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ASTRO®

HDQ 1 V2

HDMI to QAM Encoder

DRAFT VERSION

Operating manual

Before operating the device

NOTE: *Read this operating manual carefully! It contains important information about installation, ambient conditions and maintenance of the device. Keep this operating manual for future use and for handover in the event of a change of owner or operator. A PDF version of this manual can be downloaded on the ASTRO website (there may be a more recent version). The ASTRO company confirms that the information in this manual was correct at the time of printing, but it reserves the right to make changes to the specifications, the operation of the device and the operating manual without prior notice.*

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Contents

Symbols and conventions used

Symbols used in this manual

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.

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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 disposal.

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

Intended use

The HDQ 1 V2 is an HDMI to QAM converter. It is intended exclusively for signal conversion.
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 for this manual

Installation and starting operation

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

Device configuration

The 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:

☐ HDMI to QAM converter HDQ 1 V2

☐ Power supply unit

☐ Operating manual

[1] Fastening plates for wall mounting
[2] RF input
[3] RF output
[4] Power supply socket
[5] LAN socket
[6] CC (no function)
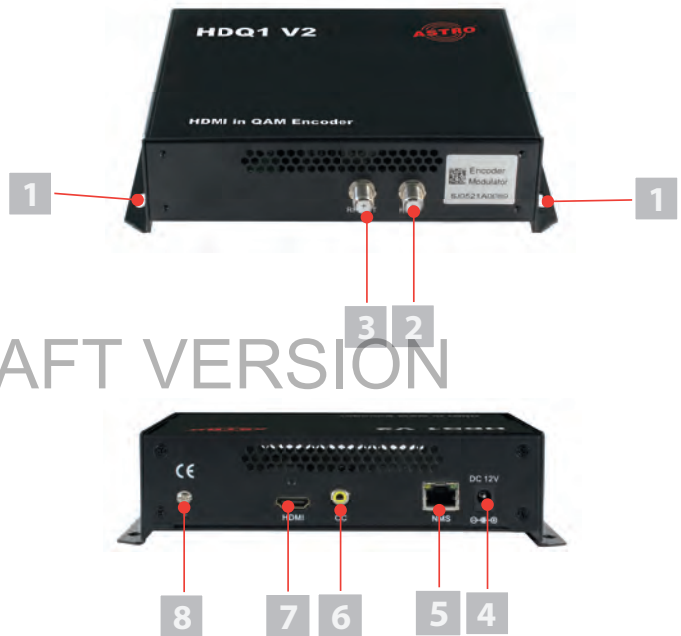[7] HDMI socket
[8] Earth connection

Fig. 1: HDQ 1 V2 signal converter

The HDQ 1 V2 signal converter has a CE marking. This confirms that the product complies with the relevant EC directives and adheres to the requirements specified therein.

CE

Important safety information

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

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

Intended use

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

Before operating the device

NOTE: *Read this operating manual carefully! It contains important information about installation, ambient conditions and maintenance of the device. Keep this operating manual for future use and for handover in the event of a change of owner or operator. A PDF version of this manual can be downloaded on the ASTRO website (there may be a more recent version).*

☐ Check the packaging and the device for transport damage immediately. Do not operate a device that has been damaged.

☐ Carrying the device by the power cable may damage the power cable or the strain relief and is therefore not permitted.

Installation and operation

☐ The device may only be installed and operated by qualified persons (in accordance with EN 62368-1) or by persons who have been instructed by qualified persons. Maintenance work may only be carried out by qualified service personnel.

☐ An installation site must be provided that prevents children from playing with the device and its connections.

- [ ] 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 vertical surfaces. The installation basis should be level and non-flammable. Operating position: Device vertical.

- [ ] The permitted ambient temperatures specified in the technical data must be complied with. If the device overheats, the insulation used to insulate 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 recesses or covering the installation location, for example using curtains, is not permitted. Ventilation openings must not be covered.

- [ ] If the device is installed in a cabinet, ensure adequate air convection is possible to avoid exceeding the maximum permitted ambient temperature.

- [ ] Do not place any objects on the device or on the external power supply unit.

- [ ] The subscriber network must be earthed in accordance with EN 60728-11 and must remain earthed even when the device is removed.

- [ ] The device and the power supply unit do not provide protection against water and may therefore only be operated and connected in dry rooms. The device and the external power supply unit must not be exposed to splashing or dripping water, condensation or similar effects of water, as this may impair the isolation from the mains voltage.

- [ ] The mains plug of the external power supply unit is used as a mains voltage disconnection unit in the event of servicing and danger, and must therefore be accessible and usable at any time. The external power supply unit is operational when connected to the mains power. If the power supply unit is also connected to the DC socket of the device, the device is also in operation.

- [ ] The device may only be powered by the supplied external power supply unit. The supplied external power supply unit may only be used to power the device supplied with the external power supply unit.

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Adhere to all applicable national safety regulations and standards.

Excess mechanical loads (e.g. falling, impacts, vibrations) may damage the insulation used to provide protection from the mains voltage.

High excess currents (lightning strikes, surges in the power utility grid) may damage the insulation used to provide protection from the mains voltage.

If there is no information about the intended use (e.g. operating site, ambient conditions), or the operating manual does not include the corresponding information, you must consult the manufacturer of this device to ensure that the device may be installed. If you do not receive the required information from the manufacturer, do not operate the device.

In rooms in which the climatic conditions vary (e.g. due to sunlight), the device may only be operated if the permissible ambient temperature can be maintained.

Do not install the device and external power supply unit in locations with excessive dust formation, as this may impair the isolation from the mains voltage.

Electromagnetic compatibility (EMC)

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

Before installation, make certain that you have checked the device for mechanical damage. Do not use damaged or bent covers or housings.

During operation, the device must always be covered by the components provided for this purpose. It is not permitted to operate the device when the cover is open.

Maintenance

☐ The power indicator – if present – only shows whether a DC current, which supplies the device components, has been disconnected. However, power indicators (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 voltage. There may still be voltages in the external power supply unit that are dangerous to touch. Even after disconnection from the mains, there may still be voltages in the external power supply unit that remain dangerous to touch for several minutes. Do not open the case of the device or the external power supply unit.

☐ Read carefully: EN 60728-11, Safety requirements/No service work during electrical storms!

☐ Disconnect the mains plug before cleaning the device!

Repair

☐ Repairs may only be performed by the manufacturer. Improperly performed repairs may result in considerable dangers for the user.

☐ 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 to avoid any danger of suffocation. Plastic bags are not toys.

☐ Do not store the device near chemicals or in places in which any leakage of chemicals may occur. In particular, organic solvents or fluids 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 supplied mains adapter to any other products.

Warranty conditions

The general terms and conditions of ASTRO Strobel GmbH apply. They can be found in the current catalogue or on the internet under "www.astro-kom.de".

Performance description

The HDQ 1 V2 is used to modulate local HDMI sources (e.g. camera, set-top box, PC) into a QAM output channel. The device offers the following performance features:

- RF frequency range: 100 - 1,000 MHz
- RF output level range: 46 - 93 dBµV
- QAM signal is fed out via the F socket
- Different resolutions
- Operation and configuration via web interface
- Power supply via 12-V plug-in power supply unit
- Wall mounting

Disposal

All of our packaging materials (cardboard boxes, inserts, plastic film and bags) are completely recyclable.
After use, this device must be disposed of in an orderly manner as electronic scrap, in accordance with the current disposal regulations of your district/country/state.

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

Suggested installation

PREPARATION:

Before you install the device, first drill four holes
in a vertical installation surface and insert suitable wall plugs into the holes. To do this, first place the device on the wall and mark the four points at which the holes are to be drilled according to the position of the fastening plates on the device.

The following describes how to install the device:

TASK

1.   Place the back of the device against the mounting surface so that its attachment points are exactly above the four screw heads. The RF connection sockets of the device must point downwards.

2.   Now push the housing slightly downwards until the upper edges of the attachment points press against the screws.

RESULT:

The device is now attached and you can begin the connection.

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Connection and start-up

PREPARATION:

To connect the HDQ 1 V2 connectors, proceed as follows:

TASK

1. Plug one F connector each into the RF input socket [2] and RF output socket [3] (see left) of the device. Make sure that the coaxial cables are laid with a sufficient bending radius.

2. Connect the earth connection [8] of the device.

3. Insert the connector of an HDMI cable into the HDMI socket [11] of the HDQ 1 V2.

4. Insert the second connector of the HDMI cable into the HDMI socket of the device whose transport stream is to be processed by the device (e.g. camera signal, DVD player).

5. Connect the LAN socket of your laptop or PC to the LAN socket [5] of the device.

6. Connect the device to the included plug-in power supply via the power supply socket [4].
Plug the power supply into a wall socket that supplies a mains voltage that corresponds to the specifications of the power supply.

RESULT:

The device is now connected and you can start the configuration (see next section "Configuration").

ATTENTION: The device is not hot-pluggable! It is therefore not possible to replace components while the system is running.

ATTENTION: If F-connectors are handled improperly or carelessly, compliance with the EMC limit values cannot always be ensured.

NOTE: The use of another power supply unit with a different output voltage or polarity can lead to the destruction of the device as well as to malfunctions and voids the warranty!
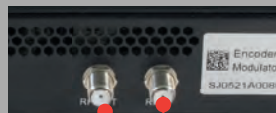
Figure 3 shows a connection example for the HDQ 1 V2:
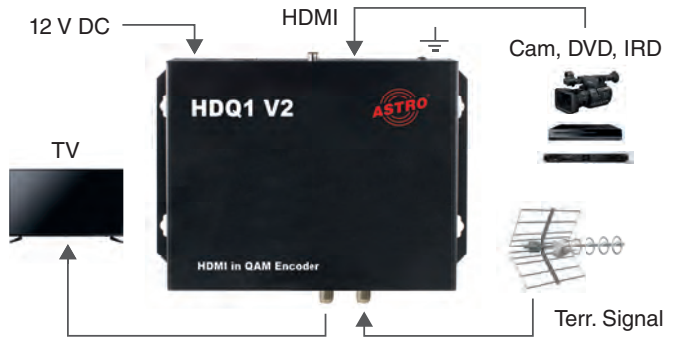
Fig. 3: Connection example

Figure 4 shows a connection example with cascade connection of two HDQ 1 V2 devices. In order to create additional capacities for input signals, several HDQ 1 V2 can be interconnected. To do this, you must connect the RF output of one device to the RF input of another.
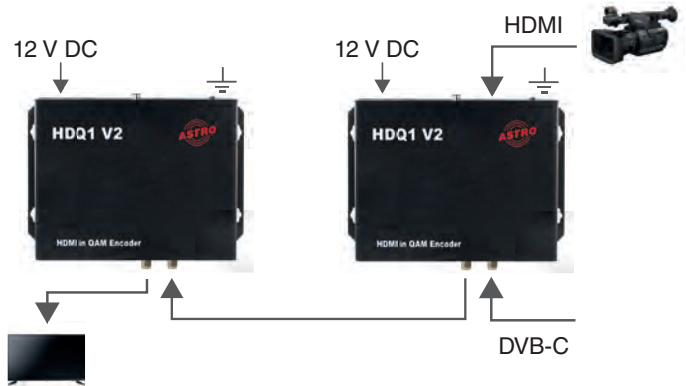
Fig. 4: Connection example with cascade connection

Configuration via the web interface

You can configure the HDQ 1 V2 via a web browser interface.

NOTE: *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.*

Log in

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 HDQ 1 V2 and your PC / laptop are on the same network.
If this is the case, enter the IP address of the HDQ 1 V2 in the address line of the browser and press the Enter key.
You should now see the login screen (see figure 5 below).
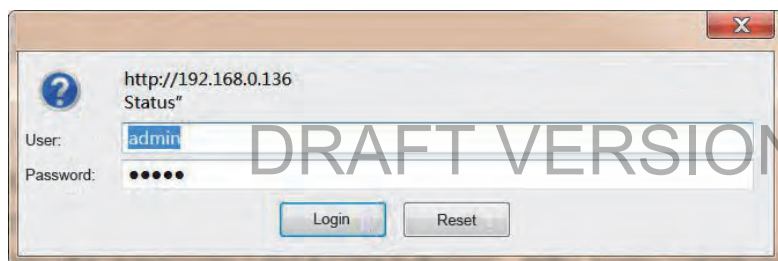
Fig. 5: login screen
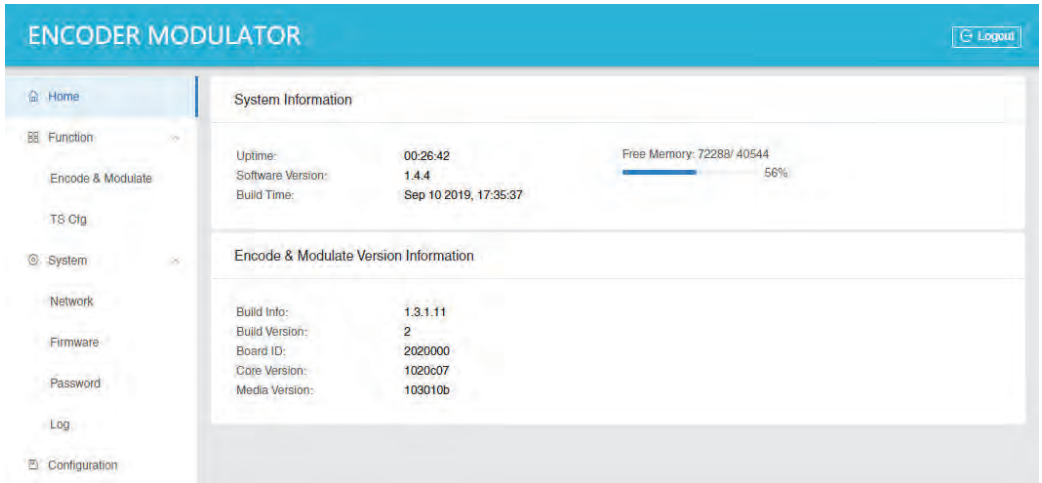
Enter your user name and password here. The user name and password are "admin" by default. Then click on the "Login" button to access the configuration interface.

NOTE: *Explanations of the technical terms used in the following sections can be found here:*
https://www.etsi.org/deliver/etsi_ts/101100_101199/101154/02.04.01_60/ts_101154v020401p.pdf

Status overview

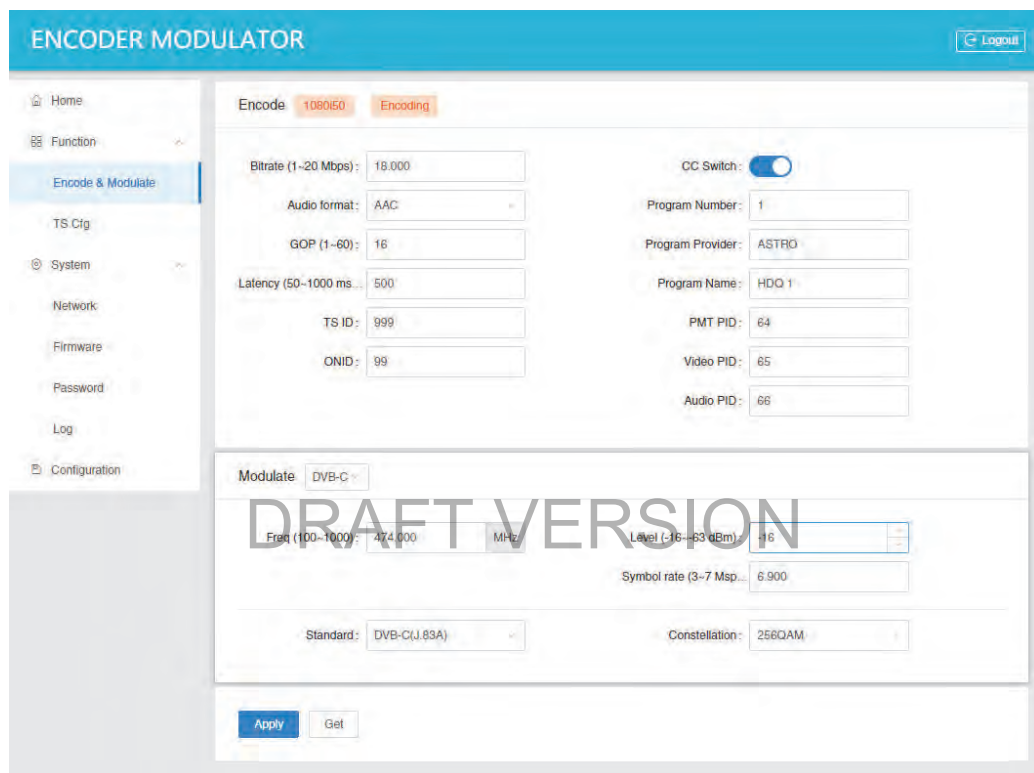After logging in, the interface displays a status overview (see figure 6).

Fig. 6: Status overview

On the status page, you can find information about the software and hardware, the amount of free space, system time, etc.

Editing and saving encoder settings

To edit the encoder parameters, click on the "Encode & Modulate" item in the main menu on the left (see fig. 6). The following input form will now appear:

Fig. 7: Encoder and modulator settings

In the input form on the right, you will see the "Encode & Modulate" section at the top. Here, you can enter the parameters for the encoding and the QAM modulation into input fields or select them from drop-down lists.

The following parameters can be changed for the encoding:

☐ Bitrate: Enter a value from 1 - 20 Mbps here.

☐ Audio format: Here, you can select the desired audio encoding from a drop-down list (possible options: MPEG I Layer 2, AAC, AC3).

- `GOP:` Group Of Pictures. Defines the use of I, P, and B frames in the video stream. Enter a value between 1 and 60 here. The value selected depends on the encoding standard used (for example, H.264 or H.265).
- `Latency:` Enter the existing latency from the generation of the signal to the arrival of the input signal at the encoder here. Values between 50 and 1000 ms are possible.
- `TS-ID:` Enter the transport stream ID here.
- `ON-ID:` Enter the ON-ID for identifying the transport stream here.
- `CC Switch:` Enable the closed caption function, if desired, by turning this switch on.
- `Program Number:` Enter the program number here.
- `Program Provider:` The program provider can be entered here.
- `Program Name:` Enter the program name here.
- `PMT PID:` Enter the PID for the program map table here.
- `Video PID:` Enter the PID for the video data stream here.
- `AUDIO PID:` Enter the PID for the audio data stream here.

The following parameters can be changed for the QAM modulation:

Fig. 8: Modulator settings

☐ `Frequency:` Enter a frequency between 100 and 1,000 MHz here.

☐ `Standard:` Select the modulation standard (J.83A or J.83B) from the drop-down list.

☐ `Level:` Enter the RF output level here (-16 to -63 dBm).

☐ `Symbol rate:` Enter a value for the symbol rate here (3,000 to 7,000 Msps).

☐ `Constellation:` Select the preferred constellation from the drop-down list (64QAM or 256QAM).

When you have set all parameters as desired, click on the "Apply" button underneath the input form.

NOTE: *To save the selected settings permanently, first select the "Configuration" item in the main menu on the left. Then click on the "save" button in the Save section. The selected settings will then be available again even after restarting the device.*
If you do not save the settings in this way, the settings activated by pressing the "Apply" button will only be retained until the device is switched off or disconnected from the mains.

Configuring the transport stream
To edit the transport stream parameters, click on the "TS Cfg" item in the main menu on the left. The following input form will now appear:

Fig. 9: Transport stream settings

Here, you can set the following parameters:

☐ `Network ID:` Enter the network ID here (value between 0 and 65536).

☐ `LCN Mode:` Select the LCN mode from the drop-down list (preset to "European").

☐ `LCN:` Enter the value for the LCN here (value between 1 and 999).

☐ `Chan List ID:` Enter the ID for the channel list here.

☐ `Version:` Version number. It is recommended that you do not change the preset value. ☐
`Country Code:` Country code. It is recommended that you do not change the preset value.

☐ `Private Data:` It is recommended that you do not change the preset value.

☐ `Chan List Name:` Name of the channel list. It is recommended that you do not change the preset name.

When you have set all parameters as desired, click on the "Apply" button underneath the input form.

NOTE: *To save the selected settings permanently, first select the "Configuration" item in the main menu on the left. Then click on the "save" button in the Save section. The selected settings will then be available again even after restarting the device.*
If you do not save the settings in this way, the settings activated by pressing the "Apply" button will only be retained until the device is switched off or disconnected from the mains.

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Setting network parameters

To edit the network parameters, click on the "Network" item in the main menu on the left. The following input form will now appear:
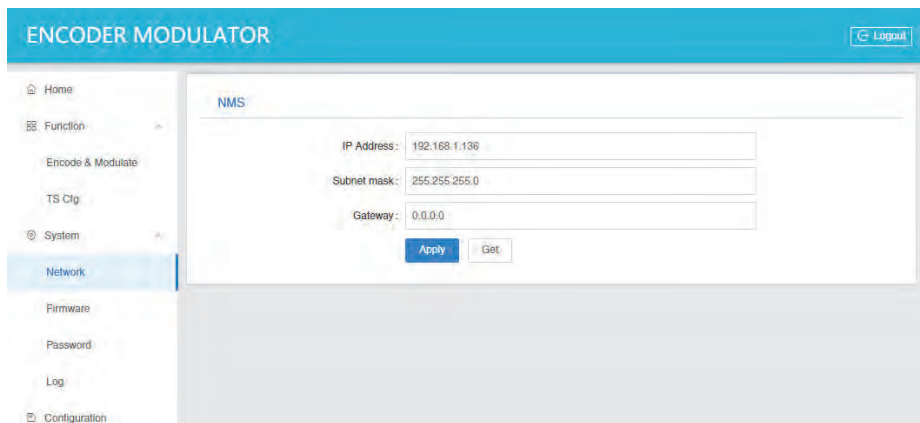

Fig. 10: Network settings

Here, you can set the following values:

- ☐ `IP Address:` Enter the IP address of the device here.

- ☐ `Subnet mask:` Enter the subnet mask.

- ☐ `Gateway:` Enter the value for the gateway here.

NOTE: Make a note of the values entered in case they become necessary in the event of a change of user. Remember that the device does not have a hardware reset function and can only be configured using this data if the network settings are changed.

When you have set all parameters as desired, click on the "Apply" button underneath the input form.

NOTE: To save the selected settings permanently, first select the "Configuration" item in the main menu on the left. Then click on the "save" button in the Save section. The selected settings will then be available again even after restarting the device.
If you do not save the settings in this way, the settings activated by pressing the "Apply" button will only be retained until the device is switched off or disconnected from the mains.

Updating the firmware

NOTE: Firmware updates can be downloaded from the "Service" section of www.astro-kom.de.

To perform a firmware update, click on the "Firmware" item in the main menu on the left. The following view appears:
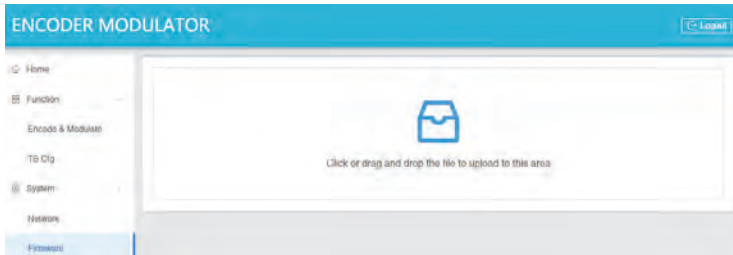

Fig. 11: Updating the firmware

After you have downloaded the file required for a firmware update from the ASTRO website, drag and drop the file into the marked area to start the update process automatically. Once the update process is complete, reboot the device to complete the update.

Changing password and user name

If you want to change your password and/or user name, click on the "Password" item in the main menu on the left. The following input form will now appear:
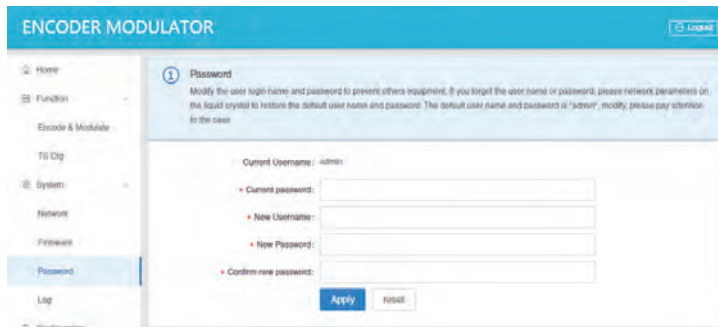

Fig. 12: Changing password

Enter your current password and the new password here, as well as a new user name if necessary.

When you have set all parameters as desired, click on the "Apply" button underneath the input form.

NOTE: *To save the selected settings permanently, first select the "Configuration" item in the main menu on the left. Then click on the "save" button in the Save section. The selected settings will then be available again even after restarting the device.*

If you do not save the settings in this way, the settings activated by pressing the "Apply" button will only be retained until the device is switched off or disconnected from the mains.

Downloading log files

To download current log files, click on the "Log" item in the main menu on the left. The following input form will now appear:
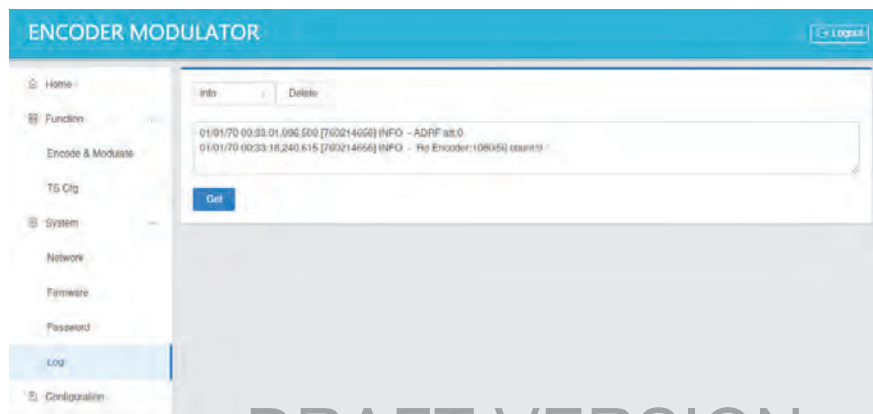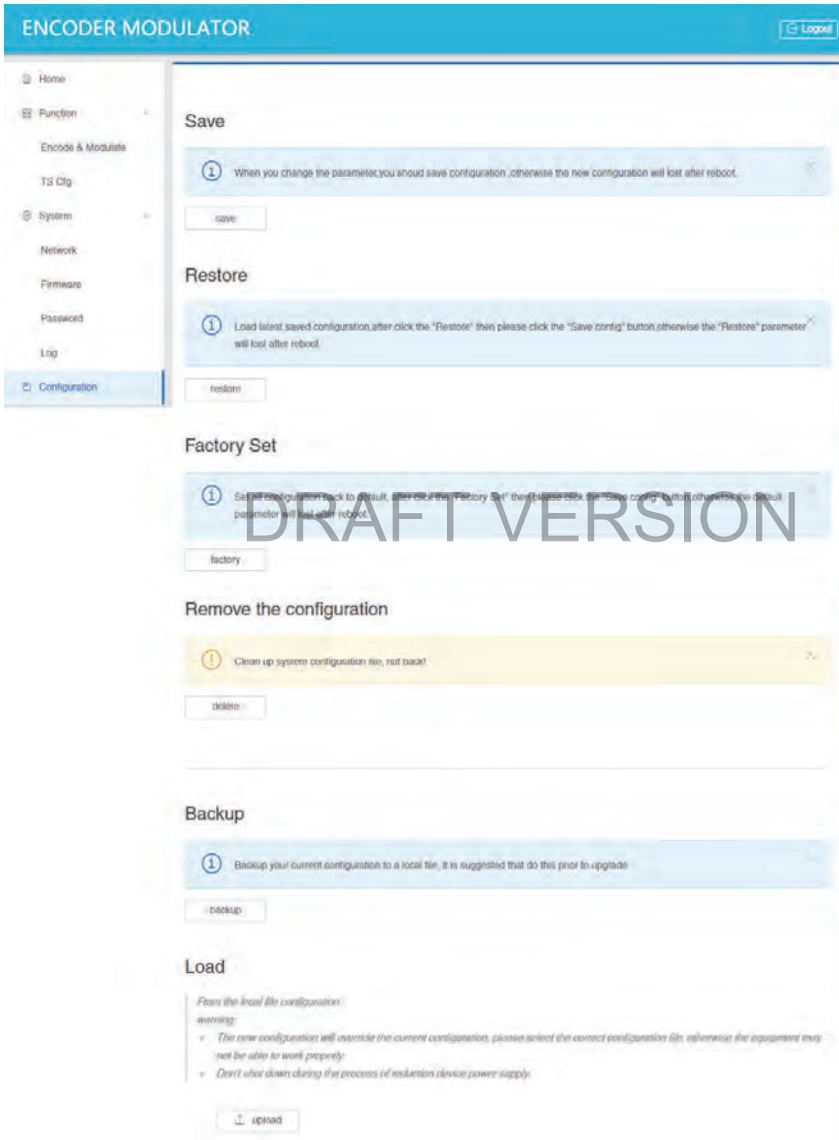

Fig. 13: Downloading log files

A list of the latest log files is displayed here. You can select and download them by clicking on the "Get" button. If you want to delete a file, click on the "Delete" button.

Modifying the configuration

To change the configuration, click on the "Configuration" item in the main menu on the left. The following view appears:

Fig. 14: Modifying the configuration

Here, you can perform the following actions:

- ☐ `Save`: Click on the "save" button to save the changes you have previously made to the configuration so that they are retained even after the device is rebooted.

- ☐ `Restore`: Click the "restore" button to load the most recently saved configuration.

- ☐ `Factory Set`: Click the "factory" button to load the factory configuration. To retain this configuration even after a reboot, you must then click the "save" button in the Save section to save it permanently.

- ☐ `Remove the configuration`: Click the "delete" button to delete the configuration. **This action cannot be undone!**

- ☐ `Backup`: Click the "backup" button to save the current configuration to a local file. It is a good idea to save to a file, for example, before performing a firmware update.

- ☐ `Load`: Click the "upload" button to upload a configuration file to the device. **Make sure that you select the right file in order to prevent the device from malfunctioning.**

NOTE: *The power supply of the device must not be interrupted during the loading process!*

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Troubleshooting

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

☐ Check whether the device has been connected to the specified mains voltage.

☐ Check whether the coaxial cables are connected correctly and make sure there are no breaks or short circuits in the connectors.

☐ Check whether the output level on the device is within the permissible limits for the operating level.

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

Maintenance and repair

ATTENTION: *It is essential that the following safety infor-mation be observed when performing maintenance and repair work. Failure to observe this safety information may result in physical injury due to electrical and thermal dangers!*

☐ The power indicator – if present – only shows whether the DC current, which supplies the device components, has been disconnected from the mains voltage. If the power indicator (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 external power supply unit that are dangerous to touch. Do not open the case of the device or the external power supply unit.

☐ Read carefully: EN 60728-11 Safety requirements: No service work during electrical storms.

☐ 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.

Technical data

Type		HDQ 1 V2
Order number		380 288
EAN-Code		4026187210854
Encoding		
Video		
Video encoding		MPEG 2 / H.264
Interface		HDMI
Resolution, Input		480@59.94/60i; 576@50i ; 720@50/59,94/60p; 1080@50i; 1080@59,94/60i 1080@50p; 1080@59,94/60p
Resolution, Output		480@30p; 576@25p; 720@25/30p; 1080@25p; 1080@30p; 1080@25p; 1080@30p
Aspect ratio		16:9
Bit rate	[Mbps]	1,000 - 20,000
Audio		
Audio encoding		MPEG I layer 2, AAC, AC3
Sample rate	[kHz]	48
Bit rate	[kbps]	MPEG I layer 2 (192 kbps); AAC (VBR); AC3 (128 kbps)
DVB-C Modulation		
Standard		J.83A (DVB-C), J.83B
Bandwidth		J.83A: 8M; J.83B: 6M
Constellation		J.83A: 16/32/64/128/ 256 QAM; J.83B: 64/ 256 QAM
Symbol rate	[Msps]	3,000 - 7,000
MER	[dB]	≥ 35
RF Frequency	[MHz]	100 … 1000 (1 kHz steps)
RF output level	[dBm]	-63 … -16 (46 - 93 dBµV; 1 dB steps)
Common data		
Management		web, language: english
Firmware update		web update
Power supply	[VDC]	12 (external power supply unit)
Dimensions	[mm]	203 x 144 x 52
Weight	[g]	approx. 550 without power supply unit

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ASTRO Strobel Kommunikationssysteme GmbH