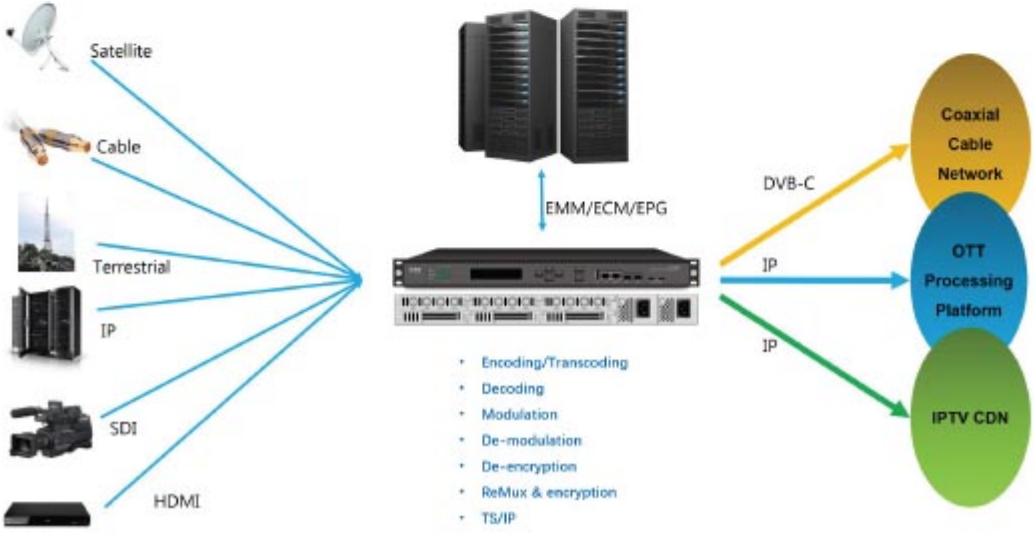
DCP-3000

Digital Content Processing Platform

PBI Digital Contents Processing Platform DCP-3000 brings a compact, powerful and flexible solutions that allow the users to build or update DTV or IPTV headend to meet the requirements of today's new network architectures. DCP-3000 is a compact 1U platform capable of processing a high number of steams. By inserting up to 6 optional functional modules and pluggable MUX/Scrambler extended modules, DCP-3000 integrates all DTV headend functions, such as DVB signal reception, descrambling, encoding, transcoding, remultiplexing, scrambling and modulation in to one single unit.

Main Feature

- Support flexible combination of kinds of functional modules
- Switching capability: 2.5Gbps line speed of one module slot
- Total internal exchange capacity: maximum 49G data processing
- 800Mbps effective bit-rate through per TS/IP port, Support IGMP v2/v3
- Support IPTV mode and conversion of MPTS from any inputs to SPTS
- Up to 24 TS IP input and 24 TS IP output with FEC
- Up to 256 SPTS IP output and 8 TS IP input under IPTV mode
- Up to 160 TS IP input and 16 TS IP output via the extended re-multiplexing module
- Support scrambling over IP with the extended re-multiplexing & scrambling module
- SNMP & WEB Management System
- Redundant Power Supplies
- 19" x 1 U EIA standard chassis



Chassis Specification

Data Exchange	
Standard	IEEE 802.3, 10/100/1000 Base-T, Full Duplex
Max. Effective Bit Rate	800Mb/s
Data Protocol	UDP or RTP, SPTS or MPTS
Control Protocol	ICMP, ARP, IGMP v2/v3
Front Panel	
TS/IP Connector Type	2 × SFP, 10/100/1000 Base-T
CA Connector Type	1 × RJ-45, 10/100/1000 Base-T
Control Connector Type	1 × RJ-45, 10/100/1000 Base-T
Upgrade Connector Type	1 x USB, 2 x Mini USB
Display	2 x 20 characters LCD Display
Rear Panel	
Module Slot	6 x Slots
Others	
Power Supply	AC/DC 100 - 240V ~1.5A Max 50/60Hz
Operating Temperature	0 ~ 45℃
Storage Temperature	-10 ~ 60℃
Operation Humidity	10 ~ 90%, (Non-condensed)

Optional Function Modules

1, Encoding/Transcoding Modules
4-Way H.264/MPEG-2 Encoding Module(HDMI/SDI)
4-Way Encoding + 4-Way Transcoding Module
8-Way H.264/MPEG-2 Transcoding Module
2, Decoding Modules
2-Way HD/SD Decoding Module
2-Way AVS+ Decoding Module
HEVC Decoding Module
3, Re-multiplexing/Scrambling Modules
Re-multiplexing & Scrambling Module
Re-multiplexing Module
4, De-scrambling Modules
4-Way De-scrambling Module
2-Way Demodulating & 2-Way De-scrambling Module
5, Modulating/Demodulating Modules
4-Way DVB-S/S2 Demodulating Module
4-Way DVB-C/T/T2 Demodulating Module
QAM Modulating Module
COFDM Modulating Module
6, TS over IP Modules
4 x RJ-45 GbE TS/IP Module
4 x SFP TS/IP Module
7, ASI Interface Modules
5 x ASI Input/Output Module

Typical Application

8 x DVB-S/S2 Demodulating + 8 x De-scrambling + 5 x ASI Inputs/Outputs + 1 QAM Modulating

P01MS reMUX & Scrambler Extension Module

Standard	Compliant with ISO13818 & EN300 468
Total Data Processing	7.5Gbps data processing capability
re-Multiplexing & Scrambling Function	24 independent TS reMUX's and Scramblers (s/w option: 48 TS reMUX only)
PID	PID filtering, remapping, pass through & mapping
PSI/SI	Insert & Edit PSI/SI tables
PCR	PCR re-stamp & calibrate
Scrambling	Local or remote CAS synchronous simul-crypt processing
Temperature Control	Self-temperature monitoring

D01S2 4xDVB-S/S2 Demodulator Module

Connect Type	4 x F type female, 75Ω
Input Frequency Range	950 ~ 2150 MHz
Input Level	-65dBm ~ -25dBm
Symbol Rate	5~45MBaud(DVB-S QPSK), 10~31MBaud (DVB-S2 8PSK)
Roll Off Factor	0.35(DVB-S QPSK), 0.35/0.25/0.2(DVB-S2 8PSK)
FEC Puncture Rate	2/3, 3/4, 5/6, 6/7, 7/8(DVB-S QPSK); 2/3, 3/4, 3/5, 5/6, 8/9, 9/10(DVB-S2 8PSK)
LNB Polarity Selection Voltage	0、13V、18V selectable
LNB Band Selection Tone	0/22K selectable
DISEqC	DISEqC 1.0
BISS-1/E Decrypt	Each tuner supports 8 Keys, each Key supports 5 PIDs
T2-MI de-encapsulator	Support

P01CI 4xCI De-encryption Module

Connector Type	4 x Independent Common Interface(DVB-CI) slots
CI Decrypt	Multiple programs CSA or BISS-1/E De-encryption
CAM watchdog	Support

D01T2 4xDVB-C/T/T2 Demodulator Module

Connect Type	4 x F Type Female, 75Ω
Input Frequency	48 ~ 860 MHz(DVB-C) 104 ~ 862 MHz(DVB-T/T2)
Input Level	-15~ 15dBm (DVB-C) -70 ~ -20dBm (QEF, DVB-T/T2)
Symbol Rate	1 ~ 7MSps（ITU J.83 Annex A DVB-C）
Constellation	6/32/64/128/256 QAM(DVB-C) QPSK/16 QAM/64QAM(DVB-T) QPSK/16 QAM/64 QAM/256 QAM(DVB-T2)
Bandwidth	6/7/8 MHz
FFT Mode	2K/8K(DVB-T) 1K/2K/4K/8K/16K/32K(DVB-T2)
Guard Interval	1/4, 1/8, 1/16, 1/32(DVB-T) 1/4, 5/32, 1/8, 5/64, 1/16, 1/32, 1/64, 1/128(DVB-T2)
FEC Code Rate	1/4, 1/8, 1/16, 1/32(DVB-T) 1/2, 2/3, 3/4, 5/6, 7/8(DVB-T) 1/2, 3/5, 2/3, 3/4, 4/5, 5/6(DVB-T2)
Input Return Loss	7dB

C01QAM 8-carrier QAM Modulator Module

Connect Type	2xF type Female, 75Ω（1 x main output、1 x -20dB monitor output）
Standard of System	ITU-T J.83 Annex A, C
RF Output	2 groups of 4 adjacent channel carriers QAM RF output
Constellation	16QAM, 32QAM, 64QAM 128QAM 256QAM
RF output range	48 ~ 996MHz, step by 1KHz
Symbol rate	2.5 ~ 6.99MBauds
RF total output level	94 ~ 120dBuV(111dBuV each carrier)
MER	> 36dB
Spurious rejection	> 55dB
Output return loss	-10dB

C01AI ASI Input/Output Module

Connect Type	5 x BNC Type Female, 75Ω
Standard	DVB-ASI, EN50083-9
Input and Output	Switch by Web Control
Input and Output Bit Rate	≤ 216Mb/s

P02EC 4-Way SDI In Encoder/Transcoder Module

Connect Type	4xSDI, BNC Type Female, 75Ω
Coding Profile & Level	H.264/AVC HP @ L4.0 & MPEG-2 MP@ML
Sampling Format	4:2:0, 10-bit, YCbCr
Video Resolution & Recommend Compression Bit Rate H.264	1080I（1920×1080）@25Hz,29.97Hz,30Hz: SMPTE274M:1~13Mb/s 1080I（1440×1080）@25Hz, 29.97Hz SMPTE274M: 5~24Mb/s 720p（1280×720）@59.94Hz,50Hz:SMPTE296M: 1~13Mb/s 480I（720×480）@29.97Hz:SMPTE656M: 600K~10Mb/s 576I（720×576）@25Hz: SMPTE656M:600K~10Mb/s
Video Resolution & Recommend Compression Bit Rate MPEG-2	480I（720×480）@29.97Hz:SMPTE656M: 3M~10Mb/s 576I（720×576）@25Hz: SMPTE656M: 3M~10Mb/s
Vide Resolution Down Scaling	Vertical & Horizontal adjustable respectively (frame rate is not scalable)
Aspect Ratio	16:9, 4:3 selectable
Audio Input	SDI Embedded
Coding Standard	MPEG1 Layer II MPEG-2/4 AAC-LC, HE-AAC (V1, V2)
Sampling Rate	48KHz

Recommend Compression Bit Rate	MPEG1 Layer II :32~192Kbps(Mono), 64~384Kbps(Stereo), MPEG2/4 AAC-LC :24~256Kbps(Mono), 48~512Kbps(Stereo) MPEG2/4 HE-AAC(V1/V2): 16~128Kbps(Mono), 32~256Kbps(Stereo)
Transcode Mode	H.264 to MPEG-2, H.264 to H.264, MPEG-2 to MPEG-2, MPEG-2 to H.264
Input	MPTS, MPEG2 MP@ML MP@HL, MPTS, H.264/AVC Main/High/Baseline Profile @ L4.0 or less (but not FMO, ASO & RS of Baseline)
Output	MPTS and/or un-stuffed TS, MPEG2 MP@ML MPTS and/or un-stuffed TS, H.264/AVC Main/ High/Baseline Profile @ L4.0 or less (but not include FMO, ASO & RS of Baseline)

P01EC 4-Way HDMI In Encoder/Transcoder Module

Connect Type	4 x HDMI, type A
Coding Profile & Level	H.264/AVC HP @ L4.0 & MPEG-2 MP@ML
Sampling Format	4:2:0
Video Resolution & Recommend Compression Bit Rate H.264	1080I（1920×1080）@25Hz,29.97Hz,30Hz: SMPTE274M:1~13Mb/s 1080I（1440×1080）@25Hz, 29.97Hz SMPTE274M: 5~24Mb/s 720p（1280×720）@59.94Hz,50Hz:SMPTE296M: 1~13Mb/s 480I（720×480）@29.97Hz:SMPTE656M: 600K~10Mb/s 576I（720×576）@25Hz: SMPTE656M:600K~10Mb/s
Video Resolution & Recommend Compression Bit Rate MPEG-2	480I（720×480）@29.97Hz:SMPTE656M: 3M~10Mb/s 576I（720×576）@25Hz: SMPTE656M: 3M~10Mb/s
Vide Resolution Down Scaling	Vertical & Horizontal adjustable respectively (frame rate is not scalable)
Aspect Ratio	16:9, 4:3 selectable
Audio Input	SDI Embedded
Coding Standard	MPEG1 Layer II MPEG-2/4 AAC-LC, HE-AAC (V1, V2)
Sampling Rate	48KHz

Recommend Compression Bit Rate	MPEG1 Layer II :32~192Kbps(Mono), 64~384Kbps(Stereo), MPEG2/4 AAC-LC :24~256Kbps(Mono), 48~512Kbps(Stereo) MPEG2/4 HE-AAC(V1/V2): 16~128Kbps(Mono), 32~256Kbps(Stereo)
Transcode Mode	H.264 to MPEG-2, H.264 to H.264, MPEG-2 to MPEG-2, MPEG-2 to H.264
Input	MPTS, MPEG2 MP@ML MP@HL, MPTS, H.264/AVC Main/High/Baseline Profile @ L4.0 or less (but not FMO, ASO & RS of Baseline)
Output	MPTS and/or un-stuffed TS, MPEG2 MP@ML MPTS and/or un-stuffed TS, H.264/AVC Main/ High/Baseline Profile @ L4.0 or less (but not include FMO, ASO & RS of Baseline)

D01PA 2-Way H.264/MPEG-2 Decoder Module

Connect Type	3 x BNC Type Female (Backup 1+1), 75Ω, 1xDB9
Video Decode	MPEG-2(MP@ ML for SD, MP@HL for HD) MPEG 4/H.264 AVC Part 10 (MP@L3 for SD, HP@L4.1 for HD)
Video Resolution	1080I × 30, 1080I × 29.97, 1080I × 25, 720p × 60, 720p × 59.94, 720p × 50, 576I × 25, 480I × 29.97
Video PID Bit Rate	< 80Mb/s
SD SDI standard	SMPTE259M, 270Mb/s (10bit)
HD SDI standard	SMPTE292M, 1.485Gb/s (10bit)
SDI Embedded Audio	Support 8x PID or pass through
Sampling Rate	32KHz, 44.1KHz, 48KHz
Audio Format	MPEG Layer1/ 2 Dolby Digital (AC3) Dolby Digital Plus(AC3+) AAC-LC、HE-AAC v1/v2
Analog Video Output	CVBS, 2 x RCA, (DB9 adapter)
CVBS Standard	NTSC, PAL, SECAM
CVBS Resolution	576I × 25, 480I × 29.97
Output Level	1.0 Vp-p ± 5% （with standard test stream）
Frequency Response	< ± 1 dB, 5.5 MHz (PAL, SECAM), 4.2MHz(NTSC)

Chroma-Luma Delay	< ± 30 ns
Field Time Distortion	<2%
Line Time Distortion	<1%
Short Time Distortion	<2%
Differential Gain	<3%
Differential Phase	<2°
S/N	>55dB
Analog Audio Output	4 x RCA, 2 x Group L+R, (DB9 adapter)
Output Impedance	600Ω （Balanced）
Output Mode	Left, Right, Mono, Stereo
Cross Talk	>70dB
THD	<0.3% @400Hz, 1KHz test done
Frequency Response	± 0.5dB （20Hz ~ 18KHz）
Output Level	-30 ~ +7dB （Adjustable, 0dBm/600Ω）
Subtitle	DVB, EBU
VBI	Teletext, WSS
Closed Caption	EIA 608, EIA 708

C01IP TS/IP Module

Connect Type	4 x RJ45, IEEE 802.3, 10/100/1000 Base-T
TS Output	128*SPTS or MPTS/port, UNICAST/ MUTICAST (Port1 & 2, Port3&4 backup 1+1)
TS Input	8*SPTS or MPTS/port, UNICAST/MUTICAST (Port1 & 2, Port3&4 backup 1+1)
Effective Bit Rate	500Mb/s per port
Protocol	UDP/RTP ICMP, ARP, IGMPv2, v3

Block Diagram

DCP-3000 Functional Block Diagram