1994 - 2014 ANNIVERSARY

PBI

digital horizon

Catalogue 2014

Digital TV Equipment and System

- » Professional IRD
- » Encoder & Transcoder
- » Remultiplexer/Scrambler
- » Modulator & Transmodulator
- » Modular Headend System
- » IPTV Solutions
- » Digital Terrestrial TV Systems
- » Accessories

Company Profile

The Company

Founded in 1994, PBI (Pro Broadband Inc.). manages to develop and manufacture high quality and state-of-the-art products to meet the digital market demands. With over 20 years of expertise in consumer electronic software and hardware engineering, PBI embarks on an advanced design, manufacturing and integration program in the industry of Digital Multimedia, Broadband Access, and Wireless Communications.

Technology

PBI leverages its core hardware and software technology across three fast growing markets: Digital Multimedia, Broadband Access, and Wireless Communications. PBI's technology is based on years of research and development experience in DVB and MPEG standards. We have made significant investments in developing software for conditional access,common interface, interactive middleware and addressable signal decoding. We have successfully achieved a high level of embedded system integration in digital CATV headend broadcasting system, household IRDs, and microwave accessaries. In addition to technical proficiency, our product development benefits from world-class, cost efficient engineering and has strong relationships with key industry players such as ST, NEC, OKI,Panasonic Siemens, Philips,Nagra,Irdeto, Viaccess, and so on.

Products

Committed to the development of headend production, PBI has a world-wide application in the digital and analog CATV network. The digital headend equipments range from MPEG-2 digital encoder, digital multiplexer, professional QPSK/QAM transmodulator, QPSK/QAM modulator to scrambler; the analog headend equipment varies from adjacent modulator, FM radio modulator and combiner etc. All headend equipment are in line with national standards of China and have been certified by the National government firm CCC and SARFT.Equipped with an advanced and specialized production base and certified by ISO 9001 and ISO 14001 system, PBI is a professional STB manufacturer. PBI's products include digital Satellite/Cable/Terrestrial STBs, HDTV receiver, IP+DVB receivers, Mobile television receiver, and PVR receiver. Integrated varied CA system and middleware, PBI STB enables program encryption and interactive applications. PBI is also a full range C/Ku-band LNB manufacturer for all different applications in the whole world.

Low-Cost Operations

At PBI, we leverage talent and resources around the great China area to develop, manufacture and market our products. Product development is done in Beijing , tapping a wealth of highly trained, cost-efficient resources. Project management is planned in Chung-Li (Taiwan Silicon Valley), gathering sufficient material/components and fast marketing information environment. Manufacturing is performed by PBI ISO qualified factories in China . Further R&D outsourcing is obtained from selected software/firmware partners in India , China , Taiwan and France . PBI management team works together to set strategy and guide the company at cost efficiency to meet the worldwide markets competition.

Service

PBI emphasizes services by providing fast reaction and on-time delivery to meet customers'needs. Hardware has become a basic tool since the digital information era has begun, thus, the quality of the software is also what we promise to PBI users. With our prompt product logistics, we are able to build a fast reaction, on-time engineering service, and low-cost manufacturing hub in Asia for our OEM/ODM customers.

The 21st Century Target

We build ourselves as our customers'own affiliated R&D and manufacturing center in Asia . We have made every effort and investment in R&D, production, inventory and logistic resources to fulfill custom-design requirement. Nevertheless, our best performance is our customers'satisfaction. We will continue to make every possible effort to achieve our corporate goals - a major OEM/ODM supplier in Asia at Digital Multimedia, Broadband Access, and Wireless Communications. So Please, Team-up with PBI-Brighten Your Digital View!

Contents

Professional IRD

DCH-3100P

H.264 HD 4:2:0 IRD

The DCH-3100P is a cost effective professional integrated receiver decoder. It is widely used in the satellite, cable and terrestrial TV network with different tuner frontend DVB-S2/S, DVB-C and DVB-T/T2. It demodulates the RF signal to the transport stream with ASI. With dual DVB common slots, DCH-3100P works with most of the well known CAS in the market and decrypts multiple services in a transport stream. The on board decoder can process a variety of digital video and audio formats in MPEG-4 AVC/H.264 and MPEG-2, in Standard Definition and in High Definition. The TV channel is decoded to digital and analog outputs, HDMI, YPbPr, CVBS, balanced and un-balanced audio. The powerful demodulation, decryption and decoding capabilities, combined with user friendly WEB GUI and SNMP based remote control makes this equipment one of the most competitive professional IRD in the market.

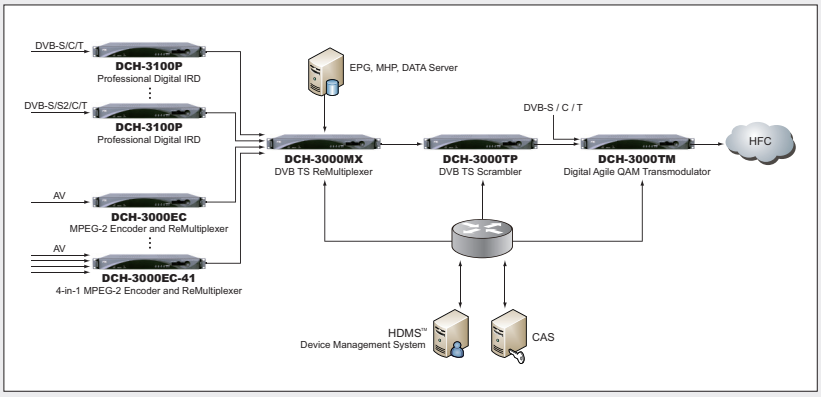
Main Feature

- Multiple tuner inputs DVB-S2/S, DVB-C, and DVB-T/T2
- 2x DVB-CI Slots, Multi Programs, BISS-1 and BISS-E decryption
- Transport stream output from ASI
- SD/HD MPEG-2 and MPEG-4/H.264 digital video decoding
- Two digital audio channel decoding of MPEG1 Layer II and AAC
- Rich Analog and Digital Outputs including, CVBS, YPbPr, HDMI, XLR
- Remote Control and Supervision by SNMP, HTTP WEB and Proprietary HDMS software
- Dynamic PMT auto detection and updating
- Support VBI TELETEXT, EBU/ DVB Subtitle, Closed Caption
- Configuration save and load after power off

Optional HDMI for HD output

Dual DVB Common Interface and Multi Programs decryption

Ethernet management



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Specification

Tuner Input	
DVB-S/S2 Tuner Input	
Connector Type	1×F type female 75Ω for Input, 1×F type female 75Ω for loop through output
Input Frequency Range	950~2150MHz
Input Level	-25~-65dBm
Symbol Rate	2~45MBaud/s for QPSK and 8PSK
Roll Off Factor	DVB-S QPSK: 0.35
	DVB-S2 8PSK: 0.35, 0.25, 0.2
Punctured Rates	DVB-S QPSK: 1/2, 3/5, 2/3, 3/4, 4/5, 5/6, 8/9, 8/10
	DVB-S2 8PSK: 3/5, 2/3, 3/4, 5/6, 8/9,9/10
LNB Polarity Selection Voltage	0, 13V, 18V selectable
LNB Band Selection Tone	0/22KHz selectable
Satellite Selection Command	DiSEqC 1.0
DVB-C Tuner Input	
Connector Type	1×F type female 75Ω for Input, 1×F type female 75Ω for loop through output
Input Frequency	48~860MHz
Input Level	45~75dBμV
Symbol Rate	1~7MBaud (ITU J.83 Annex A)
Constellation	16/32/64/128/256QAM
Bandwidth	6MHz/7MHz/8MHz
Input Return Loss	7dB (typ.)
DVB-T/T2 Tuner Input	
Connector Type	1×F type female 75Ω for Input, 1×F type female 75Ω for loop through output
Input Frequency	104 ~ 862MHz (VHF/UHF)
Input Level	-20 ~ -70dBm
Constellation	DVB-T: QPSK, 16QAM, 64QAM
	DVB-T2: QPSK, 16QAM, 64QAM, 256QAM
Bandwidth	6MHz, 7MHz, 8MHz
FFT Mode	DVB-T: 2K, 8K
	DVB-T2: 1K, 2K, 4K, 8K, 16K, 32K
Guarding Interval	DVB-T: 1/4, 1/8, 1/16, 1/32
	DVB-T2: 1/4, 5/32, 1/8, 5/64, 1/16, 1/32, 1/64, 1/128
FEC Code Rate	DVB-T: 1/2, 2/3, 3/4, 5/6, 7/8
	DVB-T2: 1/2, 3/5, 2/3, 3/4, 4/5, 5/6
Input Return Loss	7dB (typ.)
TS Processing	
Descrambler	DVB Common Scrambling Algorithm(CSA)
BISS Mode	BISS-1, BISS-E
Common Interface	Dual PCMCIA slots, compatible with major CA CAMs in the market
ASI Output	
Connector type	2×BNC Female, 75Ω
Standard	DVB-ASI, EN50083-9
HDMI Output	
Standard HDMI	1×HDMI 1.3 interface (no 1080p)
Video Resolution	1080i×30, 1080i×29.97, 1080i×25, 720p×60, 720p×59.94,720p×50, 480p×60, 576p×50, 576i×25, 480i×29.97
Audio Embedded	one digital audio pass through
Digital Video Processing	
Video Standard	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 PID Bit Rate	< 80Mb/s
Digital Audio Processing	
Number of Outputs	2×digital audio PIDs are decoded*
Sampling Rate	32, 44.1 and 48KHz
Audio Bit Rate	32, 64, 96, 128, 160, 192, 224, 256, 288, 320, 352, 384, 416 and 448 kb/s for MPEG-1 Layer I
	32, 48, 56, 64, 80, 96, 112, 128, 160, 192, 224, 256, 320 and 384 kb/s for MPEG-1Layer II
Analog Video Output	
YPbPr Connector	1 set of RCA, 75Ω
CVBS Connector	1×BNC 75Ω, 1×RCA 75Ω
Video Standard	NTSC, PAL, and SECAM
YPbPr Resolution	1080i×30, 1080i×29.97, 1080i×25, 720p×60, 720p×59.94,
	720p×50, 480p×60, 576p×50, 576i×25, 480i×29.97
Signal Level	I.0 Vp-p±5%
Frequency Response	<±I dB, at 5.5 MHz for PAL/SECAM, 4.2MHz for NTSC and 15MHz for HD YPbPr
Chroma-Luma Delay	<±30 ns
Field Time Distortion	<2%
Line Time Distortion	<1%
Short Time Distortion	<2%
Differential Gain	<3%
Differential Phase	<2°
Signal to Noise Ratio	>55 dB (luminance weighted)
Analog Audio Output	
Connector type	1×XLR Male Socket, 2 pairs of RCA audio
Output Impedance	600Ω (balanced)
Output mode	Left, Right, Dual Mono, Stereo
Number of Outputs	2 pairs of stereo audio outputs (2 Audio PIDs are decoded).
Baseband Data Output	
Subtitle	DVB/EBU
VBI	Teletext, WSS, VFD, VPS
Closed Caption	EIA 608, EIA 708, EIA 608-to-708
Control & Monitoring	
Connector Type	1×RJ-45, 10/100 Base-T for equipment IP Control
Remote Control	SNMP, HTTP Web, Proprietary HDMS Network System Management Software
Local Control	LCD display and 6-key keypad
Serial Port	1×RS-232 9-pin D-sub, for debug use only
Equipment Upgrade	FTP loader or USB
Physical	
Dimension	44mm×483mm×255mm
Weight	2.4Kg Net, 4.4Kg Gross
Power Supply	AC 90V~250V, 50/60Hz
Power Consumption	24W
Operating temperature	0~45
Storage temperature	-10~60℃
Operating Humidity	10~90%, non-condensed
Certification	
EMC: EN 55024:1998+A1:2001+A2:2003, EN 55022:2006+A1:2007, EN 61000-3-2:2006, EN 61000-3-3:2008	
FCC: Part 15 Class B	
LVD: EN 60950-1:2006 + A11:2009	

* For more information about digital audio, please contact our sales representative.

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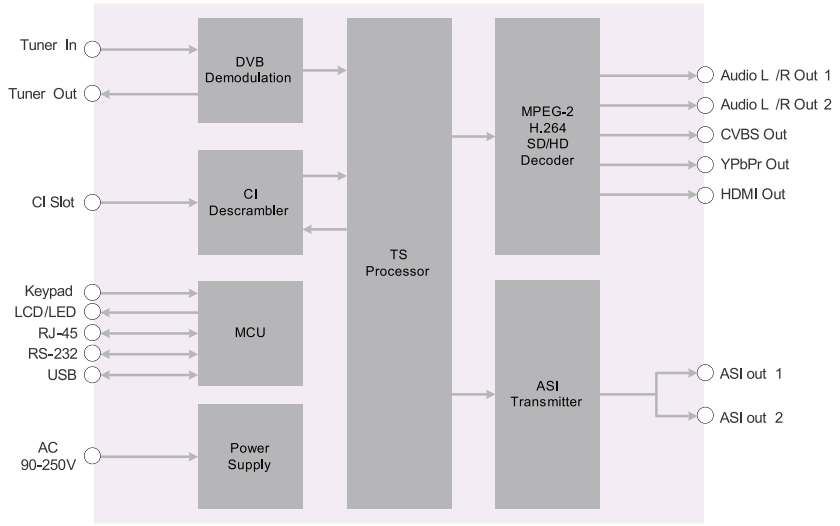
Block Diagram

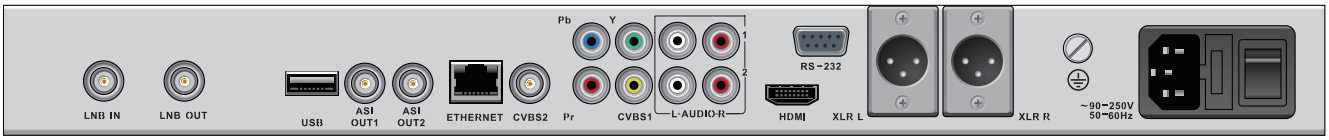
DCH-3100P Functional Block Diagram



Order Information

Model / Interface	DCH-3100P-10X					DCH-3100P-20X				
	-10C	-10T	-10T2	-10S2	-10A	-20C	-20T	-20T2	-20S2	-20A
Tuner	DVB-C	DVB-T	DVB-T2	DVB-S2		DVB-C	DVB-T	DVB-T2	DVB-S2	
ASI IN					×1					×1
Common Interface	×2	×2	×2	×2		×2	×2	×2	×2	
ASI-Output						×2	×2	×2	×2	×2
HDMI	×1	×1	×1	×1	×1	×1	×1	×1	×1	×1
CVBS	×2	×2	×2	×2	×2	×2	×2	×2	×2	×2
YPbPr	×1	×1	×1	×1	×1	×1	×1	×1	×1	×1
Audio L/R	×2	×2	×2	×2	×2	×2	×2	×2	×2	×2
Balanced audio XLR	×1	×1	×1	×1	×1	×1	×1	×1	×1	×1
USB	×1	×1	×1	×1	×1	×1	×1	×1	×1	×1

Back panel Interface



DCH-4000P

MPEG-2 SD IRD and Processor

DCH-4000P is a professional integrated receiver decoder together with a built-in transport stream processor. Equipped with a wide range of inputs of DVB-T/T2,S/S2,C tuner, ASI and TS/IP, it can be used in the satellite, cable, terrestrial and IP networks. It provides a powerful transport stream processing engine for re-multiple×ing, descrambling, TS over IP encapsulation. It has 2 DVB common interface slots capable of working with most of well known CAS in the market to de-crypt multiple pay TV services. Its re-multiple×ing capability enables creation of customized SPTS and MPTS output to IP and ASI ports. The DCH-4000P is also a professional a broadcast quality decoder for MPEG-2 Standard Definition format, and provides a wide range of industry standard digital analog video and audio outputs, CVBS, Component, AES/EBU, and SDI. This unique multi function architecture makes the DCH-4000P an ideal product for digital TV broadcast network.

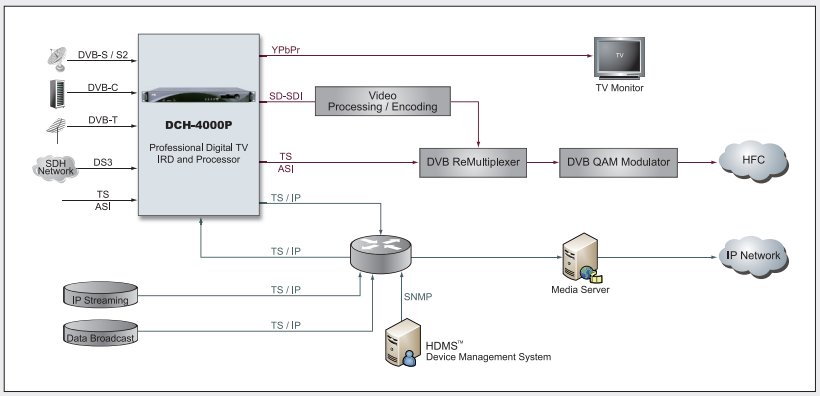
Main Feature

- Multiple inputs DVB-S2/S/C/T,TS/IP, ASI, DS3(optional)
- SD MPEG-2 (MP@ML) digital Video decoding
- Digital audio embedded in SDI output
- Multiple Analog and Digital Outputs, ASI, CVBS, YPbPr, SD-SDI, AES/EBU , TS/IP
- Fle×ible re-multiple×ing between ASI, Tuner and TS/IP Inputs
- RSSI, received Eb/No & BER monitoring
- 2× DVB-CI Slots, multiple TV programs decryption
- Dynamic PMT detection and automatic updating
- Support VBI TELETE×T, EBU/ DVB Subtitle
- UDP/RTP & Unicast/Multicast SPTS and MPTS over IP I/O
- Remote Control and Supervision by SNMP, HTTP WEB and Proprietary HDMS software

A variety of industry standard digital and analog outputs

Dual DVB Common Interface and Multi Programs decryption

Multiple RF signal input selectable among DVB-S/S2/C/T/DS3



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Specification

Tuner Input	
DVB-S/S2 Tuner Input	
Connector type	1×F type female 75Ω for Input, 1×F type female 75Ω for loop through output
Input frequency range	950~2150MHz
Input level	-25~-65dBm
Symbol rate	5~45MBaud/s for QPSK
	10~31MBaud/s for 8PSK
Roll off factor	DVB-S QPSK: 0.35
	DVB-S2 8PSK: 0.35, 0.25, 0.2
Punctured rates	DVB-S QPSK: 1/2, 3/5, 2/3, 3/4, 4/5, 5/6, 8/9, 8/10
	DVB-S2 8PSK: 3/5, 2/3, 3/4, 5/6, 8/9, 9/10
LNB Polarization selection voltage	0, 13V, 18V selectable
LNB Band selection tone	0/22KHz selectable
Satellite selection command	DiSEqC 1.0
DVB-C Tuner Input	
Connector type	1×F type female 75Ω for Input, 1×F type female 75Ω for loop through output
Input frequency range	48~860MHz
Input level	45~ 75dBμV
Symbol rate	1~7MBaud (ITU J.83 Anne× A)
Constellation	16/32/64/128/256QAM
Bandwidth	6MHz/7MHz/8MHz
Input return loss	7dB (typ.)
DVB-T Tuner Input	
Connector type	1×F type female 75Ω for Input, 1×F type female 75Ω for loop through output
Input frequency range	104~862MHz (VHF/UHF)
Input level	-20~-70dBm (Quasi Error Free, QEF)
Constellation	DVB-T: QPSK/16-QAM/64-QAM
	DVB-T2: QPSK, 16QAM, 64QAM, 256QAM
Bandwidth	6MHz/7MHz/8MHz
FFT mode	DVB-T: 2K/8K
Guard interval	DVB-T: 1/4, 1/8, 1/16, 1/32
FEC code rate	DVB-T: 1/2, 2/3, 3/4, 5/6, 7/8
Input return loss	7dB (typ.)
ASI Input	
Connector type	1×BNC, 75Ω
Standard	DVB-ASI, EN50083-9
Input bit rate	≤ 100Mb/s
DS3 Input (Option)	
Connector type	2×BNC Female, 75Ω, including loop through
Standard	Compliant with ITU-T G.703
Frame structure	Compliant with ITU-T G.752 and ITU-T G.804
Bit rate	44.736Mb/s
TS over IP	
Connector Type	1×RJ-45, 10/100M for TS/IP
Useful bit rate	70Mb/s for 10/100M
Protocol	UDP / RTP, Multicast / Unicast, IGMPv2, ARP
TS Processing	
TS Input Management	Remu× and demu× among Tuner / DS3 (optional) /, ASI and TS/IP Inputs
Service and PID management	Remu×, filtering and remapping
PSI/SI	PSI/SI table regeneration, NIT and SDT edition, LCN Edition and Re-generation
Descrambler	DVB Common Scrambling Algorithm (CSA)
BISS mode	BISS-1, BISS-E
Common Interface	Dual PCMCIA slots, compatible with major CA CAMs in the market
ASI Output	
Connector type	2×BNC Female, 75Ω
Standard	DVB-ASI, EN50083-9
TS processing	2 TS Re-multiple×ing from tuner, TS/IP and ASI input (1 for mirror)
Digital Video Processing	
Video Standard	MPEG-2(MP@ ML)
SDI Video Resolution	PAL, NTSC. SECAM
Video Bit Rate	< 80Mb/s
SD-SDI Output	
Connector type	1×SDI output, BNC Female, 75Ω
Serial interface	SMPTE 259M, 270 Mb/s (10bit)
Single level	800mV p-p
Analog Video Output	
YPbPr Connector	1 set of RCA, 75Ω
CVBS Connector	1×BNC 75Ω, 1×RCA 75Ω
Video Standard	NTSC, PAL, and SECAM
Signal Level	1.0 Vp-p±5%
Frequency Response	<±1 dB at 5.5 MHz
Chroma-Luma Delay	<±30 ns
Field Time Distortion	<2%
Line Time Distortion	<1%
Short Time distortion	<2%
Differential Gain	<4%
Differential Phase	<2°
Signal to Noise Ratio	>55 dB (luminance weighted)
Analog Audio Output	
Connector type	XLR Male Socket
Output Impedance	600Ω (balanced)
Output mode	Left, Right, Dual Mono, Stereo
Number of Outputs	1 pair of stereo audio output
Ancillary Data Processing	
Subtitle	DVB/EBU
VBI	Telete×t, WSS, VFD, VPS
Control & Monitoring	
Connector type	1×RJ-45, 10/100M, for equipment IP Control
Remote control	SNMP, HTTP Web, Proprietary HDMS Network System Management Software
Local control	LCD display and 6-key keypad
Serial port	1×RS-232 9-pin D-sub, for debug use only
Equipment upgrade	FTP loader
Physical	
Dimension	44mm×483mm×255mm
Weight	3.4Kg Net, 5.4Kg Gross
Power Supply	AC 90V~250V, 50/60Hz
Power Consumption	24W
Operating temperature	0~45℃
Storage temperature	-10~50℃
Operating Humidity	10~90%, non-condensed
Certification	
EMC: EN 55024:1998+A1:2001+A2:2003, EN 55022:2006+A1:2007, EN 61000-3-2:2006, EN 61000-3-3:2008	
FCC: Part 15 Class B	
LVD: EN 60950-1:2006 + A11:2009	

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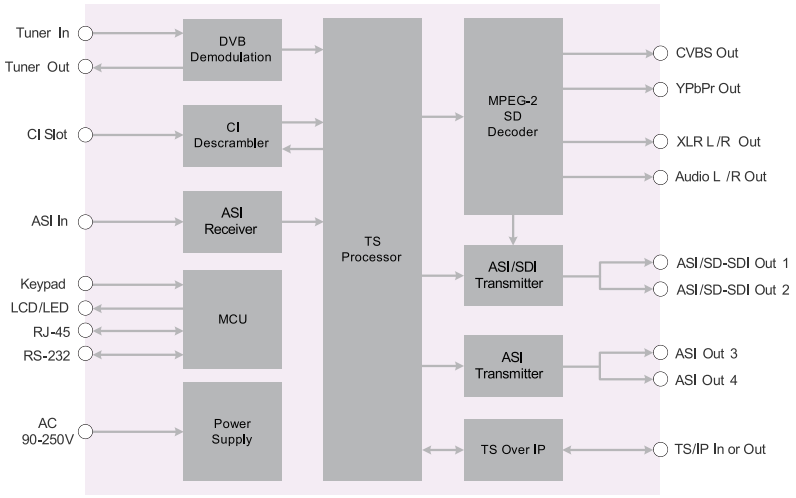
Block Diagram

DCH-4000P Functional Block Diagram



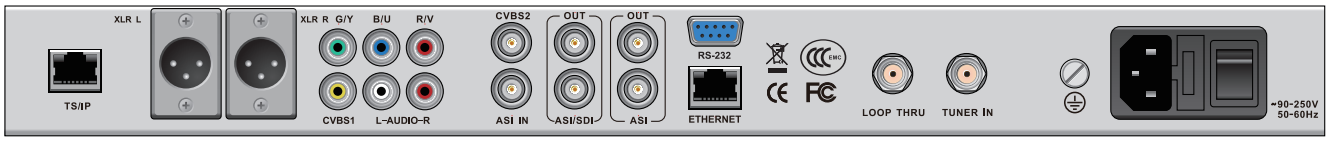
Order Information

Functionality \ Model	DCH-4000P-30X	DCH-4000P-43X	DCH-4000P-44X
Tuner Input	X = Tuner option: □–T: DVB-T □–C : DVB-C □–S : DVB-S □–S2 : DVB-S2 □–D : DS3		
ASI Input	×1	×1	×1
DVB Common Interface	×2	×2	×2
Built-in Remultiplexer	•	•	•
ASI Output (mirrored)	×2	×2	×2
SDI Output (mirrored)	×2	×2	×2
Audio L/R (RCA)	•	•	•
YUV/RGB (RCA)	•	•	•
CVBS (BNC)	×1	×1	×1
CVBS (RCA)	×1	×1	×1
10/100M TS/IP Extension board (Dual RJ-45,6 Channel)		•	
10/100M TS/IP Extension board (Single RJ-45, 32 Channel)			•

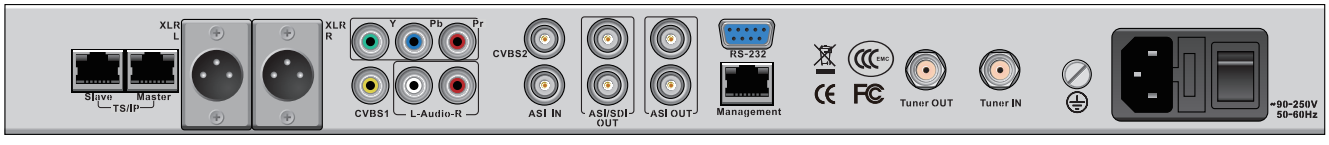
· Standard configuration

Back panel Interface

DCH-4000P-44X models



DCH-4000P-43X models



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Professional IRD

DCH-5100P

H.264 HD 4:2:0 IRD and Processor

The DCH-5100P IRD and Processor provides operators an ideal solution for receiving, remultiple×ing, descrambling and decoding operations. Equipped with a variety of inputs that ensures compatibility with all transmission media. The DCH-5100P' s remultiple×ing capabilities enable creation of new transport streams that are subsets of the original stream. Customized services may be output as multiple SPTS or MPTS over IP, as well as over ASI. By the dual DVB common interfaces, DCH-5100P could decrypt multiple services in one transport stream or two. DCH- 5100P is also a professional IRD that features a broadcast quality decoder for MPEG-2 and MPEG-4 AVC/H.264 in both Standard Definition and High Definition formats, and provides a variety of industry standard digital and analog outputs, including CVBS video, AES/EBU Audio, analog Audio, SD-SDI and HD-SDI. The unit also performs HD down-conversion and aspect ratio adaptation of HD programs to generate professional quality baseband analog video and audio outputs for easy integration with e×isting cable network infrastructure. This all-in-one architecture makes the DCH-5100P an ideal product for distribution and contribution networks.

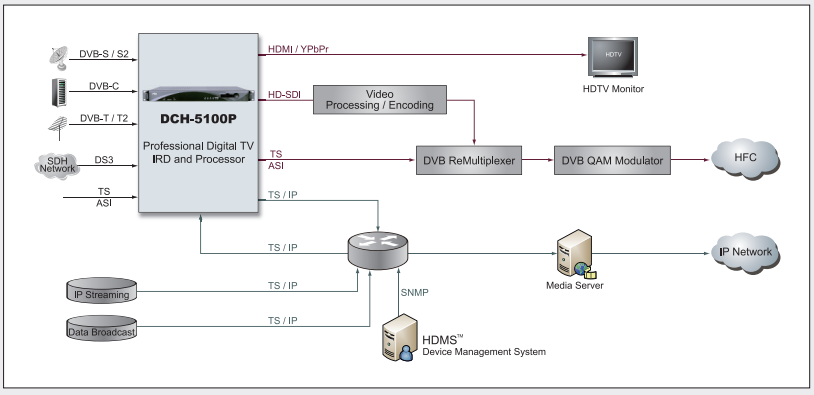
Dual DVB Common Interface and Multi Programs decryption

A variety of industry standard digital and analog outputs

Gigabit Ethernet or Dual 100M TS/IP interface for IP based networks

Main Feature

- Multiple inputs DVB-T2/S2/S/C/T/T2, TS/IP, ASI and DS3/E3 (optional)
- Supports DVB-S2 Input Stream Identifier (ISI, optional) and DVB-T SFN MIP pass through
- Redundant backup among Tuner, ASI and TS/IP with configurable priority
- SD/HD MPEG-2 and MPEG-4 AVC/H.264 digital video decoding
- Two Audio PIDs decode or pass through (compressed) in SDI output
- Multiple Analog and Digital Outputs, ASI, CVBS, YPbPr, HDMI, SD/HD-SDI, AES/EBU Audio, TS/IP
- Built-in TS re-multiple×er receives 2×ASI, Tuner and TS/IP Inputs
- 2×DVB-CI Slots, multi-program decryption, BISS-1 and BISS-E decryption
- Dynamic PMT detection and automatic updating
- Supports VBI TELETE×T, EBU/DVB Subtitle, Closed Caption
- UDP/RTP, Unicast/Multicast, and SPTS/MPTS over IP (full duple×, optional)
- Remote Control and Supervision by SNMP, HTTP WEB and Proprietary HDMS software
- PCM audio embedded in SDI and HDMI outputs
- PCM audio output on two AES/EBU audio output ports
- On Site software update through IP
- RSSI, received Eb/No & BER monitoring



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Specification

Tuner Input	
DVB-S/S2 Tuner Input (ISI Factory Optional)	
Connector Type	1×F type female 75Ω for Input, 1×F type female 75Ω for loop through output
Input Frequency Range	950~2150MHz
Input Level	-25~-65dBm
Symbol Rate	2~45MBaud
Roll-off Factor	DVB-S QPSK: 0.35
	DVB-S2 8PSK: 0.35, 0.25, 0.2
FEC Code Rate	DVB-S QPSK: 1/2, 2/3, 3/4, 5/6, 7/8
	DVB-S2 QPSK: 1/2, 3/5, 2/3, 3/4, 4/5, 5/6,8/9,9/10
	DVB-S2 8PSK: 3/5, 2/3, 3/4, 5/6, 8/9, 9/10
LNB Polarity Selection Voltage	0, 13V, 18V selectable
LNB Band Selection Tone	0/22KHz selectable
Satellite Selection Command	DiSEqC 1.0
ISI ID	1 ~ 255 user configurable
DVB-C Tuner Input	
Connector Type	1×F type female 75Ω for Input, 1×F type female 75Ω for loop through output
Input Frequency Range	48~862MHz
Input Level	45~75dBμV
Symbol Rate	1~7MBaud(ITU J.83 Anne× A)
Constellation	16/32/64/128/256QAM
Bandwidth	6MHz/7MHz/8MHz
Input Return Loss	7dB (typ.)
DVB-T/T2 Tuner Input	
Connector Type	1×F type female 75Ω for Input, 1×F type female 75Ω for loop through output
Input Frequency	104~862MHz (VHF/UHF)
Input Level	-20~-70dBm
Constellation	DVB-T: QPSK/16-QAM/64-QAM
	DVB-T2: QaPSK, 16QAM, 64QAM, 256QAM
Bandwidth	6MHz/7MHz/8MHz
FFT Mode	DVB-T: 2K/8K
	DVB-T2: 1K, 2K, 4K, 8K, 16K, 32K
Guard Interval	DVB-T: 1/4, 1/8, 1/16, 1/32
	DVB-T2: 1/4, 5/32, 1/8, 5/64, 1/16, 1/32, 1/64, 1/128
FEC Code Rate	DVB-T: 1/2, 2/3, 3/4, 5/6, 7/8
	DVB-T2: 1/2, 3/5, 2/3, 3/4, 4/5, 5/6
Input Return Loss	7dB (typ.)
ASI Input	
Connector Type	2×BNC female, 75Ω
Standard	DVB-ASI, EN50083-9
Input Bit Rate	≤ 100Mb/s
DS3 Input (Option)	
Connector Type	2×BNC female, 75Ω, including loop through
Standard	Compliant with ITU-T G.703
Frame Structure	Compliant with ITU-T G.752 and ITU-T G.804
Bit Rate	44.736Mb/s
TS over IP	
Connector Type	1×RJ-45, 10/100 Base-T or 100/1000 Base-T for TS/IP
Effective Bit Rate	70Mb/s for 10/100 Base-T, 80Mb/s for 1000Base-T
Protocol	UDP / RTP, Multicast / Unicast, IGMPv2, ARP
FEC	SMPTE 2022M (Pro-MPEG) FEC (for GbE only)
TS Processing	
TS Input Management	Demu× and Remu× among Tuner / DS3(optional) / E3 (optional), ASI and TS/IP Inputs
TS Output Management	Demu× and Remu× for 2 independent ASI outputs
Service and PID Management	Remu×, filtering and remapping
PSI/SI	PSI/SI table regeneration, NIT and SDT edition, LCN Edition and Re-generation
Descrambler	DVB Common Scrambling Algorithm (CSA)
BISS Mode	BISS-1, BISS-E
Common Interface	Double PCMCIA slots, compatible with major CA CAMs in the market
ASI Output	
Connector Type	2 pairs of BNC female, 75Ω
Standard	DVB-ASI, EN50083-9
Output Bit Rate	≤ 99Mb/s
TS Processing	2 Independent TS Re-multiple×ed from tuner, TS/IP and 2 ASI inputs
HDMI Output	
Standard	1×HDMI 1.3 interface (up to 1080i)
Video Resolution and Frame Rate	1080i×30,1080i×29.97, 1080×25,720p×60,720p×59.94,
	720p×50, 480p×60, 576p×50, 576i×25, 480i×29.97
Audio Embedded	2×stereos or compressed data pass through*
Digital Video Processing	
Video Standard	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)
SDI 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
HD/SD-SDI Output	
Connector Type	1 pair of BNCs (mirrored) , female, 75Ω
SD Standard	SMPTE 259M, 270 Mb/s (10bit)
HD Standard	SMPTE 292M, 1.485 Gbit/s (10bit)
Level	800mV p-p
Digital Audio Processing	
Connector Type	2×D-sub 9 male with ×LR adaptor cables
Number of Output	2×audio are decoded or passed through*
Audio Sampling Rate	32, 44.1 and 48 KHz
Audio Bit Rate	32, 64, 96, 128, 160, 192, 224, 256, 288, 320,352, 384, 416 and 448 kb/s for MPEG-1 Layer I
	32, 48, 56, 64, 80, 96, 112, 128, 160, 192, 224,256, 320 and 384 kb/s for MPEG-1 Layer II
Nominal Output Level	1V p-p (with standard test stream)
Output Format	AES/EBU
Load Impedance	110Ω (with ×LR adaptor cables)
Analog Video Output	
YPbPr Connector	1 set of RCA female, 75Ω
CVBS Connector	1×BNC female 75Ω, 1×RCA female 75Ω
CVBS Standard	NTSC, PAL, and SECAM

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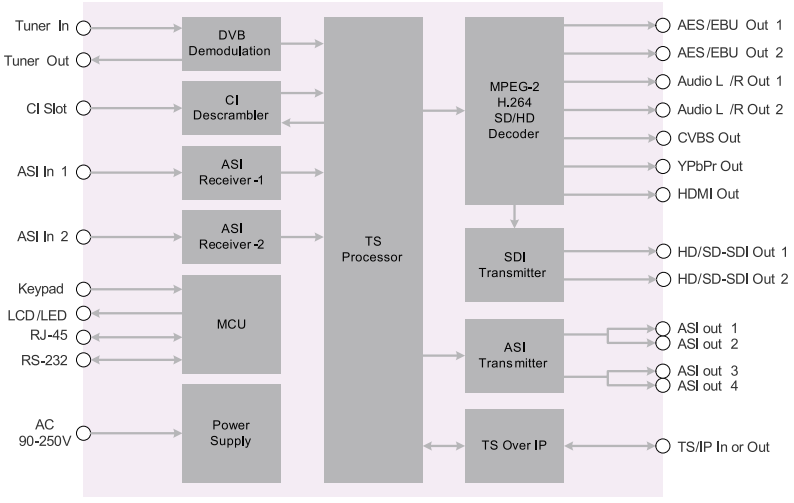
YPbPr Resolution	1080i×30, 1080i×29.97, 1080i×25, 720p×60, 720p×59.94,
	720p×50, 480p×60, 576p×50, 576i×25, 480i×29.97
Norminal Output Level	1.0 Vp-p±5% (with standard test stream)
Frequency Response	<±1 dB, at 5.5 MHz for PAL/SECAM, 4.2MHzfor NTSC and 15MHz for HD YPbPr
Chroma-Luma Delay	<±30 ns
Field Time Distortion	<2%
Line Time Distortion	<1%
Short Time Distortion	<2%
Differential Gain	<3%
Differential Phase	<2°
Signal to Noise Ratio	>55dB (luminance weighted)
Analog Audio Output	
Connector Type	2×D-sub 9 male, with ×LR adaptor cable
Output Impedance	600Ω (balanced)
Output Mode	Left, Right, Dual Mono, Stereo
Number of Output	2 pairs of stereo audio outputs (2 Audio PIDs or 4 channels are decoded).
Cross Talk Among Channels	>70dB
THD	<0.3% @ 400Hz, 1KHz test tone
Frequency Response	±0.5dB over 20Hz ~ 18KHz
Output Level	0dBm in 600Ω (0dBu), adjustable range ±I0dB
Ancillary Data Processing	
Subtitle	DVB, EBU

VBI	Telete×t, WSS, VFD, VPS
Closed Caption	EIA 608, EIA 708, EIA 608-to-708
Redundancy	
Redundancy Port	among Tuner, 2×ASI inputs and TS/IP
Switching Condition	TS Sync Loss
Switching Mode	Main, Spare
Control & Monitoring	
Connector Type	1×RJ-45, 10/100 Base-T, for equipment IPControl
Remote Control	SNMP, HTTP (Web Interface), Proprietary HDMS(Headend Device Management System)
Local Control	LCD display and 6-key keypad
Serial Port	1×RS-232 D-sub female, for debug use only
Equipment Upgrade	Embedded FTP loader and Telnet
Physical	
Dimension	44mm×483mm×320mm
Weight	3.4Kg Net, 5.4Kg Gross
Power Supply	AC 90V ~ 250V, 50/60Hz
Power Consumption	24W (e×clusive of LNB power)
Operating temperature	0~45℃
Storage temperature	-10~60℃
Operating Humidity	10~90%, non-condensed
Certification	
EMC: EN 55024:1998+A1:2001+A2:2003, EN 55022:2006+A1:2007, EN 61000-3-2:2006, EN 61000-3-3:2008	
FCC: Part 15 Class B	
LVD: EN 60950-1:2006 + A11:2009	

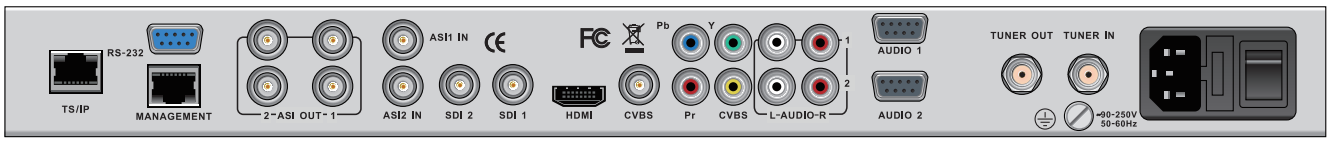
Block Diagram



Order Information

Interface \ Model	DCH-5100P-30X	DCH-5100P-43X	DCH-5100P-44X	DCH-5100P-46X
Tuner	X = Tuner option: ☐–T2: DVB-T2 ☐–T: DVB-T ☐–C : DVB-C ☐–S2 : DVB-S2 ☐–ISI : DVB-S2 ISI ☐–D : DS3 ☐–E3 : E3			
ASI Input	×2	×2	×2	×2
Common Interface	×2	×2	×2	×2
Built-in Re-mux	•	•	•	•
ASI-Output	×2	×2	×2	×2
HDMI	×1	×1	×1	×1
SDI	×2	×2	×2	×2
YPbPr	×1	×1	×1	×1
Audio L/R	×2	×2	×2	×2
AES-EBU	×2	×2	×2	×2
CVBS	×2	×2	×2	×2
10/100M extension board (Dual 6 Ch)		•		
10/100M extension board (32 Ch)			•	
GbE extension board (Full duplex)				•

Back panel Interface (Full option)



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Professional IRD

DCH-5200P

H.264 HD 4:2:0 IRD and Processor

The DCH-5200P IRD and Processor provides operators an ideal solution for receiving, remultiplexing, descrambling and decoding operations. Equipped with a variety of inputs that ensures compatibility with all transmission media. The DCH-5200P' s remultiplexing capabilities enable creation of new transport streams that are subsets of the original stream. Customized services may be output as multiple SPTS or MPTS over IP, as well as over ASI. By the dual DVB common interfaces, DCH-5200P could decrypt multiple services in one transport stream or two. DCH-5200P is also a professional IRD that features a broadcast quality decoder for MPEG-2 and MPEG-4 AVC/H.264 in both Standard Definition and High Definition formats, and provides a variety of industry standard digital and analog outputs, including CVBS video, AES/EBU Audio, analog Audio, SD-SDI and HD-SDI. The unit also performs HD down-conversion and aspect ratio adaptation of HD programs to generate professional quality baseband analog video and audio outputs for easy integration with existing cable network infrastructure. This all-in-one architecture makes the DCH-5200P an ideal product for distribution and contribution networks.

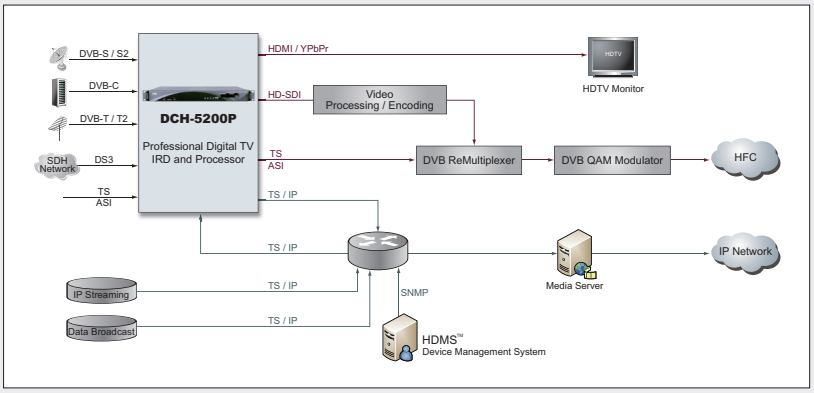
Dual DVB Common Interface and Multi Programs decryption

A variety of industry standard digital and analog outputs

Gigabit Ethernet or Dual 100M TS/IP interface for IP based networks

Main Feature

- Variety of input options DVB-T2/S2/S/C/T/DTMB/ATSC/ISDB-T, DS3/E3, TS/IP and ASI
- Supports DVB-S2 Input Stream Identifier (ISI, optional) and DVB-T SFN MIP pass through
- Redundant backup among Tuner, ASI and TS/IP with configurable priority
- SD/HD MPEG-2 and MPEG-4 AVC/H.264 digital video decoding
- Two Audio PIDs decode or pass through (compressed) in SDI output
- Multiple Analog and Digital Outputs, ASI, CVBS, YPbPr, HDMI, SD/HD-SDI, AES/EBU Audio, TS/IP
- Built-in TS re-multiplexer receives ASI, Tuner and TS/IP Inputs
- 2×DVB-CI Slots, multi-program decryption, BISS-1 and BISS-E decryption
- Dynamic PMT detection and automatic updating
- Supports VBI TELETEXT, EBU/DVB Subtitle, Closed Caption
- UDP/RTP, Unicast/Multicast, and SPTS/MPTS over IP (full duplex, optional)
- Remote Control and Supervision by SNMP, HTTP WEB and Proprietary HDMS software
- PCM audio embedded in SDI and HDMI outputs
- PCM audio output on two AES/EBU audio output ports
- On Site software update through IP
- RSSI, received Eb/No & BER monitoring



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Specification

Tuner Input	
DVB-S/S2 Tuner Input (ISI Factory Optional)	
Connector Type	1×F type female 75Ω for Input, 1×F type female 75Ω for loop through output
	950~2150MHz
Input Level	-25~-65dBm
Symbol Rate	2~45MBaud
Roll-off Factor	DVB-S QPSK: 0.35
	DVB-S2 8PSK: 0.35, 0.25, 0.2
FEC Code Rate	DVB-S QPSK: 1/2, 2/3, 3/4, 5/6, 7/8
	DVB-S2 QPSK: 1/2, 3/5, 2/3, 3/4, 4/5, 5/6, 8/9,9/10
	DVB-S2 8PSK: 3/5, 2/3, 3/4, 5/6, 8/9, 9/10
LNB Polarity Selection Voltage	0, 13V, 18V selectable
LNB Band Selection Tone	0/22KHz selectable
Satellite Selection Command	DiSEqC 1.0
ISI ID	1~255 user configurable
DVB-C Tuner Input	
Connector Type	1×F type female 75Ω for Input, 1×F type female 75Ω for loop through output
Input Frequency Range	51~862MHz
Input Level	51~75dBμV
Symbol Rate	1~7MBaud (ITU J.83 Annex A)
Constellation	16QAM, 32QAM, 64QAM, 128QAM, 256QAM
Bandwidth	6MHz, 7MHz, 8MHz
Input Return Loss	7dB (typ.)
DVB-T/T2 Tuner Input	
Connector Type	1×F type female 75Ω for Input, 1×F type female 75Ω for loop through output
Input Frequency	104 ~ 862MHz (VHF/UHF)
Input Level	-20 ~ -70dBm
Constellation	DVB-T: QPSK, 16QAM, 64QAM
	DVB-T2: QPSK, 16QAM, 64QAM, 256QAM
Bandwidth	6MHz, 7MHz, 8MHz
FFT Mode	DVB-T: 2K, 8K
	DVB-T2: 1K, 2K, 4K, 8K, 16K, 32K
Guarding Interval	DVB-T: 1/4, 1/8, 1/16, 1/32
	DVB-T2: 1/4, 5/32, 1/8, 5/64, 1/16, 1/32, 1/64, 1/128
FEC Code Rate	DVB-T: 1/2, 2/3, 3/4, 5/6, 7/8
	DVB-T2: 1/2, 3/5, 2/3, 3/4, 4/5, 5/6
Input Return Loss	7dB (typ.)
DTMB Tuner Input	
Connector Type	1×F type female 75Ω for Input, 1×F type
	female 75Ω for loop through output
Input Frequency Range	46.5~866MHz
Input Level	-87~-29dBm
Symbol Rate	7.56MBaud
Bandwidth	6MHz/7MHz/8MHz
Constellation	4QAM-NR,4QAM,16QAM,32QAM, 64QAM
Guard Interval	PN420, PN595, PN945
Roll-off Factor	0.05
Interleaving Depth	240,720
FEC Code Rate	0.4, 0.6, 0.8
ATSC Tuner Input	
Connector Type	1×F type female 75Ω for Input, 1×F type
	female 75Ω for loop through output
Input Frequency Range	54~864MHz
Input Level	-75~-7dBm(ATSC 8VSB)
Symbol Rate	10.762MBaud
Constellation	8VSB
Roll-off Factor	0.115
Bandwidth	6MHZ
ASI Input	
Connector Type	1×BNC female, 75Ω
Standard	DVB-ASI, EN50083-9
Input Bit Rate	≤ 100Mb/s
DS3 Input (Option)	
Connector Type	2×BNC female, 75Ω, including loop through
Standard	Compliant with ITU-T G.703
Frame Structure	Compliant with ITU-T G.752 and ITU-T G.804
Bit Rate	44.736Mb/s
TS over IP	
Connector Type	1×RJ-45, 10/100 Base-T or 100/1000 Base-T for TS/IP
Effective Bit Rate	70Mb/s for 10/100/1000 Base-T
Protocol	UDP / RTP, Multicast / Unicast, IGMPv3, ARP
FEC	SMPTE 2022M (Pro-MPEG) FEC (for GbE only)
TS Processing	
TS Input Management	Demux and Remux among Tuner / DS3(optional) / E3 (optional), ASI and TS/IP Inputs
TS Output Management	Demux and Remux for 2 independent ASI outputs
Service and PID Management	Remux, filtering and remapping
PSI/SI	PSI/SI table regeneration, NIT and SDT edition, LCN Edition and Re-generation
Descrambler	DVB Common Scrambling Algorithm (CSA)
BISS Mode	BISS-1, BISS-E
Common Interface	Double PCMCIA slots, compatible with major CA CAMs in the market
ASI Output	
Connector Type	2 pairs of BNC female, 75Ω
Standard	DVB-ASI, EN50083-9
Output Bit Rate	≤ 99Mb/s
TS Processing	2 Independent TS Re-multiplexed from tuner, TS/IP and 2 ASI inputs
HDMI Output	
Standard	1×HDMI 1.3 interface (up to 1080i)
Video Resolution and Frame Rate	1080i×30, 1080i×29.97,1080×25,720p ×60,720p×59.94, 720p×50, 480p×60, 576p×50, 576i×25, 480i×29.97
Audio Embedded	1×stereo
Digital Video Processing	
Video Standard	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)
SDI 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
HD/SD-SDI Output	
Connector Type	1 pair of BNCs (mirrored) , female, 75Ω
SD Standard	SMPTE 259M, 270 Mb/s (10bit)
HD Standard	SMPTE 292M, 1.485 Gbit/s (10bit)
Level	800mV p-p
Digital Audio Processing	
Connector Type	2×D-sub 9 male with XLR adaptor cables
Number of Output	2×audios are decoded or passed through
Audio Sampling Rate	32, 44.1 and 48 KHz
Audio Bit Rate	32, 64, 96, 128, 160, 192, 224, 256, 288, 320, 352, 384, 416 and 448 Kb/s for MPEG-1 Layer I, 32, 48, 56, 64, 80, 96, 112, 128, 160, 192, 224,256, 320 and 384 Kb/s for MPEG-1 Layer II
Nominal Output Level	1V p-p (with standard test stream)
Output Format	AES/EBU

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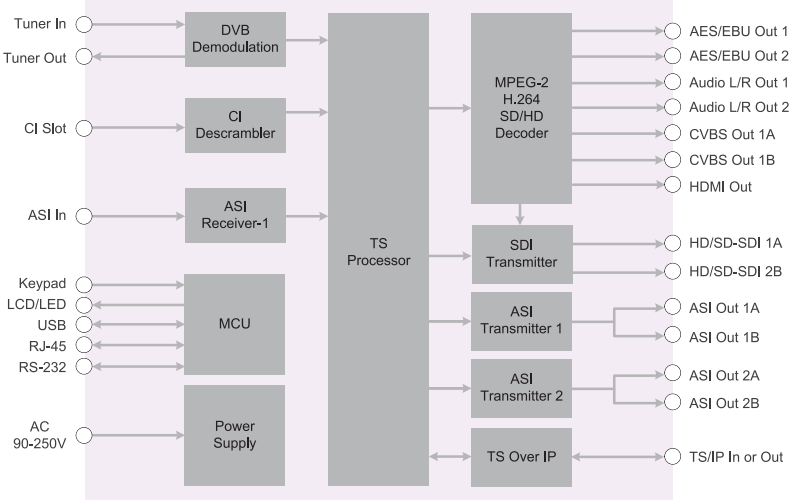
Load Impedance	110Ω (with XLR adaptor cables)
Analog Video Output	
CVBS Connector	2×BNC female 75Ω
CVBS Standard	NTSC, PAL, and SECAM
CVBS Resolution	576i×25, 480i×29.97
Nominal Output Level	1.0 Vp-p±5% (with standard test stream)
Frequency Response	<±1 dB, at 5.5 MHz for PAL/SECAM, 4.2MHz for NTSC
Chroma-Luma Delay	<±30 ns
Field Time Distortion	<2%
Line Time Distortion	<1%
Short Time Distortion	<2%
Differential Gain	<3%
Differential Phase	<2°
Signal to Noise Ratio	>55dB (luminance weighted)
Analog Audio Output	
Connector Type	2×D-sub 9 male, with XLR adaptor cable
Output Impedance	600Ω (balanced)
Output Mode	Left, Right, Dual Mono, Stereo
Number of Output	2 pairs of stereo audio outputs (2 Audio PIDs or 4 channels are decoded).
Cross Talk Among Channels	>70dB
THD	<0.3% @ 400Hz, 1KHz test tone
Frequency Response	±0.5dB over 20Hz ~ 18KHz
Output Level	0dBm in 600Ω (0dBu), adjustable range ±l0dB
Ancillary Data Processing	
Subtitle	DVB, EBU
VBI	Teletext, WSS
Closed Caption	EIA 608, EIA 708, EIA 608-to-708
Redundancy	
Redundancy Port	among Tuner, ASI input and TS/IP input
Switching Condition	TS Sync Loss
Switching Mode	Main, Spare
Control & Monitoring	
Connector Type	1×RJ-45, 10/100 Base-T, for equipment IP Control
Remote Control	SNMP, HTTP (Web Interface), Proprietary HDMS (Headend Device Management System)
Local Control	LCD display and 6-key keypad
Serial Port	1×RS-232 D-sub female, for debug use only
Equipment Upgrade	Embedded FTP loader and Telnet
Physical	
Dimension	44mm×483mm×255mm
Weight	3.4Kg Net, 5.4Kg Gross
Power Supply	AC 90V~250V, 50/60Hz
Power Consumption	24W (exclusive of LNB power)
Operating temperature	0~45℃
Storage temperature	-10~60℃
Operating Humidity	10~90%, non-condensed
Certification	
EMC: EN 55024:1998+A1:2001+A2:2003, EN 55022:2006+A1:2007, EN 61000-3-2:2006, EN 61000-3-3:2008	
FCC: Part 15 Class B	
LVD: EN 60950-1:2006 + A11:2009	

Block Diagram

DCH-5200P Functional Block Diagram

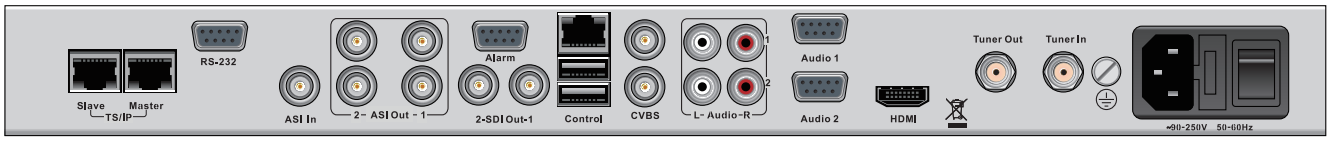


Order Information

"X" in table below stands for the option of tuner frontend.

Model			5200P-10 Series				5200P-20 Series				5200P-30 Series			
Interface			10X	12X	14X	16X	20X	22X	24X	26X	30X	32X	34X	36X
Standard Video/ Audio Option	CVBS	2*BNC, Mirrored	•	•	•	•	•	•	•	•	•	•	•	•
	AUDIO	2*R/L	•	•	•	•	•	•	•	•	•	•	•	•
	HD-VIDEO	1*HDMI	•	•	•	•	•	•	•	•	•	•	•	•
Digital Video/Audio	SDI	2*BNC									•	•	•	•
	AES/Balanced	2*D9, with extended cable adaptor									•	•	•	•
TS Input	ASI IN	1*BNC									•	•	•	•
TS Output	ASI OUT	4*BNC (2*2 redundant)					•	•	•	•	•	•	•	•
IP	100M Base-T / 6* Multicast	2*RJ45, Mirrored		•				•				•		
	100M Base-T / 32*Multicast	1*RJ45			•				•				•	
	GbE	1*RJ45				•				•				•
Control/Upgrade	Management	1*RJ45	•	•	•	•	•	•	•	•	•	•	•	•
	Upgrade	2*USB	•	•	•	•	•	•	•	•	•	•	•	•
	RS-232	1*D9	•	•	•	•	•	•	•	•	•	•	•	•
	ALARM/RELAY	1*D9	•	•	•	•	•	•	•	•	•	•	•	•
X = Tuner Frontend option	C	DVB-C	Factory default option: X= S2											
	T	DVB-T												
	S2	DVB-S2												
	T2	DVB-T2												
	D	DS3												
	M	STM-1												
	A	Extended ASI port												
	N	No tuner frontend												

Back panel Interface (Full option)



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DCH-5500P

H.264 HD 4:2:2 IRD and Processor

The DCH-5500P is the newest model and flagship of PBI's IRD product family. It provides operators an ideal solution for receiving, remultiplexing, descrambling and decoding operations, supporting all MPEG profile from Main to High 422P including MPEG-2 8-bit and MPEG-4 4:2:2 10-bit (optional). Equipped with a variety of inputs, it ensures compatibility with all transmission media. The DCH-5500P's remultiplexing capabilities enable creation of new transport streams that are subsets of the original stream. Customized services may be output as multiple SPTS or MPTS over IP, as well as over ASI. By the dual DVB common interfaces, DCH-5500P could decrypt multiple services in one transport stream or two. DCH-5500P is also a professional IRD that features a broadcast quality decoder for 4:2:0 or 4:2:2 of MPEG-2 and MPEG-4 AVC/H.264 in both Standard Definition and High Definition formats, and provides a variety of industry standard digital and analog outputs, including CVBS video, AES/EBU Audio, analog Audio, SD-SDI and HD-SDI, frame Synchronization to the external black and burst signal is also available. The unit also performs HD down-conversion and aspect ratio adaptation of HD programs to generate professional quality baseband analog video and audio outputs for easy integration with existing cable network infrastructure. This all-in-one architecture makes the DCH-5200P an ideal product for distribution and contribution networks.

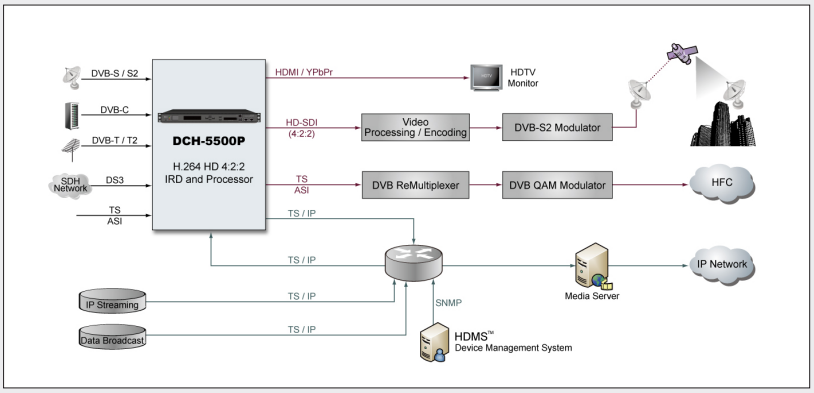
Main Feature

- Variety of input options DVB-T2/S2/S/C/T/DTMB/ATSC/ISDB-T, DS3/E3, TS/IP and ASI
- Supports DVB-S2 Input Stream Identifier (ISI, optional) and DVB-T SFN MIP pass through
- Redundant backup among Tuner, ASI and TS/IP with configurable priority
- 4:2:0 and 4:2:2 (optional) of SD/HD MPEG-2 and MPEG-4 AVC/H.264 digital video decoding
- Up to 8 Audio PIDs decode or pass through (compressed) in SDI output
- Up to 6 Audio PIDs decode or pass through (compressed) in AES output
- Multiple Analog and Digital Outputs, ASI, CVBS, HDMI, SD/HD-SDI, AES/EBU Audio, TS/IP
- Built-in TS re-multiplexer receives from ASI, Tuner and TS/IP Inputs
- 2×DVB-CI Slots, multi-program decryption, BISS-1 and BISS-E decryption
- Frame synchronizes the IRD to the external black and burst reference
- Dynamic PMT detection and automatic updating
- Supports VBI TELETEXT, EBU/DVB Subtitle, Closed Caption, and can be embedded in SDI
- UDP/RTP, Unicast/Multicast, and double full duplex SPTS/MPTS over IP
- Remote Control and Supervision by SNMP, HTTP WEB and Proprietary HDMS software
- One alarm Relay with D-sub 9 male connector
- On Site software update through IP and USB
- RSSI, received Eb/No & BER monitoring
- 1.5" TFT LCD on front panel for monitoring
- Hot-swappable redundant power supply

1.5" LCD Monitor on front panel

Optional 4:2:2 receiving and decoding

Hot-swappable redundant power supply



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Specification

Tuner Input	
DVB-S/S2 Tuner Input (ISI Factory Optional)	
Connector Type	1×F type female 75Ω for Input, 1×F type female 75Ω for loop through output
Input Frequency Range	950~2150MHz
Input Level	-25~-65dBm
Symbol Rate	2~45MBaud
Roll-off Factor	DVB-S QPSK: 0.35
	DVB-S2 8PSK: 0.35, 0.25, 0.2
FEC Code Rate	DVB-S QPSK: 1/2, 2/3, 3/4, 5/6, 7/8
	DVB-S2 QPSK: 1/2, 3/5, 2/3, 3/4, 4/5, 5/6, 8/9,9/10
	DVB-S2 8PSK: 3/5, 2/3, 3/4, 5/6, 8/9, 9/10
LNB Polarity Selection Voltage	0, 13V, 18V selectable
LNB Band Selection Tone	0/22KHz selectable
Satellite Selection Command	DiSEqC 1.0
ISI ID	1~255 user configurable
DVB-C Tuner Input	
Connector Type	1×F type female 75Ω for Input, 1×F type female 75Ω for loop through output
Input Frequency Range	51~862MHz
Input Level	51~75dBμV
Symbol Rate	1~7MBaud (ITU J.83 Annex A)
Constellation	16QAM, 32QAM, 64QAM, 128QAM, 256QAM
Bandwidth	6MHz, 7MHz, 8MHz
Input Return Loss	7dB (typ.)
DVB-T/T2 Tuner Input	
Connector Type	1×F type female 75Ω for Input, 1×F type female 75Ω for loop through output
Input Frequency	104~862MHz (VHF/UHF)
Input Level	-20~-70dBm
Constellation	DVB-T: QPSK, 16QAM, 64QAM
	DVB-T2: QPSK, 16QAM, 64QAM, 256QAM
Bandwidth	6MHz, 7MHz, 8MHz
FFT Mode	DVB-T: 2K, 8K
	DVB-T2: 1K, 2K, 4K, 8K, 16K, 32K
Guarding Interval	DVB-T: 1/4, 1/8, 1/16, 1/32
	DVB-T2: 1/4, 5/32, 1/8, 5/64, 1/16, 1/32, 1/64, 1/128
FEC Code Rate	DVB-T: 1/2, 2/3, 3/4, 5/6, 7/8
	DVB-T2: 1/2, 3/5, 2/3, 3/4, 4/5, 5/6
Input Return Loss	7dB (typ.)
DTMB Tuner Input	
Connector Type	1×F type female 75Ω for Input, 1×F type female 75Ω for loop through output
Input Frequency Range	46.5~866MHz
Input Level	-87~-29dBm
Symbol Rate	7.56MBaud
Bandwidth	6MHz/7MHz/8MHz
Constellation	4QAM-NR,4QAM,16QAM,32QAM, 64QAM
Guard Interval	PN420, PN595, PN945
Roll-off Factor	0.05
Interleaving Depth	240,720
FEC Code Rate	0.4, 0.6, 0.8
ATSC Tuner Input	
Connector Type	1×F type female 75Ω for Input, 1×F type female 75Ω for loop through output
Input Frequency Range	54~864MHz
Input Level	-75~-7dBm(ATSC 8VSB)
Symbol Rate	10.762MBaud
Constellation	8VSB
Roll-off Factor	0.115
Bandwidth	6MHZ

ASI Input-1	
Connector Type	1×BNC female, 75Ω
Standard	DVB-ASI, EN50083-9
Input Bit Rate	≤ 100Mb/s
DS3 Input-2 (Option)	
Connector Type	1×BNC female, 75Ω
Standard	DVB-ASI, EN50083-9
Input Bit Rate	≤ 100Mb/s
DS3/E3 Input (Option)	
Connector Type	2×BNC female, 75Ω, including loop through
Standard	Compliant with ITU-T G.703
Frame Structure	Compliant with ITU-T G.752 and ITU-T G.804
Bit Rate	DS3: 44.736Mb/s E3: 34.368Mb/s
TS over IP	
Connector Type	2×RJ-45, seperated 100/1000 Base-T for TS/IP
Effective Bit Rate	800Mb/s for 100/1000 Base-T, duplex for SPTS and MPTS
Protocol	UDP / RTP, Multicast / Unicast, IGMPv3, ARP
FEC	SMPTE 2022M (Pro-MPEG) FEC (for GbE only)
TS Processing	
TS Input Management	Demux and Remux among Tuner / DS3(optional) / E3 (optional), ASI and TS/IP Inputs
TS Output Management	Demux and Remux for 2 independent ASI outputs
Service and PID Management	Remux, filtering and remapping
PSI/SI	PSI/SI table regeneration, NIT and SDT edition, LCN Edition and Re-generation
Descrambler	DVB Common Scrambling Algorithm (CSA)
BISS Mode	BISS-1, BISS-E
Common Interface	Double PCMCIA slots, compatible with major CA CAMs in the market
ASI Output	
Connector Type	2 pairs of BNC female, 75Ω
Standard	DVB-ASI, EN50083-9
Output Bit Rate	≤ 200Mb/s
TS Processing	2 Independent TS Re-multiplexed from tuner, TS/IP and 2 ASI inputs
HDMI Output	
Standard	1×HDMI 1.3 interface (up to 1080i)
Video Resolution and Frame Rate	1080i×30, 1080i×29.97,1080×25,720p ×60,720p×59.94, 720p×50, 480p×60, 576p×50, 576i×25, 480i×29.97
Audio Embedded	1×stereo
Video Decode	
Video Profile/Level	MPEG-2(MP@ ML for SD, MP@HL for HD), Main Profile(MP) 4:2:0 8-bit, High Profile(HP) 4:2:2 8-bit
	MPEG-4/H.264 AVC Part 10 (MP@L3 for SD, HP@L4.1 for HD), High-422(Hi442P) 4:2:2 8/10-bit, High-10(Hi10P) 4:2:0 10-bit, High (HiP) 4:2:0 8-bit, Main (MP) 4:2:0 8-bit, Constrained Baseline (CBP) 4:2:0 8-bit, High 10 Intra Profile (AVC-I 50) 4:2:0 10-bit, High 4:2:2 Intra Profile (AVC-I 100) 4:2:2 8/10-bit
Audio Decode	
Audio Format	MPEG-1 Layer 2

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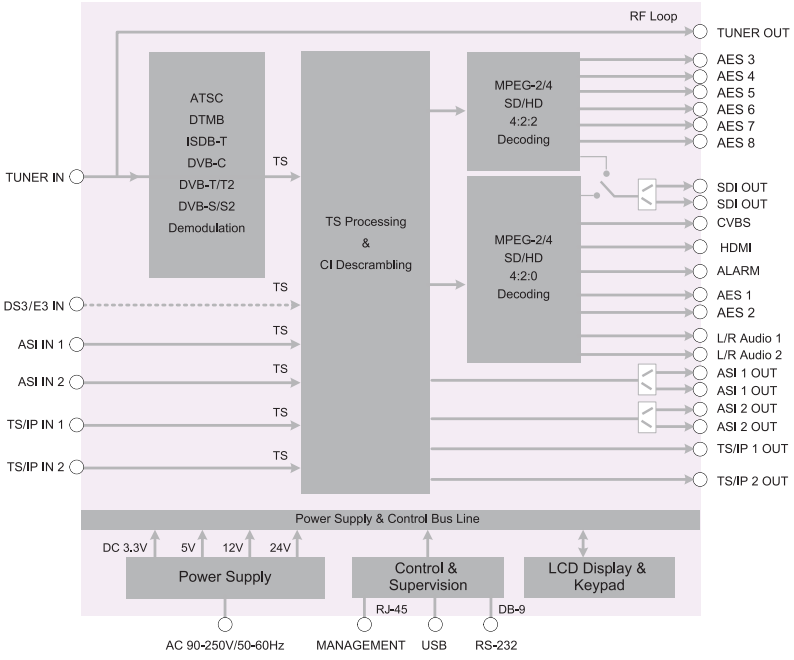
	a. 2 stereo pairs (Stereo, Dual Mono, Left, Right)
	Dolby Digital (AC3)
	a. 5.1 down-mix to 2.0 (Stereo, Dual Mono, Left, Right)
	b. Dolby Digital Audio Pass-through
	Dolby Digital Plus(AC3+)
	a. 5.1 down-mix to 2.0 (Stereo, Dual Mono, Left, Right)
	b. Dolby Digital Plus Audio Pass-through
	Dolby E
	a. 5.1 down-mix to 2.0 (Stereo, Dual Mono, Left, Right)
	b. Dolby E Audio Pass-through
	MPEG-2 AAC
	a. 5.1 down-mix to 2.0 (Stereo, Dual Mono, Left, Right)
	b. 2.0 (Stereo, Dual Mono)
	MPEG-4 HE-AAC v1/v2
	a. 5.1 down-mix to 2.0 (Stereo, Dual Mono, Left, Right)
	b. 2.0 (Stereo, Dual Mono, Left, Right)
Digital Video Processing	
Connector Type	2 x BNC female, 75Ω
SDI Video Resolution	1080p×59.94,1080p×50, 1080i×30,1080i×29.97, 1080i×25,720p×60,720p×59.94, 720p×50, 720p×29.97, 720p×25, 576i×25, 480i×29.97
Video PID Bit Rate	≤ 60Mb/s
HD/SD-SDI Output	
Connector Type	1 pair of BNCs (mirrored) , female, 75Ω
SD Standard	SMPTE 259M, 270 Mb/s (10bit)
HD Standard	SMPTE 292M, 1.485 Gbit/s (10bit)
Level	800mV p-p
Genlock	
Connector Type	1 x BNC female, 75Ω
Input Signal	Analog SD (black & burst)
Digital Audio Processing	
Connector Type	2×D-sub 9 male with XLR adaptor cables and 6 x BNC female 75Ω
Number of Output	8×audio PIDs are decoded or passed through
Nominal Output Level	1V p-p (with standard test stream)
Output Format	SDI (Embedded Audio), AES
Load Impedance	AES1~AES2: 2 x D-sub9, 110Ω (with XLR adaptor cables)
	AES3~AES8: 6 x BNC, 75Ω
Analog video Output	
CVBS Connector	1×BNC female 75Ω
CVBS Standard	NTSC, PAL, and SECAM
CVBS Resolution	576i×25, 480i×29.97
Nominal Output Level	1.0 Vp-p±5% (with standard test stream)
Frequency Response	<±1 dB, at 5.5 MHz for PAL/SECAM, 4.2MHz for NTSC

Chroma-Luma Delay	<±30 ns
Field Time Distortion	<2%
Line Time Distortion	<1%
Short Time Distortion	<2%
Differential Gain	<3%
Differential Phase	<2°
Signal to Noise Ratio	>55dB (luminance weighted)
Analog Audio Output	
Connector Type	2×D-sub 9 male, with XLR adaptor cable
Output Impedance	600Ω (balanced)
Output Mode	Left, Right, Dual Mono, Stereo
Number of Output	2 pairs of stereo audio outputs (2 Audio PIDs or 4 channels are decoded).
Cross Talk Among Channels	>70dB
THD	<0.3% @ 400Hz, 1KHz test tone
Frequency Response	±0.5dB over 20Hz ~ 18KHz
Output Level	0dBm in 600Ω (0dBu), adjustable range ±l0dB
Ancillary Data Processing	
Subtitle	DVB, EBU
VBI	Teletext, WSS
Closed Caption	EIA 608, EIA 708, EIA 608-to-708
Redundancy	
Redundancy Port	among Tuner, ASI input and TS/IP input
Switching Condition	TS Sync Loss
Switching Mode	Main, Spare
Alarm	
Connector Type	2×D-sub 9 male
Switching Condition	User Defined
Control & Monitoring	
Connector Type	1×RJ-45, 10/100 Base-T, for equipment IP Control
Remote Control	SNMP 2.0, HTTP (Web GUI), Proprietary HDMS (Headend Device Management System)
Local Control	LCD display and Front control 6-key keypad
Monitoring	1.5" TFT LCD monitor
Serial Port	1×RS-232 D-sub female, for debug use only
Equipment Upgrade	Embedded FTP loader ,Telnet and USB
Physical	
Dimension	1U 19" Full-rack size
Weight	
Power Supply	AC 90V~250V, 50/60Hz
Power Consumption	24W (exclusive of LNB power)
Operating temperature	0~45℃
Storage temperature	-10~60℃
Operating Humidity	10~90%, non-condensed
Certification	
EMC: EN 55024:1998+A1:2001+A2:2003, EN 55022:2006+A1:2007, EN 61000-3-2:2006, EN 61000-3-3:2008	
FCC: Part 15 Class B	
LVD: EN 60950-1:2006 + A11:2009	

Back panel Interface (Full option)

Block Diagram

DCH-5500P Functional Block Diagram



Order Information

Interface		Model	DCH-5500P-20X	DCH-5500P-30X
Standard Video/Audio	CVBS	1*BNC	•	•
	AUDIO	2*R/L, Balance	•	•
	HD-VIDEO	1*HDMI	•	•
Digital Video/Audio	HD-SDI	2*BNC	•	•
	AES1~AES2	2*D9, with extended cable adaptor	•	•
	AES3~AES8	6*BNC		•
TS Input	ASI IN 1	6*BNC	•	•
	ASI IN 2	1*BNC		•
TS Output	ASI OUT 1	1*BNC	•	•
	ASI OUT 2	1*BNC	•	•
Genlock	Genlock	1*BNC	•	•
4:2:0 decoding			•	•
4:2:2 decoding				•
TS/IP	GbE	2*RJ45	•	•
Control/Upgrade	Management	1*RJ45	•	•
	Upgrade	2*USB	•	•
	RS-232	1*D9	•	•
	ALARM/RELAY	1*D9	•	•
Power Supply		2*	•	•
X = Tuner	C	DVB-C	Factory default option: X=S2	
	T	DVB-T		
	S2	DVB-S2		
	T2	DVB-T2		
	D	DS3		
	M	STM-1		

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DVR-3006AV

6-Channel H.264 HD FTA Receiver

DVR-3006AV is a highly integrated 6-Channel Multi-format HD Digital TV Receiver that provides various options for up to 6 DVB-S2/S signals reception. Each on board decoder can work independently and process a variety of digital video and audio formats in MPEG-4 AVC/H.264 and MPEG-2, in Standard Definition or in High Definition. The TV channel is decoded into both digital and analog, and output via HDMI and CVBS respectively. Stable easy-to-use user interface via On Screen Display (OSD) and first-class picture quality make DVR-3006AV a very cost effective solution for digital TV signal reception system.

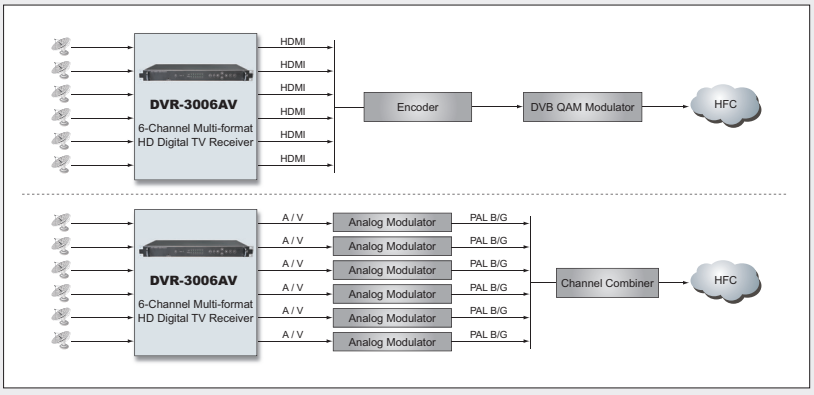
Main Feature

- Factory options for DVB-S/S2 tuner frontend
- Fully comply with MPEG-4 AVC/H.264, MPEG2 standard
- VBI Teletext (DVB ETS 300 706) and EBU/ DVB Subtitle supported
- CVBS and HDMI output
- Up to 6 common interface for descrambling (available on DVB-3006AV-CI)
- BISS 1 and BISS E decryption supported
- NTSC/PAL/AUTO TV standard conversion
- Easy-to-use On Screen Display (OSD) menu
- Automatic parameters storage and recovery
- Software upgrade via USB

Up to 6 channels Receiving and Decoding

HDMI and Composite Output

Easily Management via Front Panel



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Specification

Tuner Input	
DVB-S/S2 Tuner (DVR-3006AV-S2)	
Connector Type	6 × F type female 75Ω for Input 6 × F type female 75Ω for loop through
Input Frequency Range	950~2150MHz
Input Level	-65~-25dBm
Symbol Rate	DVB-S QPSK: 1~45MBauds/s DVB-S2 QPSK: 1~45MBauds/s DVB-S2 8PSK: 1~45MBauds/s
Roll-off Factor	DVB-S: 0.35 DVB-S2: 0.35, 0.25, 0.2
FEC Code Rate	DVB-S QPSK: 1/2, 2/3, 3/4, 5/6,6/7,7/8 DVB-S2 QPSK: 1/2, 3/5, 2/3, 3/4, 4/5, 5/6, 8/9, 9/10 DVB-S2 8PSK: 3/5, 2/3, 3/4, 5/6, 8/9, 9/10
LNB Polarity Selection Voltage	0, 13V, 18V selectable
Satellite Selection Command	DiSEqC 1.0
Digital Video/Audio Decoding	
Video Standard	MPEG-2 MP@HL H.264/AVC MP@L4.1, HP@L4.1, MP@HL, AP@L3
Video PID Bit Rate	Max. 60Mbit/s
Aspect Ratio	4:3, 16:9, Automatic
Video Resolution	480i, 576i, 1080i, 480p, 720p, 1080p
Video Format	NTSC/PAL/AUTO
Audio Standard	MPEG-1 layer I/II, MP3, MPEG-2 layer II, Dolby Digital, HE-AAC
Sampling Rate	32, 44.1, 48KHz
Common Interface	
Type	6* PCMCIA (available on DVR-3006AV-CI)
Composite Video Output	
Connector Type	RCA*1
Output Impedance	75Ω
Output Level	1.0V±30mVp-p
Frequency Response	±0.5dB (4.8MHz)
Differential Gain	≤5%
Differential Phase	≤5°
Chroma-Luma Delay	≤30ns
HDMI Output	
Connector Type	HDMI 1.1 *1
Audio Output	
Output mode	RCA*2
Audio Standard	Mono, Stereo
Output Impedance	100Ω
Output Level	±6dB
Frequency Response	±0.5dB (20Hz~18Hz)
Signal to Noise Ratio (SNR)	≥70dB
USB Interface	
Connector Type	USB Type A
Usage	Firmware upgrade
General	
Temperature	Work Temperature: 0~40ºC Storage Temperature: -25~55 ºC
Humidity	10%~90%
Power Supply	AC 90~256V 50Hz/60Hz, 25W
Net Weight	3.7Kg
Dimensions	483mmx237mmx45mm

Order Information

Interface \ Model	DVR-3006AV-CIS2
Tuner input	6×DVB-S2
Loop thru	×6
Common Interface	×6
HDMI output	×6
USB port for upgrade	×6
A/V output	×6

Back panel Interface (Full option)

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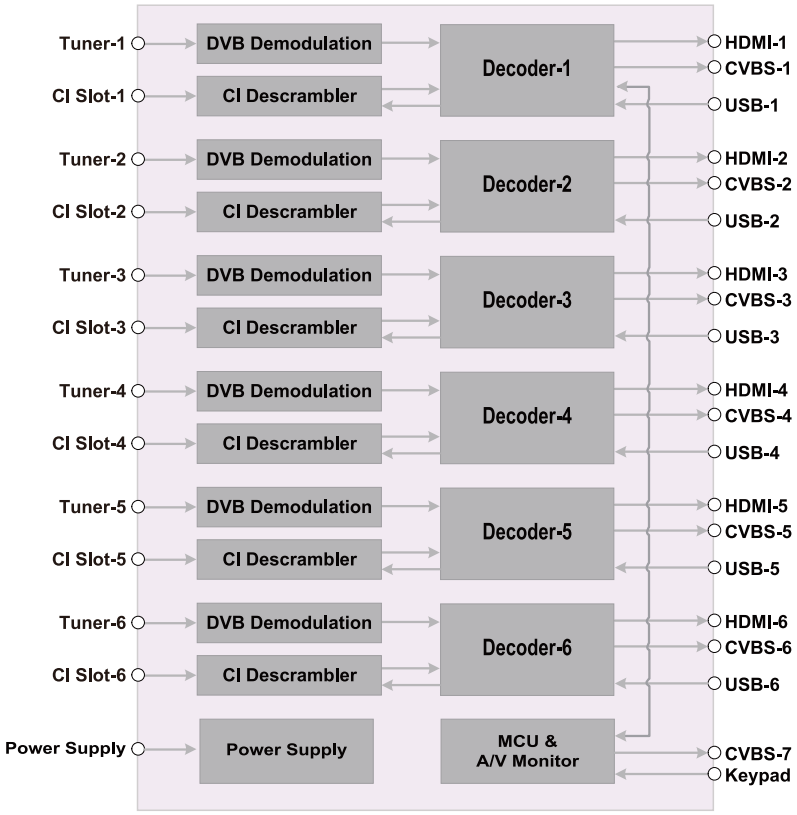
Block Diagram

DVR-3006AV-CI Functional Block Diagram



DCH-3000EC

Single Channel MPEG-2 SD Encoder

DCH-3000EC is a real-time single program 4:2:0 MPEG-2 encoder. It provides both analog and digital audio/video inputs like CVBS, S-Video and SDI. By making compression of the base band TV signal, the encoder outputs a single program transport stream (SPTS) to the ASI output port. Furthermore, DCH-3000EC has an ASI input port which can re-multiplex the encoded SPTS with an external MPTS and generate a new MPTS. As an option, the MPTS of the encoder can also be outputted through RJ-45 port over IP. User can use SNMP for equipment remote control and supervision. The configuration of an encoder with built-in re-multiplexer makes DCH-3000EC an ideal product for the digital TV Headend system where the high quality stable video/audio compression is needed.

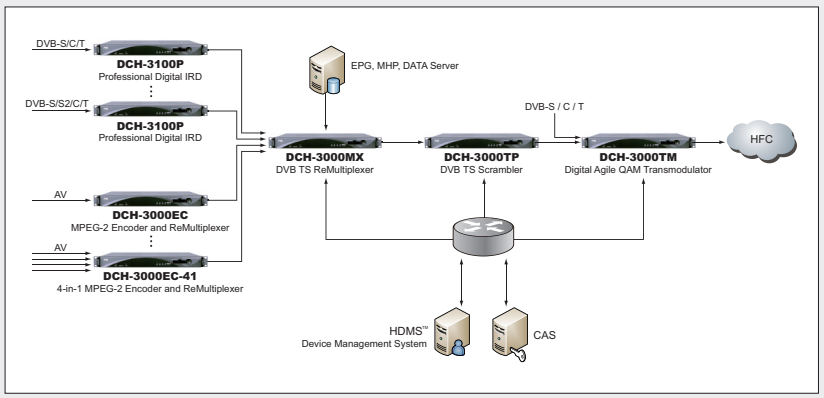
Main Feature

- Compliant with 4:2:0 MPEG-2 MP@ML video compression standard
- Multiple video inputs S-Video, SDI, ASI and CVBS
- Multiple audio inputs Stereo, Balanced audio, and SDI embedded audio input
- Support PAL, NTSC, and SECAM analog TV standards
- User-configurable 4:3/16:9 aspect ratio
- Video compression bit rate from 1.5Mbps to 20Mbps
- Configurable GOP
- Built-in two-way Re-multiplexer
- Support PAT, PMT and SDT generation and NIT insertion
- SNMP based remote control system
- LCD display and user friendly operation menu
- Up to 6 MPTS or SPTS over multicast or unicast IP streaming output

Multiple video inputs S-Video, SDI, ASI and CVBS

SNMP based remote control system and optional 100M TS/IP interface

LCD display and user friendly operation menu



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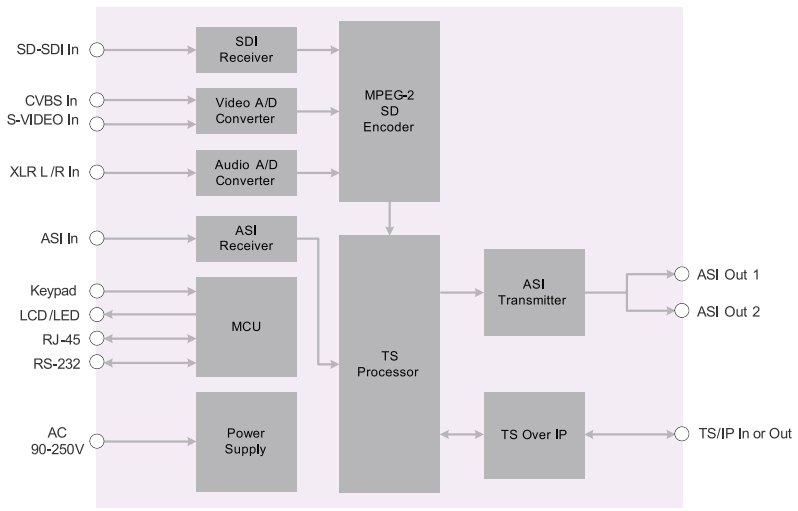
Specification

Video Compression	
Analog Input	Analog NTSC, PAL and SECAM
Digital Input	SD-SDI (SMPTE-259M)
Compression Standard	MPEG-2 MP@ML
Video Resolution	480i (720×480) @29.97Hz: SMPTE125M 576i (720×576) @25Hz: ITU-R BT.656-4
Aspect Ratio	4:3/16:9 selectable
Video Compression bit rate	1.5~20Mb/s
Audio Compression	
Audio Channels	1 pair of stereo
Compression Standard	MPEG-1 Layer II
Audio Mode	Stereo, Joint Stereo, Dual Mono, Mono
Audio Sampling Rate	32, 44.1, 48 KHz
Audio Compression bit rate	32, 64, 128, 192, 256, 384 Kb/s
Audio/Video Input Interface	
Analog Audio	Balanced Audio XLR L / R
Analog CVBS	1×BNC female, 75Ω
S-Video	1×S-Video female, 75Ω
SD-SDI	1×BNC female, 75Ω
SDI embedded audio	Group 1 to 4 selectable
ASI Input	
Connector Type	1×BNC Female, 75Ω
Input bit rate	≤ 100Mb/s
Packet Mode	Byte or Burst
Packet Length	188/204 Bytes
TS Processing	
TS Input Management	Remux and demux between ASI input and the SPTS encoded
Service and PID management	Remux, filtering and remapping
PSI/SI	PSI/SI table generation, NIT and SDT edition
TS over IP Output	
Connector Type	1×RJ-45, 10/100 Base-T for TS/IP
Useful bit rate	70Mb/s min
Protocol	UDP / RTP, Multicast / Unicast, IGMPv2, ARP
Source	Built-in Re-mux, ASI input, Encoder
ASI Output Interface	
Connector Type	2×BNC Female, 75Ω
Output bit rate	≤ 99Mb/s
Packet Length	188 / 204 Bytes
Signal Level	800mVpp±10%
Source	Any one of Built-in Re-mux, ASI input and Encoder
Control & Monitoring	
Connector Type	1×RJ-45, 10/100 Base-T, for equipment IP Control
Remote Control	SNMP, HTTP Web, Proprietary HDMS Software
Local Control	Front Panel
Software Upgrade	Built-in FTP server + Telnet
Physical	
Dimension	44mm×483mm×240mm
Net weight	2.8Kg
Power Supply	AC 90V~250V, 50/60Hz
Power Consumption	Maximum 20W
Operating Temperature	0~45℃
Storage Temperature	-10~6℃
Operating Humidity	10~90%, non-condensed
Certification	
EMC: EN 55024:1998+A1:2001+A2:2003, EN 55022:2006+A1:2007, EN 61000-3-2:2006, EN 61000-3-3:2008	
FCC: Part 15 Class B	
LVD: EN 60950-1:2006 + A11:2009	

Block Diagram

DCH-3000EC Functional Block Diagram



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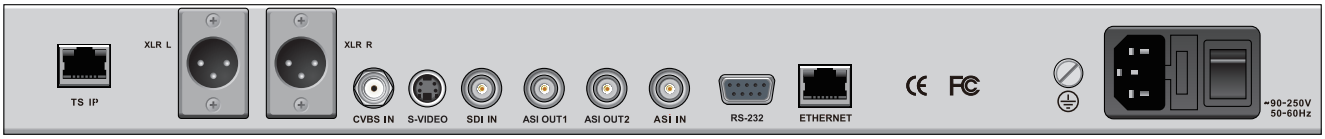
Order Information

Functionality \ Model	DCH-3000EC-10	DCH-3000EC-30	DCH-3000EC-40
S-Video Input	•	•	•
CVBS Input (BNC)	•	•	•
SDI Input (BNC)		•	•
Balanced Audio XLR Input	•	•	•
ASI Input		•	•
Built-in Remuliplexer	•	•	•
ASI Output (mirrored)	•	•	•
10/100M TS/IP Extension Board (Single RJ-45, 6 Channel)			•

· Standard function

Back panel Interface



DCH-5200EC

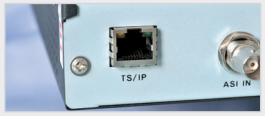
Single Channel H.264 HD Encoder

The DCH-5200EC is a high quality single channel high definition MPEG4/ H.264 encoder. It has a wide range of digital/ analog video and audio inputs: CVBS, HD-SDI, YPbPr and stereo audio. It can support up to high definition TV up to 1080P, and the compressed MPEG4/H.264 signal is outputted from the ASI and IP port. Compared to DCH-4000EC and 5000EC, it presents a unique function of Time Base Correction to ensure the audio and video synchronization, the feature necessary for the professional TV signal flow.

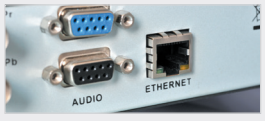
The DCH-5200EC's re-multiplexing function enables creation of a new transport stream between the TS of encoder and the TS from ASI or IP. The encoder/trans-coder output can be multiple SPTS or MPTS over IP, as well as over ASI. In trans-coding mode, the digital audios are looped through and time stamping is automatically implemented to ensure the synchronization between video and audio. This unique encoder/trans-coder with built-in re-multiplexer architecture makes the DCH-5200EC one of the best solutions to meet the MPEG2 to MPEG4/H.264 migration in today's digital broadcasting market.

Multiple inputs HDMI, HD-SDI, YPbPr, and CVBS

10/100M TS/IP extension board option

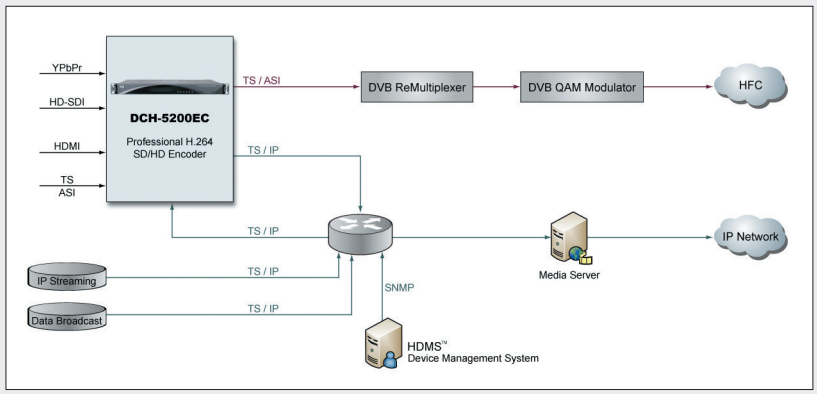


Remote Control and Supervision by SNMP, HTTP WEB and Proprietary HDMS software



Main Feature

- Multiple video resolution including 1080p, 1080i, 720p, 576i and 480i
- Multiple inputs, HD-SDI, YPbPr, and CVBS
- Unique video and audio synchronization by time base correction
- Support 10/100M TS/IP SPTS and MPTS
- Built-in re-multiplexer for encoder loop
- Support VBR and CBR encoding mode
- Support 2 pairs of analog stereo audio encoding with optional extension board
- Remote Control and Supervision by SNMP, HTTP WEB



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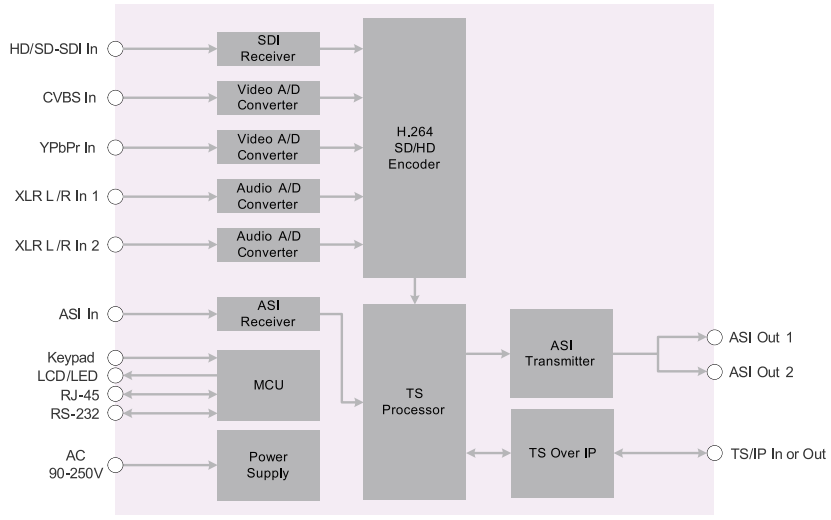
Specification

Video Compression	
Video Resolution	1080p (1920×1080) @50Hz, 59.94Hz, 60Hz: SMPTE 372M
	1080i (1920/1440×1080) @25Hz, 29.97Hz, 30Hz: SMPTE 292M
	720p (1280×720) @50Hz, 59.94Hz, 60Hz: SMPTE 292M
	480i (720×480) @29.97Hz: SMPTE 259M
	576i (720×576) @25Hz: SMPTE 259M
Compression Standard	H.264, High Profile Level 4.0
Aspect Ratio	4:3/16:9 selectable
Video Encoding Bit Rate	2Mb/s-30Mb/s
Audio Compression	
Audio Input	Embedded Audio, Analog audio
Audio Channels	Maximum 2 pair of stereo
Audio Sampling Rate	48KHz
Audio compression Bit Rate	32 ~ 384Kb/s
Audio/Video Input Interface	
Analog Audio	1×D-sub 9 Female male with XLR adaptor cables
Analog CVBS	1×BNC Female, 75Ω
YPbPr	3×RCA Female, 75Ω
HDMI	1×HDMI 1.3
ASI Input	
Connector Type	1×BNC Female, 75Ω
Input bit rate	≤ 100Mb/s
Packet Mode	Byte
Packet Length	188/204 Bytes
TS Processing	
TS Output Management	Remux and demux for mirrored ASI outputs
TS Input Management	Remux and demux between ASI input and the SPTS encoded

Service and PID management	Remux, filtering and remapping
PSI/SI	PSI/SI table regeneration, NIT and SDT edition
TS over IP	
Connector Type	1×RJ-45, 10/100M for TS/IP
Useful bit rate	70Mb/s for 10/100M
Protocol	UDP / RTP, Multicast / Unicast, IGMPv2, ARP
Source	Built-in Re-mux, ASI input, Encoder
ASI Output	
Connector Type	2×BNC Female, 75Ω
Output bit rate	≤ 99Mb/s
Packet Length	188 / 204 Bytes
Signal Level	800mVpp±10%
Control & Monitoring	
Connector Type	1×RJ-45, 10/100M, for equipment IP Control
Remote Control	SNMP, HTTP Web
Local Control	LCD display and 6-key keypad
Software Upgrade	Built-in FTP loader and Telnet
Physical	
Dimension	44mm×483mm×340mm
Net weight	3.2Kg
Power supply	AC90~250V, 50Hz/60Hz
Power Consumption	Maximum 20W
Operating Temperature	0 ~ 45℃
Storage Temperature	-10 ~ 60℃
Humidity	10 ~ 90%, non-condensed
Certification	
EMC: EN 55024:1998+A1:2001+A2:2003, EN 55022:2006+A1:2007, EN 61000-3-2:2006, EN 61000-3-3:2008	
FCC: Part 15 Class B	
LVD: EN 60950-1:2006 + A11:2009	

Block Diagram

DCH-5200EC Functional Block Diagram



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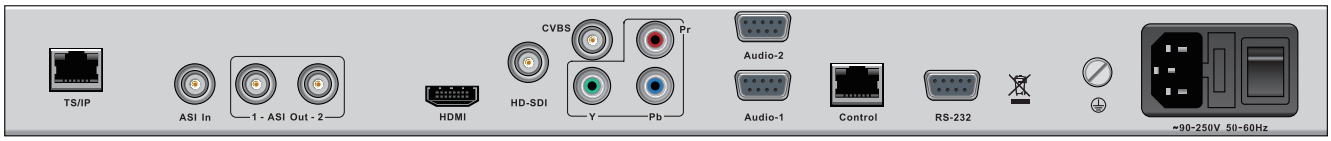
Order Information

Functionality / Model		DCH-5200EC-30	DCH-5200EC-40
Input	Analog Audio Input (Stereo L/R, RCA)	•	•
	HD SDI Input (BNC)	•	•
	CVBS Input (RCA)	•	•
	YPbPr Input	•	•
	ASI Input	•	•
Processing	Built-in Remuliplexer	•	•
Output	ASI Output (2x mirrored)	•	•
TS/IP I/O	10/100M TS/IP Extension Board (Single RJ-456 Channel)		•

Back panel Interface



DCH-5500EC

High Performance Single Channel H.264 HD Encoder

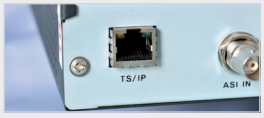
The DCH-5500EC is a high performance MPEG2 and H.264 HD encoder. It has a wide range of digital/ analog video and audio inputs: CVBS, HD-SDI, YPbPr, SPDIF, AES/EBU and XLR balance Audio. Two pairs of stereo audios can be encoded using AAC, MPEG-1 layer II encoding or pass-through the audio data. The encoded video and audio transport stream is available from its TS_over_IP and ASI outputs. With this full range audio and video format compatibility, the DCH-5500EC addresses versatile MPEG2 and H.264 encoding market in the bandwidth scale from 250Kb/s to 25Mb/s.

Main Feature

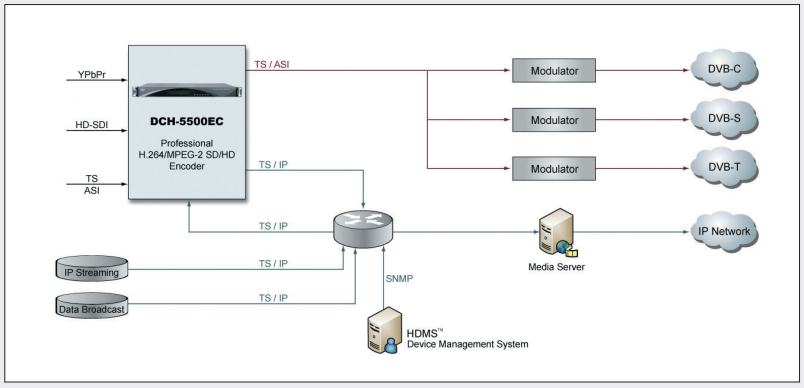
- Supports MPEG-2 HD1/SD and H.264 HD/ SD video encoding
- MPEG-1 Layer II, AAC LC and HE AAC audio encoding
- Supports 2 pairs of stereo audio encoding (Only for SDI), CVBS and YPbPr only supports one pair stereo audio
- Multiple inputs include, HD-SDI, YPbPr ,CVBS, SPDIF, AES/EBU and XLR balance Audio
- Video encoding bit rate from 250Kb/s to 25Mb/s
- Vertical & Horizontal video resolutions rescaling
- Multiple video resolution including 1080i, 720p, 576i and 480i
- Support VBR and CBR encoding mode
- ASI and TS/IP outputs
- Supports 10/100M TS/IP SPTS
- Optimized video pre-processing algorithm
- Remote Control and Supervision with HTTP WEB

Multiple inputs HDMI, HD-SDI, YPbPr, and CVBS

10/100M TS/IP extension board option



Remote Control and Supervision by SNMP, HTTP WEB and Proprietary HDMS software



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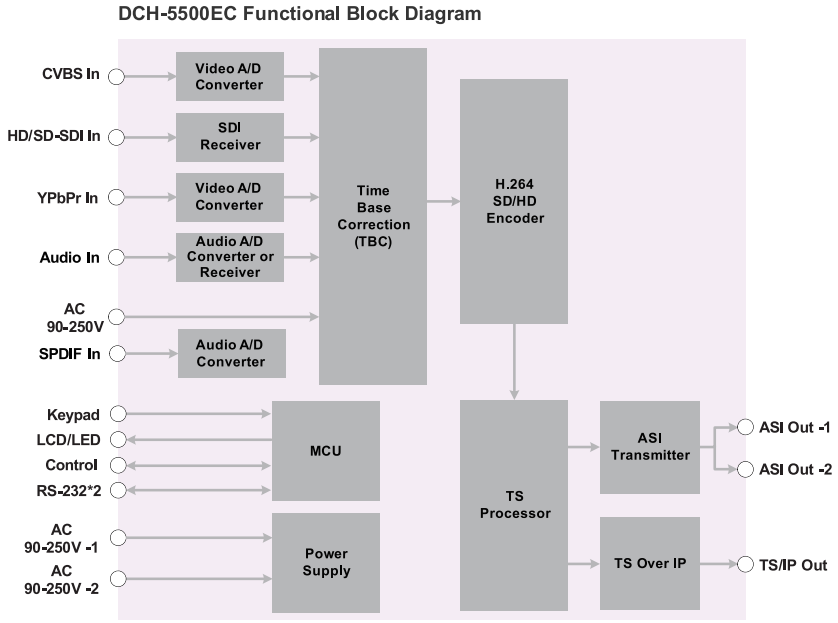
Specification

Video Compression	
Video Resolution	1080i (1920/1440×1080) @25Hz, 29.97Hz, 30Hz: SMPTE 292M 720p (1280×720) @50Hz, 59.94Hz, 60Hz: SMPTE 292M 480i (720×480) @29.97Hz: SMPTE 259M 576i (720×576) @25Hz: SMPTE 259M
Compression Standard	H.264: MP@L4.1, HP@L4.1 (HD); MP@L3.0, HP@L3.0 (SD) MPEG-2: MP@HL (HD); MP@ML (SD)
Aspect Ratio	4:3/16:9 selectable
Video Encoding Bit Rate	250Kb/s-20Mb/s
Audio Compression	
Audio Compression	MPEG-1 Layer II, AAC LC, HE AAC
Audio Input	SDI or Embedded Audio, Analog audio, and SPDIF
Audio Sampling Rate	32Kb/s, 44.1 Kb/s, 48 Kb/s
Audio Compression Bit Rate	192-384 Kb/s (MPEG-1 Layer II), 32-192Kb/s (AAC)
MUSICAM	Stereo, Dual Mono, Left Mono, Right Mono
Audio/Video Input Interface	
Analog Audio	RCA (L/R)
Digital Audio	1×S/PDIF
Analog Video	YPbPr
Digital Video	HD-SDI, 1×BNC Female, 75Ω
TS over IP	
Connector Type	1×RJ-45, 10/100M for TS/IP
Useful Bit Rate	70Mb/s for 10/100M

Protocol	UDP / RTP, Multicast / Unicast,
Source	Encoder
ASI Output	
Connector Type	1×BNC Female, 75Ω
Output Bit Rate	≤ 99Mb/s
Packet Length	188 / 204 Bytes
Signal Level	800mVpp±10%
Source	Encoder
Control & Monitoring	
Connector Type	1×RJ-45, 10/100 Base-T, for equipment control
Remote Control	HTTP Web interface
Local Control	LCD display and 6-key keypad
Software Upgrade	Built-in FTP loader and Telnet
Physical	
Dimensions	483mm×498mm×44mm
Net weight	5Kg
Power supply	AC90~250V 50Hz/60Hz
Power Consumption	15W
Operating Temperature	0~45℃
Storage Temperature	-10~60℃
Humidity	10~90%, non-condensed
Certification	
EMC: EN 55024:1998+A1:2001+A2:2003, EN 55022:2006+A1:2007, EN 61000-3-2:2006, EN 61000-3-3:2008	
FCC: Part 15 Class B	
LVD: EN 60950-1:2006 + A11:2009	

Block Diagram

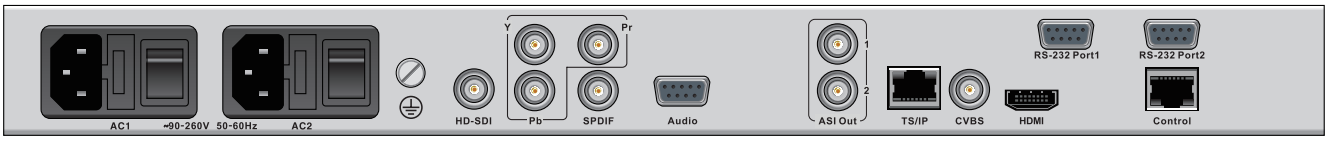
DCH-5500EC Functional Block Diagram



Order Information

Function		DCH-5500EC
Input	CVBS	•
	YPbPr	•
	HD-SDI	•
	SPDIF	•
	Audio	•
Output	ASI x2	•
	10/100M TS Over IP	•
	Control	•
	RS-232 x2	•

Back panel Interface



DCH-3000PE

Single Channel Multiformat to MPEG-2 SD Transcoder

DCH-3000PE is specially designed for the network operators who have to keep MPEG-2 services in their networks instead of MPEG-4 although more and more services from satellite and terrestrial are broadcasting in MPEG-4 today. The main reason to keep MPEG-2 service is to avoid the re-investment of the MPEG4 STBs either by the operator or by the subscriber.

The most used function of DCH-3000PE is for MPEG-4 to MPEG-2 SD trans-coding. Equipped with a wide range of input Tuner, ASI and IP, adapted to most of digital TV broadcast network, DCH-3000PE decodes any of the MPEG2 and H.264/MPEG4 TV programs in SD and HD program to baseband, and then re-compress it into MPEG-2 SD. The ancillary data, such as VBI Tele-text, Subtitles, and Digital Audio are looped through and inserted into the re-compressed stream. The re-compressed MPEG-2 stream can be outputted over ASI as well as over IP. DCH-3000PE is also a professional IRD that features a broadcast quality decoding for MPEG-2 and MPEG-4 AVC/H.264 in both SD and HD formats. It provides a variety of industry standard digital and analog audio and video outputs. Equipped with dual DVB common interfaces, DCH-3000PE works with most of conditional access Systems in the market. Remote control and supervision can be done over SNMP based management system or Web page. This all-in-one architecture makes the DCH-3000PE an ideal product for H.264/MPEG4 to MPEG-2 conversion system.

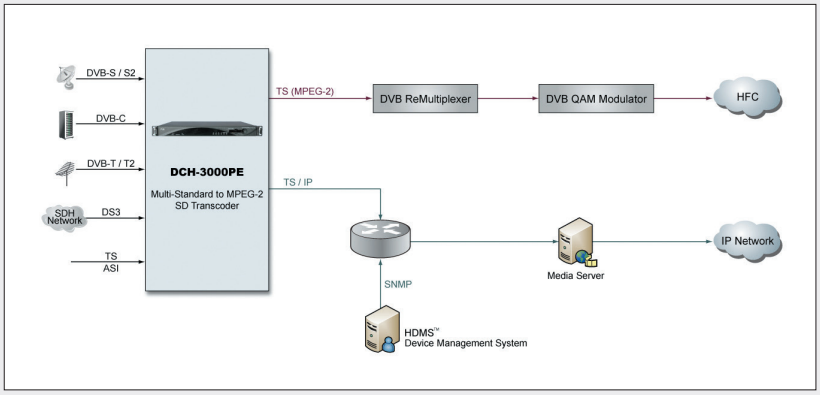
Main Feature

- Multi-standard and format to MPEG-2(MP@ML) trans-coding
- Multiple inputs DVB-S2/S/C/T/T2, TS/IP, ASI, DS3 and E3
- Redundant inputs among Tuner, ASI and TS/IP
- SD/HD MPEG-2 and MPEG-4/H.264 digital Video decoding
- Digital audio pass through for trans-coding
- Digital audio down-mix and loop through over SDI embedded
- Multiple Analog and Digital Outputs for decoded signal, ASI, TS/IP, SDI, and CVBS
- Flexible re-multiplexing among ASI, Tuner and TS/IP Inputs
- Standard definition MPEG2 encoder
- 2x DVB-CI Slots, Multi Programs, BISS-1 and BISS-E decryption
- Dynamic PMT detection and automatic updating
- VBI Tele-text, EBU/ DVB Subtitle, Closed Caption pass through
- UDP/RTP and Unicast/Multicast SPTS and MPTS over IP I/O
- Built-in remultiplexer with PSI/SI re-generation
- Remote Control and Supervision by SNMP, HTTP WEB and Proprietary HDMS software
- RSSI, received Eb/No & BER monitoring
- On Site software update through IP

Multiple Inputs and Outputs

2x DVB-CI Slots, Multi Programs decryption

Remote Control and Supervision by SNMP, HTTP WEB and Proprietary HDMS software



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Specification

Tuner Input	
DVB-S/S2 Tuner Input	
Connector Type	1×F type female 75Ω for Input, 1×F type female 75Ω for loop through output
Input Frequency Range	950~2150MHz
Input Level	-25~-65dBm
Symbol Rate	5~45MBaud/s for QPSK
	10~31MBaud/s for 8PSK
Roll-off Factor	DVB-S QPSK: 0.35
	DVB-S2 8PSK: 0.35, 0.25, 0.2
FEC Code Rate	DVB-S QPSK: 1/2, 3/5, 2/3, 3/4, 4/5, 5/6, 8/9, 8/10
	DVB-S2 8PSK: 3/5, 2/3, 3/4, 5/6, 8/9, 9/10
LNB Polarity Selection Voltage	0, 13V, 18V selectable
LNB Band Selection Tone	0/22KHz selectable
Satellite Selection Command	DiSEqC 1.0
DVB-C Tuner Input	
Connector Type	1×F type female 75Ω for Input, 1×F type female 75Ω for loop through output
Input Frequency	48~860MHz
Input Level	45~75dBμV
Symbol Rate	1~7MBaud (ITU J.83 Annex A)
Constellation	16/32/64/128/256QAM
Bandwidth	6MHz/7MHz/8MHz
Input Return Loss	7dB (typ.)
DVB-T/T2 Tuner Input	
Connector Type	1×F type female 75Ω for Input, 1×F type female 75Ω for loop through output
Input Frequency	104~860MHz (VHF/UHF)
Input Level	-20~-70dBm (Quasi Error Free, QEF)
Constellation	DVB-T: QPSK/16-QAM/64-QAM;
	DVB-T2: QPSK, 16QAM, 64QAM, 256QAM
Bandwidth	6MHz/7MHz/8MHz
FFT Mode	DVB-T: 2K/8K DVB-T2: 1K, 2K, 4K, 8K, 16K, 32K
Guard Interval	DVB-T: 1/4, 1/8, 1/16, 1/32 DVB-T2: 1/4, 5/32, 1/8, 5/64, 1/16, 1/32, 1/64, 1/128
FEC Code Rate	DVB-T: 1/2, 2/3, 3/4, 5/6, 7/8 DVB-T2: 1/2, 3/5, 2/3, 3/4, 4/5, 5/6
Input Return Loss	7dB (typ.)
ASI Input	
Connector Type	1×BNC, 75Ω
Standard	DVB-ASI, EN50083-9
TS Processing	Re-multiplexing of ASI, Tuner, and TS/IP Inputs
DS3 Input (Option)	
Connector Type	2×BNC Female, 75Ω, including loop through
Standard	Compliant with ITU-T G.703
Frame Structure	Compliant with ITU-T G.752 and ITU-T G.804
Bit Rate	44.736Mb/s
TS over IP	
Connector Type	2×RJ-45, 10/100 Base-T for TS/IP
TS/IP1	TS/IP output for demodulated signal source
TS/IP2	TS/IP output for transcoded service
Useful Bit Rate	70Mb/s for 10/100 Base-T
Protocol	UDP / RTP, Multicast / Unicast, IGMPv2,ARP
TS Processing	
TS Input Management	Remux and demux between Tuner / DS3 (optional) / E3 (optional), ASI and TS/IP Inputs
TS Output Management	Remux and demux for mirrored ASI outputs
Service and PID management	Remux, filtering and remapping
PSI/SI	PSI/SI table regeneration, NIT and SDT edition, LCN Edition and Re-generation
Descrambler	DVB Common Scrambling Algorithm (CSA)
BISS Mode	BISS-1, BISS-E
Common Interface	Double PCMCIA slots, compatible with major CA CAMs in the market
ASI Output	
Connector Type	2×BNC Female, 75Ω
ASI OUT1	output for demodulated signal source
ASI OUT2	output for transcoded service
Standard	DVB-ASI, EN50083-9
TS Processing	TS remultiplexing among tuner, TS/IP and ASI inputs
Digital Video Decoding	
Video Standard	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 PID Bit Rate	< 80Mb/s
SDI Video Resolution	1080i×30, 1080i×29.97,1080i×25, 720p×60, 720p×59.94, 720p×50, 576i×25, 480i×29.97 (only 576i×25 or 480i×29.97 is selectable when transcoding mode is selected)
SDI Output	
Connector Type	BNC Female, 75Ω
Serial Interface	SMPTE 259M, 270 Mb/s (10bit)
Level	800mV p-p
Digital Audio Decoding	
Connector Type	SDI BNC Female, 75Ω
Number of Outputs	1×digital audio* is decoded, 1×digital audio loop through
Sampling Rate	32, 44.1 and 48KHz
Audio Bit Rate	32, 64, 96, 128, 160, 192, 224, 256, 288, 320, 352, 384, 416 and 448 kb/s for MPEG-1 Layer I
	32, 48, 56, 64, 80, 96, 112, 128, 160, 192, 224, 256, 320 and 384 kb/s for MPEG-1 Layer II
Output Level	1Vpp
Output Format	XLR Balanced Audio
Load Impedance	110Ω (with cable adaptors)
Digital Audio Video Compression	
Video Compression	
Analog Video Format	NTSC, PAL and SECAM
Compression Standard	MPEG-2 MP@ML (ISO/IEC13818-2)
Video Resolution	480i (720×480) @29.97Hz: SMPTE125M 576i (720×576) @25Hz: ITU-R BT.656-4
Aspect Ratio	4:3/16:9 selectable
Video Encoding Bit rate	1.5~20Mb/s
Audio Compression	
Compression Standard	MPEG-1 Layer I, II
Audio Sampling Rate	32K, 44.1K, 48K
Audio Encoding Bit rate	32, 64,128, 192, 256, 384Kbps
Analog Video Output	
CVBS Connector	1×BNC 75Ω
Video Standard	NTSC, PAL, and SECAM

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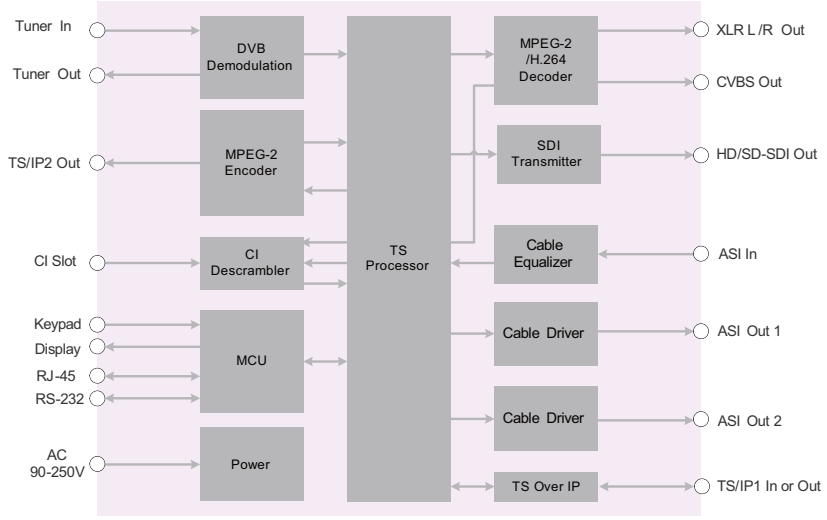
Signal Level	1000mVp-p±30mV
Frequency Response	<0.5dB,≥-4dB at 5.5MHz
Chroma-Luma Delay	<±30 ns
Field Time Distortion	<2%
Line Time Distortion	<1%
Short Time distortion	<2%
Differential Gain	<4%
Differential Phase	<5
Signal to Noise Ratio	>55 dB (luminance weighted)
Analog Audio Output	
Connector Type	DB-9 Connector
Output Impedance	600Ω (balanced)
Output Mode	Left, Right, Dual Mono, Stereo
Number of Outputs	1 pairs of stereo audio outputs
Ancillary Data Processing	
Subtitle	DVB/EBU
VBI	Teletext, WSS, VFD, VPS
Closed Caption	EIA 608, EIA 708, EIA 608-to-708
Redundancy	
Redundancy Port	between Tuner, ASI inputs and TS/IP

Switching Condition	TS Sync Loss
Switching Mode	Main, Spare
Control & Monitoring	
Connector Type	1×RJ-45, 10/100 Base-T, for equipment IP Control
Local Control	LCD display and 6-key keypad
Serial Port	1×RS-232 9-pin D-sub, for debug use only
Remote Control	SNMP, HTTP Web, Proprietary HDMS Network System Management Software
Equipment Upgrade	FTP loader
Physical	
Dimension	44mm×420mm×430mm
Weight	4.5Kg Net, 6.2Kg Gross
Power Supply	AC 90V ~ 250V, 50/60Hz
Power Consumption	24W (exclusive of LNB power)
Operating Temperature	0~45℃
Storage Temperature	-10~60℃
Operating Humidity	10~90%, non-condensed
Certification	
CCC.CE, FCC	

* For more information about digital audio, please contact our sales representative.

Block Diagram

DCH-3000PE Functional Block Diagram



Order Information

Functionality \ Model	DCH-3000PE-XX				
	-S2	-C	-T	-T2	-DS3
Tuner Input	DVB-S2	DVB-C	DVB-T	DVB-T2	DVB-DS3
ASI Input	×1	×1	×1	×1	×1
DVB Common Interface	×2	×2	×2	×2	×2
Built-in Remultiplexer	•	•	•	•	•
ASI Output (mirrored)	×2	×2	×2	×2	×2
SDI	×1	×1	×1	×1	×1
CVBS (BNC)	×1	×1	×1	×1	×1
Balanced Audio XLR (DB-9)	×1	×1	×1	×1	×1
100M TS/IP for decoding output	•	•	•	•	•
100M TS/IP for trasncoding output	•	•	•	•	•

• standard configuration

Back panel Interface

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DCH-5000PE

Single Channel Multiformat to H.264 HD Transcoder

The DCH-5000PE is a flexible platform which can trans-code any digital TV format to standard definition or high definition H.264/ MPEG4 signal. It provides most of the digital TV inputs with DVB-S/S2,DVB-T/T2,DVB-C tuner, TS input from ASI or IP port. The on-board decoder works with all kinds of digital audio and video formats including MPEG2 and MPEG4/H.264 video, MPEG1 layer II audio and AAC. After the decoding to the digital TV base band, DCH-5000PE compresses it into H.264 SD or HD, and it processes the ancillary data including VBI Teletext, Subtitles. It supports also digital audios loop through function. The re-compressed H.264 transport stream is output to IP and ASI output.

The DCH-5000PE can also be used as a professional IRD that features a broadcast quality decoder for MPEG-2 and H.264 in both Standard Definition and High Definition formats, it provides a variety of industry standard digital and analog outputs, including analog video and audio, HD-SDI and ASI. The equipment also performs HD down-conversion and aspect ratio adaptation of SD/HD programs to generate professional quality digital video and audio outputs for easy integration with existing cable network infrastructure. Equipped with dual DVB common interfaces, DCH-5000PE supports most of the conditional access system in the market. The equipment is remotely controlled and supervised by SNMP and Web page. This IRD plus encoder architecture makes the DCH-5000PE an ideal product for digital TV MPEG2 to MEG4/H.264 migration.

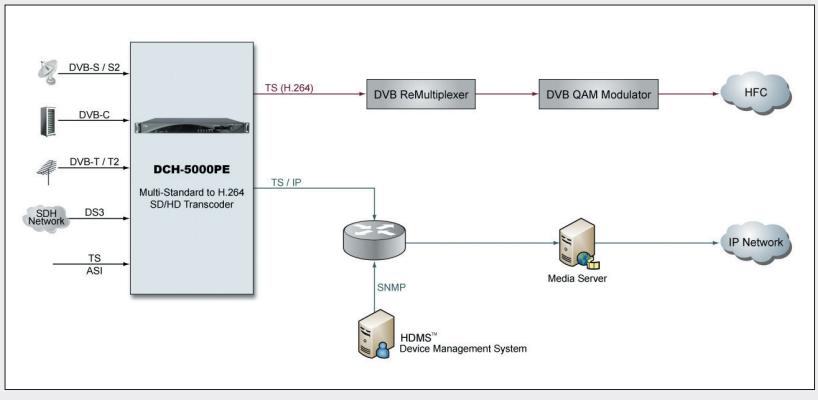
Multiple Inputs and Outputs

2x DVB-CI Slots, Multi Programs decryption

Remote Control and Supervision by SNMP, HTTP WEB and Proprietary HDMS software

Main Feature

- Multi-standard to MPEG-4 AVC/H.264 trans-coding
- Multiple inputs DVB-S2/S/C/T/T2, TS/IP 10/100M, ASI, DS3 and E3
- Redundant inputs among Tuner, ASI and TS/IP
- SD/HD MPEG-2 and MPEG-4/H.264 digital Video decoding
- Digital audio loop through for trans-coding
- Digital audio down-mix and loop through over SDI embedded
- Multiple Analog and Digital Outputs for decoded signal, ASI, TS/IP, SDI, and CVBS
- Digital outputs for transcoded signal, ASI and TS/IP
- Flexible remultiplexing among ASI, Tuner and TS/IP Inputs
- 2×DVB-CI Slots, Multi Programs, BISS-1 and BISS-E decryption
- Dynamic PMT detection and automatic updating
- VBI TELETEXT, EBU/ DVB Subtitle, Closed Caption pass through
- UDP/RTP & Unicast/Multicast SPTS and MPTS over IP I/O
- Built-in remultiplexer with PSI/SI re-generation
- Remote Control and Supervision by SNMP, HTTP WEB and Proprietary HDMS software
- On Site software update through IP
- RSSI, received Eb/No & BER monitoring



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Specification

Tuner Input	
DVB-S/S2 Tuner Input (ISI Factory Optional)	
Connector Type	1×F type female 75Ω for Input, 1×F type female 75Ω for loop through output
Input Frequency Range	950~2150MHz
Input Level	-25~-65dBm
Symbol Rate	2~45MBaud
Roll-off Factor	DVB-S QPSK: 0.35
	DVB-S2 8PSK: 0.35, 0.25, 0.2
FEC Code Rate	DVB-S QPSK: 1/2, 2/3, 3/4, 5/6, 7/8
	DVB-S2 QPSK: 1/2, 3/5, 2/3, 3/4, 4/5, 5/6, 8/9, 9/10
	DVB-S2 8PSK: 3/5, 2/3, 3/4, 5/6, 8/9, 9/10
LNB Polarity Selection Voltage	0, 13V, 18V selectable
LNB Band Selection Tone	0/22KHz selectable
Satellite Selection Command	DiSEqC 1.0
ISI ID	1~255 user configurable
DVB-C Tuner Input	
Connector Type	1×F type female 75Ω for Input, 1×F type female 75Ω for loop through output
Input Frequency	48~860MHz
Input Level	45~75dBμV
Symbol Rate	1~7MBaud (ITU J.83 Annex A)
Constellation	16/32/64/128/256QAM
Bandwidth	6MHz/7MHz/8MHz
Input Return Loss	7dB (typ.)
DVB-T/T2 Tuner Input	
Connector Type	1×F type female 75Ω for Input, 1×F type female 75Ω for loop through output
Input Frequency	104~860MHz (VHF/UHF)
Input Level	-20~-70dBm (Quasi Error Free, QEF)
Constellation	DVB-T: QPSK/16-QAM/64-QAM; DVB-T2: QPSK, 16QAM, 64QAM, 256QAM
Bandwidth	6MHz/7MHz/8MHz
FFT Mode	DVB-T: 2K/8K DVB-T2: 1K, 2K, 4K, 8K, 16K, 32K
Guard Interval	DVB-T: 1/4, 1/8, 1/16, 1/32 DVB-T2: 1/4, 5/32, 1/8, 5/64, 1/16, 1/32, 1/64, 1/128
FEC Code Rate	DVB-T: 1/2, 2/3, 3/4, 5/6, 7/8 DVB-T2: 1/2, 3/5, 2/3, 3/4, 4/5, 5/6
Input Return Loss	7dB (typ.)
ASI Input	
Connector Type	1×BNC, 75Ω
Standard	DVB-ASI, EN50083-9
TS Processing	Re-multiplexing of ASI, Tuner, and TS/IP Inputs
DS3 Input (Option)	
Connector Type	2×BNC Female, 75Ω, including loop through
Standard	Compliant with ITU-T G.703
Frame Structure	Compliant with ITU-T G.752 and ITU-T G.804
Bit Rate	44.736Mb/s
TS over IP	
Connector Type	2×RJ-45, 10/100 Base-T for TS/IP
TS/IP1	TS/IP interface for decoding
TS/IP2	TS/IP interface for transcoding
Useful bit rate	70Mb/s for 10/100 Base-T
Protocol	UDP / RTP, Multicast / Unicast, IGMPv2, ARP
TS Processing	
TS Input Management	Remux and demux between Tuner / DS3 (optional) / E3 (optional), ASI and TS/IP Inputs
TS Output Management	Remux and demux for mirrored ASI outputs
Service and PID management	Remux, filtering and remapping
PSI/SI	PSI/SI table regeneration, NIT and SDT edition, LCN Edition and Re-generation
Descrambler	DVB Common Scrambling Algorithm (CSA)
BISS Mode	BISS-1, BISS-E
Common Interface	Double PCMCIA slots, compatible with major CA CAMs in the market
Digital Video Decoding	
Video Standard	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 PID Bit Rate	< 80Mb/s
SDI Video Resolution	1080i×30, 1080i×29.97, 1080i×25, 720p×60
	720p×59.94, 720p×50, 576i×25, 480i×29.97 (only 576i×25 or 480i×29.97 is when trans-coding mode is selected)
SDI Output	
Connector Type	BNC Female, 75Ω
Serial Interface	SMPTE 259M, 270 Mb/s (10bit)
Level	800mV p-p
Digital Audio Decoding	
Connector Type	SDI BNC Female, 75Ω
Number of Outputs	1×digital audio* are decoded, 1×digital audio loop through
Sampling Rate	32, 44.1 and 48KHz
Audio Bit Rate	32, 64, 96, 128, 160, 192, 224, 256, 288, 320, 352, 384, 416 and 448 kb/s for MPEG-1 Layer I
	32, 48, 56, 64, 80, 96, 112, 128, 160, 192, 224,256, 320 and 384 kb/s for MPEG-1 Layer II
Output Level	1Vpp
Output Format	XLR Balance Audio
Load Impedance	110Ω (with cable adaptors)
Audio Video Compression	
Video compression	
Analog Video format	PAL, NTSC, SECAM
Compression Standard	H.264, High Profile Level 4.0
Video Resolution	1080i (1920/1440×1080) @25Hz, 29.97Hz, 30Hz: SMPTE 274M 720p (1280×720) @50Hz, 59.94Hz, 60Hz: SMPTE 296M 480i (720×480) @29.97Hz: SMPTE 125M 576i (720×576) @25Hz: ITU-R BT.656-4
Aspect Ratio	4:3/16:9 selectable
Video Encoding Bit rate	2Mbps~20Mb/s
Audio Compression	
Compression Standard	MPEG-1 Layer I, II
Audio Sampling Rate	32K, 44.1K, 48K
Compression Bit Rate	32, 64,128, 192, 256, 384Kbps
ASI Output	
Connector Type	2×BNC Female, 75Ω
ASI OUT1	output for demodulated signal source
ASI OUT2	output for trans-coded service
Standard	DVB-ASI, EN50083-9
TS Processing	TS re-multiplexing among tuner, TS/IP and ASI inputs

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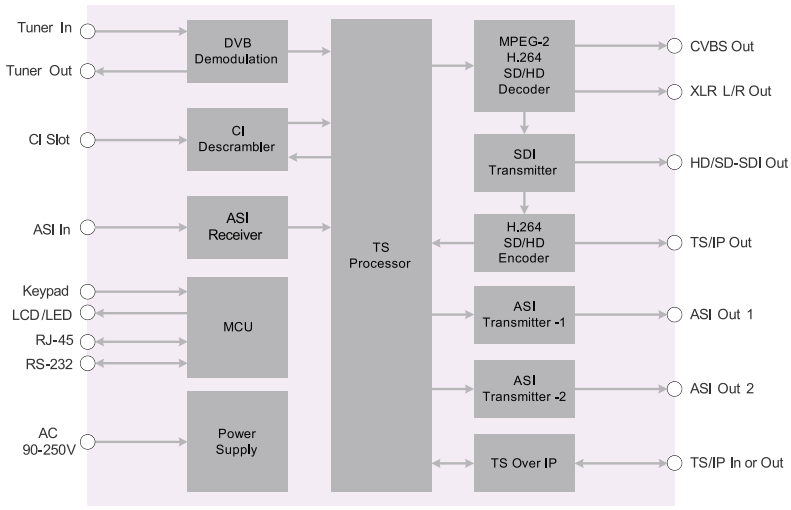
Analog Video Output	
CVBS Connector	1×BNC 75Ω
Video Standard	NTSC, PAL, and SECAM
Signal Level	1000mVp-p±30mV
Frequency Response	<0.5dB,≥-4dB at 5.5MHz
Chroma-Luma Delay	<±30 ns
Field Time Distortion	<2%
Line Time Distortion	<1%
Short Time distortion	<2%
Differential Gain	<4%
Differential Phase	<5
Signal to Noise Ratio	>55 dB (luminance weighted)
Analog Audio Output	
Connector type	DB-9 Connector
Output Impedance	600Ω (balanced)
Output mode	Left, Right, Dual Mono, Stereo
Number of Outputs	1 pairs of stereo audio outputs
Ancillary Data Processing	
Subtitle	DVB/EBU
VBI	Teletext, WSS, VFD, VPS
Closed Caption	EIA 608, EIA 708, EIA 608-to-708
Redundancy	
Redundancy Port	between Tuner, ASI inputs and TS/IP

Switching Condition	TS Sync Loss
Switching Mode	Main, Spare
Control & Monitoring	
Connector Type	1×RJ-45, 10/100M, for equipment IP Control
Remote Control	SNMP, HTTP Web, Proprietary HDMS Network System Management Software
Local Control	LCD display and 6-key keypad
Serial Port	1×RS-232 9-pin D-sub, for debug use only
Equipment Upgrade	FTP loader
Physical	
Dimension	44mm×420mm×430mm
Weight	4.5Kg Net, 6.2Kg Gross
Power Supply	AC 90V ~ 250V, 50/60Hz
Power Consumption	27W (exclusive of LNB power)
Operating temperature	0~45℃
Storage temperature	-10~60℃
Operating Humidity	10~90%, non-condensed
Certification	
EMC: EN 55024:1998+A1:2001+A2:2003, EN 55022:2006+A1:2007,	
EN 61000-3-2:2006, EN 61000-3-3:2008	
FCC: Part 15 Class	
LVD: EN 60950-1:2006 + A11:2009	

* For more information about digital audio, please contact our sales representative.

Block Diagram

DCH-5000PE Functional Block Diagram

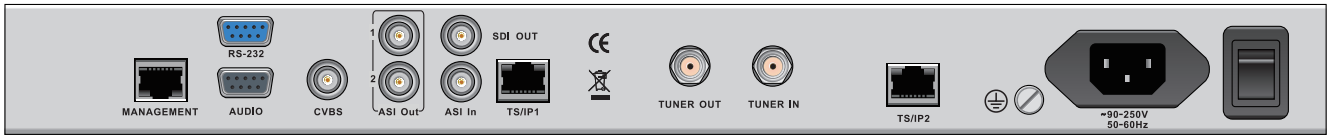


Order Information

Functionality \ Model	DCH-5000PE-XX				
	-S2	-C	-T	-T2	-DS3
Tuner Input	DVB-S2	DVB-C	DVB-T	DVB-T2	DS3/E3
ASI Input	x1	x1	x1	x1	x1
DVB Common Interface	x2	x2	x2	x2	x2
Built-in Remultiplexer	•	•	•	•	•
ASI Output (mirrored)	x2	x2	x2	x2	x2
SDI	x1	x1	x1	x1	x1
CVBS (BNC)	x1	x1	x1	x1	x1
Balanced Audio XLR (DB-9)	x1	x1	x1	x1	x1
100M TS/IP for decoding output	•	•	•	•	•
100M TS/IP for trasncoding output	•	•	•	•	•

• Standard configuration

Back panel Interface



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DIH-3000V

Multi-Channel SD/HD Encoder and Transcoder

The DIH-3000V low bitrate H.264 Encoder/Transcoder is specially designed for IPTV system, especially for those IPTV systems over unmanaged network architectures in which the bandwidth are normally limited. Supported by variety of Video Capture Card options, DIH-3000V supports up to 6 x CVBS, or 4 x HDMI, or 4 x SDI, or 2 x HDMI (HDCP-encrypted) or 1 x HD-SDI inputs. DIH-3000V can work as a 4-channel Multi-format to H.264 Transcoder also. It is able to take the stream from 4 different multicast or unicast and then transcode to H.264 and finally output multicast or unicast streaming over IP. Adopting the powerful chipset Intel Xeon and high quality compression algorithm, the inputted video can be compressed into relative low bit rate (<600kbps/channel) while the picture quality is guaranteed. DIH-3000V is also suitable for the multiscreen applications, where the inputted video can be compressed into various bit rates with different resolutions which are suitable for Smart phones, Tablets, PC and Flat screens simultaneously.

Main Feature

- MPEG-4 AVC real-time video encoding, High Profile compliant at Level 4 (HP@L4)
- MPEG-1 Layer II Audio, AAC, MP3 Encoding
- Up to 6 x CVBS, or 4 x HDMI, or 2 x HDMI (HDCP-encrypted), or 4 x SDI or 1 x HD-SDI inputs by adopting different video capture card
- Off line files transcoding, up to 4x HD or 6 x SD transcoding
- Real-time monitoring on the rate of utilization of CPU, running time, Output video/Audio bit rate
- Automatic encoding/transcoding after power recycles
- Keypad and LCD on front panel for status monitoring and IP address setting
- Remote management over Web GUI

Typical Application

Typical Application Diagram 1

Typical Application Diagram 2

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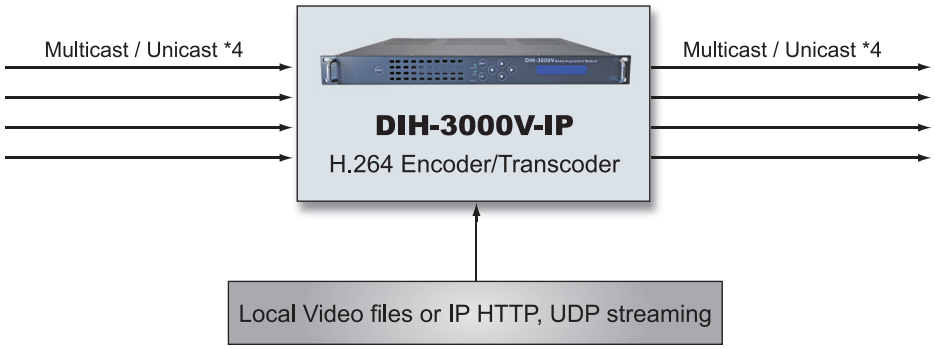
Typical Application Diagram 3

Typical Application Diagram 4



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Specification

Input				
Input Interface	AV Capture Source			
	DIH-300V-4HD/2HD	**DIH-300V-2HD**	**DIH-300V-IP**	**DIH-3000V-6AV**
	HDMI*4/2(HDCP)	HDMI*2(HDCP)	IP*5(1 port)	CVBS*6
Transcoding file source	Local Video files or IP HTTP, UDP streaming			
Video/Audio Format for Decoding				
Video Format	MPEG(1/2/4),H.264(baseline, main profile, high profile, support level number up to 5.1)			
Audio Format	MPEG(1/2/4),AAC+,AAC-LC			
Package Format	MPEG-TS			
Output				
IP Output				
Protocol	UDP Multicast and Unicast,HTTP			
Interface	RJ45			
Video/Audio Format for Encoding				
Video Format	MPEG-2/ H.264(baseline, main profile, high profile, support level number up to 5.1) GOP size (20,30,60,90,120)			
Audio Format	AAC+, AAC-LC			
Package Format	MPEG-TS			
Video resolution	User configuration, recommended value: 1920X1080p, 1280x720p, 720X576p, 720X480p			
Video frame rate	20fps, 25fps, 29.97fps,30fps			
Video bit rate	User configuration, recommended value: SD: High(800kbps), Medium(600kbps), Low(512kbps) HD: High(4000kbps), Medium(2000kbps), Low(1200kbps)			
Audio sampling rate	44.1k, 48k			
Audio bit rate	32kbps, 64kbps, 128kbps			
Management	HTTP Web GUI			
General				
Power Consumption	AC 110V~240V, 6A, 47~63Hz, Max.350W			
Operation temperature	5~45 ºC			
Storage temperature	-10~65 ºC			
Dimension	430mm*335mm*44mm			
Weight	3Kg			

Note: All specifications are subject to change without notice

Order Information

Model	DIH-3000V-IP	DIH-3000V-4HD	DIH-3000V-2HD	DIH-3000V-4SDI	DIH-3000V-6AV	DIH-3000V-SDI
Encoder/Transcoder	Transcoder	Encoder	Encoder	Encoder	Encoder	Encoder
Channel	4	4	2	4	6	1
Input Interface	IP	4xHDMI	2xHDMI (HDCP support)	4xSDI Input	6xCVBS Input	1xHD-SDI Input

DIH-5000V

Multi-Screen Encoder/Transcoder

DIH-5000V multi-screen encoder/transcoder is a broadcast level encoder that can support multiple end devices, like TV, PC, PAD, Phone, etc. It can support various input interface including CVBS, HDSDI, HDMI, and support various IP output protocol. When used as transcoder, it can convert MPEG-2, MPEG-4, and H.264 video format to MPEG-2/MPEG-4/H.264 and WMV encoding, the product can support up to16 channels SD or 4 channels HD transcoding. When used as encoder, it supports 4 channels SD or HD encoding for HDMI/SDI video/audio input, it can support 6 SD channels analog input and can output encoded data through Multi-screen . This product can be used widely in DVB /IPTV /Internet TV and Mobile TV field.

Specification

Input	IP/ASI/AV/SDI/HDSDI/HDMI
Output	IP/ASI MPEG-2 Encoding in real time, up to MP@HL
WMV support	WMV1/WMV2/WMV3 (Microsoft WMV9) Video or Audio can be turned off independently Support Multi-track Transcoding Support Subtitles Pass-through
Audio	fixed gain control or dynamic gain control supported
Video	black border on Top/Bottom/Left/Right sides supported Up to 16 SD or 4 HD channels
Rate control	Target VBR/Capped VBR/Near CBR and CBR
Dynamic Video Bitrate	IP output keeps continuous when modifying video bitrate
Resolution	from 80x64 to 1920x1080, can be customized
For SDI input	if input signal is lost, color bar will be outputted instead, and customized subtitle overlay is supported on the color bar Offline transcoding supported, cluster supported Real time file recording supported File transcoding & streaming supported
Backup support for single device	IP input and IP output
Analog Input	up to 6 channels SPTS and MPTS supported for both IP and ASI input 0~30 seconds delay, adjustable
IP Output Protocol	TS over UDP/RTP/HTTP/RTSP; FLV over HTTP/RTMP; HTTP Live Streaming; 3GP over RTP; MMS; File over Samba/NFS
Video Input Format	MPEG1/MPEG2/MPEG4/H.264/WMV/DIVX/M-JPEG/RMVB Audio Input Format: WAV/MPGA/AAC/WMA/MP3/AMR/AC3
IP Input Protocol	UDP/RTP/RTSP/MMS/HTTP; File over Samba/NFS
Multi Channels	HD: 2~4; SD: 2~16
Device control	Web or SNMP
Completely Support	from one input stream to multi-profile, multi-format, multi-protocol, and multi-interface output streams
ASI output	both internal services and external services (from IP to ASI directly) are supported Support FLV video live Support 3GP Support IPhone and IPad Series video live Support 3 dynamic Logo overlay and 2 subtitle overlay
System Backup Support	1+1 or N+M
Various Applications	DVB/IPTV/WebTV/Mobile TV/Offline Transcoding/… SNMP Protocol software supports real time status monitor, alarm message, log storage
Video Horizontal Resolution	1920/1440/1280/1024/800/720/704/640/544/480/416/352/320/240/220/192/176/144/160/128/96/8
Video Vertical Resolution	1080/768/720/600/576/480/288/240/192/180/176/144/140/128/120/96/90/80/64
Video Encoding Format	H.264/AVC Main Profile Level1-3 H.264/AVC High Profile Level4 MPEG-2 Main Profile, Main Level; MPEG-2 Main Profile, High Level

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WMV	WMV1/WMV2/WMV3 (Microsoft WMV9)
Audio Encoding Format	MPEG1 Layer II / AAC / AC3 / WMA / MP3 / AMR
Video Input interface	HDSDI / CVBS / HDMI
Audio Input interface	2 Analog balanced channels SDI embedded audio, Up to 3 stereo channels
Input interface	4xSDI; 4xASI; 4XHDSDI 4XHDMI (1U, not support HDCP), 1X HDMI (1U, not support HDCP), 3X HDMI (2U, support HDCP); 6xAV; IP

Output Interface	Two DVB-ASI output Two 100/1000M TS Over IP output
Physical and Power	
Size	1RU, 482X680X44(mm)
Weight	9Kg
Power	100-240 VAC Auto-ranging
Power Consumption	Max 300W
Operating Temp	ºC-+50ºC
Humidity	5-95%

Order Information

Config List \ Model		DIH-5000V-IP	DIH-5000V-AV	DIH-5000V-SDI	DIH-5000V-HDSDI	DIH-5000V-ASI	DIH-5000V-HDMI
Video Format	HD	√	X	X	√	√	√
	SD	√	√	√	√	√	√
Input Interface	IP	√	√	√	√	√	√
	AV	X	√	X	X	X	X
	HD-SDI	X	X	X	√	X	X
	ASI	X	X	X	X	√	X
	HDMI	X	X	X	X	X	√
Output Interface	IP	√	√	√	√	√	√
	ASI	X	X	√	X	√	X
Video Encoding Format	MPEG-2	Main Profile, Main Level					
	H.264	Profile: Baseline/Main/High Level: 1.0 ~ 4.0 Bitrate: 8k ~ 20M					
Audio Encoding Format	MPEG1-Layer2	√					
	AAC	√					
	AC3	√					

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DCH-3000TM

Single Channel QAM Transmodulator

The DCH-3000TM is a flexible Digital TV modulator and trans-modulator in the market. Equipped with either of the tuner input DVB-S/S2, DVB-C, DVB-T/T2 or base band transport stream input ASI, SPI or DS3, it can trans-modulate the signal from satellite, cable or terrestrial network to Digital cable network. It can also be used as a stand-alone DVB-C QAM or DVB-T COFDM modulator with its ASI, SPI or DS3 input. Moreover the tuner input can be re-multiplexed with ASI.SPI or DS3 transport stream input with powerful PSI/SI regeneration function. It is a cost effective and highly integrated solution with DVB-S/C/T demodulation, transport stream re-multiplexing, DVB-C QAM or DVB-T COFDM modulation in a single rack. The equipment can be easily configured and supervised by the operator and broadcaster, provide better service to his cable TV network.

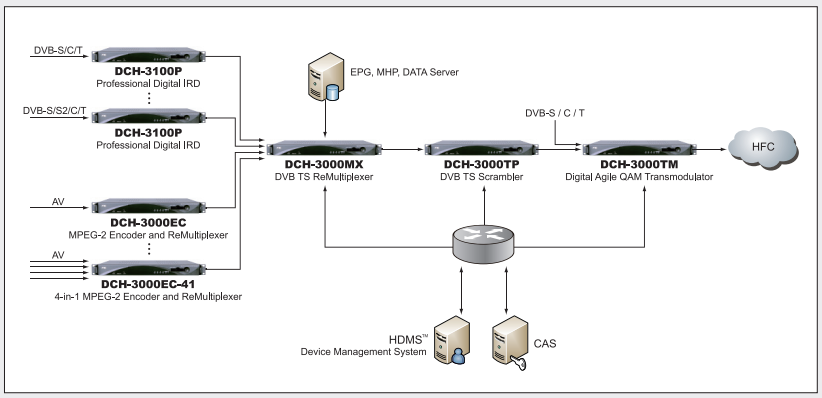
Main Feature

- DVB-S/S2, DVB-C or DVB-T/T2 Tuner Input
- Tuner RSSI, received Eb/No & BER monitoring
- DVB-C QAM or DVB-T COFDM RF modulation output
- Support Digital cable TV ITU-T J.83 Annex A and B standard
- Support DVB-T ETSI-300 744 standard
- ASI input and output
- Maximum RF output level 120dBμV (for –PlusXX series)
- Agile RF output from 48 to 862MHz
- Flexible re-multiplexing between ASI and Tuner input
- PSI/SI re-generation, including NIT, LCN edition and insertion
- Service Drop, PID filtering and Re-mapping
- Remote Control and Supervision by SNMP, WEB and Proprietary HDMS software
- On Site software update through IP

DVB-S2/S, DVB-C or DVB-T/T2 Tuner Input

48 ~ 862MHz agile RF output

ASI input and output



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Specification

Tuner Input	
DVB-S/S2 Tuner Input	
Connector Type	1×F type female 75Ω for Input, 1×F type female 75Ω for loop through output
Input Frequency Range	950~2150MHz
Input Level	-25~-65dBm
Symbol Rate	2~45MBaud
Roll-off Factor	DVB-S QPSK: 0.35
	DVB-S2 8PSK: 0.35, 0.25, 0.2
FEC Code Rate	DVB-S QPSK: 1/2, 2/3, 3/4, 5/6, 7/8
	DVB-S2 QPSK: 1/2, 3/5, 2/3, 3/4, 4/5, 5/6, 8/9,9/10
	DVB-S2 8PSK: 3/5, 2/3, 3/4, 5/6, 8/9, 9/10
LNB Polarity Selection Voltage	0, 13V, 18V selectable
LNB Band Selection Tone	0/22KHz selectable
Satellite Selection Command	DiSEqC 1.0
DVB-C Tuner Input	
Connector Type	1×F type female 75Ω for Input, 1×F type female 75Ω for loop through output
Input Frequency	48~860MHz
Input Level	45~75dBμV
Symbol Rate	1~7MBaud (ITU J.83 Annex A)
Constellation	16/32/64/128/256QAM
Bandwidth	6MHz/7MHz/8MHz
Input Return Loss	7dB (typ.)
DVB-T Tuner Input	
Connector Type	1×F type female 75Ω for Input, 1×F type female 75Ω for loop through output
Input Frequency	VHF: 174 ~ 230MHz; UHF: 470 ~ 862MHz
Input Level	-20~-91dBm
FFT Mode	2K/8K
Constellation	QPSK/16QAM/64QAM
Guard Interval	1/32, 1/16, 1/8, 1/4
FEC	1/2, 2/3, 3/4, 5/6, 6/7, 7/8
ASI Input	
Connector Type	1×BNC, 75Ω
Standard	DVB-ASI, EN50083-9
TS Processing	Remultiplexing of ASI Inputs
Input Level	800mVpp±10%
DS3 I/O (Option)	
Connector Type	2×BNC Female, 75Ω, including loop through
Standard	Compliant with ITU-T G.703
Frame Structure	Compliant with ITU-T G.752 and ITU-T G.804
Bit Rate	44.736Mb/s
ASI Output	
Connector Type	2×BNC Female, 75Ω
Standard	DVB-ASI, EN50083-9
TS Processing	2 mirrored TS, output sourcing from remultiplexing among Tuner / DS3 and ASI / SPI inputs
Signal level	800mVpp±10%
TS Processing	
TS Input Management	Remux and demux among Tuner / DS3 (optional) and ASI / SPI inputs
TS Output Management	Remux and demux for 2 mirrored ASI outputs
Service and PID management	Remux, filtering and remapping
PSI/SI	PSI/SI table regeneration, NIT and SDT edition, LCN Edition and Re-generation
DVB-C QAM Trans-modulation	
Constellation	J.83 Annex A: 16/32/64/128/256QAM J.83 Annex B: 64/256QAM
Symbol Rate	2~7.2MSymbol/s
I/Q Amplitude Error	<0.3%
I/Q Phase Error	<0.3°
Phase Jitter	<0.5°RMS
MER	>35dB
DVB-T COFDM Re-Modulation	
Constellation	QPSK/16QAM/64QAM
Bandwidth	5/6/7/8MHz
FFT Mode	2K
Guard Interval	1/4, 1/8, 1/16, 1/32
Code Rate	1/2, 2/3, 3/4, 5/6, 7/8
MER	>36dB
IF Output	
Connector Type	F type female, 75Ω
Output Frequency	36MHz
Output Level	90 dBμV
MER	>38dB
Frequency Offset	±200HZ
RF Output	
Connector Type	F type female, 75Ω
Output Frequency Range	48~860MHz agile, step by 10 KHz
Output Level	90~120dBμV, step by 1dBμV (for -PlusXX series
	100~113dBμV, step by 1dBμV (for -30XX/-20A series)
Spurious Rejection	55dB (typ.)
Output Return Loss	12dB (typ.)
Control & Monitoring	
Connector Type	1×RJ-45, 10/100 Base-T, for equipment IP Control
Remote Control	SNMP, Proprietary HDMS Network System Management Software
Local Control	LCD display and 6-key keypad
Serial Port	1×RS-232 9-pin D-sub, for debug use only
Equipment Upgrade	FTP loader
Physical	
Dimension	44mm×483mm×404mm
Weight	5.5Kg
Power Supply	AC 90V ~ 250V, 50/60Hz
Power Consumption	30W
Operating temperature	0~45□
Storage temperature	-10~60□
Operating Humidity	10~90%, non-condensed
Certification	
EMC: EN50083-2	
FCC: Part 15 Class B	
LVD: EN 60065	

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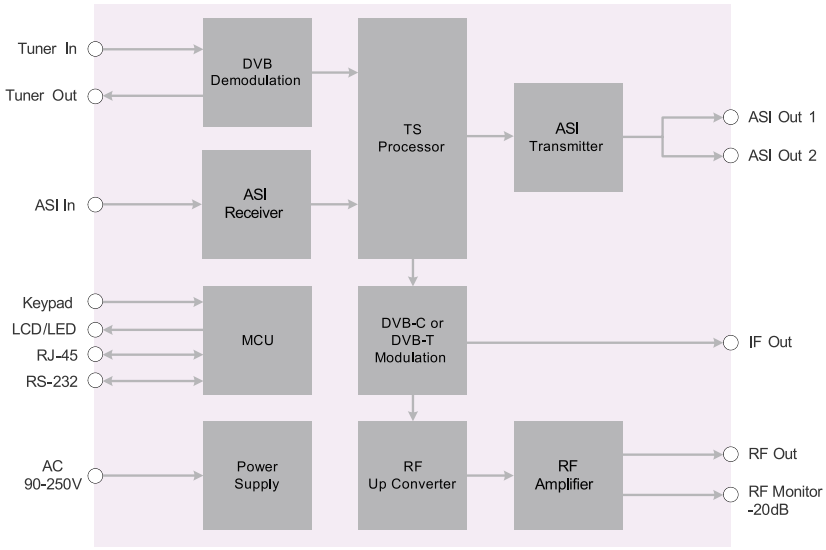
Block Diagram

DCH-3000TM Functional Block Diagram

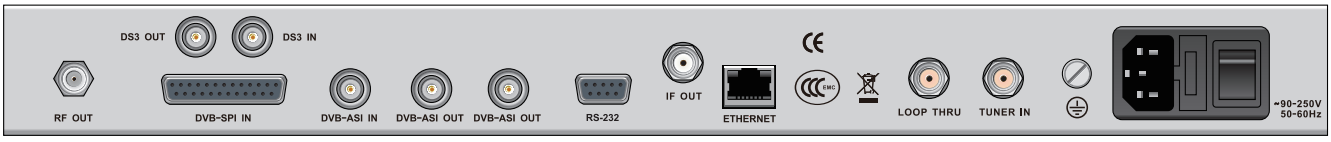


Order Information

Model / Interface	DCH-3000TM-20X					DCH-3000TM-PlusX				
	-20S2	-20C	-20T	-20A	-20D	PlusS2	PlusC	PlusT	PlusA	PlusD
Tuner	DVB-S2	DVB-C	DVB-T			DVB-S2	DVB-C	DVB-T		
ASI Input				•		•	•	•	×2	•
DS3 Input					•					•
ASI TS Output	•	•	•	•	•	•	•	•	•	•
Filter	•	•	•	•	•	•	•	•	•	•
Buit-in Re-Mux						•	•	•	•	•
RF Output	•	•	•	•	•	•	•	•	•	•
Ethemet	•	•	•	•	•	•	•	•	•	•

• standard configuration

Back panel Interface



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DCH-4100PM

Professional IRD and QAM/COFDM Transmodulator

The DCH-4100PM is built with an integrated professional IRD and digital TV modulator. It can provide to broadcaster and operator with multiple functions of digital TV signal reception, re-multiplexing, descrambling, decoding and re-modulation. It supports a wide range of tuner input DVB-S/S2, DVB-T/T2, DVB-C and is used in digital satellite, cable and terrestrial TV networks. The re-multiplexing function enables creation of new SPTS or MPTS from tuner and ASI inputs. This new transport stream may be output to QAM or COFDM modulator, IP and ASI ports. By using the dual DVB common interfaces, DCH-4100PM can decrypt multiple pay TV services in each of the 2 slots. For security application, this equipment can configured as a TS switch among tuner, ASI and TS/IP. The equipment can be controlled and supervised by SNMP, HTTP WEB and proprietary HDMS software.

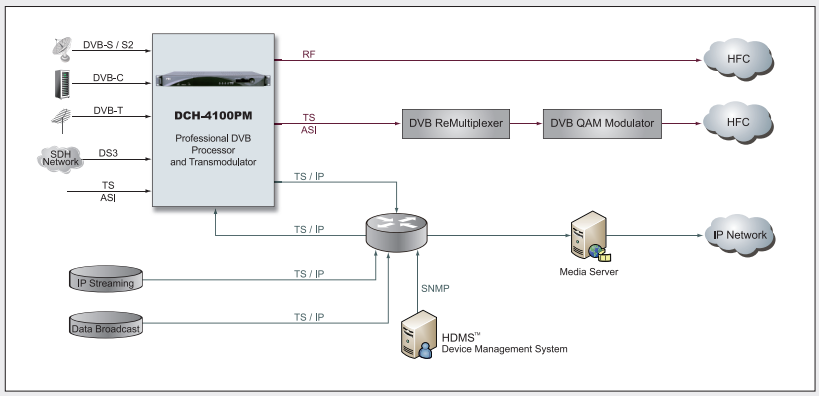
Main Feature

- Multiple inputs DVB-S2/S/C/T, TS/IP, ASI and DS3/E3 (optional)
- DVB-C QAM or DVB-T COFDM RF modulation output
- Redundant TS inputs among Tuner, ASI and TS/IP
- 100M UDP/RTP, Unicast/Multicast, and SPTS/MPTS over IP (half duplex)
- ASI input and output
- Service Drop or PID filtering and Re-mapping
- Flexible re-multiplexing among ASI, Tuner and TS/IP inputs
- PSI/SI adapting and re-generation, including NIT, LCN insertion etc.
- 2×DVB-CI Slots, Multiple TV program decryption
- Remote Control and Supervision by SNMP,
- HTTP WEB and Proprietary HDMS software
- On Site software update through IP
- RSSI, received Eb/No & BER monitoring

Multiple inputs DVB-S2/S/C/T, TS/IP, ASI or DS3/E3

2x DVB-CI Slots, Multi Programs decryption

QAM or COFDM RF output



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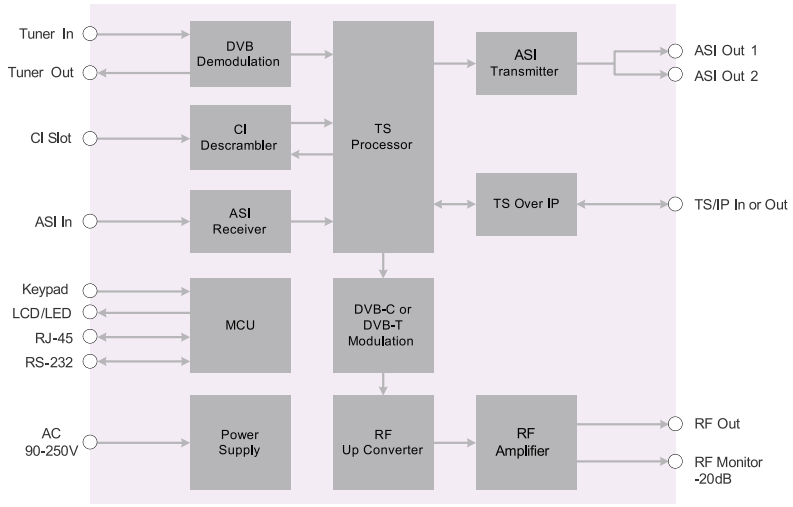
Specification

Tuner Input	
DVB-S/S2 Tuner Input	
Connector Type	1×F type female 75Ω for Input, 1×F type female 75Ω for loop through output
Input Frequency Range	950~2150MHz
Input Level	-25~-65dBm
Symbol Rate	2~45MBaud
Roll-off Factor	DVB-S QPSK: 0.35 DVB-S2 8PSK: 0.35,0.25, 0.2
FEC Code Rate	DVB-S QPSK: 1/2, 2/3, 3/4, 5/6, 7/8
	DVB-S2 QPSK: 1/2, 3/5, 2/3, 3/4, 4/5, 5/6, 8/9, 9/10
	DVB-S2 8PSK: 3/5, 2/3, 3/4, 5/6, 8/9, 9/10
LNB Polarity Selection Voltage	0, 13V, 18V selectable
LNB Band Switching Tone	0/22KHz selectable
Satellite Selection Command	DiSEqC 1.0
DVB-C Tuner Input	
Connector Type	1×F type female 75Ω for Input, 1×F type female 75Ω for loop through output
Input Frequency Range	48~862MHz
Input Level	45~75dBμV
Symbol Rate	1~7MBaud (ITU J.83 Annex A)
Constellation	16/32/64/128/256QAM
Bandwidth	6MHz/7MHz/8MHz
Input Return Loss	7dB (typ.)
DVB-T Tuner Input(DVB-T2 in option)	
Connector Type	1×F type female 75Ω for Input, 1×F type female 75Ω for loop through output
Input Frequency Range	174~230MHz (VHF); 470 ~ 860MHz (UHF)
Input Level	-20~-70dBm
Constellation	QPSK, 16-QAM, 64-QAM
Carrier Bandwidth	6/7/8 MHz
FTT Mode	2K/8K
Guard Interval	1/4, 1/8, 1/16, 1/32
FEC Code Rate	1/2, 2/3, 3/4, 5/6, 7/8
ASI Input	
Connector Type	1 x BNC Female, 75Ω
Standard	DVB-ASI, EN50083-9
Input Bit Rate	≤ 100Mb/s
Package Length	188 or 204 Bytes
DS3 Input (Option)	
Connector Type	2×BNC female, 75Ω, including loop through
Standard	Compliant with ITU-T G.703
Frame Structure	Compliant with ITU-T G.752 and ITU-T G.804
Bit Rate	44.736Mb/s
TS over IP	
Connector Type	1×RJ-45, 10/100M or 100/1000M for TS/IP
Effective Bit Rate	70Mb/s for 10/100M/1000M
Protocol	UDP / RTP, Multicast / Unicast, IGMPv2, ARP
TS Processing	
TS Input Management	Remux and demux among Tuner / DS3 (optional) / E3 (optional), ASI and TS/IP Inputs
TS Output Management	Remux and demux for mirrored ASI outputs
Service and PID management	Remux, filtering and remapping
PSI/SI	PSI/SI table regeneration, NIT and SDT edition, LCN Edition and Re-generation
Descrambler	DVB Common Scrambling Algorithm (CSA)
BISS Mode	BISS-1, BISS-E
Common Interface	Double PCMCIA slots, compatible with major CA CAMs in the market
ASI Output	
Connector Type	2×BNC Female, 75Ω
Standard	DVB-ASI, EN50083-9
TS Processing	mirrored TS Re-multiplexing from Tuner, ASI and TS/IP inputs
DVB-C Re-Modulation	
Constellation	J.83 Annex A: 16/32/64/128/256QAM; J.83 Annex B: 64/256QAM
Symbol Rate	3~7.2MS/s
I/Q Amplitude Error	< 0.3%
I/Q Phase Error	< 0.3°
Phase jitter	< 0.5°RMS
MER	> 35dB
DVB-T Re-Modulation	
Constellation	QPSK/16QAM/64QAM
Bandwidth	5/6/7/8MHz
FFT Mode	2K
Guard Interval	1/4, 1/8, 1/16, 1/32
Code Rate	1/2, 2/3, 3/4, 5/6, 7/8
MER	>36dB
RF Output	
Connector Type	1×F type female, 75Ω (primary output) 1×F type female 75Ω (-20dB for monitoring)
Output Frequency Range	48~860MHz agile, step by 10 KHz
Output Level	95~120dBμV, step by 1dBμV
Spurious Rejection	55dB (typ.)
Output Return Loss	12dB (typ.)
Control & Monitoring	
Connector Type	1×RJ-45, 10/100M, for equipment IP Control
Remote Control	SNMP, HTTP (Web Interface), Proprietary HDMS (Headend Device Management System)
Local Control	LCD display and 6-key keypad
Serial Port	1×RS-232 D-sub female, for debug use
Software Upgrade	FTP loader and Telnet
Physical	
Dimension	483×399.7×44mm
Weight	6Kg
Power Supply	AC 90V ~ 250V 50Hz/60Hz
Power Consumption	30W
Operating Temperature	0~45℃
Storage Temperature	-10~60℃
Operating Humidity	10~90%, non-condensed
Certification	
EMC: EN 55024:1998+A1:2001+A2:2003, EN 55022:2006+A1:2007, EN 61000-3-2:2006, EN 61000-3-3:2008	
FCC: Part 15 Class B	
LVD: EN 60950-1:2006 + A11:2009	

Block Diagram

DCH-4100PM Functional Block Diagram

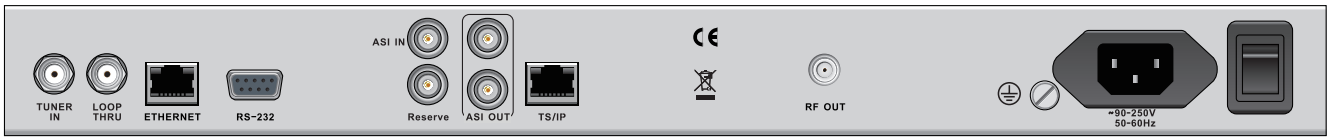


Order Information

Model / Functionality	DCH-4100PM-XX							
	-S2C	-CC	-TC	-DC	-S2T	-CT	-TT	-DT
Tuner Type	DVB-S2	DVB-C	DVB-T	DS3/E3	DVB-S2	DVB-C	DVB-T	DS3/E3
ASI Input	•	•	•	•	•	•	•	•
Built-in Re-mux	•	•	•	•	•	•	•	•
ASI Output (mirrored)	•	•	•	•	•	•	•	•
100M TS/IP Extension Board	•	•	•	•	•	•	•	•
QAM Modulation	•	•	•	•				
COFDM Modulation					•	•	•	•

• Standard configuration

Back panel Interface



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DCH-5100TM

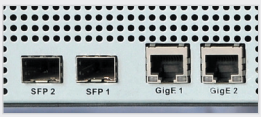
32-Way IP to QAM Modulator

The DCH-5100TM is a professional all-in-one high density IP to DVB-C QAM modulator. It receives up to 64 or 160 digital TV transport streams from both Gigabit Ethernet and ASI ports. It supports 16 QAMs or 32 QAMs by software option. For 16 QAMs, a powerful TS re-Multiplexer matrix re-builds up to 16 new TS streams for further QAM modulation. These 16 QAM carriers are directly independently up-converted with high speed DAC to achieve excellent RF performance covered the whole 1GHz band. For 32 QAMs, without re-Multiplexer built-in, each QAM carrier can randomly select one of 64 TS/IP input or ASI input. It is housed in a 1-RU chassis with two AC power supplies in redundancy.

Main Feature

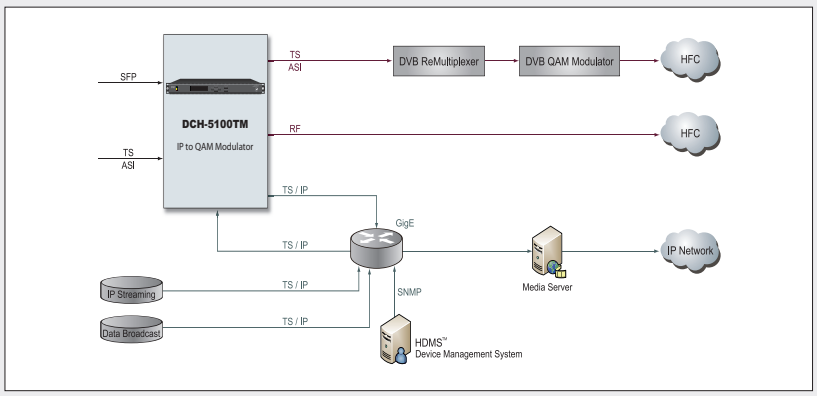
- Compliant with ITU J.83 Annex A & C and DVB-C EN300429
- Integrated GbE IP de-encapsulation
- 4 Gigabit TS/IP ports, (RJ-45 & SFP) x 2, 2+2 redundancy
- ≤200ms De-jitter for TS/IP input
- Up to 64 or 160 SPTS or MPTS Inputs over GbE
- 16 or 32 independent QAM modulators
- RF output backup port for 1+1 redundancy
- Redundant Power Supply
- Network Management through SNMP, HTTP, CLI (Command Line Interface)

Support Two switched GigE ports inputs



32 QAM output channels on single RF output

Redundant power supplies



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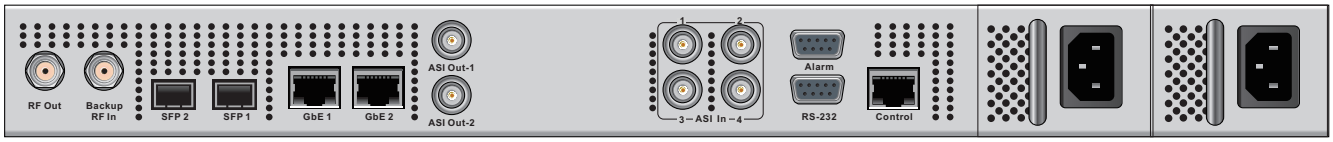
Specification

IP Input	
Connector Type	(1000Base-T + SFP) x 2, IEEE803.2, 2+2 redundant
Protocol	IPv4, IGMPv2, IGMPv3,ARP, UDP, RTP
Operating Mode	Full duplex, Auto negotiable
Streaming Type	Multicast or Unicast
Number of Streaming Input	64 or 160 (software option)
Type of TS Streaming	SPTS or MPTS
TTL	1~255 (adjustable)
De-jitter	200ms
Effective Input Bit Rate	≤950Mb/s
ASI Input	
Connector Type	4×BNC female, 75Ω
Standard	DVB-ASI, EN50083-9
Input Return Loss	15dB
Minimum Input Level	200mV
Input Data Mode	Burst or Byte, 188 or 204 Byte/Packet
Input Data Rate	≤216Mb/s
QAM Modulation	
Standard	DVB-C EN300 429, J.83 Annex A & C
Symbol Rate	3.6MBaud~7MBaud
Roll-off Factor	12%,13%, 15%, 18%
MER	>36dB (with Tester Equalizer = off)
Number of QAM Carrier	16 or 32 (software option)
RF Output	
Connector Type	1×F type Female, 75Ω
Channel Bandwidth	6MHz, 8MHz
Output Frequency Range	49~1000 MHz
Output Frequency Adjustment Step	1KHz
Output Frequency Accuracy	±25ppm
Output Level	105dBuV per channel
Output Level Attenuation	30dB(step by 1dB)
Output Return Loss	15dB min.
Shoulder Attenuation	50dBc (typical.) @ BW±10%
Spurious Rejection	60dBc (typical.)
Spectrum Flatness	4dB (over full output frequency range)

Useful Output Bit Rate	800Mb/s
Control & Monitoring	
Connector Type	1×RJ-45, 10/100 Base-T((for remote control))
Remote Control	HDMS, HTTP 1.1
Protocol	SNMP v1 & v2, HTTP 1.1
Local Control	LCD and 6-key on front panel
Serial Port	1×RS-232 D-sub 9-pin (for debug use only)
RF Monitor Port	1×F type female, 75Ω, -20dB lower than the main RF output
Alarm and Contact Relay	
Contact type	1×D-sub 9-pin
Alarm & Warning Indicator	Dual colors LED on Front panel, Contact Relay on Rear panel
Trap	SNMP v1 & v2
Event Log	last 1000 events logged in non-volatile memory
Sensors & Indicators	
Temperature Sensor	Yes
Fan Status Sensor	Yes
Alarm Buzzer	Yes
Bit rate Capacity Indication	Yes (for each QAM)
Power Supply	
Power Supply	AC 90V ~ 250V, 50/60Hz
Power Consumption	50Watts Max.
Physicals	
Dimension	445mmx543mmx44mm
Weight	8Kg Net, 12Kg Gross
Operating Temperature	0~45℃
Storage Temperature	-10~60℃
Operating Humidity	10~90%, non-condensing
Certification	
EMC: EN 55024:1998+A1:2001+A2:2003, EN 55022:2006+A1:2007, EN 61000-3-2:2006, EN 61000-3-3:2008	
FCC: Part 15 Class B	
Environment: RoHS, WEEE	

Back Panel Interface



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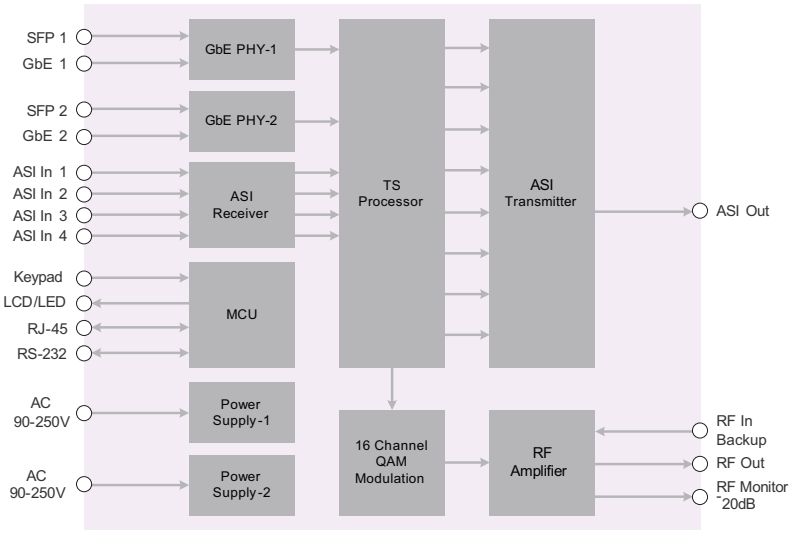
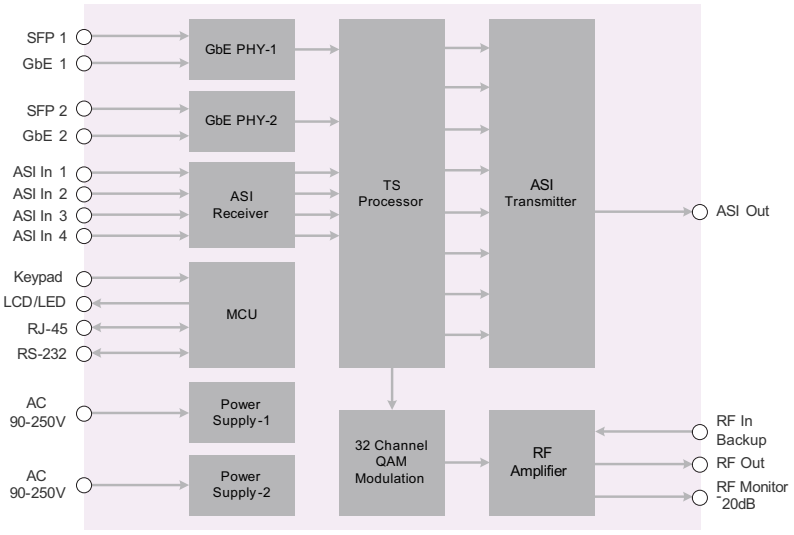
Block Diagram

DCH-5100TM Functional Block Diagram



DCH-5100TM Functional Block Diagram



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DCH-2000AD

SDI/DVB-ASI Active Signal Splitter

DCH-2000AD is a high-density active DVB-ASI/SD-SDI signal splitter, which can duplicate one SDI (SMPTE 259M) or DVB-ASI (EN50083) signal to 4 or 8 signals. In each 1RU unit, either 4 groups of 1 to 4 splitter or 2 groups of 1 to 8 splitter can be implemented. It provides clock regeneration and equalization of the input signals and it allows more than 100 meter signal distribution. DCH-2000AD is a reliable ASI/SDI signal splitting device that could be widely used in broadcast system redundancy.

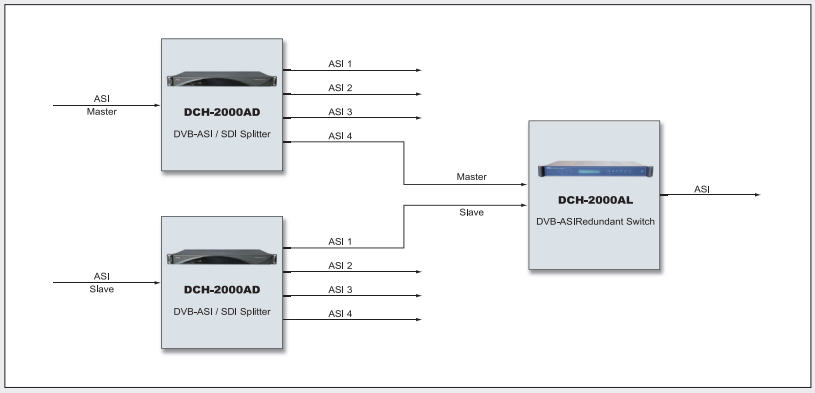
Main Feature

- Compatible with DVB-ASI EN50083 and SDI SMPTE 259M standards
- DVB-ASI and SD-SDI source automatic detection
- DC 12V backup power supply
- LED indication of input lock and bit rate on front panel
- Provides automatic input cable re-clocking and equalization to 100 meters (Beldon 8281)

duplicates single SDI or DVB-ASI signal to 4 or 8 outputs

Dual Color LED indication of input lock and rate on front panel

DC 12V backup power supply



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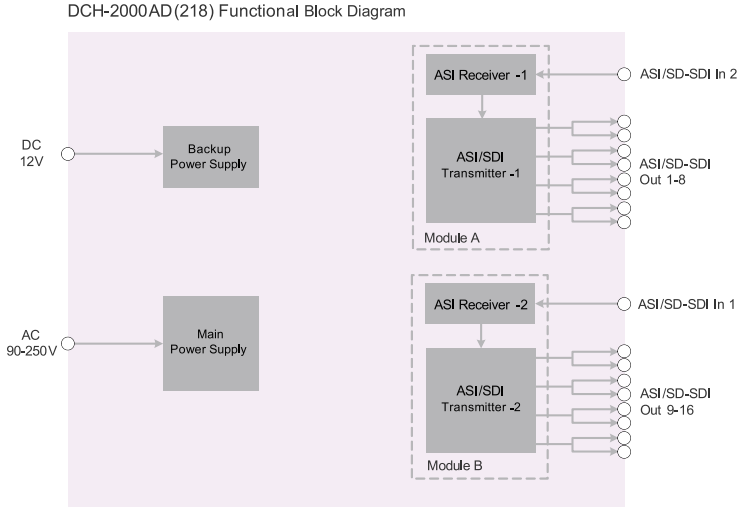
Specification

Input	
Connector Type	BNC Female, 75Ω
Input Port Number	4 or 2
Input Return Loss	≥15dB (5~270MHz)
ASI/SDI Input Amplitude	200~1000mV
Output	
Connector Type	BNC Female, 75Ω
Output Number	4* or 8*
ASI/SDI Output Amplitude	800mVpp±10%
Control & Monitoring	
Local Monitoring	4×LED indication of input lock for DCH-1000AD-414
	2 x LED indication of input lock for DCH-1000AD-218
Physical	
Dimension	44mm×483mm×255mm
Weight	2.4Kg Net, 3.5Kg Gross
Power Supply	AC 90V~250V, 50/60Hz
Power Consumption	5W
Operating Temperature	0~45℃
Storage Temperature	-10~60℃
Operating Humidity	10~90%, non-condensed

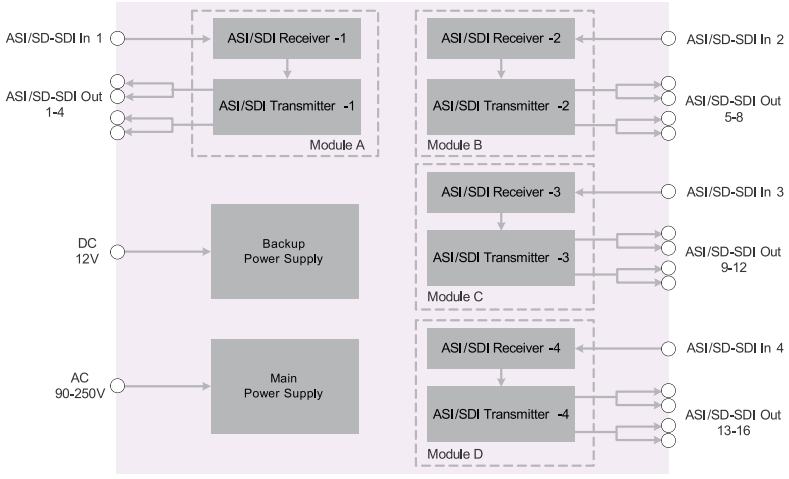
* the input signal cannot be looped through when power is off.

Block Diagram

DCH-2000AD(218) Functional Block Diagram



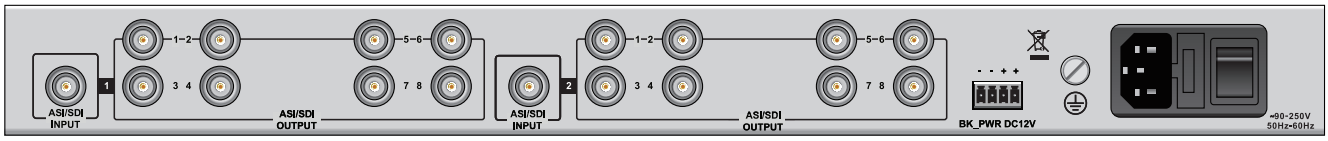
DCH-2000AD(414) Functional Block Diagram

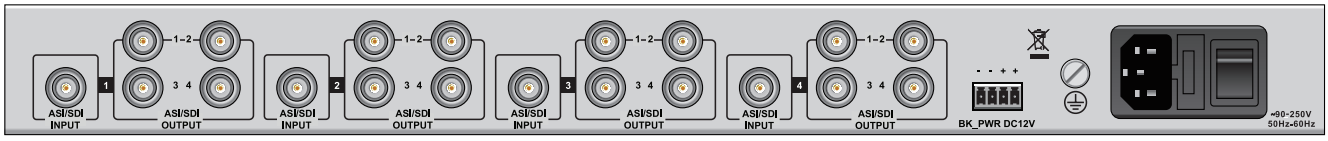


Order Information

Functionality \ Model	DCH-2000AD-218	DCH-2000AD-414
Input interface	2	4
Output interface	2×8	4×4

Back panel Interface





DCH-2000AV

Audio/Video 1+1 Redundancy Switch

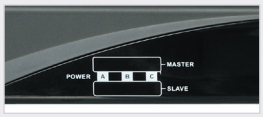
DCH-2000AV is an 1+1 analog base band audio/video redundancy switch. Three groups of independent 1+1 switch are implemented in a single 1RU chassis. Each switch has 1 primary audio/video input port, 1 backup audio/video input port and 2 audio/video output ports in mirror. The primary port is automatically switched to the back-up port in case of primary port failure by using built-in analog video signal quality monitor. The change-over condition is the detection of consecutive synchronization of analog TV signal. DCH-2000AV uses RF Relay switch to ensure reliable transition from primary to secondary input port in the case. With its high performance and stability, DCH-2000AV is an ideal product for broadcast system redundancy.

Main Feature

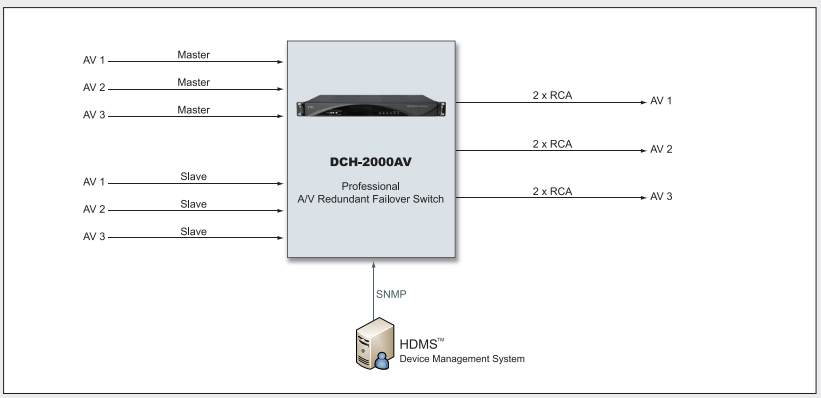
- 3 groups of 1+1 redundancy switch in compact 19”1RU chassis
- Support NTSC, PAL and SECAM standards
- Automatic or manual switching mode selection
- User-configurable automatic switch back to primary
- Remote Control and Supervision by HTTP WEB

3-in-1 redundant switch within a compact 19” 1RU chassis

LED alarm on front panel



Remote Control and Supervision by HTTP WEB



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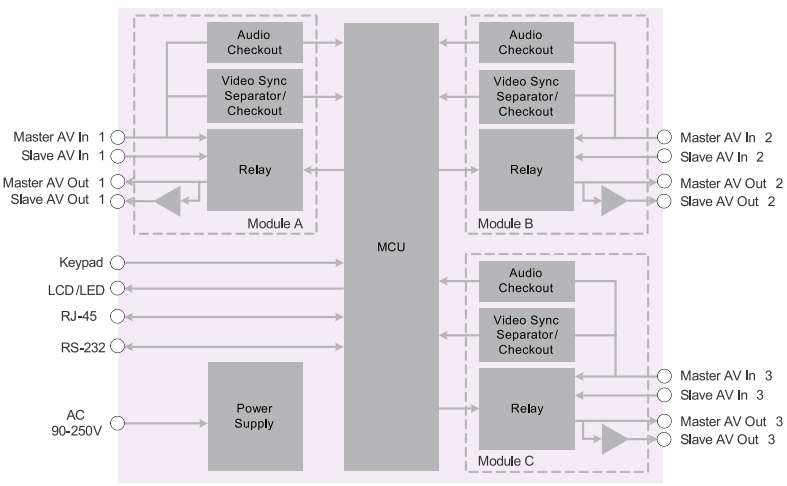
Specification

Analog Video	
Number of input	1 Primary input and 1 Backup input for each of the 3 Groups of 1+1 Switch
Number of output	2 Outputs in mirror for each of the 3 Groups of 1+1 Switch
Connector type	RCA female, 75Ω
Video Standard	NTSC or PAL, or SECAM
White level amplitude	±3mVpp
Horizontally sync. amplitude	±2mVpp
K-factor	0.1%
Differential gain	0.1%
Differential phase	0.05°
Chroma-Luma Gain	1.5%
Chroma-Luma Delay	±13ns
Nonlinear Luminance	0.2%
Horizontal Sync Edge Jitter	±1.5p-p
Frequency Response	0.5MHz ~ 4.8MHz, ±0.4 dB; 5.5MHz, +1/-2 dB
Analog Audio	
Number of input	1 pair primary inputs and 1 pair backup input for each of the 3 Groups of 1+1 Switch
Number of output	2 Outputs in mirror for each of the 3 Groups of 1+1 Switch
Connector type	RCA female, Stereo L/ R
Output Impedance	600Ω (balanced)
Total Harmonic Distortion	60Hz -10kHz, 0.02%
Frequency Response	Left: 40Hz -15Hz, ±0.5dB
	Right: 40Hz -15kHz, ±0.5dB
Amplitude	1kHz, 0dB, ±0.5dB
Audio/Video Switching	
Switching Mode	Auto/Manual
Switching Condition	Video signal loss, Video loss of Sync by 3 times in 1 sec, or Audio mute period longer than user's setting
Switching Time	< 300 ms
Power Failure Switching	Mechanical by pass through relay when power failure
Control & Monitoring	
Connector Type	1×RJ-45, 10/100 Base-T, for equipment IP Control
Remote Control	HTTP Web
Local Control	LCD display and 6-key keypad
Serial Port	1×RS-232 9-pin D-sub, for debug use only
Equipment Upgrade	Built-in FTP server + Telnet
Physical	
Dimension	483mm×220mm×44mm
Weight	3Kg Net, 4Kg Gross
Power Supply	AC 90V ~ 250V, 50/60Hz
Power Consumption	12W
Operating temperature	0~45℃
Storage temperature	-10~60℃
Operating Humidity	10~90%, non-condensed

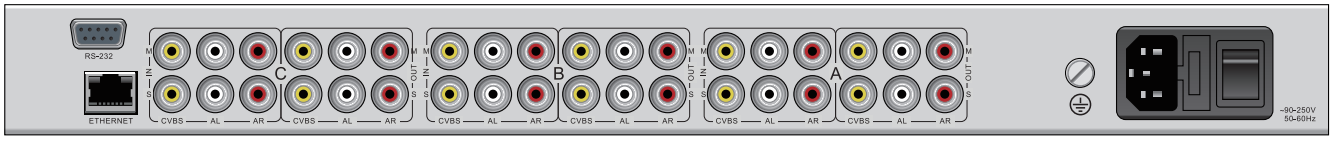
* Note: Video parameters are measured using standard test signal (PAL D, 1Vpp, S/N=60dB).
Audio parameters are measured using standard test signal (Mono, 0dBu, S/N=85dB).

Block Diagram

DCH-2000AV Functional Block Diagram



Back panel Interface



DCH-3000AL

DVB-ASI 1+1 Redundant Switch

DCH-3000AL is a digital TV redundant switch based on DVB-ASI standard. It has 6-way 1+1 ASI switches in 1RU chassis. the ASI signal will be automatically routed to backup port if technical failure of the primary port happens. The switching condition is supervised by a built-in comprehensive TS monitor which can continuously analyze the quality of each ASI input stream. Furthermore, it can detect up to 8 PIDs as the switching conditions for each way. By using the RF delay, it can ensure rapid transition from primary port to buck-up port with high performance and stability. It also can be controlled and supervised by SNMP and HTTP Web. DCH-3000AL is an ideal product for broadcast system redundancy.

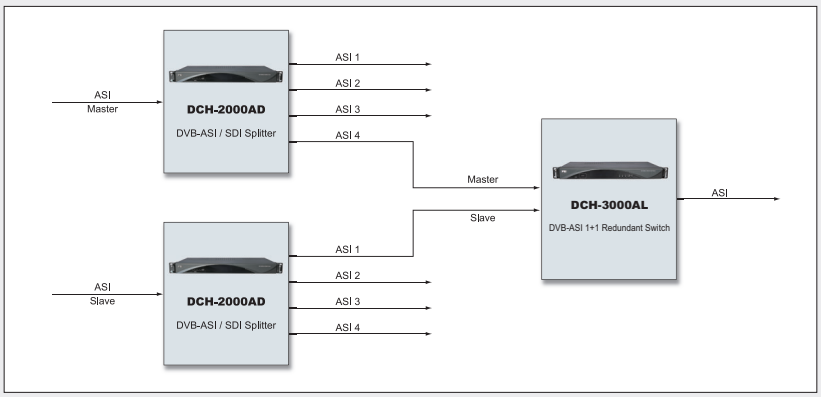
Main Feature

- Compatible with DVB-ASI (EN50083-9) standard
- Up to 6 independent 1+1 switching modules in 1RU 19"chassis
- Built-in real time transport stream monitoring
- Input and Output bit-rate up to 160 Mb/s on each switch module
- Automatic or manual switch mode
- TS sync loss and PIDs loss as switching condition
- Mechanical Bypass Relay to output in the event of power failure
- DC 12V backup power supply
- Remote control, supervision and by SNMP and HTTP Web

Switch to the back-up transport stream source automatically when problems occur

Up to 6 independent switch modules in 1RU 19" chassis

DC 12V backup power supply



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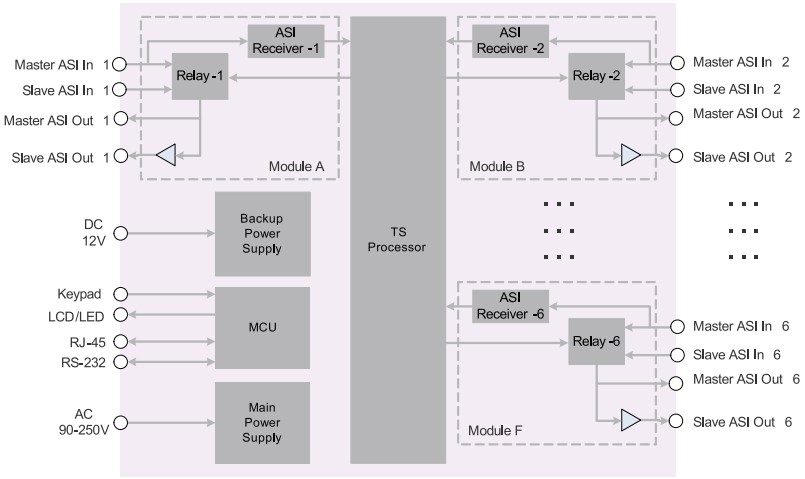
Specification

ASI Input	
Input Interface	12 (6 primary, 6 secondary)
Connector Type	BNC, 75Ω
TS Bit Rate	< 160Mb/s
Packet Format	188 /204 byte packets, without RS code
ASI Switching	
Switching Mode	Primary/Secondary, Auto/Manual
Switching Condition	TS Sync Loss and up to 8 PID losses
Switching Time	< 300 ms
Power Failure Switching	Mechanical by pass relay
ASI Output	
Output Interface	12 (6×2 duplicated outputs)
Connector Type	BNC, 75Ω
TS Bit Rate	< 160Mb/s
Packet Format	188/ 204 byte packets, without RS code

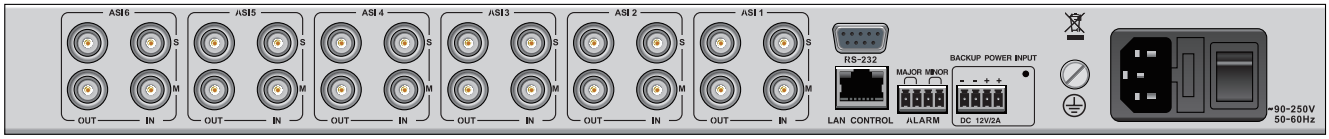
Control & Monitoring	
Connector Type	RS232 (DB-9), for PC configuration and software upgrade
Local Control	LCD display and 6-key keypad
LCD	2×10 characters LCD display
LED	7 (one for Power indicator, the others for switch status)
Physical	
Dimension	44mm×483mm×240mm
Weight	3.0Kg Net, 3.7Kg Gross
Power Supply	AC 90~260V, 50Hz/60Hz
Power Consumption	25W (MAX)
Operating Temperature	0~45℃
Storage Temperature	-10~60℃
Operating Humidity	10~90%, non-condensed

Block Diagram

DCH-3000AL Functional Block Diagram



Back panel Interface



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DXP Series

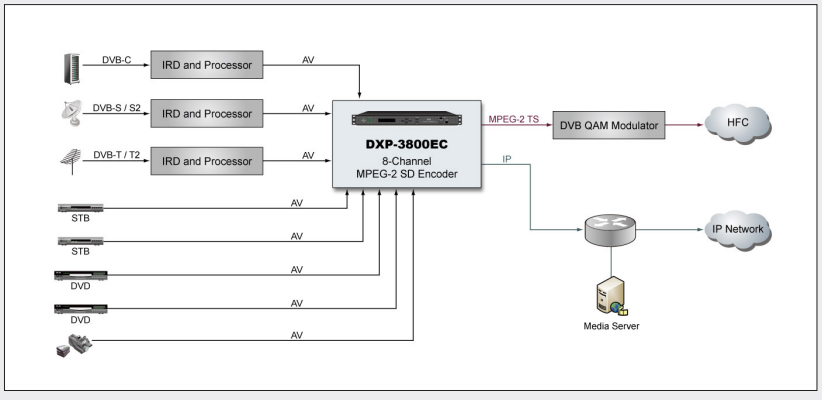
DXP-3800EC

8-Channel MPEG-2 SD Encoder

DXP-3800EC is an integrated 8-way high density MPEG-2 Encoder. Eight ways of Standard Definition (SD) base band real time A/V programs could be encoded simultaneously. These streams encoded could be re-multiplexed with the stream from its ASI input port. The final re-multiplexed Transport Stream (TS) is available at its Gigabit TSoverIP port and ASI output port.

Main Feature

- Compile with MPEG-1(ISO/IEC11172), MPEG-2 MP@ML(ISO/IEC13818)
- 8-way encoder with re-multiplexed integrated
- 1 ASI input (for daisy chain) & 1 ASI output
- Full duplex Gigabit TS over IP
- Video resolutions: 576i (PAL, SECAM) & 480i (NTSC)
- SNMP & HTTP WEB
- Redundant Power Supplies
- 19" x 1 U EIA standard chassis



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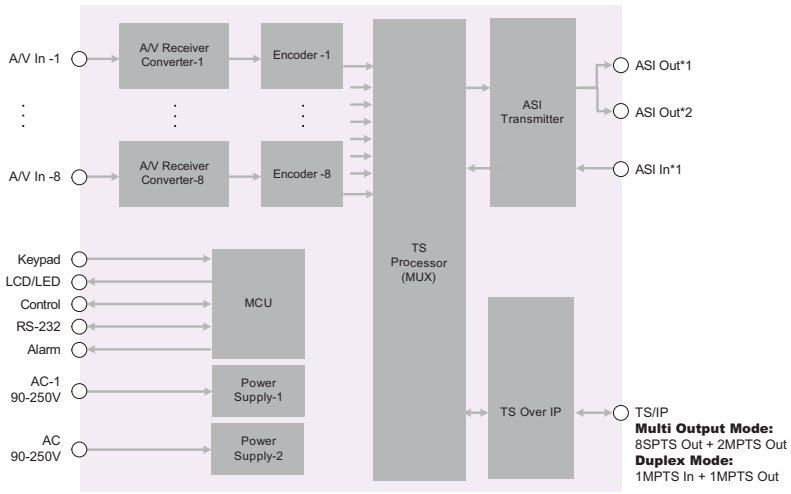
Block Diagram

DXP-3800EC Functional Block Diagram

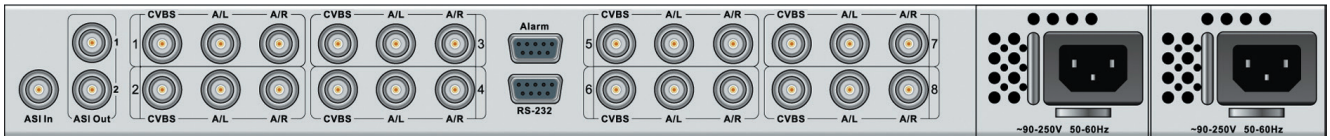


Specification

Video input & Encode	
Number of input ports	CVBS x 8
Encoding Standard	MPEG-2 MP@ML
Chrominance Format	4:2:0
Compression Bit Rate	1.5Mbps~10Mbps
Main Video Resolutions & Recommended Compression Bit Rates	480i(720×480)@29.97Hz: SMPTE656M: 3~6Mb/s 576i(720×576)@25Hz: SMPTE656M: 3~6Mb/s
Other Video Resolutions	Half D1,SIF,QSIF
Audio Input & Encode	
Number of input ports	8 pairs of Stereo Audios
Compression Standard	MPEG1 Layer I
	MPEG1 Layer II
Sampling Rate	32KHz, 44.1KHz, 48KHz
Compression Bit Rate	MPEG1 Layer I: 64~256Kb/s
	MPEG1 Layer II: 32~384Kb/s
DVB-ASI Input	
Interface	BNC Female, 75Ω
Maximum Input Bit rate	100 Mb/s
Data Transfer type	Byte
Packet Length	188 or 204 Bytes
Signal Level	200~880mVp-p
DVB-ASI Output	
Interface	BNC Female, 75Ω

Effective Data Rate	1.5 Mb/s~70 Mb/s
Data Transfer type	Byte
Packet Length	188 or 204 Bytes
Signal Level	800±80mV
Gigabit TS_over_IP	
Standard	IEEE 802.3, 10/100/1000 Base-T, Full Duplex
Maximum Effective Bit Rate	80Mb/s
Data Protocol	UDP or RTP, SPTS or MPTS
Control Protocol	ICMP, ARP, IGMPv2
Interfaces on Rear Panel	
ASI In	1×BNC Female, 75Ω
CVBS In	8×BNC Female, 75Ω
AUDIO In	8×BNC Female, 75Ω
ASI Out	2×BNC Female, 75Ω(1 Backup)
Interfaces on Front Panel	
Control	1 RJ-45, 10/100 Base-T
TS/IP	1×IP (GbE), RJ-45, 10/100/1000 Base-T, Full Duplex
Display	2 x 20 LCD Display
Others	
Power Supply	AC90~260V 50/60Hz
Operating Temperature	0~45℃
Storage Temperature	-10~60℃
Operating Humidity	10~90%, non-condensed

Back Panel Interface



Order Information

Function		DXP-3800EC-C
Iutput	CVBS x8	•
	ASI	•
Output	ASI x2 (1xBackup)	•
	GbE	•
Alarm		•
Control		•
RS-232		•

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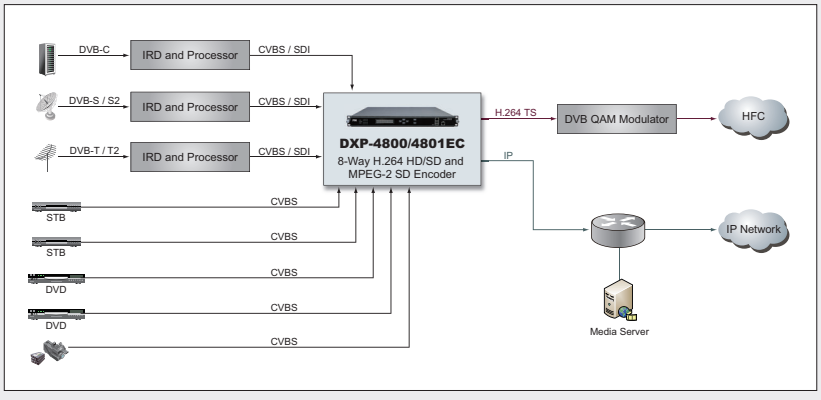
DXP-4800/4801EC

8-Way H.264 HD/SD and MPEG-2 SD Encoder

DXP-4800EC/4801EC is a high density real-time H.264 HD/SD and MPEG-2 SD Encoder that can support up to eight High Definition (HD) A/V signals compressing and encoding simultaneously. These A/V signals can be fed into DXP-4800EC/4801EC via 8 CVBS or 8x SDI input ports depending on different factory option. The encoded streams can be then remultiplexed and output over its GbE IP and ASI ports. DXP-4800EC adopts the chipset solution that embeds Time Base Correction (TBC) to ensure the audio and video synchronization, the features necessary for the professional TV signal flow. DXP-4800EC/4801EC allows user to configure, monitoring and manage over the informative front panel and keypad, or Web interface, or SNMP based management software from 3rd party. Brilliant picture quality, high density design, high stability system architecture, and the hot-swappable power supply make the DXP-4800EC/4801EC the best choice for real-time H.264 HD/SD or MPEG-2 SD encoding.

Main Feature

- Compile with H.264/AVC HP@ L4.0&MPEG-2 MP@ML
- MPEG1 Layer II, MPEG-2/4 AAC-LC/HE-AAC audio compression (AAC is for DXP-4800EC-X only)
- Support video resolution 1080i, 720p, 576i and 480i
- 8x HD-SDI or CVBS input type factory option(CVBS support SD only)
- SNMP & HTTP WEB
- 8-way encoder with re-multiplexed integrated
- Low bit rate encoding. Minimum video encoding bitrate can reach 500Kbps.
- Support resolution down scale
- Support VBR and CBR
- Full duplex Gigabit TS over IP I/O
- Redundant Power Supplies
- 19"×1 U EIA standard chassis



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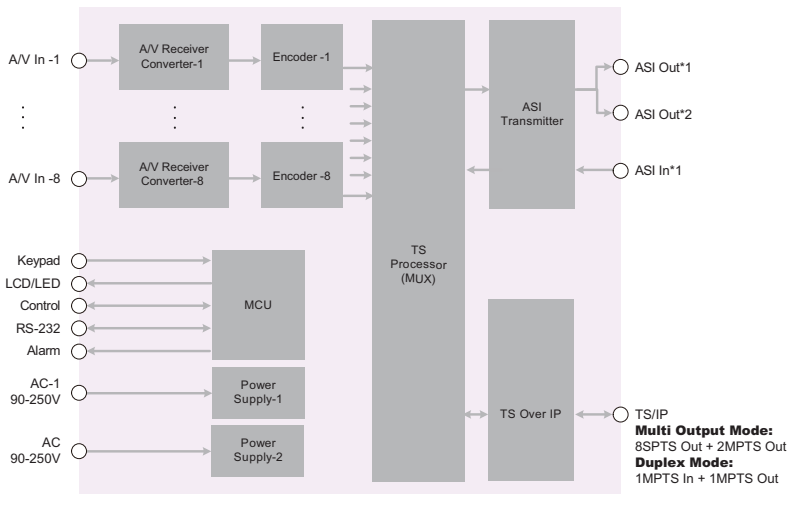
Specification

Video input & compression	
Number of input ports	HD-SDI×8 or CVBS x 8
Compression Standard	H.264/AVC HP@L4.0, MPEG-2 MP@ML
Pixel Format	4:2:0, 8-bit, YCbCr
Video Encoding Bit Rate	500Kbs~20Mbps for each channel
Video Resolution (with recommended compress bitrate)	1080i(1920×1080)@ 25Hz,29.97Hz,30Hz: SMPTE274M: 1~20Mb/s 720p(1280×720)@25Hz,29.97Hz,30Hz:SMPTE296M: 1~20Mb/s 480i(720×480)@25Hz:SMPTE656M: 600K~10Mb/s 576i(720×576)@25Hz: SMPTE656M:600K~10Mb/s
Resolution down-scale	Output resolution can be adjusted freely by user
Aspect Ratio	4:3/16:9 Selectable
Audio Input & compression	
Input	CVBS or SDI Embedded audio or analog audio (factory option)
Audio Compression	MPEG1 Layer II, MPEG-2/4 AAC-LC, HE-AAC(V1,V2). Note: AAC is for DXP-4800EC only
Sampling Rate	48KHz
Compression Bit Rate	MPEG1 Layer II :32~192Kbps(Mono), 64~384Kbps(Stereo) MPEG2/4 AAC-LC :24~256Kbps(Mono), 48~512Kbps(Stereo) MPEG2/HE-AAC(V1/V2): 16~128Kbps(Mono), 32~256Kbps(Stereo)
DVB-ASI Input	
Interface	BNC Female, 75Ω
Maximum Input Bit rate	100 Mb/s
Data Transfer type	Byte
Packet Length	188 or 204 Bytes
Signal Level	200~880mVp-p

DVB-ASI Output	
Interface	BNC Female, 75Ω
Effective Data Rate	120 Mb/s
Data Transfer type	Byte
Packet Length	188 or 204 Bytes
Signal Level	800±80mV
Gigabit TS_over_IP (Full Duplex Mode)	
Standard	IEEE 802.3, 10/100/1000 Base-T, Full Duplex
Maximum Effective Bit Rate	80Mb/s
Data Protocol	UDP or RTP, SPTS or MPTS
Control Protocol	ICMP, ARP, IGMPv2
Gigabit TS_over_IP Output (Multi-Channel IPTV Mode)	
Standard	IEEE 802.3, 10/100/1000 Base-T,
Maximum Effective Bit Rate	200Mb/s
Data Protocol	UDP or RTP, SPTS or MPTS
Control Protocol	ICMP, ARP, IGMPv2
Interfaces on Rear Panel	
ASI In	1×BNC Female, 75Ω
HD-SDI In	8×BNC Female, 75Ω (only available on DXP-4800EC/4801EC-S)
CVBS&Audio In	(8×3)×BNC Male, 75Ω (DXP-4800EC/4801EC-C)
ASI Out	2×BNC Female, 75Ω(1 Backup)
Interfaces on Front Panel	
Control	1×RJ-45, 10/100 Base-T
TS/IP	1×IP(GbE), RJ-45, 10/100/1000 Base-T, Full Duplex
Display	2×20 LCD Display
Others	
Power Supply	AC90~260V 50/60Hz
Operating Temperature	0~45℃
Storage Temperature	-10~60℃
Operation Humidity	10~90%, (Non-condensed)

Block Diagram

DXP-4800EC/4801EC Functional Block Diagram



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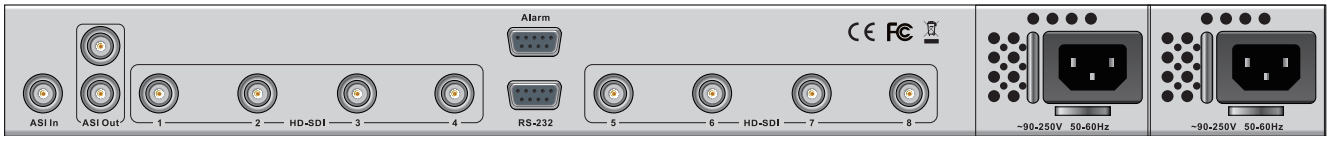
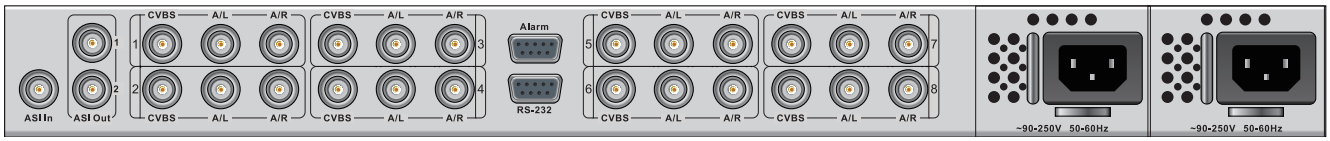
Back Panel Interface

DXP-4800/4801EC-S



DXP-4800/4801EC-C



Order Information

Function	Model	DXP-4800EC-S	DCH-4801EC-S	DCH-4800EC-C	DXP-4801EC-C
Input	HD/SD SDI	x 8	x 8		
	CVBS & Analog Audio			x 8	x 8
	TS/IP (under full duplex mode)	•	•	•	•
TS Iutput	ASI	•	•	•	•
	TS/IP (GbE)	•	•	•	•
TS Output	ASI(1+1)	•	•	•	•
	TS/IP (GbE)	•	•	•	•
Audio AAC-LC /HE-AAC		Y	N	Y	N

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DXP Series

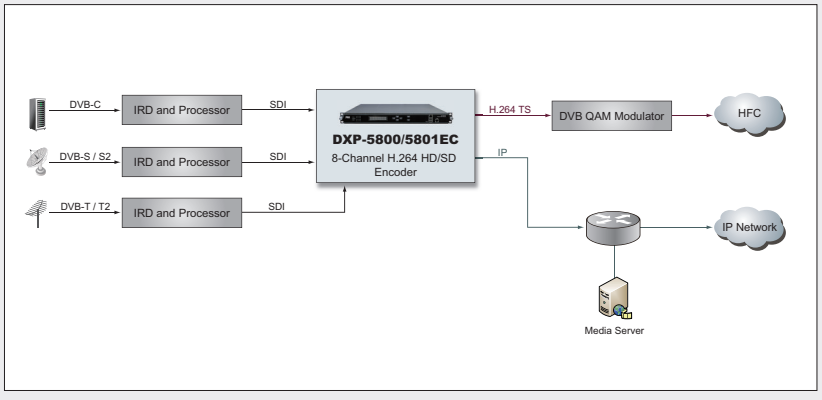
DXP-5800/5801EC

8-Channel H.264 HD/SD Encoder

DXP-5800/5801EC is a series of high density real-time H.264 HD/SD Encoders that can support up to eight High Definition (HD) A/V signals compressing and encoding simultaneously. These A/V signals can be fed into the unit via 8x SDI input ports as different factory options. The encoded streams can be then remultiplexed and output over its GbE IP and ASI ports. All models support Time Base Correction (TBC) to ensure the audio and video synchronization, the features necessary for the professional TV signal flow. The series provide two TS/IP operation modes. The first is “Full Duplex”, which allows one MPTS or SPTS inputted over 1 multicast/unicast to make up a new MPTS with local encoders, then sends out the new one over 1 multicast/unicast. In the second mode “Multiple output” which delivers up to 9 streams over IP. There are 8 un-stuffed SPTS (lower bit rate but less PCR accurate than normal SPTS, from local encoders) and 1 MPTS (from internal reMultiplexer) over the IP with different Unicast or Multicast IP addresses. DXP-5800/5801EC allows user to configure, monitoring and manage over the informative front panel and keypad, or Web interface, or SNMP based management software from 3rd party. This Encoder family presents brilliant picture quality, high density design, high stability system architecture, and the hot-swappable power supply.

Main Feature

- Compile with H.264/AVC HP@L4.0
- MPEG1 Layer II, MPEG2 AAC-LC, MPEG4 AAC-LC audio compression (see ordering information)
- 8-way real time encoder with re-multiplexed integrated
- Built-in re-Mux accepts up to 10 SPTS/MPTS (8 from local encoders, 2 from external input over IP and ASI)
- 1 ASI input (for daisy chain) & Redundant ASI output
- Full duplex Gigabit TS over IP I/O (under Full duplex operation mode)
- Up to 9 multicast/unicast output (under Multiple output operation mode)
- VBR and CBR encoding mode
- Free resolution downscale at same frame rate
- SNMP & HTTP WEB
- Redundant Power Supplies
- 19” x 1 U EIA standard chassis



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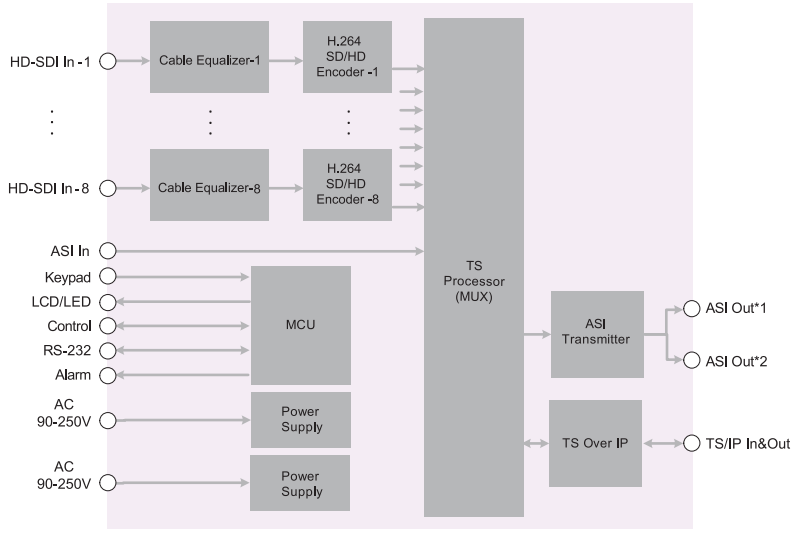
Specification

Video input & compression	
Number of input ports	HDMI x 8 or HD-SDI x 8
Compression Standard	H.264/AVC HP@L4.0
Video Sampling Format	4:2:0, 8-bit, YCbCr
Video Encoding Bit Rate	2~30Mbps for each channel
Video Resolution & Recommended Bit Rate	1080p (1920×1080) @ 59.94 Hz,50Hz: SMPTE296M: 6~30Mb/s 1080 (1920×1080) @25Hz,29.97Hz, 30Hz:SMPTE274M: 6~24Mb/s 1080i (1440×1080) @25Hz,29.97Hz, 30Hz:SMPTE274M: 5~24Mb/s 720p (1280×720) @50Hz,59.94Hz, 60Hz:SMPTE296M: 4~24Mb/s 480i (720×480) @29.97Hz:SMPTE656M: 2~10Mb/s 576i (720×576) @25Hz: SMPTE656M: 2~10Mb/s
Other Video Resolution	Free resolution downscale at same frame rate
Aspect Ratio	4:3/16:9 Selectable
Audio Input & compression	
Input	SDI Embedded audio
Audio Compression	MPEG1 Layer II, MPEG2 AAC-LC, MPEG4 AAC-LC (option)
Sampling Rate	48KHz
Compression Bit Rate	32~192Kbps(Mono), 64~384Kbps (Stereo), 128~512Kbps(AAC LC)
DVB-ASI Input	
Interface	BNC Female, 75Ω
Maximum Input Bit rate	100 Mb/s
Data Transfer type	Byte
Packet Length	188 or 204 Bytes

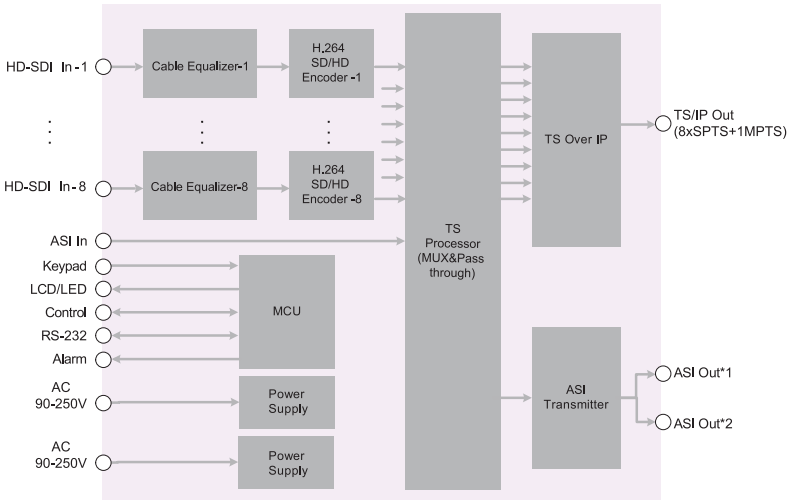
Signal Level	200 ~ 880mVp-p
DVB-ASI Output	
Interface	BNC Female, 75Ω
Max. Effective Data Rate	120 Mb/s
Data Transfer type	Byte
Packet Length	188 or 204 Bytes
Signal Level	800±80mV
Gigabit TS_over_IP (Full Duplex Mode)	
Standard	IEEE 802.3, 10/100/1000 Base-T, Full Duplex
Max. Effective Bit Rate	80Mb/s
Data Protocol	UDP or RTP, SPTS or MPTS
Control Protocol	ICMP, ARP, IGMPv2
Gigabit TS_over_IP Output (Multi-Channel IPTV Mode)	
Standard	IEEE 802.3, 10/100/1000 Base-T,
Max. Effective Bit Rate	200Mb/s
Data Protocol	UDP or RTP, SPTS or MPTS
Control Protocol	ICMP, ARP, IGMPv2
Rear Panel	
ASI In	1×BNC Female, 75Ω
HD-SDI In	8×BNC Female, 75Ω (DXP-5800/5801EC-S)
ASI Out	2×BNC Female, 75Ω(1 Backup)
Front Panel	
Control	1×RJ-45, 10/100 Base-T
TS/IP	1× IP (GbE), RJ-45, 10/100/1000 Base-T
Display	2×20 LCD Display
Others	
Power Supply	AC90~260V 50/60Hz
Operating Temperature	0~45℃
Storage Temperature	-10~60℃
Operation Humidity	10~90%, (Non-condensed)

Block Diagram

DXP-5800/5801EC Functional Block Diagram（Full Duplex）



DXP-5800/5801EC Functional Block Diagram（Multi-Channel）

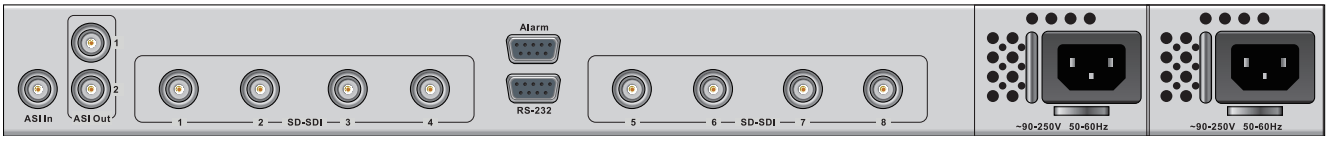


Order Information

Function	Model	DXP-5800EC-S	DXP-5801EC-S
Output	HD-SDI (BNC)	x 8	x 8
	ASI (BNC)	•	•
	TS/IP (under full duplex mode)	•	•
	ASI x2 (1xBackup)	•	•
	TS/IP (GbE)	•	•
AAC-LC Audio		•	
Alarm		•	•
Control		•	•
RS-232		•	•

Back Panel Interface

DXP-5800EC-S



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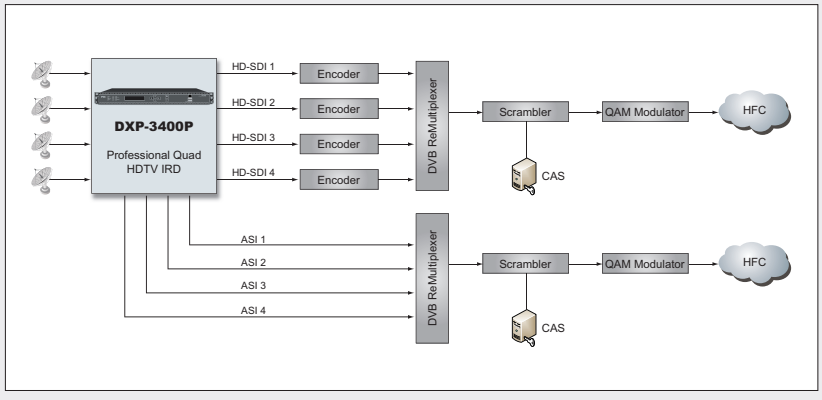
DXP-3400P

4-Channel H.264 HD IRD

The DXP-3400P provides operators an ideal solution for multi receiving, descrambling, remultiplexing and decoding operations. By the quad DVB common interfaces, DXP-3400P could decrypt multiple services in 4 transport stream. DXP-3400P is also a professional IRD that features a broadcast quality decoder for MPEG-2 and MPEG-4 AVC/H.264 in both Standard Definition and High Definition formats, and provides a variety of industry standard digital and analog outputs, including 4 separated CVBS video, analog Audio, SD-SDI and HD-SDI. The unit also performs HD down-conversion and aspect ratio adaptation of HD programs to generate professional quality baseband analog video and audio outputs for easy integration with existing cable network infrastructure. This all-in-one architecture makes the DXP-3400P an ideal product for distribution and contribution networks.

Main Feature

- Quad Tuner Input, Supports variety of input options DVB-T2/S2/S/C/T/DTMB/ATSC/ ISDB-T, DS3/E3,
- Supports DVB-S2 Input Stream Identifier (ISI, optional) and DVB-T SFN MIP pass through
- SD/HD MPEG-2 and MPEG-4 AVC/H.264 digital video decoding
- Two Audio PIDs decode or pass through (compressed) for each SDI output
- Built-in 2xTS re-multiplexer, one receives from Tuner1, Tuner2, CI1 and CI2 Inputs, the other receives from Tuner3, Tuner4, CI3 and CI4 Inputs
- 4×DVB-CI Slots, multi-program decryption, BISS-1 and BISS-E decryption
- On Site software update through IP or USB
- Dynamic PMT detection and automatic updating
- Supports VBI TELETEXT, EBU/DVB Subtitle, Closed Caption
- Remote Control and Supervision by SNMP, HTTP WEB and Proprietary HDMS software
- PCM audio embedded in SDI and HDMI outputs
- AC3 and Dolby E audio can be passed through by SDI
- VBI TELETEXT, WSS and Closed Caption embedded in SDI
- RSSI, received Eb/No & BER monitoring
- Redundant power supply



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Specification

Tuner Input	
DVB-S/S2 Tuner Input (ISI Factory Optional)	
Connector Type	4×F type female 75Ω for Input
Input Frequency Range	950~2150MHz
Input Level	-25~-65dBm
Symbol Rate	2~45MBaud
Roll-off Factor	DVB-S QPSK: 0.35 DVB-S2 8PSK: 0.35, 0.25, 0.2
FEC Code Rate	DVB-S QPSK: 1/2, 2/3, 3/4, 5/6, 7/8
	DVB-S2 QPSK: 1/2, 3/5, 2/3, 3/4, 4/5, 5/6, 8/9,9/10
	DVB-S2 8PSK: 3/5, 2/3, 3/4, 5/6, 8/9, 9/10
LNB Polarity Selection Voltage	0, 13V, 18V selectable
LNB Band Selection Tone	0/22KHz selectable
Satellite Selection Command	DiSEqC 1.0
ISI ID	1~255 user configurable
DVB-C Tuner Input	
Connector Type	4×F type female 75Ω for Input
Input Frequency Range	51~862MHz
Input Level	51~75dBμV
Symbol Rate	1~7MBaud (ITU J.83 Annex A)
Constellation	16QAM, 32QAM, 64QAM, 128QAM, 256QAM
Bandwidth	6MHz, 7MHz, 8MHz
Input Return Loss	7dB (typ.)
DVB-T/T2 Tuner Input	
Connector Type	4×F type female 75Ω for Input
Input Frequency	104~862MHz (VHF/UHF)
Input Level	-20~-70dBm
Constellation	DVB-T: QPSK, 16QAM, 64QAM
	DVB-T2: QPSK, 16QAM, 64QAM, 256QAM
Bandwidth	6MHz, 7MHz, 8MHz
FFT Mode	DVB-T: 2K, 8K
	DVB-T2: 1K, 2K, 4K, 8K, 16K, 32K
Guarding Interval	DVB-T: 1/4, 1/8, 1/16, 1/32
	DVB-T2: 1/4, 5/32, 1/8, 5/64, 1/16, 1/32, 1/64, 1/128
FEC Code Rate	DVB-T: 1/2, 2/3, 3/4, 5/6, 7/8
	DVB-T2: 1/2, 3/5, 2/3, 3/4, 4/5, 5/6
Input Return Loss	7dB (typ.)
DTMB Tuner Input	
Connector Type	4×F type female 75Ω for Input
Input Frequency Range	46.5~866MHz
Input Level	-87~-29dBm
Symbol Rate	7.56MBaud
Bandwidth	6MHz/7MHz/8MHz
Constellation	4QAM-NR,4QAM,16QAM,32QAM,64QAM
Guard Interval	PN420, PN595, PN945
Roll-off Factor	0.05
Interleaving Depth	240,720
FEC Code Rate	0.4, 0.6, 0.8
ATSC Tuner Input	
Connector Type	4×F type female 75Ω for Input
Input Frequency Range	54~864MHz
Input Level	-75~-7dBm(ATSC 8VSB)
Symbol Rate	10.762MBaud
Constellation	8VSB
Roll-off Factor	0.115
Bandwidth	6MHz
DS3 Input (Option)	
Connector Type	4×BNC female, 75Ω, including loop through
Standard	Compliant with ITU-T G.703
Frame Structure	Compliant with ITU-T G.752 and ITU-T G.804
Bit Rate	44.736Mb/s
TS Processing	
TS Input Management	Demux and Remux among Tuner and CI Inputs
TS Output Management	Demuxand Remux for 4 independent ASI outputs
Service and PID Management	Remux, filtering and remapping
PSI/SI	PSI/SI table regeneration, NIT and SDT edition, LCN Edition and Re-generation
Descrambler	DVB Common Scrambling Algorithm (CSA)
BISS Mode	BISS-1, BISS-E
Common Interface	Double PCMCIA slots, compatible with major CA CAMs in the market
ASI Output	
Connector Type	4 independent BNC female, 75Ω
Standard	DVB-ASI, EN50083-9
Output Bit Rate	≤ 100Mb/s
TS Processing	2 Independent TS Re-multiplexed from tuner1, Tuner2, CI1 and CI2. The other 2 Independent TS Re-multiplexed from tuner3, Tuner4, CI3 and CI4.
Digital Video Processing	
Video Standard	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)
SDI 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	≤ 60Mb/s
HD/SD-SDI or ASI Output	
Connector Type	4 Pairs of SDI output, BNC, female, 75Ω
SD Standard	SMPTE 259M, 270 Mb/s (10bit)
HD Standard	SMPTE 292M, 1.485 Gbit/s (10bit)
Level	800mV p-p
Embedded Audios	MPEG-1 Layer 2
	a. 2 stereo pairs (Stereo, Dual Mono, Left, Right)
	Dolby Digital (AC3)
	a. 5.1 down-mix to 2.0 (Stereo, Dual Mono, Left, Right)
	b. Dolby Digital Audio Pass-through
	Dolby Digital Plus(AC3+)
	a. 5.1 down-mix to 2.0 (Stereo, Dual Mono, Left, Right)
	b. Dolby Digital Audio Pass-through
	MPEG-2 AAC
	a. 5.1 down-mix to 2.0 (Stereo, Dual Mono, Left, Right)
	b. 2.0 (Stereo, Dual Mono, Left, Right)
	MPEG-4 HE-AAC v1/v2
	a. 5.1 down-mix to 2.0 (Stereo, Dual Mono, Mono, Left, Right)
	b. 2.0 (Stereo, Dual Mono, Left, Right)
Embedded Ancillary Data	Teletext, WSS, CC
Analog Video Output	
CVBS Connector	4×BNC female 75Ω
CVBS Standard	NTSC, PAL, and SECAM
CVBS Resolution	576i×25, 480i×29.97
Nominal Output Level	1.0 Vp-p±5% (with standard test stream)
Frequency Response	<±1 dB, at 5.5 MHz for PAL/SECAM, 4.2MHz for NTSC
Chroma-Luma Delay	<±30 ns
Field Time Distortion	<2%
Line Time Distortion	<1%
Short Time Distortion	<2%
Differential Gain	<3%
Differential Phase	<2°
Signal to Noise Ratio	>55dB (luminance weighted)
Analog Audio Output	

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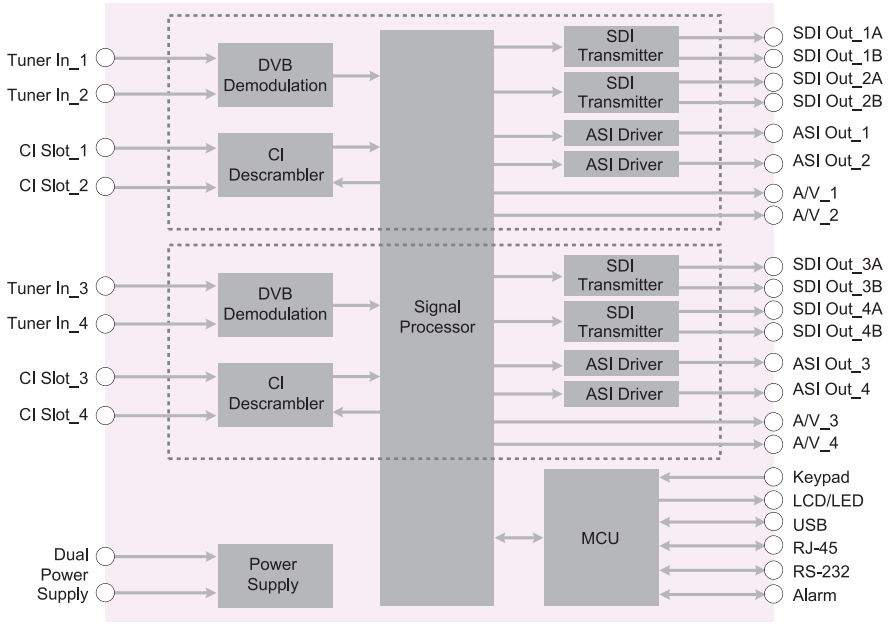
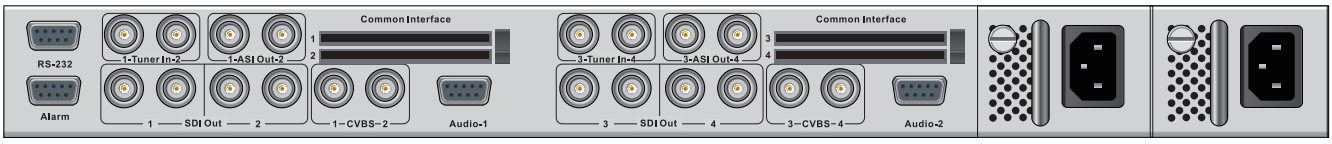
Connector Type	2×D-sub 9 male included 4 pairs of stereo audio with XLR adaptor cable
Output Impedance	600Ω (balanced)
Output Mode	Left, Right, Dual Mono, Stereo
Number of Output	4 pairs of stereo audio outputs (4 Audio PIDs or 8 channels are decoded)
Cross Talk Among Channels	>70dB
THD	<0.3% @ 400Hz, 1KHz test tone
Frequency Response	±0.5dB over 20Hz ~ 18KHz
Output Level	0dBm in 600Ω (0dBu), adjustable range ±10dB
Ancillary Data Processing	
Subtitle	DVB, EBU
VBI	Teletext, WSS
Closed Caption	EIA 608, EIA 708, EIA 608-to-708
Control & Monitoring	
Connector Type	1×RJ-45, 10/100 Base-T, for equipment IP Control
Remote Control	SNMP, HTTP (Web Interface), Proprietary HDMS (Headend Device Management System)
Local Control	LCD display and 6-key keypad
Serial Port	1×RS-232 D-sub female, for debug use only
Equipment Upgrade	Embedded FTP loader and Telnet
Physical	
Dimension	
Weight	
Power Supply	AC 90V~250V, 50/60Hz
Power Consumption	24W (exclusive of LNB power)
Operating temperature	0~45℃
Storage temperature	-10~60℃
Operating Humidity	10~90%, non-condensed
Certification	
EMC: EN 55024:1998+A1:2001+A2:2003, EN 55022:2006+A1:2007, EN 61000-3-2:2006, EN 61000-3-3:2008	
FCC: Part 15 Class B	
LVD: EN 60950-1:2006 + A11:2009	

Block Diagram

DXP-3400P Functional Block Diagram



Back Panel Interface



DXP Series

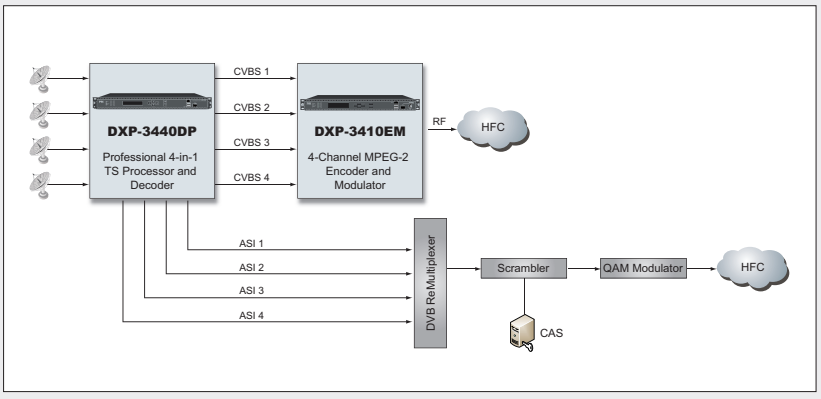
DXP-3410EM

4-Channel MPEG-2 Encoder and Modulator

DXP-3410EM integrates four real-time MPEG-2 SD Encoder modules, one re-Multiplexer and one Transmodulator module in one 19" 1RU chassis. It has four pairs of analog video audio inputs for encoding, one ASI input and one full duplex Gigabit TS-over-IP port. With built-in re-multiplexer, DXP-3410EM is able to re-multiplex those 4 SPTS streams encoded by itself and an additional MPTS from its ASI or IP input. The newly generated MPTS stream could be delivered to the QAM or COFDM transmodulator (factory optional) and finally output via RF port, or the MPTS could be also output via IP and ASI output port. DXP-3400EM is the most suitable deployment choice for any system in DVB, IPTV and Surveillance industries.

Main Feature

- Four pairs of analog video audio inputs for encoding
- Remux with 4x SPTS generated by 4x encoders, stream from ASI and IP input
- 1000 Base-T TSoIP port, supports Full-duplex and Multi-Channel IPTV output only operating mode
- Supports VBR and CBR encoding modes
- QAM or COFDM output factory optional
- Up to 120dBμV RF power level
- Remote Control and Supervision by SNMP and HTTP WEB
- Hot swappable redundant power supply unit



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Specification

Video Input & Compression	
Video Input	CVBSx 4
Compression Standard	MPEG-2 MP@ML
Chrominance Space	4:2:0
Video Encoding Bit Rate	1.5Mbps~10Mbps
Video Resolutions & Recommended Video Encoding Bit Rates	480i(720×480)@29.97Hz:SMPTE656M: 2~10Mb/s 576i(720×576)@25Hz: SMPTE656M: 2~10Mb/s
Other video resolutions	Full D1,Half D1,SIF,QSIF
Aspect Ratio	4:3 / 16:9
Audio Input & Compression	
Audio Input	4 pairs stereo audio
Compression Standard	MPEG1 Layer I, MPEG1 Layer II
Sampling Rate	32KHz, 44.1KHz, 48KHz
Audio Compression Bit Rate	MPEG1 Layer I: 64~256Kb/s
	MPEG1 Layer II: 32~384Kb/s
DVB-ASI Input	
Connector Type	BNC Female, 75Ω
Maximal Input Bit Rate	200 Mb/s
Packet Mode	Byte
Packet Length	188/204 Bytes
Signal Level	200 ~ 880mVp-p
DVB-ASI Output	
Connector Type	BNC Female, 75Ω
Effectual Output Bit Rate	200Mb/s
Packet Mode	Byte
Packet Length	188/204 Bytes
Signal Level	800±80mV
GigE Full Duplex	
GbE Full Duplex	IEEE 802.3, 10/100/1000 Base-T
Maximal Effectual Output Bit Rate	200Mb/s
UDP/RTP	SPTS or MPTS
Protocol	ICMP, ARP, IGMPv2
Multi-Channel IPTV Mode (without IP IN)	
TS/IP Out	IEEE 802.3, 10/100/1000 Base-T
Maximal Effectual Output Bit Rate	200Mb/s
UDP/RTP	SPTS or MPTS
Protocol	ICMP, ARP, IGMPv2
DVB-C Modulation	
Constellation	J.83 Annex A: 16/32/64/128/256QAM J.83 Annex B: 64B/256B
Symbol Rate	3~7.2MS/s
I/Q Amplitude Error	≤ 0.1%
I/Q Phase Error	≤ 0.1%
Phase jitter	< 0.5°RMS
MER	> 35dB (Equalizer off)
DVB-T Modulation	
Constellation	QPSK/16QAM/64QAM
Bandwidth	5/6/7/8MHz
FFT Mode	2K
Guard Interval	1/4, 1/8, 1/16, 1/32
Code Rate	1/2, 2/3, 3/4, 5/6, 7/8
MER	>36dB
RF Output	
Connector Type	1x F Type Female, 75Ω
Output Frequency Range	48~860MHz agile, step by 10 KHz
Output Level	90~120dBμV, step by 1dBμV
Spurious Rejection	≥55dB
Output Return Loss	≥12dB (typ.)
Rear Panel	
ASI In	1 x BNC Female, 75Ω
CVBS In	4 x BNC Female, 75Ω
Audio In	(4X2)x BNC Female, 75Ω
ASI Out	2 x BNC Female, 75Ω(1 Backup)
RF Out	1x F Type Female, 75Ω
Front Panel	
Control	1×RJ-45, 10/100 Base-T management port
TS/IP	1× IP (GbE), RJ-45, 10/100/1000 Base-T
Display	LCD Display
RF Monitor -20dB	1x F Type Female, 75Ω
Others	
Power Supply	AC90~260V 50/60Hz
Operating Temperature	0 ~ 40℃
Storage Temperature	-10 ~ 60℃
Operation Humidity	10 ~ 90%, Non-condensed

Order Information

Function		DXP-3410EM-CT	DXP-3410EM-CC
Input	CVBS x4 (BNC)	•	•
	HDMI (HDMI 1.4)		
	SDI (BNC)		
	ASI (BNC)	•	•
	TS/IP (GbE)	•	•
Output	ASI x2 (1xBackup,BNC)	•	•
	TS/IP (GbE)	•	•
	DVB-C RF Output		•
	DVB-T RF Output	•	
Alarm		•	•
Control		•	•
RS-232		•	•

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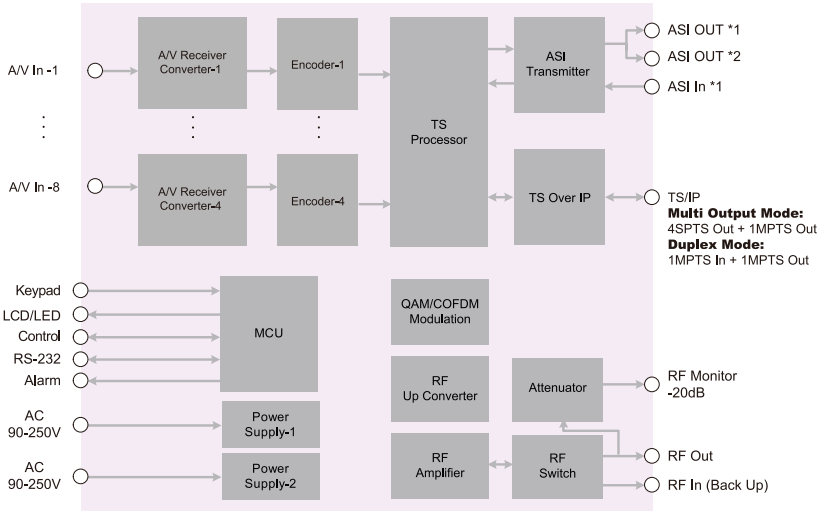
Block Diagram

DXP-3410EM Functional Block Diagram



Back Panel Interface

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DXP-5410EM/5411EM

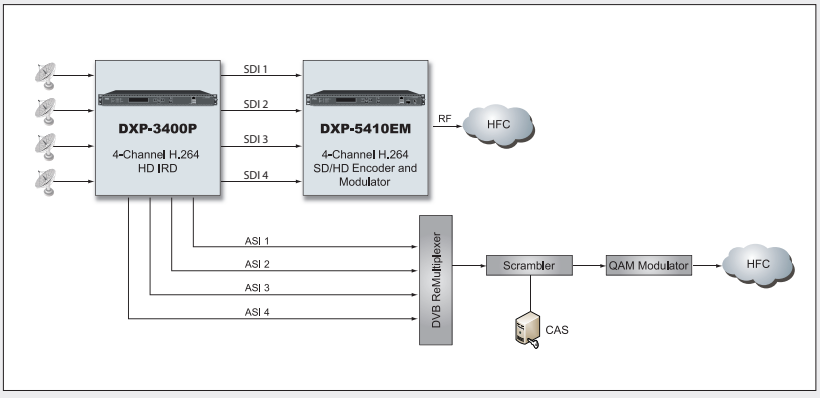
4-Channel H.264 SD/HD Encoder and Modulator

DXP-5410EM/5411EM is an integrated 4-channel real-time encoder re-multiplexer modulator. Four sets of A/V inputs are encoded and generated 4 Transport Streams (TS) independently. TS streams from the internal encoders, ASI input and TS/IP (TS_over_IP) input (duplex mode only) could be re-multiplexed into one MPTS (Multiple Program TS), then modulated onto one DVB RF carrier, QAM or COFDM. This MPTS is also available at the ASI output & TS/IP output simultaneously. There are up to 5 streams encapsulated onto TS/IP output when TS/IP is configurated as Multi-output mode. In this mode, all 4 TS streams from internal encoder could be sent through the TS/IP port while the fifth IP slot could be fed with the internal re-multiplexer or ASI input. With a built-in RF back-up relay switch, any external RF signal could be fed to the main output for back-up in cases of internal malfunction (main RF level < 75dBuV) or power supply lost.

DXP-5410EM/5411EM series are accommodated in 1U x 19" standard chassis with 2 redundant power supply modules.

Main Feature

- Comply with H.264/AVC HP@L4.1
- 4 independent real-time encoders
- Integrated 6-input TS reMUX, (4 for encoders, 1 for ASI in, 1 for TS/IP in)
- ASI & TS/IP outputs
- Up to 5 TS/IP output streams (200Mb/s Max.)(4 for encoders, 1 for ASI mirrored or reMUX)
- 480i/NTSC, 576i/PAL, 720p,1080i & 1080p
- Constant Bit Rate (CBR) & Variable Bit Rate (VBR)
- DVB-C/QAM (ITU J.83 Annex A/C) or DVB-T/COFDM RF out, selectable
- 50MHz ~ 996MHz RF carrier output frequency adjustable
- 120dBμV Total Output Level
- RF Back-up loop through input (RF relay)
- SNMP & HTTP remote control & monitor
- Software could be upgraded with Web interface
- EIA 1U x 19" standard chassis with 2 redundant power supply modules



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Specification

Video Input & Encoding	
Input type	HD-SDI×4 BNC Female 75Ω (see ordering info.)
Encoding Standard	H.264/AVC High Profile,up to Level 4.1
Y/Cb/Cr Sampling Format	4:2:0
Video Resolution & Recommended Bit Rate (see ordering info.)	1080p (1920×1080) @25Hz, 29.97Hz, 30Hz:SMPTE274M: 6~40Mb/s 1080i (1920×1080) @25Hz, 29.97Hz, 30Hz:SMPTE274M: 6~20Mb/s 720p (1280×720) @25Hz, 29.97Hz, 30Hz:SMPTE296M: 6~20Mb/s 480i (720×480) @29.97Hz:BT.656: 2~15Mb/s 576i (720×576) @25Hz: BT.656: 2~15Mb/s
Other Video Resolution & Down Scaler	Full D1,Half D1,SIF,QSIF Vertical & Horizontal Pixel down scalable respectively (with frame rate not changed)
Aspect Ratio	4:3 or 16:9 adjustable
Audio Input & Encoding	
Audio Input type	Analog Stereo×4 pairs of BNC Female, HD-SDI Embedded (see ordering info)
Standard & Recommended Bit Rate	MPEG1 Layer II, Mono: 32~192Kb/s, Stereo: 64~384Kb/s AAC-LC 2ch, Stereo: 128~512Kb/s (DXP-5410EM-X only)
Sampling Rate	48KHz
DVB-ASI Input	
Interface Type	BNC Female, 75Ω
Maximum Effective Bit Rate	200 Mb/s
Data type	Byte
Packet Length	188/204 Bytes
Valid Receiving Amplitude	200~880mVp-p
DVB-ASI Output	
Interface Type	BNC Female, 75Ω
Maximum Effective Bit Rate	200Mb/s
Data type	Byte
Packet Length	188/204 Bytes
Output Waveform Level	800±80mVp-p
TS/IP Gigabit Ethernet (Duplex mode)	
Physical Layer Standard	IEEE 802.3, 10/100/1000 Base-T
Maximum Effective Bit Rate	Input: 200Mb/s, Output: 200Mb/s
Data Encapsulation	UDP, RTP, SPTS, MPTS
Other Protocols	ICMP, ARP, IGMPv2
TS/IP Multiple Stream, Output Only	
Physical Layer Standard	IEEE 802.3, 10/100/1000 Base-T
Maximum Effective Bit Rate	Output: 200Mb/s
Data Encapsulation	UDP, RTP, SPTS, MPTS
Other Protocols	ICMP, ARP, IGMPv2
QAM Modulation	
Standard of System	ETSI EN300 492, ITU J.83, Annex A/C: 16/32/64/128/256QAM
Symbol Rate	3~7.2MS/s
I/Q Amplitude Error	≤ 0.1%
I/Q Phase Error	≤ 0.1%
Phase Jitter	< 0.5°RMS
MER	36dB min., 42dB typ. (with tester equalizer "off ")
COFDM Modulation	
Standard of System	ETSI EN 300 744
Constellation	QPSK/16QAM/64QAM
Bandwidth	5/6/7/8MHz
FTT carrier number	2K, 8K
Guard Interval	1/4, 1/8, 1/16, 1/32
FEC rate	1/2, 2/3, 3/4, 5/6, 7/8
MER	36dB min., 40dB typ.
RF Output	
Interface	F-type Female, 75Ω
Carrier Central Frequency	50~996MHz adjustable, step by 10 KHz
Output Level	90~120dBμV, step by 1dB
Spurious	≥60dBc @ 120dBuV
Return Loss	≥12dB(typ.)
Rear Panel	
ASI In	1×BNC Female, 75Ω
HD-SDI In	4×BNC Female, 75Ω (DXP-5411EM-S only)
ASI Out	2×BNC Female, 75Ω (mirrored contents)
RF Out	1×F Type Female, 75Ω
Back-up RF In	1×F Type Female, 75Ω
Front Panel	
Control	1×RJ-45, 10/100 Base-T
TS/IP	1×IP(GbE), RJ-45, 10/100/1000 Base-T
Display	20×2 character VFD
RF Monitor -20dB	1×F Type Female, 75Ω
Others	
Operating Input Voltage	AC100~260V 50/60Hz
Operating Temperature	0~40℃
Storage Temperature	-10~60℃
Operating Humidity	10~90%, Non-condensed

Order Information

Function		DXP-5410EM-S	DXP-5411EM-S
Video Compression		H.264 / AVC	H.264 / AVC
Audio Compression		MPEG + AAC	MPEG
Input	CVBS & Audio×4 (BNC)		
	HDMI×4 (A type)		
	HD-SDI×4 (BNC)	•	•
	ASI (BNC)	•	•
	TS/IP (GbE, RJ45)	•	•
	Back-up RF In (F-female)	•	•
Output	ASI×2 (BNC)	•	•
	TS/IP (GbE, RJ45)	•	•
	RF Out QAM/COFDM	•	•
	RF Monitor-20dB	•	•
Alarm (Contact Relay)		•	•
IP Control port (RJ45)		•	•
RS-232		•	•

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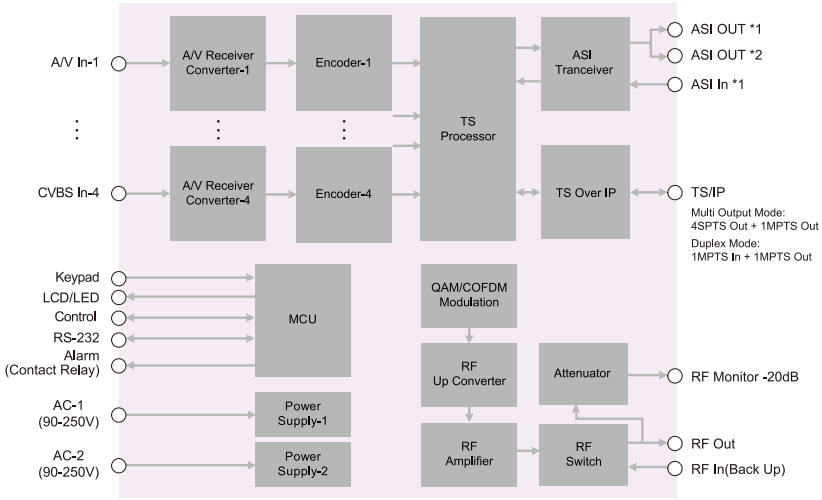
Block Diagram

DXP-5410EM Functional Block Diagram



Back Panel Interface

DXP-5410/5411EC-S

DXP-5410/5411EC-H

DXP Series

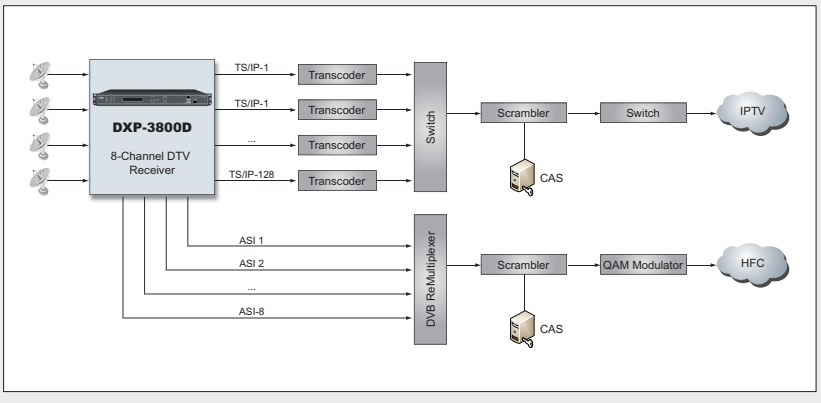
DXP-3800D

8-Channel DTV Receiver

DXP-3800D is a high-density, modular and CI decryption professional TS processor equipped with 8 independent tuners, which can be either of DVB-T/T2, DVB-S2/S, DVB-C, DTMB, ISDB-T and ATSC types. It supports a wide range of application by combining 8 tuners processing capability with industry standard outputs including ASI and TS/IP. DXP-3800D has 8 DVB common interface slots capable of working with most of well-known CAS in the market to de-crypt multiple pay TV services. DXP-3800D provides operators an ideal solution for multi receiving, re-multiplexing, descrambling and TS over IP operations, the compact 8 tuners and the powerful 8 CI decryption design make DXP-3800D one of the most competitive product in the head-end market.

Main Feature

- 8xTuners Input, Supports variety of input options DVB-T2/T/S2/S/C/DTMB/ATSC/ISDB-T
- Supports DVB-S2 Input Stream Identifier (ISI, optional) and DVB-T2 Multi PLP and SFN MIP pass through
- Built-in TS re-multiplexer receives from ASI, CI Slot1 to CI Slot8 and TS/IP inputs
- 8×DVB-CI Slots, multi-program decryption, BISS-1 and BISS-E decryption
- 8xASI output the transport stream from CI Slot1 to CI Slot8 or BISS decryption
- 1xchannel full duplex TS over IP or 128xchannels IP out without IP input
- Remote Control and Supervision by SNMP v2, HTTP WEB and Proprietary HDMS software
- On Site software update through IP or USB
- RSSI, received signal strength, Eb/N0, C/N and BER monitoring
- Redundancy power supply



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Specification

Tuner Input	
DVB-S/S2 Tuner Input (ISI Factory Optional)	
Connector Type	8×F type female 75Ω for Input
Input Frequency Range	950 ~ 2150MHz
Input Level	-25 ~ -65dBm
Symbol Rate	2 ~ 45MBaud
Roll-off Factor	DVB-S QPSK: 0.35
	DVB-S2 8PSK: 0.35, 0.25, 0.2
FEC Code Rate	DVB-S QPSK: 1/2, 2/3, 3/4, 5/6, 7/8
	DVB-S2 QPSK: 1/2, 3/5, 2/3, 3/4, 4/5, 5/6, 8/9,9/10
	DVB-S2 8PSK: 3/5, 2/3, 3/4, 5/6, 8/9, 9/10
LNB Polarity Selection Voltage	0, 13V, 18V selectable
LNB Band Selection Tone	0/22KHz selectable
Satellite Selection Command	DiSEqC 1.0
ISI ID	1 ~ 255 user configurable
DVB-C Tuner Input	
Connector Type	8×F type female 75Ω for Input
Input Frequency Range	51 ~ 862MHz
Input Level	51 ~ 75dBμV
Symbol Rate	1 ~ 7MBaud (ITU J.83 Annex A)
Constellation	16QAM, 32QAM, 64QAM, 128QAM, 256QAM
Bandwidth	6MHz, 7MHz, 8MHz
Input Return Loss	7dB (typ.)
DVB-T/T2 Tuner Input	
Connector Type	8×F type female 75Ω for Input
Input Frequency	104 ~ 862MHz (VHF/UHF)
Input Level	-20 ~ -70dBm
Constellation	DVB-T: QPSK, 16QAM, 64QAM
	DVB-T2: QPSK, 16QAM, 64QAM, 256QAM
Bandwidth	6MHz, 7MHz, 8MHz
FFT Mode	DVB-T: 2K, 8K
	DVB-T2: 1K, 2K, 4K, 8K, 16K, 32K
Guarding Interval	DVB-T: 1/4, 1/8, 1/16, 1/32
	DVB-T2: 1/4, 5/32, 1/8, 5/64, 1/16, 1/32, 1/64, 1/128
FEC Code Rate	DVB-T: 1/2, 2/3, 3/4, 5/6, 7/8
	DVB-T2: 1/2, 3/5, 2/3, 3/4, 4/5, 5/6
Input Return Loss	7dB (typ.)
DTMB Tuner Input	
Connector Type	8×F type female 75Ω for Input
Input Frequency Range	46.5~866MHz
Input Level	-87~-29dBm
Symbol Rate	7.56MBaud
Bandwidth	6MHz/7MHz/8MHz
Constellation	4QAM-NR,4QAM,16QAM,32QAM, 64QAM
Guard Interval	PN420, PN595, PN945
Roll-off Factor	0.05
Interleaving Depth	240,720
FEC Code Rate	0.4, 0.6, 0.8
ATSC Tuner Input	
Connector Type	8×F type female 75Ω for Input
Input Frequency Range	54~864MHz
Input Level	-75~-7dBm(ATSC 8VSB)
Symbol Rate	10.762MBaud
Constellation	8VSB
Roll-off Factor	0.115
Bandwidth	6MHz
TS Processing	
TS Input Management	Demux and Remux among ASI, TS/IP and CI Inputs
TS Output Management	Demux and Remux for ASI output
Service and PID Management	Service and PID level for Remux, filtering and remapping
PSI/SI	PSI/SI table regeneration, NIT and SDT edition, LCN Edition and Re-generation
Descrambler	DVB Common Scrambling Algorithm (CSA)
BISS Mode	BISS-1, BISS-E
Common Interface	8 x PCMCIA slots, compatible with major CA CAMs in the market
ASI Output	
Connector Type	9 independence BNC female, 75Ω,
Standard	DVB-ASI, EN50083-9
Output Bit Rate	≤ 200Mb/s
TS Processing	8xASI out pass through the TS from CI 1 to CI8, 1xASI Out from Remux,
ASI Input	
Connector Type	1×BNC female, 75Ω
Standard	DVB-ASI, EN50083-9
Input Bit Rate	≤100Mb/s
Connector Type	1×BNC female, 75Ω
TS over IP	
Connector Type	1×RJ-45, 100/1000 Base-T
Effective Bit Rate	400Mb/s for 128 channel IP out without IP in 80Mb/s for full duplex 1 channel
Protocol	UDP / RTP, Multicast / Unicast, IGMPv3, ARP
Alarm	
Connector Type	1×D-sub 9 male
Switching Condition	User Defined
Control & Monitoring	
Connector Type	1×RJ-45, 10/100 Base-T, for equipment IP Control
Remote Control	SNMP, HTTP (Web Interface), Proprietary HDMS (Headend Device Management System)
Local Control	LCD display and 6-key keypad
Serial Port	1×RS-232 D-sub female, for debug use only
Equipment Upgrade	Embedded FTP loader ,Telnet and http
Physical	
Dimension	44mm x 255mm x 430mm
Weight	3.5kg
Power Supply	AC 90V ~ 250V, 50/60Hz
Power Consumption	30W (exclusive of LNB power)
Operating temperature	0~45℃
Storage temperature	-10~60℃
Operating Humidity	10~90%, non-condensed
Certification	
EMC: EN 55024:1998+A1:2001+A2:2003, EN 55022:2006+A1:2007, EN 61000-3-2:2006, EN 61000-3-3:2008	
FCC: Part 15 Class B	
LVD: EN 60950-1:2006 + A11:2009	

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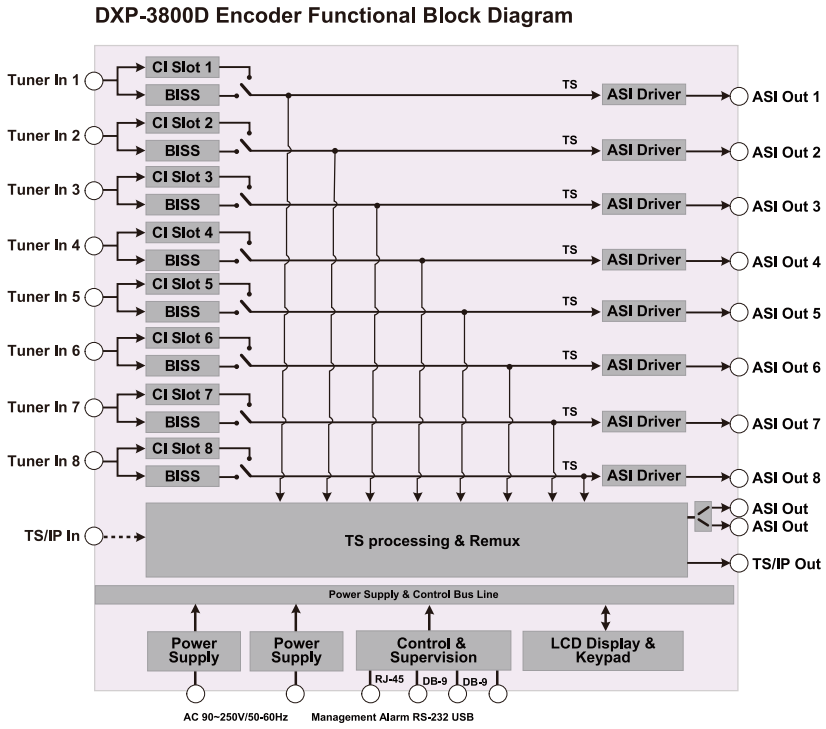
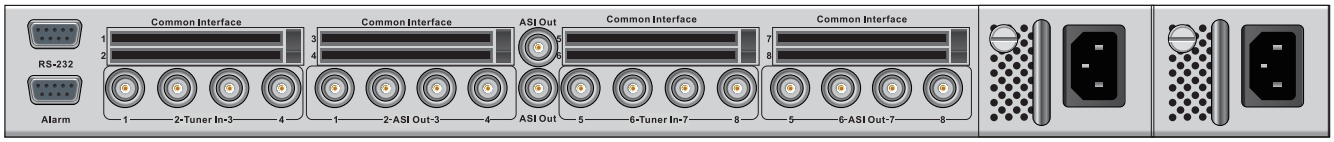
Block Diagram



Back Panel Interface



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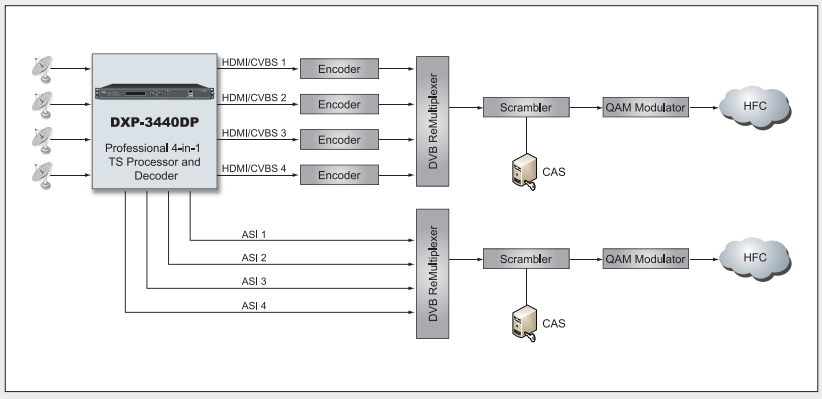
DXP-3440DP

Professional 4-in-1 TS Processor and Decoder

DXP-3440DP is a high-density, modular and CI decryption professional TS processor equipped with 4 independent tuners, which can be either of DVB-T/T2, DVB-S2/S, DVB-C, DTMB, ISDB-T and ATSC types. It supports a wide range of application by combining 4 tuners processing capability with industry standard outputs including ASI and TS/IP. DXP-3440DP has 4 DVB common interface slots capable of working with most of well-known CAS in the market to de-crypt multiple pay TV services. DXP-3440DP is also a professional IRD that features a broadcast quality decoder of MPEG-2 and MPEG-4 AVC/H.264 in both Standard Definition and High Definition formats, and provides a variety of industry standard digital and analog outputs, including 4xHDMI, 4XCVBS video, 4XAES/EBU Audio, and 4xBalance Audio. The unit also performs HD down-conversion and aspect ratio adaptation of HD programs to generate professional quality baseband analog video and audio outputs for easy integration with existing cable network infrastructure. DXP-3440DP provides operators an ideal solution for multi receiving, re-multiplexing, descrambling, multi decoding and TS over IP operations, all these features make DXP-3440DP one of the most competitive product in the head-end markett.

Main Feature

- 4 x Tuners Input, Supports variety of input options DVB-T2/T/S2/S/C/DTMB/ATSC/ISDB-T
- Supports DVB-S2 Input Stream Identifier (ISI, optional) and DVB-T2 Multi PLP and SFN MIP pass through
- Built-in TS re-multiplexer receives from IP, CI Slot1 to CI Slot4 and TS/IP inputs
- 4×DVB-CI Slots, multi-program decryption, BISS-1 and BISS-E decryption
- 4xASI output the transport stream from CI Slot1 to CI Slot4 or BISS decryption
- 1xchannel full duplex TS over IP, 5xchannels MPTS IP out, or 128xchannels SPTS IP out
- Multiple Analog and Digital Outputs, 4xHDMI, 4xCVBS, 4xAES/EBU Audio, and 4x XLR Audio
- Dynamic PMT detection and automatic updating
- Supports VBI TELETEXT, EBU/DVB Subtitle, Closed Caption
- Remote Control and Supervision by SNMP v2, HTTP WEB and Proprietary HDMS software
- On Site software update through IP or USB
- One alarm Relay with D-sub 9 male connector
- RSSI, received signal strength, Eb/N0, C/N and BER monitoring
- Redundency power supply



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Tuner Input	
DVB-S/S2 Tuner Input (ISI Factory Optional)	
Connector Type	4×F type female 75Ω for Input
Input Frequency Range	950~2150MHz
Input Level	-25~-65dBm
Symbol Rate	2~45MBaud
Roll-off Factor	DVB-S QPSK: 0.35 DVB-S2 8PSK: 0.35, 0.25, 0.2
FEC Code Rate	DVB-S QPSK: 1/2, 2/3, 3/4, 5/6, 7/8 DVB-S2 QPSK: 1/2, 3/5, 2/3, 3/4, 4/5, 5/6, 8/9,9/10 DVB-S2 8PSK: 3/5, 2/3, 3/4, 5/6, 8/9, 9/10
LNB Polarity Selection Voltage	0, 13V, 18V selectable
LNB Band Selection Tone	0/22KHz selectable
Satellite Selection Command	DiSEqC 1.0
ISI ID	1~255 user configurable
DVB-C Tuner Input	
Connector Type	4×F type female 75Ω for Input
Input Frequency Range	51~862MHz
Input Level	51~75dBμV
Symbol Rate	1~7MBaud (ITU J.83 Annex A)
Constellation	16QAM, 32QAM, 64QAM, 128QAM, 256QAM
Bandwidth	6MHz, 7MHz, 8MHz
Input Return Loss	7dB (typ.)
DVB-T/T2 Tuner Input	
Connector Type	4×F type female 75Ω for Input
Input Frequency	104~862MHz (VHF/UHF)
Input Level	-20~-70dBm
Constellation	DVB-T: QPSK, 16QAM, 64QAM DVB-T2: QPSK, 16QAM, 64QAM,256QAM
Bandwidth	6MHz, 7MHz, 8MHz
FFT Mode	DVB-T: 2K, 8K DVB-T2: 1K, 2K, 4K, 8K, 16K, 32K
Guarding Interval	DVB-T: 1/4, 1/8, 1/16, 1/32 DVB-T2: 1/4, 5/32, 1/8, 5/64, 1/16, 1/32, 1/64, 1/128
FEC Code Rate	DVB-T: 1/2, 2/3, 3/4, 5/6, 7/8 DVB-T2: 1/2, 3/5, 2/3, 3/4, 4/5, 5/6
Input Return Loss	7dB (typ.)
DTMB Tuner Input	
Connector Type	4×F type female 75Ω for Input
Input Frequency Range	46.5~866MHz
Input Level	-87~-29dBm
Symbol Rate	7.56MBaud
Bandwidth	6MHz/7MHz/8MHz
Constellation	4QAM-NR,4QAM,16QAM,32QAM, 64QAM
Guard Interval	PN420, PN595, PN945
Roll-off Factor	0.05
Interleaving Depth	240,720
FEC Code Rate	0.4, 0.6, 0.8
ATSC Tuner Input(compatible with ITU J.83 Annex B)	
Connector Type	4×F type female 75Ω for Input
Input Frequency Range	54~864MHz
Input Level	-75~-7dBm(ATSC 8VSB)
Symbol Rate	10.762MBaud
Constellation	8VSB
Roll-off Factor	0.115
Bandwidth	6MHz
TS Processing	
TS Input Management	Demux and Remux among IP input and CI1 to CI4 Inputs
TS Output Management	ASI1 to ASI4 output directly pass through the TS from CI1 to CI4, Demux and Remux for ASI5, ASI6 output and IP output
Service and PID Management	Service and PID level for Remux1, Remux2
PSI/SI	PSI/SI table regeneration, NIT and SDT edition, LCN Edition and Re-generation
Descrambler	DVB Common Scrambling Algorithm (CSA)
BISS Mode	BISS-1, BISS-E
Common Interface	4×PCMCIA slots, compatible with major CA CAMs in the market
ASI Output	
Connector Type	Daughter Board: 4×BNC female, independence output, 75Ω Main Board: 2×BNC female, independence output,75Ω
Standard	DVB-ASI, EN50083-9
Output Bit Rate	≤ 200Mb/s
TS Processing	Daughter Board: ASI1 to ASI4 out pass through the TS from CI 1 to CI4 Main Board: ASI5 out the TS from Remux1, ASI6 out the TS from Remux2
TS over IP	
Connector Type	1×RJ-45, 100/1000 Base-T
Effective Bit Rate	Support 3 different mode(need to reboot unit if change the TS/IP mode): 1. Max.430Mb/s for 6xchannels (4xchannels directly pass through the TS from CI1 to CI4, 1×channel output the TS from Remux1, and 1×channel output the TS from Remux2) MPTS IP out without IP in, 2. Max.430Mb/s for 128xchannels SPTS IP out the TS from one source, without IP in, 3. Max.80Mb/s for full duplex 1xchannel MPTS
Protocol	UDP/RTP, Multicast/Unicast, IGMPv3, ARP
A/V Decoding	
Video Standard	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)
Audio Standard	MPEG-1 Layer-I/II, MPEG-2 Layer-II LC-AAC, HE-AAC AC3, AC3+
HDMI Output	
Standard	4×HDMI 1.3 interface (up to 1080i)
Video Resolution and Frame Rate	1080i×30, 1080i×29.97, 1080i×25,720p×60,720p×59.94, 720p×50, 480p×60, 576p×50, 576i×25, 480i×29.97
Audio Embedded	4×stereo
Digital Audio Output	
Connector Type	4×DB15 female with AES/EBU adaptor cable
Number of Output	4×audio are decoded or passed through by AES
Audio Sampling Rate	32K, 44.1K and 48 KHz
Analog Audio Output	
Connector Type	4×DB15 female with 1 pair XLR adaptor cables
Output Impedance	600Ω for balance
Output Mode	Left, Right, Dual Mono, Stereo
Number of Output	4 x stereo audio output for Balance(XLR adaptor cables)
Cross Talk Among Channels	>70dB
THD	<0.3% @ 400Hz, 1KHz test tone
Frequency Response	±0.5dB over 20Hz ~ 18KHz
Analog Video Output	
Connector Type	4×DB15 female with CVBS adaptor cable(BNC)
CVBS Standard	NTSC, PAL, and SECAM

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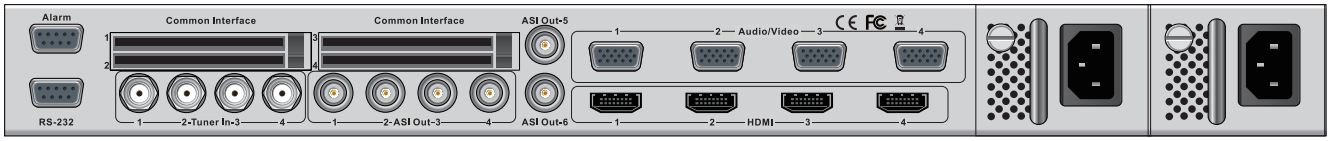
Video PID Bit Rate	≤50Mb/s
Norminal Output Level	1.0 Vp-p±5% (with standard test stream)
Frequency Response	<±1 dB, at 5.5 MHz for PAL/SECAM, 4.2MHz for NTSC and 15MHz for HD YPbPr
Chroma-Luma Delay	<±30 ns
Field Time Distortion	<2%
Line Time Distortion	<1%
Short Time Distortion	<2%
Differential Gain	<3%
Differential Phase	<2°
Ancillary Data Processing	
Subtitle	DVB, EBU
VBI	Telete×t, WSS
Closed Caption	EIA 608
Alarm	
Connector Type	1×D-sub 9 male
Switching Condition	User Defined
Control & Monitoring	
Connector Type	1×RJ-45, 10/100 Base-T, for equipment IP Control
Remote Control	SNMP, HTTP (Web Interface), Proprietary HDMS (Headend Device Management System)
Local Control	LCD display and 6-key keypad
Serial Port	1×RS-232 D-sub female, for debug use only
Equipment Upgrade	USB,WEB http and FTP
Physical	
Dimension	505mm x 445mm x 45mm
Weight	7.9kg
Power Supply	AC 90V ~ 250V, 50/60Hz
Power Consumption	30W (exclusive of LNB power)
Operating temperature	0~45℃
Storage temperature	-10~60℃
Operating Humidity	10~90%, non-condensed
Certification	
EMC: EN 55024:1998+A1:2001+A2:2003, EN 55022:2006+A1:2007, EN 61000-3-2:2006, EN 61000-3-3:2008	
FCC: Part 15 Class B	
LVD: EN 60950-1:2006 + A11:2009	

Back Panel Interface



PBI digital horizon

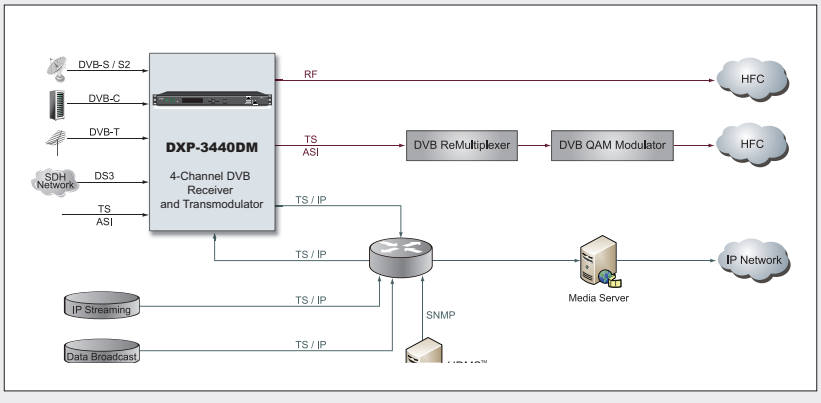
DXP-3440DM

4-Channel DVB Receiver and Transmodulator

DXP-3440DM integrates 4 DVB Receiver and Transmodulator in one 1U 19" chassis. It provides operators an ideal DTV headend setup solution by combining multi-channel receiving, descrambling, remultiplexing and DVB QAM/COFDM modulation and TS over IP operations together in one single unit. Equipped with 4 independent tuner front end with various factory options for DVB-T/T2, DVB-S2/S, DVB-C, DTMB, ISDB-T and ATSC types, and industrial standard ASI and TS/IP inputs outputs, DXP-3440DM ensures the compatibility with all kind of transmission media. The standard four PCMCIA common interface on the rear panel are capable of working with most of well-known CAS in the market to de-crypt multiple pay TV services. The compact space and powerful functions make DXP-3440DM one of the most competitive product in the head-end market.

Main Feature

- 4×Tuner Input, Supports variety of input options DVB-T2/T/S2/S/C/DTMB/ATSC/ ISDB-T
- Supports DVB-S2 Input Stream Identifier (ISI, optional) and DVB-T2 Multi PLP and SFN MIP pass through
- 4×DVB QAM/COFDM Modulation, 4 x RF Channel Output (Adjacent channel)
- Built-in TS re-multiplexer receives from ASI, CI Slot1 to CI Slot4 and TS/IP inputs
- 4×DVB-CI Slots, multi-program decryption, BISS-1 and BISS-E decryption
- 4×ASI output the transport stream from CI Slot1 to CI Slot4 or BISS decryption
- 1xchannel full duplex TS over IP or 5xchannels IP out without IP input
- Remote Control and Supervision by SNMP v2, HTTP WEB and Proprietary HDMS software
- On Site software update through IP or USB
- RSSI, received signal strength, Eb/N0, C/N and BER monitoring
- Redundant power supply



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Tuner Input	
DVB-S/S2 Tuner Input (ISI Factory Optional)	
Connector Type	4×F type female 75Ω for Input
Input Frequency Range	950~2150MHz
Input Level	-25~-65dBm
Symbol Rate	2~45MBaud
Roll-off Factor	DVB-S QPSK: 0.35
	DVB-S2 8PSK: 0.35, 0.25, 0.2
FEC Code Rate	DVB-S QPSK: 1/2, 2/3, 3/4, 5/6, 7/8
	DVB-S2 QPSK: 1/2, 3/5, 2/3, 3/4, 4/5, 5/6, 8/9,9/10
	DVB-S2 8PSK: 3/5, 2/3, 3/4, 5/6, 8/9, 9/10
LNB Polarity Selection Voltage	0,13V,18V selectable, available for Tuner 1&2
LNB Band Selection Tone	0/22KHz selectable, available for Tuner 1 & 2
Satellite Selection Command	DiSEqC 1.0
ISI ID	1~255 user configurable
DVB-C Tuner Input	
Connector Type	4×F type female 75Ω for Input
Standard	EN 300 429, ITU J.83 Annex A, B, C
Input Frequency Range	51~862MHz
Input Level	47~95dBμV 16QAM, SR=6.875Msps 256QAM, SR=6.875Msps
Symbol Rate	1~7MBaud (ITU J.83 Annex A)
Constellation	16QAM, 32QAM, 64QAM, 128QAM, 256QAM
Bandwidth	6MHz, 7MHz, 8MHz
Input Return Loss	8dB (typ.)
DVB-T/T2 Tuner Input	
Connector Type	4×F type female 75Ω for Input
Standard	EN 300 744(DVB-T), EN 302 755 (DVB-T2)
Input Frequency	104 ~ 862MHz (VHF/UHF)
Input Level	-20 ~ -70dBm
Constellation	DVB-T: QPSK, 16QAM, 64QAM
	DVB-T2: QPSK, 16QAM, 64QAM, 256QAM
Bandwidth	6MHz, 7MHz, 8MHz
FFT Mode	DVB-T: 2K, 8K
	DVB-T2: 1K, 2K, 4K, 8K, 16K, 32K
Guarding Interval	DVB-T: 1/4, 1/8, 1/16, 1/32
	DVB-T2: 1/4, 5/32, 1/8, 5/64, 1/16, 1/32, 1/64, 1/128
FEC Code Rate	DVB-T: 1/2, 2/3, 3/4, 5/6, 7/8
	DVB-T2: 1/2, 3/5, 2/3, 3/4, 4/5, 5/6
Input Return Loss	7dB (typ.)
ASI Input	
Connector Type	1×BNC female, 75Ω
Standard	DVB-ASI, EN50083-9
Input Bit Rate	≤216Mb/s
Built-in Remux	
Number of Input	9xMPTS/SPTS
Number of Output	5xMPTS/SPTS
TS Input Management	Demux and Remux among ASI, TS/IP and CI Inputs
TS Output Management	Remux for ASI output, TS/IP output and modulator
Service and PID Management	Service and PID level for Remux, filtering and remapping
PSI/SI	PSI/SI table regeneration, NIT and SDT edition, LCN Edition and Re-generation
Descrambling	
Descrambler	DVB Common Scrambling Algorithm (CSA)
Common Interface	4 x PCMCIA slots, compatible with major CA CAMs in the market
BISS Mode	BISS-1, BISS-E
QAM Modulation	
Standard of System	ETSI EN300 492, ITU J.83, Annex A/C: 16/32/64/128/256QAM
Symbol Rate	2.5~6.99 Bauds
Constellation	16QAM, 32QAM, 64QAM, 128QAM, 256QAM
I/Q Amplitude Error	≤ 0.1%
I/Q Phase Error	≤ 0.1%
Phase Jitter	< 0.5°RMS
MER	36dB min., 42dB typ. (with tester equalizer "off ")
COFDM Modulation	
Standard of System	ETSI EN 300 744
Constellation	QPSK/16QAM/64QAM
Bandwidth	5/6/7/8MHz
FTT carrier number	2K, 8K
Guard Interval	1/4, 1/8, 1/16, 1/32
FEC rate	1/2, 2/3, 3/4, 5/6, 7/8
MER	36dB min., 40dB typ.
RF Output	
Interface	1x F-type Female, 1x F-type Female(-20dB), 75Ω
Carrier Central Frequency	48~996MHz adjustable, step by 1 KHz
Output Level	92-109dBμV@1 RF output enabled, 88-105dBμV@ 2 RF output enabled 85-102dBμV@3 RF output enabled, 83-100dBμV@ 4RF output enabled step by 1dB
Spurious	≥55dBc typ.
Return Loss	≥12dB typ.
ASI Output	
Connector Type	6x BNC female, 75Ω,
Standard	DVB-ASI, EN50083-9
Output Bit Rate	≤ 200Mb/s
Data Mode	Byte
Package Length	188/204 Bytes
Signal Level	800±80mV
ASI Output Source	ASI out 1-4: TS from Tuner 1 to 4 pass through (Descrambled) ASI 5-6: TS from Remux (mirrored)
TS/IP Gigabit Ethernet (Duplex mode)	
Interface	1x RJ-45
Physical Layer Standard	IEEE 802.3, 10/100/1000 Base-T
Operation Mode	1. Full-duplex: 1x multicast/unicast input and output; 2. Multi-channel Output: 5x multicast/unicast MPTS/SPTS output; 3. IPTV Output: 128x multicast/unicast output, unstuffed stream with video/audio only
Maximum Effective Bit Rate	1. Full-duplex: Input: 80Mbps, Output: 80Mbps 2. Multi-channel Output: 700Mbps 3. IPTV Output: 430Mbps
Data Encapsulation	UDP, RTP
Other Protocols	Multicast/Unicast, IGMPv3,ARP
Alarm	
Connector Type	1×D-sub 9 male
Switching Condition	User Defined
Control & Monitoring	
Connector Type	1×RJ-45, 10/100 Base-T, for equipment IP Control
Remote Control	SNMP, HTTP (Web Interface), Proprietary HDMS (Headend Device Management System)
Local Control	LCD display and 6-key keypad
Serial Port	1×RS-232 D-sub female, for debug use only
Equipment Upgrade	Embedded FTP loader ,Telnet and http
Physical	
Dimension	44mm x 255mm x 430mm
Net Weight	3.2kg
Power Supply	AC 90V ~ 250V, 50/60Hz
Operating temperature	0~45℃
Storage temperature	-10~60℃
Operating Humidity	10~90%, non-condensed

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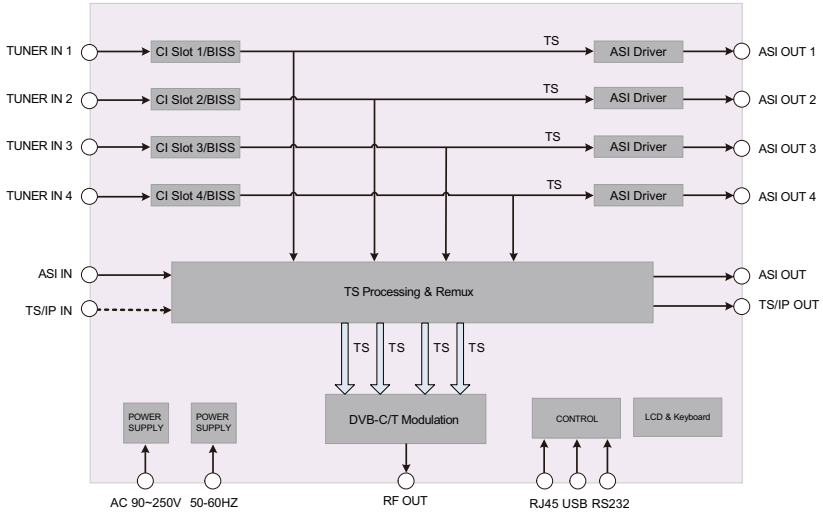
Order Information

Function		DXP-3440DM-S2C	DXP-3440DM-S2T	DXP-3440DM-T2C	DXP-3440DM-T2T
Input	Tuner	DVB-S2/S	DVB-S2/S	DVB-T2/T/C	DVB-T2/T/C
	ASI (BNC)	×1	×1	×1	×1
	TS/IP (GbE, RJ45)	•	•	•	•
Output	ASI x 4 (BNC)	•	•	•	•
	TS/IP (GbE, RJ45)	•	•	•	•
	QAM Modulation	•		•	
	COFDM Modulation		•		•
	RF Monitor -20dB	•	•	•	•
Alarm (Contact Relay)		•	•	•	•
IP Control port (RJ45)		•	•	•	•
RS-232		•	•	•	•

Block Diagram



Back Panel Interface

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DXP-3800MX

8-to-2 DVB Remultiplexer

DXP-3800MX is a professional broadcast DVB-TS Re-Multiplexer with dual independent remultiplexing unit. It can re-multiplex a large number of transport streams received over ASI and GbE interface and delivered via GbE interface and 2 independent ASI output ports. Remultiplexing up to 256 services with advanced management of PSI/SI tables, service filtering and remapping.

Main Feature

- Fully compliant with ISO13818 and EN300 468 standard
- Dual MPEG2/H.264 transport stream remultiplexing unit
- 8*ASI inputs, up to 216Mbps for each interface
- 2*ASI independent outputs with backup, up to 216Mbps for each interface
- GbE interface up to 700Mbps(multi-channel output) or 80Mbps(full duplex)
- Reultiplexing up to 256 services
- Advanced management of PSI/SI tables, service filtering and remapping
- EIT bypass or re-generate
- Web and SNMP control and monitoring
- Compact 1RU cabinet with dual hot-swap power supplies

Specification

ASI Input	
Connector Type	8×BNC female, 75Ω
Standard	DVB-ASI, EN50083-9
Input Bit Rate	≤216Mb/s
TS over IP	
Connector Type	1×RJ-45, 100/1000 Base-T
Protocol	UDP/RTP, Multicast/Unicast, IGMP V2, V3
TS/IP Number	1 MPTS or SPTS (Full Duplex Mode); 10 MPTS (Multi-Channel Mode)
Max. Bit Rate	80Mb/s (Full Duplex Mode); 700Mb/s (Multi-Channel Mode)
TS Processing	
Max. Input Bit Rate	8×216Mb/s
Max. Output Bit Rate	2×180Mb/s
Package Length	188/204
Re-multiplexing	PSI auto generation Service and PID filtering and re-mapping NIT insertion and LCN edition EIT Processing
ASI output Monitoring	
Connector Type	2×BNC female, 75Ω
Standard	DVB-ASI, EN50083-9
Function	remux of 8 ASI inputs
Output Bit Rate	≤216Mb/s
Control & Monitoring	
Connector Type	1×RJ-45, 10/100 Base-T, for equipment IP Control
Control	Front panel, Web and SNMP
Software Upgrade	FTP Loader ,Telnet , USB and Web
Physical	
Power Supply	AC90~260V 50~60Hz
Power Consumption	50W
Temperature	Storage -10 to 60℃; Operation 0 to 45℃
Net Weight	7kg
Dimensions	482mm×504mm×44mm
Operating Humidity	10 to 90%, non-condensed
Front Panel	
Display	2×20 LCD Display

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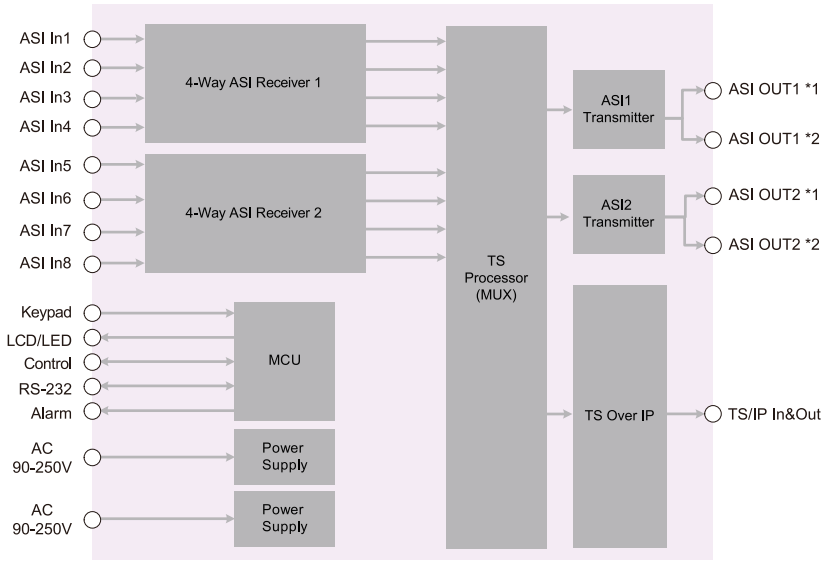
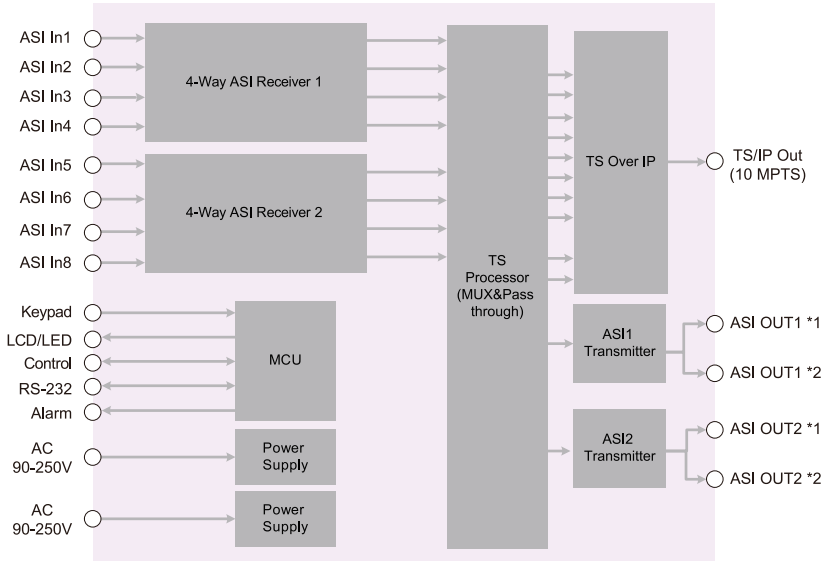
Block Diagram

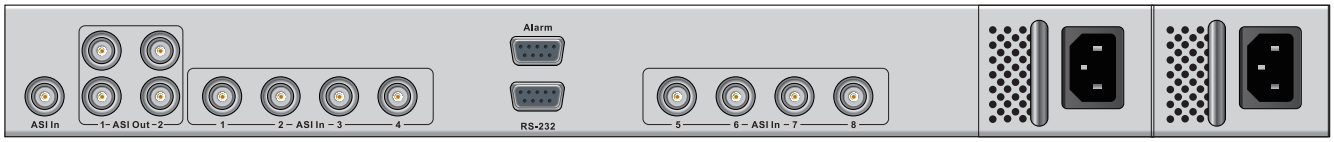
DXP-3800MX Functional Block Diagram (Full Duplex Mode)



DXP-3800MX Functional Block Diagram (Multi Channel Mode)



Back Panel Interface



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DMM-1000

Compact Modular Digital TV Headend

DMM-1000 is a compact modular digital TV headend that includes professional MPEG-2 and MPEG-4 AVC/H.264 SD/HD IRD, MPEG-2 and MPEG-4 AVC/H.264 SD/HD Encoder/Transcoder, Re-Multiplexer, QAM/COFDM Trans-Modulator, Dual Channel Analog Modulator, DVB Scrambler and so on. Within a 4U×19" chassis, it provides 8 slots for any type of modules and 2 redundant power supply units. Thanks for its flexibility and high density, DMM-1000 offers operators the advanced headend architectures in the marketplace for delivering analog and digital broadcast services to their subscribers. Coming with more new modules, DMM-1000 is most suitable for future multiple network architectures: streaming and multiplexing of digital content over IP based networks and conversion of digital content for analog networks.

Independent Hot-Swappable Functional Modules

Five hot-swappable fans assembly for longer MTBF

Redundant power supply unit

Main Feature

- DVB-S2/S, DVB-S, DVB-C, DVB-T2/T IRD modules with CI
- DVB-S/S2T/T2 to DVB-C QAM and DVB-T COFDM trans-modulator module
- MPEG-2, H.264 HD/SD encoder and trans-coder module
- 8 Way re-multiplexer module
- DVB Simulcrypt, BISS-1, BISS-E scrambler module
- Rich interface with ASI, IP, SDI, YPbPr, CVBS, XLR
- Web, SNMP Remote Control or handheld programmer unit local control
- 4RU 19"chassis compact modular design, supporting up to 8 modules
- Functional module hot-swappable
- Redundant power supply
- Intelligent cooling system with temperature
- Stand alone function of each module
- Cost-saving by backward compatible with new modules
- On site software update through IP

Product List

Product name	Model No.	Description
Compact Modular Digital Headend	DMM-1000MF	4RU Chassis with 8 Slots
	DMM-200MF	1RU Chassis with 2 Slots
	DMM-1000CU	Programmer Unit
	DMM-1200P	Single Channel MPEG-2 SD IRD and Processor
	DMM-1400P	Single Channel MPEG-2 SD IRD and Processor
	DMM-1500P	Single Channel H.264 HD IRD and Processor
	DMM-1300TM	Single Channel Transmodulator
	DMM-1400PM	Professional IRD and Trans-modulator Module
	DMM-1300EC	Single Channel MPEG-2 SD Encoder
	DMM-1400EC	Single Channel H.264 SD Encoder and Transcoder
	DMM-1500EC	Single Channel H.264 HD Encoder and Transcoder
	DMM-1520EC	Single Channel H.264 HD Encoder
	DMM-1400MX	8-Way Remultiplexer with IP I/O

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Chassis

DMM-1000MF Main Chassis

- Standard 4 RU chassis with 8 slots for functional modules and 2 slots for Power Supplies
- Hot-backup power supply unit
- Intelligent cooling system with temperature sensor
- Wall mounted or Rack mounted
- Compatible with new successive modules
- Power Supply: AC 90V-250V, 150Watts, 50-60Hz
- Optional Build-in IP Switch
- Dimension: L=340mm, W=483mm, H=178mm (4U)
- Operating temperature: 0 ~ 45℃(for all modules)
- Storage temperature: -10 ~ 60℃(for all modules)

DMM-200MF Main Chassis

- Standard 1 RU chassis with 2 slots for functional modules
- 1 power supply
- Intelligent cooling system with temperature sensor
- Wall mounted or Rack mounted
- Compatible with new successive modules
- Power Supply: AC 90V-250V, 150Watts, 50-60Hz
- Dimension: L=340mm, W=483mm, H=44.5mm (1U)

DMM-1000CU Programmer Unit

- 2×20 LCD display screen and 6-key keypad
- No external power nor battery needed
- Easy and quick on site system configuration without PC
- Compatible with new modules
- Dimension 170×70×22 mm

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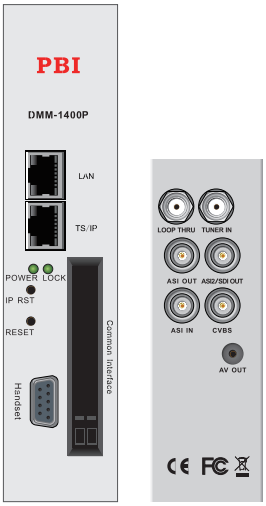
MPEG-2 SD IRD and processor module

DMM-1200P/1400P Series
Single Channel MPEG-2 SD IRD and Processor



- Multiple inputs DVB-S2/S/C/T, TS/IP and ASI
- SD MPEG-2 MP@ML digital Video decoding
- Flexible built-in re-multiplexing between ASI, Tuner and TS/IP Inputs
- 2x DVB-CI Slots, Multi Programs, BISS-1 and BISS-E decryption
- Dynamic PMT detection and automatic updating
- UDP, RTP Multicast / Unicast IP output, supports up to 32 independent channels
- PCM audio embedded in SDI output
- Remote Control and Supervision by SNMP, HTTP WEB and Proprietary HDMS software
- RSSI, received Eb/No & BER monitoring
- On Site software update through IP

Specification

Tuner Input	
DVB-S/S2 Tuner Input	
Connector Type	1×F type female 75Ω for Input, 1×F type female 75Ω for loop through output
Input Frequency Range	950 ~ 2150MHz
Input Level	-25 ~ -65dBm
Symbol Rate	DVB-S QPSK: 5~45MS/s; DVB-S2 8PSK 10~31MS/s
Roll-off Factor	DVB-S QPSK: 0.35; DVB-S2 8PSK: 0.35, 0.25, 0.2
FEC Code Rate	DVB-S2 8PSK: 2/3, 3/4, 3/5, 5/6, 8/9, 9/10
	DVB-S QPSK: 1/2, 2/3, 3/4, 5/6, 6/7, 7/8
LNB Polarization	0, 13V, 18V selectable
LNB Band Switching Tone	0/22KHz selectable
DVB-S Tuner Input	
Connector Type	1×F type female 75Ω for Input, 1×F type female 75Ω for loop through output
Input Frequency Range	950 ~ 2150MHz
Input Level	-25 ~ -65dBm
Symbol Rate	2 ~ 45MS/s
Roll-off Factor	0.35
Puncture Rate	1/2, 2/3, 3/4, 5/6, 7/8
LNB Polarization	0, 13V, 18V selectable
LNB Band Switching Tone	0/22KHz selectable
DVB-C Tuner Input	
Connector Type	1×F type female 75Ω for Input, 1×F type female 75Ω for loop through output
Input Frequency Range	48~860MHz
Symbol Rate	1 ~ 7MS/s (ITU J.83 Annex A)
Constellation	64/128/256 QAM
Input Level	-15 ~ 15dBmV
Bandwidth	6/7/8MHz
Input Return Loss	7dB (typ.)
DVB-T Tuner Input	
Connector Type	1×F type female 75Ω for Input, 1×F type female 75Ω for loop through output
Input Frequency Range	174 ~ 230MHz (VHF); 470~860MHz (UHF)
Input Level	-20 ~ -70dBm
Constellation	QPSK, 16-QAM, 64-QAM

Carrier Bandwidth	6/7/8 MHz
FTT Mode	2K/8K
Guard Interval	1/4, 1/8, 1/16, 1/32
FEC Code Rate	1/2, 2/3, 3/4, 5/6, 7/8
ASI Input	
Connector	1×BNC Female, 75Ω
Standard	DVB-ASI, EN50083-9
Input Bit Rate	≤ 100Mb/s
Package Length	188 or 204 Bytes
TS over IP (for 1400P series)	
Connector Type	1×RJ45, 10/100M for TS/IP
Useful bit rate	70Mb/s for 10/100M
Protocol	UDP / RTP, Multicast / Unicast, IGMPv2, ARP
TS Processing	
TS Input Management	Remux and demux between Tuner, ASI and TS/IP Inputs
TS Output Management	Remux and demux for 2 mirror ASI outputs
Service and PID management	Remux, filtering and remapping
PSI/SI	PSI/SI table regeneration, NIT and SDT edition, LCN Edition and Re-generation
Descrambler	DVB Common Scrambling Algorithm (CSA)
Common Interface	Double PCMCIA slots, compatible with major CA CAMs in the market
ASI Output	
Connector Type	2×BNC Female, 75Ω (one connector is shared with SDI output)
Standard	DVB-ASI, EN50083-9
Output Bit Rate	≤ 99Mb/s
Digital Video Processing	
Video Standard	MPEG-2(MP@ ML)
SDI Video Resolution	576i×25, 480i×29.97
Video Bit Rate	< 80Mb/s
SD-SDI Output	
Connector Type	1×BNC Female, 75Ω (share with one of the two ASI outputs)
Serial Interface	SMPTE 259M, 270 Mb/s (10bit)
Level	800mV p-p
Audio Embedded	Yes

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Digital Audio Processing	
Number of Output	1 pair of stereo audio output (1 Audio PID is decoded)
Analog Video Output	
CVBS Connector	1×BNC, 1×2.5mm phone jack (with phone jack to RCA adaptor)
Video Standard	NTSC, PAL, and SECAM
Analog Audio Output	
Connector Type	1×2.5mm phone jack for CVBS and stereo audio

Number of Output	1 pair of stereo audio
Control & Monitoring	
Connector Type	1× RJ45, 10/100M, for equipment IP Control
Remote Control	SNMP, HTTP Web, Proprietary HDMS Network System Management Software
Local Control	Handheld Programmer Unit
Software Upgrade	FTP loader

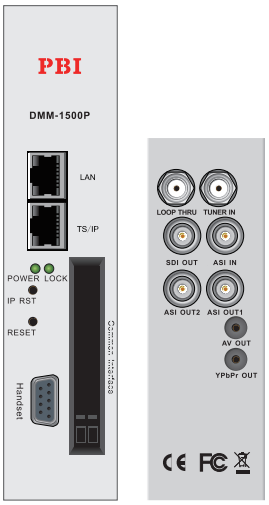
Order Information

Model / Interface	DMM-XXXX-XX											
	1200P-S	1200P-S2	1200P-C	1200P-T	1400P-S	1400P-S2	1400P-C	1400P-T	1400P-44S	1400P-44S2	1400P-44C	1400P-44T
Tuner	-S	-S2/S	-C	-T	-S	-S2/S	-C	-T	-S	-S2/S	-C	-T
ASI Input	•	•	•	•	•	•	•	•	•	•	•	•
Common Interface	×2	×2	×2	×2	×2	×2	×2	×2	×2	×2	×2	×2
Built-in Re-mux	•	•	•	•	•	•	•	•	•	•	•	•
ASI-Output	•	•	•	•	•	•	•	•	•	•	•	•
SDI	•	•	•	•	•	•	•	•	•	•	•	•
YPbPr	•	•	•	•	•	•	•	•	•	•	•	•
Audio L/R	•	•	•	•	•	•	•	•	•	•	•	•
CVBS	•	•	•	•	•	•	•	•	•	•	•	•
TS/IP(Max.6 SPTS or MPTS output)					•	•	•	•				
TS/IP(Max.32 SPTS or MPTS output)									•	•	•	•

H.264 HD IRD and Processor Module

DMM-1500P Series
Single Channel H.264 HD IRD and Processor

- Multiple inputs DVB-T2/S2/S/C/T/T2, TS/IP and ASI
- Redundant inputs between Tuner, ASI and TS/IP
- SD/HD MPEG-2 and MPEG-4/H.264 digital Video decoding
- Digital Audio decoding and loop through via
- Multiple Analog and Digital Outputs, ASI, CVBS, YPbPr, SDI, TS/IP
- Flexible re-multiplexing between 2×ASI, Tuner and TS/IP Inputs
- 2×DVB-CI Slots, Multi Programs, BISS 1 and BISS E decryption
- Dynamic PMT detection and automatic updating
- Support VBI TELETEXT, EBU/ DVB Subtitle, Closed Caption
- UDP/RTP & Unicast/Multicast SPTS and MPTS over IP I/O
- Remote Control and Supervision by SNMP, HTTP WEB and Proprietary HDMS software
- PCM audio embedded in SDI output
- On Site software update through IP
- RSSI, received Eb/No & BER monitoring



Order Information

Model / Interface	DMM-XXXX-XX									
	1500P-30S2	1500P-30C	1500P-30T	1500P-30T2	1500P-30M	1500P-44S2	1500P-44C	1500P-44T	1500P-44T2	1500P-44M
Tuner	-S2/S	-C	-T	-T2	-DTMB	-S2/S	-C	-T	-T2	-DTMB
ASI Input	•	•	•	•	•	•	•	•	•	•
Common Interface	×2	×2	×2	×2	×2	×2	×2	×2	×2	×2
Built-in Re-mux	•	•	•	•	•	•	•	•	•	•
ASI Output	×2	×2	×2	×2	×2	×2	×2	×2	×2	×2
SDI	•	•	•	•	•	•	•	•	•	•
YPbPr	•	•	•	•	•	•	•	•	•	•
Audio L/R	•	•	•	•	•	•	•	•	•	•
CVBS	•	•	•	•	•	•	•	•	•	•
TS/IP(Max.32 SPTS or MPTS output)						•	•	•	•	•

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Specification

Tuner Input	
DVB-S/S2 Tuner Input	
Connector Type	1×F type female 75Ω for Input, 1×F type female 75Ω for loop through output
Input Frequency Range	950~2150MHz
Input Level	-25~-65dBm
Symbol Rate	5~45MS/s for QPSK 10~31MS/s for 8PSK
Roll-off Factor	DVB-S QPSK: 0.35; DVB-S2 8PSK: 0.35, 0.25, 0.2
Punctured Rates	DVB-S QPSK:1/2, 3/5, 2/3, 3/4, 4/5, 5/6, 8/9, 8/10
	DVB-S2 8PSK:3/5, 2/3, 3/4, 5/6, 8/9, 9/10
LNB Polarization	0, 13V, 18V selectable
LNB Band Switching Tone	0/22KHz selectable
DiSEqC	DiSEqC 1.0
DVB-C Tuner Input	
Connector Type	1×F type female 75Ω for Input, 1×F type female 75Ω for loop through output
Input Frequency Range	48~860MHz
Input Level	45~75dBuV
Symbol Rate	1~7MS/s (ITU J.83 Annex A)
Constellation	64/128/256 QAM
Bandwidth	6/7/8MHz
Input Return Loss	7dB (typ.)
DVB-T/T2 Tuner Input	
Connector Type	1×F type female 75Ω for Input, 1×F type female 75Ω for loop through output
Input Frequency	104~862MHz (VHF/UHF)
Input Level	-20~-70dBm (Quasi Error Free, QEF)
Constellation	DVB-T: QPSK/16-QAM/64-QAM
	DVB-T2: QPSK, 16QAM, 64QAM, 256QAM
Bandwidth	6/7/8 MHz
FTT Mode	DVB-T: 2K/8K
	DVB-T2: 1K, 2K, 4K, 8K, 16K, 32K
Guard Interval	DVB-T: 1/4, 1/8, 1/16, 1/32
	DVB-T2: 1/4, 5/32, 1/8, 5/64, 1/16, 1/32, 1/64, 1/128
FEC Code Rate	DVB-T: 1/2, 2/3, 3/4, 5/6, 7/8
	DVB-T2: 1/2, 3/5, 2/3, 3/4, 4/5, 5/6
Input return loss	7dB (typ.)
ASI Input	
Connector Type	1×BNC Female, 75Ω
Standard	DVB-ASI, EN50083-9
Input Bit Rate	≤ 100Mb/s
Package Length	188 or 204 Bytes
TS over IP	
Connector Type	1×RJ45, 10/100M for TS/IP
Useful bit rate	70Mb/s for 10/100M
Protocol	UDP / RTP, Multicast / Unicast, IGMPv2, ARP
TS Processing	
TS Input Management	Remux and demux between Tuner, ASI and TS/IP Inputs
TS Output Management	Remux and demux for 2 independent ASI outputs
Service and PID management	Remux, filtering and remapping
PSI/SI	PSI/SI table regeneration, NIT and SDT edition, LCN Edition and Re-generation
Descrambler	DVB Common Scrambling Algorithm (CSA)
BISS Mode	BISS-1, BISS-E
Common Interface	Double PCMCIA slots, compatible with major CA CAMs in the market
ASI Output	
Connector Type	2×BNC Female, 75Ω
Standard	DVB-ASI, EN50083-9
TS Processing	2 Independent TS Re-multiplexing from tuner, TS/IP and 2 ASI inputs
Digital Video Processing	
Video Standard	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)
SDI Video Resolution	1080i×30, 1080i×29.97, 1080i×25, 720p×60
	720p×59.94, 720p×50, 576i×25, 480i×29.97
Video Bit Rate	< 80Mb/s
SDI Connector Type	1×BNC Female, 75Ω
SD-SDI Serial Interface	SMPTE 259M, 270 Mb/s (10bit)
HD-HDI Serial Interface	SMPTE 292M, 1.485 Gbit/s (10bit)
Level	800mV p-p
Digital Audio Processing	
Number of Output	1 pair of audio outputs
Analog Video Output	
YPbPr Connector	1×2.5mm phone jack, 75Ω (with phone jack to RCA adaptor,)
CVBS Connector	1×2.5mm phone jack, 75Ω (with phone jack to RCA adaptor,)
Video Standard	NTSC, PAL, and SECAM
YPbPr Resolution	1080i×30, 1080i×29.97, 1080i×25, 720p×60, 720p×59.94,
	720p×50, 480p×60, 576p×50, 576i×25, 480i × 29.97
Signal Level	I.0 Vp-p±5%
Frequency Response	< ±I dB at 5.5 MHz
Chroma-Luma Delay	<±30 ns
Field Time Distortion	<2%
Line Time Distortion	<1%
Short Time distortion	<2%
Differential Gain	<4%
Differential Phase	<2°
Signal to Noise Ratio	>55 dB (luminance weighted)
Analog Audio Output	
Connector type	1×2.5mm phone jack, 75Ω (with phone jack to RCA adaptor,)
Output mode	Left, Right, Dual Mono, Stereo
Baseband Data Output	
Subtitle	DVB/EBU
VBI	Teletext, WSS, VFD, VPS
Closed Caption	EIA 608, EIA 708, EIA 608-to-708
Redundancy	
Redundancy Port	between Tuner, ASI inputs and TS/IP
Switching Condition	TS Sync Loss
Switching Mode	Main, Spare
Control & Monitoring	
Connector Type	1×RJ45, 10/100M, for equipment IP Control
Remote Control	SNMP, HTTP Web, Proprietary HDMS Network System Management Software
Local Control	Handheld Programmer Unit
Equipment Upgrade	FTP loader

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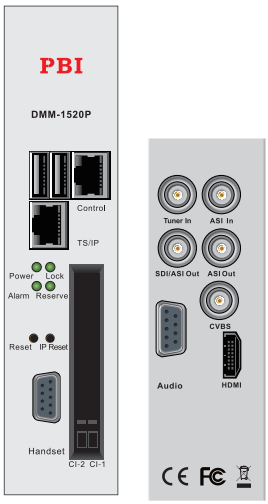
H.264 HD IRD and Processor Module

DMM-1520P Series
Professional HD/SD IRD and Processor Module



As the up-to-date PBI's professional IRD and HDTV Processor of DMM1000 series, DMM-1520P succeeds all functions from DMM-1500P, and exceeds the previous generation in terms of performance & functionalities. DMM-1520P could support two AC-3 audio or down-mixed PCM audio pass-through over SDI and AES-EBU. The integrated decoder complies with MPEG-4 (AVC high profile level 4.1) and MPEG-2 (MP@ML&MP@HL) standards. Depending on the hardware configuration, DMM-1520P is able to support various optional of reception for DVB-T2/T, DVB-S2/S, DVB-C, DTMB, ASTC, ISDB-T, TS over IP, and ASI input. Equipped with two CI slots, multi-descramble could be achieved by working with professional CAM modules. The descrambled stream could be delivered to the ASI output directly, or to the built-in re-multiplexer, or to the IP Output. Meantime, the decoded video could be outputted via HDMI, SDI with embedded audio, and CVBS (down scaled) interfaces. The built-in re-multiplexer could accept transport streams from tuner, ASI input, IP input, and the descrambled stream from CI slot, and output stream could be highly customized through the user-configurable PSI/SI regenerator. The compact design and the powerful decoding ability make DMM-1520P one of the most competitive modules in DMM1000 series.

Main features

- Factory optional for DVB-S2/S/C/T2/T, DTMB, ISDB-T and ATSC demodulations
- MPEG-2 (MP@ ML& MP@HL) and MPEG 4 Part 10 (AVC high profile level 4.1) standards compliant and decoding
- Wide choice of I/O interfaces, including ASI input/output, CVBS output, HDMI output, SD/HD-SDI output (embedded 2 pairs stereos audio), AES/EBU output, 10M/100M/1000M TS over IP input/output
- PLS(Physical Layer Signalling) function available on DVB-S2 tuner
- Single or Multi PLP(Physical Layer Pipe) function available on DVB-T2 tuner
- Built-in 1 TS re-multiplexer
- BISS 1 or BISS E decryption
- Dynamic PMT detection and automatic update
- Support Tuner, ASI input and TS over IP input redundance
- VBI TELETEXT, WSS and Closed Caption support over analog output or embedded in SDI
- 10M/100M/1000M Ethernet TSoIP Input and Output
- UDP/RTP & Unicast/Multicast for TS over IP input and output
- DVB (MPTS) and IPTV (SPTS) mode IP output
- Control and surveillance over WEB or HDMS software remotely
- Two DVB-CI slots, support multiple programs decryption
- Software up-gradable in the field easily through USB or update remotely by Web interface
- Support two AC3 or PCM audio embedded in SDI output
- Support NTP(Network Time Protocol)
- Support16 groups of parameters configuration preset
- RSSI, received Eb/No & BER available on Web interface

Order Information

Interface \ Model		DMM-1520P-S2	DMM-1520P-T2
Input	DVB-S2/S	•	
	DVB-T2/T/C		•
	CI	×2	×2
	TS/IP	•	•
Output	HDMI	•	•
	CVBS&Audio L/R	•	•
	ASI	•	•
	TS/IP	•	•
	HD-SDI	•	•

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Specification

Tuner Input	
DVB-S/S2	
Connector Type	1×F type female 75Ω for Input, 1×F type female 75Ω for Loop through
Input Frequency Range	950~2150MHz
Input Level	-25~-65dBm
Symbol Rate	2~45MBaud
Roll-off Factor	DVB-S QPSK: 0.35 DVB-S2 8PSK: 0.35, 0.25, 0.2
FEC Code Rate	DVB-S QPSK: 1/2, 2/3, 3/4, 5/6, 7/8 DVB-S2 QPSK: 1/2, 3/5, 2/3, 3/4, 4/5, 5/6, 8/9,9/10 DVB-S2 8PSK: 3/5, 2/3, 3/4, 5/6, 8/9, 9/10
LNB Polarity Selection Voltage	0, 13V, 18V selectable
LNB Band Selection Tone	0/22KHz selectable
Satellite Selection Command	DiSEqC 1.0
DVB-T/T2	
Connector Type	1×F type female 75Ω for Input, 1×F type female 75Ω for Loop through
Input Frequency	104~862MHz (VHF/UHF)
Input Level	-20~-70dBm
Constellation	DVB-T: QPSK, 16QAM, 64QAM DVB-T2: QPSK, 16QAM, 64QAM, 256QAM
Bandwidth	6MHz, 7MHz, 8MHz
FFT Mode	DVB-T: 2K/8K DVB-T2: 1K, 2K, 4K, 8K, 16K, 32K
Guard Interval	DVB-T: 1/4, 1/8, 1/16, 1/32 DVB-T2: 1/4, 5/32, 1/8, 5/64, 1/16, 1/32, 1/64, 1/128
FEC Code Rate	DVB-T: 1/2, 2/3, 3/4, 5/6, 7/8 DVB-T2: 1/2, 3/5, 2/3, 3/4, 4/5, 5/6
Input Return Loss	7dB (typ.)
DVB-C	
Connector Type	1×F type female 75Ω for Input, 1×F type female 75Ω for Loop through
Input Frequency Range	51~862MHz
Input Level	45~75dBμV
Symbol Rate	1~7Mbaud (ITU J.83 Anne× A)
Constellation	16QAM, 32QAM, 64QAM, 128QAM, 256QAM
Bandwidth	6MHz, 7MHz, 8MHz
Input Return Loss	7dB (typ.)
TS over IP	
Connector Type	1×RJ-45, 10M/100M/1000M Base-T for TS/IP
TS/IP Mode	32 x SPTS Out or Full duplex(1 x MPTS In + 1 x MPTS Out)
Effective Bit Rate	120M for 32 x SPTS Out, 100M for Full duplex
Protocol	UDP/RTP, Multicast/Unicast, IGMPv3, ARP
TS Processing	
TS Input Management	Demu× and Remu× among Tuner, ASI Input and TS/IP Input
TS Output Management	Demu× and Remu× for ASI output
Service and PID Management	Remu×, filtering and remapping
PSI/SI	PSI/SI table regeneration, PMT and SDT edition
Descrambler	DVB Common Scrambling Algorithm (CSA)
BISS Mode	BISS-1, BISS-E
Common Interface	Double PCMCIA slots, compatible with major CA CAMs in the market
ASI Output	
Connector Type	1xBNC female, 75Ω
Standard	DVB-ASI, EN50083-9
Output Bit Rate	≤200Mb/s
TS Processing	TS Re-multiple×ed from Tuner, ASI Input and TS/IP Input
A/V Decoding	
Video Standard	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)
Audio Standard	MPEG-1 Layer-I/II, MPEG-2 Layer-II LC-AAC, HE-AAC AC3, AC3+
HDMI Output	
Standard	1×HDMI 1.3 interface (up to 1080i)
Video Resolution and Frame Rate	1080i×30, 1080i×29.97, 1080i×25,720p×60,720p×59.94, 720p×50, 480p×60, 576p×50, 576i×25, 480i×29.97
Audio Embedded	1×stereo
HD/SD-SDI Output(Can be configured as ASI Output)	
Connector Type	1xBNC, female, 75Ω
Standard	SMPTE 259M, 270 Mb/s for SD, SMPTE 292M, 1.485 Gbit/s for HD
Level	800mV p-p
Video Resolution and Frame Rate	1080i×30, 1080i×29.97, 1080i×25, 720p×60, 720p×59.94, 720p×50, 576i×25, 480i×29.97
Video PID Bit Rate	≤50Mb/s
Digital Audio Output	
Connector Type	1×D-sub 9 female with AES/EBU adaptor cable and 1xBNC SDI embedded
Number of Output	1×audio are decoded or passed through by AES, 2xaudios are decoded or pass through by SDI
Audio Sampling Rate	32K, 44.1K and 48 KHz
Analog Audio Output	
Connector Type	1×DB9 female with 1 pair XLR adaptor cables or 2 pairs R/L BNC cables
Output Impedance	600Ω for balance
Output Mode	Left, Right, Dual Mono, Stereo
Number of Output	1 x stereo audio output for Balance(XLR adaptor cables) or 2 x stereos audio outputs for RCA (BNC cables)
Cross Talk Among Channels	>70dB
THD	<0.3% @ 400Hz, 1KHz test tone
Frequency Response	±0.5dB over 20Hz ~ 18KHz
Analog Video Output	
Connector Type	1×BNC
CVBS Standard	NTSC, PAL, and SECAM
Video PID Bit Rate	≤50Mb/s
Norminal Output Level	1.0 Vp-p±5% (with standard test stream)
Frequency Response	<±1 dB, at 5.5 MHz for PAL/SECAM, 4.2MHz for NTSC and 15MHz for HD YPbPr
Chroma-Luma Delay	<±30 ns
Field Time Distortion	<2%
Line Time Distortion	<1%
Short Time Distortion	<2%
Differential Gain	<3%
Differential Phase	<2°
Ancillary Data Processing	
Subtitle	DVB, EBU
VBI	Telete×t, WSS
Closed Caption	EIA 608, EIA 708, EIA 608-to-708
SDI Embedded	Teletext, WSS, Closed Caption
Redundancy	
Redundancy Port	among Tuner, ASI input and TS/IP input
Switching Condition	TS Sync Loss or no PAT packet
Switching Mode	Main, Spare

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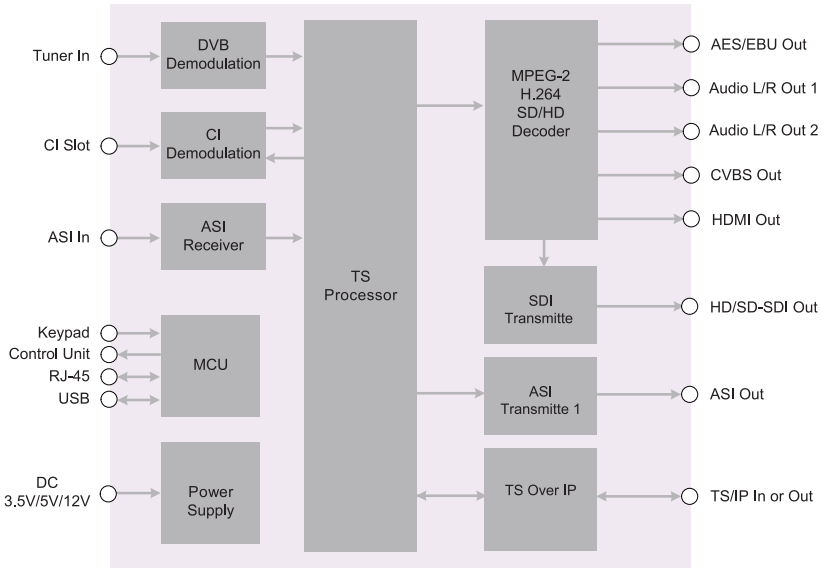
Control & Management	
Connector Type	1×RJ-45, 10M/100M Base-T, for equipment IP Control
Remote Control	SNMP v1/v2, HTTP (Web Interface), Proprietary HDMS (Headend Device Management System)
Local Control	Handset display and 6-key keypad with VGA interface

Equipment Upgrade	WEB HTTP or USB or Telnet
Physical	
Power Supply	DC 3.3V/5V/12V
Power Consumption	20W
Operating temperature	0~45℃
Storage temperature	-10~60℃
Operating Humidity	10~90%, non-condensed

Block Diagram

DMM-1520P Functional Block Diagram



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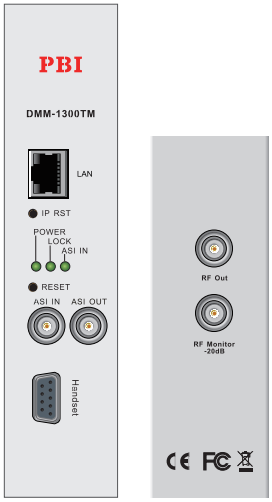
Digital TV Modulator and Trans-Modulator

DMM-1300TM Series
Single Channel Transmodulator



- DVB-S2/S, DVB-C or DVB-T Tuner Input
- ASI input and output
- Flexible re-multiplexing between ASI and Tuner inputs
- PSI/SI adapting and re-generation, including NIT insertion, LCN insertion etc.
- Service Drop or PID filtering and Re-mapping
- Remote Control and Supervision by SNMP, HTTP WEB and Proprietary HDMS software
- On Site software update through IP
- RSSI, received Eb/No & BER monitoring

Specification

Tuner Input	
DVB-S/S2 Tuner Input	
Connector Type	1×F type female 75Ω for Input, 1×F type female 75Ω for loop through output
Input Frequency Range	950~2150MHz
Input Level	-25~-65dBm
Symbol Rate	DVB-S QPSK: 5~45MS/s; DVB-S2 8PSK 10~31MS/s
Roll-off Factor	DVB-S QPSK: 0.35; DVB-S2 8PSK: 0.35, 0.25, 0.2
Punctured Rates	DVB-S2 8PSK: 2/3, 3/4, 3/5, 5/6, 8/9, 9/10
	DVB-S QPSK: 1/2, 2/3, 3/4, 5/6, 6/7, 7/8
LNB Polarization	0, 13V, 18V selectable
LNB Band Switching Tone	0/22KHz selectable
DVB-C Tuner Input	
Connector Type	1×F type female 75Ω for Input, 1×F type female 75Ω for loop through output
nput Frequency Range	48~860MHz
Symbol Rate	1~7MS/s (ITU J.83 Annex A)
Constellation	64/128/256 QAM
Input Level	-15~15dBmV
Bandwidth	6/7/8MHz
Input Return Loss	7dB (typ.)
DVB-T Tuner Input	
Connector Type	1×F type female 75Ω for Input, 1×F type female 75Ω for loop through output
Input Frequency Range	174~230MHz (VHF); 470~860MHz (UHF)
Input Level	-20~-70dBm
Constellation	QPSK, 16-QAM, 64-QAM
Carrier Bandwidth	6/7/8 MHz
FTT Mode	2K/8K
Guard Interval	1/4, 1/8, 1/16, 1/32
FEC Code Rate	1/2, 2/3, 3/4, 5/6, 7/8
ASI Input	
Connector Type	1×BNC Female, 75Ω
Standard	DVB-ASI, EN50083-9
Input Bit Rate	≤ 100Mb/s
Package Length	188 or 204 Bytes
TS Processing	
TS Input Management	Remux and demux between Tuner and ASI Inputs
Service and PID management	Remux, filtering and remapping
PSI/SI	PSI/SI table regeneration, NIT and SDT edition, LCN Edition and Re-generation
ASI Output	
Connector Type	1×BNC Female, 75Ω
Standard	DVB-ASI, EN50083-9
TS Processing	2 mirror TS Re-multiplexing from Tuner and ASI inputs
DVB-C Re-Modulation	
Constellation	J.83 Annex A: 16/32/64/128/256QAM; J.83 Annex B: 64/256QAM
Symbol Rate	3~7.2MS/s
I/Q Amplitude Error	< 0.3%
I/Q Phase Error	< 0.3°
Phase jitter	< 0.5°RMS
MER	> 35dB
DVB-T Re-Modulation	
Constellation	QPSK/16QAM/64QAM
Bandwidth	5/6/7/8MHz
FFT Mode	2K
Guard Interval	1/4, 1/8, 1/16, 1/32
Code Rate	1/2, 2/3, 3/4, 5/6, 7/8
MER	>36dB
RF Output	
Connector Type	F type female, 75Ω
Output Frequency Range	48~860MHz agile, step by 10 KHz
Output Level	97~110dBμV, step by 1dBμV
Spurious Rejection	55dB (typ.)
Output Return Loss	12dB (typ.)
Control & Monitoring	
Connector Type	1×RJ45, 10/100M, for equipment IP Control
Remote Control	SNMP, HTTP Web, Proprietary HDMS Network System Management Software
Local Control	Handheld Programmer Unit
Software Upgrade	FTP loader

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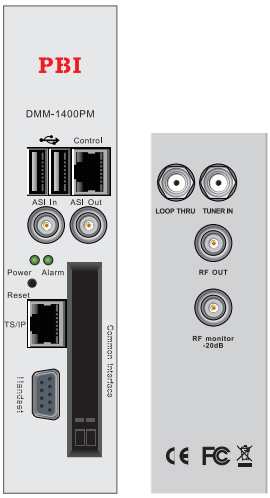
Order Information

Interface \ Model	DMM-XXXX-XX							
	1300TM-S2C	1300TM-CC	1300TM-TC	1300TM-AC	1300TM-S2T	1300TM-CT	1300TM-TT	1300TM-AT
Tuner	-S2/S	-C	-T		-S2/S	-C	-T	
ASI Input	•	•	•	•	•	•	•	•
Built-in Re-mux	•	•	•	•	•	•	•	•
ASI Output	•	•	•	•	•	•	•	•
QAM Modulation	•	•	•	•				
COFDM Modulation					•	•	•	•

DMM-1400PM Series
Professional IRD and Trans-modulator Module

DMM-1400PM is a professional IRD and trans-modulator products, which combine IRD and modulator into one module. It can receive signal from multiple sources such as DVB-S2/S/C/T/T2, de-modulate to TS stream, descramble with CAM card, then modulate to DVB-C QAM RF signal or DVB-T COFDM or DVB-T2 or DTMB RF signal. With its GbE full duplex IP interface, it also support TS over IP input/ output function. With its high performance and stability, DMM-1400PM is your best choice for various broadcast system or SMATV system.



Main features

- Multiple inputs DVB-S2/S/C/T/T2, TS/IP, and ASI optional
- DVB-C QAM or DVB-T COFDM or DVB-T2 or DTMB RF modulation output
- Supports 2K/4K/8K FFT Mode for DVB-T COFDM modulation
- GbE UDP/RTP, Unicast/Multicast, and SPTS/MPTS over IP(full duplex)
- Flexible re-multiplexing among Tuner, ASI and TS/IP inputs
- PSI/SI adapting and re-generation, including NIT, LCN insertion etc.
- Service Drop or PID filtering and Re-mapping
- 2 x DVB-CI slots, Multiple TV program decryption
- Remote Control and supervision by SNMP, HTTP WEB
- RSSI, received Eb/No & BER monitoring
- On Site software update through IP or USB

Specification

Tuner Input	
DVB-S/S2 Tuner Input	
Connector Type	1×F type female 75Ω for Input, 1×F type female 75Ω for loop through output
Input Frequency Range	950~2150MHz
Input Level	-25~-65dBm
Roll-off Factor	DVB-S: 0.35 DVB-S2: 0.2, 0.25, 0.35
FEC Code Rate	DVB-S QPSK: 1/2, 2/3, 3/4, 5/6, 7/8 DVB-S2 QPSK: 1/2, 3/5, 2/3, 3/4, 4/5, 5/6, 8/9, 9/10 DVB-S2 8PSK: 3/5, 2/3, 3/4, 5/6, 8/9, 9/10
LNB Polarity Selection Voltage	0, 13V, 18V selectable
LNB Band Selection Tone	0/22KHz selectable
Satellite Selection Command	DiSEqC 1.0
DVB-C Tuner Input	
Connector Type	1×F type female 75Ω for Input, 1×F type female 75Ω for loop through output
Input Frequency Range	48~862MHz
Input Level	45~75dBμV
Symbol Rate	1~7MBaud(ITU J.83 Annex A)
Constellation	16/32/64/128/256QAM
Bandwidth	6MHz/7MHz/8MHz
Input Return Loss	7dB(typ.)
DVB-T Tuner Input	
Connector Type	1×F type female 75Ω for Input, 1×F type female 75Ω for loop through output
Input Frequency Range	174~230MHz(VHF); 470~860MHz(UHF)
Input Level	-20~-70dBm
Modulation	QPSK, 16-QAM, 64-QAM
Carrier Bandwidth	6/7/8 MHz
FTT Mode	2K/8K
Guard Interva	1/4, 1/8, 1/16, 1/32
Viterb Error Correction Code Rate	1/2, 2/3, 3/4, 5/6, 7/8
ASI Input	
Connector Type	1×BNC female, 75Ω
Standard	DVB-ASI, EN50083-9
Input Bit Rate	≤ 100Mb/s
Package Length	188 or 204 Bytes
TS over IP	
Connector Type	1 x RJ-45, 1000 Base-T

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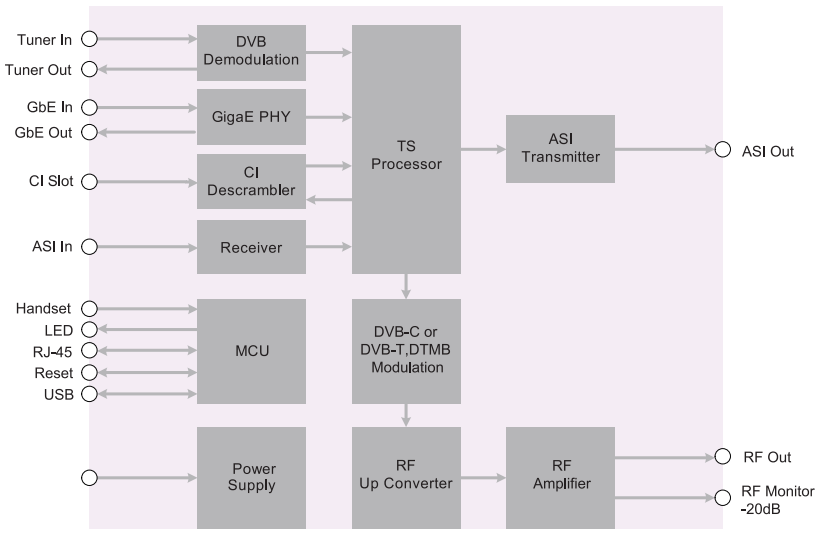
Effective Bit Rate	800Mb/s
Protocol	Unicast/Multicast, UDP/RTP, IGMPv2, ARP
TS Processing	
TS Input Management	Remux and demux among Tuner, ASI and TS/IP inputs
TS Output Management	Remux and demux for mirrored ASI outputs
Service and PID management	Remux, filtering and remapping
PSI/SI	PSI/SI table regeneration, NIT and SDT edition, LCN Edition and Re-generation
Descrambler	DVB Common Scrambling Algorithm (CSA)
Common Interface	Double PCMCIA slots, compatible with major CA CAMs in the market
ASI Output	
Connector Type	1 x BNC Female, 75Ω
Standard	DVB-ASI, EN50083-9
TS Processing	Can output TS Re-multiplexing from Tuner, ASI and TS/IP inputs
DVB-C Modulation (for DMM-1400PM-xC model)	
Constellation	J.83 Annex A: 16QAM, 32QAM, 64QAM, 128QAM, 256QAM J.83 Annex B: 64QAM, 256QAM
Symbol Rate	3~7.2MS/s
I/Q Amplitude Error	< 0.3%
I/Q Phase Error	< 0.3°
Phase jitter	< 0.5°RMS
MER	> 35dB
DVB-T Modulation (for DMM-1400PM-xT model)	
Constellation	QPSK, 16QAM, 64QAM
Bandwidth	5/6/7/8MHz
FFT Mode	2K/4K/8K

Guard Interval	1/4, 1/8, 1/16, 1/32
Code Rate	1/2, 2/3, 3/4, 5/6, 7/8
MER	>36dB
DTMB Modulation (for DMM-1400PM-xM model)	
Constellation	QPSK, 16QAM, 64QAM, 4QAM-NR, 32QAM
Bandwidth	8MHz
Sub Carriers	1 or 3780
Guard Interval	1/4, 1/7, 1/9
FEC BCH LDPC	0.4, 0.6, 0.8
Time Inter-leaver Depth	240, 720
MER	>36dB
DVB-T2 Modulation (for DMM-1400PM-xT2 model)	
Constellation	QPSK, 16QAM, 64QAM, 256QAM
Bandwidth	5/6/7/8MHz
FFT Mode	2K
Guard Interval	1/4, 1/8, 1/16, 1/32
Code Rate	1/2, 3/5, 2/3, 3/4, 4/5, 5/60.8
MER	>38dB
RF Output	
Connector Type	1x F type female, 75Ω (primary output) 1x F type female 75Ω (-20dB for monitoring)
Output Frequency Range	48~860MHz agile, step by 10 KHz
Output Level	95~110dBμV, step by 1dBμV
Spurious Rejection	55dB (typ.)
Output Return Loss	12dB (typ.)
Control & Monitoring	
Connector Type	1×RJ-45, 10/100M, for equipment IP Control
Remote Control	SNMP, HTTP (Web Interface)
Local Control	Handheld Programmer Unit
Software Upgrade	Embedded FTP loader and Telnet or USB

Block Diagram

DMM-1400PM Functional Block Diagram



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Order Information

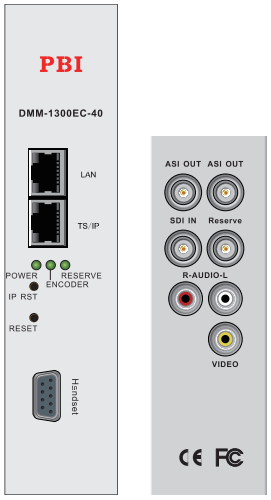
Model	DMM-1400PM-XX															
Function	-S2C	-CC	-TC	-DC	-S2T	-CT	-TT	-DT	S2T2	CT2	TT2	DT2	-S2M	-CM	-TM	-DM
Tuner Input	DVB-S2	DVB-C	DVB-T	DS3-E3	DVB-S2	DVB-C	DVB-T	DS3-E3	DVB-S2	DVB-C	DVB-C	DS3-E3	DVB-S2	DVB-C	DVB-T	DS3/E3
ASI Input	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Built-in Remux	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
ASI Out	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
GbE TS/IP	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
QAM Modulation	•	•	•	•												
COFDM Modulation					•	•	•	•								
T2 Modulation									•	•	•	•				
DTMB Modulation													•	•	•	•

• Standard Configuration

MPEG-2 SD encoder module

DMM-1300EC Series
Single Channel MPEG-2 SD Encode

- Digital SDI with embedded digital audio input
- Analog Composite Video for PAL/NTSC/SECAM Input
- MPEG-2 MP@ML Video encoding
- User configurable GOP
- User configurable 4:3/16:9 aspect ratio
- PAT, PMT and SDT generation and NIT Insertion
- 10/100M IP Output, UDP/RTP & Unicast/Multicast SPTS and MPTS
- Remote Control and Supervision by SNMP, HTTP WEB and Proprietary HDMS software



Specification

Video Compression	
Analog Input	Analog NTSC, PAL and SECAM
Digital Input	SD-SDI (SMPTE-259M)
Compression Standard	MPEG-2 MP@ML
Video Resolution	480i (720x480) @29.97Hz: SMPTE125M
	576i (720x576) @25Hz: ITU-R BT.656-4
Aspect Ratio	4:3/16:9 selectable
Video output Bit rate	1.5 ~ 20Mb/s
Audio Compression	
Audio Channels	1 pair of stereo
Audio Sampling Rate	32, 44.1, 48 KHz
Audio Output Bit rate	32, 64, 128, 192, 256, 384 Kb/s
Audio/Video Input Interface	
Analog Audio	RCA female, Stereo L/ R
Analog CVBS	RCA female, 75Ω
SD-SDI	1×BNC female, 75Ω
SDI embed audio	Group 1 to 4 selectable
TS Processing	
TS Output Management	Remux and demux for mirror ASI outputs

Service and PID management	Remux, filtering and remapping
PSI/SI	PSI/SI table regeneration, NIT and SDT edition
TS over IP Output	
Connector Type	1×RJ45, 10/100M for TS/IP
Useful bit rate	70Mb/s for 10/100M
Protocol	UDP / RTP, Multicast / Unicast, IGMPv2 ARP
ASI Output Interface	
Connector Type	2×BNC Female, 75Ω
Output bit rate	≤ 99Mb/s
Packet Length	188 / 204 Bytes
Signal Level	800mVpp±10%
Control & Monitoring	
onnector Type	1×RJ45, 10/100M, for equipment IP Control
Remote Control	SNMP, HTTP Web, Proprietary HDMS networ Management Software
Local Control	Handheld Programmer Unit
Software Upgrade	FTP loader

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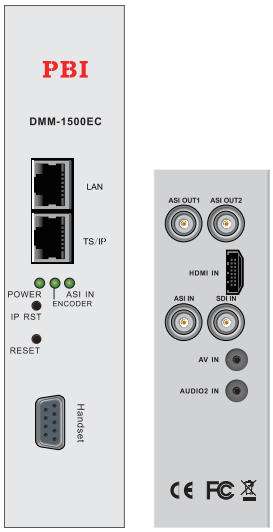
Order Information

Interface \ Model	DMM-XXXX-XX	
	1300EC-30	1300EC-40
CVBS	•	•
SD-SDI Input	•	•
ASI Output	×2	×2
TS/IP Output		•

H.264 encoder and transcoder module

DMM-1400EC Series
Single Channel H.264 SD Encoder and Transcoder

DMM-1500EC Series
Single Channel H.264 HD Encoder and Transcoder



- Multiple video resolution including 1080i, 720p, 576i and 480i
- Multiple inputs, HD/SD-SDI, and CVBS for encoding
- ASI and IP Input for Trans-coding
- Support 10/100M TS/IP SPTS and MPTS
- Built-in re-multiplexer for encoder loop
- Support VBR and CBR encoding mode
- Digital audio pass through for trans-coding
- Support 2 pairs of analog stereo audio encoding with optional extension board
- Remote Control and Supervision by SNMP, HTTP WEB and Proprietary HDMS software

Specification

Video Compression	
Video Resolution	1080i (1920/1440×1080) @25Hz, 29.97Hz, 30Hz: SMPTE274M (for 1500EC only)
	720p (1280×720) @50Hz, 59.94Hz, 60Hz: SMPTE296M (for 1500EC only)
	480i (720×480) @29.97Hz: SMPTE125M
	576i (720×576) @25Hz: ITU-R BT.656-4
Compression Standard	H.264, High Profile Level 4.0
Aspect Ratio	4:3/16:9 selectable
Video Encoding bit rate	2Mb/s-20Mb/s
Audio Compression	
Audio Input	Embedded Audio, Analog audio
Audio Channels	1 pair of stereo
Sampling rate	48KHz
Audio compression bit rate	16~256Kb/s
Audio/Video Input Interface	
Analog Audio	1×2.5mm phone jack, Stereo L/ R (with phone jack to RCA adaptor)
Analog CVBS	1×2.5mm phone jack (with phone jack to RCA adaptor)
HD-SDI	1×BNC Female, 75Ω (for 1500EC)
SD-SDI	1×BNC Female, 75Ω (for 1400EC)
ASI Input	
Connector Type	1×BNC Female, 75Ω
Input bit rate	≤ 100Mb/s

Packet Mode	Byte
Packet Length	188/204 Bytes
TS Processing	
TS Input Management	Remux and demux between ASI input and the SPTS encoded
TS Output Management	Remux and demux for mirror ASI outputs
Service and PID management	Remux, filtering and remapping
PSI/SI	PSI/SI table regeneration, NIT and SDT edition
TS over IP	
Connector Type	1×RJ45, 10/100M for TS/IP
Useful bit rate	70Mb/s for 10/100M
Protocol	UDP / RTP, Multicast / Unicast, IGMPv2, ARP
Source	Built-in Re-mux, ASI input, Encoder
ASI Output Interface	
Connector Type	2×BNC Female, 75Ω
Output bit rate	≤ 99Mb/s
Packet Length	188 / 204 Bytes
Signal Level	800mVpp±10%
Control & Monitoring	
Connector Type	1×RJ45, 10/100M, for equipment IP Control
Remote Control	SNMP, HTTP Web, Proprietary HDMS network Management Software
Local Control	Handheld Programmer Unit
Software Upgrade	FTP loader

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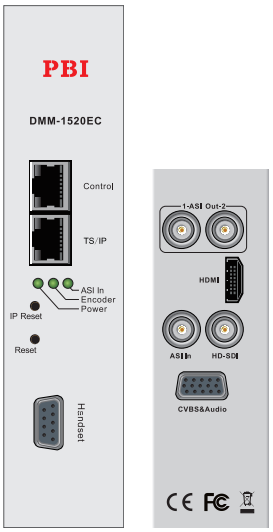
Order Information

Interface \ Model	DMM-XXXX-XX	
	1400EC	1500EC
HD-SDI Input		•
SD-SDI Input	•	•
CVBS	•	•
ASI Input	•	•
Built-in Re-mux	•	•
ASI Output	×2	×2
TS/IP I/O	•	•

H.264 HD encoder module

DMM-1520EC
Single Channel H.264 HD Encoder



DMM-1520EC is a highly adaptable single channel H.264 (MPEG-4 AVC) HD Encoder, which provide users a high-level operation experience to meet the requirement of the Digital broadcasting market. The DMM-1520EC support various input interface that include HD/SD-SDI, and CVBS. The compressed stream could output via GbE IP and ASI. DMM-1520EC can encode two pairs of stereo audio with its 2nd audio daughter board. With built-in re-multiplexer, DMM-1520EC could re-multiplex the SPTS generated itself and a MPTS input from ASI or IP, which makes DMM-1520EC the most suitable deployment choice for any broadcast system.

Main features

- Fully compliant with H.264 HP@Level 4.0 and MP@Level 3.0
- Multiple video resolution including 1080p, 1080i, 720p, 576i and 480i
- Multiple inputs, HD/SD-SDI, and CVBS for encoding
- Support GbE TS/IP input/output(full duplex)
- Built-in Re-mux can multiplex services from ASI Input, IP input with encoded service.
- Can edit PSI/SI
- Support VBR and CBR encoding mode
- Support 2 pairs of analog stereo audio encoding with optional extension audio board
- Remote Control and Supervision by SNMP, HTTP WEB
- 4RU 19” chassis compact modular design, supporting up to 8 modules
- Support Down scale without changing frame rate.

Order Information

Interface \ Model		DMM-1520EC-XX			
		-30	-32	-40	-42
Input	CVBS	•	•	•	•
	Audio 1	•	•	•	•
	Audio 2		•		•
	SDI	•	•	•	•
	ASI	•	•	•	•
Output	ASI x2	•	•	•	•
TS/IP GbE				•	•

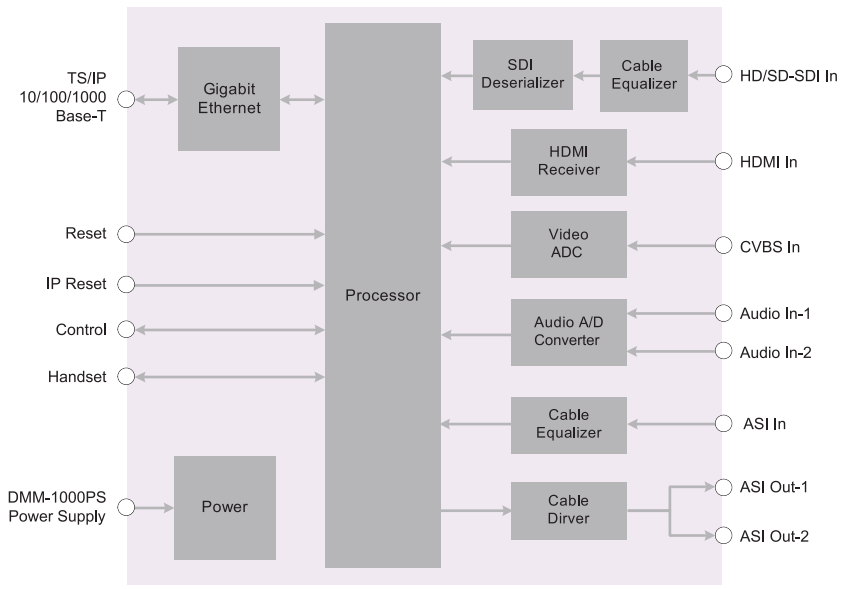
Specification

Video Input & Compression	
Video Input	1×HD/SD-HDMI(v1.3) 1×BNC for CVBS input 1×BNC for HD/SD-SDI input(for DMM-1520-3x and DMM-1520-4x model only)
Compression Standard	H.264/AVC HP@L4.0
Chrominance Space	4:2:0
Video Encoding Bit Rate	2Mbps~30Mbps
Video Resolutions& Recommended Video Encoding Bit Rates	1080p (1920×1080) @ 59.94 Hz,50Hz: SMPTE296M: 6~30Mb/s 1080 (1920×1080) @25Hz,29.97Hz, 30Hz:SMPTE274M: 6~24Mb/s 1080i (1440×1080) @25Hz,29.97Hz, 30Hz:SMPTE274M: 5~24Mb/s 720p (1280×720) @50Hz,59.94Hz, 60Hz:SMPTE296M: 4~24Mb/s 480i (720×480) @29.97Hz:SMPTE656M: 2~10Mb/s 576i (720×576) @25Hz: SMPTE656M: 2~10Mb/s
Audio Input & Compression	
Audio Input	HDMI Embedded Analog L,R audio input via a 2.5mm phone jack SDI Embedded(for DMM-1520-3x and DMM-1520-4x model only) 2nd analog L.R audio input via an extension audio board(for DMM-1520-x2 model only)
Compression Standard	MPEG1 Layer II Encoding (Mono, Stereo) MPEG2 AAC-LC Encoding (Stereo) MPEG4 AAC-LC Encoding (Stereo)
Sampling Rate	48KHz
Audio Compression Bit Rate	MPEG1 Layer II: 32~256Kb/s (Both 2 pairs of audio on DMM-1520EC-x2 model) AAC-LC: 128~512Kb/s (1st pair of audio only)

DVB-ASI Input	
Connector Type	1×BNC Female, 75Ω
Maximal Input Bit Rate	100 Mb/s
Packet Mode	Byte
Packet Length	188/204 Bytes
Signal Level	200~880mVp-p
DVB-ASI Output	
Connector Type	1×BNC Female, 75Ω
Effectual Output Bit Rate	1.5 Mb/s~70 Mb/s
Packet Mode	Byte
Packet Length	188/204 Bytes
Signal Level	800±80mV
GigE Full Duplex	
GbE Full Duplex	IEEE 802.3, 10/100/1000 Base-T
Maximal Effectual Outpu t Bit Rate	80Mb/s
UDP/RTP Protocol	SPTS or MPTS IGMPv2
Control&Monitoring	
Connector Type	1×RJ45, 10/100 Base-T, for equipment Control
Remote Control	SNMP, HTTP(WEB interface)
Local Control	Handheld Programmer Unit
Software Upgrade	FTP loader and Telnet
Physical parameter	
Power supply	DC 3.3V/5V/12V, supplied by DMM-1000MF chassis
Power Consumption	<18W
Operating Temperature	0~45℃
Storage Temperature	0~45℃
Storage Temperature	-10~60℃
Humidity	10~90%, Non-condensed

Block Diagram

DMM-1520EC Functional Block Diagram



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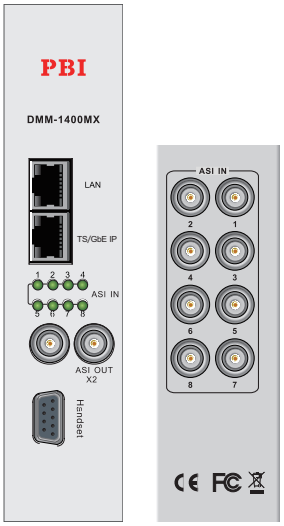
Re-Multiplexer

DMM-1400MX
Re-multiplexer Module

- 8-way SPTS or MPTS ASI inputs
- Redundant ASI outputs
- Gigabit Ethernet for TS over IP Output
- PSI/SI table regeneration, NIT, EIT and SDT edition, LCN Edition and Re-generation
- Remote Control and Supervision by SNMP and Proprietary HDMS software
- On Site software update through IP



Specification

ASI Input	
Connector Type	8×BNC Female, 75Ω
Input Bit Rate	≤ 216Mb/s
Data transmission mode	BYTE or BURST mode auto-detection
Packet Length	188 /204 bytes, auto-detection
ASI Output	
Connector Type	2×BNC Female, 75Ω
Output bit rate	≤ 216Mb/s
Data transmission mode	Byte
Packet Length	188 or 204 Bytes
Signal Level	800mVpp±10%
PSI/SI generating	PAT, PMT, SDT, CAT, NIT, EIT Actual P/F, EIT Schedule
Control & Monitoring	
Connector Type	1×RJ45, 10/100M, for equipment IP Control
Remote Control	SNMP, Proprietary HDMS network Management Software
Local Control	Handheld Programmer Unit
Software Upgrade	FTP loader
TS over IP	
Connector Type	1×RJ-45, 100/1000 Base-T for TS/IP
Effective Bit Rate	80Mb/s for 1000 Base-T
Protocol	UDP / RTP, Multicast / Unicast, IGMPv2, ARP

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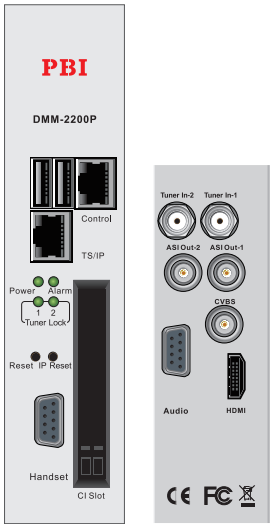
Professional IRD and Processor

DMM-2200P Series
Twin Professional HD/SD IRD and Processor Module



DMM-2200P is a high-density, cost-effective modular receiver equipped with two independent tuners, which can be chosen respectively from DVB-T2/S2/S/C/T/T2 inputs. DMM-2200P supports a wide range of application by combining dual tuner processing capability with MPEG2, H.264, SD/HD video decoding and industry standard outputs including ASI, CVBS, HDMI, TS/IP. It has 2 DVB common interface slots capable of working with most of well-known CAS in the market to de-crypt multiple pay TV services. The compact dual-tuner design and the powerful decoding ability make DMM-2200P one of the most competitive modules in DMM1000 series.

Main features

- SD/HD MPEG-2(MP@ML&MP@HL) and MPEG-4/H.264(AVC high profile level 4.1) digital Video decoding
- Twin-tuner design, wide tuner options from DVB-S2/S/C/T/T2
- 2x DVB-CI Slots, Multi Programs, BISS 1 and BISS E decryption
- Support services re-mux/filter and 204/188 transfer
- UDP/RTP & Unicast/Multicast SPTS and MPTS over IP I/O
- Support VBI TELETEXT, EBU/ DVB Subtitle, Closed Caption
- Dynamic PMT detection and automatic updating
- Multiple Analog and Digital Outputs, ASI, CVBS, HDMI, TS/IP
- Support NTP(Network Time Protocol)
- Remote Control and Supervision by SNMP and HTTP WEB
- RSSI, received Eb/No & BER monitoring
- Quick upgraded via USB port
- Auto save settings when sudden power-off

Specification

Tuner Input	
DVB-S/S2 Tuner Input	
Connector Type	2×F type female 75Ω for input
Input Frequency Range	950~2150MHz
Input Level	-25~-65dBm
Symbol Rate	2~45MS/s for QPSK and 8PSK
Rolling-off Factor	DVB-S QPSK: 0.35 DVB-S2 8PSK: 0.35, 0.25, 0.2
Punctured Rates	DVB-S QPSK: 1/2, 2/3, 3/4, 5/6, 7/8 DVB-S2 QPSK: 1/2, 3/5, 2/3, 3/4, 4/5, 5/6, 8/9, 9/10 DVB-S2 8PSK: 3/5, 2/3, 3/4, 5/6, 8/9, 9/10
LNB Polarization	0, 13V, 18V selectable
LNB Band Switching Tone	0/22KHz selectable
DiSEqC	DiSEqC 1.0
DVB-C Tuner Input	
Connector Type	2×F type female 75Ω for input
Input frequency	51~862MHz
Input level	45~75dBuV
Symbol rate	1~7MS/s (ITU J.83 Annex A)
Constellation	16/32/64/128/256QAM
Bandwidth	6/7/8MHz
Input return loss	7dB (typ.)
DVB-T/T2 Tuner Input	
Connector Type	2×F type female 75Ω for input
Input frequency	104~862MHz (VHF/UHF)
Input level	-20~-70dBm
Constellation	DVB-T: QPSK/16-QAM/64-QAM DVB-T2: QPSK, 16QAM, 64QAM, 256QAM
Bandwidth	6MHz/7MHz/8MHz
FFT mode	DVB-T: 2K/8K DVB-T2: 1K, 2K, 4K, 8K, 16K, 32K
Guard interval	DVB-T: 1/4, 1/8, 1/16, 1/32 DVB-T2: 1/4, 5/32, 1/8, 5/64, 1/16, 1/32, 1/64, 1/128
FEC code rate	DVB-T: 1/2, 2/3, 3/4, 5/6, 7/8 DVB-T2: 1/2, 3/5, 2/3, 3/4, 4/5, 5/6
Input return loss	7dB (typ.)
TS over IP	
Connector Type	1×RJ45, 10/100M for TS/IP
Useful bit rate	70Mb/s for 10/100M
Protocol	UDP / RTP, Multicast / Unicast, IGMPv2, ARP
Uni/Multicast	support maximum 32 channel uni/multicast output
TS Processing	
TS input	Tuner1, Tuner2 or TS/IP input
TS output	2 independent ASI outputs
Re-mux	Re-mux services, edit PSI/SI
BISS descramble	BISS-1, BISS-E

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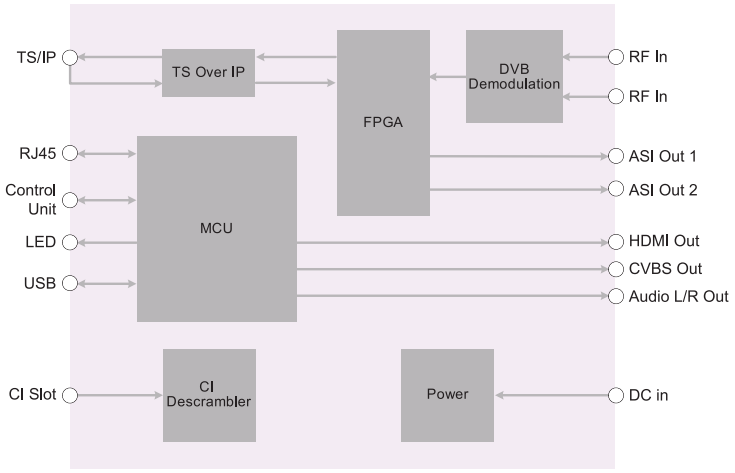
CI slots	2×PCMCIA Slots, comply with most major CAMs in market
ASI Output	
Connector Type	2×BNC Female, 75Ω
Standard	DVB-ASI, EN50083-9
Output bit rate	≤160Mb/s
HDMI Output	
Standard HDMI	1×HDMI 1.3 interface (partial)
Video Resolution	1080i×30, 1080i×29.97, 1080i×25, 720p×60, 720p×59.94, 720p×50, 480p×60, 576p×50, 576i×25, 480i×29.97
Audio Embedded	1×Stereo or AC3 Loop Through
Digital Video/Audio Processing	
Video Standard	MPEG-2(MP@ ML for SD, MP@HL for HD), MPEG 4/H.264 AVC high profile level 4.1
Audio Standard	MPEG-1 Layer-I/II, MPEG-2 Layer-II
	LC-AAC, HE-AAC, AC3, AC3+
Analog Video Output	
Connector Type	1×BNC female
Video Standard	NTSC, PAL, and SECAM
Video bit rate	≤50Mb/s
Analog Audio Output	

Connector Type	1×DB9, 600Ω, has a DB-9 to XLR converter
Output type	Left, Right, Dual Mono, Stereo
Baseband Data Output	
Subtitle	DVB/EBU
VBI	Teletext, WSS
Closed Caption	EIA 608, EIA 708, EIA 608-to-708
A/V monitor	
Monitor Port	HDMI, CVBS
Monitor Condition	User define
Control & Monitoring	
Connector Type	1×RJ45, 10/100M, for equipment IP Control
Remote Control	SNMP, HTTP Web
Local Control	Handheld Programmer Unit
Software Upgrade	1×USB Port or FTP loader
General	
Power supply	DC 3.3V/5V/12V, supplied by DMM-1000MF chassis
Power consumption	20W
Operating temperature	0~45℃
Storage temperature	-10~60℃
Operating Humidity	10~90%, non-condensed

Block Diagram

DMM-2200P Functional Block Diagram



Order Information

Interface	Model	DMM-2200P-S2	DMM-2200P-T2
Input	DVB-S2/S	×2	
	DVB-T2/T/C		×2
	CI	×2	×2
	TS/IP	•	•
Output	HDMI	•	•
	CVBS&Audio L/R	•	•
	ASI	×2	×2
	TS/IP	•	•

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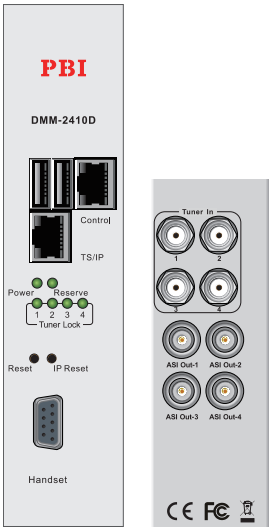
Professional IRD and Processor

DMM-2410D Series
Professional Quad Demodulator



The DMM-2410D professional Quad Demodulator provides operators an ideal solution for multiple channel receiving and remultiplexing operations. Equipped with 4 independent tuners and 1 TS over IP inputs, DMM-2410D ensures compatibility with all transmission media, such as DVB-S2/S/T/T2/C and so on. The DCH-2410D's remultiplexing capabilities enable the creation of new transport streams that are subsets of the original inputted stream. Customized services may be output as multiple SPTS or MPTS over IP, as well as over ASI. All these architectures make the DCH-2410D an ideal product for DTV signals receiving and demodulation.

Main features

- Variety of tuner factory options DVB-T2/S2/S/C/T/T2 and TS/IP
- Built-in TS re-multiplexer receives 4xTuner and TS/IP input
- Dynamic PMT detection and automatic updating
- UDP/RTP, Unicast/Multicast, and SPTS/MPTS over IP
- Remote Control and Supervision by SNMP, HTTP WEB and Proprietary HDMS software
- On Site software update through IP
- RSSI, received Eb/No & BER monitoring

Specification

DVB-S/S2 Tuner Input	
Connector Type	4×F type female 75Ω for Input
Input Frequency Range	950~2150MHz
Input Level	-25~-65dBm
Symbol Rate	2~45MBaud
Roll-off Factor	DVB-S QPSK: 0.35 DVB-S2 8PSK: 0.35, 0.25, 0.2
FEC Code Rate	DVB-S QPSK: 1/2, 2/3, 3/4, 5/6, 7/8 DVB-S2 QPSK: 1/2, 3/5, 2/3, 3/4, 4/5, 5/6, 8/9, 9/10 DVB-S2 8PSK: 3/5, 2/3, 3/4, 5/6, 8/9, 9/10
Satellite Selection Command	DiSEqC 1.0
LNB Polarity Selection Voltage	0, 13V, 18V selectable
LNB Band Selection Tone	0/22KHz selectable
DVB-C Tuner Input	
Connector Type	4×F type female 75Ω
Input Frequency Range	48~860MHz
Input Level	45~75dBμV
Symbol Rate	1~7MBauds (ITU J.83 Anne× A)
Constellation	16/32/64/128/256QAM
Bandwidth	6MHz/7MHz/8MHz
Return Loss	7dB
DVB-T/T2 Tuner Input	
Connector Type	4×F type female 75Ω
Input Frequency	104~862MHz (VHF/UHF)
Input Level	-20~-70dBm
Constellation	DVB-T: QPSK, 16QAM, 64QAM DVB-T2: QPSK, 16QAM, 64QAM,256QAM
Bandwidth	6MHz/7MHz/8MHz
FFT Mode	DVB-T: 2K/8K
	DVB-T2: 1K, 2K, 4K, 8K, 16K, 32K
Guard Interval	DVB-T: 1/4, 1/8, 1/16, 1/32 DVB-T2: 1/4, 5/32, 1/8, 5/64, 1/16, 1/32, 1/64, 1/128
FEC Code Rate	DVB-T: 1/2, 2/3, 3/4, 5/6, 7/8 DVB-T2: 1/2, 3/5, 2/3, 3/4, 4/5, 5/6
Return Loss	7dB (typ.)
TS over IP	
Connector Type	1×RJ-45, 10/100 Base-T for TS/IP
Protocol	UDP/RTP, Multicast/Unicast, IGMP 2, V3
Effective Bit Rate	Support 3 different mode (reboot is needed to change the TS/IP mode): 1. Max.430Mb/s, output only, 5x multicast/unicast MPTS (TS comes from Tuner 1 to 4 pass through, 1x channel from built-in Remux) 2. Max.430Mb/s, output only, 128x multicast/unicast SPTS (TS comes from either tuner 1 to 4 or built-in Remux) 3. Max.80Mb/s, full duplex, 1x multicast/unicast MPTS/SPTS input and output
Control & Monitoring	
Connector Type	1×RJ-45, 10/100 Base-T, for equipment IP Control
Remote Control	SNMP, HTTP (Web Interface), Proprietary HDMS (Headend Device Management System)
Software Upgrade	FTP Loader and Telnet
Physical	
Power Supply	DC 3.3V/5V/12V, supplied by DMM-1000MF chassis
Power Consumption	15W
Weight	560g
Storage temperature	-10 to 55℃
Operating Humidity	10~90%, non-condensed

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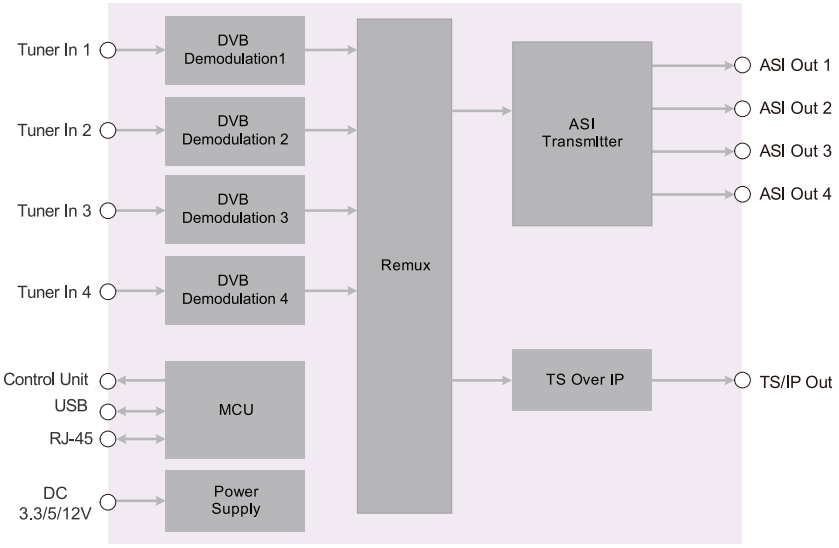
Block Diagram

DMM-2410D Function Block Diagram



Order Information

Interface \ Model		DMM-2410D-S2/S	DMM-2410D-T2/T	DMM-2410D-C
Tuner Input	DVB-S/S2	×4		
	DVB-T/T2		×4	
	DVB-C			×4
Output	ASI	×4	×4	×4
	TS/IP	•	•	•

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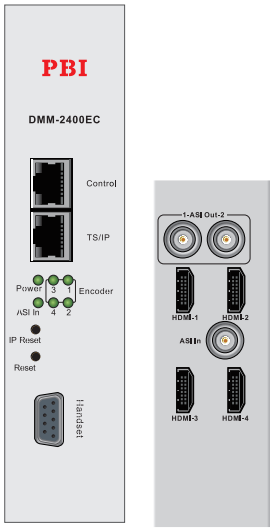
Digital TV SD/HD Encoder

DMM-2400EC/2401EC Series
4-Channel H.264 HD Encoder



- 4 SDI inputs with internal re-multiplexer in one module
- Support H.264 AVC HD Encoding
- Multiple video resolutions including 1080p 1080i, 720p, 576i and 480i
- Support down-scale function without changing frame rate
- Built-in TBC(Time Base Correction), very robust against to input signal intermittence
- Supports 1000 Base-T full duplex TS-over-IP
- Supports VBR and CBR encoding modes
- Remote Control and Supervision by SNMP and HTTP WEB
- Accommodated in 4RU 19" chassis (DMM-1000MF) which supports up to 8 modules and equipped with auto-backup Power Supply module.

Specification

Video Input & Compression	
Video Input	or 4×HD/SD-SDI
Compression Standard	H.264/AVC HP@L4.0
Chrominance Space	4:2:0
Video Encoding Bit Rate	2Mbps~30Mbps
Video Resolutions & Recommended Video Encoding Bit Rates	1080p (1920×1080) @ 59.94 Hz,50Hz: SMPTE296M: 6~30Mb/s 1080 (1920×1080) @25Hz,29.97Hz, 30Hz:SMPTE274M: 6~24Mb/s 1080i (1440×1080) @25Hz,29.97Hz, 30Hz:SMPTE274M: 5~24Mb/s 720p (1280×720) @50Hz,59.94Hz, 60Hz:SMPTE296M: 4~24Mb/s 480i (720×480) @29.97Hz:SMPTE656M: 2~10Mb/s 576i (720×576) @25Hz: SMPTE656M: 2~10Mb/s
Audio Input & Compression	
Audio Input	HD/SD-SDI Embedded
Compression Standard	MPEG1 Layer II Encoding MPEG2 AAC-LC Encoding, MPEG4 AAC-LC Encoding
Sampling Rate	48KHz
Audio Compression Bit Rate	MPEG1 Layer II: 32~256Kb/s AAC-LC: 128~512Kb/s
DVB-ASI Input	
Connector Type	1×BNC Female, 75Ω
Maximal Input Bit Rate	100 Mb/s
Packet Mode	Byte
Packet Length	188/204 Bytes
Signal Level	200~880mVp-p
DVB-ASI Output	
Connector Type	1×BNC Female, 75Ω
Effectual Output Bit Rate	1.5 Mb/s~70 Mb/s
Packet Mode	Byte
Packet Length	188/204 Bytes
Signal Level	800±80mV
GigE Full Duplex	
GbE Full Duplex	IEEE 802.3, 10/100/1000 Base-T
Maximal Effectual Output Bit Rate	80Mb/s
UDP/RTP	SPTS or MPTS
Protocol	ICMP, ARP, IGMPv2
Control&Monitoring	
Connector Type	1×RJ45, 10/100 Base-T, for equipment Control
Remote Control	SNMP, HTTP(WEB interface)
Local Control	Handheld Programmer Unit
Software Upgrade	Quick upgrade via USB, or FTP loader and Telnet
Physical parameter	
Power supply	DC 3.3V/5V/12V, supplied by DMM-1000MF chassis
Power Consumption	20W (Max.)
Operating Temperature	0~45℃
Storage Temperature	-10~60℃
Humidity	10~90%, Non-condensed

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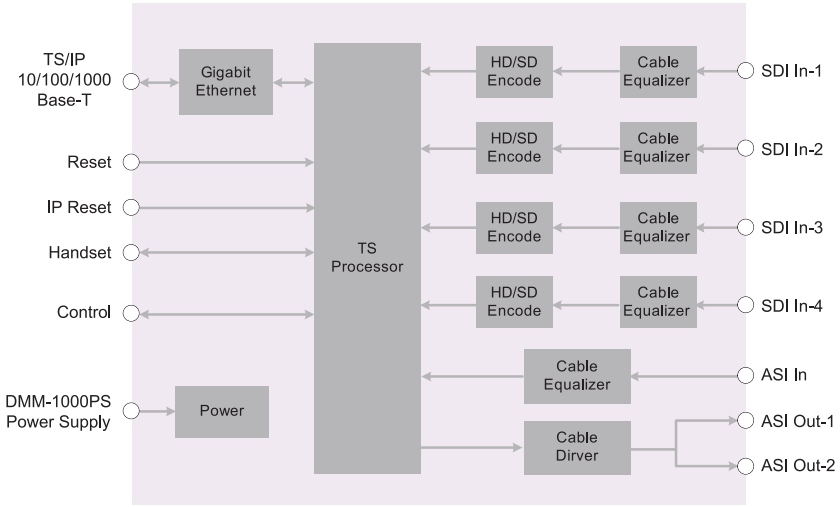
Block Diagram

DMM-2400EC-S Functional Block Diagram



Order Information

Interface / Model		DMM-2400EC-S
Video Input	HD/SD SDI	×4
TS Input	ASI	•
	TS/IP(GbE)	•
TS Output	ASI (1+1)	•
	TS/IP(GbE)	•

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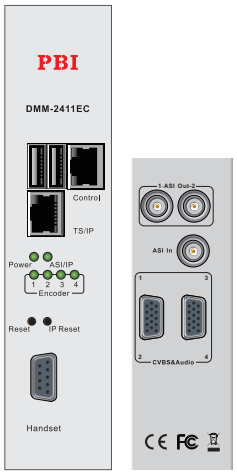
Digital TV SD/HD Encoder

DMM-2410EC/2411EC
4-way Encoder/Transcoder Series



DMM-2410EC/2411EC are a series of high density H.264 HD/SD & MPEG-2 SD real time encoders/transcoders. This blade type design integrates 4 independent encoders/transcoders, 1 Re-multiplexer, 1 ASI_in, 1 ASI_out, and 1 Gigabit (GbE) TS/IP port. New MPTS could be generated with the built-in Re-multiplexer from any combination of services among ASI_in, TS/IP_in and the local encoders. HD-SDI and CVBS inputs are available as factory hardware options.

All models provide two TS/IP operation modes. The first is “Full Duplex”, which allows one MPTS or SPTS inputted to make up a new MPTS with local encoders, then sends the new one over IP & ASI_out. In the second mode “Multiple output” which delivers up to five streams over IP. There are four un-stuffed SPTS (lower bit rate but less PCR accurate than normal SPTS, from local encoders) and one MPTS (from internal Re-multiplexer) over the IP with different Unicast or Multicast IP addresses. All models support transcoding function. They accept an MPTS and transcode up to 4 channels inside and the final output is formed as an MPTS and/or 4 un-stuffed SPTS.

Main features

- Compliant with H.264/AVC Baseline, Main & High Profile @ L4.0 or less & MPEG-2 MP@ML
- 4 independent AV inputs (SDI, CVBS, note: see Model List)
- Independent Encoding/Transcoding mode control
- Internal reMultiplexer, new MPTS is made up from ASI_in, TS/IP_in & Local Encoders
- MPTS remultiplexed and 4 local un-stuffed SPTS available over IP
- Video Input Resolution: 1080i, 720p, 576i, 480i (note: CVBS models support SD only, see Model List)
- Minimum Video Bit Rate 500Kb/s (Standard PAL or NTSC SD video, while total bit rate ~ 700Kb/s)
- Independent Vertical & Horizontal pixel scale
- Transcoding from MPEG2 to H.264/AVC & vice versa
- VBR & CBR mode for encoding/transcoding
- Audio coding: MPEG1 Layer II, MPEG2/4 AAC-LC , HE-AAC(note: see Model List)
- SNMP & HTTP WEB for monitoring & control

Specification

Video Input & compression Coding	
Video Input Interfaces	4×SDI, or 4×CVBS (note: see Model List)
Coding Profile & Level	H.264/AVC BLP, MP, HP @ L4.0 or less, MPEG-2 MP@ML (note: see Model List)
Sampling Format	4:2:0, 10-bit, YCbCr
Compression Bit Rate	600K~20Mbps
Video Resolution & Recommend Compression Bit Rate H.264	1080i (1920×1080) @25Hz,29.97Hz, 30Hz:SMPTE274M: 1~20Mb/s 720p 1280×720) @25Hz,29.97Hz, 30Hz:SMPTE296M: 1~20Mb/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: 3~10Mb/s 576i (720×576) @25Hz: SMPTE656M: 3~10Mb/s
Video Resolution Down Scaling	Vertical & Horizontal adjustable respectively (frame rate is not scalable)
Aspect Ratio	4:3, 16:9 Selectable
Audio Input & Compression Coding	
Audio Input Interfaces	SDI Embedded or Analog (note: see Model List)
Coding Standard	MPEG1 Layer II MPEG-2/4 AAC-LC/HE-AAC(V1, V2) (available on DMM-2410EC series)
Sampling Rate	48KHz
Recommend Compression Bit Rate	MPEG1 Layer II :32~192Kbps(mono), 64~384Kbps(stereo) MPEG-2/4 AAC-LC :24~256Kbps(mono), 48~512Kbps(stereo) MPEG2/4 HE-AAC(V1, V2) : 16~128Kbps(mono), 32~256Kbps(stereo)
Transcoding	
Transcoding Mode	H.264 to MPEG-2, H.264 to H.264, MPEG-2 to MPEG-2, MPEG-2 to H.264
Input Standard	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 Standard	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)
DVB-ASI Input	
Input Interface	BNC Female, 75Ω
Maximum Bit Rate	100 Mb/s

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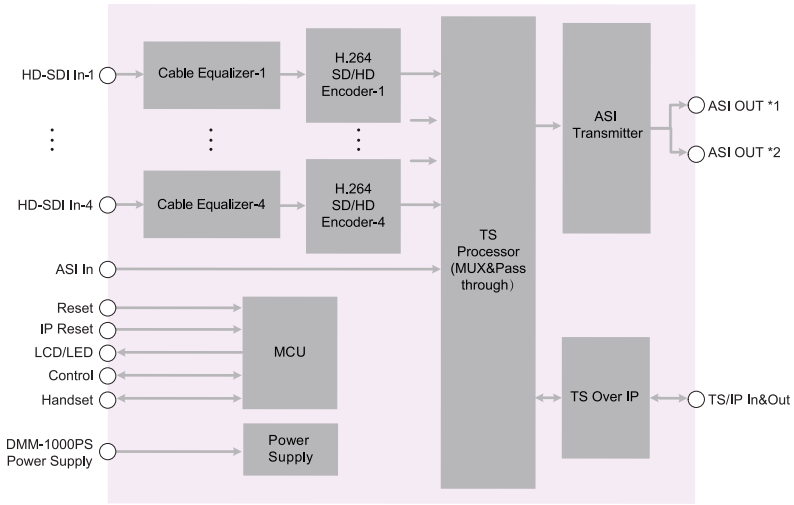
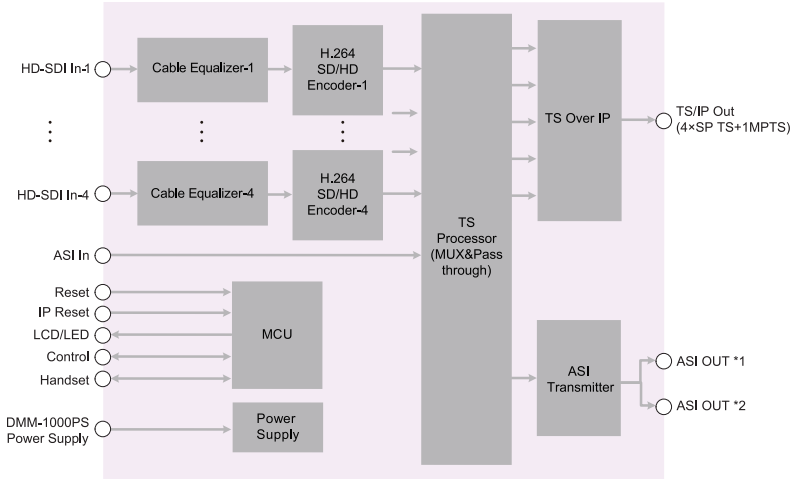
Data Type	Byte
Packet Length	188/204 Bytes
Signal Level	200~880mVp-p
DVB-ASI Output	
Input Interface	BNC Female, 75Ω
Effective Bit Rate	120Mb/s
Data Type	Byte
Packet Length	188/204 Bytes
Signal Level	800±80mV
TS/IP Gigabit Ethernet (note: see Model List)	
Standard	IEEE 802.3, 10/100/1000 Base-T
Maximum Effective Bit Rate	80Mb/s (note: Full Duplex mode), 200Mb/s (note: Multiple Output mode)
Encapsulation	SPTS or MPTS
Protocol	UDP, RTP, ICMP, ARP, IGMPv2
Rear Panel options	
SDI In	4×BNC Female, 75Ω (DMM-2410EC-S or DMM-2411EC-S, see Model List)
ASI In	1×BNC Female, 75Ω
CVBS In & Analog Audio In	2×D-Sub15 (with D-Sub 15 to BNC female adapter cablings, total 4 sets of inputs, see Model List)
ASI Out	2×BNC Female, 75Ω(1 Backup)
Front Panel	
Control	1×RJ-45, 10/100 Base-T
TS/IP	1×RJ-45, 10/100/1000 Base-T
LED	1×Power, 4x Encoder Status, 1x ASI/IP Status
IP Reset	Press for 5 second or more to return the default IP address of control port
Reset	Local reset
Others	
Power	DC 3.3V/5V/12V, from DMM-1000 (8-slot) or DMM-200 (2-slot)
Operating Temperature	0~40℃
Storage Temperature	-10~60℃
Operating Humidity	10~90% (Non-condensed)

Block Diagram

DMM-2410EC/2411EC-S Encoder Functional Block Diagram(Full Duplex)



DMM-2410EC/2411EC-S Encoder Functional Block Diagram(Multi Channel)



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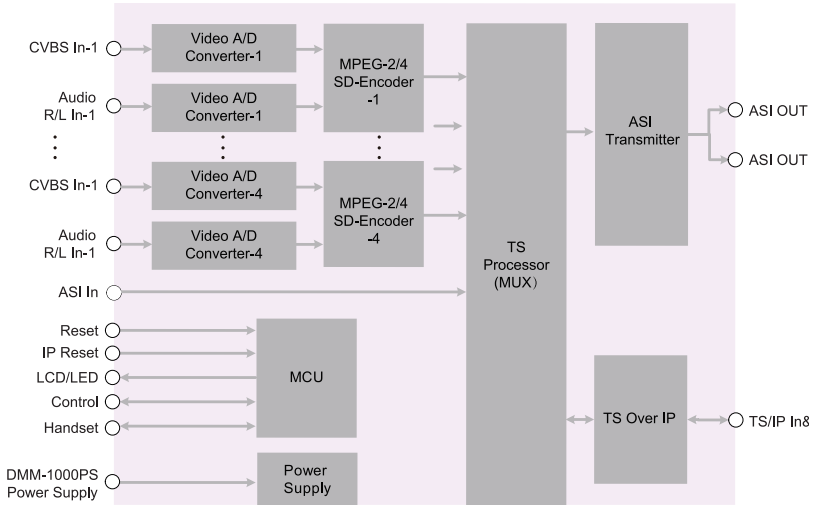
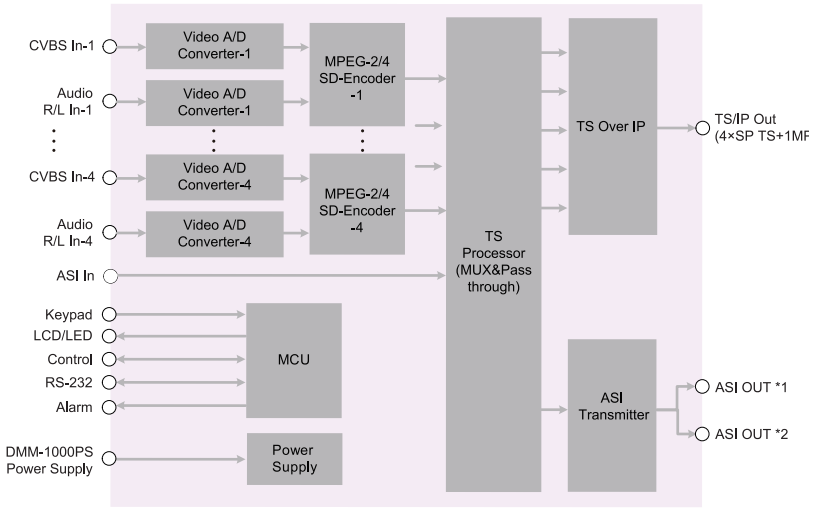
DMM-2410EC/2411EC-C Encoder Functional Block Diagram(Full Duplex)



DMM-2410EC/2411EC-C Encoder Functional Block Diagram(Multi Channel)



Order Information

Interface	Mode	DMM-2410EC-S	DMM-2411EC-S	DMM-2410EC-H	DMM-2411EC-H	DMM-2410EC-C	DMM-2411EC-C
Input	HD/SD SDI with Embedded Audio	x4	x4				
	HDMI with Embedded Audio			x4	x4		
	CVBS & Analog Audio					x4	x4
TS Input	ASI	•	•	•	•	•	•
	TS/IP(GbE)	•	•	•	•	•	•
TS Output	ASI (1+1)	•	•	•	•	•	•
	TS/IP(GbE)	•	•	•	•	•	•
Audio AAC-LC /HE-AAC		•		•		•	

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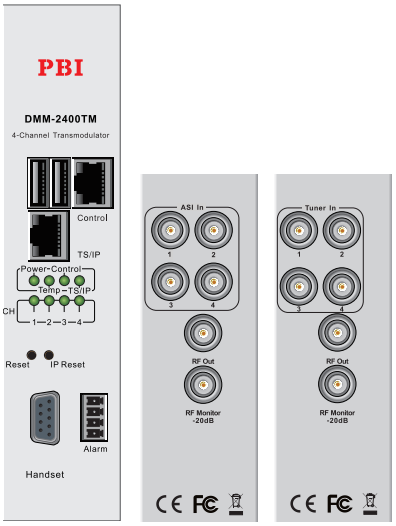
Digital TV Modulator and Trans-Modulator

DMM-2400TM Series
4-Channel Transmodulator

DMM-2400TM is a high density 4-Way modulator and trans-modulator module. It could receive up to 4 independent TS streams from Tuner, ASI or TS/IP (note 1) inputs, then modulates and combines them to 4 adjacent DVB-C RF carriers over a coaxial output. Different types of inputs are available as factory options, such as DVB-S/S2, DVB-C/T/T2 and ASI. With its built-in remux (note 1) functional block, DMM-2400TM also provides TV program filtering and re-multiplexing of TS inputs(note 2) to rebuild new TS outputs for modulation. TS/IP input is a software option.



Main features

- 4 independent TS inputs from DVB-S2/C/T/T2 tuners or TS/IP or ASI
- Built-in remux for TS from Tuner or ASI (note 1, 2)
- Service and PID filtering and re-multiplexing
- PSI/SI re-generation, NIT and LCN Insertion (note 2)
- TS/IP GbE input supports RTP/UDP, IGMP V2/V3, Multicast/Unicast (note 1)
- 4 adjacent DVB-C QAM over 48 ~ 996MHz
- Excellent MER (>40dB) & BER (<10E-9)
- Web remote control and SNMP supervision
- Software update via Ethernet or USB port

Specification

DVB-S/S2 Tuner Input (factory option)	
Connector Type	4×F type female 75Ω
Standard	EN 300 421(DVB-S), EN 302 307 (DVB-S2)
Frequency Range	950~2150MHz
Input Level	-25~-65dBm
Symbol Rate	2~45MBaud
Roll-off Factor	DVB-S QPSK: 0.35 DVB-S2 8PSK: 0.35, 0.25, 0.2
FEC Code Rate	DVB-S QPSK: 1/2, 2/3, 3/4, 5/6, 7/8 DVB-S2 QPSK: 1/2, 3/5, 2/3, 3/4, 4/5, 5/6, 8/9, 9/10 DVB-S2 8PSK: 3/5, 2/3, 3/4, 5/6, 8/9, 9/10
LNB Polarity Selection Voltage	13V for Vertical, 18V for Horizontal, 500mA Max., available only on tuner 1 & tuner 2
LNB Band Selection Tone	0/22KHz selectable, available only on tuner 1 & tuner 2
DVB-C Tuner Input (factory option)	
Connector Type	4×F type female 75Ω
Standard	EN 300 429
Input Frequency Range	51~862MHz
Input Level	45~95dBμV @ 256QAM, 6.875MBauds
Symbol Rate	1~7MBauds
Constellation	16/32/64/128/256QAM
Bandwidth	6MHz/7MHz/8MHz
Return Loss	7dB (typ.)
DVB-T/T2 Tuner Input (factory option)	
Connector Type	4×F type female 75Ω
Standard	EN 300 744(DVB-T), EN 302 755 (DVB-T2)
Input Frequency	104~862MHz (VHF/UHF)
Input Level	-20~-70dBm

Constellation	DVB-T: QPSK, 16QAM, 64QAM DVB-T2: QPSK, 16QAM, 64QAM, 256QAM
Bandwidth	6MHz/7MHz/8MHz
FFT Mode	DVB-T: 2K/8K DVB-T2: 1K, 2K, 4K, 8K, 16K, 32K
Guard Interval	DVB-T: 1/4, 1/8, 1/16, 1/32 DVB-T2: 1/4, 5/32, 1/8, 5/64, 1/16, 1/32, 1/64, 1/128
FEC Code Rate	DVB-T: 1/2, 2/3, 3/4, 5/6, 7/8 DVB-T2: 1/2, 3/5, 2/3, 3/4, 4/5, 5/6
Return Loss	7dB
ASI Input (factory option)	
Connector Type	4×BNC female, 75Ω
Standard	DVB-ASI, EN50083-9
Input Bit Rate	≤216Mb/s
TS over IP Input (software option)	
Connector Type	1×RJ-45, 100/1000 Base-T
Protocol	RTP/UDP, IGMP V2/V3, Multicast/Unicast
TS/IP Number	4 MPTS or SPTS
Max. Bit Rate	320Mb/s (total bit rate of 4 TS streams)
TS Processingof Built-in Re-Multiplexer (software option)	
Max. Input Bit Rate	4×216Mb/s
Max. Output Bit Rate	4×108Mb/s
Package Length	188/204
Re-multiplexing functions	PSI auto generation Service and PID remux, filtering and re-mapping NIT insertion and LCN edition EIT Processing
DVB-C Modulation	
Standard	J.83 Annex A, (Annex C available upon request)
Constellation	16QAM, 32QAM, 64QAM, 128QAM,256QAM

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Symbol Rate	2.5~6.99MS/s
BER	≤10E-9
MER	>40dB (with Tester Equalizer enabled)
RF output	
Connector Type	2 x F type female(1 for -20dB Monitoring), 75Ω
Frequency Range	48~996MHz with a step of 1kHz adjustable
Output Level	95~110dBμV with a step of 1dB adjustable, total of 4 carriers
Spurious Rejection	55dB (typical)
Return Loss	-10dB (typical)
ASI output Monitoring	
Connector Type	1×BNC female, 75Ω
Standard	DVB-ASI, EN50083-9
Function	Loop through Monitoring of either of 4 Tuner or ASI inputs

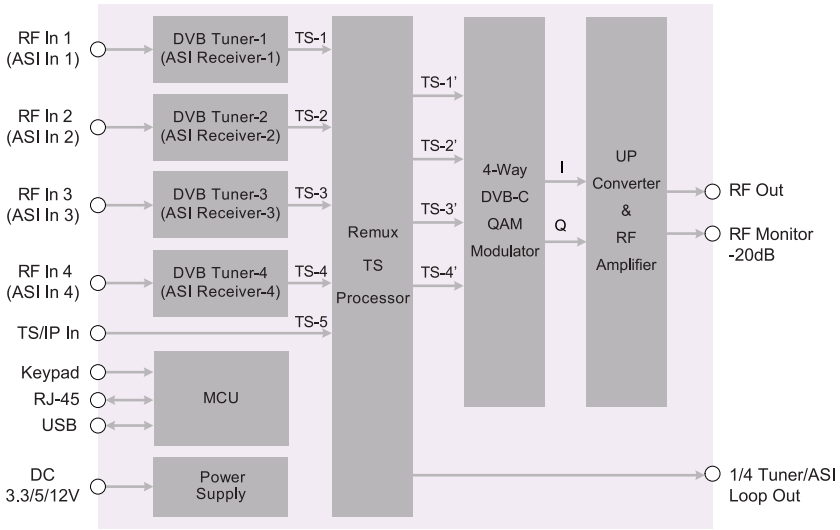
Output Bit Rate	≤216Mb/s
Control & Monitoring	
Connector Type	1×RJ-45, 10/100 Base-T, for equipment IP Control
Remote Control	HTTP Web Interface and SNMP
Software Upgrade	FTP and Telnet through IP
Physical	
Power Supply	DC 3.3V/5V/12V, supplied by DMM-1000MF chassis
Power Consumption	25W Max.
Dimension	379.7mm(D)×111.5mm(H)×37mm(W)
Weight	800g approximately
Operating Temperature	0 ~ 45℃
Storage Temperature	-10 ~ 55℃
Operating Humidity	10 ~ 90% Non-condensed

Note:

1. TS/IP input and re-multiplexer are exclusive software options. When the software for TS/IP input is loaded, the re-multiplexer function will be void, vice versa.
2. TS/IP input is not allowed to use.

Block Diagram

DMM-2400TM Functional Block Diagram



Order Information

		DMM-2400TM			
		30S2C	30T2C	30AC	30IC
Tuner input	DVB-S/S2	×4			
	DVB-T/T2/C		×4		
ASI-In				×4	
Built-in Remux		•	•	•	
TS/IP In		×4	×4	×4	×4
RF-Out		×4	×4	×4	×4
Modulation		DVB-C	DVB-C	DVB-C	DVB-C
Note: when enable TS/IP In function, the remux function will be disabled.					

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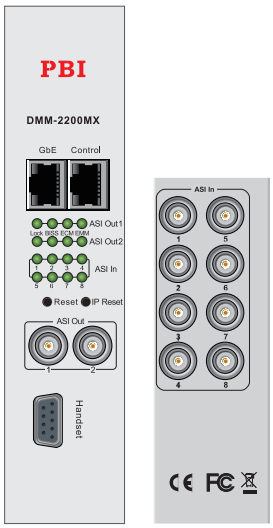
Dual channel remultiplexer module with EIT and GbE IP support

DMM-2200MX / DMM-2200DX Series
Re-Multiplexer and Scrambler Module



DMM-2000MX/DX is a series of high density advanced DVB transport stream re-multiplexer and scrambler modules. It can receive SPTS and MPTS from both GbE and ASI input ports. By using the user friendly web control interface, the input TS is demuxed to SPTS, then routed to the ASI and GbE output ports to build new SPTS and MPTS with PSI/SI regeneration or pass through. It can support up to maximum 256 PID or 32 TV services per TS with re-mapping, bypass, filtering functions. PCR jitter is improved by PCR correction and re-stamping features.

As an advanced option, DMM-2200MX/DX can provide with DVB scrambling functions. It can support BISS-1, BISS-E and Simulcrypt modes by using the DVB common scrambling algorithm and built-in CW generator.

With its multiple TS over ASI and IP input and output ports, flexible configuration and powerful TS processing ability, DMM-2000MX/DX is a key routing equipment that links the TV sources from professional IRDs and encoders to DVB modulators in the headend system.

Features

- MPEG2 and MPEG4/H.264 TS Re-Multiplexing
- BISS 1/E, Simulcrypt mode Scrambling in advanced mode
- TS Input and Output from both ASI and IP
- ASI Input or Output up to 160Mbps
- TS/IP through GbE port up to 860Mbps input/output
- TS/IP in UDP/TCP/RTP, Multicast and Unicast modes
- Null packet insertion for TS/IP transmission
- Maximum processing of 32 services or 256 PIDs per TS
- Service, component, data de-multiplexing, filtering and re-multiplexing
- PCR re-generation and correction function
- PID and service remapping, bypass, filtering, conflict detection
- PSI/SI re-generation, insertion, NIT and SDT edition
- EIT bypass or re-generation
- TS Analyzer with TS, service bit rate and alarm supervision
- Web remote control and SNMP supervision

Order Information

Model / Interface	DMM-2200MX	DMM-2200MX-TP	DMM-2200MX	DMM-2200DX-TP
ASI Input Number	8	8	2	2
ASI Output Number	2	2	8	8
DVB Scrambling	NO	YES	NO	YES

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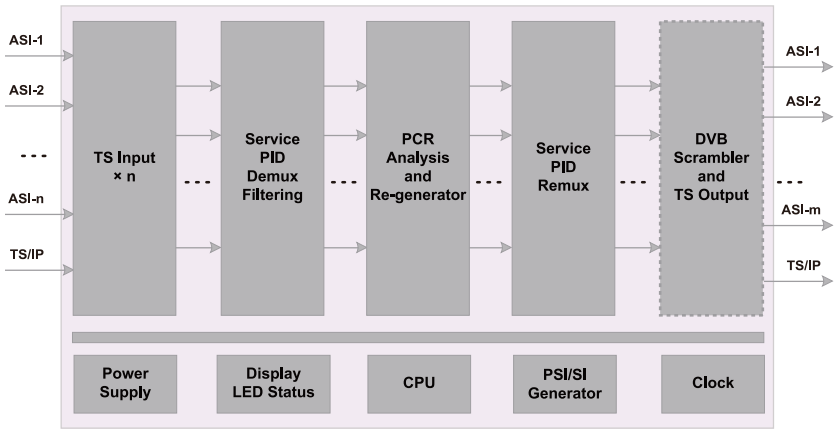
Specification

ASI Ports	
Number	10
Input bit rate	≤ 213Mb/s
Output bit rate	≤ 160Mb/s
Data mode	BYTE or BURST auto-detection
Packet Length	188 /204 bytes, auto-detection
Signal Level	200-800mVpp±10%
Connector type	BNC Female, 75Ω
TS over IP	
Transmission mode	Multicast or Unicast , IGMP V2/V3
Number of streams	64, 128 or 256
Input and output Bit Rate	Maximum 420Mb/s, future extension to 860Mb/s
Encapsulation	UDP or UDP/RTP 1-7 TS packets in each IP packet
FEC(option)	Pro MPEG COP#3 (SMPTE 2022) future evolution
PCR clock reference	PCR regeneration
Connector type	1000M Ethernet RJ-45 electrical
TS Processing	
Maximum throughput	21Gb/s
Maximum TS	64 TS from IP and 8 TS from 8 ASI
Maximum service	64 services from each of 8 ASI port, 32 services if PCR regeneration 64 services from each of 64 TS over IP
Service management	Local service building Live service input pass through, stop, filtering, sharing and redundancy Service proprieties' edition and modification
Component management	Local component building Live component input pass through, stop, filtering, sharing, redundancy
EMM, ECM and private data	Crossing and filtering
Bandwidth management (option)	Transport stream and service bit rate view Quality of service definition, service policing, Overflow prevention
PSI/SI and Data	
PSI/SI	Regeneration and edition tables and descriptors through on line editor Tree structure view in XML format
EIT	Pass through, regrouping, automatic remapping of TS ID, ON_ID and Service ID in the EITs from different ASI and IP inputs
Data(option)	Opportunist data insertion to replace null packets
DVB Scrambling	
Scrambling mode	Simulcrypt, BISS-1, BISS-E
Simulcrypt number per TS	Maximum 4
Processing capability	<54Mb/s per TS
EMM	Maximum number 64; Protocol TCP or UDP; Maximum bandwidth 8Mb/s
ECM	Maximum number 64; Protocol TCP; Maximum bandwidth 3.8Mb/s
Control & Monitoring	
Connector Type	RJ-45, 10/100 Base-T
Local Control	16 LED, Support external key pad with LCD display and 6-key
Remote Control	HTTP Web, SNMP future extension
Equipment Upgrade	HTTP web page
Physicals	
Dimension	381mm×111mm×32mm
Weight	0.335Kg Net
Power Supply	DC 5V, 5A
Power Consumption	25W
Temperature	Operating 0~45℃; Storage -10~60℃
Operating Humidity	10~90%, non-condensed
Racks	
Model and Type	DMM-1000 for 4RU; DMM-200 for 1RU
Number of Slot	8 slots for 4RU rack, 2 slots for 1RU rack
Dimension	Width=483mm, Height=177mm, Depth=388mm for 4RU Width=483mm, Height=44mm, Depth=388mm for 1RU
Cooling	By air with automatic temperature detection
Power Supply	AC 100V-260V, 50-60Hz

Block Diagram



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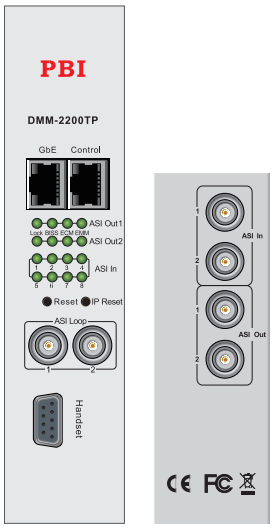
Dual channel DVB scrambler module



DMM-2200TP
Dual Channel DVB Scrambler

DMM-2200TP is a professional broadcast level Twin DVB-TS Scrambler module,which can support 2 TS streams scrambling with one signal unit. Each ASI Out ports can output independent scrambled TS streams or transparent loop through input TS stream out. It can support up to four different Simulcrypt scramble or BISS 1/E scramble by using the DVB common scrambling algorithm and built-in CW generator. With its high performance and stability, DMM-2200TP can be widely used in current or new-style DVB-S/T/C digital TV headend system.

Features

- Fully compliant with IOS13818 and EN300 468 standard
- Support MPEG2/H.264 TS stream scrambling
- Support BISS 1/E, Simulcrypt scrambling
- 2*ASI for SPTS/MPTS input, up to 213Mbps for each ASI.
- 2*ASI for independent MPTS output, up to 52Mbps for each scrambled TS.
- Can process maximum 48 EMM and ECM for each scramble tunnel
- Support most major CAS in market
- Support local or remote CAS synchronous simulcrypt processing
- Support error alarm of TS level
- Support statistics of PID and service bit rate
- Support PSI/SI insertion or re-generation
- IP GbE interface with up to 860Mbps input/output (transparent TS)
- Large cache with powerful output buffer against burst overflow
- Web remote management and SNMP supervision

Order Information

Interface / Model	DMM-2200TP
ASI Input	×2
ASI Scrambling Output	×2
ASI Loop-through Output	×2
Re-Multiplexing	•
Scrambling	•
TS/IP Interface(GbE)	×1
Ethernet Interface	×1
RS-232	×1

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Specification

TS over IP	
Connector Type	
Connector Type	1×RJ45, 1000Base-T full duplex, IEEE803.2
Protocol	IPv4, IGMPv2/V3, UDP, RTP
Transport type	Multicast
IP Stream type	SPTS/MPTS
IP Jitter	200ms
Input/Output Bit Rate	≤860Mb/s
ASI Input/Output	
Connector Type	2×BNC female, 75Ω for Input 2× BNC female, 75Ω for Scrambling Output 2×BNC female, 75Ω for Loop Though Output
Standard	DVB-ASI, EN50083-9
Receiving Sensitivity	≤200mV
Input Voltage	200~880mV
Output voltage	800±80mV
Rising Time	≤1200ps
Falling Time	≤1200ps

Deterministic Jitter(peak)	≤10%
Random Jitter(peak)	≤8%
Return Loss	15dB
Data Format	Byte / Burst / Auto
Packet Length	188(byte) / 204(burst) / Auto
Input Bit Rate	≤213Mbps/per port (transparent TS)
Output Bit Rate	≤213Mbps/per port (transparent TS) ≤213Mbps/per port (scrambled TS)
Input/Output Service Quantity	256 PIDs/32 services
TS Scrambling	
Scrambling Algorithm	DVB common scrambling algorithm, built-in CW generator
Scrambling Mode	Simulcrypt, BISS 1/E
Control & Monitoring	
Connector Type	1×RJ-45, 10/100 Base-T, for equipment IP Control
Remote Control	SNMP, HTTP (Web Interface)
Front Panel Operation	LCD Display, Buttons control

DMM-1000AS

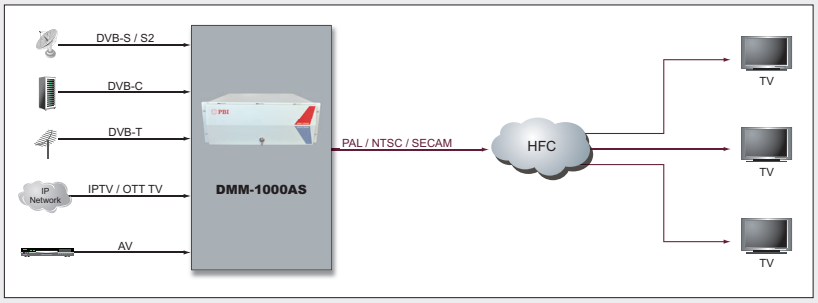
Compact Modular SMATV Headend

DMM-1000AS is a compact modular SMATV headend, supporting up to 16 channels in one 19" 4U chassis. It integrates multiple functions including DTV signal reception, descrambling, decoding and analog modulation. DMM-1000AS has various options for RF input front end, such as DVB-S/S2/T/T2/C, ATSC, ISDB-T and DMBT etc., moreover, analog AV and IP input are also available. Equipped with dual DVB-CI, the DMM-1000AS module can decrypt multiple pay TV services and loop through the TS to the neighbor modules through internal cables for further processing. Each DMM-1000AS module can process two MPEG-2 or H.264 HD/SD services and downscale the HD content to SD, then modulate and output via two adjacent analog RF channels. DMM-1000AS supports various analog modulation standard, such as PAL B/G, PAL D/K, NTSC, and SECAM etc. Each DMM-1000AS module can be controlled and supervised by SNMP and HTTP WEB.

Main Feature

- Support various analog modulation standard, such as PAL B/G, PAL D/K, NTSC, and SECAM etc.
- DVB-S/S2/T/T2, ATSC, ISDB-T, DMBT front end option
- Support IP input and analog AV input
- MPEG-2, H.264 HD/SD decoding
- Two adjacent analog RF channel output per module
- Dual DVB-CI for multi-decryption
- TS loop through between modules
- Functional module hot-swappable
- Web, SNMP remote control or handheld programmer unit local control
- 19" 4RU chassis compact modular design, supporting up to 8 modules in one chassis
- Redundant power supply
- Intelligent temperature control cooling system
- Stand alone function of each module
- Cost-saving by backward compatible with new modules
- On site software update through IP or USB

Application Diagram



Product List

Product name	Model No.	Description
Professional IRD and Analog Modulator Module	DMM-1701PM	Dual Channel IRD and Analog Modulator Module
Professional IRD and Analog Modulator Module	DMM-1702PM	Dual Channel IRD and Analog Modulator Module
Professional Analog Modulator Module	DMM-1701IM	Dual Channel IPTV Decoder and Analog Modulator Module
Professional IPTV Decoder and Analog Modulator Module	DMM-1701M	Dual Channel PAL/NTSC/SECAM modulator
Professional Signal Splitter	DMM-1701LD	8-Way Active Satellite Signal Splitter
Professional CATV Combiner and Amplifier	MM-1701CA	7-inputs Combiner and Amplifier

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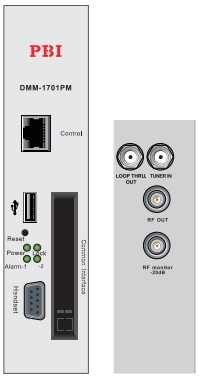
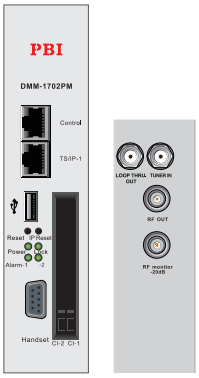
Signals Processing Modules

DMM-1701PM series
DVB Tuner to Analog Trans-modulator



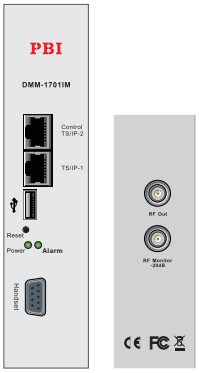
- Multiple RF input front end option DVB-S2/S/C/T/T2, ATSC, ISDB-T, DMBT
- Two adjacent analog channels output in range of 48-860MHz
- Output level 100dBμV per channel
- Support MPEG-2, H.264 SD/HD decoding
- Remote Control and Supervision by SNMP and HTTP WEB
- Support BISS-1, BISS-E descrambling
- Dual DVB-CI for multi-decryption
- Dynamic PMT detection and automatic updating

DMM-1702PM series
DVB/IP to Analog Trans-modulator



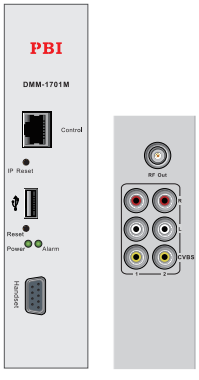
- RF input or IP input selectable by software
- Multiple DVB tuner front end option DVB-S2/S/C/T/T2, ATSC, ISDB-T, DMBT
- Two H.264 SD/HD receiver decoders and analog modulators
- Dynamic PMT detection and automatic updating
- Support BISS-1, BISS-E descrambling
- Dual DVB-CI slots for multi-decryption
- Binding analog channels output in range of 48-860MHz
- 100dBμV per channel
- Remote Control and Supervision by SNMP and HTTP WEB

DMM-1701IM series
Twin TS/IP to Analog Trans-modulator



- Two IP multicast/unicast input ports
- Two adjacent analog channels output in range of 48-860MHz
- Supports MPEG-2, H.264 SD/HD decoding
- Output level 100dBμV per channel
- Remote Control and Supervision by SNMP and HTTP WEB

DMM-1701M series
Twin Analog Modulator



- Two analog AV input
- Two adjacent analog channels output in range of 48-860MHz
- Modular design for easy installation and maintenance
- Output level 100dBμV per channel
- Remote Control and Supervision by SNMP and HTTP WEB

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Specification

Tuner Input (for DMM-1701PM Series)	
DVB-S/S2 Tuner Input	
Connector Type	1×F type female 75Ω for Input, 1×F type female 75Ω for loop through output
Input Frequency Range	950~2150MHz
Input Level	-25~-65dBm
Symbol Rate	DVB-S: 1~45MBauds/s for QPSK DVB-S2: 1~45MBauds/s for QPSK, 8PSK
Roll-off Factor	DVB-S: 0.35 DVB-S2: 0.2, 0.25, 0.35
FEC Code Rate	DVB-S QPSK: 1/2, 2/3, 3/4, 5/6, 6/7, 7/8 DVB-S2 QPSK: 1/2, 3/5, 2/3, 3/4, 4/5, 5/6, 8/9, 9/10 DVB-S2 8PSK: 3/5, 2/3, 3/4, 5/6, 8/9, 9/10
LNB Polarity Selection Voltage	0, 13V, 18V selectable
LNB Band Switching Tone	0/22KHz selectable
Satellite Selection Command	DiSEqC 1.0
DVB-C Tuner Input	
Connector Type	1×F type female 75Ω for Input, 1×F type female 75Ω for loop through output
Input Frequency Range	51~858MHz
Input Level	40~85dBμV
Symbol Rate	1~7MBaud
Constellation	16/32/64/128/256QAM (ITU J.83 Annex A)
Bandwidth	6MHz/7MHz/8MHz
DVB-T Tuner Input	
Connector Type	1×F type female 75Ω for Input, 1×F type female 75Ω for loop through output
Input Frequency Range	49~861MHz
Input Level	-25~-65dBm
Carrier Bandwidth	6/7/8 MHz
FTT Model	2K/8K
Guard Interval	1/4, 1/8, 1/16, 1/32
Viterb Error Correction Code Rate	1/2, 2/3, 3/4, 5/6, 7/8
IP Input (for DMM-1701IM series)	
Connector Type	2×RJ-45, 10/100M
Standard	UDP, RTP, Multicast, Unicast, MPTS, SPTS
A/V Input (for DMM-1701M series)	
Video Input	2 sets of RCA, 75Ω
Audio Input	2 sets of RCA mono or A2(optional), 10Ω(unbalance)
Descramble (for DMM-1701PM series)	
Descrambler	DVB Common Scrambling Algorithm (CSA)
BISS Mode	BISS-1, BISS-E
Common Interface	Double PCMCIA slots, compatible with major CA CAMs in the market
Analog channels Modulation (for DMM-1701PM/1701IM/1701M)	
Video	
Video carrier frequency accuracy	VHF: △f ≤ 5KHz UHF: △f ≤ 10KHz
Video modulation depth	DMM-1701M 77.5~97.5% DMM-1701PM/1701IM 87.5%
Video in-band flatness	≤2dB
Differential Gain	≤7%
Differential Phase	≤5°
Video S/N ratio	≥45dB
Chrominance/Luminance delay	△τ ≤45nS
K factor of 2T pulse	≤4%
Audio	
FM modulation deviation	DMM-1701M 40~160KHz (D/K, B/G, I) 20~80KHz (M/N) DMM-1701PM/1701IM 40~100KHz (D/K, B/G, I) 50KHz (M/N)
Audio frequency response	±1.5dB (40Hz~15KHz)
Total harmonic distortion (THD)	≤1.2% (1KHz tone with ±60KHz(D/K, B/G, I) or ±30KHz(M/N) FM deviation)
1st audio carrier frequency	6.5MHz±5KHz/6.0MHz±5KHz/5.5MHz±5KHz/4.5MHz±5KHz(basing on different standards)
2nd audio carrier frequency	6.742MHz±5KHz/6.258MHz±5KHz/5.742MHz±5KHz/4.742MHz±5KHz(basing on different standards)
Audio S/N ratio	≥55dB
Audio Pre-emphasis	50μS (B/G,D/K,I), 75μS (M/N)
RF Output (for DMM-1701PM/1701IM/1701M)	
Connector Type	1×F type female, 75Ω (primary output) 1×F type female 75Ω (-20dB for monitoring)
Output Frequency Range	48~860MHz adjacent, step by 10 KHz
Output Level	100±3dBμV
Output Level Attenuation	0~18dB adjustable, step by 1 dB
Output Return Loss	≥ 10dB
Control & Monitoring	
Connector Type	1×RJ-45, 10/100M, for equipment IP Control
Remote Control	SNMP, HTTP (Web Interface), Proprietary HDMS (Headend Device Management System)
Local Control	Handheld programmer unit
Software Upgrade	Embedded FTP loader and USB
Physical	
Dimension	379.7×111.5×39mm
Power Consumption	30W Max.
Operating Temperature	0- +45℃
Storage Temperature	-10~ +50℃
Operating Humidity	20~90%, non-condensed

Order Information

Model / Interface	1701PM-XX						1701IM-XX		1701M-XX	
	DVB-S2		DVB-T		DVB-C					
Video Audio	MONO	A2	MONO	A2	MONO	A2	MONO	A2	MONO	A2
PAL D/K	02S2	04S2	02T	04T	02C	04C	02	04	02	04
PAL D/K(Poland)	02S2	08S2	02T	08T	02C	08C	02	08	02	08
PAL B/G	12S2	14S2	12T	14T	12C	14C	12	14	12	14
NTSC	22S2	-	22T	-	22C	-	22	-	22	-
SECAM D/K	32S2	34S2	32T	34T	32C	34C	32	34	32	34
SECAM L	42S2	-	42T	-	42C	-	42	-	42	-
PAL-I	52S2	-	52T	-	52C	-	52	-	52	-

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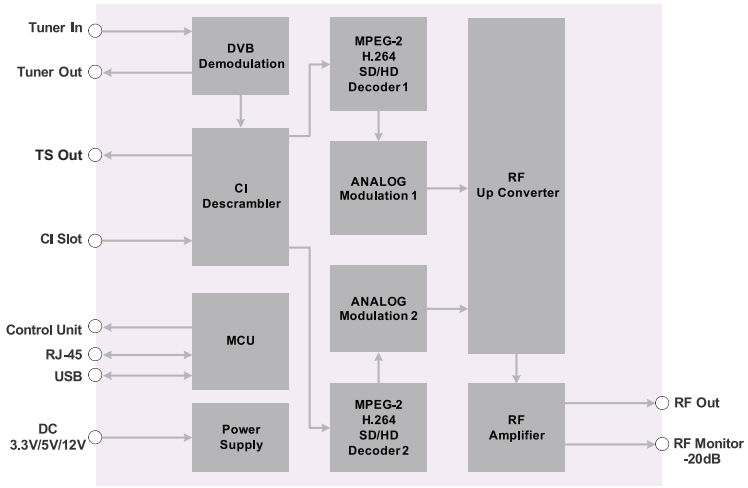
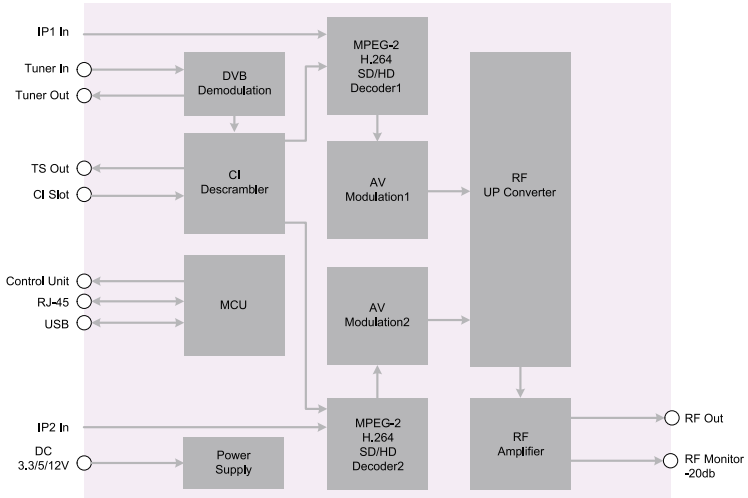
Model	1702PM-XX					
Tuner	DVB-S2		DVB-T		DVB-C	
Audio	MONO	A2	MONO	A2	MONO	A2
PAL D/K	02S2	04S2	02T	04T	02C	04C
PAL D/K(Poland)	02S2	08S2	02T	08T	02C	08C
PAL B/G	12S2	14S2	12T	14T	12C	14C
NTSC	22S2	-	22T	-	22C	-
SECAM D/K	32S2	34S2	32T	34T	32C	34C
SECAM L	42S2	-	42T	-	42C	-
PAL I	52S2	-	52T	-	52C	-

Block Diagram

DMM-1701PM Functional Block Diagram



DMM1702PM Functional Block Diagram



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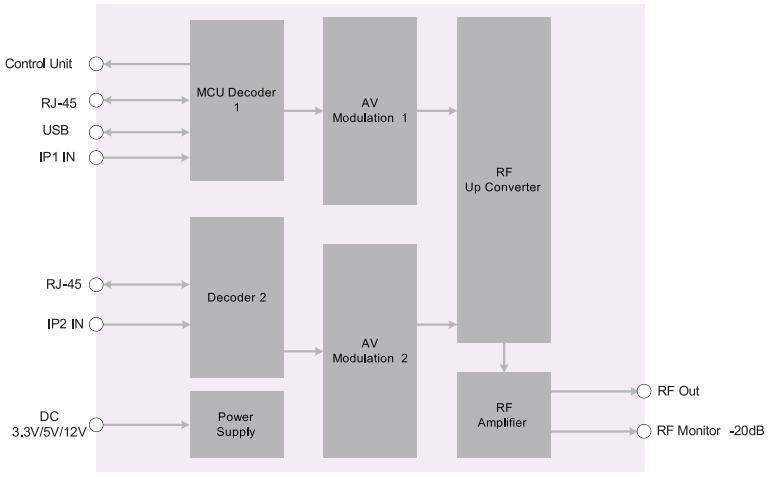
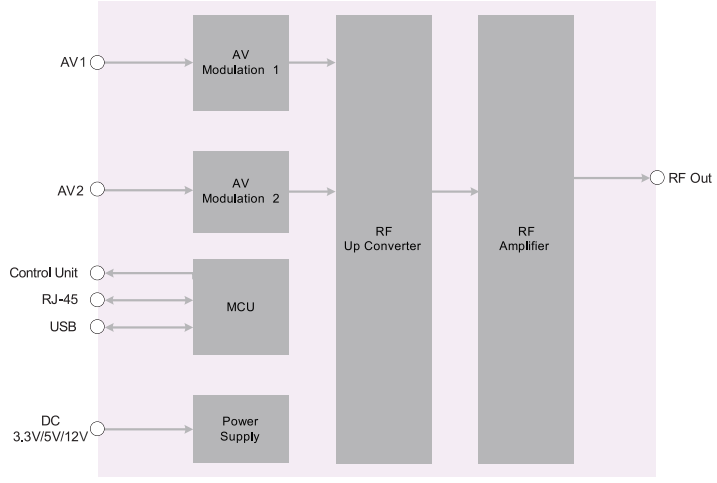
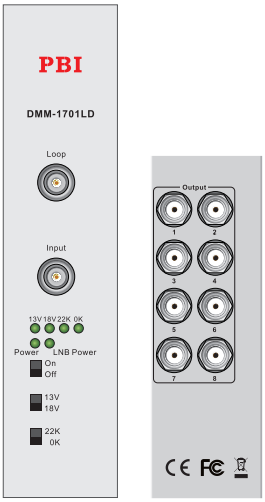
DMM1701IM Functional Block Diagram



DMM1701M Functional Block Diagram



DMM-1701LD
8-Way Active Satellite Signal Splitter



DMM-1701LD is an 8-Way active L-band satellite signal splitter. The RF input port can be fed with 13/18V and 0/22KHz to drive the LNB and antenna. By using micro strip line technology, the port-to-port isolation between 8 RF outputs is higher than 40dB. It is a useful and cost effective spare part for satellite professional IRD product line.

Main Feature

- Used with professional satellite receiver and decoder modules in DMM product line
- Isolated DC between input and output based on micro strip directional coupler
- Active splitter to keep good RF output level
- High isolation between 8 RF output ports
- Loop output of RF input on front panel for supervision
- Manual LNB 13/18V, 0/22kHz switches with LED status

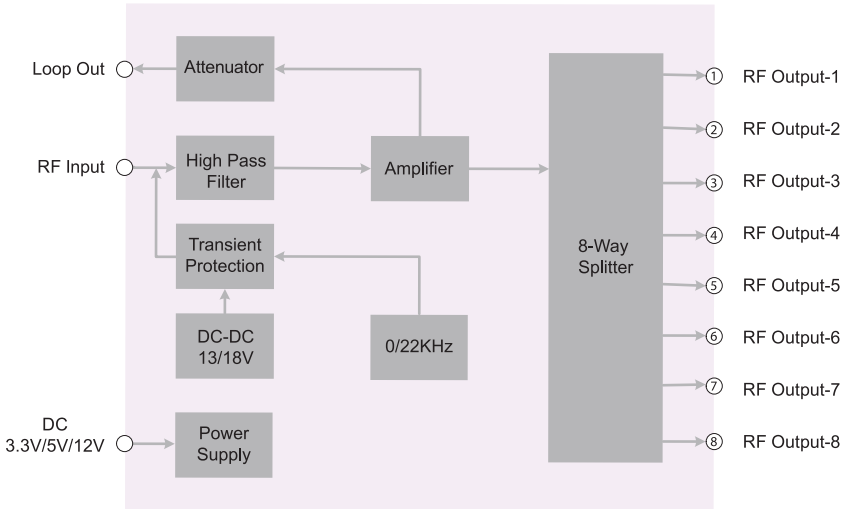
Specification

RF Input	
Input Number	1
Connector type	Type F, 75Ω
Frequency range	950MHz - 2150MHz
Input level	-65 ~ -25dBm
LNB Control	
13/18V	13±1V, 18±1.5V
0/22KHz	0.7±0.1Vpp, 22±1KHz
Load current	350mA
RF Output	
Output Number	8 outputs, 1 loop output
Connector type	Type F, 75Ω
Gain	0±2dB

Return loss	≥10dB
Flatness	±2dB
Isolation	≥40dB
Control & Monitoring	
Switch	3 switches for LNB power ON/OFF, 13V/18V and 0/22KHz
LED	6 LEDs for Power, LNB Power, 13V, 18V, 0kHz, 22kHz
Physical	
Dimension	379.7×111.5×39 mm
Power consumption	10W Max
Operation temperature	0~45°C
Storage temperature	-10~50°C

Block Diagram

DMM-1701LD Functional Block Diagram



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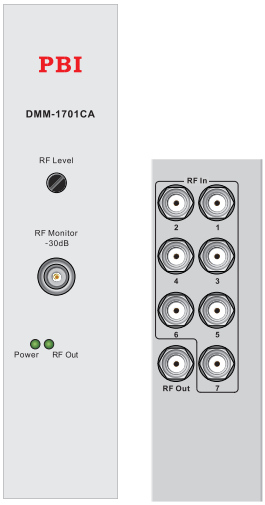
DMM-1701CA
High Linear Combiner and Amplifier Module



The DMM-1701CA is a high linear combiner and amplifier module which can combine 7 RF inputs into 1 RF output and amplify output level up to 110dBμV per channel. Modular design make it very easy for installation and maintenance. User can adjust gain manually and monitor output RF signal via -30dB monitor port. DMM-1701CA is suitable for both analog and digital system.

Main Feature

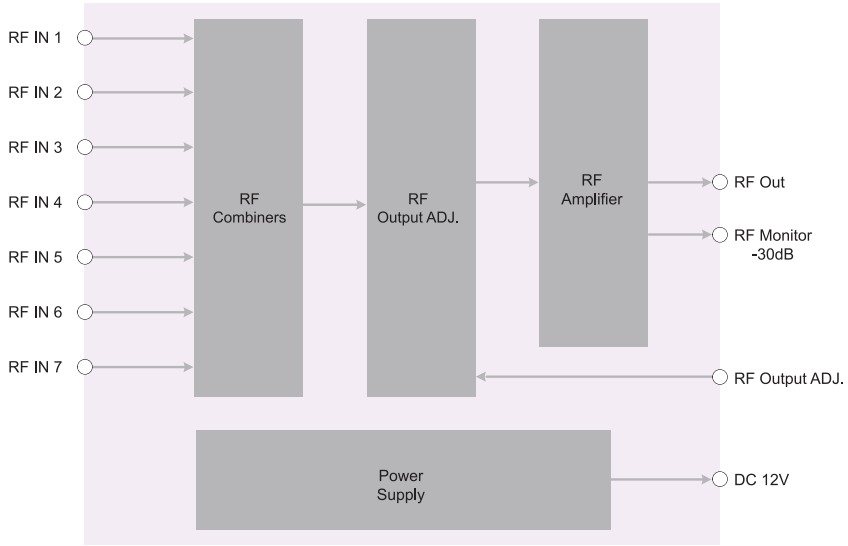
- Manual adjusted gain amplifier
- Support -30dB monitor port
- Support 7 RF input into 1 RF output
- Modularized design for easy installation and maintenance

Specification

Connector Type	7 x F type female 75Ω for Input, 1 x F type female 75Ω for output,1 x F type female 75Ω for -30dB monitor
Frequency Range	48～860MHz
Input Level	100dBμV(per channel)
Output Level	110dBμV(per channel)
Input Return Loss	≥7dB
Output Return Loss	≥12dB
CTB	112CH analog, flat, Vo=44dBmV TYP: -62dBc Max.: -60dBc
XMOD	112CH analog, flat, Vo=44dBmV TYP: -58dBc Max.: -56dBc
CSO	112CH analog, flat, Vo=44dBmV TYP: -62dBc Max.: -60dBc
Noise factor	MAX：6dB
Passband Flatness	MIN：0.5 dB MAX：2.5 dB
Isolation between Input Ports	TYP：20dB MIN：16.5dB
Isolation between Input and Output Ports	MIN：27dB

Block Diagram

DMM-1701CA Functional Block Diagram



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C966 ProBox Serires(Dual Core)

Digital Home Media Internet PC

ProBOX C966 is an advanced Digital Home Media Internet PC who is based on Android 4.0 OS and Cloud Peer-to-Peer technology. With build-in iCloud-IPTVTM Player, it can receive LiveTV, VOD and internet radio services. User can use its browser to surf internet and get latest international/domestic news, stock info and whether forecast. It also can access popular video website such as Youtube, hulu, etc.

ProAPC C966 is an open system based player box and its functions can be extended by installing different applications. User can use a free internet telephone or conference call via extension USB Phone or USB Speaker Phone with other ProBrain terminal devices using Skype , or use ProNAS(Network Attached Storage) to automatically download in the background thousands of free HD movies, 3D movies or other video contents to an extension USB HDD, and meantime play android games (such as Angry Birds, Fruit Ninja, etc.) with an Air Mouse (3-Axis Sensor) to or motion-sensing game via USB camera.

Moreover, ProAPC C966 support ProLink, via which user can share multimedia contents over the LAN or WiFi network. There are two main functions of ProLink: 1. “Multiscreen Video Push” which can share the multimedia content among Android based TV, Tablet, PC, smart phones, STB, etc.; 2. “Multiscreen Interaction” which can make interactive actions and control between different Android based devices. For example: user can use ProBrain ProPad 7”/10.1” to control PC via WiFi and push the contents from PC to TV, tablet, smart phone.

ProAPC C966 has 3 USB 2.0 ports which can support WiFi Dongle or 3G Dongle for wireless internet access. It also support extension USB storage. User can play various local multimedia contents such as HD/SD movies, TV series, music, pictures, etc. stored in portable storage devices or downloaded from internet.

Main Feature

- Base on Android 4.2 OS and Peer-to-Peer(P2P) technology
- Comply with MPEG-2(MP@ML), MPEG-4 AVC/H.264 and other video compression standards
- Support Flash10, HTML, Java-Script and Cookies
- Support 1080P full HD playing and HDMI 1.4(HDCP1.2) output
- Support WLAN/LAN ,PPPoE, DCHP and Static IP
- Support multiple streaming media format playing such as MPEG-1, MPEG-2, MPEG-4, H.264, etc.
- Support Skype and Video telephone over IP(Option)
- Support iCloud-IPTVTM , can receive LiveTV and VOD services
- Build in ProNAS(Network Attached Storage), can automatically download and play HD movies, 3D movies or other video contents to extension USB HDD
- Support ProLink, can share multimedia contents in network
- Support “Multiscreen Video Push” function, can real-time share content among Android based TV, Tablet,, smart phones, STB, etc
- Suport “Multiscreen Interaction” function, can make interactive actions and control between different Android based devices
- Support Air Mouse (3-Axis Sensor), can play thousands android games such as Angry Birds, Fruit Ninja, etc. Support motion-sensing game via USB camera
- Can play local multimedia contents on extension Storage devices
- Can support extension USB devices such as Mouse, keypad, Earphone, Mic., etc.
- Can upgrade via USB or online
- Support content sharing function, can play multimedia contents from other devices in same LAN network
- Can receive free OTT TV services or Radio services from internet
- User can download and install Android APK himself
- Can upgrade more applications and functions via internet

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Specification

System	
OS	Android 4.2.2
CPU	Dual Core 1.5G
Nand Flash	4GByte
SPI Flash	4MByte
DDR3	1GByte
Stream Transport /Video & Audio Decoding	
Video Decoding Format	MPEG-1,MPEG-2,MPEG-4,DivX3.11~6.x,AVC,H.264,VC-1,AVC,AVS,SVC,MVC,FLV
Video Output Format	PAL/NTSC/SECAM
Video Resolution	1920*1080p(60Hz),1920*1080i(50Hz),1280*720p(50Hz),720*480i(60Hz),720*480p(60Hz)
Audio Decoding Format	AAC LC, Dolby Digital, Dolby Digital Plus,MPEG-1 Layer1,2,3,WMA,WMA Pro,AAC HE5.1
Audio Mode	Mono, Stereo
Audio Sampling Rate	8KHz,16KHz,11.05kHz,24kHz,32kHz,44.1kHz,48kHz
Photo Format	JPEG,PNG,GIF,RLE,MJPEG
Protocol	
Network	TCP/IP, UDP, TFTP, FTP, HTTP
Access Control	PPPoE, DHCP, Static IP address configuration
Front Panel	
IR	IR
LED	Power indicate, Ethernet status, IR
Interface	
AV OUT	CVBS+Audio_L/Audi0_R*1 (Phonejack type)
ETHERNET	RJ45(transfer device) 10/100M Base-T
USB	USB2.0*3
HDMI	HDMI*1
Micro SD Card Reader	1
IR Extender	1
DC Input	5V/3A, <15W
Others	
Temperature	Work Temperature: 5~45ºC Storage Temperature: -10~65ºC
Net Weight	About 200g
Net Dimension	108mm ×102mm ×22mm

Note: All specifications are subject to change without notice.

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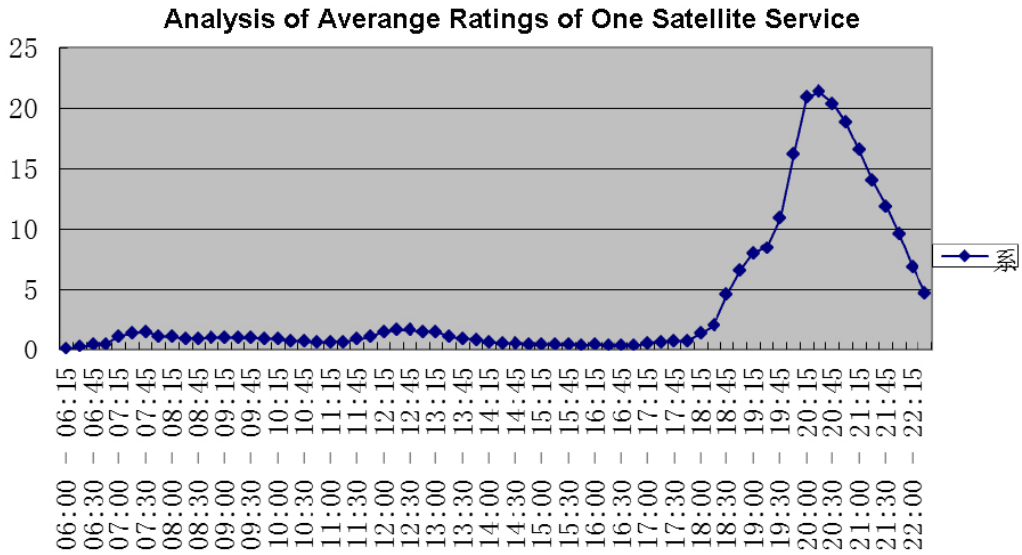
F965CC **ProBox**

DVB+OTT+CloudTV Dual Core Dual Tuner Hybrid STB

ProBox F965CC is an advanced Digital Home Media Internet PC who is based on Android 4.0 OS and Cloud Peer-to-Peer technology. With build-in iCloud-IPTVTM Player, it can receive LiveTV, VOD and internet radio services. User can use its browser to surf internet and get latest international/ domestic news, stock info and whether forecast. It also can access popular video website such as Youtube, hulu, etc.

ProBox F965CC is an open system based player box and its functions can be extended by installing different applications. User can use a free internet telephone or conference call via extension USB Phone or USB Speaker Phone with other ProBrain terminal devices using Skype, or use ProNAS(Network Attached Storage) to automatically download in the background thousands of free HD movies, 3D movies or other video contents to an extension USB HDD, and meantime play android games (such as Angry Birds, Fruit Ninja, etc.) with an Air Mouse (3-Axis Sensor) to or motion-sensing game via USB camera.

In addition, ProBox F965CC supports ProANA (Analytics of User Behavior in TV watching, one of the ProBrain iCloud utilities) which is developed to help broadcasters to measures television and other digital media audiences through a real-time and accurate survey, and analyze all survey data to generate a readable report. The ProANA is an automatic running program in background of F965CC that will not affect user experience in watching a live program. It's able to track on the current playing channel that may come from cable TV and internet TV and sends the relevant information back to the survey server for further analysis. It can store analytics data for one year or longer time for data analysis, search or other usages. ProANA helps broadcasters and advertisers to plan more accurate and customer-oriented marketing strategy.



Moreover, ProBox KA980 support P-Link, via which user can share multimedia contents over the LAN or WiFi network. There are two main functions of P-Link: 1. "Multiscreen Video Push" which is based on DMP(Digital Media Player) of DLNA and can share the multimedia content among Android based TV, Tablet, PC, smart phones, STB, etc.; 2. "Multiscreen Interaction" which can make interactive actions and control between different Android based devices. For example: user can use ProBrain ProPad 7"/10.1" to control PC via WiFi and push the contents from PC to TV, tablet, smart phone.

ProBox F965CC has 3 USB 2.0 ports which can support WiFi Dongle or 3G Dongle for wireless internet access (can optional support built-in WiFi). It also support extension USB storage. User can play various local multimedia contents such as HD/SD movies, TV series, music, pictures, etc. stored in portable storage devices or downloaded from internet.

ProBox use dual DVB-C tuners design and can play and record programs at the same time. User can enjoy both DVB-C cable digital TV and OTT content within one box.

If equipped with AS825(Digital audio processor) and installed P-KaraOK apk, ProBox F965CC can become a family karaoke center. It can store thousands karaoke songs with extension hard disk drive and download unlimited songs from internet. User can adjust key, echo, delay or volume of microphone like professional karaoke devices.

Main Feature

- Comply with DVB-C standards and major internet standars.
- Support dual DVB-C Tuners which can play and record TV programs at the same time.
- Support Built-in WiFi module for wireless internet connection(optional)
- Support receive SD/HD content from both DVB-C cable network and internet
- Support seamless switch between DVB, OTT and Internet video
- Support full DVB-C RF frequency range scan or specific frequency scan
- Support ProBrain PUDRM High Security CAS and Standard Security smart card CAS which can simucrypt with current DVB TV system like Topreal, CTi, Enigma,etc.
- Base on Android OS and Peer-to-Peer(P2P) technology
- Support PDRM to protect copyright and avoid illegal copy or pirate.
- Comply with MPEG-2(MP@ML), MPEG-4 AVC/H.264 and other video compression standards
- Support Flash10, HTML, Java-Script and Cookies
- Support 1080P full HD playing and HDMI 1.4(HDCP1.2) output
- Support WLAN/LAN ,PPPoE, DCHP and Static IP
- Support multiple streaming media format playing such as MPEG-1, MPEG-2, MPEG-4, H.264, etc.
- Support iCloud-IPTVTM , can receive LiveTV and VOD services
- Build in ProNAS(Network Attached Storage), can automatically download and play HD movies, 3D movies or other video contents to extension USB HDD
- Support ProLink, can share multimedia contents in network
  - Support “Multiscreen Video Push” function, can real-time share content among Android or iOs based TV, Tablet, smart phones, STB, etc.
  - User can share text, picture, video, music, voice with friends via P-Chat application
  - Can use smart phone or tablet to control Karaoke application like order songs, adjust microphone audio effect, record songs, etc.
- Support Air Mouse (3-Axis Sensor), can play thousands android games such as Angry Birds, Fruit Ninja, etc. Support motion-sensing game via USB camera
- Support internet Karaoke order service
- Can play local multimedia contents like movie, tv series, music and photo on USB extension Storage devices. Can also support download via NAS(Network-attached storage)
- Can support extension USB devices such as Mouse, keypad, Earphone, Mic., etc.
- Can upgrade via USB or online
- Support content sharing function, can play multimedia contents from other devices in same LAN network
- Can receive free OTT TV services or Radio services from internet
- Can preset favorite website for quick access
- User can download and install Android APK himself
- Can upgrade more applications and functions via internet

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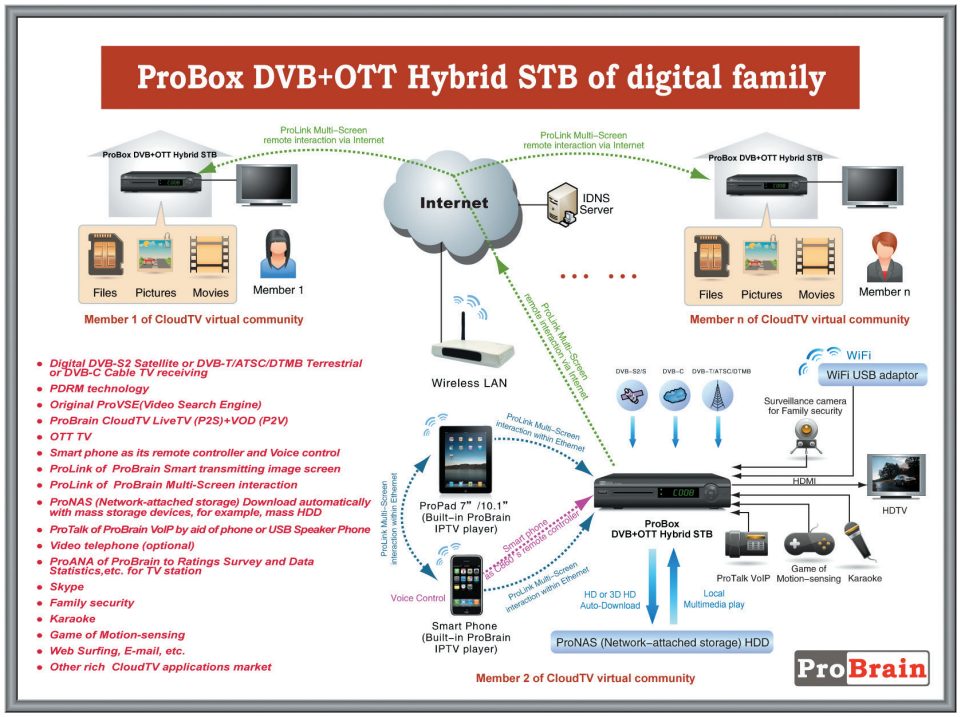
Specification

RF Modulation	DVB-C
Constellation	16/32/64/128/256QAM
Input Freq Range	47~999MHz
Bandwidth	6MHz,8MHz
Input Impedance	75Ohm
Input Level	-15 to 15dBm
RF Input Connector	IEC type
Symbol Rate	3.6~6.952Mbaud
System	
OS	Andriod 4.2.2
CPU	Dual Core 1.5G
NAND Flash	4GByte
SPI Flash	4MByte
DDR3	1GByte
Stream Transport /Video & Audio Decoding	
Video Decoding Format	MPEG-1,MPEG-2,MPEG-4,DivX3.11~6.x,AVC,H.264,VC-1,AVC,AVS,SVC,MVC,FLV
Video Output Format	PAL/NTSC/SECAM
Video Resolution	1920*1080p(60Hz),1920*1080i(50Hz),1280*720p(50Hz),720*480i(60Hz),720*480p(60Hz)
Audio Decoding Format	AAC LC, Dolby Digital, Dolby Digital Plus,MPEG-1 Layer1,2,3,WMA,WMA Pro, AAC HE5.1
Audio Mode	Mono, Stereo
Sampling Rate	8KHz,16KHz,11.05kHz,24kHz,32kHz,44.1kHz,48kHz
Photo Format	JPEG, PNG, GIF, RLE, MJPEG
Protocol	
Network	TCP/IP, UDP, HTTP

Access Control	PPPoE, DHCP, Static IP address configuration
Front Panel	
LED	7 segment Digital Display ,Power indicate, Tuner lock status, LED display, IR
Control Button	7 Keys(Power,Up,Down,Left,Right,Ok,Menu,)
DVB Smart Card slot	1
USB port	USB2.0*1
Rear Panel	
Analog A/V Output	CVBS+Audio_L/Audio_R+SPDIF(coaxial)*1
ETHERNET port	RJ45(transfer device) 10/100M Base-T
USB	USB2.0*2
HDMI	HDMI*1
Micro SD Card	1
IR Extender Port	3.5mm
WIFI	Built-in (optional)
DC Power	5V/3A, <15W
Power switch	Ship type
Others	
Power Supply	175~265 VAC, 50/60 Hz, Max.20W
Temperature	Work Temperature: 5~45ºC; Storage Temperature: -25~75 ºC
Net Weight	2Kg
Dimension	300mm x 235mm x 64mm
Accessories	Remote controller*1, AA battery*1, HDMI cable*1, RCA cable*1, Power adapter*1, Warranty card*1, User manual*1

Application



DHC-3601

DVB-C STB

DHC-3601 is a Digital Cable HDTV Receiver. It's the best solution to enjoy HDTV program!
DHC-3601 can convert all DVB HD format programs to SD output or HD output simultaneously. DHC-3601 supports parental control, and OSD Teletext.
Affordable price, user- friendly interface, great reception, and easy installation, DHC-3601 is no doubt the best choice to experience high resolution, high quality video, and surround audio!

Main Feature

- Compliant with Digital Cable TV standard
- DVB-C Tuner from 42-1002MHz,bandwidth 6/8MHz
- Symbol Rate 1~7M bauds
- Video MPEG2/H.264 SD and HD decoding up to 1080p
- Audio MPEG1 Layer II, Dolby AC3/E-AC3, AAC and HE-AAC decoding
- Analog and Digital Outputs, CVBS, YPbPr, HDMI,S/PDIF
- Automatic and Manual channel search
- Up to 2000 channels processing
- Support EPG of 7 days
- Embedded Topreal CAS
- Software update through USB port or on Air

Specification

DVB-C	
Tuner input	DVB-C
Tuner input type	1*F type female for Input 1*F type female for loop through output
Demodulation	16/32/64/128/256QAM
Bandwidth	6/8MHz(IF filter 6,7,8 MHz)
Frequency range	42~1002MHz
Input impedance	75Ohm
Input level	-15~+15 dBuV
Symbol rate	1~7Mbaud with step of 1kBauds
System	
OS	Linux
CPU	M3601E,Dual-core Main system:1500MIPs
SPI Flash	4MB
DDR RAM	128MB
Video	
Standards	MPEG-2 MP@ML for SD MPEG-2 MP@HL FOR HD H.264/AVC MP@L3.0 for SD,HP@L4.1 for HD VC-1 AP@L1 for SD,AP@L3 for HD
Frame Frequency	25/50Hz
Resolution	Up to 1920*1080p(60Hz)
Bit Rate	MPEG-2 MP@ML: 2–15 M bps MPEG-2 MP@HL: <19 M bps MPEG-4 AVC HP@L3:<10 M bps MPEG-4 AVC HP@L4: <20 M bps
Aspect Ratio	4:3 and 16:9
Audio	
Standard	MPEG 1 Layers 1, 2 (mono, dual channel, and stereo); Dolby Digital (AC3)&Dolby Digital AC-3/E-AC3 MPEG-2 AAC-LC & MPEG4 HE-AAC
Sampling Rate	32,44.1,48KHz
Audio Output	mono, dual mono, stereo, joint stereo
Front Panel	
IR	IR
Keys	MENU/OK/VOL+/VOL-/CH+/CH-,Power ON/OFF
LED	Power indicate*1, Signal Lock*1
Smart Card	Reader compliant to ISO
Interface	
Video Output	CVBS RCA Jack81, YPbPr RCA Jack*1
Audio Output	1 pairs of RCA stereo(Audio Left/Audio Right)
USB	USB2.0*1
HDMI	HDMI*1, HDCP 1.3
S/PDIF (Digital Audio Port)	Coaxial RCA type
DC Input	12V/1.5A
Conditional Access	
CA Vendor	Topreal
CA type	Smart card less or Smart card
Others	
Power Supply	100~240VAC 50/60 Hz
Power Consumption	Stand By <1W Working mode < 8W Max 12W
Temperature	Work Temperature: 5~45ºC Storage Temperature: -10~65ºC
Humidity	20~90%,non-condensed
Weight	910g with gift box
STB Dimension	200mm ×152mm ×40mm
Gift Box Dimension	318mm ×238mm ×62mm
Accessories	Remote Control, Battery, RF adapter, AV Cable, HDMI Cable in option
Shipment Information	3880 units per 20' Container

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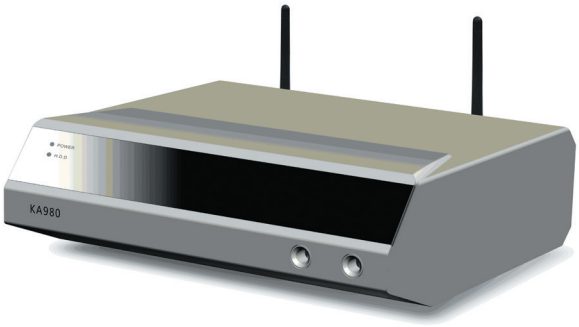
ProBox KA980

OTT+CloudTV+Karaoke Hybrid STB



TProBox KA980 is an advanced Digital Home Media Internet PC who is based on Android 4.2 OS and Cloud Peer-to-Peer technology. With build-in iCloud-IPTVTM Player, it can receive LiveTV, VOD and internet radio services. User can use its browser to surf internet and get latest international/ domestic news, stock info and whether forecast. It also can access popular video website such as Youtube, hulu, etc.

It is also a family karaoke box. It can store thousands karaoke songs with extension hard disk drive and download unlimited songs from internet. With built-in Karaoke audio effect processor, user can adjust key, echo, delay or volume of microphone like professional karaoke devices.

ProBox KA980 is an open system based player box and its functions can be extended by installing different applications. User can use a free internet telephone or conference call via extension USB Phone or USB Speaker Phone with other ProBrain terminal devices using Skype , or use ProNAS(Network Attached Storage) to automatically download in the background thousands of free HD movies, 3D movies or other video contents to an extension USB HDD, and meantime play android games (such as Angry Birds, Fruit Ninja, etc.) with an Air Mouse (3-Axis Sensor) to or motion-sensing game via USB camera.

Moreover, ProBox KA980 support P-Link, via which user can share multimedia contents over the LAN or WiFi network. There are two main functions of P-Link: 1. “Multiscreen Video Push” which is based on DMP(Digital Media Player) of DLNA and can share the multimedia content among Android based TV, Tablet, PC, smart phones, STB, etc.; 2. “Multiscreen Interaction” which can make interactive actions and control between different Android based devices. For example: user can use ProBrain ProPad 7”/10.1” to control PC via WiFi and push the contents from PC to TV, tablet, smart phone.

ProBox KA980 has 3 USB 2.0 ports which can support extension USB storage. User can play various local multimedia contents such as HD/SD movies, TV series, music, pictures, etc. stored in portable storage devices or downloaded from internet.

Main Feature

- Base on Android OS and Peer-to-Peer(P2P) technology
- Support Karaoke function and online update songs database
- Support wire or wireless microphone for karaoke
- Built-in WiFi for internet connection
- Support PDRM to protect copyright and avoid illegal copy or pirate.
- Comply with MPEG-2(MP@ML), MPEG-4 AVC/H.264 and other video compression standards
- Support Flash10, HTML, Java-Script and Cookies
- Support 1080P full HD playing and HDMI 1.4(HDCP1.2) output
- Support WLAN/LAN ,PPPoE, DCHP and Static IP
- Support multiple streaming media format playing such as MPEG-1, MPEG-2, MPEG-4, H.264, etc.
- Support iCloud-IPTVTM , can receive LiveTV and VOD services
- Build in ProNAS(Network Attached Storage), can automatically download and play HD movies, 3D movies or other video contents to extension USB HDD
- Support ProLink, can share multimedia contents in network
- Support “Multiscreen Video Push” function, can real-time share content among Android based TV, Tablet,, smart phones, STB, etc
- Suport “Multiscreen Interaction” function, can make interactive actions and control between different Android based devices
- Support Air Mouse (3-Axis Sensor), can play thousands android games such as Angry Birds, Fruit Ninja, etc. Support motion-sensing game via USB camera
- Can play local multimedia contents like movie, tv series, music and photo on USB extension Storage devices. Can also support download via NAS(Network-attached storage)
- Can support extension USB devices such as Mouse, keypad, Earphone, Mic., etc.
- Can upgrade via USB or online
- Support content sharing function, can play multimedia contents from other devices in same LAN network
- Can receive free OTT TV services or Radio services from internet
- Can preset favorite website for quick access
- User can download and install Android APK himself
- Can upgrade more applications and functions via internet

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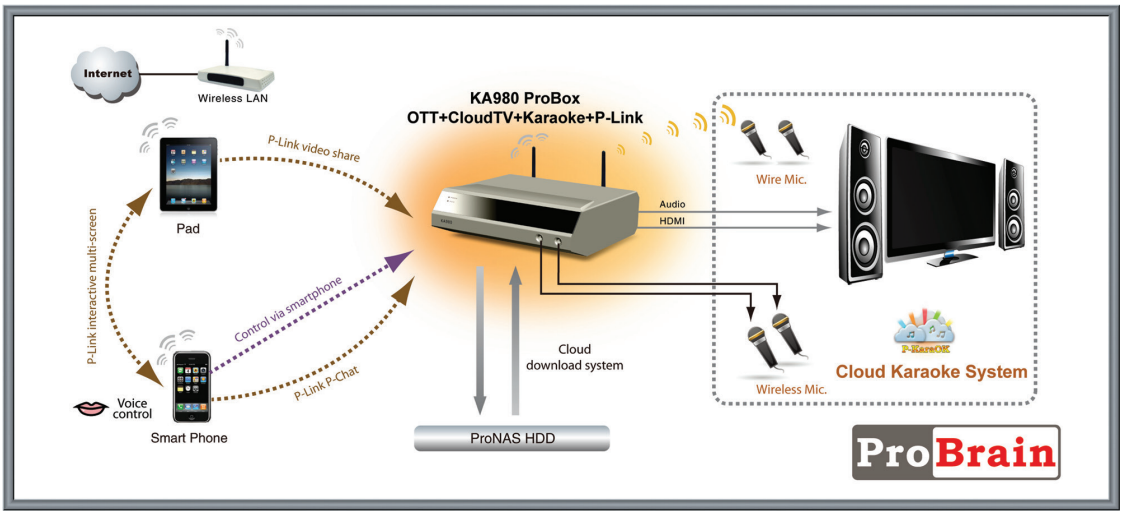
Specification

System	
OS	Android 4.2
CPU	Dual ARM Cortex-A9@1.5GHz
NAND Flash	2GByte or 4GByte
SPI Flash	1MByte
DDR3	512MByte or 1GByte
Stream Transport /Video & Audio Decoding	
Video Decoding Format	MPEG-1,MPEG-2,MPEG-4,DivX3.11~6.x,AVC,H.264,VC-1,AVC,AVS,SVC,MVC,FLV
Video Output Format	PAL/NTSC/SECAM
Video Resolution	1920*1080p(60Hz),1920*1080i(50Hz),1280*720p(50Hz),720*480i(60Hz),720*480p(60Hz)
Video Transportation Bit rate	Max.560Mbps
Audio Decoding Format	AAC LC, Dolby Digital, Dolby Digital Plus,MPEG-1 Layer1,2,3,WMA,WMA Pro, AAC HE5.1
Audio Mode	Mono, Stereo
Audio Sampling Rate	8KHz,16KHz,11.05kHz,24kHz,32kHz,44.1kHz,48kHz
Photo Format	JPEG,PNG,GIF,RLE,MJPEG
Protocol	
Network	TCP/IP, UDP, TFTP, FTP, HTTP
Access Control	PPPoE, DHCP, Static IP address configuration
Front Panel	
LED	7 segment Digital Display , LED display: Power indicate/ Ethernet status, IR
Control Button	7 Keys (Power, Up, Down, Left, Right, Ok, Menu,)
USB port	USB2.0*1
Rear Panel	
TUNER input	IEC type
Analog audio output	CVBS+Audio_L/Audio_R+SPDIF (coaxial)*1
S/PDIF output port	1
Karaoke audio output	Audio_L/Audio_R
Microphone port	wire Mic. port*2, wireless Mic.*2
WIFI antenna	1
ETHERNET port	RJ45(transfer device) 10/100M Base-T*1
USB port	USB2.0*2
HDMI port	HDMI*1
Micro SD Card slot	1
SATA slot for HDD	1
IR Extender	3.5mm
Power switch	Ship type
DC Input	12V/1.5A, <15W
Others	
Power supply	90~265 VAC, 50/60 Hz, Max.20W
Temperature	Work Temperature: 5~45ºC Storage Temperature: -25~75 ºC
Net Weight	1.5Kg
Net Dimension	200mm×152mm×40mm

Note: All specifications are subject to change without notice.

Application



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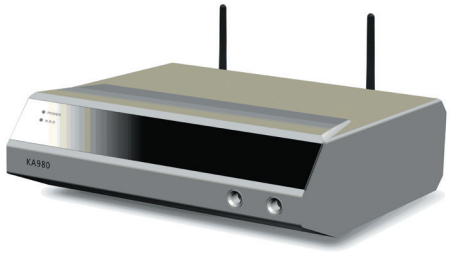
AS805/AS825

Multi-function Karaoke Audio Effect Processor



AS805/AS825 multi-function Karaoke Aduio Effect Processor is made with high performance audio processing chipset. It can support optic audio signal input and output to ensure high quality audio performance. User can adjust key, echo, delay, Mic volume, etc. like professional karaoke device. With 2 wire microphones(AS805) or 2 wireless microphones(AS825), ProBrain Karaoke application, and ProBrain PAS-880 professional active sound box(option), user can build up a home karaoke and multimedia center in their house.

Main Feature

- Built-in karaoke audio effect processor, can adjust key, echo, delay, Mic volume, etc.
- Support 2 wire microphones(AS805) or 2 wireless microphones(AS825)
- Can work with ProBrain PAS-880 professional active sound box
- Support plug-in 2TB SATA hard drive with thousands karaoke songs.
- Download unlimited new songs from internet cloud server.
- Support karaoke soundtrack switch
- Can connect with any OTT Box to make it as a home karaoke center
- Can be used together with DVD/Blue-Ray Player/PC/OTT Box

Specification

Microphone	
Frequency Response	20Hz~20KHz:±0.5dB
S/N	-5dB(Max)
Dual audio channels input	1V (rms)
Dual audio channels output	3V (rms)
I/O Impedance	2.7KΩ
MIC Input Sensitivity	8.5mV (rms)
Rear Panel	
Analog audio input	Audio_L/Audio_R*2
Analog audio output	Audio_L/Audio_R*2
S/PDIF input port	1
S/PDIF output port	1
Wire MIC. port	2(AS805)
Wireless MIC. port	1(AS825)
DC Input	12V/1.5A (AC to DC adaptor)
Others	
Power supply	90~240 VAC, 50/60 Hz, Max.10W
Temperature	Work Temperature: -20~60ºC; Storage Temperature: -25~65 ºC
Net Weight	1.5Kg
Net Dimension	185mm×167mm×36mm (AS805) 205mm×195mm×70mm (AS825)

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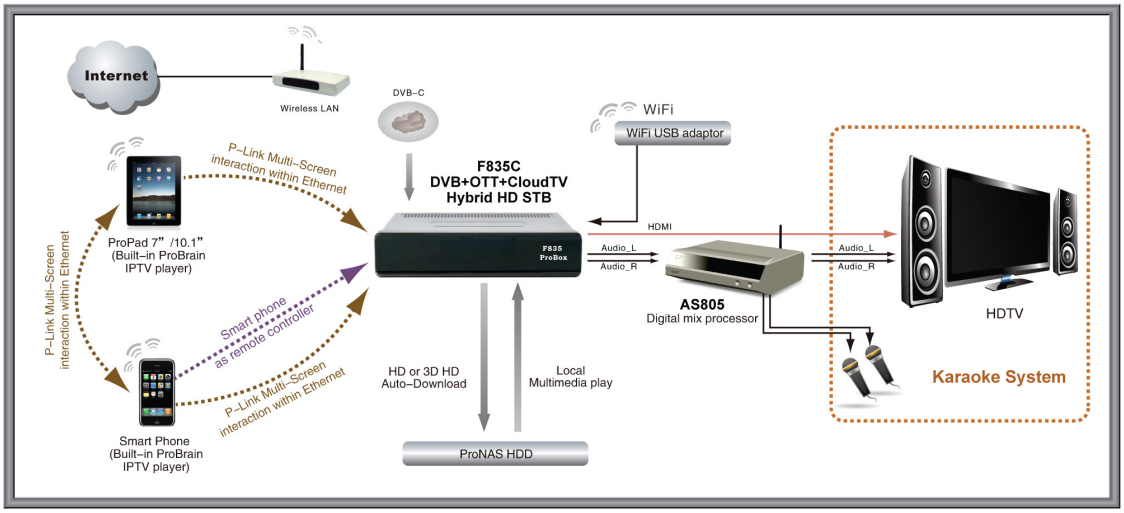
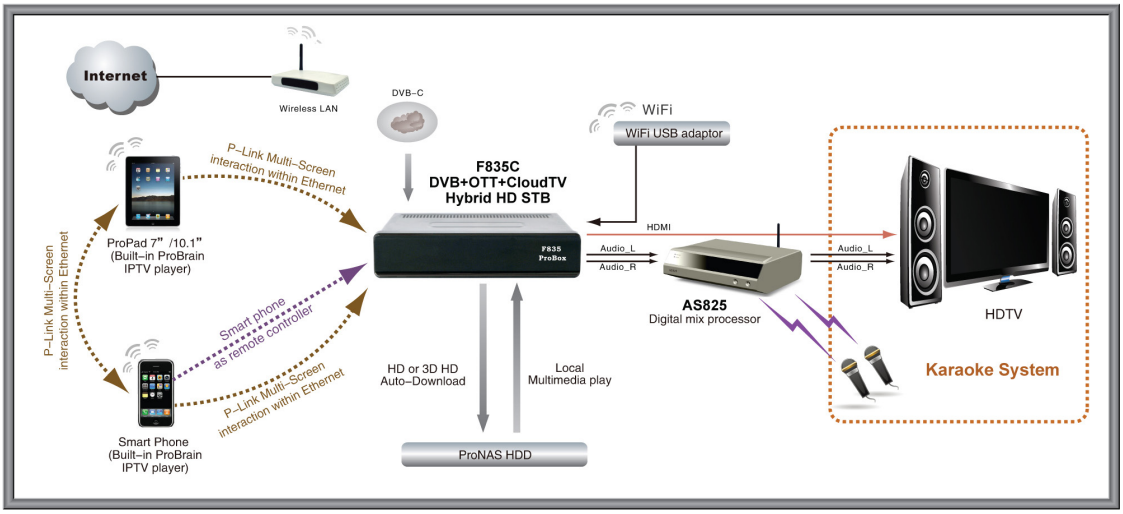
Application

AS805 Application



AS825 Application



Tenor-GAF2

DVB-T2 Modulator

Main Feature

- Fully compliant with DVB-T2 standard
- Support Mode A, Mode B and Multi-PLP
- 2xASI inputs, 1xGigabit Ethernet IP input, optional satellite input
- Support 1k, 2k, 4k, 8k , 16k , 32k FFT modes
- Guard Interval: 1/4, 1/8, 1/16, 1/32,1/128,19/128,19/256
- Rotated constellation: 29°, 16.8°, 8.6°, Antan(1/ 16°)
- FEC: 1/2, 3/5, 2/3, 3/4, 4/5, 5/6
- Constellation: QPSK, 16QAM, 64QAM, 256QAM
- Support SFN-SISO-MISO and MFN
- Channel Bandwidth: 5MHz, 6MHz, 7MHz, 8MHz
- RF agile from 30MHz to 900MHz with step 1Hz
- High performance RF feature with MER>40dB
- External 1pps and 10MHz Clock inputs
- Onboard GPS option
- Powerful Linear and non linear correction
- IP remote control and RS232 serial control

Specification

ASI Input
- Standard:Compliant with EN 50083 ASI interface standard
- Packet Length:188 or 204 packet, Packet mode and Burst mode
- TS Redundancy Mode:Manual or Auto, seamless in SFN mode
- Connector Type:BNC female, impedance 75Ohm

Satellite Input
- Standard:Compliant with DVB-S and DVB-S2 standard
- Frequency Range:950MHz to 2150MHz
- Sensitivity:-65dBm to -25dBm
- Connector Type:BIS- F connector, 75Ω

Ethernet stream Input
- Transceiver Type:Copper transceiver or optical transceiver
- Connector Type:
one RJ45 for 1000base-T, one SFP for Gigabit optical input

Stream Processing and Modulation
- Stream Input:Stream input redundancy management
- Network:MFN, SFN-SISO and SFN-MISO
- Modulation Mode:Mode A, Mode B and Multi-PLP
- FFT:1k,2k, 4k, 8k, Extended 8k, 16k, Extended 16k,32k,
Extended 32k
- FEC:1/2, 3/5, 2/3, 3/4, 4/5,5/6
- Guard Interval:1/4, 1/8, 1/16, 1/32, 1/128, 19/128, 19/256
- Constellation:QPSK,16QAM,64QAM,256QAM (normal or rotated)
- Time Interleaving:Adjustable Time Interleaving

Digital Pre-correction
- Pre-correction:Linear and non-linear pre-correction
- Spectrum tilt adjustment:+/-1dB, step 0.1dB
- Peak to Average Power Reduction(PAPR)

RF Output
- Central Frequency:30MHz to 900MHz
- Signal Level(Main):0dBm +/- 1dB with 0dB to -10dB attenuation
adjustable by 0.1dB step
- Output Level Stability:+/- 0.1dB/10°C
- Modulation Error Ratio(MER):>40dB
- Shoulder:<-50dB @ +/-4.2MHz from central frequency
- Spurious:<-50dBc relative to total power
- Return Loss:>15dB
- Connector Type:N female, impedance 50 Ohm

Test Signal Modes
- Mode 1:PRBS TS sequence
- Mode 2:Sinus tone generation
- Mode 3:Spectrum Gap
- Mode 4:Null Symbol Insertion

Clock Reference
- Internal 10MHz:Stability:
0.5ppm(typ), Output level: 0dBm +/- 3dB

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- External 10MHz:Input level: -5dBm to +10dBm
  Input connector type: SMA female, 50 Ohm
- External 1PPS Reference:
  Input level: LVTTL and TTL level, Pulse width: 1us
  Input connector type: SMA female, 5 KOhms;

Built-in GPS Receiver Option

- Locked Accuracy:+/-1 x 10-9
- Status Monitoring: Antenna status, GPS lock status, Satellite Number and signal strength, YY/MM/DD and HH/MM/SS

Control and Alarm

- Remote Control:IP Ethernet RJ-45 or RS232
- Contact Relay:Major alarms

Physical Conditions

- Power Supply:AC 190V - 240V, 50/60Hz
- Power Consumption:100W max
- Operating Temperature:0 - +50ºC
- Dimension:44mm(Height)×483mm(Width)×500mm(Depth)
- Weight:Net 3.3 kg, Gross 5 kg

Non linear Pre-correction

Correction	Nb point	Abscissa range	Ordinate range	Step
AM/AM	16	-12 dB to +12dB	-6dB to +6dB	0.05dB
AM/PM	16	-12 dB to +12dB	-25° to +25°	0.05dB/0.2°

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Alto-GAF

DTMB Modulator

Main Feature

- Compliant with terrestrial TV standard in China GB20600-2006
- 2 TS ASI inputs for 188/204 byte, Packet Mode and Burst Mode
- PID Filtering and Insertion
- TDS-OFDM modulation
- Support 1 or 3780 sub carriers
- Guard Interval: 1/4, 1/7,1/9
- FEC BCH LDPC: 0.4, 0.6, 0.8
- Time Inter-leaver Depth: 240,720
- Constellation: QPSK,16QAM, 64QAM,4QAM-NR,32QAM
- Support SFN and MFN with SIP processing
- Channel bandwidth: 6,7,8MHz
- RF agile for VHF or UHF with step 1Hz
- RF level from –10dBm to 0dBm
- MER>38dB, Shoulder>50dB
- External 1PPS and 10MHz Clock inputs
- Linear and non linear pre-correction
- RS232 Control and Supervision or IP Web browser in option

Specification

TS Input
- Compliant with EN 50083 ASI interface standard
- 2 ASI inputs,188/204 packet, Packet and Burst mode
- PID Filtering Insertion for TV program cut and Insertion
- Bit Rate adaptation,Null Packet Filtering,PID Processing
- Connector type: BNC female, Impedance 75Ohm

Modulation and Channel Coding
- TDS-COFDM modulation
- Sub carriers: 1 or 3780
- FEC BCH LDPC: 0.4, 0.6, 0.8
- Guard Interval: 1/4,1/7, 1/9
- Time Inter-leaver Depth: 240,720
- Constellation:QPSK,16QAM,64QAM,4QAM-NR, 32QAM
- Channel Bandwidth: 6MHz, 7MHz,8MHz

RF Output
- Central frequency: VHF or UHF by 1Hz
- Signal level(Main): 0dBm +/- 2dB with 0dB to 10dB attenuation adjustable by 0.1dB step
- Signal stability: +/- 0.1dB
- Modulation error ratio(MER): >38dB
- Shoulder: >50dB @ +/-5MHz from central frequency
- Spurious: 50dB relative to total power
- Return loss: >15dB
- Connector type: N female, Impedance 50 Ohm

RF Amplifier Option
- Ultra linear amplifier for VHF, UHF Bands
- Gain: 15-25dB
- Gain Flatness: <1dB
- Gain Stability: <0.1dB
- Return loss: >15dB
- Connector type: N female, Impedance 50Ohm

Linear Pre-correction
- Spectrum tilt adjustment: +/-2dB, step 0.2dB
- Useful Bandwidth: 7.61MHz
- Number of pre-correction points: 32
- Amplitude pre-correction: +/-3dB
- Group Delay pre-correction: +/-500ns

Test Signal Modes
- PRBS TS Sequence, PN 9,15,23
- Signal Carrier Test Tone
- SFN Fine Tune

DTMB Network
- SFN: Time offset setting
- MFN: BR adaptation, Static delay

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- Loss of Reference Signal 1pps, 10MHz management
- SIP option field processing: TX ID, Time offset, Frequency offset, Power, Cell ID, TX Mute

Clock Reference

- Internal 10MHz

Stability: 0.5ppm(typ); 3.0ppm(full temperature range)
Aging: 0.8ppm; Output level: 0dBm +/- 3dB

- External 10MHz

Input level: -5dBm to +10dBm
Input connector type: N female, 50 Ohm

- External 1pps reference

Input level: TTL level 5 KOhms; Pulse width: 1us
Input connector type: BNC female

Built-in GPS Receiver Option

- Locked Accuracy : +/-1×10-9
- Antenna status, GPS lock status, Satellite Number and signal strength, YY/MM/DD and HH/MM/SS

Control and Alarm

- Local control: 6 buttons, LCD screen, LED
- Remote control: RS-232 or WEB browser through IP Ethernet RJ-45 in option
- DB-9 with 2 Contact Relays for alarms: TS Loss, Bit rate Overflow, 1pps or 10MHz loss, SFN loss, etc

Physical Conditions

- Power supply: AC 220V+/-10%, 45W
- Operating temperature: 0-50ºC
- Storage conditions:-10-70ºC, humidity 10%-80% at 50ºC
- Dimension: L=540mm, W=483mm, H=44mm (1RU)
- Weight: Net 7 kg, Gross 10 kg

Non linear Pre-correction

Correction	Nb point	Abscissa range	Ordinate range	Step
AM/AM	16	-12 dB to +12dB	-6dB to +6dB	0.05dB
AM/PM	16	-12 dB to +12dB	-25° to +25°	0.05dB/0.2°

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Bossa-GAF

ISDB-T/TB Modulator

Main Feature

- Fully Compliant with ISDB-T and ISDB-TB Standard
- High MER, RF Stability, Shoulder Level and Low Phase Noise
- Support 1k, 2k, 4k FFT Modes
- Guard Interval: 1/4, 1/8, 1/16, 1/32
- FEC: 1/2, 2/3, 3/4, 5/6, 7/8
- Constellation: DQPSK, QPSK, 16QAM, 64QAM
- MFN and SFN Network Operation (IIP Packets)
- RF Agile from 50MHz to 860MHz with step 1Hz
- Option IF Agile from 34MHz to 70MHz with step 1Hz
- Powerful Linear and Non-linear Precorrection
- Support Crest Factor Adjustment
- External 1pps and 10MHz Clock Inputs
- Optional Pre- Amplifier
- Optional Onboard GPS
- RS232 Control and Supervision or IP Web Browser in Option

Specification

TS Input
- Fully complaint with ARIB STB-B31 and TR-B14 standard
- 2 x ASI inputs
- Support 188/204 packet, Packet mode and Burst mode
- Input Transport Stream Packet de-multiplexer
- IIP packet management for SFN operating
- TS Redundancy: Manual/Auto, Seamless in SFN mode
- Connector type: BNC female, Impedance 75Ohm

Modulation and channel coding
- FFT: 1k ,2k, 4k
- FEC: 1/2, 2/3, 3/4, 5/6, 7/8
- Guard Interval: 1/4, 1/8, 1/16 or 1/32
- Constellation: DQPSK, QPSK, 16QAM, 64QAM
- Time interleave: 0 to 16
- Channel Bandwidth: 6MHz

IF Output Option

Central frequency: 34MHz to 70MHz, Step 1Hz
- Signal level(Main): 0dBm +/- 2dB with 0dB to -10dB attenuation adjustable by 0.1dB step
- Modulation error ratio(MER): >42dB
- Shoulder: >55dB
- Spurious: 50dB relative to total power
- MFN and SFN network operation (IIP packets)
- Connector type: N female, Impedance 50 Ohm

Linear Pre-correction
- Number of Pre correction points: 32
- Amplitude pre correction: +/-3dB
- Phase pre correction: +/-1us

Adjustable Crest Factor
- The range of Crest Factor: 8-20dB
- The crest factor optimization: 1-255

RF Output:
- Central frequency: 50MHz to 860MHz
- Signal level(Main): 0dBm +/- 2dB with 0dB to -10dB attenuation adjustable by 0.1dB step
- Signal stability: +/- 0.5dB,+/-10kHz
- Modulation error ratio(MER): >40dB
- Shoulder: >50dB
- Spurious: 50dB relative to total power
- Connector type: N female, Impedance 50 Ohm

RF Pre-Amplifier Option
- Ultra linear amplifier for VHF, UHF Bands
- Gain: 15dB
- Gain Flatness <1dB, Gain Stability <0.1dB

Test Signal Modes
- PRBS TS Sequence
- Sinus tone insertion
- Null Symbol Insertion
- Central Carrier Cancelled

ISDB-T/TB Network
- SFN: Time offset setting
- MFN: BR adaptation, Static delay setting

Clock Reference
- Internal 10MHz

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Stability: <+/-5×10-9(typ), Output level: 0dBm +/- 3dB
• External 10MHz
Input level: -7dBm to +2dBm
Input connector type: BNC female, 50 Ohm
• External 1pps reference
Input level: TTL level 5 KOhms; Pulse width: 1us
Input connector type: BNC female
• Optional onboard GPS

Control and Alarm

• Local control: 6 buttons, LCD screen, LED
• Remote control: RS232 or WEB browser through IP Ethernet RJ-45 in option

Phyical

• Power supply: AC 110V+/-15% or 220V+/-10%, 80W
• Operating temperature: 0 to 50 degrees
• Dimension: L=540mm,W=483mm, H=44mm (1RU)
• Weight: Net 7 kg, Gross 10 kg

Non linear Pre-correction:

Correction	Nb point	Abscissa range	Ordinate range	Step
AM/AM	16	-12 dB to +12dB	-6dB to +6dB	0.05dB
AM/PM	16	-12 dB to +12dB	-25° to +25°	0.05dB/0.2°

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Symphony-5W/10W

Digital Terrestrial & Mobile TV Transmitter

Main Feature

- Support major digital terrestrial and mobile TV standards, including DVB-T/T2,ISDB-T,ATSC,DTMB,DVB-H,FLO,CMMB
- 2 TS ASI inputs in redundancy mode
- PID Filtering and Insertion
- Constellation: QPSK, 16QAM, 64QAM, 256QAM FFT: 2k, 4k, 8k
- Guard Interval: 1/4, 1/8, 1/16, 1/32, FEC: 1/2, 2/3, 3/4, 5/6, 7/8
- RF output power 5W/10W in compact 1RU chassis
- RF channel bandwidth: 6MHz, 7MHz, 8MHz
- Output frequency agile from 470MHz to 862MHz
- LDMOS wide band UHF amplifier technology
- Powerful linear and non-linear pre-correction
- Support crest factor adjustment
- Support SFN and MFN with MIP processing
- External and internal 10MHz and 1PPS inputs
- Front panel LED status monitoring and LCD menu
- IP Web control and supervision, SNMP in option
- Dual-exciter in option
- Satellite input and built-in GPS in option

Specification

Input
- Support DVB-T/T2,ISDB-T,ATSC,DTMB, DVB-H, FLO,CMMB standards
- 2×ASI inputs in redundancy mode with clever switching, bit rate adaptation
- PID Filtering Insertion for TV program cut and Insertion
- Connector type: 2 BNC female, Impedance 75Ohm
- Satellite input in option

RF Output
- Central frequency: 470MHz to 862MHz
- RF output power: 5W/10W digital
- Channel bandwidth: 6MHz, 7MHz, 8MHz
- Signal stability: +/-0.5dB
- Modulation error ratio(MER):>33dB in DVB-T
- Shoulders: >38dBc @±4.2MHz in DVB-T(8MHz)
- VSWR: 3:1 (self protected)
- Connector type: N-type female, Impedance 50Ohm

Pre-correction
- Linear pre-correction: amplitude and group delay
- Non linear pre-correction: AM-AM, AM-PM

Adjustable Crest Factor
- Crest factor range: 8-20dB
- Crest factor optimization range: 1-255

Clock Reference

Automatic 10MHz and 1PPS loss management
- Internal 10MHz

Aging: <+/-0.3ppm; <1Hz with GPS

Output level: 0dBm +/- 3dB
- External GPS

10MHz input level: -15dBm to +15dBm

1PPS input level: TTL level, pulse width: 1us
- Built-in GPS receiver option
- Built-in satellite receiver option

Control Mode
- Local control: buttons, LCD screen, LEDs
- Remote control: User friendly man machine interface through RS-232 port and IP Web browser, SNMP in option

Physical
- Power supply: AC 90-264V/50-60Hz
- Power Consumption: <72W for 5W transmitter
  <97W for 10W transmitter
- Operating temperature: -5 to +45 degrees
- Storage condition:-20 to 80 degrees
- Dimension:482.6mm(W)×500mm(D)×44.3mm(H) (1RU)
- Weight: 8.9kg

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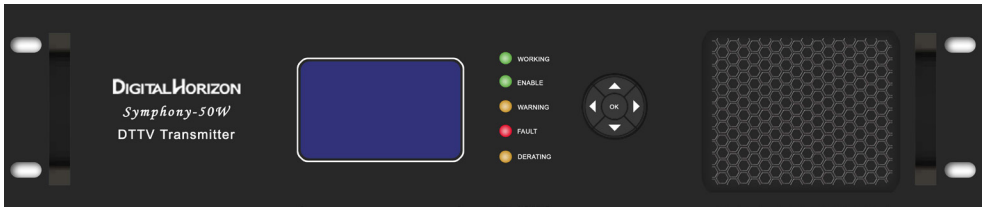
Symphony-30W/50W

Digital Terrestrial & Mobile TV Transmitter



Main Feature

- Support major digital terrestrial and mobile TV standards, including DVB-T/T2,ISDB-T,ATSC,DTMB,DVB-H,FLO,CMMB
- 2 TS ASI inputs in redundancy mode
- PID Filtering and Insertion
- Constellation: QPSK, 16QAM, 64QAM, 256QAM, FFT: 2k, 4k, 8k
- Guard Interval: 1/4, 1/8, 1/16, 1/32, FEC: 1/2, 2/3, 3/4, 5/6, 7/8
- RF output power 30W/50W in compact 2RU chassis
- RF channel bandwidth: 6MHz, 7MHz, 8MHz
- Output frequency agile from 470MHz to 862MHz
- LDMOS wide band UHF amplifier technology
- Powerful linear and non-linear pre-correction
- Support crest factor adjustment
- Support SFN and MFN with MIP processing
- External and internal 10MHz and 1PPS inputs
- Front panel LED status monitoring and LCD menu
- IP Web control and supervision, SNMP in option
- Dual-exciter in option
- Satellite input and built-in GPS in option

Specification

Input
• Support DVB-T/T2,ISDB-T,ATSC,DTMB, DVB-H, FLO,CMMB standards
• 2×ASI inputs in redundancy mode with clever switching, bit rate adaptation
• Connector type: 2 BNC female, Impedance 75Ohm
• Satellite input in option
RF Output
• Central frequency: 470MHz to 862MHz
• RF output power: 30W/50W digital
• Channel bandwidth: 6MHz, 7MHz, 8MHz
• Signal stability: +/-0.5dB
• Modulation error ratio(MER): >33dB in DVB
• Shoulders: >38dBc @ ±4.2 MHz in DVB(8MHz)
• VSWR: 3:1 Max
• Connector type: N-type female, Impedance 50Ohm
Pre-correction
• Linear pre-correction: amplitude and group delay
• Non linear pre-correction: AM-AM, AM-PM
Adjustable Crest Factor
• Crest factor range: 8-20dB
• Crest factor optimization range: 1-255
Clock Reference

Automatic 10MHz and 1PPS loss management
• Internal 10MHz
Aging: <+/-0.3ppm; <1Hz with GPS Output level: 0dBm +/- 3dB
• External GPS
10MHz input level: -15dBm to +15dBm
1PPS input level: TTL level, pulse width: 1us
• Built-in GPS receiver option
• Built-in satellite receiver option
Control Mode
• Local control: buttons, LCD screen, LEDs
• Remote control: User friendly man machine interface through RS-232 port and IP Ethernet browser, SNMP in option
Physical
• Power supply: AC 100-230V/50-60Hz
• Power Consumption:<290W for 30W transmitter <430W for 50W transmitter
• Operating temperature: -10 to 55 degrees
• Storage condition:-20 to 80 degrees
• Dimension:482.6mm(W)×500mm(D)×89mm(H) (2RU)
• Weight: 13kg

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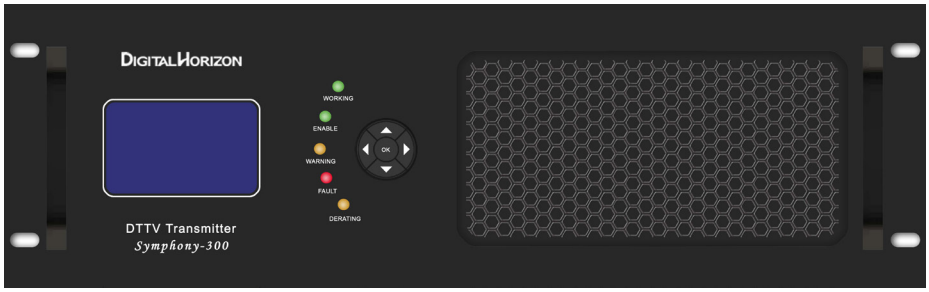
Symphony-100W/300W

Digital Terrestrial & Mobile TV Transmitter



Main Feature

- Support major digital terrestrial and mobile TV standards, including DVB-T/T2,ISDB-T,ATSC,DTMB,DVB-H, FLO,CMMB
- 2 TS ASI inputs in redundancy mode
- PID Filtering and Insertion
- Constellation: QPSK, 16QAM, 64QAM, 256QAM FFT: 2k, 4k, 8k
- Guard Interval: 1/4, 1/8, 1/16, 1/32, FEC: 1/2, 2/3, 3/4, 5/6, 7/8
- RF output power 100W/300W in compact 3RU chassis
- RF channel bandwidth: 6MHz, 7MHz, 8MHz
- Output frequency agile from 470MHz to 862MHz
- LDMOS wide band UHF amplifier technology
- Powerful linear and non-linear pre-correction
- Support crest factor adjustment
- Support SFN and MFN with MIP processing
- External and internal 10MHz and 1PPS inputs
- Front panel LED status monitoring and LCD menu
- IP Web control and supervision, SNMP in option
- Dual-exciter in option
- Satellite input and built-in GPS in option

Specification

Input
• Support DVB-T/T2,ISDB-T,ATSC,DTMB, DVB-H, FLO,CMMB standards
• 2×ASI inputs in redundancy mode with clever switching, bit rate adaptation
• PID Filtering Insertion for TV program cut and Insertion
• Connector type: 2 BNC female, Impedance 75Ohm
• Satellite input in option
RF Output
• Central frequency: 470MHz to 862MHz
• RF output power: 100W/300W digital
• Channel bandwidth: 6MHz, 7MHz, 8MHz
• Signal stability: +/- 0.5dB
• Modulation Error Ratio(MER):>33dB in DVB
• Shoulders: >38dBc@±4.2 MHz in DVB(8MHz)
• VSWR: 3:1 (Self Protected)
• Connector type: 7/16 DIN female, Impedance 50Ohm
Pre-correction
• Linear pre-correction: amplitude and group delay
• Non linear pre-correction: AM-AM, AM-PM
Adjustable Crest Factor
• Crest factor range: 8-20dB
• Crest factor optimization range: 1-255
Clock Reference
Automatic 10MHz and 1PPS loss management

• Internal 10MHz
Aging: <+/-0.3ppm; <1Hz with GPS Output level: 0dBm +/- 3dB
• External GPS
10MHz input level: -15dBm to +15dBm 1PPS input level: TTL level, pulse width: 1us
• Built-in GPS receiver option
• Built-in satellite receiver option
Control Mode
• Local control: buttons, LCD screen, LEDs
• Remote control: User friendly man machine interface through RS-232 port and IP Ethernet browser, SNMP in option
Physical
• Power supply: AC 100-230V / 50-60Hz for 100W transmitter AC 180-264V / 50-60Hz for 300W transmitter
• Power Consumption: < 650W for 100W transmitter < 2100W for 300W transmitter
• Operating temperature: -5 to 45 degrees
• Storage condition:-20 to 80 degrees
• Dimension:482.6mm(W)×500mm(D)×132.5mm(H) (3RU)
• Weight: 15kg for 100W transmitter 17.5kg for 300W transmitter

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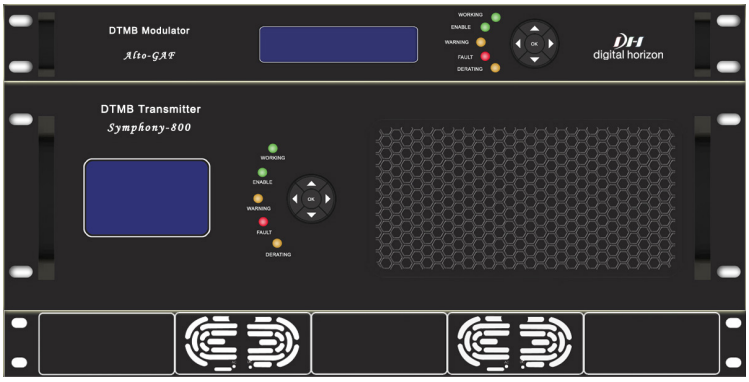
Symphony-800W

Digital Terrestrial & Mobile TV Transmitter



Main Feature

- Support DVB-T/T2,ISDB-T,ATSC,DTMB,CMMB standards
- 2 TS ASI inputs in redundancy mode
- TS/IP Input in option for DVB-T2
- RF output power 800W in compact 5RU structure
- RF channel bandwidth: 6MHz, 7MHz, 8MHz
- Output frequency 470MHz to 862MHz
- LDMOS wide band UHF amplifier technology
- Green power Doherty technology up to 38% high efficiency
- Powerful linear and non-linear pre-correction
- Support crest factor peak power adjustment
- Support SFN and MFN
- External and internal 10MHz and 1PPS inputs
- Front panel LED status monitoring and LCD menu
- IP Web control and supervision, SNMP in option
- Dual-exciter in option

Specification

Input
• 2×ASI inputs in redundancy mode with clever switching, bit rate adaptation
• TS/IP input in option for DVB-T2
• PID Filtering Insertion for TV program cut and Insertion
• ASI Connector type: 2 BNC female, Impedance 75Ohm
Modulation
• DVB-T/T2, DTMB, CMMB, ATSC, ISDB-T
• Constellation up to 256QAM for DVB-T2
• Multiple FEC and Guard Interval
RF Output
• Central frequency: 470MHz to 862MHz
• RF output power: <800W for DVB-T2 COFDM
• RF output power: <1200W for ATSC
• Channel bandwidth: 6MHz, 7MHz, 8MHz
• Signal stability: +/- 0.5dB
• Modulation error ratio(MER): >33dB in DVB-T2
• Shoulders: >38dBc@±4.2 MHz in DVB-T2
• VSWR: 3:1 (Self Protected)
• Connector type: 7/16 DIN female, Impedance 50Ohm
Pre-correction
• Linear pre-correction: amplitude and group delay
• Non linear pre-correction: AM-AM, AM-PM
Network
• SFN, Single Frequency Network
• MFN, Multi Frequency Network
• Synchronization: by 10MHz, 1PPs, TOD from GPS receiver
Clock Reference
• Automatic 10MHz and 1PPS loss management
• Internal 10MHz Aging: <+/-0.3ppm; <1Hz with GPS Output level: 0dBm +/- 3dB
• External GPS 10MHz input level: -15dBm to +15dBm 1PPS input level: TTL level, pulse width: 1us
• Built-in GPS receiver option
Control and Supervision
• Local control: buttons, LCD screen, LEDs
• Remote control: User friendly man machine interface through IP Ethernet browser
• Protection: RF over drive, High reflection, Power supply over voltage
• SNMP in option
Physical
• Power supply: AC 180-264V / 50-60Hz
• Operating temperature: -5 to 40 degrees
• Storage condition:-20 to 60 degrees
• Dimension:482.6mm(W)×500mm(D)×220mm(H) (5RU)
• Weight: 30.5kg

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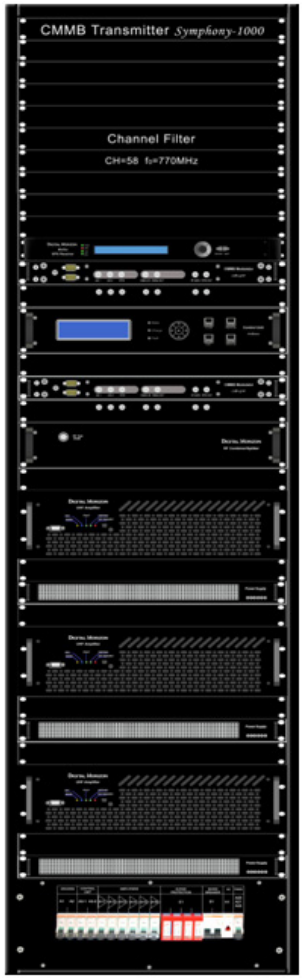
Symphony-1200W

Digital Terrestrial & Mobile TV Transmitter



Main Feature

- Support major digital terrestrial and mobile TV standards, including DVB-T/T2, ISDB-T, ATSC, DTMB, DVB-H, FLO, CMMB
- Dual-exciter in redundancy mode
- 2 TS ASI inputs in redundancy mode
- PID Filtering and Insertion
- Support 2k, 4k, 8k FFT modes
- Guard Interval: 1/4, 1/8, 1/16, 1/32
- FEC: 1/2, 2/3, 3/4, 5/6, 7/8
- Constellation: QPSK, 16QAM, 64QAM, 256QAM
- RF output power 1200W in 22RU Rack
- RF channel bandwidth: 6MHz, 7MHz, 8MHz
- Output frequency agile from 470MHz to 862MHz
- LDMOS wide band UHF amplifier technology
- Powerful linear and non-linear pre-correction
- Support crest factor adjustment
- Support SFN and MFN with MIP processing
- External and internal 10MHz and 1PPS inputs
- Front panel LED status monitoring and LCD menu
- RS232 control and supervision or IP Web browser in option
- Satellite input and built-in GPS in option

Specification

Input
• Support DVB-T/T2,ISDB-T,ATSC,DTMB, DVB-H, FLO,CMMB standards
• 2×ASI inputs in redundancy mode with clever switching, bit rate adaptation
• PID Filtering Insertion for TV program cut and Insertion
• Connector type: 2 BNC female, Impedance 75Ohm
• Satellite input in option
RF Output
• Central frequency: 470MHz to 862MHz
• RF output power: 1200W digital
• Channel bandwidth: 6MHz, 7MHz, 8MHz
• Signal stability: +/- 1dB
• Modulation error ratio(MER): >33dB in DVB
• Shoulders: >38dBc @ ±4.2MHz in DVB(8MHz)
• VSWR: 3:1 (Self Protected)
• Connector type: 7/16 DIN female, Impedance 50Ohm
Pre-correction
• Linear pre-correction: amplitude and group delay
• Non linear pre-correction: AM-AM, AM-PM
Adjustable Crest Factor
• Crest factor range: 8-20dB
• Crest factor optimization range: 1-255
Clock Reference
Automatic 10MHz and 1PPS loss management
• Internal 10MHz Aging: <+/-0.3ppm; <1Hz with GPS Output level: 0dBm +/- 3dB
• External GPS 10MHz input level: -15dBm to +15dBm 1PPS input level: TTL level, pulse width: 1us

• Built-in GPS receiver option
• Built-in satellite receiver option
Control Mode
• Local control: buttons, LCD screen, LEDs
• Remote control: User friendly man machine interface through RS-232 port and IP Ethernet browser, SNMP in option
Physical
• Power supply: AC 180-264V / 50-60Hz
• Power Consumption: < 7000W
• Operating temperature: -5 to 45 degrees
• Storage condition:-20 to 80 degrees
• Dimension:482mm(W)×500mm(D)×22RU(H)
• Weight: 130kg (no rack)

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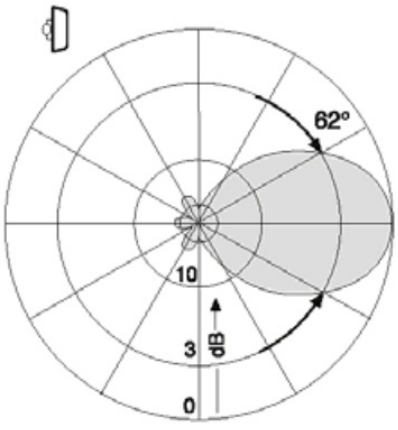
ANT-U-P-12

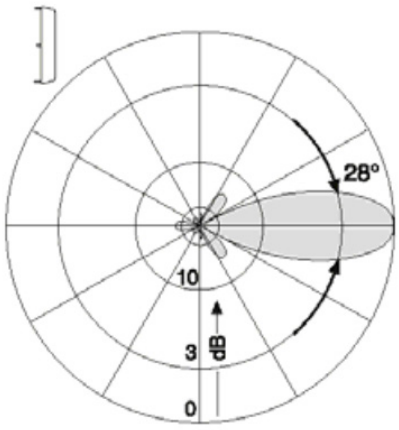
UHF Broadcast Panel Antenna

Main Feature

- Frequency range: 470-860MHz
- Impedance: 50Ω
- Input connector: L27-50K,IF45K
- Gain: 12dBd
- Power: 1.5kW / piece
- VSWR: < 1.08
- Polarization: horizontal or Vertical
- Lightning protection: DC grounded
- Dimension: 450mmx1000mmx235mm
- Weight: 12Kg
- Wind surface: 0.45m2
- Wind load (150km/h): 63.5kg
- Material: Fiberglass radome
- Line and dipole in silver-plated copper and brass Stainless reflector



Horizontal



Vertical

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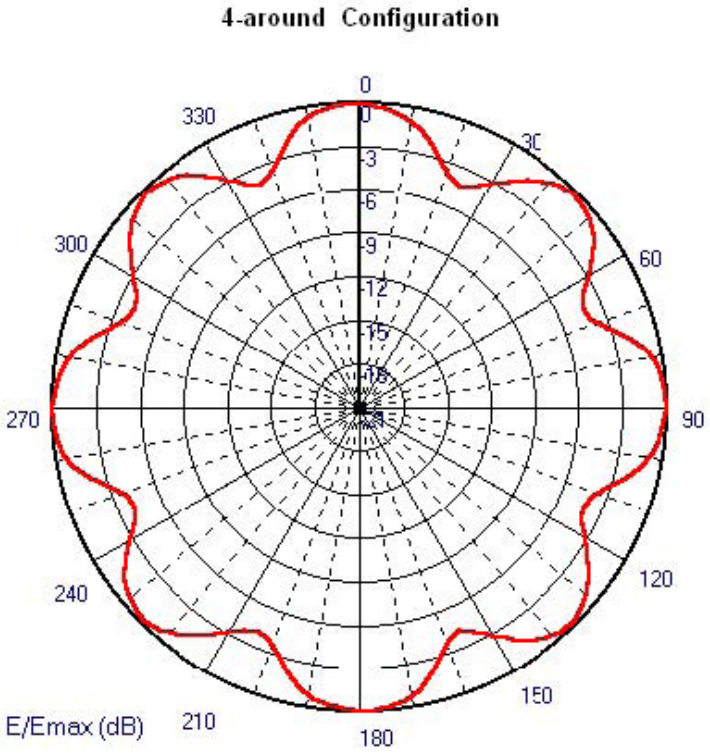
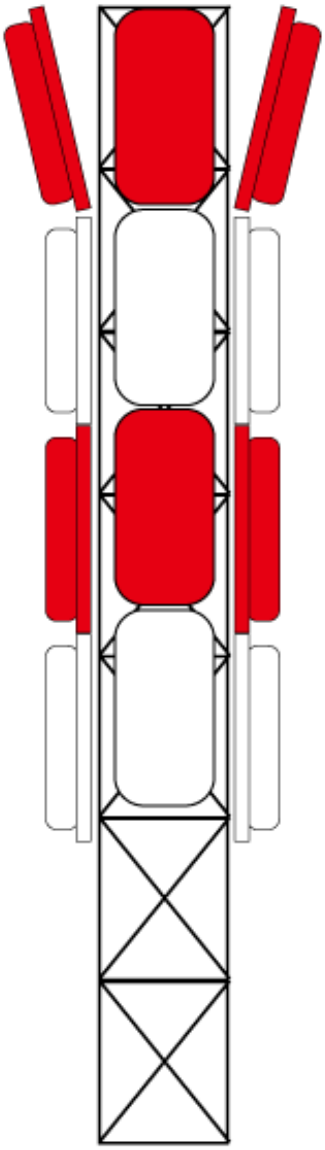
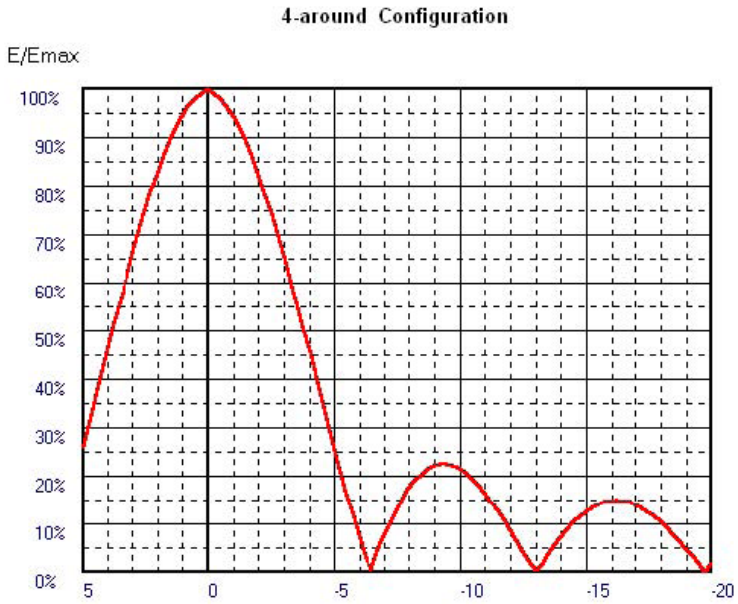
Typical Azimuth Patterns





Typical Elevation Patterns



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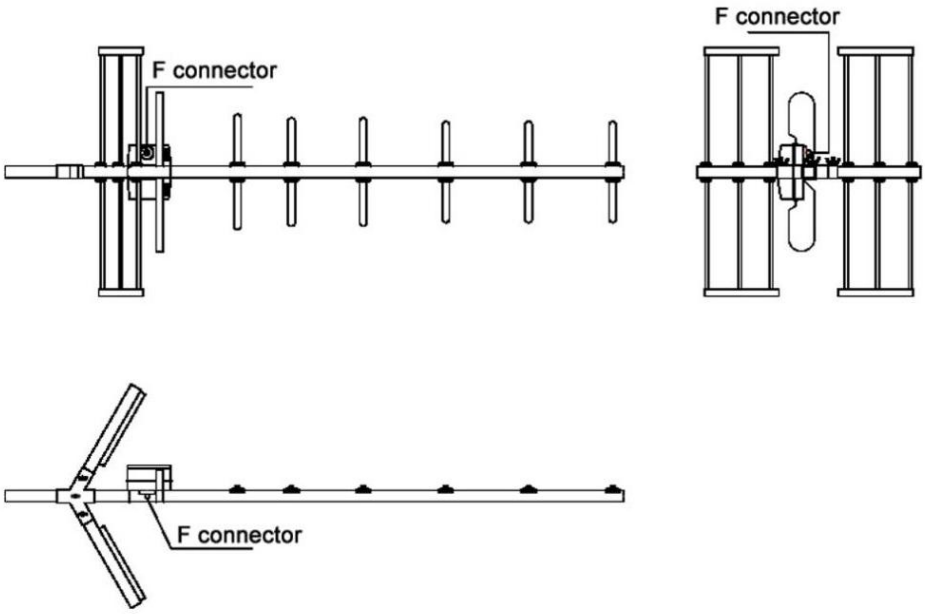
TAO-15P1

UHF Terrestrial TV Antenna

Specification

Frequency	UHF
Connector	75ohm, F type Female
Gain	15dB
VSWR	<1.5
Weight	0.6kg
Length	88cm

Antenna Installation Drawing



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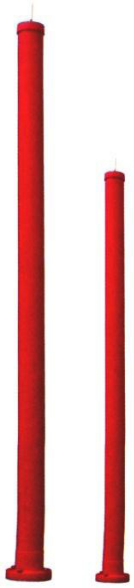
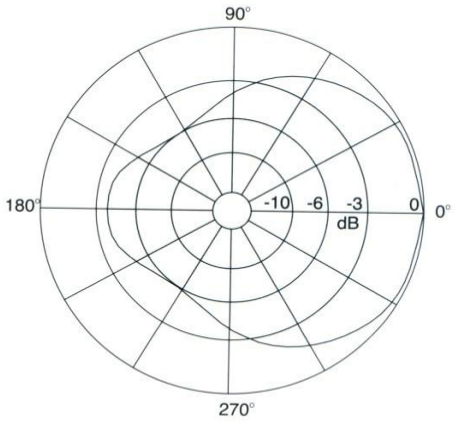
ANT-U-S-10

UHF Slot Antenna



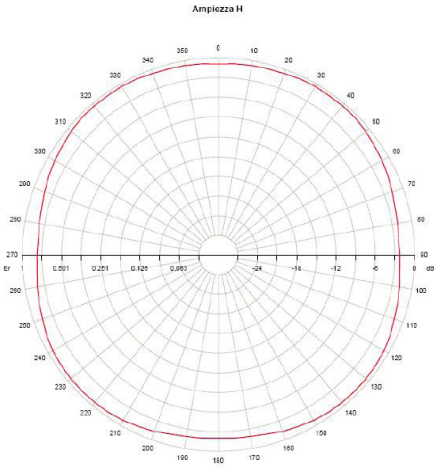


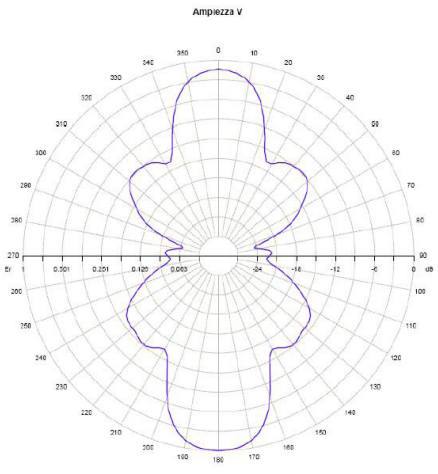
Specifications

- Frequency Range: 16MHz over 470~860MHz
- Polarization Type: Horizontal
- Gain: 9.5dB (4 slots 3m@600MHz),
  11dB(6 slots 4m@600MHz),
  12.5dB(8 slots 5m@600MHz)
- VSWR: ≤ 1.10
- Input Connector: 7/8"EIA ,1 5/8" EIA ,3 5/8" EIA
- Power Handling Capacity: 1kW, 3kW, 5kW,10kW
- Nominal Impedance (Ω): 50Ω
- Weight: 30kg(1kW),60kg(3~5kW),80kg(10kW)
- Max wind speed: 36m/s
- Insulating Materials : PTFE
- Material of antenna array : aluminium alloy
- Material of shield: FRP

ANT-U-T-6

UHF Turnstile Antenna





Specifications

Electrical Features	
Working Band	470-860MHz
Bandwidth	UHF band IV/V
Gain	Max 6dBi
VSWR	≤ 1.12:1
Polarization	Horizontal
Half power Beam width	E-Plane - 22°; H-Plane - 360°
Power Handling	200W or 1000W
Lighting Protection	DC grounded dipoles
Connector	N or DIN 7/8" female, Impedance 50Ω
Mechanical Features	
Materials	--ABS radome --Bolts in stainless steel --Lines and dipoles in silver-plated copper and brass --Teflon insulators --Silicon O-Rings
Mounting	Directly on tower/mast top(Φ60-114 mm)
Mounting Bracket	Included
Icing Protection	ABS radome in white
Treatments	--Silver-plating --Hot dip galvanized --Military grade treated MIL-C-5541
Antenna Dimensions	365 x 365 x 1460 mm
Weight	23.5 Kg net
Wind Load(at 160Km/h and 30° C air temperature)	230N
Packing Dimensions	450 x 600 x 1600 mm(47kg gross weight)

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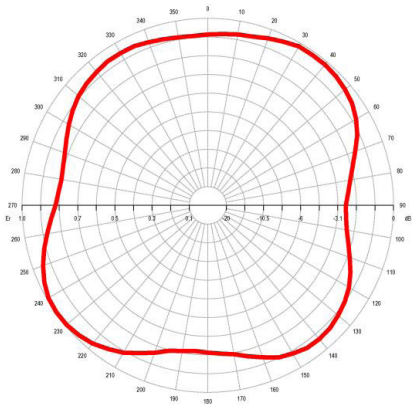
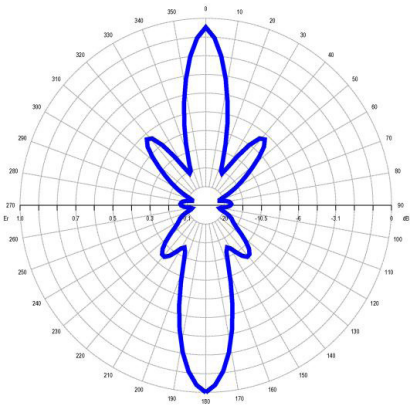
ANT-U-T-10

UHF Turnstile Antenna



H-Plane



E-Plane

Specifications

Electrical Features	
Working Band	470-860MHz
Bandwidth	UHF band IV/V
Gain	Max 10.7 dBi
VSWR	≤ 1.12:1 (-25 dB)
Polarization	Horizontal
Half power Beam width	E-Plane - 11°; H-Plane - 360°
Power Handling	2000W – 5000W
Lighting Protection	All metal parts DC grounded including inner conductors
Connector	7/8" for 200W or 1 5/8" for 5000W
Mechanical Features	
Materials	Aluminium, hot dip galvanized steel bracket
Mounting	Directly on supporting mast (60-114 mm) safety hoist hook
Mounting Bracket	Included
Icing Protection	ABS radome
Treatments	Bracket, covers and bolts in galvanized steel silver plated connector and lines, military norms treatment (MIL-C-5541) dipoles
Antenna Dimensions	365x365x2360 mm
Weight	43.5 Kg net
Wind Surface	0.82 m2 front - 0.82 m2 side
Wind Load(at 160Km/h and 30° C air temperature)	67.50 Kg front - 67.50 Kg side
Survival Wind	180Km/h
Packing Dimensions	wooden cage (ISPM-15) 450x600x2500 mm - 80Kg

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VIP-TimBox

Digital TV SD Receiver With Smart Card Less CAS

Main Feature

- Support DVB-C,DVB-T/T2 tuner or dual tuners
- RF Signal Strength and signal quality display
- MPEG-2/MPEG-4AVC/H.264, AVS SD decoding
- Automatic and manual full band channel scanning
- Manage up to 1000 TV and Radio channels
- Channel edition, delete , favorite and parental lock
- True colors on screen display user friendly menu
- Multi languages, English by default
- CVBS outputs
- Automatic PAL/NTSC conversion
- EPG up to 7 days
- PVR via plug-in USB HDD
- Software upgrade through USB and on air
- Channel information save in memory after power off
- Front panel displaying channel number or time
- Teletext via OSD & VBI
- Full multi-lingual DVB subtitling and audio track support
- User-friendly remote control with function buttons
- Low power consumption and green power standby mode

Specification

DVB-T/T2 Tuning and De-Multiplexing	
Connector	1×IEC 16902 female 75Ω for Input, 1×IEC 169-2 male 75Ω for loop through output
Input Frequency	104~862MHz (VHF/UHF)
Input Level	-70~-20dBm
Demodulation standard	DVB-T(EN 300 744) and DVB-T2 (EN302 755)
Demodulation	QPSK, 16QAM, 64QAM for DVB-T QPSK, 16QAM, 64QAM, 256QAM for DVB-T2
FFT Mode	2K, 8K for DVB-T 1K, 2K, 4K, 8K, 16K, 32K, 32K ext for DVB-T2
FEC Code Rate	1/2, 2/3, 3/4, 5/6, 7/8 for DVB-T 1/2, 3/5, 2/3, 3/4, 4/5, 5/6 for DVB-T2
Guard Interval	1/4, 1/8, 1/16, 1/32 for DVB-T 1/4, 5/32, 1/8, 5/64, 1/16, 1/32, 1/64, 1/128 for DVB-T2
Bandwidth	6MHz, 7MHz, 8MHz
De-multiplexer	MPEG2 ISO/IEC 13818-1
DVB-C Tuning and De-Multiplexing	
Connector	1×IEC 169-24 female 75Ω for Input 1×IEC169-1 male 75Ω for through output
Standard	Compliant with ITU J.83 Annex A,C, Annex B in option
Input Frequency	47~862MHz
Input Level	43~73dBuV for 64QAM, 47~ 77dBuV for 256QAM
Symbol Rate	1~7MBaud with step of 1kBauds
Constellation	16/32/64/128/256QAM
Bandwidth	8MHz in Annex A and C 6MHz in Annex B in option
Digital Video Decoding	
Standard	ISO/IEC 13818-2, ISO/IEC 14496-10 and AVS
Video Decoding	MPEG-2 MP@ ML and HL for SD H.264/AVC MPand HP @ L3.0 for SD AVS Jizhun Profile SD
Aspect Ratio	4:3 and 16:9
Video Resolution	480i/480p/576i/576p/720p
Video Bit Rate	MPEG-2 MP@ML: 2~15 Mbps MPEG-4 AVC HP@L3:<10Mbps
Digital Audio Decoding	
Standard	ISO/IEC13818-3 and TR1011154
Audio Decoding	MPEG-1 and MPEG-2 Layer I & II, MP3 AAC, HE-AAC Dolby and Dolby+ in option

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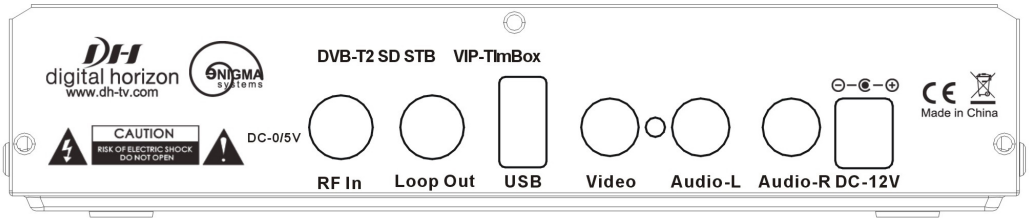
Audio Mode	Single channel, Dual Channel, Stereo, Joint Stereo
Audio Sampling Rate	22.1 kHz, 32 kHz, 44.1KHz, 48 kHz
Subtitle & Teletext	
Subtitle	DVB Subtitle
Teletext	EBU TELETEXT
Menu Function	
Channel Search	Automatic search based on LCN or NIT Manual search based on Frequency and channel number
Channel Management	Up to 1000 channels edition, delete, move, lock, rename; 8 favorite channel groups
EPG	7 days
Language	English, other languages in option
Software Update	loader through USB and on Air
Security	Menu lock, Parental lock, PIN lock
PVR Option	
Function	Play/Stop/Record/Pause/Forward/ Back, Scheduled Recording using EPG
Profiles	3.x, 4.0, 5.0, 6.0 Home Theater & HD profiles
File System	FAT 32
Media Format	MPEG2, TS, AVI, MKV, ASF, Quick, DivX,FLV, VC-1 DivX 3.X ~ 6.X;, AVI, VOB, MOV, MKV, JPEG, BMP, PNG, Motion JPEG, Flash 3.1 Lite
Connector	USB 2.0 supporting external hard disk of 250-500GB
Conditional Access Option	
CA Vendor	NDS, Irdeto, Nagra, Conax, CTI, Novel, Enigma, etc
CA Type	Smart card less or Smart card
System Resource	
CPU	MIPS 34Kf@450DMIPS DDR2 667MHz
OS	ECOS
SDRAM Memory	64Mbytes DDR2 SDRAM
FLASH Memory	8Mbytes
Front Panel	
Keys	MENU/OK/VOL+/VOL-/CH+/CH-,ON/OFF/ Standby
7-Segments LED	To display the channel number or/and other information

Bi-colored LED	Red/Green to indicate the various states of the STB
USB	1×USB 2.0 for external Hard Disk PVR function
Smart Card	Reader compliant to ISO in option
Back Panel	
RF	1×IEC 16902 female 75Ω for Input, 1×IEC 169-2 male 75Ω for loop through output
CVBS	3×RCA female for Video, Audio Left and Audio Right
USB	1×USB 2.0
Power	AC-DC adapter 12V Input
PVR Option	
Function	Play/Stop/Record/Pause/Forward/Back, Scheduled Recording using EPG
File System	FAT 32
Media Format	MPEG2, TS, AVI, MKV, ASF, Quick, DivX,FLV, VC-1
Connector	USB 2.0 supporting external hard disk of 250-500GB
Physicals	
Power Supply	DC 12V, 1.5A with Power Adapter
Power Consumption	<8W without PVR <1W auto Standby Green Power Mode
Temperature	Operation +5~+45s°Cs Storage -10~+70°C
Humidity	20~90%, non-condensed
STB Dimension	35mm(Height)×170mm(Width)× 116mm(Depth)
Gift Box Dimension	78mm(Height)×230mm(Width) × 146mm(Depth)
Weight	0.8Kg with gift box
Carton Information	828*295*248mm, Gross Weight: 16kg, 20 STB/Carton
Shipment Information	23000 units per 40' High Container
Accessories	Remote Control, AC-DC adapter, AV Cable, User Guide Battery 2 x 1.5V, AAA in option
Remote Control Unit	
Keys	42 with digit, Up/Down/Left/Right/OK, Volume+/-, Program+/-, PVR keys, EPG key, etc
Mode	Infra Red with 36kHz Carrier

Order Information

Product Name	DVB-T/C STB	DVB-T/T2/C STB
Model	VIP-TimBox-TC	VIP-TimBox-T2C

Back panel Interface



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VIP-Timbox+

Digital TV HD Receiver With Smart Card Less CAS

ENIGMA systems
Perpetual Security Solutions

Main Feature

- Support DVB-C,DVB-T/T2 tuner or dual tuners
- RF Signal Strength and signal quality display
- MPEG-2/MPEG-4AVC/H.264 SD/HD decoding
- Automatic and manual full band channel scanning
- Manage up to 1000 TV and Radio channels
- Channel edition, delete , favorite and parental lock
- True colors on screen display user friendly menu
- Multi languages, English by default
- HDMI, YPbPr, S/PDIF and CVBS outputs
- Automatic PAL/NTSC conversion
- EPG up to 7 days
- PVR via plug-in USB HDD
- Software upgrade through USB and on air
- Channel information save in memory after power off
- Front panel displaying channel number or time
- Teletext via OSD & VBI
- Full multi-lingual DVB subtitling and audio track support
- Low power consumption and green power standby mode
- Embedded hardware less CA system Enigma

Specification

DVB-T/T2 Tuning and De-Multiplexing	
Connector	1×IEC 16902 female 75Ω for Input, 1×IEC 169-2 male 75Ω for loop through output
Input Frequency	104~862MHz (VHF/UHF)
Input Level	-70~-20dBm
Demodulation standard	DVB-T(EN 300 744) and DVB-T2 (EN302 755)
Demodulation	QPSK, 16QAM, 64QAM for DVB-T QPSK, 16QAM, 64QAM, 256QAM for DVB-T2
FFT Mode	2K, 8K for DVB-T 1K, 2K, 4K, 8K, 16K, 32K, 32K ext for DVB-T2
FEC Code Rate	1/2, 2/3, 3/4, 5/6, 7/8 for DVB-T 1/2, 3/5, 2/3, 3/4, 4/5, 5/6 for DVB-T2
Guard Interval	1/4, 1/8, 1/16, 1/32 for DVB-T 1/4, 5/32, 1/8, 5/64, 1/16, 1/32, 1/64, 1/128 for DVB-T2
Bandwidth	6MHz, 7MHz, 8MHz
De-multiplexer	MPEG2 ISO/IEC 13818-1
DVB-C Tuning and De-Multiplexing	
Connector	1×IEC169-24 female 75Ω for Input 1×IEC169-1 male 75Ω for loop through output
Standard	Compliant with ITU J.83 Annex A,C, Annex B in option
Input Frequency	47~862MHz
Input Level	43~ 73dBuV for 64QAM, 47~ 77dBuV for 256QAM
Symbol Rate	1~7MBaud with step of 1kBauds
Constellation	16/32/64/128/256QAM
Bandwidth	8MHz in Annex A and C 6MHz in Annex B in option
De-multiplexer	MPEG2 ISO/IEC 13818-1
Digital Video Decoding	
Standard	ISO/IEC 13818-2 and ISO/IEC 14496-10
Video Decoding	MPEG-2 MP@ ML for SD, MP@ HL for HD H.264/AVC MP@ L3.0 for SD, HP@ L4.1 for HD
Aspect Ratio	4:3 and 16:9, HD to SD Conversion
Video Resolution	480i/480p/576i/576p/720p/1080i/1080p
Video Bit Rate	MPEG-2 MP@ML: 2~15 Mbps MPEG-2 MP@HL: <19 Mbps MPEG-4 AVC HP@L3:<10Mbps MPEG-4 AVC HP@L4: <20Mbps
Digital Audio Decoding	
Standard	ISO/IEC13818-3 and TR101154
Audio Decoding	MPEG-1 and MPEG-2 Layer I & II, Dolby Digital Audio, E-AC3,WMA and HE-AAC Digital Audio
Dolby Digital (AC-3)	Stereo down-mixing to analog and digital audio outputs (including HDMI). For digital outputs, L-PCM stereo encoding is provided
Audio Mode	Single channel, Dual Channel, Stereo, Joint Stereo
Audio Sampling Rate	22.1 kHz, 32 kHz, 44.1KHz, 48 kHz
Subtitle & Teletext	
Subtitle	DVB Subtitle
Teletext	EBU TELETEXT
Menu Function	

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STB

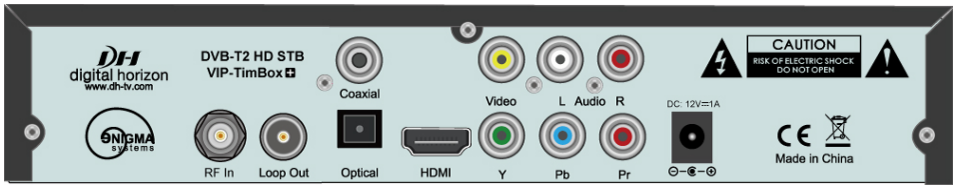
Channel Search	Automatic search based on LCN or NIT Manual search based on Frequency and channel number
Channel Management	Up to 1000 channels edition, delete, move, lock, rename; 8 favorite channel groups
EPG	7 days
Language	English, other languages in option
Software Update	loader through USB and on Air
Security	Menu lock, Parental lock, PIN lock
PVR Option	
Function	Play/Stop/Record/Pause/Forward/Back, Scheduled Recording using EPG
Profiles	3.x, 4.0, 5.0, 6.0 Home Theater & HD profiles
File System	FAT 32
Media Format	MPEG2, TS, AVI, MKV, ASF, Quick, DivX,FLV, VC-1 DivX 3.X~6.X;, AVI, VOB, MOV, MKV, JPEG,BMP,PNG, Motion JPEG, Flash 3.1 Lite
Connector	USB 2.0 supporting external hard disk of 250-500GB
Conditional Access Option	
CA Vendor	NDS, Irdeto, Nagra, Conax, CTI, Novel, Enigma, etc
CA Type	Smart card less or Smart card
System Resource	
CPU	MIPS 34Kf@500MHz /880DMIPS
OS	ECOS
SDRAM Memory	64Mbytes DDR2 SDRAM
FLASH Memory	4Mbytes
Front Panel	
Keys	MENU/OK/VOL+/VOL-/CH+/CH-,ON/OFF/ Standby
7-Segments LED	To display the channel number or/and other information
Bi-colored LED	Red/Green to indicate the various states of the STB
USB	1×USB 2.0 for external Hard Disk PVR function
Smart Card	Reader compliant to ISO in option
Back Panel	

RF	1×IEC 16902 female 75Ω for Input, 1×IEC 169-2 male 75Ω for loop through output
CVBS	3×RCA female for Video, Audio Left and Audio Right
HDMI	1×HDMI 1.3 with HDCP (up to 1920x1080p)
Digital Audio	1×S/PDIF coaxial
Audio CINCH	2 Analog Audio L/R connectors (white/red color)
USB	1×USB 2.0
Power	AC-DC adapter input
PVR Option	
Function	Play/Stop/Record/Pause/Forward/Back, Scheduled Recording using EPG
File System	FAT 32
Media Format	MPEG2, TS, AVI, MKV, ASF, Quick, DivX,FLV, VC-1
Connector	USB 2.0 supporting external hard disk of 250-500GB
Physicals	
Power Supply	DC 5V, 1.5A with Power Adapter
Power Consumption	<8W without PVR <1W auto Standby Green Power Mode
Temperature	Operation +5~+45℃; Storage -10~+70℃
Humidity	20~90%, non-condensed
STB Dimension	40mm(Height)×220mm(Width)×160mm(Depth)
Gift Box Dimension	65mm(Height)×225mm(Width)×225mm(Depth)
Weight	1.0Kg with gift box
Carton Information	675*245*240mm, Gross Weight: 10.5kg, 10 STB/Carton
Shipment Information	17000 units per 40' High Container
Accessories	Remote Control, Battery, AC-DC adapter, AV Cable, User Guide, HDMI Cable in option
Remote Control Unit	
Keys	42 with digit, Up/Down/Left/Right/OK, Volume+/-, Program+/-, PVR keys, EPG key, etc
Mode	Infra Red with 36kHz Carrier
Battery	2×1.5V, AAA

Order Information

Product Name	DVB-T STB with CAS	DVB-C STB with CAS	DVB-T/T2 STB with CAS
Model	VIP-TimBox+ T	VIP-TimBox+ C	VIP-TimBox+ T2/T

Back panel Interface



PBI digital horizon

VIP Control®

Conditional Access System

The Leading Software CAS for Broadcast TV

ENIGMA systems
Perpetual Security Solutions

The Technology

The aim of the VIP Control® technology is to provide a new generation of content protec-tion systems adapted to the current needs of digital broad-casters & content owners. Enigma Systems security is based on a pure software mechanism: the Certex Sys-tem®. This exclusive software approach constitutes a com-pletely new way of thinking about content protection and a technological breakthrough. Furthermore, it presents the decisive advantages of being very cost effective compared to legacy systems which require specific hardware (e.g. smart-card) and offering at the same time better visibility regarding security costs for content own-ers and broadcasters. Enigma Systems' con-tribution offers a secu-rity system in which smartcard (virtual) swaps are free of logistics and can be operated in a preven-tive way. These preventive smartcard swaps offer an in-comparable business and asset protection to broadcasters, preventing the well known dra-matic revenue losses experi-enced by some broadcasters when their legacy smartcard-based systems have been hacked. Finally, the Enigma Systems' VIP Control® Conditional Ac-cess System is today deployed in several countries around the world and offers a true alterna-tive to hardware based solu-tions especially for the mass analogue to digital migration due to its cost effectiveness and the high revenue protec-tion offered by its Certex Sys-tem® security technology.

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Packages / Functionalities

Functionalities / Package	Copper	Bronze	Silver	Gold	Platinum
VIP Smartcard Technology®	√	√	√	√	√
Signal Partitioning (STB anti-steal)	√	√	√	√	√
Servers Multi-Language Web / User Friendly GUI	√	√	√	√	√
Servers Hierarchical operator management levels	√	√	√	√	√
Automatic Backup/Restore Procedures	√	√	√	√	√
Multi-Language Subscriber Messaging**	√	√	√	√	√
Subscriber Messages (Mails / Forced Messages)	√	√	√	√	√
Multi Transport Support (IP, DVB C/S/T/H, …)	√	√	√	√	√
Codec Multi Format Support (SD, HD)**	√	√	√	√	√
Multi Codec Support (MPEG2, H264, …)**	√	√	√	√	√
DVB Simulcrypt Support	√	√	√	√	√
“A la Carte” Subscription Mode	√	√	√	√	√
Maturity Level Management	√	√	√	√	√
Pin Code Management	√	√	√	√	√
Cryptographic Keys Update	√	√	√	√	√
Activity Logs		√	√	√	√
Fingerprinting		√	√	√	√
Multi Operator Support			√	√	√
Output Copy Protection (Macrovision, HDMI)**			√	√	√
Multi Tuner / Multi TV Support**			√	√	√
Secured Return Path**				√	√
Local Usage Measurement**				√	√
Fault Detection and Tolerance Support				√	√
STB Functions Remote Activation				√	√
SMS & Mail System Alerts				√	√
SNMP Agent				√	√
Internet & Mobile Phone Programs Orders					√
Right Tracing					√
Servers Hardware Redundancy	Optional	Optional	Optional	Optional	Optional
FTA Channels Lock**	Optional	Optional	Optional	Optional	Optional
Over The Air Loader (OTA)	Optional	Optional	Optional	Optional	Optional
Web Services Interface		Optional	Optional	Optional	Optional
Prepaid Subscription (Mobile Phone SMS activation)			Optional	Optional	Optional
Billing System			Optional	Optional	Optional
Pay Per View				Optional	Optional
NVOD Support**				Optional	Optional
VOD Support				Optional	Optional
Rich Business Rules Support (DRM)					Optional
Watermarking**					Optional

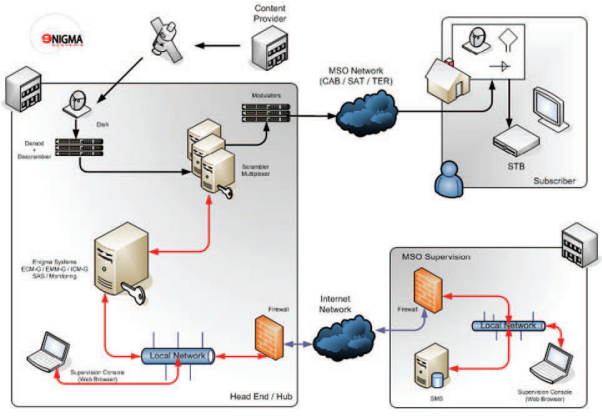
* System successfully tested with 5 million subscribers.
** Subject to STB hardware capabilities.
*** Currently supported languages (English, Spanish, French, German, Slovakian, Chinese).

The VIP Control® Conditional Access System

Beyond the benefits obtained by the use of the Certex System® technology for what concerns the security mechanism, the CAS solution offered by Enigma Systems has been designed in order to take into account most of the broadcasters and content owners technical and business con-straints.

The wide application range of the VIP Control per-mits a Multi Service Operator to use a unique so-lution for any of its platforms (set top boxes, mo-bile phones, web-TV services, …) with any kind of codec (MPEG2, H264, …) and format (SD and HD).

The Enigma Systems’ encryption system is based on the DVB Common Scrambling Algorithm and the DVB simulcrypt protocol. It is for these rea-sons fully interoperable with most of the headend and receivers equipments available on the mar-ket.



The system management application supports many language (English, French, Spanish, Chinese, …). The Enigma Systems applica-tions make use of the most recent web technologies and offer web services API. This approach leads to very straightforward system integrations with SMS third-party providers and prevents many problems in head-end operations due to the absence of any proprie-tary protocol. As a conse-quence, the Enigma Sys-tems' CAS applications (SAS, ECM-G, EMM-G and ICM-G) offer very low de-ployment and maintenance costs.

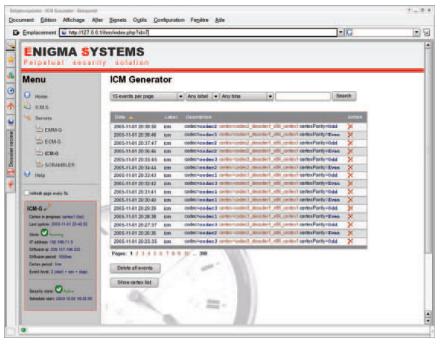
The highly distributed CAS architecture of the Enigma Systems' applications offers wide possibilities in terms of scalability and hot redundancy.

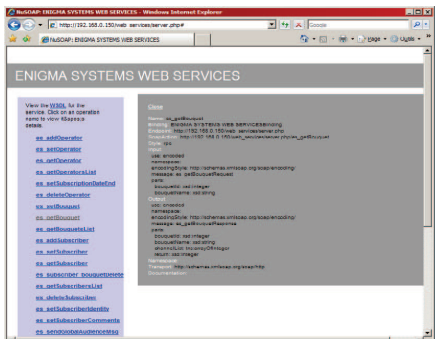
The integration process of the Certex System® technology in the set-top boxes has been highly simplified conducing to a safe and quick integration of the Enigma technology in the products of major set-top boxes manufacturers. Furthermore the optimized design of the Enigma Systems embedded software made possible the use of the Enigma Systems technology in basic and very cost effec-tive set-top boxes .

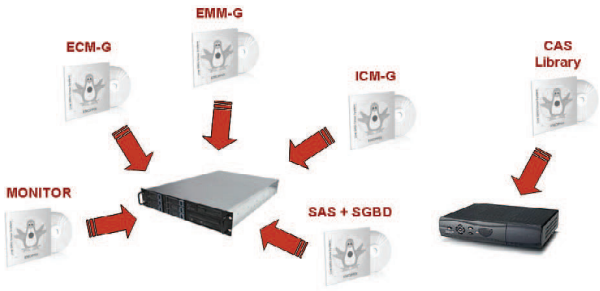
Thanks to the Certex System® technol-ogy, the security renewal of the VIP Control® CAS can be done in a preven-tive way ("network vaccination" stop-ping any piracy deployment possibility) and not only in a curative way (as in the case of hardware security). Preven-tive security particularly important for asset protection (as for example in the case of broadcasters contracting a loan to finance the analogue to digital migration investment). As a consequence, it offers a much better visibility on security costs to TV broadcasters and maximizes revenues on the long term and not only on the short term as hardware based solu-tions.

The virtual smartcard (VIP Smartcard®) designed by Enigma Systems offers all the functionalities of a typical hardware based smartcard. Nevertheless, due to the availability of sig-nificant higher resources in the STB in terms of memory and CPU power compared to a hardware smartcard, the VIP Smartcard® received significant improvements in terms of functionalities and security. Moreover, as directly integrated to the receiver, the VIP Smartcard® can operate a better control of the content processing operated by the receiver.

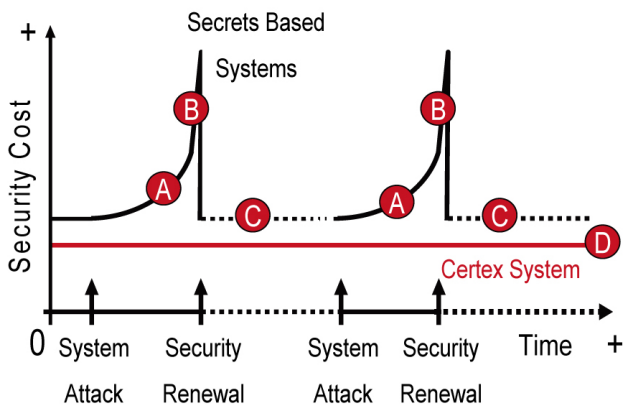
Enigma Systems' solutions enable the service provider to have total control over subscribers and services in a cost effective manner.







Note : Servers Hardware Provided by Enigma Systems – Receivers Hardware Provided by Third Party Companies



A Revenue impact due to Piracy

B Direct and indirect cost due to security renewal

C Lack of visibility about the time life of the new system

D As security renewal is part of the Certex System, it ensures a constant and predictable security cost over the time

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VIP Control® Key Benefits

Versatility. This CAS solution allows multiple today's busi-ness models to take place: VOD, content distribution through broadcast media, IPTV broadcasting on set-top boxes or personal computers. Furthermore, the Certex Sys-tem® technology not only permits to protect the access to the content but controls its use too.

Cost effectiveness. This CAS solution is hardware free re-garding security; versatile smart card are swapped through DVB signal; hence, expensive logistics issues for smart card swaps are not a problem anymore.

Retail market control. Our Certex System® mechanism offers a complete control on unfair competition from the retail market and STB asset protection as well.

Security renewability. The security policy can be config-ured regarding broadcaster's security needs. VIP Smart-card swaps can take place in a curative or preventive way. VIP Smartcard® swaps sched-uling allows the security to increase with time !

No return path required. This unique CAS solution does not need either heavy crypto-graphic keys infrastructures required when using return path for reasons of safety nor dedicated secured hardware embedded on receiver main board in order to safely transfer critical data such as keys or entitlements.

Asset protection. The Enigma Systems' unique approach guarantees a complete visi-bility on costs dedicated to security issues and a com-plete control on piracy risks. The Enigma Systems' tech-nology offers the best long term revenue protection to content owners and broad-casters.

Worldwide Deployments

VIP Billing®

Billing and Customer Relation

Management solution For digital TV operators

ENIGMA SYSTEMS has beendeveloping solutions for operators of digital TV for the last few years now. VIP Billing® is an evolutionary billing solution and progressive CRM, created for operators wishing to increase the income from their networks, make their services stand out from those of their competitors and increase the quality of service offered to endcustomers.

VIP Billing is the result of ground exper ience acquired throughout past decade among all type of DTV operators, cable, terrestrial and IP. VIP Bi l l ing has been successfully implemented with local and nat ional DTV operators

Why choose VIP Billing ?

●	Make your services stand out from those of your competitors with TV on demand, VOD, purchase through scratchcards with interactivity through a GSM network.	●	Release your internal resources by allowing your clients to access their account.
●	Increase your revenue per client by implementing a dist inct ive commercial policy.	●	Charge new services with the diversification of your offering.
●	Build customer loyalty by implementing loyalty programs, discounts on events, purchase of services in advance, discount incident, notifications before rights expirations.	●	Manage your strategic partnerships with installers, repairers, resellers, content providers.
●	Simplify the management of your clients delivering them instant rights activation and ef f icient suppor t program.	●	Increase your market percentages by implementing a winning marketing strategy developed from your reports.
●	Develop your interactive services with the integrated GSM module.	●	Improve your sales by using the pre-paid scratchcard sales service.

VIP Billing® is marketed under license or ASP mode hosted service.

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FUNCTIONS

MARKETING
Creation of a product pricing policy.
Pre-paid and post-paid management.
Scratchcards activated by GSM.
Marketing of 256 basic channel packages and more than 1,000 derived channel packages.
Pass purchase orders by SMS.
Creation of micro payment marketing offers by day, week, or month...
Management of differentiated limitation rights for differed payment for the rights.
Management of marketing partners for businesses, resellers, installers, content providers.

ADMINISTRATION
Management of user accounts; clients, sellers, cashiers, resellers, content providers…
Multilingual and multicurrency management enabling the marketing of TV services in border areas.
Management of marketing agencies and access control servers.
Management of content providers.
Automatic and daily backup of the databases.

INVOICING
Management of sales points.
Management of incursive clients.
Management of late payments with notification levels including grace periods.
Buying advance rights.
Management of limitation rights.

CRM
Management of customised client messages displayed on a TV screen in three formats.
Management of unpaid accounts with automatic client reminders.
Automatic notification of end of client rights.
Management of special offers per client or per product.

STOCKS
Management of the RECEIVERS with bar code reader support.
Traceability of the RECEIVERS by model and software version numbers.
Management of the Scratchcards and their usage status.
Management of the installation kits.
Batchs tracking.

PERFORMANCES

√ Work environment MySQL/Linux
√ Delivered on a RAID1 software configured server.
√ Sized for 100,000 users.
√ Modular hardware architecture.

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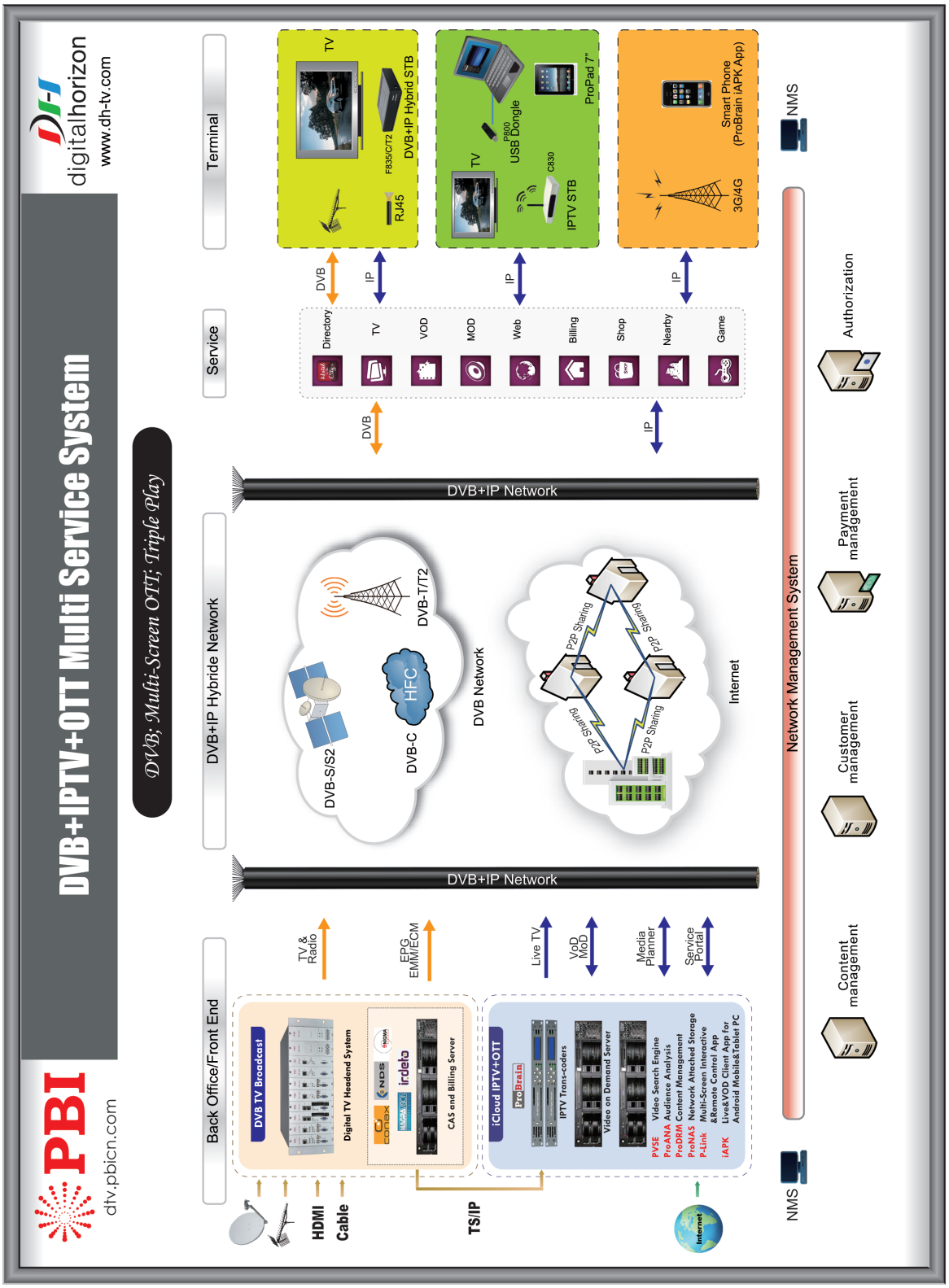
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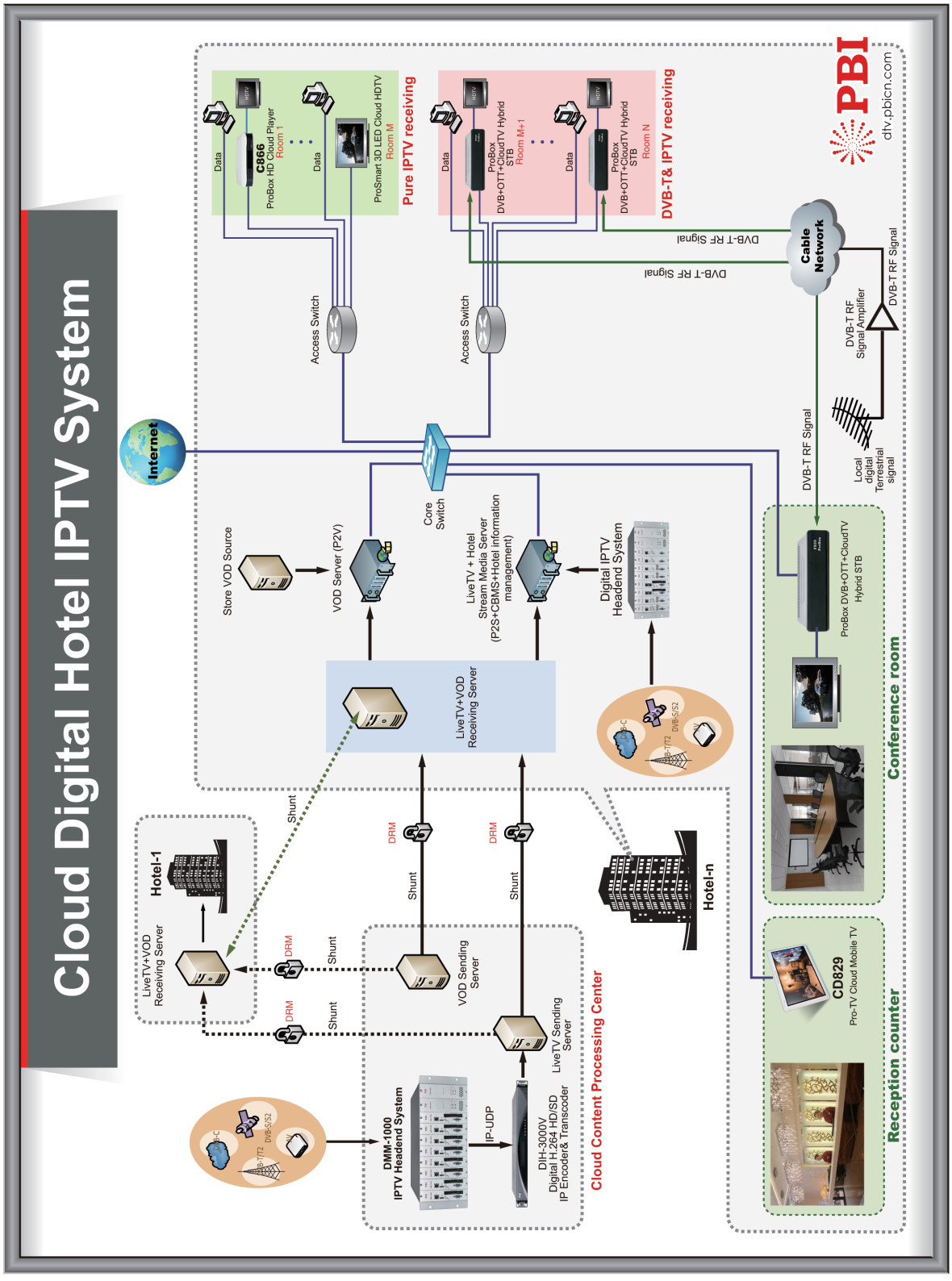
DVB+IP Hybride Network
Service
Terminal
DVB TV Broadcast
Digital TV Headend System
CAS and Billing Server
iCloud IPTV+OTT
IPTV Trans-coders
Video on Demand Server
ProBrain
PVSE Video Search Engine
ProANA Audience Analysis
ProDRM Content Management
ProNAS Network Attached Storage
P-Link Multi-Screen Interactive &Remote Control App
iAPK Live&VOD Client App for Android Mobile&Tablet PC
HDMI
Cable
TS/IP
TV & Radio
EPG EMM/ECM
Live TV
VoD MoD
Media Planner
Service Portal
DVB+IP Network
DVB-S/S2
DVB-C
HFC
DVB-T/T2
DVB Network
P2P Sharing
Internet
DVB
IP
Directory
TV
VOD
MOD
Web
Billing
Shop
Nearby
Game
RJ45
F835/C/T2
DVB+IP Hybrid STB
P800
USB Dongle
C830
IPTV STB
ProPad 7"
3G/4G
Smart Phone (ProBrain iAPK App)
NMS
Network Management System
Content management
Customer management
Payment management
Authorization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C866
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ProSmart 3D LED Cloud HDTV
Room M
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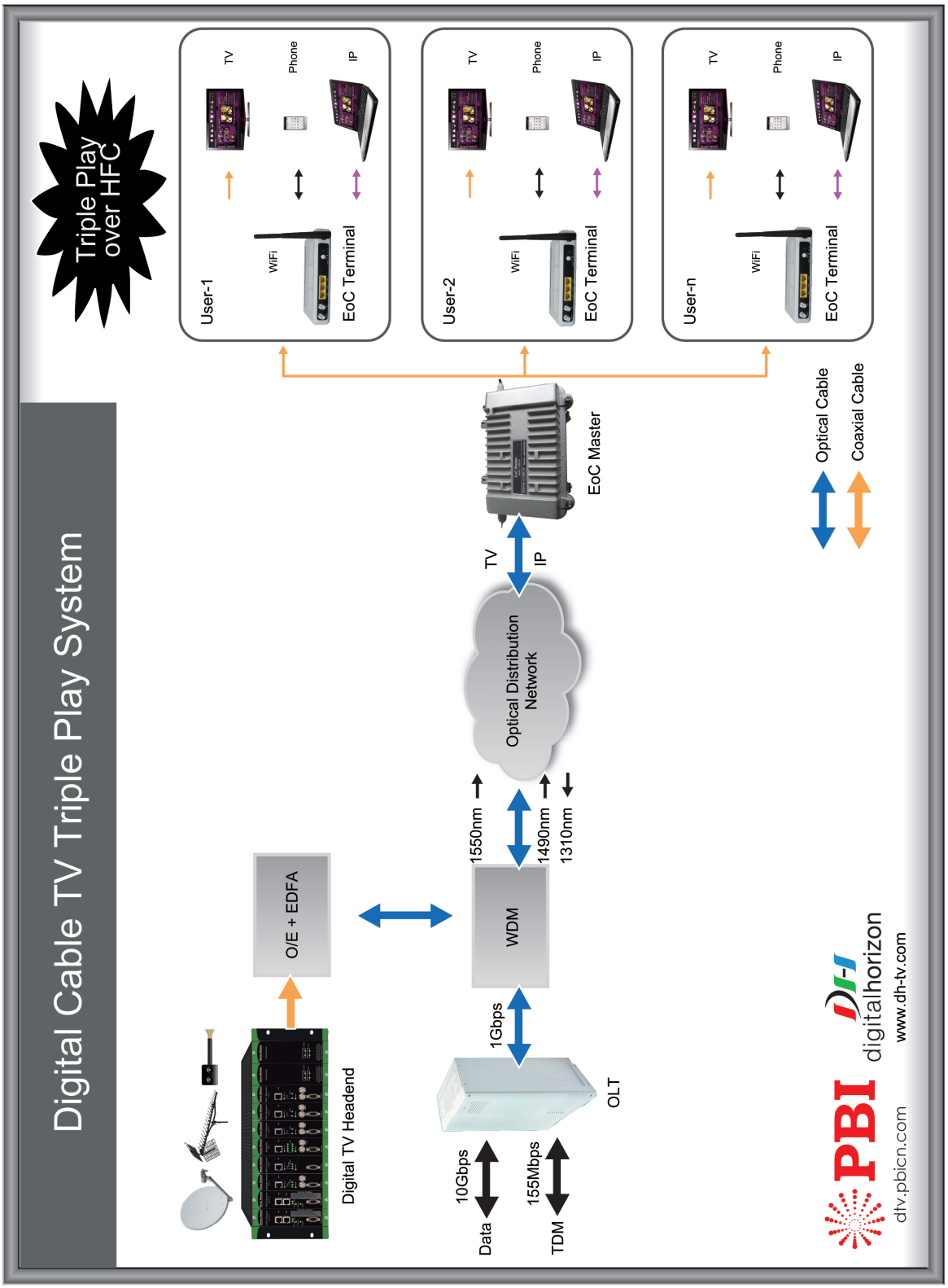
STB
Room M+1
Room N
Data
Access Switch
Cable Network
DVB-T RF Signal
DVB-T RF Signal Amplifier
Local digital Terrestrial signal
Internet
Core Switch
Store VOD Source
VOD Server (P2V)
LiveTV + Hotel Stream Media Server (P2S+CBMS+Hotel information management)
Digital IPTV Headend System
LiveTV+VOD Receiving Server
ProBox DVB+OTT+CloudTV Hybrid STB
Conference room
CD829
Pro-TV Cloud Mobile TV
Reception counter
Hotel-1
Hotel-n
Shunt
DRM
VOD Sending Server
LiveTV Sending Server
DMM-1000
IPTV Headend System
IP-UDP
DIH-3000V
Digital H.264 HD/SD
IP Encoder& Transcoder
Cloud Content Processing Center


Digital Cable TV Triple Play System
Triple Play over HFC
User-1
TV
Phone
IP
WiFi
EoC Terminal
User-2
TV
Phone
IP
WiFi
EoC Terminal
User-n
TV
Phone
IP
WiFi
EoC Terminal
EoC Master
TV
IP
Optical Cable
Coaxial Cable
Optical Distribution Network
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1490nm
1310nm
WDM
1Gbps
OLT
10Gbps
Data
155Mbps
TDM
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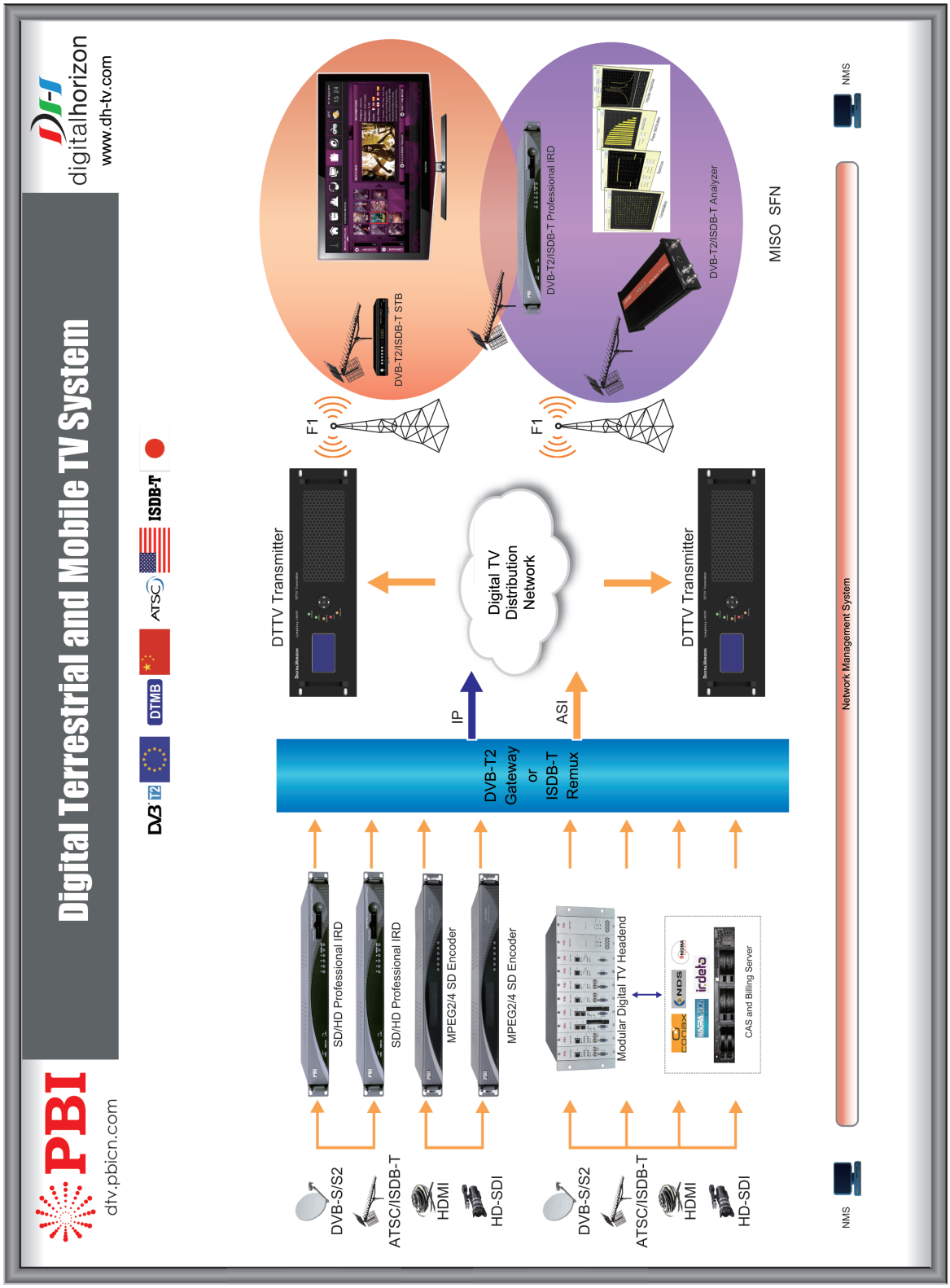
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DTMB
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ISDB-T
DVB-S/S2
ATSC/ISDB-T
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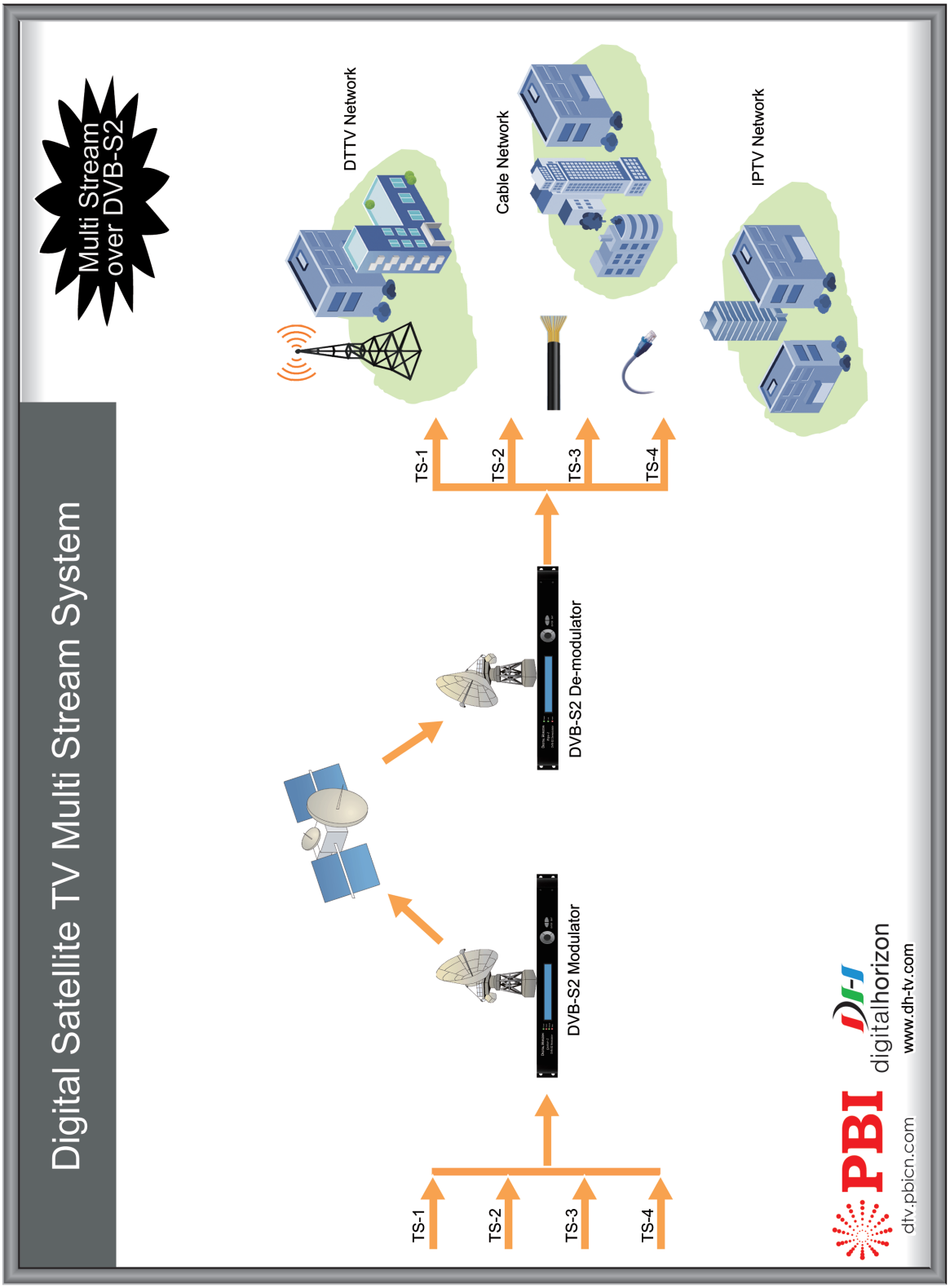
SD/HD Professional IRD
SD/HD Professional IRD
MPEG2/4 SD Encoder
MPEG2/4 SD Encoder
Modular Digital TV Headend
CAS and Billing Server
DVB-T2 Gateway or ISDB-T Remux
IP
ASI
Digital TV Distribution Network
DTTV Transmitter
DTTV Transmitter
F1
F1
DVB-T2/ISDB-T STB
DVB-T2/ISDB-T Professional IRD
DVB-T2/ISDB-T Analyzer
MISO SFN
NMS
NMS
Network Management System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Multi Stream over DVB-S2
DTTV Network
Cable Network
IPTV Network
TS-1
TS-2
TS-3
TS-4
DVB-S2 De-modulator
DVB-S2 Modulator
TS-1
TS-2
TS-3
TS-4
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