

User Manual

HDMI Modulator Ref. 8201 & 8202



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1. INTRODUCTION

1.1. Product description

Convert your local HDMI signal into an RF signal, ready for distribution over coaxial cables.

These modulators support all cable and terrestrial standards.

- 1 HDMI input, capable of receiving all resolutions up to 1080p60.
- 1 RF input, to by-pass terrestrial or cable signals.
- 1 RF output:
 - DVB-T and ISDB-T (ref. 8201)
 - DVB-T, DVB-C, DTMB and ATSC (ref. 8202)
- Perfect picture thanks to a MER comparable to other premium headend equipment.
- Easy to use menu structure, in combination with the Johansson rotary/push button.
- Optimized for cascading multiple modulators on your coaxial network.
- Smallest housing in its range.
- Most stable HDMI modulator on the market

1.2. Package contents

- 1x HDMI Modulator (ref. 8201 or 8202)
- 1 power adaptor

1.3. Hardware installation

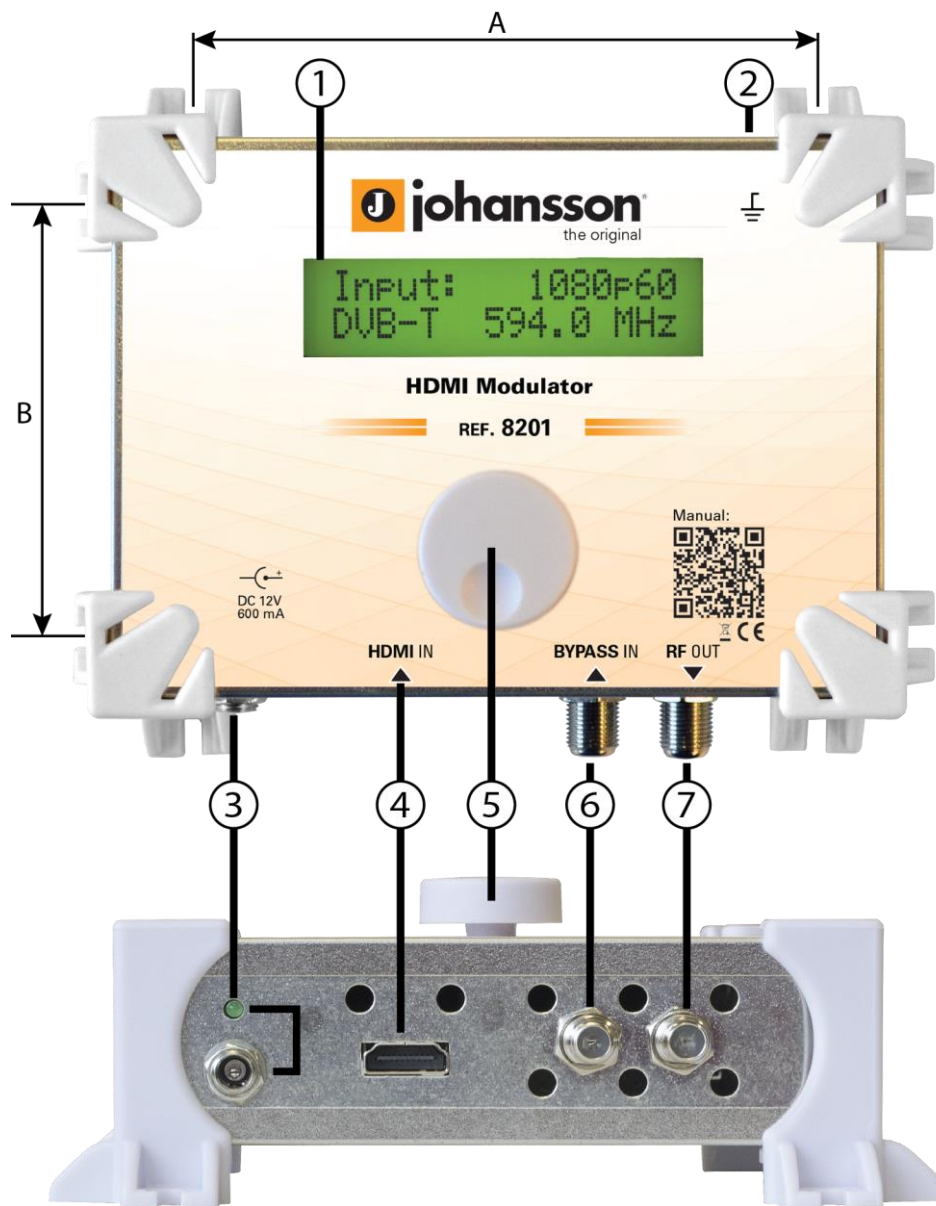


FIGURE 1: TOP & FRONT VIEW OF PRODUCT

A = 113 mm.

B = 78 mm.

N° 1: Display

N° 2: Grounding

N° 3: Power Supply socket + LED indication

N° 4: HDMI connector

N° 5: Johansson rotary/push button

N° 6: Bypass IN connector

N° 7: RF out connector

Connections:

- Connect the Power Adapter to the Power supply socket (3), see connection possibilities on previous page.
- Connect an earth wire to the appropriate clamp (2).
- Connect the HDMI output of a Blu-Ray player, DVD player, a satellite receiver or any other video source with the HDMI input (4).
- Connect your TV to the RF output connector (7).
- Optionally, you can insert an existing coaxial distribution to the Bypass In connector (6). This will result in a combination of the HDMI modulated signal and the existing coaxial distribution on the RF output connector (7).

Indicators:

- 'Power' LED : indication of DC power presence

1.4. Safety Instructions



Read these instructions carefully before connecting the unit



To prevent fire, short circuit or shock hazard:

- Do not expose the unit to rain or moisture.
- Install the unit in a dry location without infiltration or condensation of water.
- Do not expose it to dripping or splashing.
- Do not place objects filled with liquids, such as vases, on the apparatus.
- If any liquid should accidentally fall into the cabinet, disconnect the power plug.



To avoid any risk of overheating:

- Install the unit in a well aired location and keep a minimum distance of 15 cm around the apparatus for sufficient ventilation
- Do not place any items such as newspapers, tablecloths, 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 your local authority's recycling processes

2. SOFTWARE SETTINGS

The use of the Johansson rotary/push button is very simple, see the table below.

	<p>Push the button 2s to enter the basic configuration.</p> <p>Push the button to confirm your selections.</p>
	<p>When rotating the button you scroll through the different screens.</p>

 **Important remark :** For fastest manipulation of the menu, the modulator only activates the settings at the end ("Save & Exit").

Before entering the menu, the modulator already gives you on the start screen the most important parameters of the modulator :

```

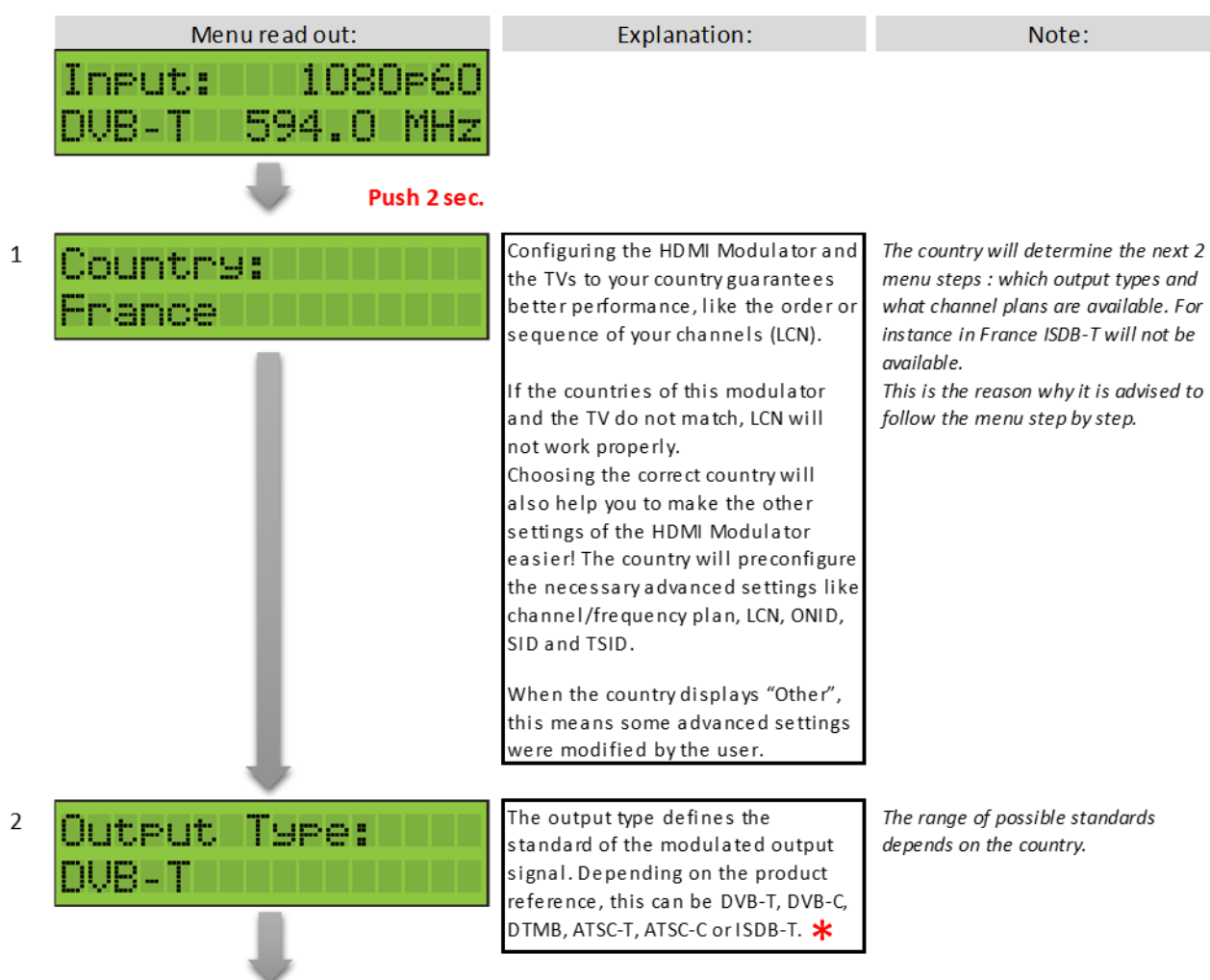
Input:  1080p60
DVB-T  594.0 MHz
  
```

- The first row indicates if an HDMI signal is detected and its resolution.
- The second row shows the output type and output frequency.

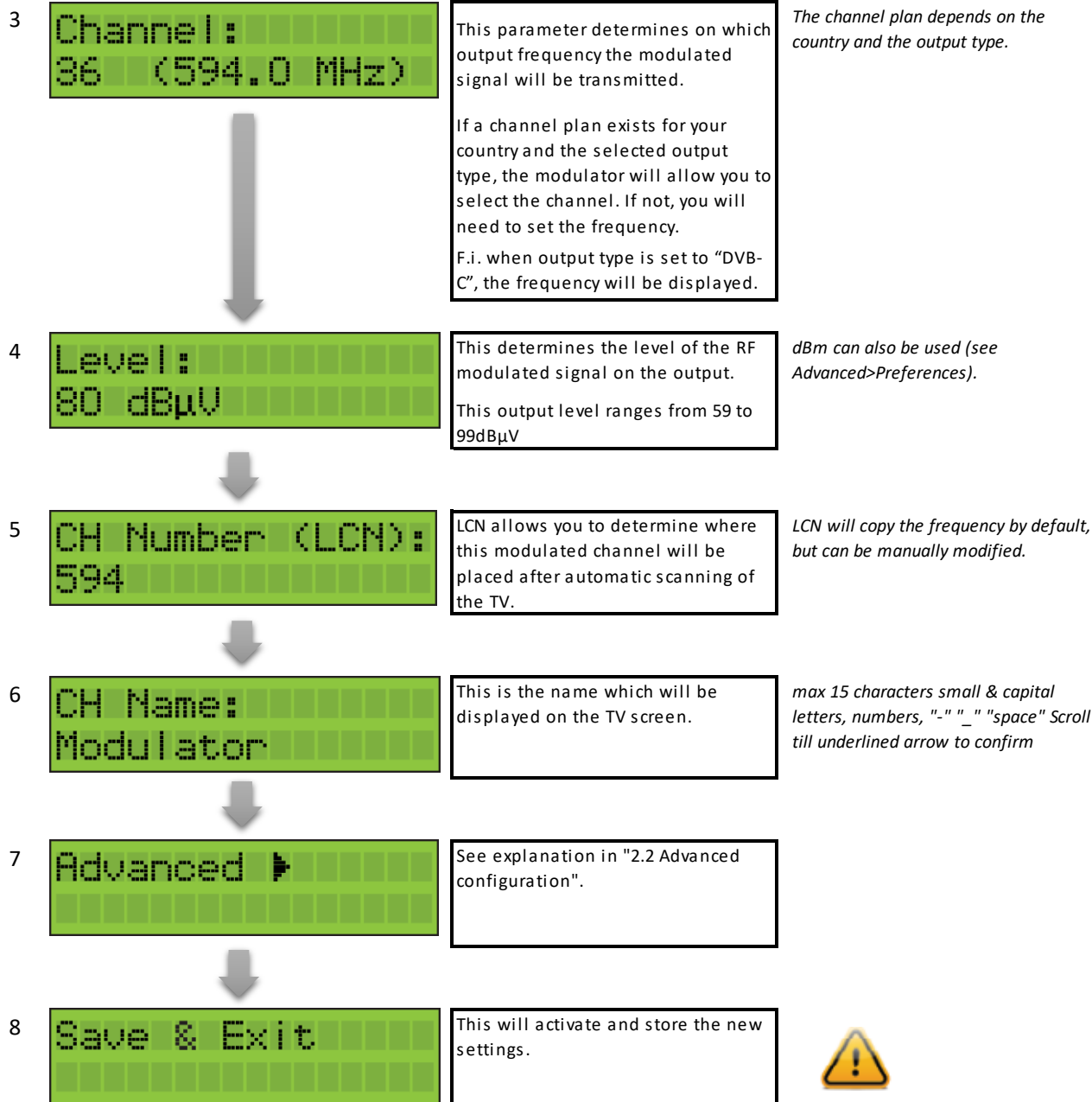
2.1. Basic configuration

In this part we will make the BASIC CONFIGURATION to start using the HDMI Modulator. In most cases, this will be sufficient to configure the product. Only in special cases, where detailed settings have to be set, you will need to use the advanced configuration. See the next paragraph.

The best way to configure the product is to follow the menu step by step. Some of the settings have effect on 1 or more of the following settings. This means for instance that step1 (Country) will overrule step 2 (Output type). If you have set for instance the output type to ATSC-T and then you go back to country and configure this to be France, ATSC-T will be changed into DVB-T (as ATSC is not supported in France).



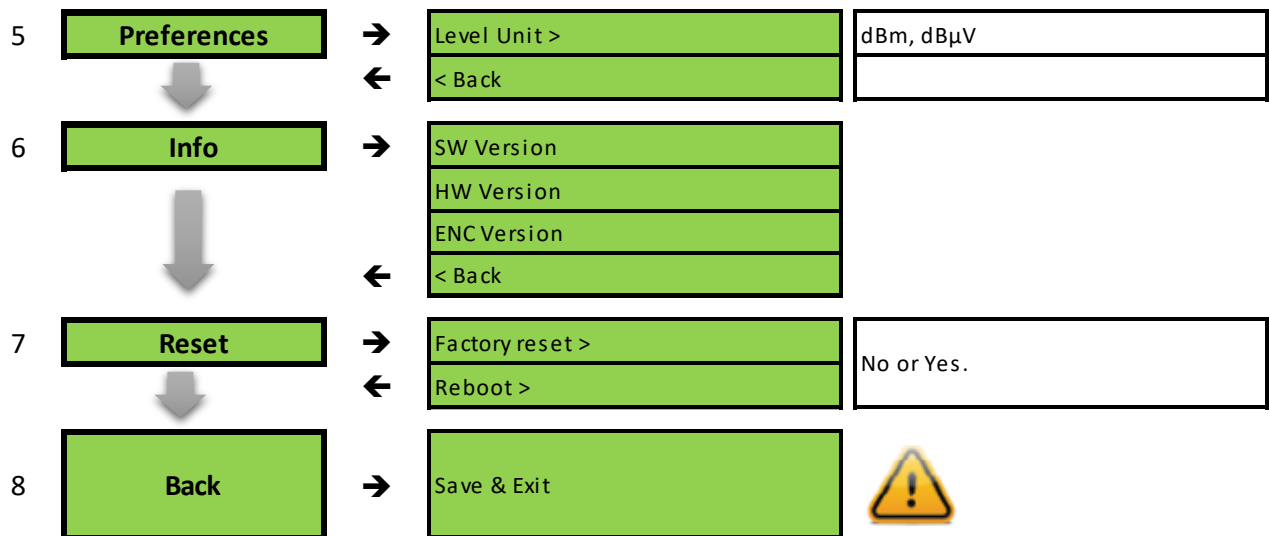
* For ISB-T configuration, please see Appendix A (p. 15 of this manual)



2.2. Advanced configuration

In this part we will explain the ADVANCED CONFIGURATION of the HDMI Modulator. This will however not be needed in most installation. The advanced configuration includes the following screens:

Menu read out:		Parameter	Range (can depend on product reference and other settings)
1	RF Output	<div>→</div> <div>Output Type ></div> <div>Frequency ></div> <div>Bandwidth ></div> <div>Constellation ></div> <div>Guard Interval ></div> <div>Code rate ></div> <div>Carrier Type: ></div> <div>Interleave ></div> <div>Sync Frame ></div> <div>PN Phase ></div> <div>< Back</div> <div>←</div>	<div>DVB-T, DVB-C, ISDB-T, ATSC-T, ATSC-C, DTMB</div> <div>174-1218 MHZ</div> <div>6, 7, 8 MHz</div> <div>QPSK, QAM-4NR, QAM-16, QAM-32, QAM-64, QAM-128, QAM-256,8VSB</div> <div>1/4, 1/8, 1/16, 1/32</div> <div>1/2, 2/3, 3/4, 5/6, 7/8</div> <div>2K, 8K</div> <div>None, 240, 720</div> <div>420, 595, 945</div> <div>Constant, Variable</div>
2	Video	<div>→</div> <div>Bit Rate ></div> <div>GOP Size ></div> <div>< Back</div> <div>←</div>	<div>From 2000 to 23000 Kbps, but limited by MUX settings (see note 1)</div> <div>1 to 100</div>
3	Audio	<div>→</div> <div>Encoding Type ></div> <div>Bit Rate ></div> <div>< Back</div> <div>←</div>	<div>AAC, MPEG2</div> <div>From 32 to 320 Kbps</div>
4	Stream	<div>→</div> <div>SID ></div> <div>TSID ></div> <div>ONID ></div> <div>Prvt Data Spec ></div> <div>NID ></div> <div>Network Name ></div> <div>Network version ></div> <div>PMT PID ></div> <div>Video PID ></div> <div>Audio PID ></div> <div>< Back</div> <div>←</div>	<div>0 to 65535</div> <div>0 to 65535</div> <div>0 to 65535</div> <div>0 to 4294967295</div> <div>0 to 65535</div> <div>max 15 characters small & capital letters, numbers, "-" "_" "space" Scroll till underlined arrow to confirm</div> <div>0 to 31</div> <div>32 to 8190</div> <div>32 to 8190</div> <div>32 to 8190</div>



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).

Note 2 : Don't forget to "Save & Exit" to activate your new settings.

3. TECHNICAL SPECIFICATIONS

HDMI INPUT							
VIDEO RESOLUTION	-	576i up to 1080p					
VIDEO ENCODING	-	H264/AVC					
AUDIO ENCODING	-	MPEG1 Layer II / AAC					
CONNECTOR TYPE	-	HDMI Type A					
RF INPUT							
FREQUENCY	MHz	5 -1218					
LOSS TO RF OUTPUT	dB	2					
RF OUTPUT (=RF INPUT SIGNAL + HDMI MODULATED TRANSPONDER)							
MODULATED CHANNEL FREQUENCY	MHz	174-1218					
OUTPUT LEVEL	dBμV	59-99 (adjustable)					
MER	dB	Typ. 38					
OUTPUT SETTINGS		8201+8202	8202	8202	8202	8202	8201
OUTPUT TYPE	-	DVB-T	DVB-C	ATSC-T	ATSC-C	DTMB	ISDB-T
BITRATE	Mbps	2 - 23		2 - 15		2 - 23	
CHANNEL BANDWIDTH	MHz	6,7 or 8	2 to 8	6	6	8	6
CONSTELLATION	-	COFDM (QPSK / 16QAM / 64QAM)	16QAM 32QAM 64QAM 128QAM 256QAM	8VSB	64QAM 256QAM	QPSK QAM-4NR 16QAM 32QAM 64QAM	COFDM (QPSK / 16QAM / 64QAM)
OTHER SETTINGS	-	Code rate Guard Interval 2K-8K	-	-	-	Interleave Code rate 2K-8K Sync frame PN phase	Code rate Guard Interval 2K-8K
CONFIGURATION							
BASIC CONFIGURATION	-	Country Output Type Output Frequency Output Level LCN Channel Name					
ADVANCED CONFIGURATION	-	RF Video & Audio SID PMT, VPID, APID NIT, ONID PDS TS ID					
POWER & DIMENSIONS, ETC...							
POWER	-	Input Voltage: 12 VDC Consumption: 5 W Typ. (6 W max.) Jack Ø 2.1 mm					
DIMENSIONS, WEIGHT, EAN CODE	-	155 x 120 x 60 mm. 0.6 kg. 2082010000018 or 2082020000015					
ACCESSORIES	-	12V power adapter					

4. 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 is YYWW format, example 1644 = year 2016 – week 44.
For the serial number barcodes, the date corresponds to the 4 first numbers

APPENDIX A: CONFIGURING THE HDMI MODULATOR FOR ISDB-T

To configure the HDMI Modulator for ISDB-T channels, the module uses virtual channel numbering. Therefore, channels must be converted to binary code. Follow the below steps carefully:

1. Start-up the module and choose country: BRAZIL
2. The virtual channel is defined as XX.YY, where
 - a. XX =Private Data Specifier (Advanced > Stream > Prvt Data Spec)
 - b. YY = LCN value = Ch Number
 - c. ONID
 - d. SID is combination of ONID and LCN

Example: virtual channel number 1-1 with ONID 1002

- a. Private Data Specifier = 1
- b. LCN value = 1
- c. ONID = 1002 (decimal) = 1111101010 (binary)
- d. SID = ONID(bin) 00(bin) (LCN - 1) (bin) : 1111101010 00 000 = 32064 decimal

Virtual channel (on ISDB_T decoder) XX-YY	Private data specifier (decimal) XX	ONID (decimal)	LCN (decimal) YY	SID (decimal)	SID (binary)
1-1	1	1002	1	32064	1111101010 00 000
1-2	1	1002	2	32065	1111101010 00 001
1-3	1	1002	3	32066	1111101010 00 010
1-4	1	1002	4	32067	1111101010 00 011
1-5	1	1002	5	32068	1111101010 00 100
1-6	1	1002	6	32069	1111101010 00 101
1-7	1	1002	7	32070	1111101010 00 110
1-8	1	1002	8	32071	1111101010 00 111



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