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HDIQ 4

HDMI to IP and QAM converter

DRAFT VERSION



Operating manual

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Before starting operation of the device

HINWEIS: Read this operating manual attentively! It contains important information about installation, ambient conditions and maintenance of the device. Keep this operating manual for future use and for handover in the event of a change of owner.

The ASTRO company confirms that the information in this manual was correct at the time of printing, but it reserves the right to make changes, without prior notice, to the specifications, the operation of the device and the operating manual.

Symbols and conventions used

Symbols used in these instructions

Pictograms are visual symbols with specific meanings. You will encounter the following pictograms in this installation and operating manual:



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



Warning about various dangers to health, the environment and material.



Warning about thermal dangers (risk of burns).



Recycling symbol: indicates components or packaging materials which can be recycled (cardboard, inserts, plastic film and bags). Used batteries must be disposed of at approved recycling points. Batteries must be completely discharged before being disposed of.



This symbol indicates components which must not be disposed of with household rubbish.

Copyright information

Parts of the software used with this product originate from third-party vendors and were developed under a variety of licensing conditions. Detailed information on the licences can be found on the device's web user interface. If you select the menu item "Licensing" on the web browser interface of the device, you will find a link to a page with detailed information.

You can obtain the source code for licence-free parts of the software upon request and against payment of a processing fee.

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All other parts of the software used with this product are subject to the copyright owned by

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Intended use

The HDIQ 4 is a 19 inch device for converting HDMI video and audio signals into IP and QAM output signals.

Modification of the devices or use for any other purpose is not permitted and will immediately void any guarantee provided by the manufacturer.

Target group of this manual

Installation and starting operation

The target group for installation and starting operation of the ASTRO headend technology are qualified experts who have training enabling them to perform the work required in accordance with EN 60728-11 and EN 62368-1. Unqualified person are not allowed to install and start operation of the device.

Device configuration

Target group for the configuration of the ASTRO headend are persons who have received instructions and have training enabling them to perform a configuration. Knowledge of EN 60728-11 and EN 62368-1 is not necessary for configuration.

Device description

The device package contains the following:

- HDIQ 4 converter
- Operating manual

Fig. 1, top:

- [1] LC display
- [2] NMS and data ports
- [3] Operating status and alarm lamp
- [4] Lock indicators
- [5] Arrow buttons
- [6] Enter button
- [7] Menu button
- [8] Lock button

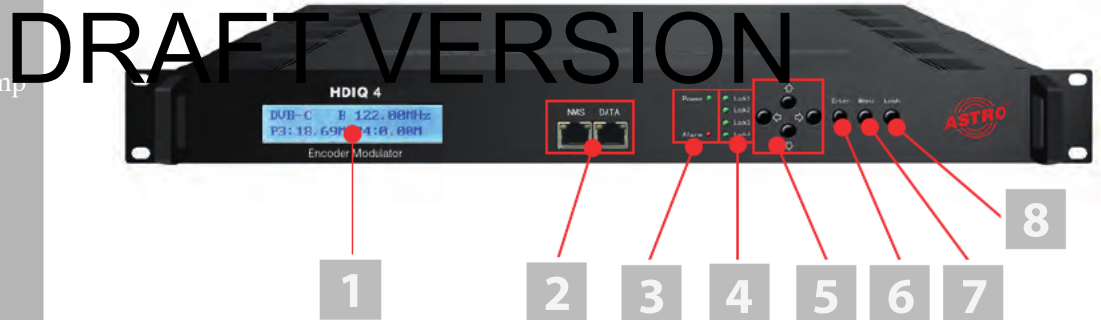


Fig. 1, bottom:

- [9] HDMI inputs 1 and 2 (module 1)
- [10] HDMI inputs 3 and 4 (module 2)
- [11] RF input
- [12] RF output
- [13] ASI input
- [14] ASI output
- [15] Power switch
- [16] Power cable socket
- [17] Earth connection

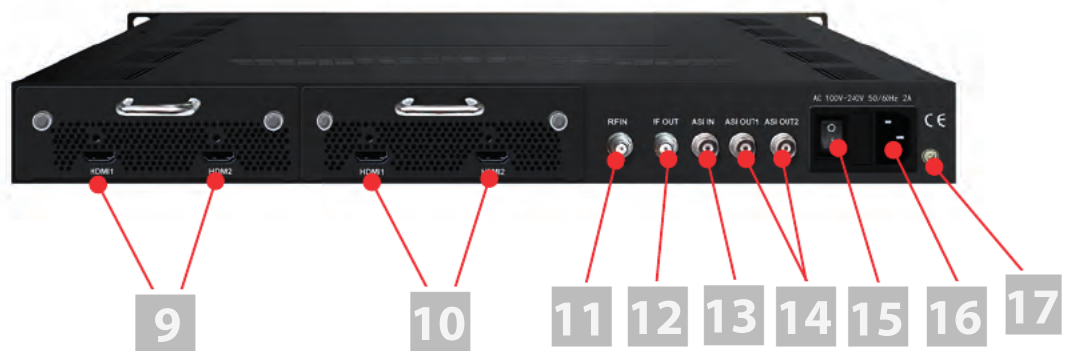


Fig. 1: Front panel and rear

The HDIQ 4 has a CE marking. This confirms that products comply with the relevant EC directives and the requirements specified in them.



Important safety information

To avoid any potential risks to the greatest extent possible, you must adhere to the following safety information:



ACHTUNG: *Failure to observe this safety information may result in personal injury due to electrical and thermal dangers!*

Proper use

- Only use the device at the approved operating sites and in the ambient conditions allowed (as described in the following), and only for the purpose described in the section "Proper use".

Before starting operation of the device

HINWEIS: *Read this operating manual attentively! It contains important information about installation, ambient conditions and maintenance of the device. Keep this operating manual for future use and for handover in the event of a change of owner or operator.*

- Check the packaging and the device for transport damage immediately. Do not start operation of a device that has been damaged.
- Transporting the device by the power cable may damage the mains cable or the strain relief, and is therefore not permitted.

Installation and operation

- The device may only be installed and operated by qualified persons (in accordance with EN 62368-1) or by persons who have been instructed by qualified persons. Maintenance work may only be carried out by qualified service personnel.
- The installation site must be planned in a way that prevents children from playing with the device and its connections.
- In order to prevent inadmissible operating statuses from occurring, only the components described in this manual, or components approved by the manufacturer for the base unit, may be used.
- In order to operate the HDIQ 4 unit, it must be connected to mains sockets with a protective earth conductor.
- The electrical connection conditions must correspond to the specifications on the device type plate.
- To avoid damage due to overheating, the device may only be installed on horizontal surfaces. The device is primarily designed for operation in metallically conductive 19" racks with sufficient air convection. The installation surface should be non-flammable.
- The ambient temperatures specified in the technical data must be complied with, even when climatic conditions change (e.g. due to sunlight). If the device overheats, the insulation used to isolate the mains voltage may be damaged.
- The device and its cable may only be operated away from radiant heat and other sources of heat.
- To avoid trapped heat, ensure there is good ventilation on all sides (minimum interval of 20 cm to other objects). Installing the device in a niche or covering the ventilation openings is not permitted.
- No objects may be placed on the device.
- The subscriber network must be earthed in accordance with EN 60728-11, and must remain earthed even when the device is removed. Furthermore, the earth connection on the device can be used. Devices within hand's reach must be integrated into the potential equalisation together. Operating the device without an earth conductor, without earthing the device or without using device potential equalisation is not permitted.
- The device does not feature protection against water and may therefore only be operated and connected in dry rooms. It must not be exposed to splash water or drip water, condensation or similar effects of water, as this may impair the isolation from the mains voltage.
- The electrical system supplying current to the device, e.g. a house installation, must incorporate safety devices against excessive current, earth leakages and short-circuiting in accordance with EN 60950-1.
- All adhere to all applicable national safety regulations and standards.



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- The mains plug is used as a mains voltage disconnect unit in the event of servicing and in the event of danger, and must therefore be accessible and be able to be operated at any time. The device is operational as soon as one mains plug is connected to the mains voltage.
- Do not install the unit in locations with excessive dust formation, as this may impair the isolation from the mains voltage.
- Excess mechanical loads (e.g. falling, impacts, vibrations) may damage the insulation used to provide protection from mains voltage.
- High excess currents (lightning strike, surges in the power utility grid) may damage the insulation used to provide protection from mains voltage.
- If there is no information about intended use (e.g. operating site, ambient conditions), or the operating manual does not include the corresponding information, then you must consult the manufacturer of this device to ensure that the device may be installed. If you do not receive any information on this from the manufacturer, do not start operating the device.
- Disconnect devices with damaged power cables from the mains power (unplug the power supply plug).

Electromagnetic compatibility (EMC)

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

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

Maintenance

- The operating display only shows whether the DC current, which supplies the device components, has been disconnected. However, operating displays (on the power supply unit or the device) that are not lit up in no way indicate that the device is completely disconnected from the mains. There may still be voltages in the device that are dangerous to touch. You may therefore not open the device.
- Read carefully: EN 60728-11, Safety requirements / No service tasks during electrical storms!

Repair

- Repairs may only be performed by the manufacturer. Improperly performed repairs may result in considerable dangers for the user.
- Do not start operating devices with a damaged power cable, and instead have them repaired by the manufacturer.
- If malfunctions occur, the device must be disconnected from the mains and authorised experts must be consulted. The device may need to be sent to the manufacturer.

General information

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



Warranty conditions

The general terms and conditions of ASTRO Bit GmbH apply. You will find these in the current catalogue or on the Internet under "www.astro-kom.de".

Disposal

All of our packaging material (cardboard boxes, inserts, plastic film and bags) is completely recyclable. Electronic devices must not be disposed of with household waste, but rather – according to DIRECTIVE 2002/96/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL from 27 January 2003, on waste electrical and electronic equipment – must be properly disposed of. When it is no longer of use, please bring the device for disposal to one of the public collection points for this purpose.

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

Performance description

The HDIQ 4 can convert four HDMI signals into four DVB-C signals. All four input signals can also be mixed together into one DVB-C output signal (multiplexing). At the same time, the HDMI signals can each be output as SPTS and as MPTS.

The HDIQ 4 has the following features:

- 4 HDMI inputs
- 1 DVB-C output, 1 - 4 output frequencies in the range 30 - 960 MHz
- IP output (4 x SPTS, 1 x MPTS) via UDP, RTP/RTSP protocol
- MPEG 2 & MPEG4 AVC/H.264 HD/SD video encoding
- MPEG 1 Layer II, MPEG- AAC, MPEG 4 AAC, AC 3 2.0 audio encoding
- Up to 1920*1080@50P/60P (MPEG 4 AVC/H.264)
- Up to 1920*1080@50I/60I (MPEG 2 HD)
- NIT and LCN generation
- Excellent signal parameters (MER \geq 42 dB, output level up to 97 dB μ V)
- WEB interface

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Operating the device

The HDIQ 4 can be configured via a web interface or by using the front panel controls and LCD display. The functions of the elements on the front of the unit are described below:

- “Menu” button: Undo last entered value, return to previous menu.
- “Enter” button: Allows you to activate the parameter to be changed or confirm a selected parameter or an entered value.
- Left and right arrow buttons: Allow you to change the value of a parameter.
- Up and down arrow buttons: Allow you to select a parameter or change the value of a parameter.
- “Lock” button: With this button you can block input, or release it by pressing it again. When you press the button once, the display shows the configuration status of the device.

After switching on the device, an initialisation takes place. After that, first menu item “Status” is displayed.

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Menu structure

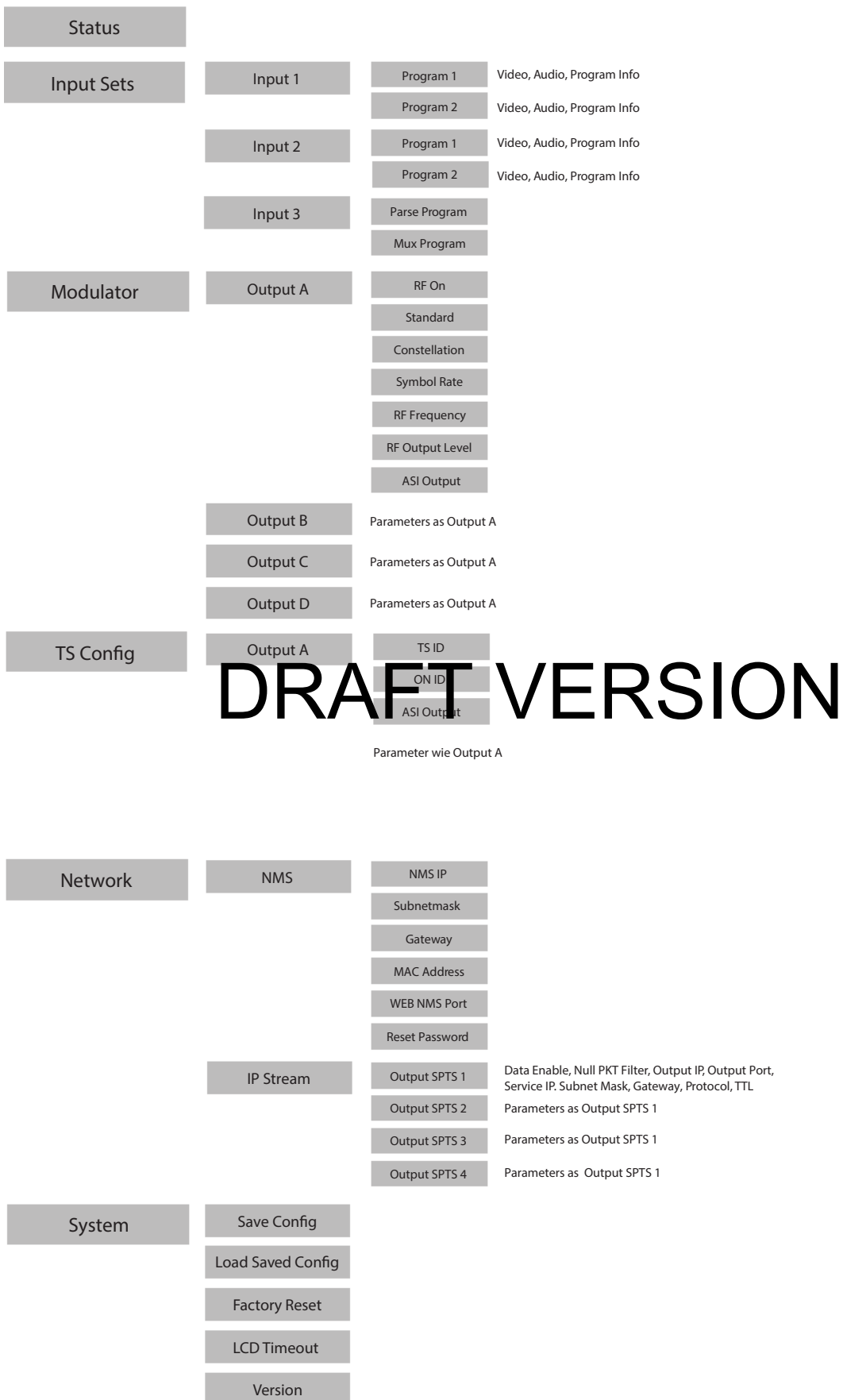


Fig. 2: Menu structure

Initialisation

After switching on the device, an initialisation takes place. This process takes a few seconds. The following parameters are then displayed:

- DVB-C: displays the current modulation standard
- A, B, C or D: displays alternately output A, B, C or D
- XXX.XX MHz: shows the frequency of the currently displayed output
- X.XX Mbps: displays the encoded bit rate

Main menu items

To display the main menu items, you must first press the “Lock” button. The following list is then displayed:

- Status
- Input Sets
- Modulator
- TS Config
- Network
- System

Use the up and down arrow button to navigate between the menu items. Press the “Enter” button to display the parameters of a main menu item.

HINWEIS: To edit the parameters in the submenus, use the left and right arrow buttons to select the value you want. Then confirm your selection by pressing the “Enter” button.

Status

When you select “Status” menu, the time since the device was switched on is displayed.

Input Sets

Select this menu item to see the parameters of input 1, 2 or 3. Use the up and down arrow buttons to select one of the inputs.

For both input 1 and input 2 you can choose between two programs. For each of these programs you can set parameters in the “Video”, “Audio” and “Program Info” submenus.

The following parameters are available for inputs 1 and 2:

Video:

- Video in status: MPEG2 or H.264
- Resolution: Resolution in pixels
- Video Format
- Video Bit rate: Adjustable from 1 - 19.5 Mbps
- Low Delay: Normal, Mode 1 or Mode 2
- CC Switch
- B frame
- P frame
- DTS Delay

HINWEIS: The different combinations of video format, video bit rate, low delay mode and resolution of the signal source lead to different latencies on the receiving side.

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Audio:

- Audio Format: MPEG-1 Layer 2, MPEG-2 AAC, MPEG-4 AAC or AC3
- Audio Bit rate: Adjustable from 64 to 320 Kbps

Program Info:

- Program Output
- Program Name
- Service Provider
- Program ID
- PMT PID
- PCR PID
- Video PID
- Audio PID

Input 3 corresponds to the ASI input. Here you can choose between the submenus "Parse Program" and "MUX Program". The "Parse Program" function is for determining the number of received programs. The "MUX Program" function is for routing the individual programs to the individual outputs A, B, C and D.

In detail, the following functions can be selected:

Parse Program:

- Parse Program
- Get 3 Programs

MUX Program:

- Output A MUX
- Output B MUX
- Output C MUX
- Output D MUX

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After selecting the output, navigate to the program using the up and down arrow buttons and set a checkmark by pressing the "Enter" button.

Modulator

In the "Modulator" menu, you can set the modulation parameters in each of the submenus "Output A" to "Output D":

- RF On: Enable or disable output
- Standard: J.83A (DVB-C), J.83B or J.83C (For Europe, the standard is J.83A (DVB-C)).
- Constellation: J.83A: 16QAM 32QAM, 64 QAM, 128QAM, 256QAM; J.83B or J.83C: 64QAM or 256 QAM (for Europe, 64QAM or 256QAM applies.)
- Symbol Rate: J.83A and J.83C: 5 - 9 Mbps; J.83B: fixed setting
- RF Frequency: Adjustable from 30 to 960 MHz in 1 kHz increments
- RF Level: Adjustable from -30 to -10 dBm in 0.1 dBm increments
- ASI Output: One of the outputs A, B, C, D can be mirrored to the ASI output. Select the required output here.

TS Config

Here you can select the transport stream and network ID for the four outputs and the ASI output.

Network

In the "Network" menu, you can choose between the submenu items "NMS" and "IP Stream".

NMS:

- NMP
- Subnet Mask
- Gateway
- MAC Address
- Web NMS Port
- Reset Password

IP Stream:

Here you can first choose between the four SPTS and the MPTS output. Then you can set the following parameters in another submenu:

- Data enable
- Null PKT Filter
- Output IP
- Output Port
- Service IP
- Subnet Mask
- Gateway
- Protocol
- TTL

System

In the "System" menu you can load and save configurations and display the current software version of the device:

- Save Config
- Load saved CFG
- Factory Reset
- LCD time-out
- Version

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Configuration via the web interface

You can configure the HDIQ 4 via a web browser interface.

HINWEIS: Make sure that the IP address of the device is not the same as that of your PC or laptop. This would otherwise result in an IP conflict.

Login

The IP address of the device is: 192.168.0.136

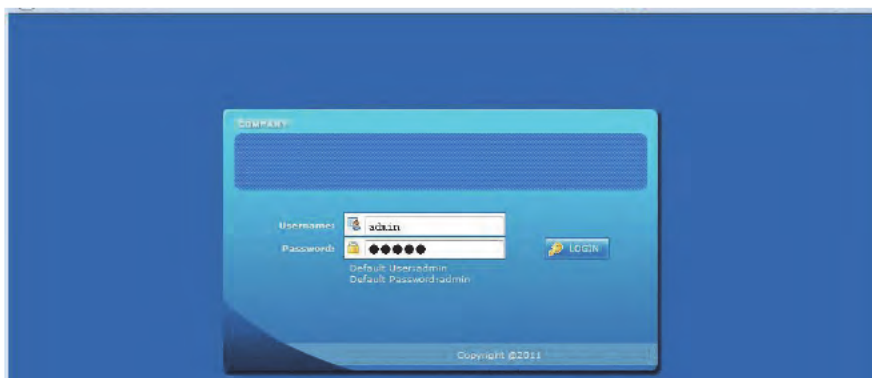
Change the IP address of the PC / laptop as follows:

192.168.99.xxx (where xxx can be between 1 and 254, except 64, to avoid IP conflicts).

Connect the device to your PC or laptop via an Ethernet cable and use the ping diagnostic tool (ping command) to determine whether the HDIQ 4 and your PC / laptop are on the same network.

If this is the case, enter the IP address of the HDIQ 4 in the address line of the browser and press Enter on your keyboard.

You should now see the login screen (see Fig. 3 below).



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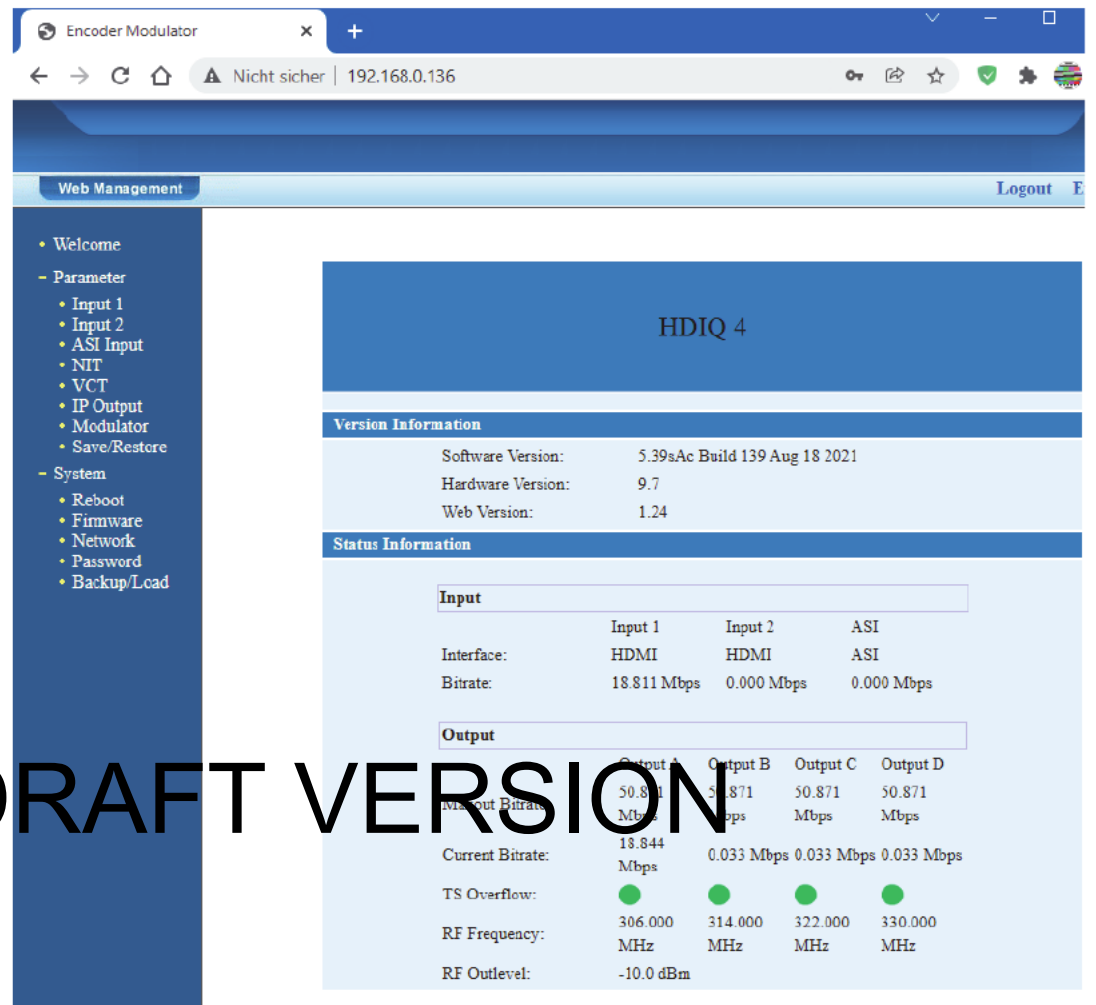
Fig. 3. Login screen

Enter your user name and password here. The user name and password are “admin” by default. Then click the “Login” button to access the configuration interface.

HINWEIS: The menu structure in the web interface is slightly different to that of the device display.

Status overview

After logging in, the interface displays a status overview (see figure 4). In the area on the left you can see the main menu.



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Fig. 4: Status overview

The following parameters are displayed:

- Default IP address of the device (192.168.0.136)
- Default subnet mask of the device (255.255.255.0)
- Default gateway of the device (192.168.0)

Parameters of the two inputs (Input 1 and Input 2)

In the main menu on the left you can use the submenu items “Input 1” and “Input 2” to display the set parameters of the two inputs and edit them (see Fig. 5). In the first column you see the parameters for Program 1, in the second column the parameters for Program 2.

2CH Mpeg2/H.264 HD Encoder Configuration (EN13)

Video Format	<input type="text" value="H.264"/>	<input type="text" value="Mpeg2"/>
Aspect Ratio	<input type="text" value="Auto"/>	<input type="text" value="Auto"/>
Low delay	<input type="text" value="Normal"/>	<input type="text" value="Normal"/>
Video BitRate(Mbps)	<input type="text" value="18.000"/>	<input type="text" value="12.000"/>
DTS Delay	<input type="text" value="200"/> (1-500)	<input type="text" value="200"/> (1-500)
GOP Bframe	<input type="text" value="2"/> (<=3)	<input type="text" value="2"/> (<=3)
Gop Pframe	<input type="text" value="4"/> (<=6)	<input type="text" value="4"/> (<=6)
H.264 Profile	<input type="text" value="High Profile"/>	<input type="text" value="Main Profile"/>
H.264 Level	<input type="text" value="Level 4.2"/>	<input type="text" value="Level 3.1"/>
Auto Config	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Resolution	<input type="text" value="1920*1080_50i"/>	<input type="text" value="1920*1080_50i"/>
Audio Format	<input type="text" value="Mpeg4 AAC"/>	<input type="text" value="Mpeg2"/>
Dialog Normalization	<input type="text" value="-31"/> (-31 --1)dB	<input type="text" value="-31"/> (-31 --1)dB
Audio BitRate	<input type="text" value="320 Kbps"/>	<input type="text" value="192 Kbps"/>
Audio Gain(0-400%)	<input type="text" value="100"/>	<input type="text" value="100"/>
Program Out Enable(ABCDE)	<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
Service Provider	<input type="text" value="ASTRO"/>	<input type="text" value="TV-Provider"/>
Program Name	<input type="text" value="HDMI 1"/>	<input type="text" value="TV-102"/>
Service ID	<input type="text" value="0x101"/>	<input type="text" value="0x102"/>
PMT PID	<input type="text" value="0x100"/>	<input type="text" value="0x104"/>
Video PID	<input type="text" value="0x101"/>	<input type="text" value="0x105"/>
Audio PID	<input type="text" value="0x102"/>	<input type="text" value="0x106"/>
PCR PID	<input type="text" value="0x103"/>	<input type="text" value="0x107"/>
Video:	●	●
Video Format:	1280x720 50p	unknown
Encoding:	●	●
Bitrate:	18.833 Mbps	0.000 Mbps
Rom Version:	0.0.3.211	0.0.3.211

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Fig. 5: Input parameters of the two inputs

In detail, you can edit the following parameters of the two programs via selection lists or input fields:

- Video Format: MPEG-2 or H.264
- Aspect Ratio: Aspect ratio (Auto, 4:3 or 16:9)
- Low Delay: Latency (Normal, Mode 1, Mode 2, Manual), when set to "Normal", Low Delay mode is disabled.
- Video Bit rate: Adjustable from 1 to 19 Mbps
- DTS Delay: Adjustable from 1 to 500; default is 200
- GOP Frame: Adjustable to 1, 2 or 3
- H.264 Profile: Adjustable to Automatic, Baseline, Main or High
- H.264 Level: Adjustable to 2.2, 3, 3.1, 3.2, 4, 4.1, 4.2, 5, 5.1
- Auto Config: automatic setting of resolution on input signal, if checkbox is activated
- Resolution: Resolution (1920x1080x60i, 1440x1080x60i, 1440x1080x50i, 1280x720x60p, 1280x720x50p, 720x480x60i, 720x576x50i)
- Audio Format: MPEG2, MPEG2 AAC, MPEG4 AAC or AC3
- Digital Normalization: Adjust/boost dialogue voices between -31 and -1 dB
Set higher values to make dialogue clearer/louder.
- Audio Bit rate: 64, 96, 128, 192, 256 or 320 Kbps
- Audio Gain: 0 to 400%; default is 100%
- Program Out Enable: Enable and assign output; A, B, C, D for SPTS, E for MPTS
- Service Provider: Provider name
- Program Name: Program name
- Service ID (SID): hexadecimal, 0x001 to 0x999 (1 to 2457)
- PMF ID: hexadecimal, 0x001 to 0x999 (1 to 2457)
- Video PID: hexadecimal, 0x001 to 0x999 (1 to 2457)
- Audio PID: hexadecimal, 0x001 to 0x999 (1 to 2457)
- Service PID hexadecimal, 0x001 to 0x999 (1 to 2457)
- Video (LED): green: input signal OK, red: no input signal
- Video Format: Resolution of the input signal
- Encoding (LED): green: device is processing the input signal, red: error
- Bitrate: current bit rate of the input signal

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***HINWEIS:** The different combinations of video format, video bit rate, low delay mode and resolution of the signal source lead to different latencies on the receiving side.*

ASI Input

This function is not available. Please leave the default settings.

NIT (network information table)

To edit the NIT settings, click “NIT” the main menu on the left. You then see the table “NIT Insert”:

Fig. 6: NIT

Select one of the outputs using the radio buttons in the first line. In the second line you can optionally make the NIT invisible by activating the checkbox for “Close NIT”.

Click “Add” to create and edit an NIT entry (see Fig. 7). You then see the table “NIT TS Loop”.

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Fig. 7: Creating a NIT entry

You can change the following parameters here:

- Transport Stream ID
- Original Network ID
- RF Frequency
- FEC Outer
- Constellation
- Symbolrate
- FEC Inner
- Service ID
- LCN (Click "Add" to add the LCN.)

When you have made your settings, save them by clicking the "Save" button. If you do not want to save the settings, click "Cancel".

Next, click the "Update NIT" button in the "NIT Insert" table to update the NIT. Click "Clear NIT" if you want to clear the current NIT.

VCT

This function is not available. Please leave the default settings.

IP Output

To edit the SPTS and MPTS settings for the IP outputs, click "IP Output" in the main menu on the left. You then see the table "IP Output Configuration" (see Fig. 8).

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Output Type	IP Address	Port	Protocol	TTL
SPTS1	239.1.0.1	10000	UDP	128
SPTS2	239.1.0.2	10000	UDP	128
SPTS3	239.1.0.3	10000	UDP	128
SPTS4	239.1.0.4	10000	UDP	128
MPTS	239.1.0.0	10000	RTP/RTSP	128

Service IP: 192.168.2.137
 Subnet Mask: 255.255.255.0
 Gateway: 192.168.2.0

Fig. 8: Configuring the IP outputs

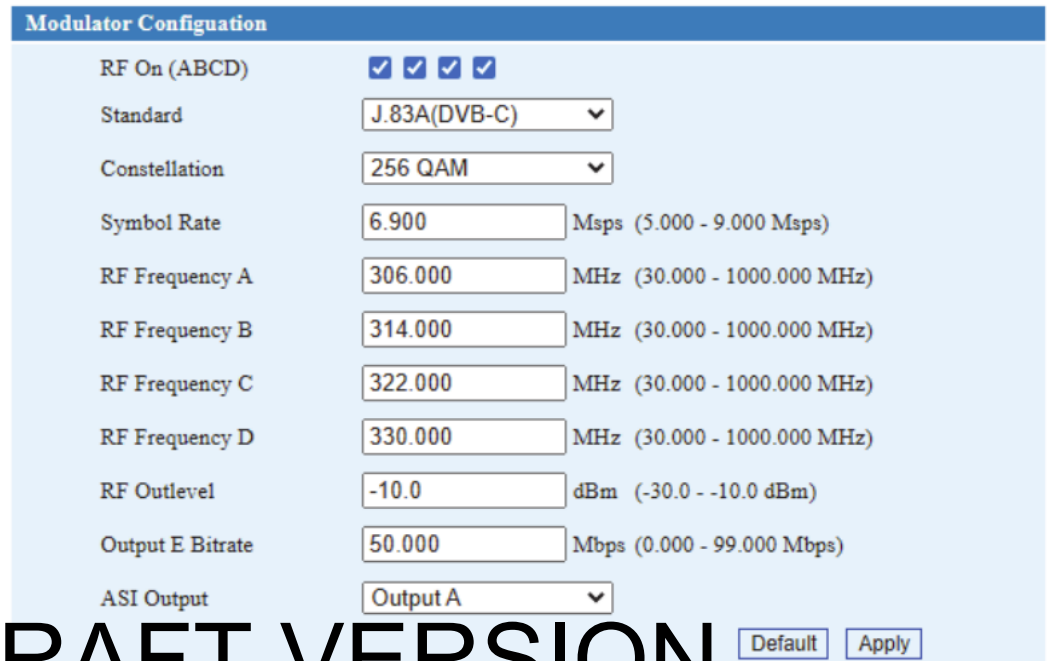
In the first line you can enable or disable individual outputs by checking or unchecking the corresponding checkbox.

In the second line you can enable or disable the filtering of the null packets for each output.

In the following lines you can make the settings for the individual transport streams (SPTS and MPTS). Below this you see the entries for service IP address, subnet mask and gateway.

Modulator

To edit the modulation parameters for the DVB-C output, click “Modulator” in the main menu on the left. You then see the table “Modulator Configuration” (see Fig. 9).



Modulator Configuration	
RF On (ABCD)	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/>
Standard	J.83A(DVB-C)
Constellation	256 QAM
Symbol Rate	6.900 Msps (5.000 - 9.000 Msps)
RF Frequency A	306.000 MHz (30.000 - 1000.000 MHz)
RF Frequency B	314.000 MHz (30.000 - 1000.000 MHz)
RF Frequency C	322.000 MHz (30.000 - 1000.000 MHz)
RF Frequency D	330.000 MHz (30.000 - 1000.000 MHz)
RF Outlevel	-10.0 dBm (-30.0 - -10.0 dBm)
Output E Bitrate	50.000 Mbps (0.000 - 99.000 Mbps)
ASI Output	Output A

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Fig. 9: Configuring the modulator

In the first line you can activate or deactivate the QAM signal for outputs A, B, C and D. The following parameters can be edited.

You can edit the following parameters here:

- Standard: J.83A (DVB-C), J.83B or J.83C (For Europe, the standard is J.83A (DVB-C)).
- Constellation: J.83A: 16QAM 32QAM, 64 QAM, 128QAM, 256QAM; J.83B or J.83C: 64QAM or 256 QAM (for Europe, 64QAM or 256QAM applies.)
- Symbol Rate: 5,000 to 9,000 MS/s. Recommendation: 6,900 MS/s
- RF Frequency A: Adjustable from 30 to 960 MHz in 1 kHz increments
- RF Frequency B: Adjustable from 30 to 960 MHz in 1 kHz increments
- RF Frequency C: Adjustable from 30 to 960 MHz in 1 kHz increments
- RF Frequency D: Adjustable from 30 to 960 MHz in 1 kHz increments
- RF Outlevel: Adjustable from -30 to -10 dBm in 0.1 dBm increments
- Output E Bitrate: Data rate of Output E (MPTS). 0 to 99,000 Mbps. Recommendation: 50,000
- ASI Output: One of the outputs A, B, C, D can be mirrored to the ASI output. Select the required output here.

Save/Restore

To save or load device settings, click “Save/Restore” in the main menu on the left. You then see the following table (see Fig. 10):

<p>Save Configuration</p> <p>When you change the parameter, you should save configuration, otherwise the new configuration will be lost after reboot.</p> <p style="text-align: right;"><input type="button" value="Save config"/></p>
<p>Restore Configuration</p> <p>Load latest saved configuration, after click the "Restore" then please click the "Save config" button, otherwise the "Restore" parameter will be lost after reboot.</p> <p style="text-align: right;"><input type="button" value="Restore"/></p>
<p>Factory Set</p> <p>Set all configuration back to default, after click the "Factory Set" then please click the "Save config" button, otherwise the default parameter will be lost after reboot.</p> <p style="text-align: right;"><input type="button" value="Factory set"/></p>

Fig. 10: Saving and loading device settings

You can perform the following actions in this table:

- Save Configuration: Save the settings.
NOTE: Unsaved settings are not retained after rebooting the device!
- Restore Configuration: Loads the last saved settings.
- Factory Set: Loads the factory settings.

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Reboot

To reboot the device, click “Reboot” in the main menu on the left. You then see the following table (see Fig. 11):

<p>Reboot</p> <p>Some configuration will work after reboot the device, such as Web Manage Port set, Firmware update, Configuration Load (reboot automatically).</p> <p style="text-align: right;"><input type="button" value="Reboot"/></p>
--

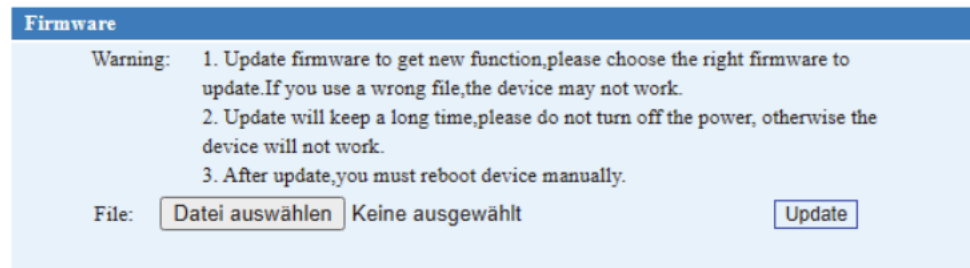
Fig. 11: Rebooting the device

Click the “Reboot” button to restart the device:

HINWEIS: Some settings will only take effect after a reboot (e.g. Web Manage Port, Firmware Update).

Firmware

To carry out a firmware update, click “Firmware” in the main menu on the left. You then see the following table (see Fig. 12):



Firmware

Warning:

1. Update firmware to get new function, please choose the right firmware to update. If you use a wrong file, the device may not work.
2. Update will keep a long time, please do not turn off the power, otherwise the device will not work.
3. After update, you must reboot device manually.

File:

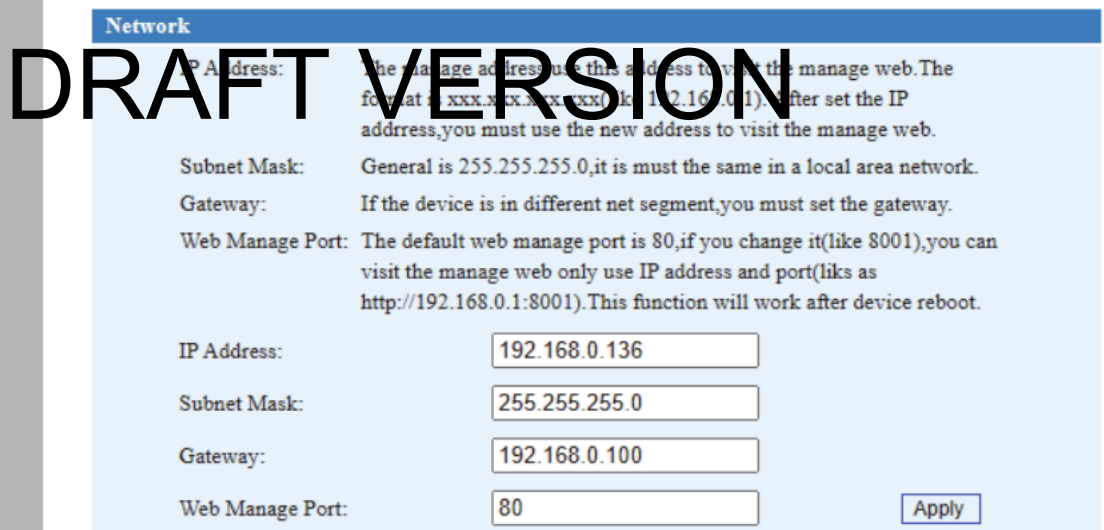
Fig. 12: Updating the firmware

Click “Select File” to select the firmware file. Then click “Update” to execute the update.

HINWEIS: The update is not complete until the device is rebooted.

Network

To make the network settings, click “Network” in the main menu on the left. You then see the following table (see Fig. 13):



Network

IP Address: The manage address use this address to visit the manage web. The format is xxx.xxx.xxx.xxx (like 192.168.0.1). After set the IP address, you must use the new address to visit the manage web.

Subnet Mask: General is 255.255.255.0, it must be the same in a local area network.

Gateway: If the device is in different net segment, you must set the gateway.

Web Manage Port: The default web manage port is 80, if you change it (like 8001), you can visit the manage web only use IP address and port (like as http://192.168.0.1:8001). This function will work after device reboot.

IP Address:

Subnet Mask:

Gateway:

Web Manage Port:

Fig. 13: Network settings

Edit the IP address, subnet mask, gateway and web management port here if necessary. Then click “Apply” to save the changes.

Password

To enter a new user name and password, click "Password" in the main menu on the left. You then see the following table (see Fig. 14):

Fig. 14: Entering your password

Here you must first enter the currently valid password. Below that, you then enter the new user name and password. Then click "Apply" to save the changes.

Backup/Load

If you want to save the device settings to a file or load device settings, click "Backup/Load" in the main menu on the left. You then see the following table (see Fig. 15):

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Fig. 15: Saving or loading a backup file

Click "Backup config" to save the current settings to a file. Click "Select file" to select an existing configuration file. Then click "Load file" to load the configuration file.

Troubleshooting

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

- Check whether the device is connected to the required grid voltage (230 V~, 50 Hz for the U 100 base unit, and 48 V for the U 100-48 base unit).
- Check whether the signal cable is connected correctly, and that there are no breaks or short circuits in the connectors.

If the problem cannot be resolved, please contact the ASTRO customer service.

Maintenance and repair

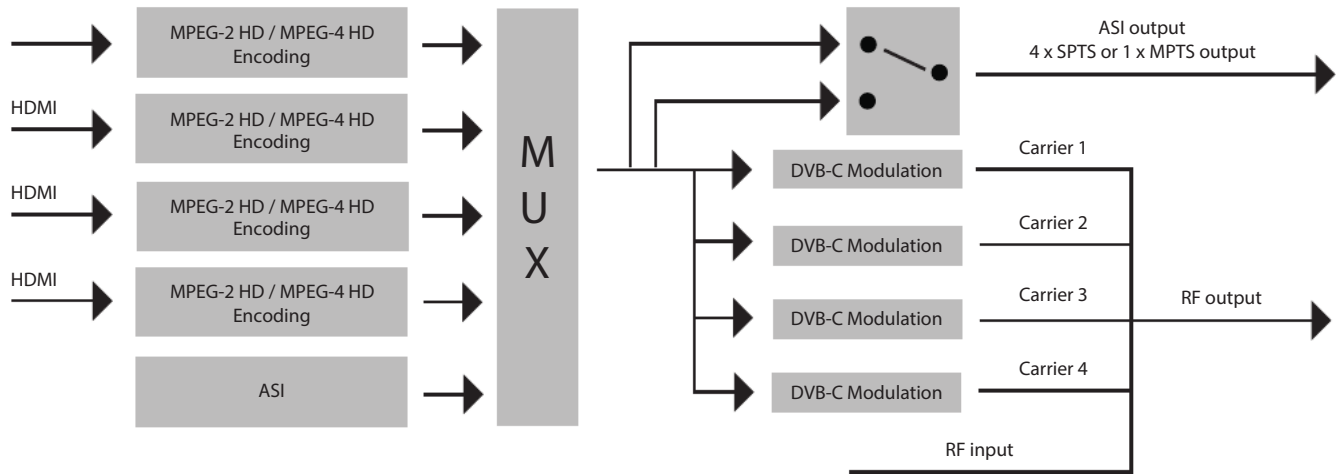
ACHTUNG: *The following safety information must be observed when performing maintenance and repair work. Failure to observe this safety information may result in personal injury due to electrical and thermal dangers!*



- The operating display only shows whether the DC current, which supplies the device components, has been disconnected from the mains voltage. If the operating display (for the power supply unit or the device) does not light up, this does not mean that the device has been fully disconnected from the mains voltage. There may still be voltages in the device that are dangerous to touch. You may therefore not open the device.
- The cover for the power supply unit is designed to prevent accidental contact with voltages that are dangerous to touch, and must not be removed.
- Housing components near the cooling fins at the rear, or actual the cooling fins, may become very hot.
- Read carefully: EN 60728-11 Safety requirements: No service work during thunderstorms.
- A defective device may only be repaired by the manufacturer to ensure that components with the original specification are used (e.g. power cable fuse). Improperly performed repairs may result in considerable dangers for the user or installer. If malfunctions occur, the device must therefore be disconnected from the mains and authorised experts must be consulted. The device may need to be sent to the manufacturer.

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Signal flow



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Decoding	Encoding Details					Latency (ms)
	Resolution	Encoding Bit rate	Low Latency Modus	Signal source	Encoding Type	
DVB-C HD STB	1080i@50	14M	MODE 1	HDMI	Mpeg-2	170
					H.264	347.5
				SDI	Mpeg-2	227.5
					H.264	367.5
			MODE 2	HDMI	Mpeg-2	222.5
					H.264	395
				SDI	Mpeg-2	240
					H.264	397.5
DVB-C HD STB	720p@50	14M	MODE 1	HDMI	Mpeg-2	85.75
					H.264	237.5
				SDI	Mpeg-2	127.5
					H.264	295
			MODE 2	HDMI	Mpeg-2	182.5
					H.264	277.5
				SDI	Mpeg-2	167.5
					H.264	325
DVB-C HD STB	576i@50	14M	MODE 1	HDMI	Mpeg-2	310
					H.264	600
				SDI	Mpeg-2	330
					H.264	620
			MODE 2	HDMI	Mpeg-2	270
					H.264	610
				SDI	Mpeg-2	280
					H.264	620

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Appendix

Decoding Terminal	Encoding Details					Average Latency (ms)
	Resolution	Encoding Bit Rate	DTS Mode	Single Source Interface	Encoding Type	
DVB-C HD STB	1080i@50	14M	DTS=1	HDMI	Mpeg-2	170
					H.264	347.5
			SDI	Mpeg-2	227.5	
				H.264	367.5	
			DTS=40	HDMI	Mpeg-2	222.5
					H.264	395
SDI	Mpeg-2	240				
	H.264	397.5				

DVB-C HD STB	720p@50	14M	DTS=1	HDMI	Mpeg-2	85.75
					H.264	237.5
			SDI	Mpeg-2	127.5	
				H.264	295	
			DTS=40	HDMI	Mpeg-2	182.5
					H.264	277.5
SDI	Mpeg-2	167.5				
	H.264	325				

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DVB-C HD STB	576i@50	14M	DTS=1	HDMI	Mpeg-2	310
					H.264	600
			SDI	Mpeg-2	330	
				H.264	620	
			DTS=40	HDMI	Mpeg-2	270
					H.264	610
SDI	Mpeg-2	280				
	H.264	620				

Type		HDIQ 4
Order number		380 400
EAN-Code		4026187240868
Encoding		
Video encoding		MPEG-2, MPEG-4 AVC/H.264
Input		HDMI*4
Resolution		1920*1080_60P, 1920*1080_50P (for MPEG-4 AVC/H.264 only) 1920*1080_60i, 1920*1080_50i, 1280*720_60p, 1280*720_50P 720*480_60i, 720*576_50i
Video Bit rate	[Mbps]	1 - 19
Low delay		Normal, mode 1, mode 2
Audio encoding		MPEG-1 Layer II, MPEG-2-AAC, MPEG4-AAC, AC-3 2.0
Sample rate	[kHz]	48
Audio Bit rate	[kbps]	64, 96, 128, 192, 256, 320
Modulation DVB-C		
Standard		J.83A , J.83B, J.83C
MER	[dB]	≥ 42
RF output		up to 4 output frequencies in the range 30 - 960 MHz
RF output level	[dbm]	-30...-10 (77~97 dBμV), 0.1dB steps
Symbol rate	[Mpsps]	5,000 ~ 9,000 adjustable
Constellation		J.83A: 16 / 32 / 64 / 128 / 256QAM; J.83B and J.83C: 64 / 256QAM
Bandwidth		J.83A: 8 M; J.83B and J.83C: 6 M
IP output		
Transmission protocols		UDP, RTP, RTSP
Type of transport stream		4 x SPTS and 1 x MPTS
System		
Local interface		LCD + control buttons
Remote management		WEB interface
Outputs		1 IP (4*SPTS or 1 MPTS) out over UDP, RTP/RTSP (RJ45, 100 M)
NMS interface		RJ45, 100 M
Language		English
Common data		
Power supply	[VAC]	100 - 240
Dimensions	[mm]	420 x 400 x 44
Weight	[kg]	4.5
Ambeint temperature	[°C]	0 - 45

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