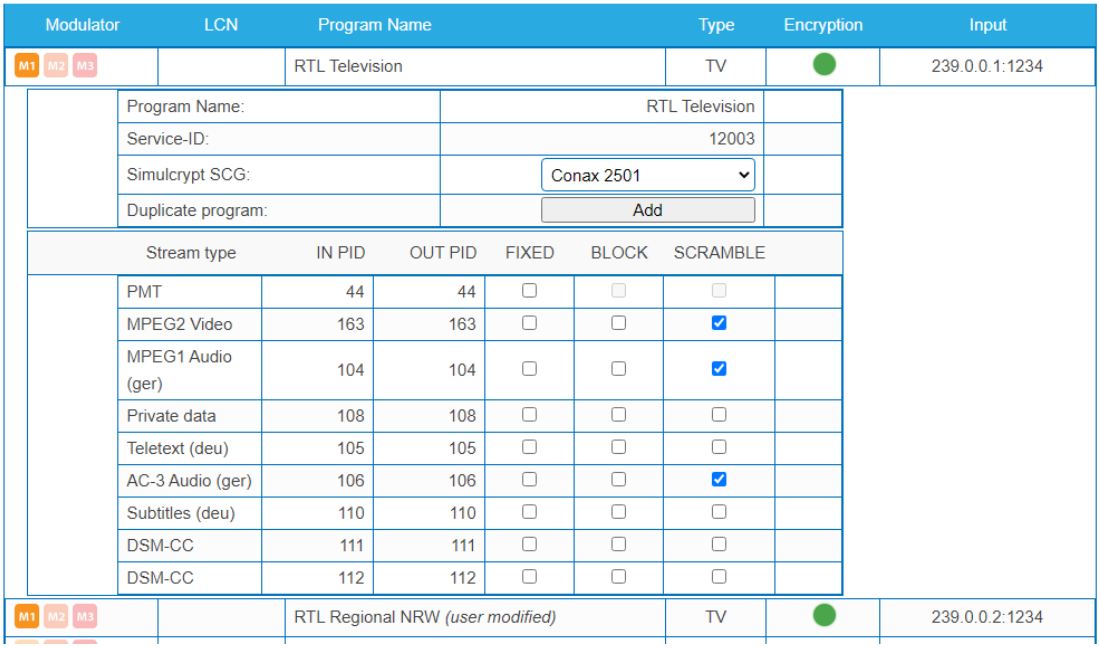
Select a **Simulcrypt SCG** from the drop-down list (it shows all configured SCGs).

By default all video and audio PIDs for the program are selected for the scrambling.

Select/unselect individual PIDs at “Scramble” column to overwrite the defaults.

Click “Save changes” once ready.

After saving the changes encryption status column shows scrambling status for each program selected for scrambling.



Scrambling status monitoring

Web interface contains multiple Simulcrypt status traffic lights and they all give different level of details:

Phase2 → Programm Encryption column: This is the most important status. If all scrambled services have green light, system is working without problems. But if any service has red light, Maintenance → CAS page gives more details.

SCG table status: Once SCG status is green, services connected to this SCG are scrambled and status must be green also at related rows in ECMG and ECM tables. If SCG status is red, please check status columns at ECMG and ECM tables.

ECM table status: Status of each ECM stream. Re-check access criteria value if status is red.

ECMG table status: Server connection status. The least important item but indicates some network setup problem if status color is red. Check that e.g. network cable is properly connected to the device. All the other status items stay red until ECMG status becomes green.

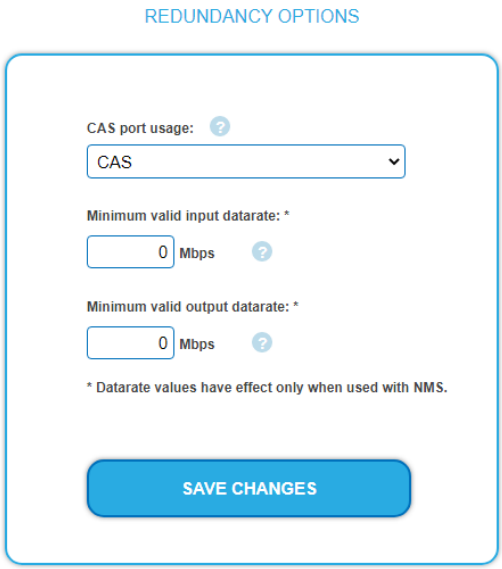
Maintenance → View Logs gives overview about scrambling status in long-term. All SCG errors are reported here.

SNMP traps give the most detailed immediate information for studying e.g. CAS server connection problems. One good tool for collecting SNMP traps is iReasoning MIB Browser. SNMP traps must first be enabled at Maintenance page.

Redundancy

Input port redundancy

Under the menu item MAINTENANCE > REDUNDANCY, you can configure whether and how the CAS interface is used as an IPTV input or as a redundant IPTV input.



CAS port usage:
Choose **CAS**.

The CAS interface is used as CAS interface.

Choose **IPTV2**.

The CAS interface is used as second IPTV input.

Minimum data rates:

The minimum valid input data rate and the minimum valid output data rate apply to the **NMS** function.

If the values are fallen short of, then the system switches to the backup device.

The minimum input/output data rates must be configured for each device to be monitored. The values can be different for each monitored device.

NMS (with MIS 1-11)

A device can monitor up to five other devices and serve as a backup device for these devices. If certain configurable conditions apply (input error, output error, operating voltage error, etc.), then the backup device is switched to.

Switching is only done if the backup device does not also fail. Switching will not occur, for example, if the IPTV input is missing on both devices or both are connected to the same failed power source.

Requirements

A valid license (MIS 1-11) must be installed for the **backup device** (see 0 **Licenses for Software Extensions** on page 38).

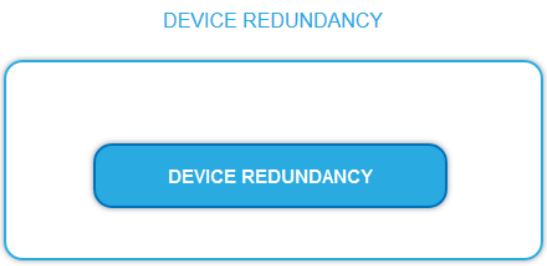
All devices must be connected via the control ports (ideally in the same IP subnet)

The backup device should be identical in construction to the monitored devices so that all outputs are redundant. If a device with fewer outputs is used as a backup device, only the available output channels are replaced in the event of a fault.

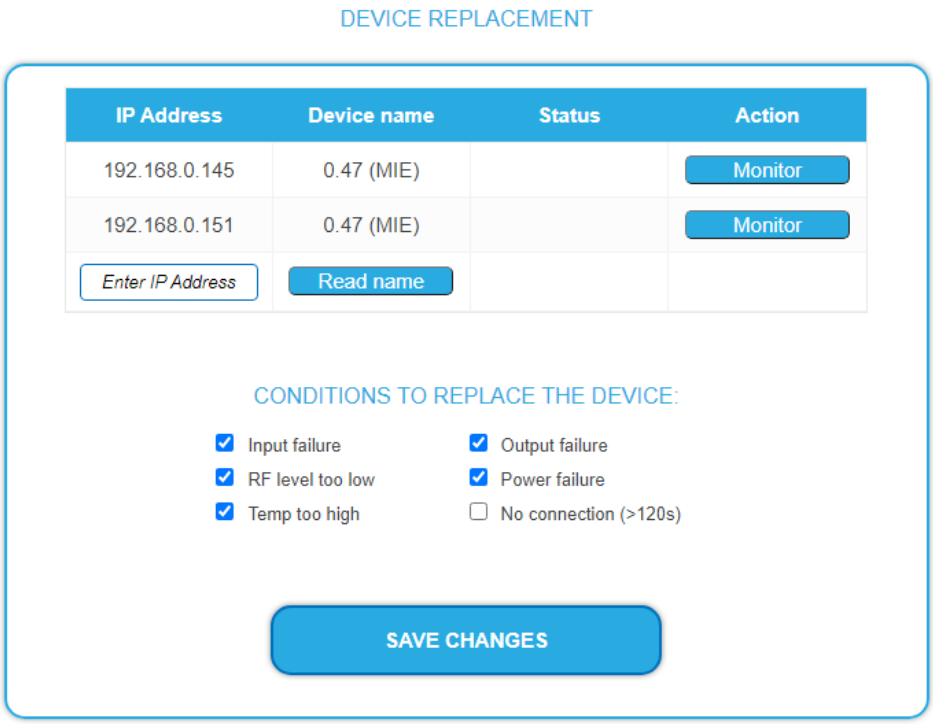
Configuring Device Redundancy

Device redundancy is configured on the backup device.

Click MAINTENANCE > DEVICE REDUNDANCY.



The DEVICE REPLACEMENT dialog opens.



A table lists the devices that are located in the same subnet (in the example 192.168.0.xxx)

Select the device to be monitored.

If the device is on a different subnet, enter its IP address manually and click READ NAME.

Under CONDITIONS TO REPLACE THE DEVICE, select the conditions under which to switch to the backup device:

Input failure: The input data rate at IPTV IN1 and IPTV IN2 is below the configured minimum input data rate.

Output failure: The output data rate (sum of the data rates of all active modulators) is below the configured minimum output data rate.

RF level to low: The measured output level is too low compared to the user-configured output level (initialization → Phase3 → Common output level)

Power failure: The internal voltage is too low (<11.0 V).

Temp to high: The temperature of the processor rises too high (>90°C). At this temperature, the unit will still operate normally, but probably there are ventilation problems and the temperature will continue to rise. Selecting this condition allows an immediate smooth transition before the temperature rises so high that the processor may stop working.

No connection (>120s): The backup device is not able to connect to the monitored device via the Control port within 120 s. **Note: This option requires special caution!** For example, a loose Ethernet cable can separate the two devices, which can lead to an unwanted replacement, and both devices send HF output signals simultaneously. Switching to the backup device is normally done after the device has been in an error state for more than 60 seconds (exception for the No connection error (>120s)).

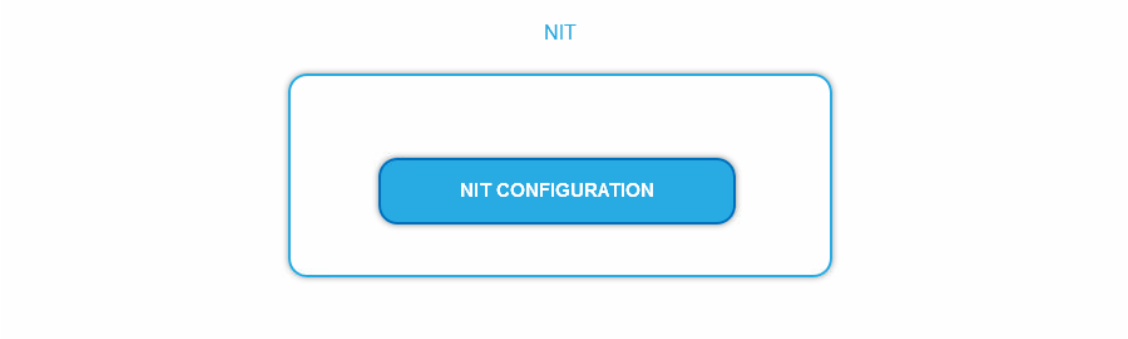
Select one or more conditions.

Then click SAVE CHANGES.

Network Information Table (NIT)

The NIT Network Information Table transmits a series of parameters in the digital data stream that are necessary for a scan of the receivers. The specific parameters within the NIT, such as ONID – Original Network ID and TS-ID – Transmitting Subscriber ID, can each be configured. In addition, transmission parameters can be added and changed manually from other headends. This makes it easy to manage the receivers's channels at the headend. The channel searching procedure will be faster and more reliable.

Start NIT Configuration



Click on NIT CONFIGURATION to open the settings dialog.

Select type

Select Auto.

An NIT is created that contains all channels (from 114 MHz to 1002 MHz).

The unoccupied channels contain only the most important parameters such as symbol rate and modulation.

Select Off.

There is no NIT created and therefore no LCN output.

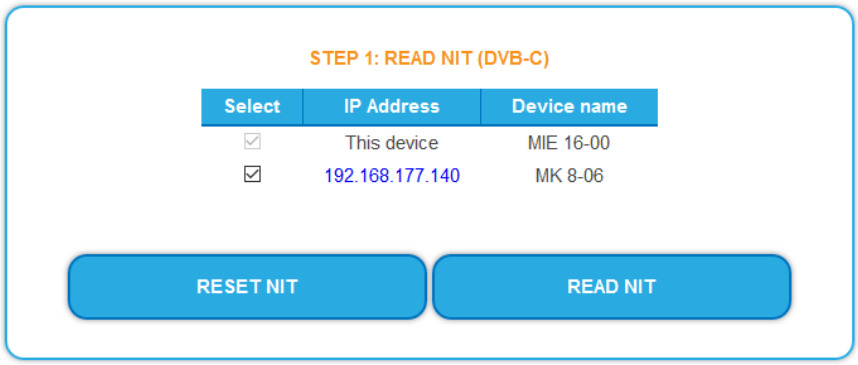
Select Manual.

The input fields for reading, checking and uploading the NIT are displayed.

Note: Only with the software extension MKS 1-00 can the type be set to Manual and a Network Information Table (NIT) be read from the devices, edited and uploaded back to the devices. The MKS 1-00 must be installed by AXING support (for this purpose, a connection with the Internet is necessary).

Read NIT

Under STEP 1: READ NIT (DVB-C) the devices in the network are displayed.



Select the devices from which the NIT is to be read out.

The device you are currently configuring (This device) is always selected.

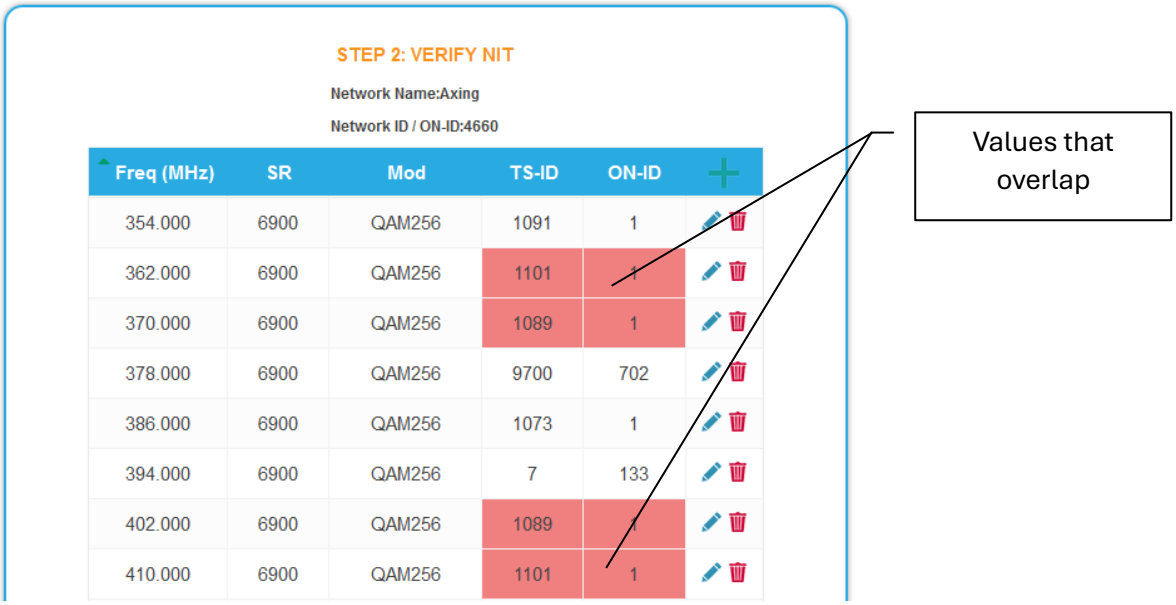
Click on READ NIT.

The data of the devices are read in and listed under STEP 2: VERIFY NIT.

Note: If necessary, you must reset the NIT before importing (see „**Reset the NIT**“ on page 50).

NIT Check

Note: If the NIT is edited, the headend automatically switches to cross-multiplex mode.



Values that overlap are displayed in red. These errors must be cleaned up before uploading.

Notes:

Different TS-IDs must always be assigned

The ON-ID must be the same for all headends

Edit NIT

Click the pen symbol next to a line.

The fields can be edited.

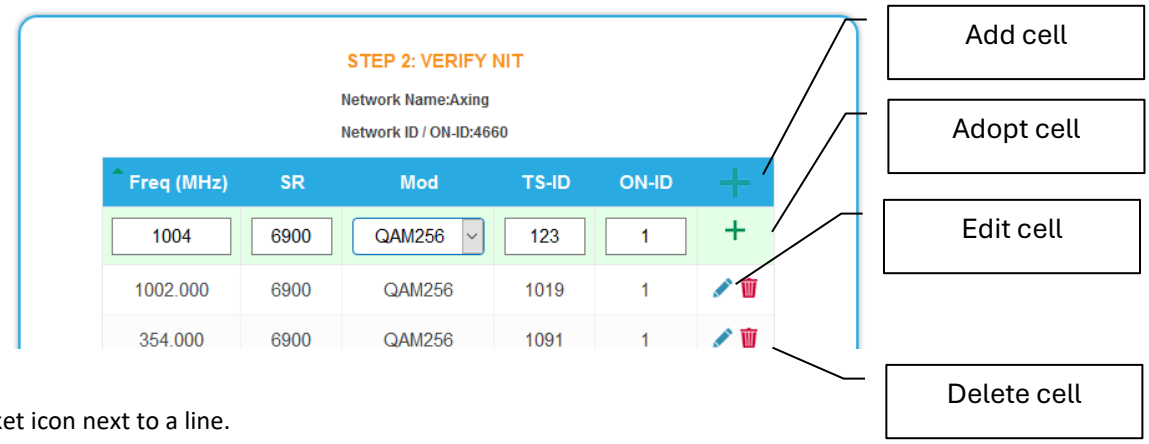
Click on the plus sign in the column header.

An additional line is inserted.

Enter plausible data in the fields, matching the other values.

Click on the plus sign next to the cell.

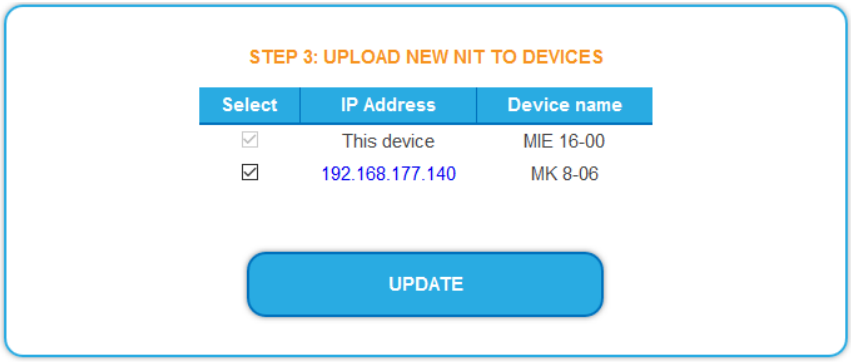
The line will be adopted.



Click the wastebasket icon next to a line.

The line is deleted.

Upload NIT to the devices



Select the devices you want to upload to.

Click UPDATE.

The data is uploaded and stored in the headend.

Reset the NIT

Resetting the NIT is necessary in certain circumstances.

Example:

Three devices are used.

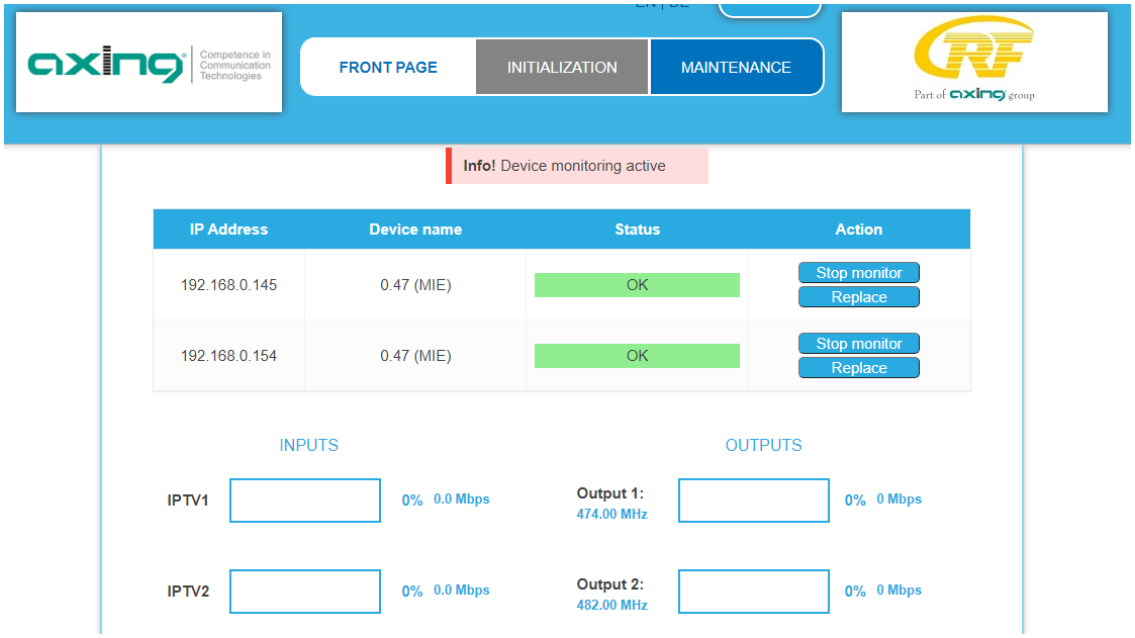
In the first device, the NIT is edited and uploaded to all devices. Subsequently, in the modulator output of the first device, parameters such as the channel output frequency are changed. If the NIT is read in again, the old channel output frequency will also be read in as it is still in device 2 and 3. Resetting removes all previous loaded NIT configurations from the devices. These now only return their current configured settings while reading.

Click RESET NIT.

The NIT entries of the devices are reset.

Device Redundancy

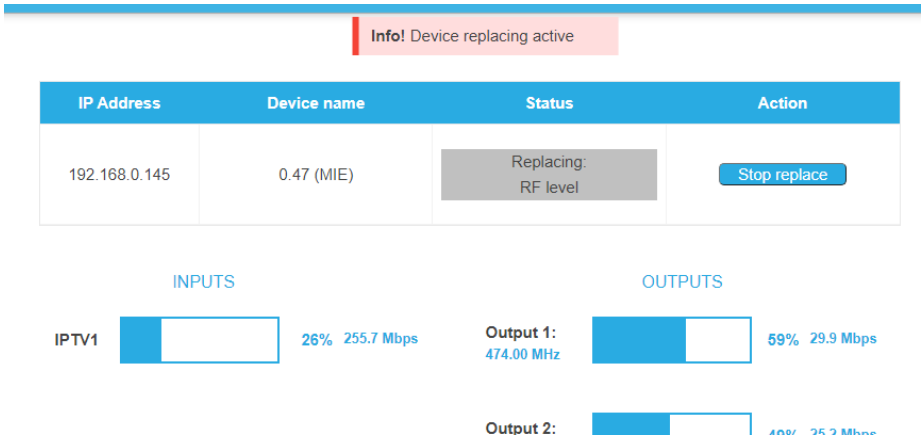
The **backup device** shows the status of all monitored devices on the front page. If there are failures on devices, then this is displayed in the **Status** column.



No data rates for inputs and outputs are displayed for the backup device. The initialisation pages (Phase1 - Phase3) are not available.

The device redundancy can be tested by clicking the **Replace** button for each individual monitored device.

In case any monitored device fails, redundant device detects the failure, disables the failing device and starts replacing it. The reason is shown in the **Status** column.



After the backup device has replaced another device, other devices are no longer monitored.

Therefore, the failed device should be repaired or replaced as soon as possible.

Technical specifications

IPHE 8-00

Type	IPHE 8-00	IPHE-16	IPHE-24
IPTV input			
Supported input transport streams	SPTS, MPTS (CBR/VBR)		
Max. number (out of SPTS or MPTS)	512	512	512
Supported protocols	IP V4; UDP; RTP; IGMP v2, v3		
Total net data rate	1 × 900 Mbps	1 × 900 Mbps	900 Mbps
Transportstreams			
Modifiable program information	Program name, SID remapping, PID filtering, TSID, ONID		
PCR correction	automatic adaptive PCR-correction, <500 ns		
LCN	Yes		
NIT handling @ DVB-C	auto | manual | off		
EPG regeneration	Yes		
Encryption	DVB-CSA* | DVB-CISSA* | ATIS-IDSA* | AES-ECB* | AES-CBC*		
Output			
Number of channels	1 × 8 @ DVB-C 1 × 6 @ DVB-T	1 × 16 DVB-C 1 × 12 DVB-T	1 × 24 DVB-C 1 × 24 DVB-T
Frequency range	109…1006 MHz @ DVB-C 109…862 MHz @ DVB-T		
Channels selectable	S2…K87 @ DVB-C S2…K69 @ DVB-T		
Channel bandwidth	7/8 MHz @ DVB-T		
Possible frequency shift	-4…+4 MHz (0.5 MHz steps)		
Connector	1 × F-female	1 × F-female	1 × F-female
Test port	1 × F-female (–30 dB)	1 × F-female (–30 dB)	1 × F-female (–30 dB)
Impedance	75 Ω		
Output level adjustable	80…105 dBµV @ DVB-C 77…102 dBµV @ DVB-T		
Output modulation			
Compliance	EN 50083-9 | ETSI TS 101 154 | ETSI EN300 429 | ETSI EN 300 744 | ITU-T J.83A/C		
Type	QAM32, QAM64, QAM128, QAM256 @ DVB-C QPSK, QAM16, QAM64 @ DVB-T		
Supported output formats	MPEG-2/H.262, MPEG-4/H.264 and HEVC/H.265		
MER	≥ 40 dB @ DVB-C ≥ 36 dB @ DVB-T		
BER	≥9x10-9		
Roll off	15 %		
Shoulder attenuation	≥ 56 dB		

Type	IPHE 8-00	IPHE-16	IPHE-24
C/N	≥45 dB		
Reflection	>14 dB		
Bit rate, max	50.87 Mbps @ DVB-C | 31.668 Mbps @ DVB-T		
FFT	2K mode @ DVB-T		
FEC	1/2, 2/3, 3/4, 5/6, 7/8 @ DVB-T		
Guard interval	1/4, 1/8, 1/16, 1/32 @ DVB-T		
Symbol rate	1…7.5 MBaud/s		
Interfaces			
IPTV input	1 x RJ45	1 x RJ45	1 × RJ45
CAS/IPTV (redundant)	1 x RJ45	1 x RJ45	1 x RJ45
Compliance IPTV/CAS interfaces	IEEE 802.3, 1000 Base-T (GigE)		
Control/CAS	1 × RJ-45	1 × RJ-45	1 × RJ-45
Compliance Control/CAS	IEEE 802.3, 10/100 Base-T		
Software control and upgrading	Via Remote Access		
Supported configuration protocols	HTTP, SNMP v1, SNMP v2c, AXING SMARTPortal**		
General			
Operating voltage	12…18 DC		
Switching power supply	16V/60W		
Power consumption	35 W	35 W	40 W
Equipotential bonding connection	4 mm2		
Operating temperature range (acc. to EN 60065)	–10°C…+50°C		
Storage temperature range (acc. to EN 60065)	–20 °C…+80 °C		
Dimensions (W × H × D) appr.	43*270*175mm		
Weight	1.180 kg	1.180 kg	1..180 kg
Comments	* with software extension MKS 1-02 only ** encrypted, cloud-based application for configuration, monitoring and remote maintenance		