

HDTV AND IPTV HEAD-END

DMM-1100

COMPACT MODULAR DIGITAL TV HEADEND



Main Feature

- DVB-S2/S, DVB-S, DVB-C, DVB-T IRD modules with CI
- DVB-S/S2/C/T to DVB-C QAM and DVB-T COFDM trans-modulator module
- MPEG-2, MPEG-4/H.264, AVS+ and H.265 digital video decoding
- MPEG-2, H.264 HD/SD encoder and transcoder module
- 8 Way re-multiplexer module
- Rich interface with ASI, IP, SDI, 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

DMM-1100 is a compact modular digital TV headend that includes professional MPEG-2 and MPEG-4 AVC/H.264 AVS+ and H.265 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.

CHASSIS CONTROL UNIT

DMM-1100MF 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°C(for all modules)
- Storage temperature: -10 ~ 60°C-(for all modules)



DMM-210MF Main Chassis

- Standard 1 RU chassis with 2 slots for functional modules
- Single power supply is standard configuration
- 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)
- Operating temperature: 0 ~ 45°C(for all modules)
- Storage temperature: -10 ~ 60°C-(for all modules)



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



IRD MODULE

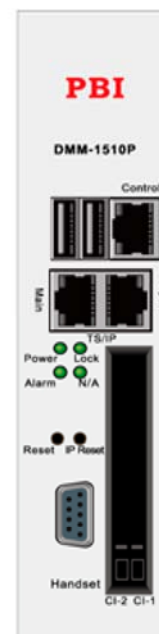
DMM-1510P

Professional HD/SD IRD and Processor Module

As the up-to-date PBI's professional IRD and HDTV Processor of DMM1000 series, DMM-1510P succeeds all functions from DMM-1500P, and exceeds the previous generation in terms of performance and functionalities. DMM-1510P could support two AC-3 audio pass-throughs over AES-EBU. The integrated decoder complies with MPEG-4, MPEG-2 and HEVC standards. Depending on the hardware configuration, DMM-1510P can support various optional of reception for DVB-T, DVB-S/S2/S2X, 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 output via HDMI 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-1510P one of the most competitive modules in DMM-1100 series.

Main Feature

- Variety of input optional DVB-S2/S2X/C/T/T2/DTMB/ISDB-T/ATSC, TS/IP and ASI
- Redundant backup among Tuner, ASI input and TS over IP input
- SD/HD/UHD MPEG-2, MPEG 4/H.264/H.265, AVS+, AVS2 video decoding
- Wide choice of I/O interfaces, including ASI, CVBS, HDMI, AES/EBU, XLR Balanced Audio, TS over IP
- PLS (Physical Layer Signaling) and ISI (Input Stream Identifier) function available on DVB-S2 tuner
- Single or Multi PLP (Physical Layer Pipe) function available on DVB-T tuner
- 2 x DVB-CI slots, support multiple programs decryption, BISS-1 or BISS-E decryption
- Dynamic PMT detection and automatic update
- VBI TELETEXT and WSS support over analog output
- UDP/RTP and Unicast/Multicast for TS over IP input and output
- 2 x Gigabit IP port, one full duplex SPTS/MPTS over IP and second backup output
- Control and surveillance over WEB or HDMS software remotely
- Software up-gradable in the field easily through USB or remote Control and Supervision by SNMP, HTTP WEB and Proprietary HDMS software
- RSSI, received Eb/No & BER available on Web interface



DMM-1510P

Specification

Tuner Input

Connector Type 1×F type female 75Ω for Input, 1×F type female 75Ω for loop through output

TS Input and Output

ASI

Connector Type Input: 1×BNC, 75Ω; Output: 1×BNC, 75Ω

Standard DVB-ASI, EN50083-9

Bit Rate Input ≤ 200Mb/s; Output ≤ 200Mb/s

TS over IP

Connector Type 2×RJ45, 100/1000 Base-T, Independent

Effective Bit Rate Full duplex, 300Mb/s for 64xIP out

Protocol UDP/RTP, Multicast/Unicast, IGMPv2, ARP

TS Processing

TS Descrambler Dual PCMCIA: DVB-CI, BISS-1, BISS-E

Service and PID Management Remux, filtering and remapping

PSI/SI PSI/SI table regeneration, NIT, SDT and SDT edition, LCN Edition

Audio and Video Output

Audio and Video Coding Standard

Video Profile/Level 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), H.265, AVS+, AVS2

Audio Profile/Level MPEG-1 Layer-III, MPEG-2 Layer-II LC-AAC, HE-AAC

HDMI Output

Connector Type 1xHDMI 2.0

Video Resolution 1080p60, 1080p59.97, 1080i60, 1080i25, 720p60, 720p50, 576i25, 480i29.97

Digital Audio Output

Number of Output Decoded or passed through 1 channel

Output Format AES/EBU

Analog Audio and Video Output

CVBS Connector 1×BNC 75Ω

CVBS Standard NTSC, PAL and SECAM

Audio Connector 1×DB9 female with 1 pairs of XLR adaptor 600Ω

Audio Output Mode Left, Right, Dual Mono, Stereo

Ancillary Data Processing

Subtitle DVB, EBU

VBI Teletext, WSS

Redundancy

Redundancy Port among Tuner, ASI input and TS/IP input

Switching Condition TS Sync Loss

Switching Mode Main, Spare

Control and Monitoring

Connector Type 1xRJ45, 10/100M Base-T

Remote Control SNMP v1/v2, HTTP (Web Interface), Proprietary HDMS (Headend Device Management System)

Local Control Handset display

Upgrade WEB HTTP or USB or Telnet

Order Information

Interface Function	DMM-1510P-10X	DMM-1510P-12X	DMM-1510P-20X	DMM-1510P-22X
ASI IN	●	●	●	●
ASI OUT	●	●	●	●
AES/EBU	●	●	●	●
TS/IP	-	●	-	●
Re-Multiplexer			●	●

Standard: S: DVB-S/S2/S2X

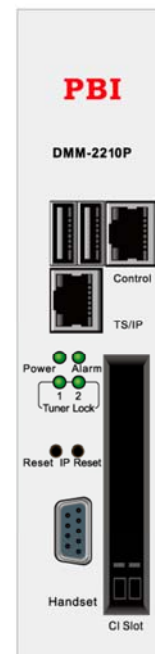
TUNER IN (X)

Option: T: DVB-C/T D: DTMB A: ATSC I: ISDB-T

DMM-2210P

Twin Professional HD/SD IRD and Processor Module

DMM-2210P is a high-density, modular professional decoder receiver equipped with two independent tuners, which can be either of DVB-T, DVB-S/S2/S2X, DVB-C, DTMB, ISDB-T and ATSC types. It supports a wide range of applications by combining dual tuner processing capability with MPEG2, H.264, SD/HD, AVS+ and H.265 video decoding and industry standard outputs including ASI, CVBS, HDMI, TS/IP. It has 2 DVB-CI Slots capable of working with most of the well-known CAS in the market to de-encrypt multiple pay TV services. The compact dual-tuner design and the powerful decoding ability make DMM-2210P one of the most competitive modules in DMM-1100 series.



Main Feature

- Twin-tuner supporting DVB-S/S2/S2X/C/T, DTMB and ATSC demodulations
- Singal channel decoder from 2 TS of twin tuners
- SD/HD MPEG-2, MPEG-4/H.264, AVS+ and H.265 digital Video decoding
- 2x DVB-CI Slots, Multi Programs, BISS 1 and BISS E decryption
- Support services re-mux/filtering and 204/188 packet length
- UDP/RTP and Unicast/Multicast SPTS and MPTS over IP Input/Output
- Support VBI TELETEXT, EBU/ DVB Subtitle
- 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
- Easy firmware upgrade via USB port
- Automatic configuration backup when power-off
- PIP (Picture in Picture) supported via CVBS or HDMI



DMM-2210P

Specification

Tuner Input

Connector Type 2×F type female 75Ω

TS Input and Output

ASI

Connector Type Output: 2×BNC, 75Ω

Standard DVB-ASI, EN50083-9

Bit Rate ≤ 160Mb/s

TS over IP

Connector Type 2×RJ45, 100/1000 Base-T, Independent

Effective Bit Rate 80M for full duplex with ProMPEG FEC,

200Mb/s for full duplex without ProMPEG FEC,

600Mb/s for 32xSPTS IP out only

Protocol UDP/RTP, Multicast/Unicast, IGMPv2, ARP

Uni/Multicast Support maximum 32 channel Uni/Multicast output

TS Processing

TS Descrambler Dual PCMCIA: DVB-CI, BISS-1, BISS-E

Service and PID Management Remux, filtering and remapping

PSI/SI PSI/SI table regeneration, NIT, SDT and SDT edition, LCN Edition

Audio and Video Output

Audio and Video Coding Standard

Video Profile/Level 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), H.265, AVS+, AVS2

Audio Profile/Level MPEG-1 Layer-I/II, MPEG-2 Layer-II; LC-AAC,
HE-AAC, AC3, AC3+

HDMI Output

Connector Type 1xHDMI 1.4

Video Resolution 1080p60, 1080p59.97, 1080p30, 1080i60,
1080i59.97, 1080i30, 1080i29.97, 1080i25,
720p60, 720p59.94, 720p50, 480p60, 576p50,
576i25, 480i29.97

Digital Audio Output

Number of Output Decoded or passed through 1 channel

Output Format AES/EBU

Analog Audio and Video Output

CVBS Connector 1×BNC 75Ω

CVBS Standard NTSC, PAL and SECAM

Audio Connector 1×DB9 female with 1 pairs of XLR adaptor 600Ω

Audio Output Mode Left, Right, Dual Mono, Stereo

Ancillary Data Processing

Subtitle DVB, EBU

VBI Teletext, WSS

Control and Monitoring

Connector Type 1xRJ45, 10/100M Base-T

Remote Control SNMP v1/v2, HTTP (Web Interface), Proprietary
HDMS (Headend Device Management System)

Local Control Handset display

Upgrade WEB HTTP or USB or Telnet

Order Information

Interface Function

DMM-2210P-X

TUNER IN (X)

Standard: S: DVB-S/S2/S2X

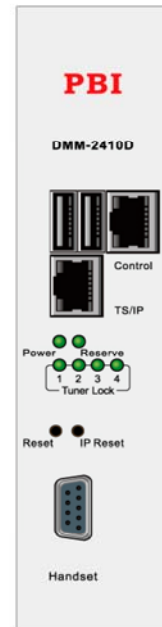
Option: T: DVB-C/T D: DTMB A: ATSC I: ISDB-T

DEMODULATOR MODULE

DMM-2410D

Professional Quad Demodulator Module

The DMM-2410D professional Quad Demodulator provides operators an ideal solution for multiple channels 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/C and so on. The DMM-2410D's remultiplexing capabilities enable the creation of new transport streams that are subsets of the original input stream. Customized services may be output as multiple SPTS or MPTS over IP, as well as over ASI. All these architectures make the DMM-2410D an ideal product for DTV signals receiving and demodulation.



Main Feature

- Variety of tuner factory options DVB-S2/S/C/T 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
- Configuration reload after power failure
- RSSI, received Eb/No & BER monitoring



DMM-2410D

Specification

Tuner Input

Connector Type 4×F type female 75Ω

TS Input and Output

ASI

Connector Type Output: 4×BNC, 75Ω

Standard DVB-ASI, EN50083-9

Bit Rate ≤ 108Mb/s

TS over IP

Connector Type 1×RJ45, 100/1000 Base-T, Independent

Effective Bit Rate Multi DVB mode, 5 channels MPTS IP output, 600Mb/s

IPTV Mode, 128 channels SPTS IP output, for IP applications, no stuffing/null packet, non-DVB standard, 550Mb/s

DVB Full duplex, 1 MPTS in and out, 80Mb/s

Protocol UDP/RTP, Multicast/Unicast, IGMPv2, v3

TS Processing

Service and PID Management Remux, filtering and remapping

PSI/SI PSI/SI table regeneration, NIT, SDT and SDT edition, LCN Edition

Control and Monitoring

Connector Type 1xRJ45, 10/100M Base-T

Remote Control SNMP v1/v2, HTTP (Web Interface), Proprietary HDMS (Headend Device Management System)

Local Control Handset display

Upgrade WEB HTTP or USB or Telnet

Order Information

Interface Function

DMM-2410D-X

TUNER IN (X)

Standard: S: DVB-S/S2/S2X

Option: T: DVB-C/T D: DTMB A: ATSC I: ISDB-T

MPEG-2 ENCODER MODULE

DMM-1300EC

Professional MPEG-2 SD Encoder Module

Main Feature

- Digital SDI with embedded digital audio input
- Analog Composite Video for PAL/NTSC/SECAM Input
- MPEG-2 MP@ML Video encoding
- User configurable GOP and 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 Coding

Connector Type	SD-SDI: 1×BNC type female 75Ω CVBS: RCA female, 75Ω
SDI Embed Audio	Group 1 to 4 selectable
Compression Standard	MPEG-2 MP@ML
Video Resolution	480i (720x480) @29.97Hz: SMPTE125M 576i (720x576) @25Hz: ITU-R BT.656-4
Video output Bit rate	1.5 ~ 20Mb/s
Ratio	4:3/16:9

Audio Compression Coding

Connector Type	SD-SDI: Group 1 to 4 selectable Analog: RCA female, Stereo L/R
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TS Processing

Service and PID Management	Remux, filtering and remapping
PSI/SI	PSI/SI table regeneration, NIT and SDT edition

ASI Output

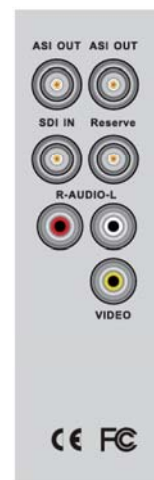
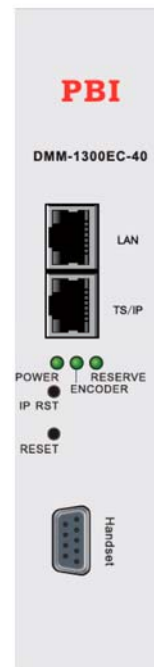
Connector Type	2×BNC Female, 75Ω
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TS/IP Output

Connector Type	1×RJ45, 10/100M for TS/IP
Protocol	UDP / RTP, Multicast / Unicast, IGMPv2, ARP

Control and Monitoring

Connector Type	1xRJ45, 10/100M Base-T
Remote Control	SNMP v1/v2, HTTP (Web Interface), Proprietary HDMS (Headend Device Management System)
Local Control	Handset display
Upgrade	FTP loader



DVB RE-MULTIPLEXER MODULE

DMM-1400MX

DVB Re-multiplexer Module

Main Feature

- 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

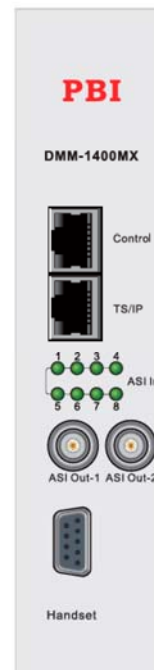
Connector Type	2×BNC Female, 75Ω
Output Bit Rate	≤ 216Mb/s
Data Transmission Mode	Byte
Packet Length	188 or 204 Bytes
Signal Level	800mVpp±10%
PSI/SI generating	PAT, PMT, SDT, CAT, NIT, EIT Actual P/F, EIT Schedule

TS over IP

Connector Type	1×RJ45, 100/1000 Base-T for TS/IP
Effective Bit Rate	80Mb/s for 1000 Base-T
Protocol	UDP / RTP, Multicast / Unicast, IGMPv2, ARP

Control and Monitoring

Connector Type	1xRJ45, 10/100M Base-T
Remote Control	SNMP v1/v2, HTTP (Web Interface), Proprietary HDMS (Headend Device Management System)
Local Control	Handset display
Upgrade	FTP loader

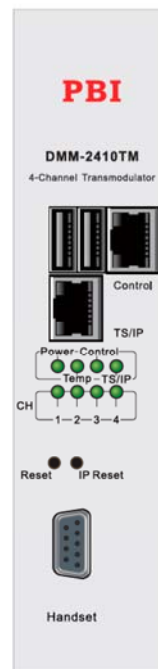


TRANS-MODULATOR MODULE

DMM-2410TM

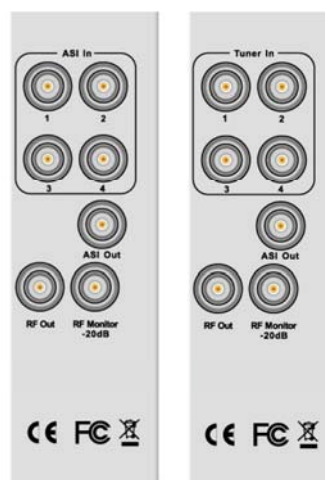
Quad Transmodulator Module

DMM-2410TM is a high-density Quad Modulator and Trans-modulator module. It could receive up to 4 independent TS streams from Tuners, ASI or TS/IP input, modulates them to 4 adjacent DVB-C RF carriers. Different types of inputs are available as factory options, such as DVB-S/S2, DVB-C/T and ASI. With its built-in remux function, DMM-2410TM can accept TS from Tuners, ASI or TS/IP inputs, and then filtering, re-multiplexing, building 4 new TS for modulation. DMM-2410TM could be used either as a 4-way IP QAM modulator or a 4-way trans-modulator.



Main Feature

- 4 independent TS inputs DVB-S2/C/T, TS/IP, ASI (option)
- TS/IP Gbe input support UDP/RTP, IGMP V2,V3 and Multicast/Unicast
- Built-in remux for TS from ASI, Tuner and TS/IP inputs
- Service and PID filtering and re-multiplexing
- Re-generate PSI/SI, can insert NIT, LCN, etc
- 4 adjacent DVB-C QAM or DTMB (factory option) carriers over 48-996MHz
- Web remote control and SNMP supervision
- Software update via ETHERNET or USB port



DMM-2410TM

Specification

Tuner Input

Connector Type 4 x F type female 75Ω

TS Input and Output

ASI

Connector Type 4 x BNC female, 75Ω

Standard DVB-ASI, EN50083-9

Bit Rate Input: ≤ 216 Mb/s

TS over IP

Connector Type 1×RJ45, 100/1000 Base-T, Independent

Effective Bit Rate 320Mb/s (total bitrate of 4 TS streams)

Protocol UDP/RTP, Multicast/Unicast, IGMPv2, ARP

TS Processing

TS processing and Remux PSI auto generation, Service and PID remux, filtering and re-mapping NIT insertion and LCN edition EIT Processing

Modulation

DVB-C Modulation

Standard J.83 Annex A; J.83 Annex C (Future evolution)

Constellation 16QAM, 32QAM, 64QAM, 128QAM, 256QAM

Symbol Rate 2.5-6.99MS/s

BER ≤0E-9

MER >40dB Typ. (disable equalization)

DTMB Modulation

Constellation 4QAM, 16QAM, 64QAM

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

RF Output

Connector Type 2 x BNC female (1 port for -20dB monitor), 75Ω

Output Frequency Range 48-860MHz adjustable (1KHz step)

Output Level 95-110dBμV adjustable (1dB step)

Spurious Rejection 55dB (typ.)

Output Return Loss -10dB (typ.)

Control and Monitoring

Connector Type 1xRJ45, 10/100M Base-T

Remote Control SNMP, HTTP (Web Interface)

Local Control Handset display

Upgrade Embedded FTP loader and Telnet

Order Information

Interface Function	DMM-2410TM-X			
	S2C	T2C	AC	IC
DVB-S2X Input	●	-	-	-
DVB-T Input	-	●	-	-
ASI Input	-	-	●	-
IP/IP Input	●	●	●	●
Re-Multiplexer	●	●	●	●
RF Output	DVB-C	DVB-C	DVB-C	DVB-C

DMM-1701PM

Dual DVB Tuner to Analog Trans-modulator Module

Main Feature

- Multiple RF input option DVB-S2/S/C/T, 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

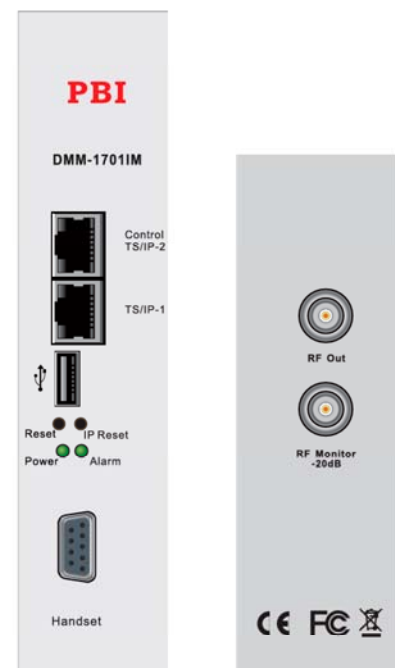


DMM-1701IM

Dual TS/IP to Analog Trans-modulator Module

Main Feature

- 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



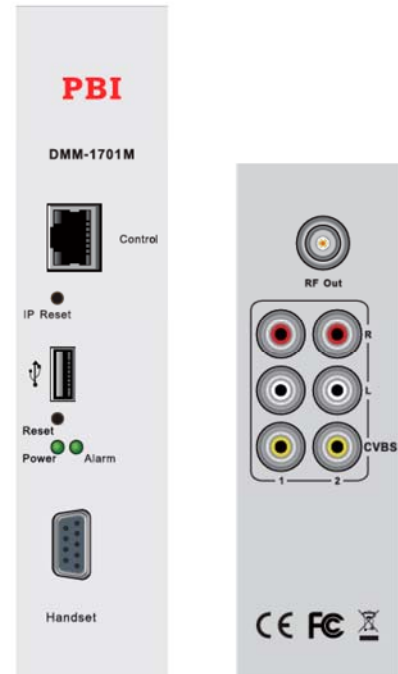
ANALOG MODULATOR MODULE COMBINER AND AMPLIFIER MODULE

DMM-1701M

Dual Analog Modulator Module

Main Feature

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



DMM-1701CA

High Linear Combiner and Amplifier Module

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



DMM-1701 SERIES

Specification

Input of Modulator Module

Connector Type	1×F type female 75Ω for Input, 1×F type female 75Ω for loop through output (DMM-1701PM)
	2×RJ-45, 10/100M (DMM-1701IM)
	2 sets of RCA, 75Ω,
	2 sets of RCA 10Ω(unbalance) (DMM-1701M)
IP Input (DMM-1701IM)	
Standard	UDP, RTP, Multicast, Unicast, MPTS, SPTS
Descrambler (DMM-1701PM)	
TS 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: $\Delta f \leq 5\text{KHz}$ UHF: $\Delta f \leq 10\text{KHz}$	
Video modulation depth	DMM-1701M	77.5~97.5%
	DMM-1701PM/1701IM	87.5%
Video in-band flatness	$\leq 2\text{dB}$	
Differential Gain	$\leq 7\%$	
Differential Phase	$\leq 5^\circ$	
Video S/N ratio	$\geq 45\text{dB}$	
Chrominance/Luminance delay	$\Delta T \leq 45\text{nS}$	
K factor of 2T pulse	$\leq 4\%$	
Audio		
FM modulation deviation	DMM-1701M	40~160KHz
	DMM-1701PM/1701IM	40~100KHz
Audio frequency response	$\pm 1.5\text{dB}$ (40Hz~15KHz)	
Total harmonic distortion (THD)	$\leq 1.2\%$ (1KHz tone with $\pm 60\text{KHz}$ (D/K, B/G, I) or $\pm 30\text{KHz}$ (M/N) FM deviation)	
Audio S/N ratio	$\geq 55\text{dB}$	
Audio Pre-emphasis	50μS (B/G,D/K,I)	

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	$\geq 10\text{dB}$

Control and Monitoring

Connector Type	1xRJ45, 10/100M Base-T
Remote Control	SNMP v1/v2, HTTP (Web Interface), Proprietary HDMS (Headend Device Management System)
Local Control	Handheld programmer unit
Upgrade	Embedded FTP loader and USB

DMM-1701CA

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	$\geq 7\text{dB}$
Output Return Loss	$\geq 12\text{dB}$
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
Passband Flatness	MIN: 0.5 dB MAX: 2.5 dB
Noise factor	MAX: 6dB
Isolation between Input Ports	TYP: 20dB MIN: 16.5dB
Isolation between Input and Output Ports	MIN: 27dB