SOFTEL

NEP100-A

IP Streamer

Mutiple Inputs (HDMI+Tuner+IP over Multi-Protocol+TS file) + Multi-Protocol Conversion + IPTV Server

1U Chassis with 3 card slots

3U Chassis with 6 card slots

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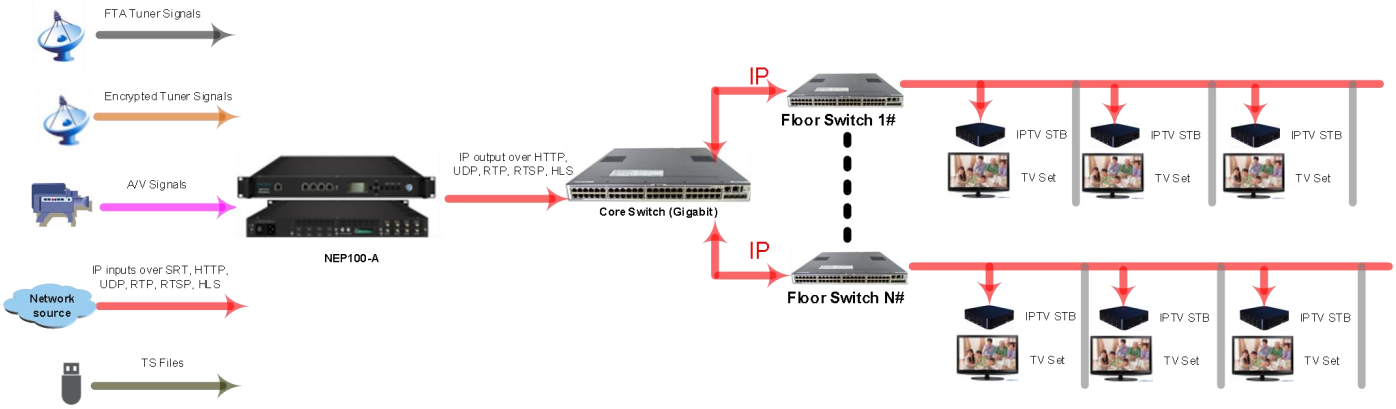
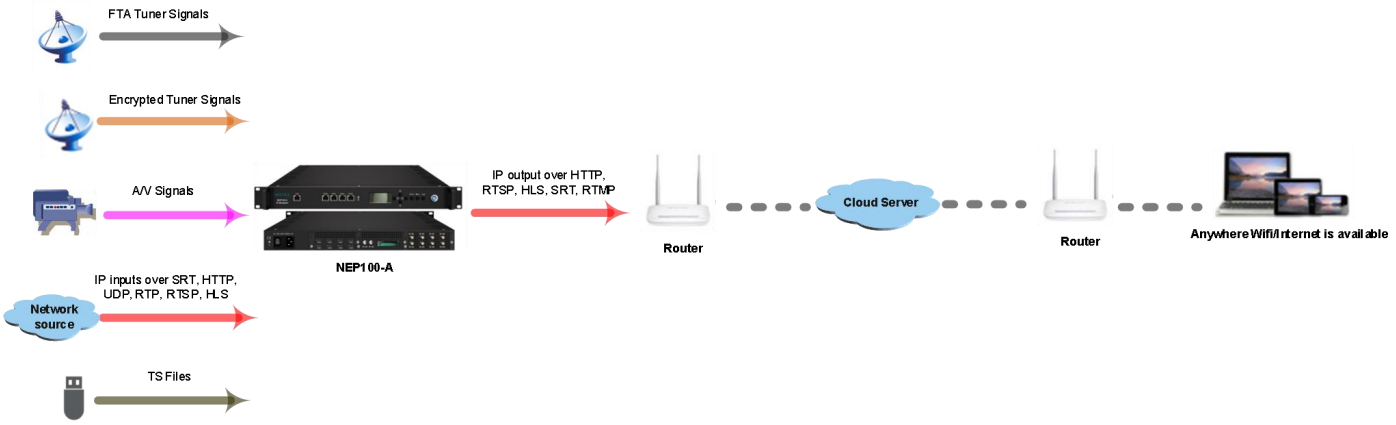
Application Example

IPTV System as a Server



Protocol Conversion as a Streamer



Outline

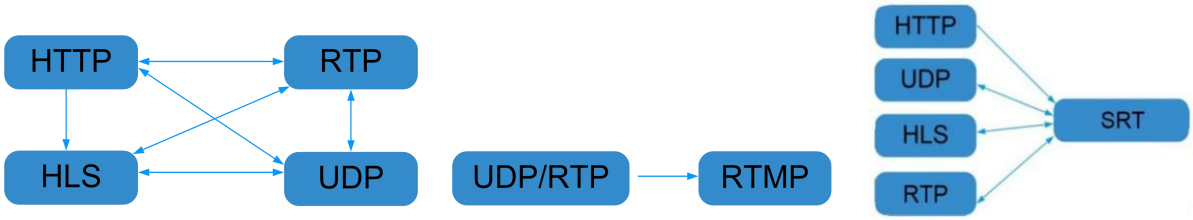
NEP100-A is a flexibly modularized 1U (or 3U) device with the features of Encoder/Receiver, IP Gateway and IPTV Server for the protocol-conversion application and IPTV-system application. It supports max 3 (or 6) pluggable streamer cards embedded, such as encoder card and tuner card to receive the HDMI signals and tuner signals etc. It can also convert the input IP streams from the embedded modules and Ethernet ports over SRT, HTTP,UDP, RTP, RTSP, HLS protocol and TS files into the output IP streams over SRT, HTTP,UDP, RTP, RTSP, HLS and RTMP protocol. It is also integrated with SOFTEL IPTV management software and Streamer cards to make it ideal in an IPTV system, such as

hotel, hospital and community.

Key Features

- **Encoder/Receiver, IP Gateway and IPTV Server in one device**
- **2 separate Web GUI, one for Cards and Gateway, the other for IPTV Server**
- **Support uploading TS files directly in Web GUI to broadcast your own channels**
- **Support inter-cut feature of a live program, a TS file and a picture**
- **Support IP anti-jitter feature for the external IP streams**
- **Support downloading SOFTEL IPTV APK directly in the Web GUI**
- **Multi-level password control for your system security**
- **LCD/Key button for Network-Setting checking**
- **Modularized design, max 3 (or 6) cards embedded, a flexible option as per the actual application**

IP Protocol Conversion (example)



Specifications

Input	IP inputs thru ETH 1&2, GE ports over SRT,HTTP, UDP (SPTS), RTP(SPTS), RTSP (over UDP, payload: mpeg TS) and HLS	For 1U model
	IP inputs thru ETH 1-4 GE ports & 6-7 SFP+ ports over SRT,HTTP, UDP (SPTS), RTP(SPTS), RTSP (over UDP, payload: mpeg TS) and HLS	For 3U model
	TS files uploading through Web management	
	Encoder card and Tuner card etc (Please refer to the detailed card spec below)	
IP output	IP outputs thru ETH0, GE port over SRT, HTTP (Unicast), UDP(SPTS, Multicast) , RTP, RTSP, HLS and RTMP (Program source should be H.264 and AAC encoding)	
System	Channel switching time with SOFTEL' STB: HTTP (1-3s), HLS (0.4-0.7s)	
	It is closely related with the program bitrate and protocol type etc for Max program numbers involved in protocol conversion, and the actual application shall prevail	

	with maximum 80% CPU utilization (Please refer to Test data for reference in the end of the spec)	
	It is closely related with the program bitrate and protocol type etc for Max affordable terminal numbers in IPTV application of the STB/Android TV installed with SOFTEL IPTV APK, and the actual application shall prevail with maximum 80% CPU utilization (Please refer to Test data for reference in the end of the spec)	
	IPTV Features: Live channel, VOD, Hotel intro, Dining, Hotel service, Scenery intro, APPS,Adding scrolling caption, welcome words, pictures, advertisement, video, music etc (the features are only applicable to IP out application in the STB/Android TV installed with SOFTEL IPTV APK)	
General	Demission (WxLxH)	482mm×464mm×44mm (1U model) 482mm×493mm×133mm (3U model)
	Management	2 separate Web GUI (one for Cards and Gateway, the other for IPTV Server) through ETH3 (3U model through ETH5)
	Temperature	0~45℃(operation), -20~80℃(storage)
	Power Supply	AC100V±10%, 50/60Hz or AC 220V±10%, 50/60Hz

Available Card Specification (more available cards later for development)

SFT902A 2 Tuner Descrambling Card

Stream in:
2 Tuner input, F Type,
Stream out:
16 SPTS output over UDP/RTP
DVB-CI:
2 independent common interface slots
Standard:
DVB-S/S2/S2X;

DVB-S
Input Frequency: 950-2150MHz
Symbol Rate: QPSK 1~45Msps
Signal Strength: -65~ -25dBm
FEC Demodulation: 1/2, 2/3, 3/4, 5/6, 7/8

DVB-S2

Input Frequency: 950-2150MHz
Symbol rate: QPSK/8PSK 1~45Msps, 16APSK 1~45 Msps, 32APSK1~32 Msps
FEC Demodulation: 1/2, 2/3, 3/4,5/6,7/8, 4/5,5/6,8/9, 9/10

DVB-S2X
Input Frequency: 950-2150MHz
Symbol rate: QPSK/8PSK/16APSK 0.5~45 Msps; 8APSK/32APSK: 0.5~40Msps
FEC Demodulation:
QPSK: 1/2, 3/5, 2/3, 3/4, 4/5, 5/6, 8/9, 9/10, 13/45, 9/20, 11/20
8PSK: 3/5, 2/3, 3/4, 5/6, 8/9, 9/10, 23/36, 25/36, 13/18
8APSK: 5/9-L, 26/45-L
16APSK: 2/3, 3/4, 4/5, 5/6, 8/9, 9/10,1/2-L, 8/15-L, 5/9-L, 26/45, 3/5, 3/5-L, 28/45, 23/36, 2/3-L, 25/36, 13/18, 7/9, 77/90
32APSK: 3/4, 4/5, 5/6, 8/9, 2/3-L, 32/45, 11/15, 7/9

Support Diseqc function

Multiplexing:
Maximum PID Remapping: 256 output pids
Function: PID remapping (automatically or manually), Accurate PCR adjusting, generate PSI/ SI table automatically
Descrambling:
CAM/CI Quantity: 2
BISS Mode: Mode 1, Mode E; 32 BISS Keys

SFT942A 4 frequencies Descrambling Card

Stream in:
4 frequencies input(each RF in interface for 2 frequencies locking), F Type,
Stream out:
16 SPTS output over UDP/RTP
DVB-CI:
2 independent common interface slots
Standard: DVB-C (J.83 A/C)/J.83B/ DVB-T/DVB-T2/ISDB-T switchable

Standard: DVB-C (J.83 A/C); J.83B
Input Frequency: 60MHz~890MHz
Symbol rate: 1000~9000Ksps
Constellation: 16/32/64/128/256 QAM; 64/256 QAM for J.83B

Standard: DVB-T/T2
Frequency In: 60MHz~890MHz
Bandwidth: 5/6/7/8M bandwidth
PLP supported for DVB-T2

Standard: ISDB-T
Input Frequency:60-890MHz

Multiplexing:
Maximum PID Remapping: 256 output pids
Function: PID remapping (automatically or manually), generate PSI/ SI table automatically
Descrambling:
CAM/CI Quantity: 2
BISS Mode: Mode 1, Mode E; 32 BISS Keys

SFT228S 8 HDMI Encoder Card

Input: 8*HDMI (4 HDMI is available)
Output: 8*SPTS (4 SPTS if 4 HDMI) output over UDP/RTP/RTSP, Unicast/Multicast
Video Encoding:
Video format: MPEG-4 AVC/H.264
Input resolution: 1920×1080_60P, 1920×1080_60i, 1920×1080_50P, 1920×1080_50i,1280×720_60P, 1280×720_50P, 720×576_50i, 720×480_60i,
Output resolution: 1920×1080_30P, 1920×1080_25P, 1280×720_30P, 1280×720_25P, 720×576_25P,720×480_30P,
GOP structure: IP…P (P Frame adjustment, without B Frame)
Video Bit-rate: 1Mbps~13Mbps each channel
Rate Control: CBR/VBR
Audio Encoding:
Audio format: MPEG1 Layer II, LC-AAC, HE-AAC and AC3 Pass through, support audio gain adjustment
Sampling rate: 48 KHz
Audio Bit-rate:
MPEG-1 Layer 2: 48/56/64/80/96/112/128/160/192/224/256/320/384 kbps
LC-AAC: 48/56/64/80/96/112/128/160/192/224/256/320/384 kbps
HE-AAC: 48/56/64/80/96/112/128 kbps

Support Logo, Caption, QR Code insertion

SFT228S-V2 8 HDMI Encoder Card

Input: 8*HDMI (4 HDMI is available)
Output: 8*SPTS (4 SPTS if 4 HDMI) output over UDP/RTP/RTSP, Unicast/Multicast
Video Encoding:
Video format: HEVC/H.265, MPEG-4 AVC/H.264
Input resolution: 1920×1080_60P, 1920×1080_60i, 1920×1080_50P, 1920×1080_50i,1280×720_60P, 1280×720_50P, 720×576_50i, 720×480_60i,
Output resolution: 1920×1080_30P, 1920×1080_25P, 1280×720_30P, 1280×720_25P, 720×576_25P,720×480_30P,
GOP structure: IP…P (P Frame adjustment, without B Frame)
Video Bit-rate: 1Mbps~13Mbps each channel
Rate Control: CBR/VBR
Audio Encoding:
Audio format: MPEG1 Layer II, LC-AAC, HE-AAC and AC3 Pass through, support audio gain adjustment
Sampling rate: 48 KHz
Audio Bit-rate:
MPEG-1 Layer 2: 48/56/64/80/96/112/128/160/192/224/256/320/384 kbps
LC-AAC: 48/56/64/80/96/112/128/160/192/224/256/320/384 kbps
HE-AAC: 48/56/64/80/96/112/128 kbps

Support Logo, Caption, QR Code insertion

SFT908 8 FTA DVB-S/S2/S2X Tuner Card

Stream in: 8 Tuner input, F Type,
Stream out: 512 SPTS out over UDP/RTP/RTSP, Unicast/Multicast
Tuner input: DVB-S/S2/S2X
Symbol rate: QPSK/8PSK/16APSK 0.5~45 Msps; 8APSK/32APSK: 0.5~40Msps
Input Frequency: 950-2150MHz

DVB-S Constellation: QPSK

FEC Demodulation: 1/2, 2/3, 3/4, 5/6, 7/8

DVB-S2 Constellation: QPSK/8PSK/16APSK/32APSK

FEC Demodulation:

QPSK: 1/2, 2/3, 3/4, 5/6, 3/5, 4/5, 8/9, 9/10

8PSK: 3/5, 2/3, 3/4, 5/6, 8/9, 9/10

16APSK: 2/3, 3/4, 4/5, 5/6, 8/9, 9/10

32APSK: 3/4, 4/5, 5/6, 8/9, 9/10

DVB-S2X Constellation: QPSK/8PSK/8APSK/16APSK/32APSK

FEC Demodulation:

QPSK: 1/2, 3/5, 2/3, 3/4, 4/5, 5/6, 8/9, 9/10, 13/45, 9/20, 11/20

8PSK: 3/5, 2/3, 3/4, 5/6, 8/9, 9/10, 23/36, 25/36, 13/18

8APSK: 5/9-L, 26/45-L

16APSK: 2/3, 3/4, 4/5, 5/6, 8/9, 9/10,1/2-L, 8/15-L, 5/9-L, 26/45, 3/5, 3/5-L, 28/45, 23/36, 2/3-L, 25/36, 13/18, 7/9, 77/90

32APSK: 3/4, 4/5, 5/6, 8/9, 2/3-L, 32/45, 11/15, 7/9, 9/10

Support Diseqc function

Multiplexing:

Maximum PID Remapping: 256 output pids

Function: PID remapping (automatically or manually), Accurate PCR adjusting, generate PSI/ SI table automatically

Descrambling:

BISS Mode: Mode 1, Mode E; up to 120Mbps, 32 BISS Key

SFT928 8 FTA DVB-C/T/T2/ISDB-T Multi-Mode Tuner Card

Stream in: 8 tuner input, F Type

Stream out: 512 SPTS out over UDP/RTP/RTSP, Unicast/Multicast

Tuner input: DVB-C (J.83 A/C)/J.83B/ DVB-T/DVB-T2/ISDB-T switchable

Standard: DVB-C (J.83 A/C); J.83B

Input Frequency: 60MHz~890MHz

Symbol rate: 1000~9000Ksps

Constellation: 16/32/64/128/256 QAM; 64/256 QAM for J.83B

Standard: DVB-T/T2

Frequency In: 60MHz~890MHz

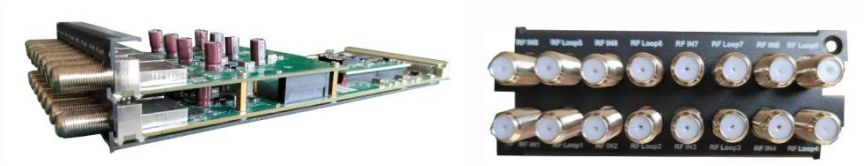
Bandwidth: 5/6/7/8M bandwidth
PLP Index:0~255 for DVB-T2

Standard: ISDB-T
Input Frequency:60-890MHz

Multiplexing:
Maximum PID Remapping: 256 output pids
Function: PID remapping (automatically or manually), generate PSI/ SI table automatically

Descrambling:
BISS Mode: Mode 1, Mode E; up to 120Mbps, 32 BISS Keys

SFT908 V2 8 FTA DVB-S/S2/S2X Tuner Card



Stream in: 8 Tuner input, F Type, with loop out
Stream out: 512 SPTS out over UDP/RTP/RTSP, Unicast/Multicast
Tuner input: DVB-S/S2/S2X
Symbol rate: QPSK/8PSK/16APSK 0.5~45 Msps; 8APSK/32APSK: 0.5~40Msps
Input Frequency: 950-2150MHz

DVB-S Constellation: QPSK
FEC Demodulation: 1/2, 2/3, 3/4, 5/6, 7/8
DVB-S2 Constellation: QPSK/8PSK/16APSK/32APSK
FEC Demodulation:
QPSK: 1/2, 2/3, 3/4, 5/6, 3/5, 4/5, 8/9, 9/10
8PSK: 3/5, 2/3, 3/4, 5/6, 8/9, 9/10
16APSK: 2/3, 3/4, 4/5, 5/6, 8/9, 9/10
32APSK: 3/4, 4/5, 5/6, 8/9, 9/10
DVB-S2X Constellation: QPSK/8PSK/8APSK/16APSK/32APSK
FEC Demodulation:
QPSK: 1/2, 3/5, 2/3, 3/4, 4/5, 5/6, 8/9, 9/10, 13/45, 9/20, 11/20
8PSK: 3/5, 2/3, 3/4, 5/6, 8/9, 9/10, 23/36, 25/36, 13/18
8APSK: 5/9-L, 26/45-L
16APSK: 2/3, 3/4, 4/5, 5/6, 8/9, 9/10,1/2-L, 8/15-L, 5/9-L, 26/45, 3/5, 3/5-L, 28/45, 23/36, 2/3-L, 25/36, 13/18, 7/9, 77/90
32APSK: 3/4, 4/5, 5/6, 8/9, 2/3-L, 32/45, 11/15, 7/9, 9/10

Support Diseqc function

Multiplexing:

Maximum PID Remapping: 256 output pids

Function: PID remapping (automatically or manually), Accurate PCR adjusting, generate PSI/ SI table automatically

Descrambling:

BISS Mode: Mode 1, Mode E; up to 120Mbps, 32 BISS Key

Test data for reference (1U model):

Protocol conversion	Programs	Bitrate	Terminals	CPU utilization
UDP to HTTP	60	8M	100	80%
UDP to HLS	60	8M	120	65%
UDP to HTTP	60	2M	400	80%
UDP to HLS	60	2M	400	40%
UDP to SRT	45	8M	---	80%
UDP to RTMP	50	8M	---	80%

Test data for reference (3U model):

Protocol conversion	Programs	Bitrate	Terminals	CPU utilization
UDP to HTTP	150	8M	600	82%
UDP to HLS	150	8M	1300	30%
UDP to SRT	130	8M	---	75%
UDP to RTMP	150	8M	---	80%