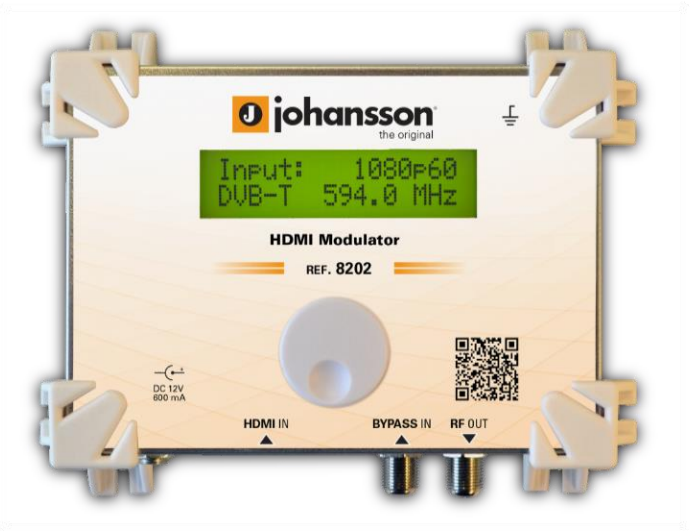
User Manual

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

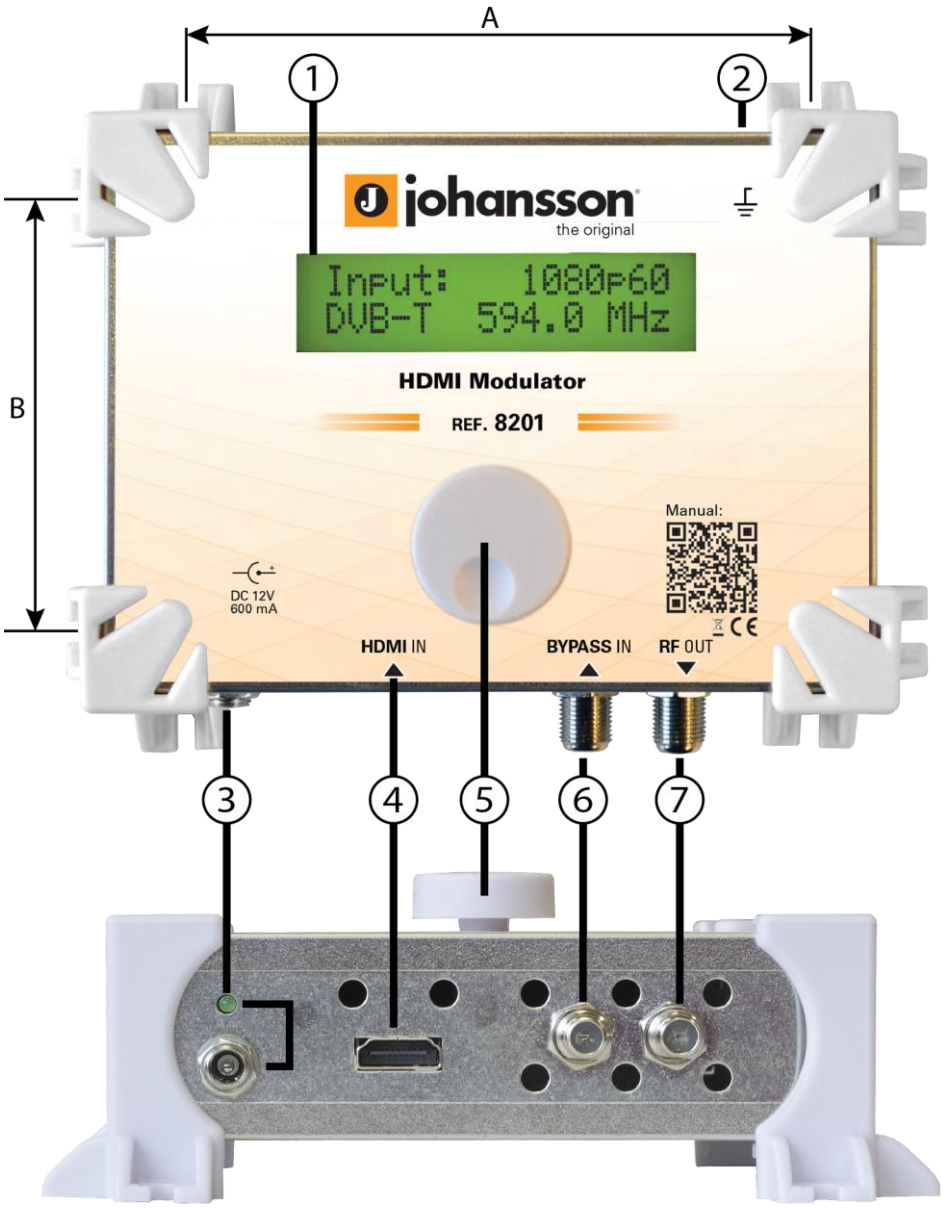


FIGURE 1: TOP & FRONT VIEW OF PRODUCT

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.

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

⚠ **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 :

- 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).

	Menu read out:	Explanation:	Note:
	Input: 1080p60 DVB-T 594.0 MHz		
	Push 2 sec.		
1	Country: France	Configuring the HDMI Modulator and the TVs to your country guarantees better performance, like the order or sequence of your channels (LCN). If the countries of this modulator and the TV do not match, LCN will not work properly. Choosing the correct country will also help you to make the other settings of the HDMI Modulator easier! The country will preconfigure the necessary advanced settings like channel/frequency plan, LCN, ONID, SID and TSID. When the country displays "Other", this means some advanced settings were modified by the user.	*The country will determine the next 2 menu steps : which output types and what channel plans are available. For instance in France ISDB-T will not be available.* *This is the reason why it is advised to follow the menu step by step.*
2	Output Type: DVB-T	The output type defines the standard of the modulated output signal. Depending on the product reference, this can be DVB-T, DVB-C, DTMB, ATSC-T, ATSC-C or ISDB-T. *	*The range of possible standards depends on the country.*

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

3

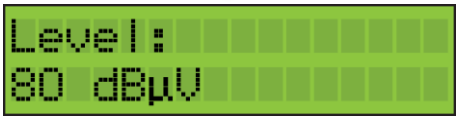
This parameter determines on which output frequency the modulated signal will be transmitted.

If a channel plan exists for your country and the selected output type, the modulator will allow you to select the channel. If not, you will need to set the frequency.

F.i. when output type is set to “DVB-C”, the frequency will be displayed.

The channel plan depends on the country and the output type.

4



This determines the level of the RF modulated signal on the output.

This output level ranges from 59 to 99dBµV

dBm can also be used (see Advanced>Preferences).

5

LCN allows you to determine where this modulated channel will be placed after automatic scanning of the TV.

LCN will copy the frequency by default, but can be manually modified.

6

This is the name which will be displayed on the TV screen.

max 15 characters small & capital letters, numbers, "-" "_" "space" Scroll till underlined arrow to confirm

7

See explanation in "2.2 Advanced configuration".

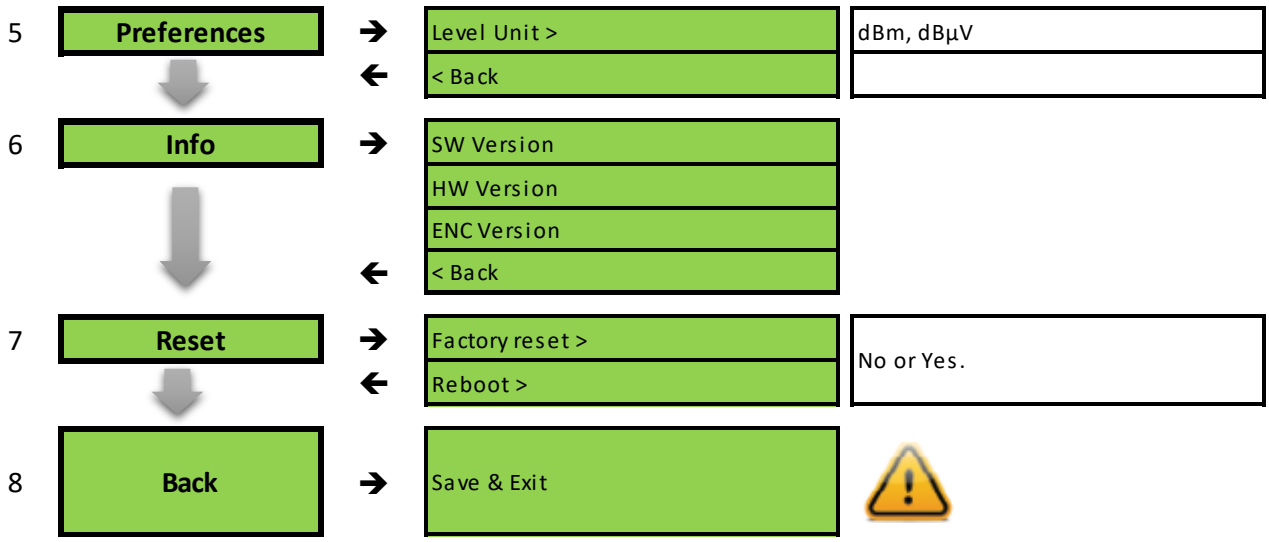
8

This will activate and store the new settings.

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**	→	Output Type >	DVB-T, DVB-C, ISDB-T, ATSC-T, ATSC-C, DTMB
			Frequency >	174-1218 MHZ
			Bandwidth >	6, 7, 8 MHz
			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
			Carrier Type: >	2K, 8K
			Interleave >	None, 240, 720
			Sync Frame >	420, 595, 945
			PN Phase >	Constant, Variable
		←	< Back	
2	**Video**	→	Bit Rate >	From 2000 to 23000 Kbps, but limited by MUX settings (see note 1)
			GOP Size >	1 to 100
		←	< Back	
3	**Audio**	→	Encoding Type >	AAC, MPEG2
			Bit Rate >	From 32 to 320 Kbps
		←	< Back	
4	**Stream**	→	SID >	0 to 65535
			TSID >	0 to 65535
			ONID >	0 to 65535
			Prvt Data Spec >	0 to 4294967295
			NID >	0 to 65535
			Network Name >	max 15 characters small & capital letters, numbers, "-" "_" "space" Scroll till underlined arrow to confirm
			Network version >	0 to 31
			PMT PID >	32 to 8190
			Video PID >	32 to 8190
			Audio PID >	32 to 8190
		←	< Back	



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	1111101010000000
1-2	1	1002	2	32065	1111101010000001
1-3	1	1002	3	32066	1111101010000010
1-4	1	1002	4	32067	1111101010000011
1-5	1	1002	5	32068	1111101010000100
1-6	1	1002	6	32069	1111101010000101
1-7	1	1002	7	32070	1111101010000110
1-8	1	1002	8	32071	1111101010000111

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