



# MP-104R

Quad Channel H.264 IP Streaming to  
ATSC/J.83B QAM Modulator



## User Guide

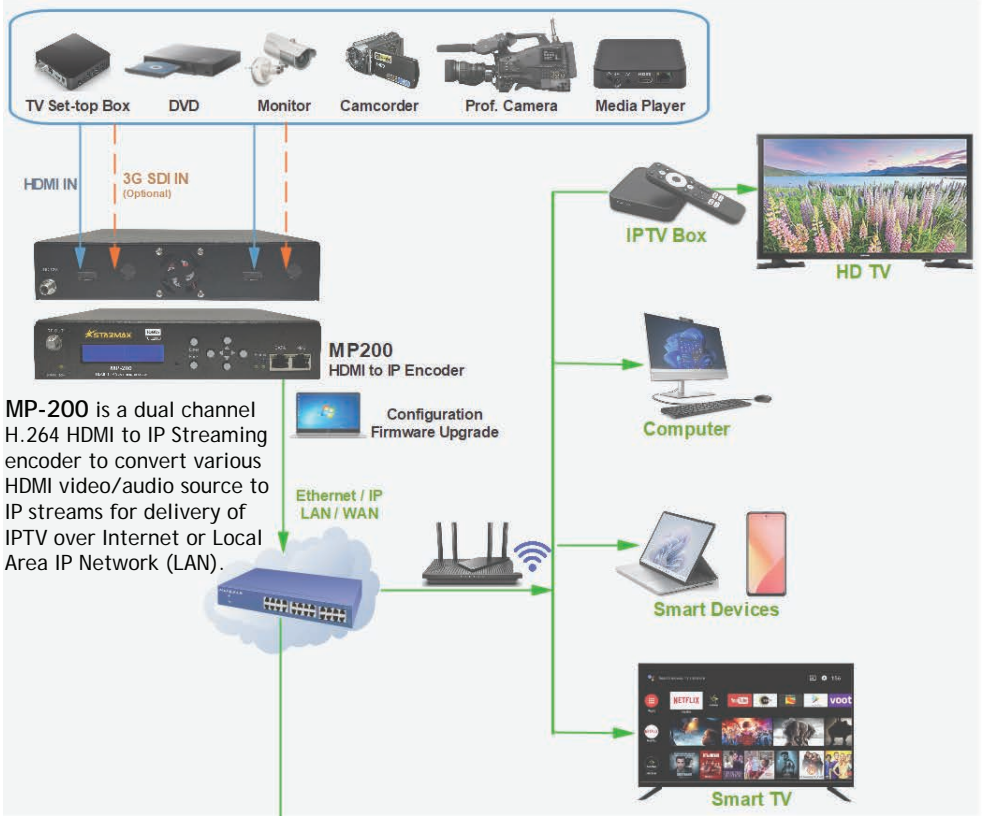
v1.2  
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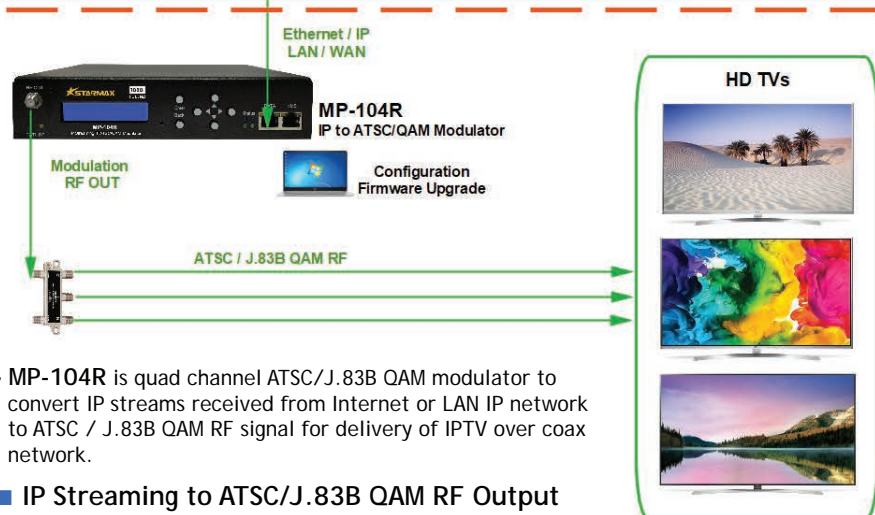


# Introduction

## ■ Various HDMI Input Source for IP Streaming Output



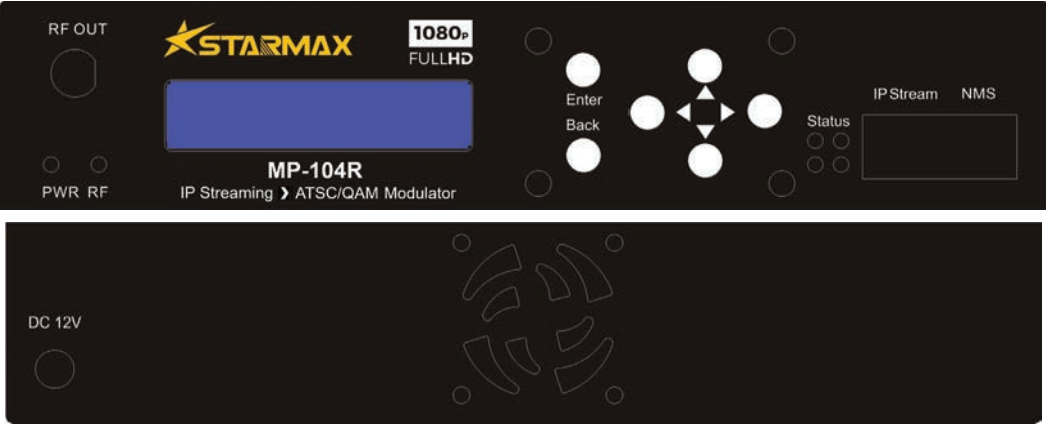
- MP-200 is a dual channel H.264 HDMI to IP Streaming encoder to convert various HDMI video/audio source to IP streams for delivery of IPTV over Internet or Local Area IP Network (LAN).



- MP-104R is quad channel ATSC/J.83B QAM modulator to convert IP streams received from Internet or LAN IP network to ATSC / J.83B QAM RF signal for delivery of IPTV over coax network.

## ■ IP Streaming to ATSC/J.83B QAM RF Output

# Overview



## ■ Operation Panel (Front)

- 3"x1.2" dot matrix LCD
- Keypad

• **Back**

Return or escape to upper level menu and cancel the current operation

• ◀▶▲▼

Arrow keys to traverse between menu items or increase / decrease selected parameter value

• **Enter**

Confirm the selection

- IP Stream (DATA) 1000Base-T IP streaming output
- NMS 1000Base-T Web based configuration
- RF (OUT) Modulated RF output, 75Ω F
- LEDs Status



- |           |                       |
|-----------|-----------------------|
| RF        | solid <b>amber</b>    |
|           | dark                  |
|           | blinking <b>amber</b> |
| • LED 1/3 | solid <b>blue</b>     |
| • LED 2/4 | solid <b>green</b>    |
|           | blinking <b>green</b> |

## ■ Input Interface (Back)

- DC 12V DC Power Input

- |  |
|--|
| RF out                                 |
| DATA port disconnected or no TS inputs |
| IP streams bit rate exceeds the limit  |
| TS input available (SPTS1, SPTS3)      |
| TS input available (SPTS2, SPTS4)      |
| HDMI not connected or no TS input      |

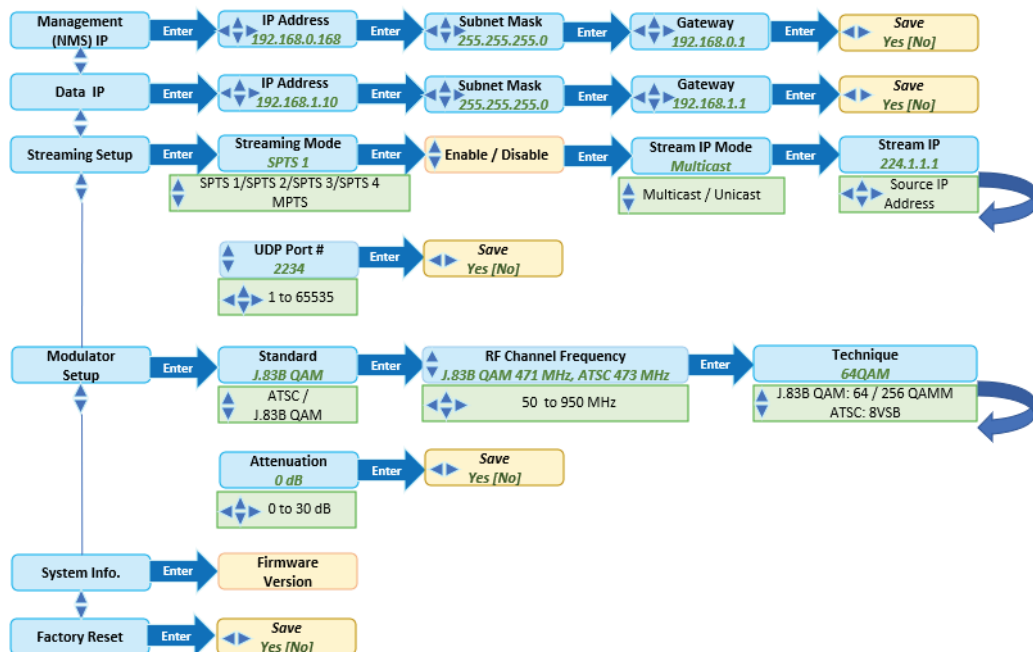
## ■ Installation Requirement

- Available TV sets
- Available Ethernet/IP network
- Available electrical power socket

## ■ Package Content

- MP-104R quad channel H.264 IP streaming to ATSC/J.83B QAM modulator
- AC/DC power adapter
- User Guide

# LCD Menu Flowchart



All commands and settings are also available on Web based configuration by connecting the Ethernet port of computers to the *NMS* port of MP-104R. Launch any Web browser and point the URL to <http://192.168.0.168> to login with

User name            *admin*  
Password            *0000*

to access configuration pages.

# Specifications

IP Streaming to ATSC / J.83B QAM Modulation		
Input	Interface	1000Base-T RJ-45 x 1 for IP streaming in Unicast / Multicast UDP / RTP
	Transport Streams	SPTS x 4 or MPTS x 1
	Protocols	RTP, ARP, IPv4, TCP/UDP, HTTP, IGMP v2/v3
	Packet Length	188 Bytes
Output	Interface	75Ω F x 1
	Standard	ATSC (8VSB) or J.83B (64QAM or 256QAM)
	Frequency	50 to 950 MHz, 1 kHz Step
	Level	70 to 100 dBμV, 1 dB Step, 0 to 30dB Adjustable
	Channels	Main-channel with 4x Sub-channels
Video	Encoding	MPEG-2; 5 to 15 Mb/s compression rate
	Resolution	1080 60/50 p/i
	MER	≥ 35dB
	Aspect Ratio	16:9, 4:3
	Bit Rate	2 to 20Mbps
Audio	Encoding	MPEG-1 Layer 2, AAC, AC3
	Sampling Rate	48 kHz
	Bit Rate	64, 96, 128, 192, 256, 320 kbps
General		
Management/Configuration		1000Base-T RJ-45 x 1 Web based
Power Supply		12 VDC, 1A
Dimensions		8.66" x 8.11" x 1.73" (220 x 206 x 44 mm)
Weight		1.9 lbs (900g)
Environment		Operating Temperature: 5 to 40 °C
		Humidity: 80% @ 30 °C

## ■ IP Streaming Theory

IP streaming to smart devices (TVs, phones, tablets, computers) requires the IPTV streams to reach the video player in server (broadcaster) and client (player) model. The IPTV streams can be distributed over IP network, which can be WAN/Internet or LAN/Intranet through wired or wireless (e.g. Wi-Fi or cellular) connection on demand basis.

The Internet/Intranet connection bandwidth required for live IPTV streaming is about 9Mbps per channel for 1080p video resolution. Larger streaming server such as YouTube, AWS, Hulu offer higher throughput or bandwidth to deliver the live streaming to millions of users simultaneously.

The output of MP-104R streaming can be received and played on various smart devices, such as

- Regular TV with Android TV set-top box, IPTV set-top box, or IPTV to HDMI decoder
- Android Smart TV
- Computer, cell phone, tablet
- MP-104R IP to ATSC / J.83B QAM RF modulator for distribution of IPTV over coax network

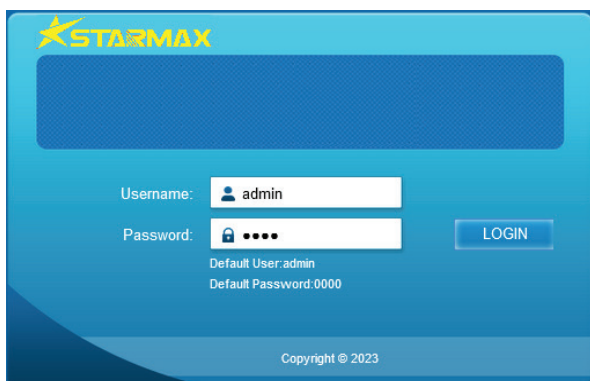
Video player APP, such as VLC ([www.videolan.org](http://www.videolan.org)), MX player ([www.mxplayer.in](http://www.mxplayer.in)) downloadable from Google Play or Apple store, is required to play IPTV streams on smart devices.

# Web Configuration and Remote Control

- ① Connect the Ethernet (RJ-45) port on the front panel of MP-104R to the Ethernet port of a PC with Ethernet cable. Power on MP-104R.
- ② Configure the IP address of the PC to be static IPv4 192.168.0.100.
- ③ Launch a Web browser on PC and type <http://192.168.0.168>, The default login name is '*admin*' and the default password is '0000'.

The default IP address of MP-201 NMS port is 192.168.0.168. If this address is changed from LCD menu or Web configuration page, write down the new IP address for future use. If the IP address of the NMS port of MP-104R is unknown, press and hold the reset button for 5 seconds to restore the default IP address of NMS port to be 192.168.0.168.

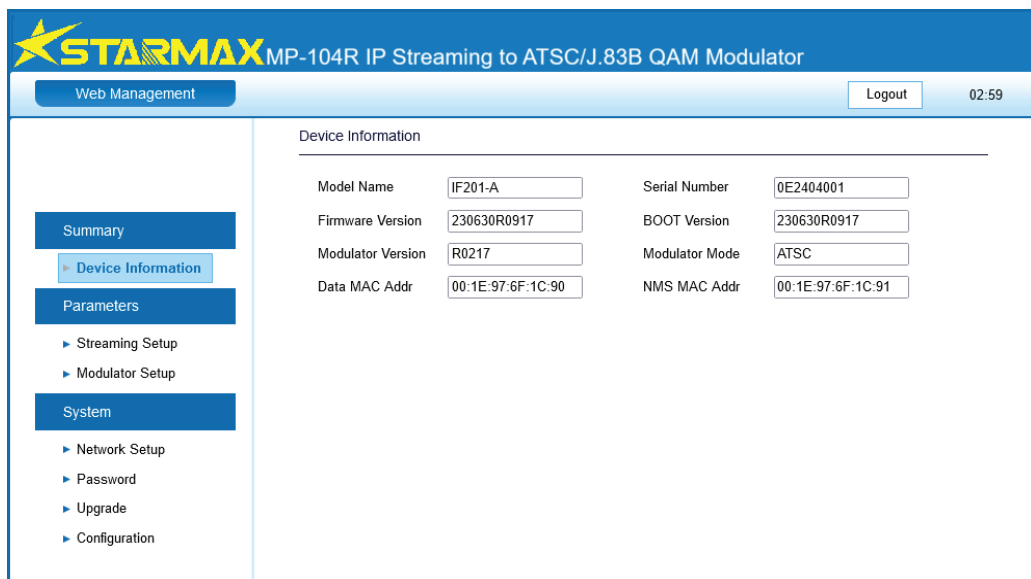
## ■ Login



The login page features the STARMAX logo at the top left. Below it is a large blue rectangular area. Underneath this area are two input fields: 'Username:' with 'admin' entered and 'Password:' with four dots. To the right of the password field is a blue 'LOGIN' button. Below the input fields, it says 'Default User: admin' and 'Default Password: 0000'. At the bottom center, it says 'Copyright © 2023'.

The default login name is '*admin*' and the default password is '0000'.

There are 3 sections on Web configuration pages - Summary, Modulation, and System.



The web interface has a blue header with the STARMAX logo and the title 'MP-104R IP Streaming to ATSC/J.83B QAM Modulator'. Below the header is a navigation bar with 'Web Management' and 'Logout' (with a timer at 02:59). The main content area is divided into a left sidebar and a right section. The sidebar has three main sections: 'Summary' (with 'Device Information' selected), 'Parameters' (with 'Streaming Setup' and 'Modulator Setup'), and 'System' (with 'Network Setup', 'Password', 'Upgrade', and 'Configuration'). The right section is titled 'Device Information' and contains a table of device details.

Device Information			
Model Name	IF201-A	Serial Number	0E2404001
Firmware Version	230630R0917	BOOT Version	230630R0917
Modulator Version	R0217	Modulator Mode	ATSC
Data MAC Addr	00:1E:97:6F:1C:90	NMS MAC Addr	00:1E:97:6F:1C:91

# Web Configuration - System

## ■ Network

**NMS IP** IP settings of Configuration (NMS) port.

IP Address	<input type="text" value="192.168.1.168"/>
Subnet Mask	<input type="text" value="255.255.255.0"/>
Default Gateway	<input type="text" value="192.168.1.1"/>

**Data IP** IP settings of streaming Data port.

IP Address	<input type="text" value="192.168.0.10"/>
Subnet Mask	<input type="text" value="255.255.255.0"/>
Default Gateway	<input type="text" value="192.168.0.1"/>

**Notes:**

- IP address of NMS port and Data port CANNOT be configured in the same subnet to avoid conflict
- Current IP address of NMS port and Data port can be found on LCD menu

<input type="button" value="Cancel"/>	<input type="button" value="Apply"/>
---------------------------------------	--------------------------------------

## ■ Login User Name and Password

New Username	<input type="text" value="admin"/>
New Password	<input type="password"/>
Confirm Password	<input type="password"/>

<input type="button" value="Apply"/>
--------------------------------------

## ■ Upgrade

Firmware File :

Press *Choose* to select firmware file (*image.ub*) and then *Upgrade* to update the firmware.

<input type="button" value="Choose"/>	<input type="button" value="Upgrade"/>
---------------------------------------	--

Encode File :

Note: MP-104R reboots after Firmware/Encoder/Boot update.  
Wait for 1 minute for the device to boot up.

<input type="button" value="Choose"/>	<input type="button" value="Upgrade"/>
---------------------------------------	--

BOOT File :

Press *Choose* to select boot loader file (*bootloader.bin*) and then *Upgrade* to update boot loader.

<input type="button" value="Choose"/>	<input type="button" value="Upgrade"/>
---------------------------------------	--

## ■ Configuration

Factory Reset	<input type="button" value="Apply"/>	Apply Factory Reset to restore configurations to factory defaults.
Download Config	<input type="button" value="Save"/>	Download configuration file from the device to PC connected.
Upload Config	<input type="button" value="Load"/>	Upload configuration file from PC connected to the device.



# Web Configuration - IP Streams

## ■ IP Streams

	Protocol	IP	Port	Bit Rate
<input checked="" type="checkbox"/> SPTS 1	Multicast UDP/RTP ▾	224.1.1.1	2234	8.03 Mbps
<input checked="" type="checkbox"/> SPTS 2	Multicast UDP/RTP ▾	224.1.1.1	2236	3.94 Mbps
<input type="checkbox"/> SPTS 3	Multicast UDP/RTP ▾	224.2.2.2	2238	0.00 Mbps
<input type="checkbox"/> SPTS 4	Multicast UDP/RTP ▾	224.2.2.2	2240	0.00 Mbps
<input type="checkbox"/> MPTS	Multicast UDP/RTP ▾	224.2.2.2	2250	0.00 Mbps
Total				11.97 Mbps

Cancel

Apply

IP video streams can be distributed in Single Program Transport Stream (SPTS) or Multi-Program Transport Stream (MPTS). Each stream can be delivered in unicast address or multicast address to reach destination over IP network.

Multicast IP address range is (224.0.0.0 to 239.255.255.255 with 224.0.0.0 to 224.0.0.255 reserved exclusively for local network management and maintenance. If multicast address is used to reach the destination, mostly a video player APP installed on computer or smart devices,

- ① Both the encoder (sender) and the decoder (receiver) of IP streams are located in the same Local Area Network (LAN) subnet.
- ② Both the encoder/sender and the decoder/receiver of IP streams join the same multicast group address.
- ③ The network administrator has configured the routers and firewalls in the LAN to allow multicast traffic to pass through.

Each IP stream can be encoded to one SPTS stream. Multiple IP streams can be encoded to one MPTS stream.

- ◆ Streams
  - SPTS 1 check box to enable the 1st input SPTS.
  - SPTS 2 check box to enable the 2nd input SPTS.
  - SPTS 3 check box to enable the 3rd input SPTS.
  - SPTS 4 check box to enable the 4th input SPTS.
  - MPTS check box to enable the only input MPTS.
- ◆ Protocol UDP/RTP in Unicast or Multicast IP streaming destination.
- ◆ Stream IP Unicast or multicast IP address of IP streaming destination.
- ◆ Port UDP/RTP port number of IP streaming destination.
- ◆ Bit Rate Bit rate of the IP stream received.

## Playlist URL

### ■ UDP and RTP

- ◆ Unicast `udp://@destination_IP_address:port_number` or `rtp://@destination_IP_address:port_number`  
for example `udp://@192.168.10.25:2234` where 192.168.10.25 is the IP address of the decoder/receiver of IP streams.
- ◆ Multicast `udp://@multicast_IP_address:port_number` or `rtp://@multicast_IP_address:port_number`  
for example `udp://@224.1.1.1:2234` where 224.1.1.1 is the multicast IP address.

### ■ HTTP Live Streaming (HLS) and HTTP protocols are not supported

# Web Configuration - Modulation

## ■ Modulation

Standard	<input type="text" value="ATSC"/>	RF Frequency	<input type="text" value="473000"/> KHz
Modulation	<input type="text" value="8VSB"/>	RF Atten.	<input type="text" value="0 dB"/>
TS ID	<input type="text" value="1"/>		
Allow Bit Rate	<input type="text" value="19.39"/> Mbps	Actual Bit Rate	<input type="text" value="12.02"/> Mbps

### Channel Parameter

	SPTS 1	SPTS 2	SPTS 3	SPTS 4
	<input type="text" value="Remapping"/>	<input type="text" value="Remapping"/>	<input type="text" value="Remapping"/>	<input type="text" value="Remapping"/>
Major Channel	<input type="text" value="14"/>	<input type="text" value="14"/>	<input type="text" value="14"/>	<input type="text" value="14"/>
Minor Channel	<input type="text" value="1"/>	<input type="text" value="2"/>	<input type="text" value="3"/>	<input type="text" value="4"/>
Short Name	<input type="text" value="DTV-1"/>	<input type="text" value="DTV-2"/>	<input type="text" value="DTV-3"/>	<input type="text" value="DTV-4"/>
Service ID	<input type="text" value="1"/>	<input type="text" value="2"/>	<input type="text" value="3"/>	<input type="text" value="4"/>
PMT PID	<input type="text" value="100"/>	<input type="text" value="200"/>	<input type="text" value="300"/>	<input type="text" value="400"/>
PCR PID	<input type="text" value="101"/>	<input type="text" value="201"/>	<input type="text" value="301"/>	<input type="text" value="401"/>
VIDEO PID	<input type="text" value="102"/>	<input type="text" value="202"/>	<input type="text" value="302"/>	<input type="text" value="402"/>
AUDIO PID	<input type="text" value="103"/>	<input type="text" value="203"/>	<input type="text" value="303"/>	<input type="text" value="403"/>

- ◆ **Modulation Standard** Selection of *ATSC* or *J.83B QAM*.
- ◆ **Output Frequency** Output channel frequency. Refer to ATSC or J.83B QAM channel plan in the appendix of this User's Guide to set proper output frequency in MHz.
- ◆ **Technique** ATSC      *8VSB* only.  
J.83B      selection of *64 QAM* or *256 QAM*.
- ◆ **RF Output Attenuation** Selection of output attenuation between 0dB and 31dB.
- ◆ **TS ID** Transport Stream ID between 1 and 65535
- ◆ **Allow Bit Rate** Allowed total bit rate of all IP streams received.
- ◆ **Actual Bit Rate** Actual total bit rate of all IP streams received.
- ◆ **PID Pass-Through** Selection of Pass-Through or Re-Mapping of PID.  
If input stream is SPTS, the PID's and other parameters can be either Pass-Through or Re-Mapping.  
If input stream is MPTS, the PID's and other parameters can only be Pass-Through.
- ◆ **Major Channel Number** Output channel number.
- ◆ **Minor Channel Number** Output subchannel number.
- ◆ **Program Name** Program name. Maximum 15 characters allowed.
- ◆ **Service ID** Service Stream ID between 1 and 65535.
- ◆ **PMT PID** Program Map Table (PMT) Packet ID (PID) between 32 and 8190.
- ◆ **PCR PID** Program Clock Reference Packet ID (PID) between 32 and 8190.
- ◆ **Video PID** Video Packet ID (PID) between 32 and 8190.
- ◆ **Audio PID** Audio Packet ID (PID) between 32 and 8190.

# ATSC (8VSB) Channel Plan - North America

Channel Bandwidth: 6 MHz 8VSB

- Suggested settings for output channel  
Frequency 473.000 MHz  
Channel Number 66.1  
Channel Name HD1

Channel Plan is for reference only. It may vary across countries, areas or cities. Refer to the LCD menu screen of the Modulator to load country-wise Channel Plan if available.

- Mexico ATSC channels are channel 14 to channel 69.

Channel No.	Frequency (MHz)	Channel No.	Frequency (MHz)
VHF		UHF	
2	57	42	641
3	63	43	647
4	69	44	653
5	79	45	659
6	85	46	665
VHF High Band III		47	671
7	177	48	677
8	183	49	683
9	189	50	689
10	195	51	692
11	201	52	701
12	207	53	707
13	213	54	713
UHF		55	719
14	473	56	725
15	479	57	731
16	485	58	737
17	491	59	743
18	497	60	749
19	503	61	755
20	509	62	761
21	515	63	767
22	521	64	773
23	527	65	779
24	533	66	785
25	539	67	791
26	545	68	797
27	551	69	803
28	557	70	809
29	563	71	815
30	569	72	821
31	575	73	827
32	581	74	833
33	587	75	839
34	593	76	845
35	599	77	851
36	605	78	857
37	611	79	863
38	617	80	869
39	623	81	875
40	629	82	881
41	635	83	887

# J.83B QAM Channel Plan - North America

Channel Bandwidth: 6 MHz QAM

- Suggested settings for output channel  
Frequency 783.000 MHz (# 122)  
Channel Name HD1

Channel Plan is for reference only. It may vary across countries, areas or cities. Refer to the LCD menu screen of the Modulator to load country-wise Channel Plan if available.

Channel No.	Frequency (MHz)	Channel No.	Frequency (MHz)	Channel No.	Frequency (MHz)	Channel No.	Frequency (MHz)
Low		Super		Hyper		Jumbo	
2	57	28	249	62	453	112	723
3	63	29	255	63	459	113	729
4	69	30	261	64	465	114	735
1	75	31	267	Ultra		115	741
5	79.00 / 81.00	32	273	65	471	116	747
6	85.00 / 87.00	33	279	66	477	117	753
Mid		34	285	67	483	118	759
95	93	35	291	68	489	119	765
96	99	36	297	69	495	120	771
97	105	Hyper		70	501	121	777
98	111	37	303	71	507	122	783
99	117	38	309	72	513	123	789
14	123	39	315	73	519	124	795
15	129	40	321	74	525	125	801
16	135	41	327	75	531	126	807
17	141	42	333	76	537	127	813
18	147	43	339	77	543	128	819
19	153	44	345	78	549	129	825
20	159	45	351	79	555	130	831
21	165	46	357	80	561	131	837
22	171	47	363	81	567	132	843
High		48	369	82	573	133	849
7	177	49	375	83	579	134	855
8	183	50	381	84	585	135	861
9	189	51	387	85	591	136	867
10	195	52	393	86	597	137	873
11	201	53	399	87	603	138	879
12	207	54	405	88	609	139	885
13	213	55	411	89	615	140	891
Super		56	417	90	621	141	897
23	219	57	423	91	627	142	903
24	225	58	429	92	633	143	909
25	231	59	435	93	639	144	915
26	237	60	441	94	645	145	921
27	243	61	447	Jumbo		146	927
				100	651	147	933
				101	657	148	939
				102	663	149	945
				103	669	150	951
				104	675	151	957
				105	681	152	963
				106	687	153	969
				107	693	154	975
				108	699	155	981
				109	705	156	987
				110	711	157	993
				111	717	158	999

# DVB-T Channel Plan - Europe, Colombia & Asia

Channel Bandwidth: 7 MHz or 8 MHz QAM, QPSK

- Suggested settings for output channel  
Frequency 474.000 MHz (CH-21)  
Channel Name HD1

Channel Plan is for reference only. It may vary across countries, areas or cities. Refer to the LCD menu screen of the Modulator to load country-wise Channel Plan if available.

- UK DVB-T channels start from CH-21.
- New Zealand DVB-T channels start from CH-26.
- Australia DVB-T channels - 7 MHz bandwidth.

Channel No.	Frequency (MHz)	Channel No.	Frequency (MHz)	Channel No.	Frequency (MHz)	Channel No.	Frequency (MHz)
CH-05	177.5*	CH-42	642	CH-06	177.5	CH-45	648.5
CH-06	184.5*	CH-43	650	CH-07	184.5	CH-46	655.5
CH-07	191.5*	CH-44	658	CH-08	191.5	CH-47	662.5
CH-08	198.5*	CH-45	666	CH-09	198.5	CH-48	669.5
CH-09	205.5*	CH-46	674	CH-09A	205.5	CH-49	676.5
CH-10	212.5*	CH-47	682	CH-10	212.5	CH-50	683.5
CH-11	219.5*	CH-48	690	CH-11	219.5	CH-51	690.5
CH-12	226.5*	CH-49	698	CH-12	226.5	CH-52	697.5
CH-21	474	CH-50	706	CH-28	529.5	CH-53	704.5
CH-22	482	CH-51	714	CH-29	536.5	CH-54	711.5
CH-23	490	CH-52	722	CH-30	543.5	CH-55	718.5
CH-24	498	CH-53	730	CH-31	550.5	CH-56	725.5
CH-25	506	CH-54	738	CH-32	557.5	CH-57	732.5
CH-26	514	CH-55	746	CH-33	564.5	CH-58	739.5
CH-27	522	CH-56	754	CH-34	571.5	CH-59	746.5
CH-28	530	CH-57	762	CH-35	578.5	CH-60	753.5
CH-29	538	CH-58	770	CH-36	585.5	CH-61	760.5
CH-30	546	CH-59	778	CH-37	592.5	CH-62	767.5
CH-31	554	CH-60	786	CH-38	599.5	CH-63	774.5
CH-32	562	CH-61	794	CH-39	606.5	CH-64	781.5
CH-33	570	CH-62	802	CH-40	613.5	CH-65	788.5
CH-34	578	CH-63	810	CH-41	620.5	CH-66	795.5
CH-35	586	CH-64	818	CH-42	627.5	CH-67	802.5
CH-36	594	CH-65	826	CH-43	634.5	CH-68	809.5
CH-37	602	CH-66	834	CH-44	641.5	CH-69	816.5
CH-38	610	CH-67	842				
CH-39	618	CH-68	850				
CH-40	626	CH-69	858				
CH-41	634						

Note: \* indicates channels with 7 MHz bandwidth.

# ISDB-T(b) Channel Plan - South America

Channel Bandwidth: 6 MHz QAM, DQPSK, QPSK

- Suggested settings for output channel  
Frequency 473.143 MHz (CH-14)  
Channel Name HD1

Channel Plan is for reference only. It may vary across countries, areas or cities. Refer to the LCD menu screen of the Modulator to load country-wise Channel Plan if available.

Channel No.	Frequency (MHz)	Channel No.	Frequency (MHz)
CH-07	177.143	CH-39	623.143
CH-08	183.143	CH-40	629.143
CH-09	189.143	CH-41	635.143
CH-10	195.143	CH-42	641.143
CH-11	201.143	CH-43	647.143
CH-12	207.143	CH-44	653.143
CH-13	213.143	CH-45	659.143
CH-14	473.143	CH-46	665.143
CH-15	479.143	CH-47	671.143
CH-16	485.143	CH-48	677.143
CH-17	491.143	CH-49	683.143
CH-18	497.143	CH-50	689.143
CH-19	503.143	CH-51	695.143
CH-20	509.143	CH-52	701.143
CH-21	515.143	CH-53	707.143
CH-22	521.143	CH-54	713.143
CH-23	527.143	CH-55	719.143
CH-24	533.143	CH-56	725.143
CH-25	539.143	CH-57	731.143
CH-26	545.143	CH-58	737.143
CH-27	551.143	CH-59	743.143
CH-28	557.143	CH-60	749.143
CH-29	563.143	CH-61	755.143
CH-30	569.143	CH-62	761.143
CH-31	575.143	CH-63	767.143
CH-32	581.143	CH-64	773.143
CH-33	587.143	CH-65	779.143
CH-34	593.143	CH-66	785.143
CH-35	599.143	CH-67	791.143
CH-36	605.143	CH-68	797.143
CH-37	611.143	CH-69	803.143
CH-38	617.143		

# DVB-C (J.83A QAM) Channel Plan

Channel Bandwidth: 8 MHz QAM

- Suggested settings for output channel  
Frequency 778.000 MHz (# 88)  
Channel Name HD1

Channel Plan is for reference only. It may vary across countries, areas or cities. Refer to the LCD menu screen of the Modulator to load country-wise Channel Plan if available.

Channel No.	Frequency (MHz)	Channel No.	Frequency (MHz)	Channel No.	Frequency (MHz)
1	52.5	34	339	67	610
2	60.5	35	347	68	618
3	68.5	36	355	69	626
4	80	37	363	70	634
5	88	38	371	71	642
13	115	39	379	72	650
14	123	40	387	73	658
15	131	41	395	74	666
16	139	42	403	75	674
17	147	43	411	76	682
18	155	44	419	77	690
19	163	45	427	78	698
6	171	46	435	79	706
7	179	47	443	80	714
8	187	48	451	81	722
9	195	49	459	82	730
10	203	50	474	83	738
11	211	51	482	84	746
12	219	52	490	85	754
20	227	53	498	86	762
21	235	54	506	87	770
22	243	55	514	88	778
23	251	56	522	89	786
24	259	57	530	90	794
25	267	58	538	91	802
26	275	59	546	92	810
27	283	60	554	93	818
28	291	61	562	94	826
29	299	62	570	95	834
30	307	63	578	96	842
31	315	64	586	97	850
32	323	65	594	98	858
33	331	66	602	99	866

# Compliance

## ■ Warranty

The MP-200 modulator has one-year Limited Hardware Warranty and 90-day free software updates after purchase. This Limited Warranty Statement gives the customer specific legal rights. The customer may also have other rights which vary from State to State in the United States, from province to province in Canada, and from country to country elsewhere in the world. To the extent that this Limited Warranty Statement shall be deemed modified to be consistent with such local law. Under such local law, certain disclaimers and limitations of this Warranty Statement may not apply to the customer.

## ■ Important Safety Instructions

Basic safety precautions should always be followed to reduce the risk of fire, electrical shock, and personal injury, including the following:

- Do not use this product near water - for example, near a bathtub, kitchen sink, laundry tub, or swimming pool, or in a wet basement; only clean with dry cloth.
- Do not block any ventilation openings. Install in accordance with the manufacturer's instructions. Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus including amplifiers that produce heat.
- Do not remove the cover of the modulator, cover the modulator with thick or heavy objects.
- Use only the power cord indicated in this manual if applicable.

## ■ FCC Class B Equipment

This device has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try and correct the interference by implementing one or more of the following measures:

- Reorient or relocate the device
- Increase the separation between the device and receiver
- Connect the device to an outlet on a circuit different from that to which the receiver is connected (applicable only to power line products)
- Consult the dealer or an experience radio or television technician for help

## ■ Declaration of Conformity for Products Marked with the FCC logo - USA Only

This device complies with Part 15 of the FCC Rules license-exempt RSS standard(s). Operation is subject to the following two conditions:

- This device may not cause harmful interference
- This device must accept any interference received, including interference that may cause undesired operation of the device

Where applicable standard FCC Part 15, Subpart B ANSI C63.4:2014, the BSL Testing Co., Ltd. performed above specification conformity test and issued certificate # BSL24030234P01-E01 in accordance with local regulation.

## ■ Declaration of CE and RoHS Conformity

Objects: MP-200 and MP-104R

This declaration of conformity is issued under the sole responsibility of the manufacturer for products of HDMI IP encoders that support single channel or multi-channel IP streaming standards. The object(s) of the declaration described above are in conformity with the relevant Community harmonization legislation:

- Harmonized Directive with RoHS Directive (2015/863/EU) and 2017/2012/EU amending Annex II to 2011/65/EU
- Electromagnetic Compatibility Directive (2014/30/EU)
- LVD Directive (2014/35/EU)

And their amendments.

References to the relevant harmonized standards, including the date of the standard, used in relation to which the conformity is declared:

- ETSI EN 55032:2015+A11:2020
- ETSI EN 62368-1:2020+A11:2020
- ETSI EN 55035:2017+A11:2020
- ETSI EN IEC 61000-3-2:2019+A1:2021
- ETSI EN IEC 61000-3-3:203/A2:2021
- EN IEC 62321-1:2013, 62321-4:2013/AMD1:2017, 62321-6:2015, 62321-7-2:2017, 62321-3-1:2013, 62321-5:2013, 62321-7-1:2015, 62321-8:2017

Where applicable, the TMC Testing Service Co., Ltd. performed above specification conformity test and issued certificate # MK24030234P01-S01, MK24030234P01-C01, and MK24030234P01-E01 in accordance with local regulation.



# Trouble Shooting

- ◆ **The NMS port is not accessible for configuration of MP-104R modulator**
  - Make sure the IP address of the NMS port of MP-104R is entered to the Web browser correctly.  
The IP address of the NMS port can be displayed on LCD screen by traversing the menu tree.
  - The IP address of the LAN port of computer connects to the MP-104R is assigned with different IP subnet from the NMS port of MP-104R.
- ◆ **Why the NMS and the DATA ports of MP-104R cannot be assigned to the same IP subnet**

If IP addresses of the NMS port and the DATA port of MP-104R are assigned to the same subnet, the internal Ethernet switch may transmit the IP streams to the wrong port to forward.
- ◆ **Does MP-104R support DHCP**

MP-104R doesn't support DHCP. Static IP addresses have to be assigned to the NMS and the DATA ports of MP-104R. It's common to connect the DATA port to the router of home network or LAN to receive IP streams through Internet or Intranet, but make sure the static IP address assigned to the DATA port doesn't duplicate the IP address assigned to other computing devices connected to the same network to avoid IP address conflict.
- ◆ **What's the Ethernet network bandwidth required for IP streaming**

Depending on the video bit rate configured on the source of IP streams, minimum 12 Mbps of network bandwidth per channel is required. Lower network bandwidth will cause high latency and jitter of IP stream playback.
- ◆ **The video and the audio from video source are not synchronized on TV**

Unplug and plug the input port(s) on the Modulator to restore.
- ◆ **Video with fast motion doesn't play well or shows ghosting on TV**

This might be caused by interlacing issue with 1080i resolution on sports or action video.
- ◆ **How to get the best video quality on TV with the Modulator**
  - Change the resolution of video source to 1080p or 720p (progressive). If TV doesn't support 1080p, change the resolution of video source to 720p and enable interlacing.
  - If QAM modulation technique is available from the Modulator, change it to 256QAM.
- ◆ **How do I know my TV supports ATSC or J.83B QAM standard**

Most recent models of TV set sold in the US within the last three years can support both ATSC and J.83B QAM standards but if it's unsure, the broadcasting standard of the TV can be realized by checking the wiring:

  - If the coaxial cable connected to the TV is an outdoor/indoor antenna drop, the TV supports ATSC.
  - If the coaxial cable connected to the TV is a Cable TV drop without set-top box, the TV supports J.83B QAM.
- ◆ **Some or most channels are instable or cannot be viewed on TV**

The input signal can be too strong for the TV tuner. Increase the RF output attenuation to be higher than 0dB but less than 30dB.
- ◆ **The Modulator output video stretches or shrinks on TV**

MP-104R processes input video without alteration in color and aspect ratio. Check the settings of aspect ratio on video source and TV to adjust and fix.
- ◆ **The Modulator output video on TV is flickering**

Some old TVs expect the MPEG Transport Stream (TS) Video PID value different from PCR PID. Check the TS Settings of MP-104R and change the PCR PID value to be different from Video PID value.

## Notes

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