

HDTV AND IPTV HEAD-END

DCP-3000

DIGITAL CONTENT PROCESSING PLATFORM



Main Feature

- Support flexible combination of kinds of functional modules
- 6 Input/Output module slots and 1 extension module slot (for reMUX & Scrambler)
- 920Mbps input + 920Mbps output for each TS/IP SFP port, IGMP v2/v3
- Support IPTV mode and conversion of MPTS from any inputs to SPTS
- 16 TS processors on the main board, support PSI/SI edition and regeneration, remapping and filtering
- Up to 256 MPTS/SPTS TS/IP input and 512 MPTS/SPTS TS/IP output
- Support 32 channels remux and scrambling with the extended module (P01MS)
- Removable cooling fan assembly with alarm & speed control
- Administrate with Front Panel Menu, Web and SNMP
- Redundant Power Supplies RSSI, received Eb/No & BER monitoring

DCP-3000 brings a compact, powerful, and flexible solutions that allow the users to build or update the DTV or IPTV headend to meet a variety of requirements of today's new network architecture. DCP-3000 is a 1RU chassis which be capable of transforming into any type of digital headend with six independent I/O modules and one extended module. Each module can be configured individually to the decoder, transcoder, encoder, scrambler, descrambler, multiplexer, QAM/COFDM modulator or interfaces. The six I/O modules and power supply all can support hot-swap(*) .

DCP-3000MF CHASSIS

Chassis Specification

Front Panel

Upgrade/Debug Interface	1×USB (Upgrade), 2×Mini USB (Debug)
Control Interface	1×RJ-45, 10/100/1000 Base-T
CA Interface	1×RJ-45, 10/100/1000 Base-T
TS/IP Interface	2×RJ-45(GbE) or SFP, 10/100/1000 Base-T
Display	2x20 LCD Display

Rear Panel

Module Slot	6xSlots
Power Supply	2xHot Backup PS; AC100-240V; 100W & 300W

TS/IP Processing

Standard	IEEE 802.3, 10/100/1000 Base-T, Full Duplex
Max. Effective Bit Rate	920Mb/s
Data Protocol	UDP or RTP, SPTS or MPTS
Control Protocol	ICMP, ARP, IGMP v2/v3

Others

Operating Temperature	0 ~ 45°C
Storage Temperature	-10 ~ 60°C
Operation Humidity	10 ~ 90%, (Non-condensed)

Typical Application



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

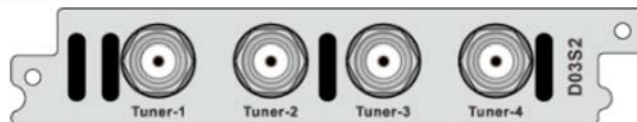
Optional Function Modules

Function	Model	Description
Receiving/Demodulation Modules	D03S2	4 x DVB-S2X/S2/S Demodulator Module
	D03T2	4 x DVB-C/T/ATSC/ISDB-T Demodulator Module
	D03DC	4 x DTMB/DVB-C Demodulator Module
TS Processing Module	P01CI	4 x CI De-encryption Module
	P01MS	32 x ReMUX & Scrambler Extension Module
Decoding Modules	D04PA	2 x SDI AVS2/AVS+/H.265/H.264 4K/HD Decoder Module
Encoding/Transcoding Modules	P01EC	4 x HDMI MPEG-2/H.264 HD/SD Encoder Module
	P02EC	4 x SDI MPEG-2/H.264 HD/SD Encoder Module
	P03EC	4 x 3G SDI H.265 4K 4:2:2 10bit Encoder Module
	P01AT	4 x H.265/AVS+/MPEG2/H.264 HD/SD Transcoder Module
Modulation Modules	C01MOD	8 x QAM adjacent Modulator Module
	C02MOD	4 x DVB un-adjacent Multi Modulator Module
	C03TM	4 x DVB-T2 Modulator Module
I/O Module	C01IP	4 x SFP (256 x TS/IP IN/OUT) Module
	C01ASI	5 x ASI IN/OUT Module
	P01DA	2 x DS3 IN + 2 x DS3 OUT + 1 x ASI Adaptor Module

DEMODULATOR MODULE

D03S2

4 x DVB-S2X/S2/S Demodulator Module

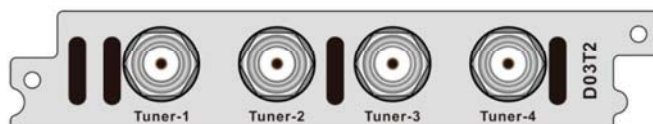


Interface	4 x F type Female, 75Ω
Input Frequency Range	950 ~ 2150 MHz
Input RF level	-65dBm ~ -25dBm
Symbol Rate	DVB-S2X/S2 QPSK,8PSK: 1 ~ 60 MSps 16APSK: 1 ~ 58 MSps 32APSK: 1 ~ 55 MSps
Roll Off Factor	0.35 (DVB-S QPSK) 0.35/0.25/0.2 (DVB-S2 8PSK) 0.35, 0.25, 0.2, 0.15, 0.1, 0.05 (DVB-S2X)
FEC Puncture Rate	2/3, 3/4, 3/5, 5/6, 8/9, 9/10 (DVB-S2 8PSK) 1/2, 2/3, 3/4, 5/6, 6/7, 7/8 (DVB-S QPSK) 64800 bits FECFRAME VCM and ACM

LNB voltage / 22K	0/13V/18V optional, 0 or 22KHz optional
ISI ID	1 ~ 255
BISS	BISS-1/E (up to 40 PIDs de-encryption per tuner input)
T2-MI de-encapsulation	8 PLP IDs demodulation per tuner input, total of up to 32 PLP ID TS can be converted to the host

D03T2

4 x DVB-C/T/ATSC/ISDB-T Demodulator Module



Interface	4 x F type Female, 75Ω
Input Frequency Range	42 ~ 1002 MHz
Input RF level	-60dBm ~ -20dBm
Symbol Rate	1.8 ~ 7.2MSps (ITU J.83 Annex A DVB-C)
Constellation	16/32/64/128/256 QAM(DVB-C) QPSK/16 QAM/64 QAM(DVB-T)
Bandwidth	6/7/8 MHz (T/C/ISDB-T) 6MHZ (ATSC)

FFT Mode	2K/8K(DVB-T) 2K/4K/8K(ISDB-T)
Guard Interval	1/4, 1/8, 1/16, 1/32(DVB-T/ISDB-T)
FEC Code Rate	1/2, 2/3, 3/4, 5/6, 7/8(DVB-T)

DEMODULATOR MODULE

DECODER MODULE

D03DC

4 x DVB-C/DTMB Demodulator Module



Interface 4 x F type Female, 75Ω

Input Frequency Range 48 ~ 860 MHz (DVB-C)

Input RF level -15dBm ~ 15dBm (DVB-C)

Symbol Rate 1 ~ 7MSps(ITU J.83 Annex A DVB-C)

Constellation 16/32/64/128/256 QAM(DVB-C)
4QAM-NR, 4QAM, 16QAM, 32QAM, 64QAM (DTMB)

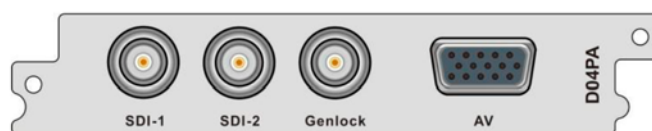
Bandwidth 6/7/8 MHz

Guard Interval PN420, PN595, PN945

FEC Code Rate 0.4, 0.6, 0.8

D04PA

2 x AVS2/AVS+/H.265/H.264 4K/HD Decoder Module



Interface 2 x SDI out, 1 x Genlock input, BNC Female,
75Ω; 1 x D-sub 15 Female

Video Format MPEG-2(MP@ML SD, MP@HLHD)
MPEG-4 AVC Part 10/H.264 (MP@L3 SD,

Audio Format MPEG-1 Layer II, AAC-LC, HE AAC V1/V2,
AC3

Video Resolution 1080i30, 1080i29.97, 1080i25, 720p60,
720p59.94, 720p50, 576i25, 480i29.97

Aspect Ratio 16:9, 4:3 Selectable

Video PID Bit Rate ≅ 50Mbps

STREAM PROCESSING MODULE

P01CI

4 x CI De-encryption Module



Interface	4 x Independent Common Interface (DVB-CI) slots
Descramble	Single program, multi-program scrambling
CI Decrypt	Multiple programs CAS or BISS-1/E De- encryption

CAS	Support all major CA systems
Monitoring	Support CAM watchdog

P01MS

ReMUX & Scrambler Extension Module



Standard	Compliant with ISO13818 & EN300 468
Re-Multiplexing & Scrambling Function	32 independent TS reMUX's and Scramblers
Scrambling	DVB Common Scrambling Algorithm & BISS-1/E Scrambling
Simul-crypt	Up to four Local or Remote CAS synchronous simul-crypt processing

PID	PID filtering, remapping, pass through& mapping
PSI/SI	Insert & Edit PSI/SI tables. EIT Insert, passthrough & regenerate
PCR	PCR re-stamp & calibrate
Temperature Control	Self-temperature monitoring, error alarms such as continuous counting /PCR

ENCODING MODULE

P01EC

4 x HDMI MPEG-2/H.264 HD/SD Encoder Module



Interface	4 x HDMI, type A
Coding Profile & Level	H.264/AVC BLP, MP, HP @ L4.0 or less & MPEG-2 MP@ML
Encoding Output	4 x independent HD/SD Encoding
TS output	4 x TS encoding/transcoding & one remux TS to host
Video Input Resolution	1080p, 1080i, 720p, 576i, 480i
GOP	GOP setting

Audio Encoding	MPEG-1 Layer II, MPEG-2/4, AAC-LC, AC3
Audio Gain	-7dB~+12dB adjustable
Sampling Format	4:2:0 10bit, YCbCr
Aspect Ratio	4:3, 16:9

P02EC

4 x SDI MPEG-2/H.264 HD/SD Encoder Module



Interface	4 x SDI
Coding Profile & Level	H.264/AVC, HP @ L4.0 & MPEG-2 MP@ML, MP@HL
Encoding Output	4 x independent HD/SD Encoding
TS output	4 x TS encoding/transcoding & one channel remux TS to host
Video Input Resolution	1080p, 1080i, 720p, 576i, 480i
GOP	GOP setting

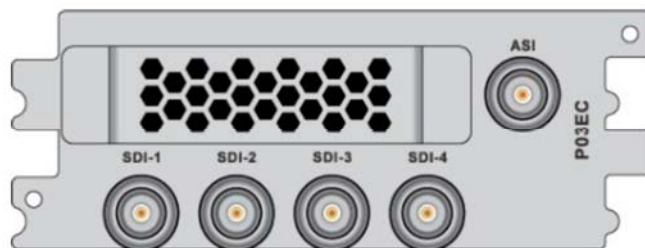
Audio Encoding	MPEG-1 Layer II, MPEG-2/4, AAC-LC, AC3
Audio Gain	-7dB~+12dB adjustable
Sampling Format	4:2:0 10bit, YCbCr
Audio Compressed Bit Rate	300K ~ 20Mbps, CBR/VBR mode
Aspect Ratio	4:3, 16:9

ENCODING MODULE

TRANSCODING MODULE

P03EC

4 x 3G SDI H.265 4K 4:2:2 10bit Encoder Module



Interface	3G SDI Input: 4 x BNC, 75Ω
Coding Profile & Level	H.265 (HEVC)
Encoding Output	4 x HD or 1x 4K UHD Encoding
Video Input Resolution	2160p, 1080p, 1080i, 720p, 576p, 576i, 480i
GOP	GOP setting
Resolution Adjust	Video resolution reduction, horizontal and vertical adjustable
Aspect Ratio	10bit, 8bit, 4:2:2, 4:2:0

Audio Compression Bit Rate	300K ~ 80Mbps, CBR/VBR mode
Audio Encoding	MPEG-1 Layer II, MPEG-2/4, AAC-LC, AC3
Audio Input	SDI Embedded
Audio Mode	Stereo
Audio Sampling Format	48KHZ
Audio Compression Bit Rate	64~384kb/s

P01AT

4 x H.265/AVS+/MPEG-2/H.264 HD/SD Transcoder Module



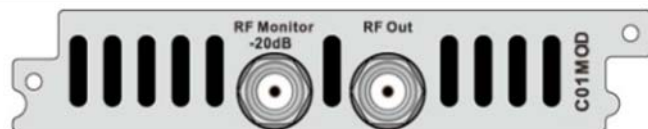
Transcoding mode	H.264/AVC Baseline, Main & High Profile @L4.0 or less & MPEG-2 MP@ML
Transcoding Output	H.265/AVS+ HD/SD to MPEG2/H.264 HD/SD, MPEG2 HD/SD to H.264 HD/SD H.264 HD/SD to MPEG2 HD/SD AC3 Transcoding
TS output	4 x TS transcoding & one channel remux TS to host
GOP	GOP setting

PID	Audio/Video PID, PCR PID & Service name setting
Audio Encoding	MPEG-1 Layer II, MPEG-2/4, AAC-LC/HE-AAC, Audio passthrough
Audio Compression Bit Rate	300K ~ 20Mbps, CBR/VBR mode
Aspect Ratio	4:3, 16:9

MODULATOR MODULE

C01MOD

8 x QAM adjacent Modulator Module



Interface	2 x F type Female, 75Ω (1 x main output, 1 x -20dB monitor output)
Modulation Mode	QAM Mode
RF Output Range	48 ~ 1000MHz, step by 1KHz
Symbol rate	2.5 ~ 6.99MBauds
RF total output level	88 ~ 118dBuV (108dBuV each carrier)

Spurious rejection	55dB
Return loss	-10dB
RF Output	2 x 4 adjacent channel carriers QAM
QAM Modulation	ITU-T J.83 Annex A, C
Constellation	16QAM, 32QAM, 64QAM, 128QAM, 256QAM
MER	> 38dB, BER < 10E-9

C02MOD

4 x QAM/COFDM/DTMB/ISDB-T Modulator Module



Interface	2 x F type Female, 75Ω (1 x main output, 1 x -20dB monitor output)
Modulation mode	QAM, COFDM, DTMB, ISDB-T (selectable)
RF Output Range	48 ~ 1000MHz, step by 1KHz
RF Output	4 x RF output independently
RF total output level	88 ~ 105dBuV
Spurious rejection	50dB
MER	> 35dB
Return loss	-10dB
QAM Modulation	
Standard	J83.A (DVB-C)、J83.B (Clear QAM)
Constellation	16QAM, 32QAM, 64QAM, 128QAM, 256QAM
Symbol rate	J83.A DVB-C adjustable, J83.B 5.05641 MS/s&5.360537 MS/s
COFDM Modulation	
Constellation	QPSK, 16QAM, 64QAM
Bandwidth	6/7/8MHz

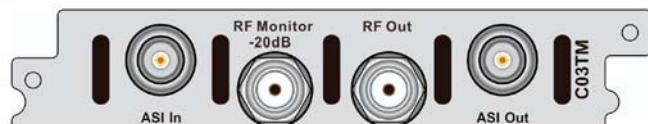
FFT Mode	2k,4k,8k
Guard Interval	1/4, 1/8, 1/16, 1/32
DTMB Modulation	
Constellation	4QAM,16QAM,32QAM,64QAM
Bandwidth	2M-8M
Time Deint	240,720
Guard Interval	PN945, PN595, PN420
FFT Code Rate	2/5, 3/5, 4/5
ISDB-T Modulation	
Constellation	4QAM,16QAM,64QAM
Bandwidth	6MHz
FFT Mode	2k,4k,8k
Guard Interval	1/4, 1/8, 1/16, 1/32
FFT Code Rate	1/2, 2/3, 3/4, 5/6, 7/8

DEMODULATOR MODULE

INTERFACE MODULE

C03TM

4 x COFDM Modulator Module

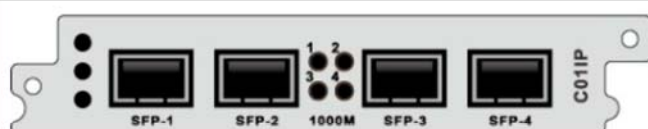


Interface	2 x F type Female, 75Ω (1 x main output, 1 x -20dB monitor output)
Modulation Mode	QCOFDM Mode
RF Output Range	48 ~ 860MHz, step by 10KHz
RF total output level	80 ~ 110dBuV
Constellation	BPSK, QPSK, 16QAM, 64QAM
Bandwidth	6/7/8MHz

Spurious rejection	>55dB
Return loss	-12dB
MER	> 38dB
Guard Interval	1/4, 1/8, 1/16, 1/32, 1/128, 19/128, 19/256
FFT Mode	1k, 2k, 4k, 8k, 8k EXT, 16k, 16k EXT, 32k, 32k EXT
MER	> 38dB

C01IP

4 x SFP (256 x TS/IP IN/OUT) Module



Interface	4 x SFP, 1000 Base-T
Standard	IEEE 802.3, 1000Base-T, Full Duplex
Maximum bit rate	920Mbps
Data Format	UDP/RTP, Multicast/Unicast, SPTS/MPTS

Control Protocol	ICMP, ARP, IGMP v2/v3
Maximum number of services	4x 64 TS in; 4x 64 TS out
Operational mode	4 x independent or 1+1 redundancy

INTERFACE MODULE

C01ASI

5 x ASI IN/OUT Module



Interface	5 x BNC Female, 75Ω
Standard	DVB-ASI, EN50083-9
Input or Output	ASI Input or output, up to 5xASI Input or 5xASI Output
Bit Rate	Up to 213Mbps
Minimum Rx Sensitivity	88 ~ 118dBuV (108dBuV each carrier)

Maximum Input Voltage 880mV

T2-MI Support

P01DA

2 x DS3 Input/2 x DS3 Output/1 x ASI Adaptor Module



Interface	5 x BNC Female, 75Ω
Standard	DVB-ASI, EN50083-9/ITU-T G.703
Frame Structure	ITU-T G.752/ITU-T G.804

ASI Switch by Web Control

DS3 Switch by Web Control

DS3 Bit Rate 44.736Mbps