SUNNISKY CDM100 Compact Digital CATV Headend Modular System

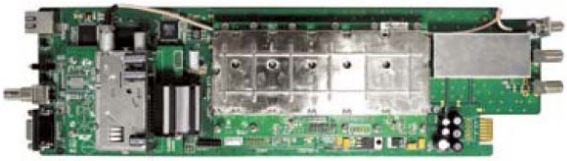
SUNNISKY CDM100 is one compact digital CATV headend modular system, which combines modular professional DVB-S/S2 or DVB-C or DVB-T/T2 TS CI SD or HD IRD, H.264 HD and MPEG-2 SD Video/Audio encoder, Re-Multiplexer, DVB-TS Scrambler and QAM or DVB-T/T2 COFDM Modulator into a 4Ux19" chassis. User can use it to easily build up a mini-digital headend system with high flexibility. It contain 8 same or different module slots into one 4U 19" chassis as customer's demand, including professional DVB-S/S2 or DVB-C or DVB-T/T2 TS CI IRD module, H.264 HD and MPEG-2 SD Video/Audio Encoder module, Re-Multiplexer module, and DVB-C QAM or DVB-T/T2 COFDM Modulator module, etc.

- ✧ Professional DVB-S/S2 or DVB-C or DVB-T/T2 TS CI SD or HD IRD module: One professional IRD (Integrated Receiving Decoder) module, which supports to receive DVB-S/S2 or DVB-C or DVB-T/T2 RF input signal and ASI-TS input signal, then will be decoded and converted to ASI and IP output a the same time. Every module has a CI slot for PCMCIA module and Smartcard operation to decrypt TV program which have been encrypted with CA system, such as Irdeto, Viaccess and TongFang, etc. Its IP output interface supports Unicast and Multicast modes with 6 or 32 UDP IP addresses. The internal PID filter could remove unwanted program(s) and reduce bit rate at the outputs of ASI and IP.

- ✧ H.264 HD and MPEG-2 SD Video/Audio Encoder Module: One real time MPEG-2 Video/Audio Encoder which supports CVBS or SDI video and stereo audio input ports, and. real time H.264 HD Encoder which supports HDMI or HD-SDI video or CVBS input ports; They both could output ASI-TS signal and IP signal with Unicast and Multicast modes and 6 or 32 UDP IP addresses.

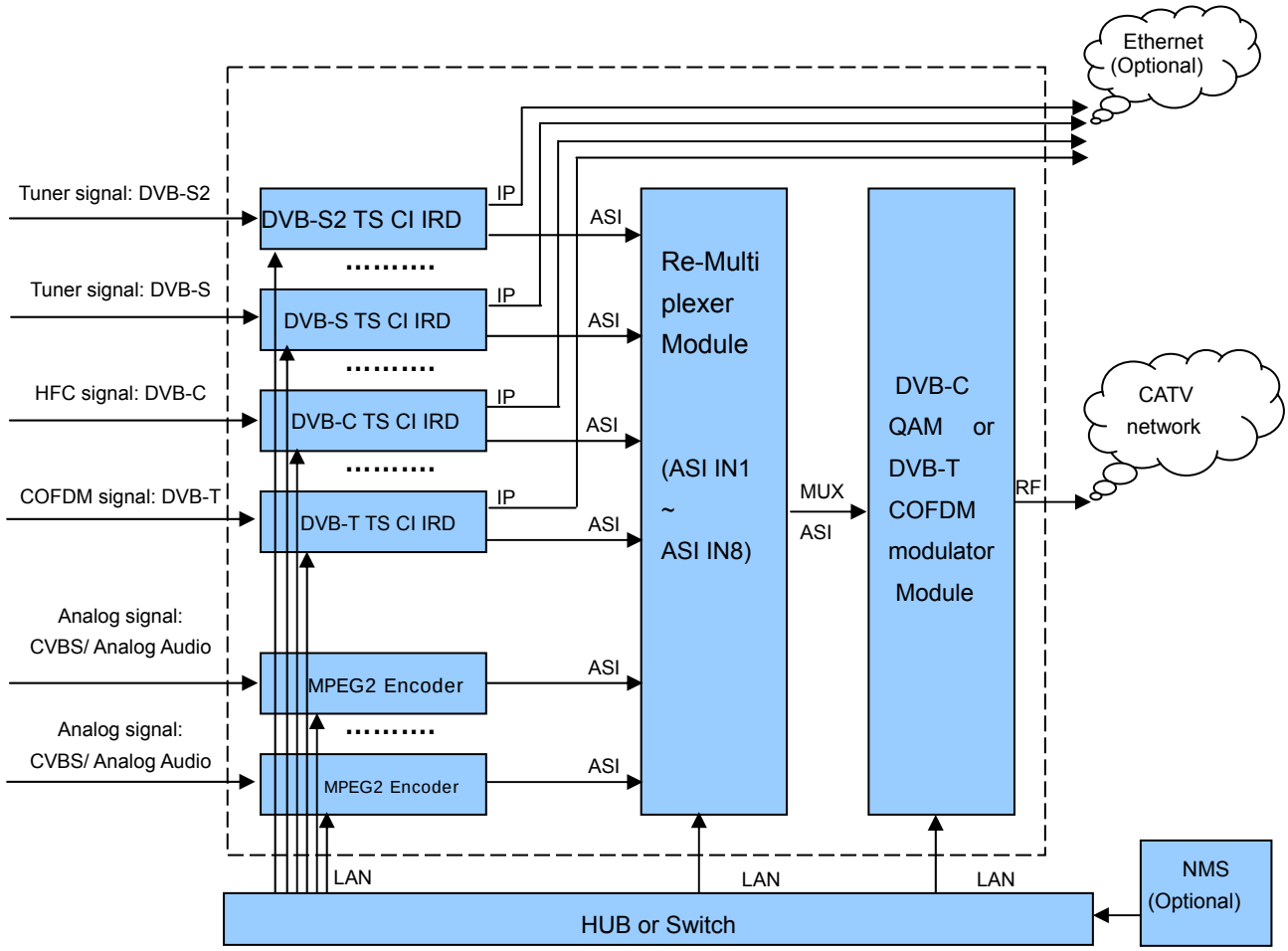
- ✧ Re-Multiplexer Module: One Re-Multiplexer with 8 input DVB-TS and 1 DVB-TS output.

- ✧ DVB-C QAM or DVB-T/T2 COFDM Modulator: One adjacent agile DVB-C QAM modulator or adjacent agile DVB-T/T2 COFDM modulator which could convert ASI-TS to RF signal output.



- ✧ Converter from DVB-S2 or DVB-C QAM or DVB-T/T2 COFDM demodulation to DVB-C QAM or DVB-T COFDM modulator.

So by aid of this CDM100 Mini-CADTV system, we could rapidly get one highly integrated and stable digital CATV system solution with high flexibility.



Feature

- Full complaint with MPEG-2(MP@ML) and DVB-S/S2/-C/-T/T2 standards
- IEC 4U x 19" chassis for 8pcs same or different modules
- Every module could be operated and work independently
- Stable Mini Modular system with high flexibility
- Support power supply backup
- PID filter of DVB-S/S2 or DVB-C or DVB-T/T2 TS CI SD or HD IRD
- DVB-S/S2 or DVB-C or DVB-T/T2 TS CI IRD with 2 slots that support being encrypted system of Irdeto, Viaccess, etc.
- 100V AC to 260V AC, 50/60Hz power supply
- DVB-TS over IP or IP over DVB-TS of TS CI SD or HD IRD working mode selectable, and DVB-TS over IP supports Unicast and 6-ways or 32-ways Multicast mode output
- Running continuously with excellent stability
- LCD display and user friendly operation
- Automatic recovery for latest system configuration due to expected or unexpected power off
- By 10/100BaseT Ethernet based on TCP/IP (optional), SNMP protocol, it can realize remote control, network management and parameters setup

1. Specification of TS CI IRD Modules for DVB-S2, DVB-S, DVB-C and DVB-T/T2 receiving

✧ **DVB-S2 TS CI** SD or HD **IRD Module**

Satellite DVB-S2 TUNER	
LNB Input and Output	Loop through
Input frequency	C/Ku band, 950~2150MHz
Input level	-65dBm~-25dBm
Input impedance	75Ω, F type

Tone Switch	0/22KHz for universal LNB
LNB Power	14V/18V (max.400mA), Short Circular Protection
Channel Decoding	
Complies with	DVB-S2 and DVB/DSS standards
Demodulation	DVB-S:QPSK; DVB-S2: QPSK/8PSK
FEC Decoder	DVB-S2 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 DVB-S: 1/2,2/3,3/4,5/6,6/7,7/8
Rolling Off Factor	DVB-S: 0.35; DSS: 0.2 ; DVB-S2: 0.35, 0.25, 0.2
Symbol rate	QPSK: 5~ 45Msps; 8PSK: 10~31Msps
Demultiplexer	
Standard	ISO/IEC 13818-2
Video decoding	
Standard	ISO/IEC 13818-2; MPEG-2 MP@ML
Aspect radio	4:3, 16:9
Video format	SD: 720X576@ PAL; 720X480 @NTSC HD: 1920X1080i 50and 60; 1280X720P 50 and 60;720X480P 60; 720X576 50; 525X480i 60; 625X576i 50
Audio decoding	
Standard	ISO/IEC 13818-3
Decoding	MPEG-1 layer I and II
Audio output mode	Stereo, Dual, Mono channel
Volume level	32 Levels
Common Interface	
Standard	EN 50221
CI module	JEIDA 4.0 PCMCIA type II*2
Support	Irdeto, CryptoWorks, Irdeto, Mediaguard, Nagravision, Canal+, and Viaccess Common Access systems
DVB-TS over IP Output	
Connector	RJ45,10M/100Mbps Base-T
Output bit rate	70Mbits/s (Max.)
UDP/RTP mode	Multicast or Unicast
Protocol	IGMP V2, UDP/RTP,ARP
ASI Input (Optional)	
Interface	ASI port, BNC connector, 75Ω
Signal level	800mVp-p
TS input available bit rate	≤160Mbps
Packet length	188 or 204
Data mode	Byte
ASI Output	
Connector	BNC*1, 75Ω
Output level	0.8Vp-p±0.1V
Data transmission rate	99Mb/s
Packet length	188 or 204
Data mode	Byte
Video and audio Output	
Connector	SD: CVBS + stereo, 2.5mm phone jack HD: HD-SDI+ stereo, 2.5mm phone jack

✧ **DVB-S TS CI** SD or HD **IRD Module**

Satellite DVB-S TUNER

LNB Input and Output	Loop through
Input frequency	C/Ku band, 950~2150MHz
Input level	-65dBm~-25dBm
Input impedance	75Ω, F type
Tone Switch	0/22KHz for universal LNB
LNB Power	14V/18V (max.400mA), Short Circular Protection
Channel Decoding	
Complies with	DVB-S EN300 421
Demodulation	QPSK
FEC Decoder	1/2, 2/3, 3/4, 5/6 and 7/8, Interleaving 1=12
Rolling Off Factor	0.35
Symbol rate	2~45Ms/s
Demultiplexer	
Standard	ISO/IEC 13818-2
Video decoding	
Standard	ISO/IEC 13818-2; MPEG-2 MP@ML
Aspect radio	4:3, 16:9
Video format	SD: 720X576@ PAL; 720X480 @NTSC HD: 1920X1080i 50and 60; 1280X720P 50 and 60;720X480P 60; 720X576 50; 525X480i 60; 625X576i 50
Audio decoding	
Standard	ISO/IEC 13818-3
Decoding	MPEG-1 layer I and II
Audio output mode	Stereo, Dual, Mono channel
Volume level	32 Levels
Common Interface	
Standard	EN 50221
CI module	JEIDA 4.0 PCMCIA type II*2
Support	Irdeto, CryptoWorks, Irdeto, Mediaguard, Nagravision, Canal+, and Viaccess Common Access systems
DVB-TS over IP Output	
Connector	RJ45,10M/100Mbps Base-T
Output bit rate	70Mbits/s (Max.)
UDP/RTP mode	Multicast or Unicast
Protocol	IGMP V2, UDP/RTP,ARP
ASI Input(Optional)	
Interface	ASI port, BNC connector, 75Ω
Signal level	800mVp-p
TS input available bit rate	≤160Mbps
Packet length	188 or 204
Data mode	Byte
ASI Output	
Connector	BNC*1, 75Ω
Output level	0.8Vp-p±0.1V
Data transmission rate	99Mb/s
Packet length	188 or 204
Data mode	Byte
Video and audio Output	
Connector	SD: CVBS + stereo, 2.5mm phone jack HD: HD-SDI+ stereo, 2.5mm phone jack

✧ **DVB-C TS CI** SD or HD **IRD Module**

RF Signal Input and Tuner	
Signal input and output	Loop through
Input frequency	48~8602MHz
Input level	45~75dBμV
Input impedance	IEC type, 75Ω
Channel Decoding	
Complies with	DVB-C & MPEG2 standard
Demodulation mode	16/32/64/128/256 QAM; J.83 Annex A or B
FEC Decoder	1/2, 2/3, 3/4, 5/6 and 7/8
Input Symbol rate	2~7Mbaud
Demultiplexer	
Standard	ISO/IEC 13818-2
Video decoding	
Standard	ISO/IEC 13818-2; MPEG-2 MP@ML
Aspect radio	4:3, 16:9
Video format	SD: 720X576@ PAL; 720X480 @NTSC HD: 1920X1080i 50and 60; 1280X720P 50 and 60;720X480P 60; 720X576 50; 525X480i 60; 625X576i 50
Audio decoding	
Standard	ISO/IEC 13818-3
Decoding	MPEG-1 layer I and II
Audio output mode	Stereo, Dual, Mono channel
Volume level	32 Levels
Common Interface	
Standard	EN 50221
CI module	JEIDA 4.0 PCMCIA type II*2
Support	Irdeto, CryptoWorks, Irdeto, Mediaguard, Nagravision, Canal+, and Viaccess Common Access systems
DVB-TS over IP Output	
Connector	RJ45,10M/100Mbps Base-T
Output bit rate	70Mbits/s (Max.)
UDP/RTP mode	Multicast or Unicast
Protocol	IGMP V2, UDP/RTP,ARP
ASI Input(Optional)	
Interface	ASI port, BNC connector, 75Ω
Signal level	800mVp-p
TS input available bit rate	≤160Mbps
Packet length	188 or 204
Data mode	Byte
ASI Output	
Connector	BNC*1, 75Ω
Output level	0.8Vp-p±0.1V
Data transmission rate	99Mb/s
Packet length	188 or 204
Data mode	Byte
Video and audio Output	
Connector	SD: CVBS + stereo, 2.5mm phone jack HD: HD-SDI+ stereo, 2.5mm phone jack

✧ **DVB-T TS CI** SD or HD **IRD Module**

ANT. Signal Input and Tuner	
Signal input and output	Loop through
Demodulation	COFDM
Input frequency	VHF:104MHz~230MHz; UHF:470MHz~862MHz
Input level	-70dBmV ~ -20dBmV
Input impedance	IEC type, 75Ω
Tuner Bandwidth	6/7/8MHz (Selectable)
Channel Decoding	
Complies with	DVB-T/T2&MPEG2 standard
Constellation	DVB-T: QPSK,16QAM,64QAM ; DVB-T2: QaPSK, 16QAM, 64QAM, 256QAM
FEC Decoder	DVB-T:1/2, 2/3, 3/4, 5/6,7/8 with Constraint Length K=7; DVB-T2: 1/2, 3/5, 2/3, 3/4, 4/5, 5/6
Guard Interval mode	DVB-T: 1/32,1/16,1/8,1/4, off; DVB-T2: 1/4, 5/32, 1/8, 5/64, 1/16, 1/32, 1/64, 1/128
OFDM Spectrum/FFT mode	DVB-T: 2K, 8K; DVB-T2: 1K, 2K, 4K, 8K, 16K, 32K
Input Symbol rate	4.98~31.67Mbit/s
Demultiplexer	
Standard	ISO/IEC 13818-2
Video decoding	
Standard	ISO/IEC 13818-2; MPEG-2 MP@ML
Aspect radio	4:3, 16:9
Video format	SD: 720X576@ PAL; 720X480 @NTSC HD: 1920X1080i 50and 60; 1280X720P 50 and 60;720X480P 60; 720X576 50; 525X480i 60; 625X576i 50
Audio decoding	
Standard	ISO/IEC 13818-3
Decoding	MPEG-1 layer I and II
Audio output mode	Stereo, Dual, Mono channel
Volume level	32 Levels
Common Interface	
Standard	EN 50221
CI module	JEIDA 4.0 PCMCIA type II*2
Support	Irdeto, CryptoWorks, Irdeto, Mediaguard, Nagravision, Canal+, and Viaccess Common Access systems
DVB-TS over IP Output	
Connector	RJ45,10M/100Mbps Base-T
Output bit rate	70Mbits/s (Max.)
UDP/RTP mode	Multicast or Unicast
Protocol	IGMP V2, UDP/RTP,ARP
ASI Input (Optional)	
Interface	ASI port, BNC connector, 75Ω
Signal level	800mVp-p
TS input available bit rate	≤160Mbps
Packet length	188 or 204
Data mode	Byte
ASI Output	
Connector	BNC*1, 75Ω
Output level	0.8Vp-p±0.1V
Data transmission rate	99Mb/s
Packet length	188 or 204

Data mode	Byte
Video and audio Output	
Connector	SD: CVBS + stereo, 2.5mm phone jack HD: HD-SDI+ stereo, 2.5mm phone jack

2. Specification of MPEG2 SD Encoder Module

Video Input and Compression	
Video compression and encoding	MPEG-2 4:2:0MP@ML encoding (ISO/IEC13818-2)
Video input	CVBS***1, RCA female**
Video format	PAL, NTSC and SECAM
Video compression code rate	1.5~10Mbps, GOP frame adjustable
Video Resolution	Support Full D1, Half D1, SIF, QSIF
Video input impedance	75Ω
Audio Input and Compression	
Audio compression and encoding	MPEG-1 & MPEG-2 Layer I/II
Audio input	RCA female, Left and Right, 10K, unbalance
Audio sampling	32, 44.1, 48KHz
Audio code rate	32, 64, 128, 256, 384Kbps
ASI Output (TS Stream Output)	
TS output ports	DVB ASI*1, BNC connector
TS output Bit Rate	20~70Mbps@MPTS
Package length	188 or 204 selectable
Data transfer clocking	BYTE
Signal level	800mVp-p±10%
SDI embedded audio output	
Connector	BNC, 75Ω; embedded audio Stereo or Dual sound, group 1 to 4, selectable

3. Specification of H.264 HD Encoder Module

Video Input and Compression	
Video compression and encoding	MPEG-4 AVC（H.264）High Profile 4.0 and Main Profile 4.0
Video input	HD/SD SDI*1，HDMI*1，YPbPr*1，CVBS*1 video interface
Video format	PAL BG HIN/NTSC 4.43M 50Hz/PAL N/NTSC N/SECAM/NTSC M/PAL 4.43M 60Hz /NTSC 4.43M 60Hz/PAL M
Video compression code rate	0.128~20M**bps**,
Video Resolution	Support HD 1920*1080i, Full D1, Half D1, SIF, QSIF
Video input impedance	75Ω
Audio Input and Compression	
Audio compression and encoding	MPEG1 Layer2, MPEG-2 AAC audio transcoding, AC3 audio transcoding
Audio input	analog balance or unbalance audio interface, digital audio（HD/SD-SDI，HDMI）
Audio sampling	32, 44.1, 48KHz
Audio code rate	32~256Kbps，64~448Kbps（AC3）
DVB-TS over IP Output (Optional)	
Connector	RJ45,10M/100Mbps Base-T
Output bit rate	70Mbits/s (Max.)
UDP/RTP mode	Multicast or Unicast
Multicast control protocol	IGMP V2
ASI Input (TS Stream input)	
TS input ports	DVB ASI*1, BNC connector

TS input Bit Rate	<20Mbps@SPTS
Package length	188 or 204 Bytes adaptable
ASI Output (TS Stream Output)	
TS output ports	DVB ASI*1, BNC connector
TS output Bit Rate	1.5~70Mbps@MPTS
Package length	188 Bytes
SDI embedded audio output (Optional)	
Connector	BNC, 75Ω

4. Specification of DVB Re-Multiplexer Module

ASI input (TS Input)	
Input interface	DVB ASI*8, BNC, 75Ω
Input package length	188 or 204 self-adapting
Every input maximum Bit Rate	160Mbps
Data transfer clocking	BYTE or BURST, self-adapting
ASI Output (TS Output)	
Output interface	DVB ASI*1, BNC, 75Ω
Output package length	188 or 204 Bytes selectable
Data transfer clocking	BYTE
Signal level	800mVp-p±10%
Output maximum Bit Rate	99Mbps, Null packet stuffing Auto
PID package Exchange	
Input PID Amount	65535 (Max.)
Output PID Amount	65535 (Max.)

5. Specification of DVB-TS Scrambler Module

ASI input	
Standard	DVB
Input Connector	BNC*2
Impedance	75Ω
TS standard	ISO13818-1
Valid bit rate	60Mbps (Max.)
Packet format	188/204 bytes (automatic identification)
TS input mode	Uniform
ASI output	
Standard	DVB
Input Connector	BNC*2
Impedance	75Ω
TS standard	ISO13818-1
TS Packet format	188/204 bytes (none of RS encoding for 204bytes)
TS output mode	Uniform

6. Specification of DVB-C QAM Modulator Module

QAM modulation	
Constellation	J.83 Annex A: 16/32/64/128/256QAM; Annex B: 64/256QAM
Output Symbol rate	3~7.2M Bauds
I/Q amplitude error	< 0.3%
I/Q phase error	< 0.3°
Phase jitter	< 0.5° RMS
MER	> 35dB
ASI Input	

ASI input interface	BNC, female75
Data transfer clocking	BYTE or BURST, self-adapting
Packet length	188/204 byte, self-adapting
RF Output	
Output frequency	48~860MHz continuously adjustable; 10KHz/step
Output level	95 to 110dBμV step by 1dB
Spurious	> 55dBc
Output interface	75F female
Output return loss	> 12dB

7. Specification of DVB-T COFDM Modulator Module

COFDM modulation	
Constellation	QPSK/16QAM/64QAM
FFT mode	2K
Guard interval	1/4, 1/8, 1/16, 1/32, off
ASI Input	
ASI input interface	BNC, female75
Data transfer clocking	BYTE or BURST, self-adapting
Packet length	188/204 byte, self-adapting
RF Output	
Output frequency	48~860MHz continuously adjustable; 10KHz/step
Output level	97 to 110dBμV step by 1dB
Spurious	> 55dBc
Output interface	75F female
Output return loss	> 12dB

8. Specification of Module of DVB-S2 TS CI IRD +DVB-C QAM Modulator

Please see 1-DVB-S2 TS CI IRD+ 6 DVB-C QAM Modulator.

9. Specification of Module of DVB-S2 TS CI IRD + DVB-T COFDM Modulator

Please see 1-DVB-S2 TS CI IRD+ 7 DVB-T COFDM Modulator.

10. Specification of Module of Converter from DVB-C QAM to DVB-C QAM Modulator

Please see 1-DVB-C TS CI IRD+ 6 DVB-C QAM Modulator.

11. Specification of Module of Converter from DVB-C QAM + DVB-T COFDM Modulator

Please see 1-DVB-C TS CI IRD+ 7 DVB-T COFDM Modulator.

12. Specification of Module of Converter from DVB-T/T2 COFDM to DVB-C QAM Modulator

Please see 1-DVB-T/T2 TS CI IRD+ 6 DVB-C QAM Modulator.

13. Specification of Module of Converter from DVB-T/T2 COFDM + DVB-T COFDM Modulator

Please see 1-DVB-T/T2 TS CI IRD+ 7 DVB-T COFDM Modulator.

Note: All specifications are subject to change without notice.

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