

# Stream Media Platform

SMP100



## OVERVIEW

The SMP100 is Wellav's high-value product for medium and small sized service operators. It provides proven headend technology in a compact, 1RU chassis. With over 30 different input and output module options that can be combined as needed, it offers a true, comprehensive video delivery solution.

Whether it is for multiplexing, receiving, encoding, transcoding, modulating, scrambling or descrambling applications, the SMP100 provides the perfect combination of capacity, flexibility and reliability at an affordable price point.

## KEY FEATURES

Sharing the same functional modules with DMP900 SMP100 provides:

- Any Input to Any Output capability
- Compact modular design: 1RU with 3 modules and embedded ASI/IP interface
- Multi-Function: multiplexing, receiving, encoding, transcoding, modulation, scrambling and more.
- SNMP for remote integration and service
- Future modules/functions supported

### Highly integrated digital TV solution

- This 1RU chassis includes 3 module slots with more than 30 different modules for various functions. The SMP100 chassis includes ASI and IP inputs/outputs.

### Encoding/Transcoding

- Up to 12 SD & 6 HD programs of encoding
- Up to 24 SD & 6 HD programs of transcoding
- Multi-audio/AAC/AC3 encoding

### Receiving

- 12 frequencies of DVB-S/S2/C/T/T2/ISDB-T/8VSB receiving

## KEY FEATURES(cont.)

### Modulation/Scrambling

- Up to 24-QAM modulating
- Up to 12-OFDM modulating
- 8 frequency transmodulation to QAM (DVB-S/S2/T/T2/ISDB-T/8VSB)
- Scrambling module, up to 12 TS streams

### Stream Processing

- Up to 4 Gbps processing (approx. 1000 programs)
- Up to 14 ASI ports of multiplexing
- Internal multiplexing or pass-through capabilities
- Supports SI and EPG data insertion
- EIT multiplexing (option)

### Embedded I/O Interfaces:

- 4 x 100Mbps (2 In and 2 Out) ASI and 1 GbE TS/IP (real input/output up to 860 Mbps) interface on chassis

### Management interface

- Supports both Web GUI and client-based NMS
- SNMP compatible
- Configuration importable or exportable for easy maintenance
- Signal status monitoring

## BENEFITS

### Best Solution for Future Evolution of Technology in Any Operation

With the built-in ASI/IP I/O feature, the SMP100 can be used as a multiplexer without any modules. Our full and continuously updated product line ensures your investment by offering the ability to add modules instead of additional headend equipment.

### Reduced Rack Space with Energy Savings

SMP100 has an advanced module design which reduces the rack space required for your headend system. This design also offers up to a 40% reduction in energy usage.

### Flexible Distribution with Any-In-Any-Out Feature

Wellav offers a variety of Input /Output modules for that interface and are supported by the SMP100. This chassis comes with integrated ASI/IP ports on the chassis and can be easily integrated into a new or existing video distribution network.

### Easy Management and Configuration

SMP100 comes with a Web GUI or Network Management Software (NMS) which provides operators a convenient way to monitor, manage and configure the installed modules.



# SPECIFICATIONS

## Stream Media Platform SMP100

### COST-EFFECTIVE DIGITAL MEDIA PLATFORM(CHASSIS)

Module:	SMP100
Kernel Processing Capacity:	384 TS
Data Processing:	4Gbps (approx. 1000 programs)
Slot Number:	3 slot
Interface:	2 x ASI Input 2 x ASI output 1 GbE TS/IP (4I-4O w/ EIT, 12I-12O, 64I, 28O) 1 management (RJ45)
Multiplexing:	Support
BISS Descrambling:	Support (future option)
Power Consumption:	Max. 20W
Chassis Dimension:	480mm x 44mm x 440mm
Management:	Support both Web-based and client-based NMS SNMP supported for system integration

### MPEG2/H.264 SD/HD DECODER

Module:	Decoder
Decoding programs:	2xSD/HD via HDMI/SDI
Video Resolution:	480i, 576i, 720p, 1080i
Video Decoding:	SD: MPEG2 MP@ML MPEG4 AVC MP@L3 HD: MPEG2 MP@HL MPEG4 AVC MP@L4 / HP@4
Audio Decoding:	MPEG1 Layer II MPEG2 Layer II AAC Dolby Digital (AC3) (optional)
Program & PID level decoding:	Support
Subtitle:	DVB / EBU subtitles & Closed Captions

### MPEG2 AV SD ENCODER

Module:	EN2AV-2S+(C), EN2AV-4S(C)
Inputs	
Video:	2 or 4xCVBS
Audio:	2 or 4 pairs of audio (unbalanced)
Video Resolution:	480i, 576i
Encoding Format	
Video:	MPEG2 MP@ML
Audio:	MPEG1 Layer II
Encoding bitrate	
Video:	2.0~15 Mbps

### LOW-BITRATE H.264/MPEG2 AV SD ENCODER

Module:	EN2AV-4SM(Q)
Inputs	
Video:	4xCVBS
Audio:	4 pairs of audio (unbalanced)
Video Resolution:	480i, 576i
Encoding Format	
Video:	MPEG2 MP@ML, H.264 AVC / H.264 MP@L3
Audio:	MPEG1 L2/AAC, LC/HE AAC
Encoding bitrate	
Video:	0.8 ~ 9Mbps (H.264), 1.5 ~ 15 Mbps (MPEG2)

### MPEG2 SDI/AV SD ENCODER

Module:	EN2SDIS+ (C)
Inputs	
Video:	2xCVBS/SDI (BNC)
Audio:	2 pairs of audio (balanced/unbalanced)
Video Resolution:	480i, 576i
Encoding Format	
Video:	MPEG2 MP@ML
Audio:	MPEG1 Layer-I/II
Encoding Bitrate	
Video:	2.0 ~ 15Mbps

### H.264 SDI/AV SD ENCODER

Module:	EN4SDI+ (Q)
Inputs	
Video:	2xCVBS/SDI (BNC)

Audio:	2 pairs of audio (balanced/unbalanced)
Video Resolution:	480i, 576i
Encoding Format	
Video:	H.264 AVC / H.264 MP@L3
Audio:	MPEG1 Layer-I/II
Encoding Bitrate	
Video:	1.0 ~ 20Mbps

### H.264 SDI/AV SD/HD ENCODER

Module:	EN4SDIH+(Q)
Inputs	
Video:	2xCVBS/SDI (BNC)
Audio:	2 pairs of audio (balanced/unbalanced)
Video Resolution:	480i, 576i, 720p, 1080i,1080p
Encoding Format	
Video:	H.264 AVC / H.264 MP@L3/HP@L4
Audio:	MPEG1 Layer-I/II, AAC
Encoding bitrate	
Video:	1.0 ~ 20Mbps

### LOW-BITRATE MPEG2/H.264 SDI/AV SD ENCODER

Module:	EN4SDISM+(Q)
Inputs	
Video:	2xCVBS/SDI (BNC)
Audio:	2 pairs of audio (balanced/unbalanced)
Video Resolution:	480i, 576i
Encoding Format	
Video:	H.264 AVC / H.264 MP@L3
Audio:	MPEG1 L2/AAC LC/HE AAC
Encoding Bitrate	
Video:	0.8 ~ 9Mbps (H.264) 1.5 ~ 15 Mbps (MPEG2)

### MULTI-AUDIO SDI/AV SD/HD ENCODER

Module:	EN2SDIS-MPG(C), EN4SDIS-MPG(Q), EN4SDIH-MPG(Q), EN4SDISM-MPG(Q)
Description:	SDI/AV encoder with additional 2 pairs of MPEG1L2 audio
Inputs	
Video:	2xCVBS/SDI (BNC)
Audio:	2 pairs of audio (balanced/unbalanced) Up to 4 pairs of SDI embedded audio
Video Resolution:	480i, 576i, 720p, 1080i, 1080p (EN4SDIH-MPG)
Encoding Format	
Video:	MPEG2 MP@ML (EN2SDIS-MPG) H.264 AVC / H.264 MP@L3 (EN4SDIS-MPG/ EN4SDISM-MPG) H.264 AVC / H.264 MP@L3/HP@L4 (EN4SDIH-MPG) Additional 2xMPEG1 Layer-I/II
Audio:	
Encoding Bitrate	
Video:	2.0 ~ 15 Mbps (MPEG2) (EN2SDIS-MPG) 1.0 ~ 20 Mbps (H.264) (EN4SDIS-MPG/ EN4SDIH-MPG) 0.8 ~ 9Mbps (H.264) 1.5 ~ 15 Mbps (MPEG2) (EN4SDISM-MPG)

### MULTI-AUDIO SDI/AV SD/HD ENCODER(AC3)

Module:	EN2SDIS-AC3(C), EN4SDIS-AC3(Q) EN4SDIH-AC3(Q), EN4SDISM-AC3(Q)
Description:	SDI/AV encoder with additional 2 pairs of AC3 audio
Inputs	
Video:	2xCVBS/SDI (BNC)
Audio:	2 pairs of audio (balanced/unbalanced) Up to 4 pairs of SDI embedded audio
Video Resolution:	480i, 576i, 720p, 1080i, 1080p (EN4SDIH-AC3)
Encoding Format	
Video:	MPEG2 MP@ML ( EN2SDIS-AC3) H.264 AVC / H.264 MP@L3 (EN4SDIS-AC3 / EN4SDISM-AC3) H.264 AVC / H.264 MP@L3/HP@L4(EN4SDIH-AC3)
Audio:	2xMPEG1 Layer-I/II Additional 2xAC3
Encoding Bitrate	
Video:	2.0~ 15 Mbps (MPEG2) (EN2SDIS-AC3)

# SPECIFICATIONS(cont.)

## Stream Media Platform SMP100

1.0~ 20 Mbps (H.264) (EN4SDIS-AC3 / EN4SDIH-AC3)  
 0.8 ~ 9Mbps (H.264)  
 1.5 ~ 15 Mbps (MPEG2) (EN4SDISM-AC3)

### H.264 HDMI SD/HD ENCODER

Module: EM4HDMI(Q)  
**Inputs**  
 Video: 2xHDMI  
 Audio: HDMI embedded  
 Video Resolution: 480i , 576i, 720p, 1080i, 1080p  
**Encoding Format**  
 Video: HD: H.264 AVC / H.264 HP@L4  
 SD: H.264 AVC / H.264 MP@L3  
 Audio: MPEG1 Layer II , AAC  
**Encoding bitrate**  
 Video: 1.0~20 Mbps

### MPEG2 SD TRANSCODER

Module: TC2-2S(C), TC2-4S(C)  
 Transcoding programs: 2xSD programs (TC2-2S)  
 2xSD programs with downscaling(TC2-4S)  
 4xSD programs or 2xHD programs (TC2-4S)  
 Video resolution: 480i, 576i  
 Video Profile: MPEG2 MP@ML  
 Audio: MPEG1 Layer-I/II, AC3 pass through  
 VideoBitrate: 2.0~15 Mbps

### H.264 SD/HD TRANSCODER

Module: TC4-2S(Q), TC4-4S/2H(Q)  
 Transcoding programs: 2xSD programs, 1xHD programs (TC4-2S)  
 4xSD programs, 2xHD programs (TC4-4S/2H)  
 2xHD programs (TC4-4S/2H)  
 Video resolution: 480i, 576i, 720p,1080i, 1080p  
 Video Profile: HD: H.264 AVC / H.264 HP@L4  
 SD: H.264 AVC / H.264 MP@L3  
 Audio: MPEG1 Layer- II, AAC, AC3 pass through  
 Video bitrate: SD: 1.0 ~ 15 Mbps, HD: 1.0 ~ 20 Mbps

### LOW-BITRATE MPEG2/H.264 SD TRANSCODER

Module: TCSD-4SM(Q)  
 Transcoding programs: 4x SD programs  
 Video resolution: 480i, 576i  
 Video Profile: H.264 AVC / H.264 MP@L3  
 MPEG2 MP@ML  
 Audio: MPEG1 Layer- II, AAC, AC3 pass through  
 Video Bitrate: SD:0.8~9Mbps (H.264), SD:1.5~15Mbps (MPEG2)

### HIGH-DENSITY MPEG2/H.264 SD/HD TRANSCODER

Module: TCHD-M(H)  
 Transcoding Program No 1 x FHD/2 x HD/1 x HD + 4 x SD/8 x SD  
 Video Transcoding: MPEG2 MP@HL;  
 MPEG4 AVC HP@L4.2;  
 MPEG4 AVC MP@L4.2;  
 MPEG4 AVC BP@L4.1  
 Output Resolution: 1920/1440/1280/960x1080p/i  
 1208/960/640x720p  
 720/704/544/528/480/352x576i  
 720/702/640/544/528/480/352x480i  
 Frame Rate: Max. 60  
 VBI/VANC data processing: AFD/BAR, Closed caption, V-CHIP  
 De-Interlacing Support: Yes  
 Video Input Bitrates: Max 128Mbps @MPEG2  
 Max 120Mbps @H.264  
 Video Output Bitrates: MPEG2 SD: 0.6 Mbps ~ 16 Mbps  
 MPEG2 HD: 1 ~ 20 Mbps  
 H.264 SD: 0.3 Mbps ~ 15 Mbps  
 H.264 HD: 0.5 Mbps ~20 Mbps  
 Audio Format: MPEG1 Layer II AAC.  
 Dolby digital AC-3 (optional)  
 Supports audio pass through  
 Yes  
 Support Audio Pass Through  
 Audio Output Bitrates: MPEG1 Layer II: 32 - 384 Kbps

AAC: 32 - 504 Kbps  
 AC3: 32 - 504 Kbps  
 AFD modification, Channel branding, PIP(future option)

Extra Functions:

### HIGH-END MULTI-SCREEN TRANSCODER

Module: TCMS-M(H)  
 Input: Max.1 x FHD or 2 x 2 SD/HD input (MPEG2/H.264)  
 Output Profiles: (Per Input) Max. 7 profiles  
 Video Transcoding: H.264 AVC MP@L4.2  
 H.264 AVC HP@L4.2  
 H.264 AVC BP@L4.1  
 Output Resolution: 1920/1440/1280/960/720/640x1080  
 1208/960/954x720  
 960x640  
 1024/768/720/704/544/528/480/352x576  
 960/540  
 854/720/702/640/544/528/480/352x480  
 768x432  
 640/480x360  
 480x320  
 512/352x288  
 460/360x270  
 144x256  
 480/320x240  
 400x224  
 384x216  
 320/240x180  
 192x192  
 Frame Rate: Max. 60  
 De-Interlacing: Support  
 User-Defined Profiles: Yes  
 Aligned Output: GOP, IDR, PTS  
 Video Output BitRates: (CBR & VBR)  
 H.264 SD: 128 Kbps ~ 15 Mbps  
 H.264 HD: 500Kbps ~ 20 Mbps

Audio Format: MPEG1 Layer II, AAC, Dolby Digital AC-3 (option),  
 Support audio pass through  
 Audio Output Bitrates: MPEG1 Layer II: 32 - 384 Kbps  
 AAC: 32 - 504 Kbps, AC3: 32 - 504 Kbps  
 Extra Functions: AFD modification, Channel branding, PIP(future option)

### TS OVER IP MODULE

Module: TSIP  
 Connector: 2 x 100/1000Base-T, RJ-45  
 2 x 1000Base-X, SFP  
 Package format: RTP/UDP  
 Traffic type: Unicast or Multicast  
 Channels: 64 in 32 out or 16 in 256 out  
 FEC: Support

### ASI MODULE

Module: ASI  
 Inputs/Outputs: 4xASI  
 TS Max Bit Rate: up to 100 Mbps (each ASI)

### DS3 MODULE

Module: DS3  
 Inputs/Outputs: E3/DS3  
 TS Max Bit Rate: 44.736Mbps

### DVB SCRAMBLER

Module: Scrambler+  
 Max TS streams: 12 streams  
 EMM Bitrate: up to 3Mbps  
 Simulcrypt Scrambling: 4 CA systems simultaneously  
 Encryption: DVB EMM and ECM data insertion

### CI MODULE

Module: CI  
 Connector: 2 x PCMCIA CI slots  
 CA Module: Multicrypt/Simulcrypt, Hot swappable

### DVB-S/S2 RECEIVER

Module: DVBS2

# SPECIFICATIONS(cont.)

## Stream Media Platform SMP100

Inputs:	4xRF input
Frequency Range:	950 ~ 2150 MHz
Constellation:	QPSK, 8PSK,
Signal Level:	-65dBm ~ -25 dBm
Symbol Rate:	1 ~ 45 Ms/s,
Lnb:	13/18V DC
22khz:	on/off
FEC:	Support

### DVB-T/T2 RECEIVER

Module:	DVBT, DVBT2
Inputs:	4xRF input
Frequency Range:	48 ~ 862MHz
Constellation:	QPSK, 16/64QAM (DVB-T), QPSK, 16/64/256 (DVB-T2)
Guard Interval:	1/4, 1/8, 1/16, 1/32 (DVB-T), 1/4, 1/8, 1/16, 1/32, 1/128, 19/256, 19/128 (DVB-T2)
Transmission Mode: (DVB-T2)	2K, 8K (DVB-T), 1K, 2K, 4K, 8K, 16K, 32K
Signal Level:	-80 ~ -20 dBm

### DVB-C RECEIVER

Module:	DVBC, DVBC+
Inputs:	2xRF input (supports 4 frequencies)
Frequency Range:	48 ~ 862 MHz
Qam Mode:	16/32/64/128/256 QAM
Symbol Rate:	3.6 ~ 6.952 Ms/s
FEC Mode:	ITU-T J.83 Annex A/B/C
Per RF Input Bit-Rate:	up to 55Mbps
Signal Level:	40~80 dBuV

### ATSC RECEIVER

Module:	ATSC
Inputs:	4xRF input
Frequency Range:	57 ~ 803 MHz
Demodulation:	8VSB
Bandwidth:	6MHz
Input Bitrate:	19.39Mbps

### ISDB-T RECEIVER

Module:	ISDBT
Inputs:	4xRF input
Frequency Range:	48 ~ 862MHz,
Constellation:	QPSK/16/64QAM/DQPSK
Guard Interval:	1/4, 1/8, 1/16, 1/32
Carrier Mode:	Modes 1, 2, 3
Transmission Mode:	1K, 2K, 3k

### QAM MODULE

Module:	QAM
Outputs:	F-type Female, RF Monitor
Channels:	4 or 8 adjacent channels
Output Range:	48 ~ 862 MHz
Constellations:	16/32/64/128/256QAM
Symbol Rate:	4.4 ~ 6.952 Ms/s
Output Level:	30~46dBmV@8channels, 30~55dBmV@1channel

### LQAM MODULE

Module:	LQAM
Interface	
1 x F-type female connector	external RF input
1 x F-type female connector external	combined RF output of internal 1~4 RF channels and external
RF Output	
Standard:	ITU-T-T J.83 Annex A/C, Annex B
Bandwidth:	6MHz/7MHz/8MHz
Channels:	Up to 4 adjacent channels
Output Range:	48 ~ 862 MHz
Constellations:	16/32/64/128/256QAM
Symbol Rate:	4.4 ~ 6.956 Ms/s
Output Level:	30~55dBmV

### IQAM MODULE

Module:	IQAM
Interface	
1 x F-type female connector	16 x RF output agile-frequency channels
Standard:	ITU-T-T J.83 Annex A/C, Annex B
Bandwidth:	6MHz/7MHz/8MHz
Channels:	Up to 16 agile-frequency channels (as per license)
RF Output	
Output Range:	57 ~ 999 MHz
Constellations:	16/32/64/128/256QAM
Symbol Rate:	3.0 ~ 6.956 Ms/s
Output Level:	30~55dBmV

### OFDM MODULE

Module:OFDM	
Outputs:	F-type Female, RF Monitor
Channels:	2 or 4 adjacent channels
Output Range:	48 ~ 862 MHz
QAM Constellations:	QPSK/16/64QAM
Transmission Mode :	2k, 8k
FEC:	1/2, 2/3, 3/4, 5/6, 7/8
Guard Interval:	1/4, 1/8, 1/16, 1/32
Output Level:	30~46dBmV@8channels 30~52dBmV@4channels 30~55dBmV@1channel

### IP QAM MODULE

Module:	IPQAM
Input:	1 GbE TS/IP
Outputs:	F-type Female, RF Monitor
Channels:	8xQAM or 4xOFDM, A/C
Package Format:	RTP/UDP
Output Range:	48 ~ 862 MHz
QAM Constellations:	16/32/64/128/256QAM
Symbol Rate:	4.4~ 6.952Ms/s
Output Level:	30~46dBmV@8channels 30~52dBmV@4channels 30~55dBmV@1channel

### SCRAMBLER QAM MODULE

Module:	SQAM
Interface of Scrambling:	1 x RJ45
Outputs:	F-type Female, RF Monitor
Max TS Streams:	4 or 8 streams, Annex A/C or B
Emm Bitrate:	Up to 3Mbps
Simulcrypt Scrambling:	4 CA system simultaneously
Encryption:	DVB EMM and ECM data insertion
Output Range:	48 ~ 862 MHz
QAM Constellations:	16/32/64/128/256QAM
Symbol Rate:	4.4 ~ 6.952 Ms/s
Output level:	30~46dBmV@8channels 30~52dBmV@4channels 30~55dBmV@1channels

### SCRAMBLER OFDM MODULE

Module:	SOFDM
Interface of Scrambling:	1 x RJ45
Outputs:	F-type Female, RF Monitor
Max TS Streams:	2 or 4 streams
EMM Bitrate:	Up to 3Mbps
Simulcrypt Scrambling:	4 CA system simultaneously
Encryption:	DVB EMM and ECM data insertion
Output Range:	48 ~ 862 MHz
QAM Constellations:	QPSK/16/64QAM
Transmission Mode :	2k, 8k
FEC:	1/2, 2/3, 3/4, 5/6, 7/8
Guard Interval:	1/4, 1/8, 1/16, 1/32
Output Level:	30~46dBmV@8channels 30~52dBmV@4channels 30~55dBmV@1channel