

# 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

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

### KEY FEATURES (cont.)

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.

## Stream Media Platform SMP100

### SPECIFICATIONS

#### 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 MPEG1 Layer II MPEG2 Layer II AAC Dolby Digital (AC3) (optional)
Audio Decoding:	
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

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

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)
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## SPECIFICATIONS

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

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)
Audio:	Additional 2xMPEG1 Layer-I/II
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) 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

### H.264 HDMI SD/HD ENCODER (CONT.)

Encoding Format	
Video:	HD: H.264 AVC / H.264 HP@L4 SD: H.264 AVC / H.264 MP@L3 MPEG1 Layer II , AAC
Audio:	
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



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### SPECIFICATIONS

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

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
Support Audio Pass Through	Yes
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)

#### 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
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:	2K, 8K (DVB-T), 1K, 2K, 4K, 8K, 16K, 32K (DVB-T2)
Signal Level:	-80 ~ -20 dBm

#### DVB-C RECEIVER

Module:	DVBC, DVBC+
Inputs:	2xRF input (supports 4 frequencies)
Frequency Range:	48 ~ 862 MHz



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### SPECIFICATIONS

#### DVB-C RECEIVER (CONT.)

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, 30~52dBmV@4channels 30~55dBmV@1channel

#### LQAM MODULE

Module:	LQAM
Interface	
1 x F-type female connector	external RF input
1 x F-type female connector	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

#### IQAM MODULE (CONT.)

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

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### SPECIFICATIONS

#### SCRAMBLER OFDM MODULE (CONT.)

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