



# User Manual

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## PROHDMI STREAMER/MODULATOR

Ref. 5520 / 5530-5531



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# 1. INTRODUCTION

## 1.1. Product description

The ProHDMI Streamer/Modulator is a professional headend encoder with 4 HDMI inputs and 1 IP/coaxial output port. The ProHDMI allows you to stream high quality video and optimize video experience.

The **ProHDMI Streamer (Ref. 5520)** has 1 IP output port and supports H.264 standard. The **ProHDMI Modulator (Ref. 5530)** has 1 coaxial output port with up to 2 independent output MUXs and supports DVB-T/DVB-C/ATSC-T/ATSC-C/DTMB standards. The **ProHDMI Modulator (Ref. 5531)** has 1 coaxial output port with up to 2 independent output MUXs and supports DVB-T/ISDB-T standards.

The ProHDMI module has an ethernet management port for system control and configuration. The module should be slid in a 19 inch DMH rack (Ref. 5065ETH).

## 1.2. Typical installation

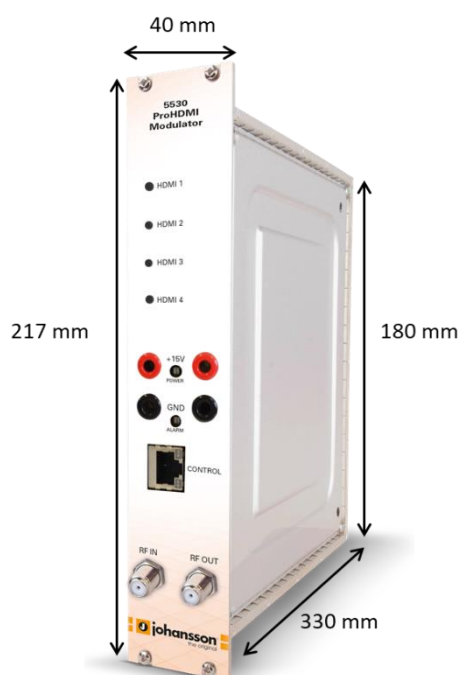
The ProHDMI can be used to provide high quality HDMI signals in a wide range of projects, both in the hospitality as in the residential market. Typical buildings or infrastructures where the ProHDMI can be used include, but are not limited to:

- Large and small hotels, hostels, bed and breakfasts, holiday parks
- Hospitals, resthomes, prisons
- Large and small multi-dwelling units with an international public, settlements
- Maritime infrastructure such as boats, yachts, barges

### 1.3. Package contents

- 1 x ProHDMI (ref. 5520 or 5530 or 5531)
- 1 x 75 Ohm Terminator DC Block (ref. 5530 and 5531)
- 1 x RF bridge (ref. 5530 and 5531)
- 2 x DC banana bridges

### 1.4. Product dimensions



## 1.5. Mounting

Proper installation is critical to system performance. It is particularly important to install the ProHDMI correctly in order to receive and distribute optimal signal quality. Installing the ProHDMI should be a straightforward process.

- Install the ProHDMI in a well ventilated and cool room. In case the ambient temperature of the room is higher than 30°C (or 91°F), the ProHDMI must be used in combination with a fan unit (Ref. 5062ETH).
- Slide the ProHDMI in a 19 inch DMH rack (Ref. 5065ETH). screw 4 bolts in the front plate of the ProHDMI to secure it to the DMH rack.
- Plug the HDMI cables in the back of the ProHDMI module
- **ProHDMI Streamer** (Ref. 5520): plug an Ethernet cable in the streaming port. **ProHDMI Modulator** (Ref. 5530/5531) insert a coaxial cable in the RF out port.
- Connect the ProHDMI to the power supply unit (Ref. 5051ETH or 5051UKETH) (power + GND) using the DC banana bridges. If applicable, also connect the ProHDMI to the next module in the rack, making sure they are powered as well. Once it is powered, a **RED** LED above the control port will start blinking. When the LED stops blinking the module is completely booted and ready for configuration. This will take approximately 4 minutes.
- For configuration of the module, plug one end of the Ethernet cable in the control port, and the other end in a computer (to access the webinterface).
- More information about configuration of the ProHDMI module can be found in the next section

## 2. CONFIGURING THE PROHDMI USING THE WEBINTERFACE

### MINIMAL SYSTEM REQUIREMENTS

The WebGUI is supported by the following web browsers:

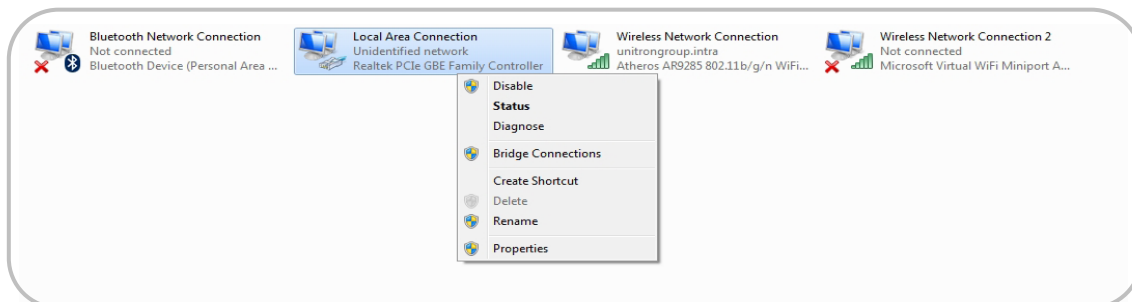
- Google Chrome
- Mozilla Firefox
- Internet Explorer
- Safari

Make sure to use the most recent version of the browser. When using a different browser, we cannot guarantee a correct functioning of the interface.

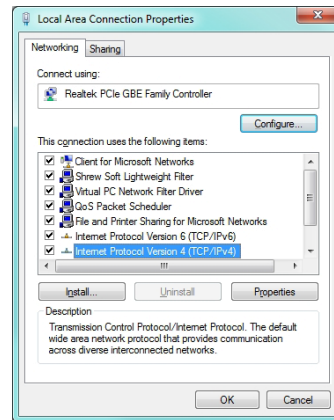
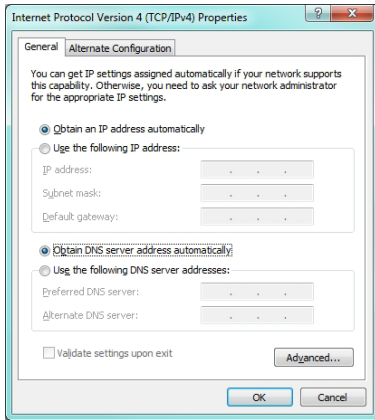
### LOGGING IN TO THE DEVICE

To connect the module to your computer, plug one end of the Ethernet cable in the control port, and the other end in a computer. Once the ProHDMI is powered and fully booted, the module is reachable and ready to be configured.

- The module will obtain an IP address from your PC, this will take a little while.
- For this operation to work, **it is important that the PC is NOT set with a manual IP address!**
  - o Set the adapter to obtain an automatic IP address as explained in the following procedure (for Microsoft Windows7®)
  - o Navigate to the *Control Panel* (Start → Control Panel).
  - o Enter the *Network and Sharing Center* and go to the *Adapter Settings*
  - o Right-click on the *Local Area Connection* and choose *Properties*.



- Double click on Internet Protocol Version 4 (TCP/IPv4) to enter the IP settings of your adapter.
- Make sure the *'Obtain an IP address automatically'* checkbox is selected.
- Click **OK** to save the settings.



## GENERAL CONFIGURATION

There are 2 options to open the WebGUI:

- 1) **With Apple Bonjour Service installed on your PC**

Open your web browser, and go to:  
<http://start.local>

To install Apple's Bonjour Service on your PC:  
[https://support.apple.com/kb/dl999?locale=nl\\_NL](https://support.apple.com/kb/dl999?locale=nl_NL)

- 2) **IP address with DHCP server**

Identify the IP address of the module in your DHCP server and insert the IP address in your web browser:  
<http://XXX.XXX.XXX.XXX>

The webinterface will now open.

Below, the different actions for configuration are discussed:

### DEVICE > Information

The landing page with information about the device will appear.

On this screen, you see general information and monitoring information.

Device	General information	
Information	<b>Hardware</b>	<b>Software</b>
Network configuration	Serial number: 1725010030630	Version: 1.0.0.BETA-1
Login configuration	Version: V01.00.00	Release date: Thu Jul 20 15:17:34 2017
Update	<b>Monitoring information</b>	
Download settings	<b>Runtime</b>	
Upload settings	Uptime: 0 days, 04:11	
Factory reset		
Reboot		
<b>Inputs</b>		
HDMI		

## DEVICE > Network Configuration

You can change the Hostname and the network interface settings.  
Press *Apply* to save the changes you made.

**Device**

- Information
- Network configuration
- Login configuration
- Update
- Download settings
- Upload settings
- Factory reset
- Reboot

**Inputs**

- HDMI

**Outputs**

- RF

**General settings**

**Hostname**

5530

**Network interface settings**

**Management interface**

*Obtain automatically*

*IP address*

*Subnet mask*

*Gateway*

*DNS*

## DEVICE > Login configuration

To prevent unauthorised access to the module. Click enable password protection and change the username and password of the module.  
Press *Apply* to save the changes you made.

**Device**

- Information
- Network configuration
- Login configuration
- Update
- Download settings
- Upload settings
- Factory reset
- Reboot

**Inputs**

**Login configuration**

**Enable password protection**

*Username*

*Password*

*Confirm password*



## DEVICE > Update

Click on *Choose file*, and open the upgrade file.

Click *Update* to send the file to the device, this will install the new firmware on the device.

The screenshot shows the 'Device' menu on the left with 'Update' selected. The main area is titled 'Firmware update' and contains an 'Update file' section with a 'Choose file' button and a progress bar at 0%. Below this is an 'Update' button.

## DEVICE > Download settings / Upload settings / Factory reset / Reboot

Click *Download settings* to download the settings of the module.

Click *Upload settings* to upload settings to the module.

All settings can be reset to default by means of a factory reset. If it is at issue, click *Factory reset* to reset your ProHDMI. This will erase the current settings on the device. The ProHDMI can also be manually reset. This can be done by inserting a pin (e.g. a paperclip) in the small opening in the front plate of the ProHDMI right above the letters "GND" (between the power and alarm LEDs).

- By pressing this button less than 2 seconds (LED above management port will turn **RED**), the device will reboot
- By pressing this button longer than 5 seconds (LED above management port will blink **GREEN**), the device will reboot, the IP settings will be reset and the login will be disabled.

By pressing *Reboot*, the module will reboot

The screenshot shows the 'Device' menu on the left with 'Download settings' highlighted. The main area is titled 'General information' and contains two panels: 'Hardware' and 'Software'. Below these is a 'Monitoring information' section with a 'Runtime' panel.

Hardware		Software	
Serial number:	1725010030630	Version:	1.0.0.BETA-1
Version:	V01.00.00	Release date:	Thu Jul 20 15:17:34 2017

Runtime	
Uptime:	0 days, 04:14

## INPUTS > HDMI

The Status of the HDMI source(s) should be locked (✓)

Change the Encoder settings for each input, according to your project needs.

- Name: Choose a name for the input
- SID (Service ID): 0 to 65535
- LCN (Logic Channel Number): 0 to 999
- PMT PID (Program Map Table Packet ID): 32 to 8190
- Video PID (Packet ID): 32 to 8190
- Video Type: H264
- Video bitrate (kbps): From 2000 to 30000 Kbps, but limited by MUX settings (see note 1)
- Audio PID (Packet ID): 32 to 8190
- Audio type: AAC, MPEG2
- Audio bitrate (kbps): From 32 to 320 Kbps
- GOP Size (Group of Pictures Size): 1 to 100

Press *Apply* to confirm your changes.

Note 1 : If you are not able to reach for instance 18.000kbps, you will need to increase the bandwidth by changing the “RF Output” settings (set constellation to 64QAM, guard interval to 1/32 and/or code rate to 7/8).

**Device**

- Information
- Network configuration
- Login configuration
- Update
- Download settings
- Upload settings
- Factory reset
- Reboot

**Inputs**

- HDMI

**Outputs**

- RF

**Status**

Input 1	Input 2	Input 3	Input 4
Lock <span style="color: green; font-size: 1.2em;">✓</span>	Lock <span style="color: green; font-size: 1.2em;">✓</span>	Lock <span style="color: green; font-size: 1.2em;">✓</span>	Lock
Video format 1080i50	Video format 1080i50	Video format 1080i50	Video format

**Encoder settings**

**Input 1**

Name	<input type="text" value="HDMI Input 1"/>
SID	<input type="text" value="1"/>
LCN	<input type="text" value="1"/>
PMT PID	<input type="text" value="40"/>
Video PID	<input type="text" value="44"/>
Video type	<input type="text" value="H.264"/>
Video bitrate (kbps)	<input type="text" value="10000"/>
Audio PID	<input type="text" value="48"/>
Audio type	<input type="text" value="MPEG2"/>
Audio bitrate (kbps)	<input type="text" value="192"/>
GOP size	<input type="text" value="60"/>

**Input 2**

Name	<input type="text" value="HDMI Input 2"/>
SID	<input type="text" value="2"/>
LCN	<input type="text" value="2"/>
PMT PID	<input type="text" value="41"/>
Video PID	<input type="text" value="45"/>
Video type	<input type="text" value="H.264"/>
Video bitrate (kbps)	<input type="text" value="10000"/>
Audio PID	<input type="text" value="49"/>
Audio type	<input type="text" value="MPEG2"/>
Audio bitrate (kbps)	<input type="text" value="192"/>
GOP size	<input type="text" value="60"/>

## OUTPUTS &gt; RF

PROHDMI MODULATOR (REF 5530 – 5531)

Select the Output MUX for the HDMI Inputs under Service settings. Make sure the Birate does not exceed the maximum Mbps, this can be checked at Status.

At Modulation settings, MUX 1 and 2 can be configured according to your project needs.

- Type:
  - ProHDMI Modulator (Ref. 5530): DVB-C, DVB-T, DTMB, ATSC-C, ATSC-T
  - ProHDMI Modulator (Ref. 5531): DVB-T, ISDB-T
- Level (dBm):
- Frequency (kHz): 174000-1218000 kHz
- Bandwidth (MHz): 6, 7, 8
- Constellation: QPSK, QAM-4NR, QAM-16, QAM-32, QAM-64, QAM-128, QAM-256,8VSB
- Guard Interval: 1/4, 1/8, 1/16, 1/32
- Code rate: 1/2, 2/3, 3/4, 5/6, 7/8
- FFT Mode (Fast Fourier Transform)(Carrier Type): 2K, 8K
- Enabled: tick the mark to enable this output MUX

The Transport stream settings of MUX 1 and 2 can also be configured in this tab.

- TSID (Transport Stream ID): 0 to 65535
- ONID (Original Network ID): 0 to 65535
- NID (Network ID): 0 to 65535
- Private Data Spec: 0 to 4294967295
- Network Name: max 15 characters small & capital letters, numbers, "-" "\_" "space"
- Network version: 0 to 31

Press *Apply* to confirm your changes.

**Device**

- Information
- Network configuration
- Login configuration
- Update
- Download settings
- Upload settings
- Factory reset
- Reboot

**Inputs**

- HDMI

**Outputs**

- RF

**Status**

MUX 1

Bitrate  20 / 27 Mbps

MUX 2

Bitrate  20 / 27 Mbps

**Service settings**

Services

Service name	Output MUX
HDMI Input 1	MUX 1 (474.0 MHz)
HDMI Input 2	MUX 1 (474.0 MHz)
HDMI Input 3	MUX 2 (858.0 MHz)
HDMI Input 4	MUX 2 (858.0 MHz)

**Modulation settings**

MUX 1

Type: DVB-T

Level (dBm): -25

Frequency (kHz): 474000

Bandwidth: 8 MHz

Constellation: 64-QAM

Guard Interval: 1/32

Code Rate: 3/4

FFT Mode: 8K

Enabled:

MUX 2

Type: DVB-T

Level (dBm): -25

Frequency (kHz): 858000

Bandwidth: 8 MHz

Constellation: 64-QAM

Guard Interval: 1/32

Code Rate: 3/4

FFT Mode: 8K

Enabled:

**Transport stream settings**

MUX 1

TSID: 1

ONID: 8442

NID: 8442

Private data spec: 40

Network name: Testlabo

Network version: 30

MUX 2

TSID: 2

ONID: 8442

NID: 8442

Private data spec: 40

Network name: Testlabo

Network version: 30

Apply

## OUTPUTS > IP PROHDMI STREAMER (REF 5520)

Make sure the total bitrate does not exceed 30000Kbps per input. When using a gigabit network, the total bitrate can go up to 120 MBps.

Select the output mode: SPTS or MPTS

### SPTS

Define the service and transport stream settings for the SPTS:

- Service name: HDMI 1 to 4
  - Enabled: tick the mark to enable or disable the service
  - Dest. Address: defines the destination address of the SPTS
  - Dest. Port: defines the destination port of the SPTS
- 
- TSID (Transport Stream ID): 0 to 65535
  - ONID (Original Network ID): 0 to 65535
  - NID (Network ID): 0 to 65535
  - Private Data Spec: 0 to 4294967295
  - Network Name: max 15 characters small & capital letters, numbers, "-" "\_" "space"
  - Network version: 0 to 31

Press *Apply* to confirm your changes.

**Device**

- Information
- Network configuration
- Login configuration
- Update
- Download settings
- Upload settings
- Factory reset
- Reboot

**Inputs**

- HDMI

**Outputs**

- IP

**Status**

**General**

Total bitrate  42 Mbps

**Service settings**

Output mode SPTS ▾

**SPTS 1**

Service name	Enabled	Dest. address	Dest. port
HDMI1	<input checked="" type="checkbox"/>	239.1.1.1	49152

**SPTS 2**

Service name	Enabled	Dest. address
HDMI2	<input checked="" type="checkbox"/>	239.1.1.2

**Transport stream settings**

**SPTS 1**

TSID

ONID

NID

Private data spec.

Network name

Network version

**SPTS 2**

TSID

ONID

NID

Private data spec.

Network name

Network version

Apply

## MPTS

Define the service and transport stream settings for the MPTS:

- Service name: HDMI 1 to 4
  - Enabled: tick the mark to enable or disable the service
  - Dest. Address: defines the destination address of the MPTS
  - Dest. Port: defines the destination port of the MPTS
- 
- TSID (Transport Stream ID): 0 to 65535
  - ONID (Original Network ID): 0 to 65535
  - NID (Network ID): 0 to 65535
  - Private Data Spec: 0 to 4294967295
  - Network Name: max 15 characters small & capital letters, numbers, "-" "\_" "space"
  - Network version: 0 to 31

Press *Apply* to confirm your changes.

**Device**

- Information
- Network configuration
- Login configuration
- Update
- Download settings
- Upload settings
- Factory reset
- Reboot

**Inputs**

- HDMI

**Outputs**

- IP

**Status**

**General**

Total bitrate  34 Mbps

**Service settings**

Output mode MPTS ▾

**MPTS 1**

Service name	Enabled	Dest. address	Dest. port
HDMI1	<input checked="" type="checkbox"/>	239.1.1.1	49152
HDMI2	<input checked="" type="checkbox"/>		
HDMI3	<input checked="" type="checkbox"/>		
HDMI4	<input checked="" type="checkbox"/>		

**Transport stream settings**

**MPTS 1**

TSID

ONID

NID

Private data spec.

Network name

Network version

Apply

### 3. TECHNICAL SPECIFICATIONS

#### Inputs: HDMI

Number of inputs	-	4 x HDMI 1.3
Video resolution	-	576i up to 1080p
Video encoding	-	H264/AVC
Audio encoding	-	MPEG1 Layer II / AAC
Connector type	-	HDMI Type A

#### Output: RF

Modulated channel frequency	MHz	174 - 1218
Output level	dB $\mu$ V	55 - 99 (adjustable)
MER	dB	Typ. 38

#### Output Settings

Output type	-	DVB-C	DVB-T	DTMB	ATSC-C	ATSC-T
Bitrate	Mbps	2 - 23				2-15
Channel bandwidth	MHz	2 to 8	6, 7 or 8	8	6	6
Constellation	-	16QAM, 32QAM, 64QAM, 128QAM, 256QAM	COFDM (QPSK / 16QAM / 64QAM)	QPSK, QAM-4NR, 16QAM, 32QAM, 64QAM,	64QAM 256QAM	8VSB
Other settings	-	-	Code rate, Guard Interval, 2K-8K	Interleave Code rate 2K-8K Sync frame PN phase	-	-

#### General

Connectors	-	Front side: - Output: RF + Loopthrough - Management: 1 x RJ-45 (Ethernet) - DC: Banana sockets Rear side: - HDMI Input: 4 x HDMI 1.3
Power supply	VDC	15
Consumption	A	1,2
Operating temperature	°C	0 to + 40
Dimensions	-	5 RU x 8 TE x 330 mm

## 4. SAFETY INSTRUCTIONS



**Read these instructions carefully before connecting the unit**

- ⚠ To avoid any risk of overheating:
  - Install the unit in a well aery location and keep a minimum distance of 15 cm around the apparatus for sufficient ventilation
  - Do not place any items such as newspapers, table-cloths, curtains,... on the unit that might cover the ventilation holes.
  - Do not place any naked flame sources, such as lighted candles, on the apparatus
  - Do not install the product in a dusty place
  - Use the apparatus only in moderate climates (not in tropical climates)
  - Respect the minimum and maximum temperature specifications
- ⚠ To avoid any risk of electrical shocks:
  - Connect apparatus only to socket with protective earth connection.
  - The mains plug shall remain readily operable
  - Pull out power plug to make the different connections of cables
  - To avoid electrical shock, do not open the housing of adapter.



**Maintenance**

- ⚠ Only use a dry soft cloth to clean the cabinet.
- ⚠ Do not use solvent
- ⚠ For repairing and servicing refer to qualified personnel.



**Dispose according to your local authority's recycling processes**

## 5. CONDITIONS OF WARRANTY

Unitron N.V. warrants the product as being free from defects in material and workmanship for a period of 24 months starting from the date of production indicated on it. See note below.

If during this period of warranty, the product proves defective, under normal use, due to defective materials or workmanship, Unitron N.V, at its sole option, will repair or replace the product. Return the product to your local dealer for reparation

### THE WARRANTY IS APPLIED ONLY FOR DEFECTS IN MATERIAL AND WORKMANSHIP AND DOES NOT COVER DAMAGE RESULTING FROM:

- Misuse or use of the product out of its specifications.
- Installation or use in a manner inconsistent with the technical or safety standards in force in the country where the product is used
- Use of non-suitable accessories (power supply, adapters...).
- Installation in a defect system.
- External cause beyond the control of Unitron N.V. such as drop, accidents, lightning, water, fire, improper ventilation...

### THE WARRANTY IS NOT APPLIED IF:

- Production date or serial number on the product is illegible, altered, deleted or removed.
- The product has been opened or repaired by a non-authorized person.

### NOTE

Date of production can be found in the product's serial number code. The format will either be "YEAR W WEEK" (e.g., 2016W01 = year 2016 week 1) or "YYWW" (e.g., 1447 = year 2014 week 47).



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