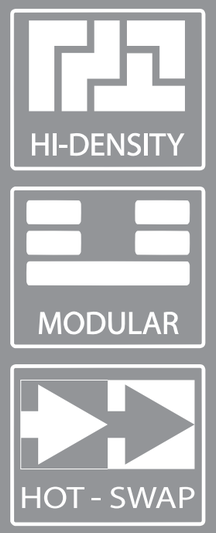


SC2000/SC2100 version 003

Appear TV

SC2000/SC2100

APPEAR TV AS

Po Box 8 Lilleaker
No-0216 Oslo
Norway
Tel: +47 24 11 90 20
Fax: +47 24 11 90 21
Email: info@appeartv.com
Web: www.appeartv.com

appeartv.com

PRODUCT BRIEF

The most efficient reception and streaming solution

Built around a modular platform hosting a wide selection of modules, Appear TV's SC2000/SC2100 can be configured as a turn-key head-end or as a standalone solution designated for intensive service processing applications.

The SC2000/SC2100's integrated architecture offers superior reliability, while its single web-based management interface simplifies deployment and reduces maintenance routines. A user friendly GUI offers intuitive selection of services, and comprehensive management facilities featuring automatic and manual configuration possibilities.

Content Aggregation

The SC2000/SC2100's high density and selection of multiple source inputs makes it the most effective content aggregation solution. Configured as a high density receiver, services from sources including IP, DVB-S/S2, DVB-C and DVB-T networks as well as ASI feeds, can be obtained and output via ASI, IP, QAM and COFDM.

Descrambling

Appear TV's high performance multi-service descramblers maximize receiver utilization and simplify system design and deployment. Appear TV provides two types of descramblers: one that is CAM-based (DVB-Common Interface) and another for bulk descrambling. The DVB-CI based descramblers are capable of descrambling up to 10 DVB scrambled services per CAM.

The bulk descrambler, on the other hand, is aimed at software-based CA systems. It is used for the descrambling of multiple services protected by one or more CA systems. The bulk descrambler is capable of descrambling up to 250 DVB or AES scrambled services.

With support for various CA systems, be it hardware-based or software-based, Appear TV's descramblers are an efficient, space and energy saving solution.

Scrambling

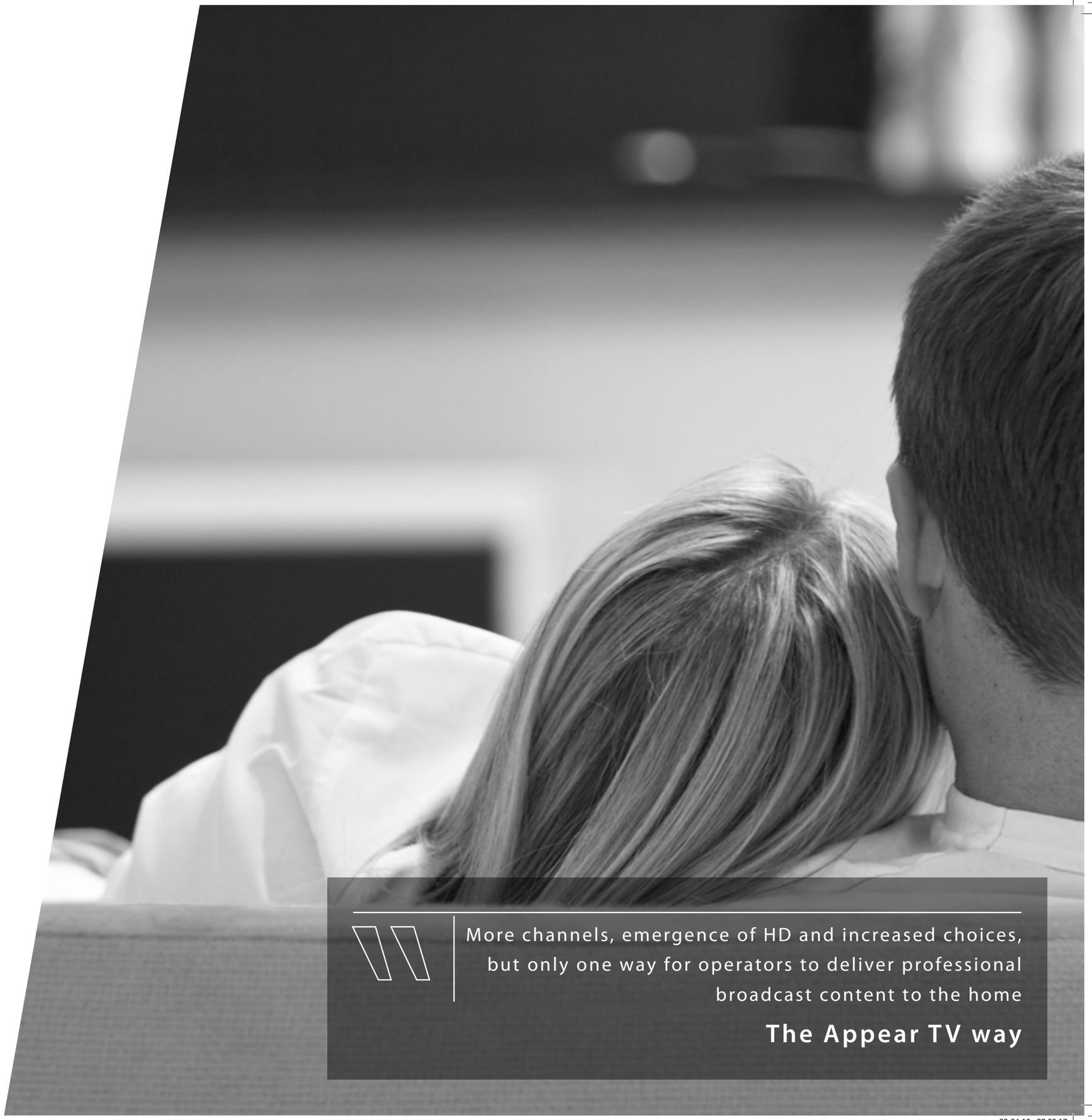
The SC2000/SC2100's scrambling capabilities is amidst the highest performance in the market. Compatible with major CA systems, Appear TV supports AES and DVB CSA algorithms and offers a number of throughput options.

Processing

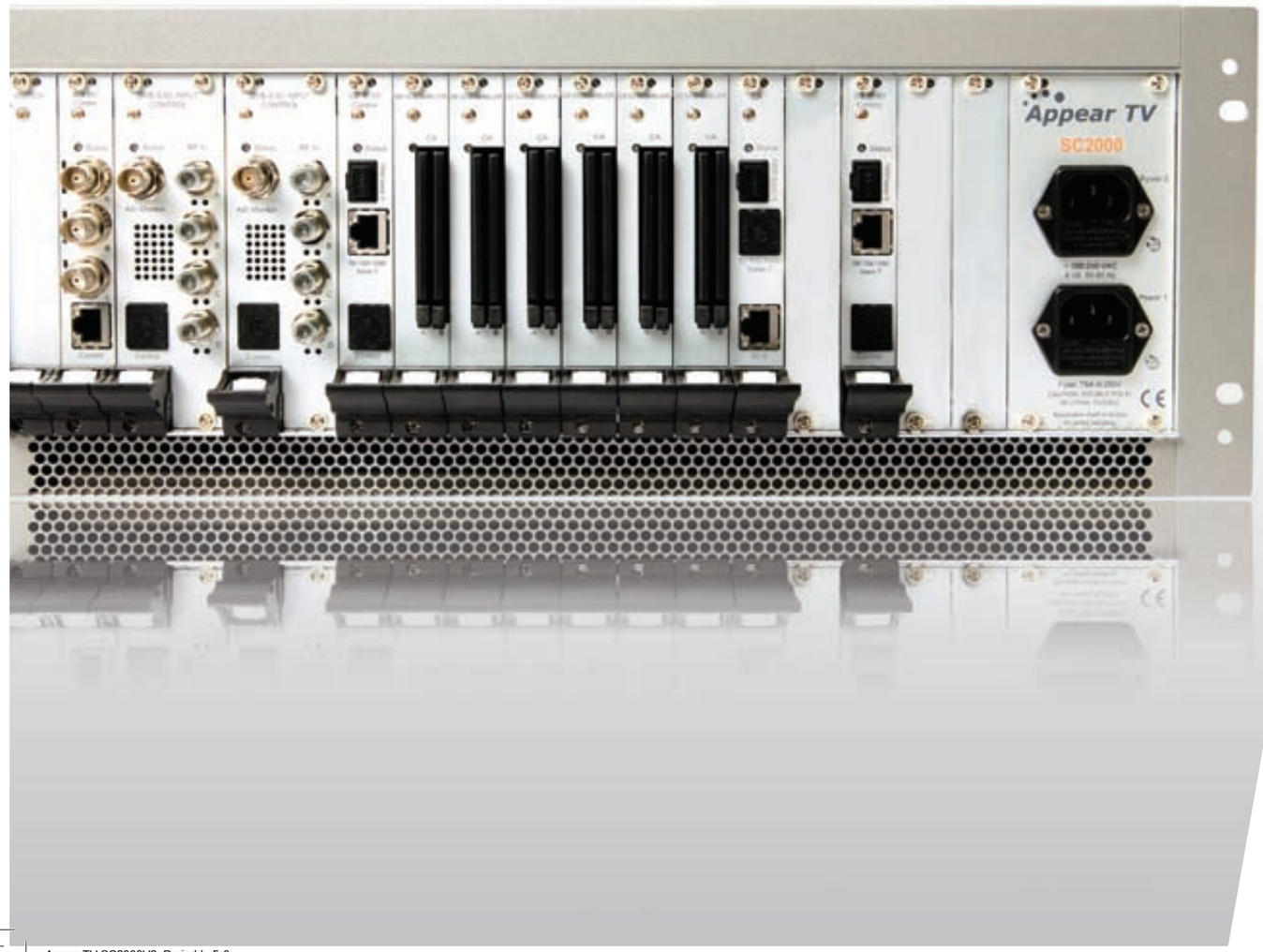
The SC2000/2100 can carry out EPG regeneration to regenerate schedule information using channel bouquets received from multiple sources. Via the GUI, operators can configure the number of days the schedule information should be played out, the data rate, etc. It is also possible to prioritize a higher repetition for events that are nearer in time.

Digital audio leveling for both radio and TV channels from different studios, processed with different encoder settings, is possible with the SC2000/2100. The audio leveling solution enables operators to individually adjust the audio level of up to 250 channels within the MPEG domain.

Resilience is built into the Appear TV architecture. SC2000 modules are hot-swappable, including power supplies and fans, and along with Pro MPEG FEC, Appear TV's redundancy solution offers full or partial redundancy for a variety of failure scenarios.



The SC2000/SC2100 is ideal for digital TV broadcast over FTTH, ADSL2+/VDSL and for Cable Operators moving towards IP distribution. The SC2000/SC2100 is also suitable for smaller digital broadcast networks; in the Hospitality Industry and in Corporate or Governmental Offices where Streaming Broadcast TV to PCs is valued for informational and monitoring purposes.



FEATURES

- 1RU and 4RU chassis
- Input options:
  - IP - ASI - DVB-S/S2
  - DVB-T - DVB-C/J.83 - 8VSB
- Any combination of inputs in the same chassis. Maximum (4RU):
  - 15 IP inputs - 45 ASI inputs
  - 28 DVB-S/S2, DVB-T, DVB-C or 8VSB inputs
- PSI/SI/PSIP input analysis
- MPEG output options with multiplexing support:
  - IP - ASI - QAM Annex A,B or C
  - COFDM
- PSI/SI/ATSC regeneration
- ProMPEG FEC on IP in and IP out (enhanced HW)
- Up to 28 DVB common interface slots for DVB descrambling
- Bulk descrambler with DVB and AES SW descrambling
- Support DVB and AES scrambling, simulcrypt interface based
- Audio levelling
- Hot-swappable modules (4 RU only)
- Intuitive web-based user control
- Dual redundant hot-swappable power supplies (option, 4RU only)
- Monitoring of power and fans (4 RU only)
- SNMP Alarm MIB
- SOAP/XML Interface for external control

CHASSIS

4RU

- Modular configuration with up to 16+2 board positions
- WEB based configuration, SNMP Alarms, SOAP/XML interface
- Forced air-cooling (through back of 4RU)
- Dual redundant hot-swappable power supply
  Option 1. 325W each, T250V 5A fuse
  Option 2. 400W each, T250V 6A fuse
- 4 individually monitored hot-swappable fans
- Hot-swappable modules

1RU

- Modular configuration with up to 9+1 board positions
- WEB based configuration, SNMP Alarms, SOAP/XML interface
- Forced air-cooling (through sides of 1RU)
- Swappable modules in back
- Optional IP IO or descrambler in front

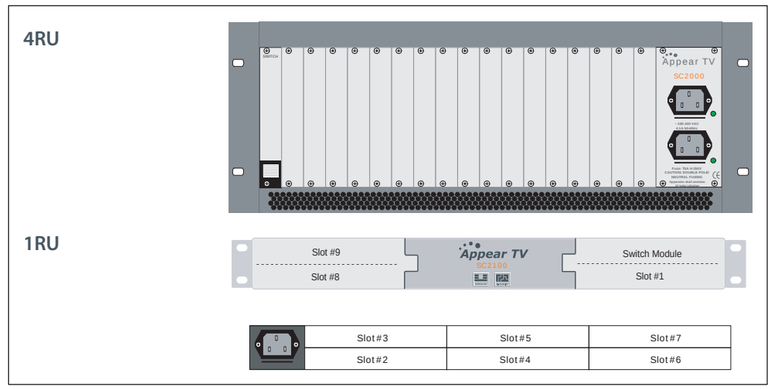
SWITCH MODULE

DC/SWM (product code)

- Gbit/s routing between modules in a chassis
- 1 slot wide (4RU switch module must be placed in slot 0. Redundant module in slot 17)

DIMENSIONS

4RU (w*h*d mm) 440 (480 with ears) * 180 * 400 (+ connectors)
1RU (w*h*d mm) 440 (480 with ears) * 45 * 480 (+ connectors)
Standard 19 inch rack mounting, 4RU high



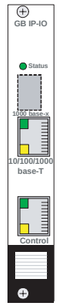
INPUT MODULES

(*Product codes)

Ethernet Input

- 10/100/1000BaseT input card (RJ45)
- Mini-GBIC interface (SFP) for optical input
- Supports UDP/RTP Multicast/Unicast reception
- Supports reception of MPTS and SPTS
- Service filtering
- PCR regeneration
- 10/100/1000BaseT management port (RJ45)
- Enables WEB management
- 1 slot wide

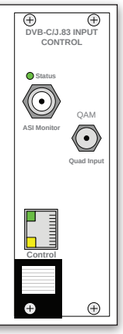
*SC/GBIPIN-MMI



DVB-C Input w/Management

- 4xQAM inputs
- F connector
- 0.87-6.9 Ms/s
- Supports reception of MPTS and SPTS
- Service filtering
- ASI monitoring port
- 10/100/1000BaseT management port (RJ45)
- Enables WEB management
- 2 slots wide

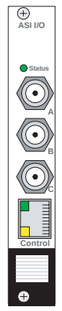
*SC/4QAM-MMI



ASI Input w/Management

- 3xASI input
- BNC connectors
- 213 Mbit/s per input
- Supports reception of MPTS and SPTS
- Service filtering
- 10/100/1000BaseT management port (RJ45)
- Enables WEB management
- 1 slot wide

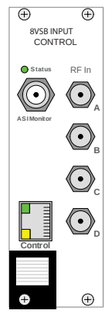
*SC/3ASI-MMI



8VSB Input w/ Management

- 4x8VSB Inputs
- F connectors
- 50 to 860 MHz Frequency Range
- Supports reception of MPTS and SPTS
- ASI monitoring port
- Service Filtering
- 10/100/1000 BaseT management port (RJ45)
- Enables WEB management
- 2 slots wide

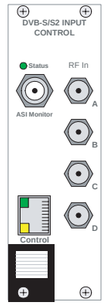
*SC/4x8VSB-MMI



DVB-S/S2 Input w/Management

- 4xDVB-S/S2 inputs
- F connectors
- DVB-S, DVB-S2 QPSK and 8PSK modes
- 950 – 2150 MHz Frequency Range
- 1-45 MSym/s (mode dependent)
- 1/2, 2/3, 3/4, 5/6, 7/8, 8/9, 9/10 FEC (mode dependent)
- Supports reception of MPTS and SPTS
- Service filtering
- ASI monitoring port
- 10/100/1000BaseT management port (RJ45)
- Enables WEB management
- 2 slots wide

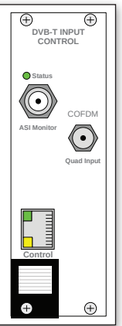
*SC/4DVBS-MMI *SC/4DVBSS2-MMI



DVB-T Input w/Management

- 4xCOFDM inputs
- F connector
- 1/2, 2/3, 3/4, 5/6, 7/8 FEC
- 2k and 8k carrier mode
- QPSK, 16QAM, 64QAM modulation
- Supports reception of MPTS and SPTS
- Service filtering
- ASI monitoring port
- 10/100/1000BaseT management port (RJ45)
- Enables WEB management
- 2 slots wide

*SC/4COFDM-MMI



Please note that card ejector will not be mounted for modules installed in 1RU chassis. Modules mounted in front of 1 RU chassis are not hot-swappable.

PROCESSING MODULES

(*Product codes)

Bulk Descrambler

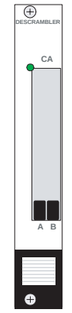
- Descrambles up to 250 services (850 Mbit)
- Integrated with soft clients for ECM handling (no smart card required)
- Support for both DVB-CA and AES descrambling
- BISS descrambling
- 1 slot wide

*SC/BDESC25, *SC/BDESC50, *SC/BDESC100,
*SC/BDESC150, *SC/BDESC200, *SC/BDESC250

Descrambler

- 2xDVB Common interface
- Descrambling of 10 services per CAM (depends on common interface)
- Support for all major CA systems and CAMS
- 1 slot wide

*SC/2C1



Scrambling

- DVB CA compliant scrambling (CSA) and AES compliant scrambling
- Scrambles up to 250 services, maximum 850 Mbit/s
- Support scrambling of MPEG-2 and H264 in SD &HD
- DVB Simulcrypt compliant
- 10/100/1000BaseT IP interface towards CA system (RJ45)
- Handles up to 250 ECM's
- 1 slots wide

*DVB Scrambler with SCS, SC/DVBMCSXX
*AES Scrambler with SCS, SC/AESMCSXX

EPG

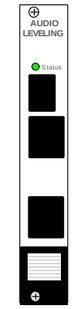
- Re-generation of EIT schedule on selected output port
- Gathers EIT information from all input ports
- EPG data is filtered and regenerated to reflect new channel plan
- Supports multiple of networks
- Configurable play out rate with prioritization
- Configurable period to be played out
- EIT reception from multiple of ATV units (later release)
- 1 slot wide

*SC/EPG

Digital Audio Leveling

- For equalisation of audio in TV and Radio services within a digital head-end
- Audio volume control in an MPEG domain
- Audio leveling of 250 channels
- Supports MPEG 1, layer 1 / 2 audio
- Adjustment range +- 30 db
- 1 slot wide

*SC/AUDLEV25, *SC/AUDLEV75,
*SC/AUDLEV150, *SC/AUDLEV250



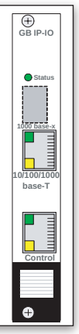
OUTPUT MODULES

(*Product codes)

Ethernet Output

- 10/100/1000BaseT input card (RJ45)
- Mini-GBIC interface (SFP) for optical input
- Supports UDP/RTP Multicast/Unicast transmission
- Supports multiple of output cards
- Streaming of up to 850 Mbit/s
- Maximum 250 service per output card
- Supports streaming of SPTS
- Support streaming of MPTS with Multiplexing (optional)
- PSI/SI regeneration
- PCR regeneration
- 1 slot wide

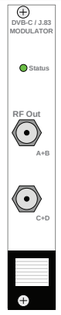
*SC/GBIPOUT



QAM Output

- 16 QAM modulators, 4 and 4 paired
- Full digital modulation and up-conversion
- DOCSIS 3.0 RF compliant
- 32 / 64 / 128 / 256 QAM modulation
- Frequency range of 47 – 862 MHz
- Supports multiplexing and transparent pass through
- PSI/SI/PSIP regeneration
- 2 x 75 ohm RF output (EN/IEC 60728-5) - F connector
- ITU-TJ83. Annex A/B/C
- 1 slots wide

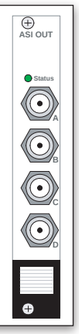
*SC/8QAMOUTMX



ASI Output

- 4xASI outputs
- BNC connectors
- 213 Mbit/s per output
- 4 different multiplexed outputs
- PSI/SI regeneration
- 1 slot wide

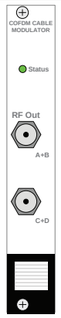
*SC/4ASIOUTMX



COFDM Output

- 4 COFDM modulators (ETSI EN 300744)
- Full digital modulation and up-conversion
- QPSK, 16-QAM and 64-QAM
- 5, 6, 7, 8 MHz bandwidth
- Frequency range 47-862 MHz, fully agile
- PSI/SI regeneration
- 2 x 75 ohm RF output (EN/IEC 60728-5) - F connector
- 1 slot wide

*SC/4COFDMOUTMX



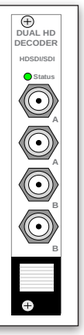
DECODER MODULES

(*Product codes)

MPEG 4 HD Decoder with SDI Output*

- 2 SDI/HDSDI outputs per decoder
- MPEG2 and MPEG4 (H264) SD and HD
- VBI re-insertion (WSS, WST/EBU Teletext, VPS, VITS)
- DVB and EBU subtitling
- 2 SDI/HDSDI outputs per decoder
- 1 slot wide

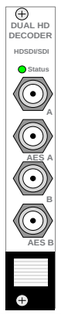
*SC/ADMSDISD *SC/ADMSDISDOSDM
*SC/ADMSDIHD *SC/ADMSDIHDOSDM



MPEG 4 HD Decoder with SDI output & AES audio option*

- 2 decoders per module
- MPEG2 and MPEG4 (H264) SD and HD
- VBI re-insertion (WSS, WST/EBU Teletext, VPS, VITS)
- DVB and EBU subtitling
- 1 SD/HDSDI output per decoder
- 1 AES audio output per module
- 1 slot wide

*SC/ADMSDIAUDSD *S/ADMSDIAUDSDOSDM
*SC/ADMSDIAUDHD *S/ADMSDIAUDHDOSDM



*For MPEG output specifications please see DC1000/DC1100 product brochure

INPUT INTERFACE SPECIFICATIONS

IP Input	Interface	: 10/100/1000 Base-T Ethernet and SFP interface
	Maximum data rate	: Up to 850 MBit/s
	Data format	: UDP Multicast/Unicast, RTP
	Transport stream	: SPTS and MPTS
	PCR de-jittering	: Yes
ASI Input (EN 50083-9)	Connector	: BNC female, 75Ω
	Number of inputs per module	: 3
	Maximum bit-rate per port	: Up to 213.7Mbit/s (burst)
	Management	: 10/100/1000 Base-T Ethernet
DVB-S/S2 Input	Connector	: F female, 75Ω
(EN 300 421, EN 302 307)	Number of inputs per module	: 4
	Decoding	: LDPC and BCH
	Symbol rate DVB-S	: 1-45 MSym/s
	Symbol rate DVB-S2	5–30 MSym/s
	FEC DVB-S	: 1/2, 2/3, 3/4, 5/6, 7/8
	FEC DVB-S2 QPSK	: 1/2, 3/5, 2/3, 3/4, 4/5, 5/6, 8/9, 9/10
	FEC DVB-S2 8PSK	: 3/5, 2/3, 3/4, 5/6, 8/9, 9/10
	DVB-S2 FEC frames	: Normal frames
	Input level	: -25 to -70 dBm
	Frequency range	: 950-2150 MHz
	LNB voltage	: 0/13/18 Volt
	Maximum LNB supply current	: 400 mA
	LNB signaling	: LNB voltage + 22kHz continuous tone
	Management	: 10/100/1000 Base-T Ethernet
DVB-T Input (EN 300 744)	Connector	: F female, 75Ω
	Number of inputs per module	: 4 demodulators (one connector)
	Input level	: -20 to -65 dBm
	Frequency range	: 49 – 861 MHz (center frequency)
	Channel bandwidth	: 7 and 8 MHz (6 MHz optional)
	Guard interval	: 1/4, 1/8, 1/16, 1/32
	Carrier mode	: 2k, 8k
	Hierarchy stream	: High and low priority
	Hierarchy mode	: All
	Carrier modulation	: QPSK, 16QAM, 64QAM
	FEC rate	: 1/2. 2/3, 3/4, 5/6, 7/8
	FEC	: Reed Solomon & Viterb Fully compliant with ETS 300 744 and NorDig 2 specifications
	Spectrum	: Non-inverted and inverted
	Management	: 10/100/1000 Base-T Ethernet
DVB-C Input (EN 300 429)	Connector	: F female, 75Ω
	Number of inputs per module	: 4 demodulators (one connector)
	Frequency range	: 51 – 858 MHz (center frequency)
	Channel bandwidth	: 7 and 8 MHz (6 MHz optional)
	QAM Mode	: 4, 16, 32, 64, 128, 256 QAM
	Symbol rate	: 0.87-6.9 Mbaud
	FEC	: ITU-T J83 annex A, B and C And ETS 300 429
	Spectrum	: Non-inverted and inverted
	Management	: 10/100/1000 Base-T Ethernet
	Input power level	: -20 to -50 dBm*
8-VSB Input (ATSC A/53)	Connector	: F female, 75Ω
	Number of inputs per module	: 4
	Input Level	: -34 to +40 dBmV
	Frequency range	: 50 – 860 MHz
	Modulation	: 8-VSB
	Band	: Broadcast
	Management	: 10/100/1000 Base-T Ethernet

MPEG OUTPUT SPECIFICATIONS

IP Output	Interface	: 10/100/1000 Base-T Ethernet output and SFP interface
	Maximum data rate	: Up to 850 MBit/s *
	Maximum number of services	: 250
	Data format	: UDP Multicast/Unicast, RTP
	Video format	: Transport stream, MPEG-2 SD/HD and MPEG-4 SD/HD
	PCR regeneration	: Yes, According to EN50083_9
	Multiplexing	: Yes (Option)
ASI Output	Connectors	: 4 BNC female, 75Ω
	Number of outputs per module	: 4 different Transport Streams
	Maximum bit-rate per port	: up to 213.7Mbit/s
	Transport stream output	: SPTS and MPTS
	Number of services per card	: 250 (sum of all 4 ports)
	Multiplexing	: Yes, per port
	Output format	: Constant bit-rate
	PCR Regeneration	: Yes, According to EN50083_9
	PSI/SI handling	: Automatically regenerated
	Tables Supported	: PAT, PMT, CAT, SDT, NIT, EITpf ,TOT, TDT
QAM Output	Interface	: 2 x F connector female, 75 ohm
	Number of QAM frequencies per module	: 16 different channels according to EN 300 429 8 per port
	Number of services per card	: 250 services (sum of all 16 channels)
	Multiplexing	: Yes, per port
	Transparent pass-through	: Yes, per port
	Modulation	: 32 / 64 / 128 / 256 - QAM
	Symbol rate	: 4,7 to 7,00 Mbaud (Annex A and C)
	Frequency range	: 47 – 862 MHz
	Frequency step size	: 1 Hz
	Frequency stability	: 2 ppm
	Output level with 16 carriers on	: -9,2 to +2,2dBm
	Output level adjustment step size (GUI)	: 0,5 dB
	PCR Regeneration	: Yes, According to EN50083-9
	Tables Supported	
	- PSI	: PAT, PMT, CAT
	- SI	: SDT, NIT, EITpf ,TOT, TDT
	- PSIP	: MGT, TVCT,CVCT
COFDM Output for Cable	Interface	: 2 x F connectors female, 75 ohm
	Number of COFDM frequencies per module	: 4 different channels according to EN 300 744 2 per port
	Number of services per card	: 250 services (sum of all 4 channels)
	Multiplexing	: Yes, per port
	Transparent pass-through	: Yes, per port
	Modulation	
	- IFFT size	: 2k, 8k
	- Guard intervals	: 1/4, 1/8, 1/16, 1/32
	- Code rates	: 1/2, 2/3, 3/4, 5/6, 7/8
	- Constellation	: QPSK, 16-QAM, 64-QAM
	- Channel spacing	: 5, 6, 7 or 8 MHz
	Frequency range	: 47– 862 MHz
	Frequency step size	: 1 Hz
	Frequency stability	: 2 ppm
	Output level with 4 carriers on	: -9,2 to +2,2dBm
	Output level adjustment step size (GUI)	: 0,2 dB
	PCR Regeneration	: Yes, According to EN50083-9
	Tables Supported	
	- PSI	: PAT, PMT, CAT
	- SI	: SDT, NIT, EITpf ,TOT, TDT
	- PSIP	: MGT, TVCT, CVCT

PROCESSING MODULES SPECIFICATIONS

Bulk Descrambling	Interface	: SW based smart card
	CA system support	: Please contact Appear TV
	BISS support	: Mode 1
	Maximum data rate	: Up to 850 MBit/s
	Number of services per module	: 250
	Scrambling algorithms	: DVB-CA and AES
DVB Descrambling	Interface	: DVB Common Interface
	CA system support*	: BetaCrypt, Conax, Cryptoworks, Irdeto, Mediaguard, Viaccess, NDS Viasat, Nagra
	Number of services per CAM	: 10 (requires multi service CAM)

* Appear TV aim to integrate with all major CA providers. Please contact Appear TV for an updated list over integrated CA systems.

Scrambling	Scrambling algorithm	: DVB-CA and AES
	Maximum data rate	: Up to 850 MBit/s
	Number of services per scrambler card	: 250 (depending on SW license)
	Video format	: Transport stream, MPEG-2 SD/HD and MPEG-4 SD/HD
	Interface towards CA System	: Simulcrypt interface
	Number of CA systems	: 4 CA systems simultaneously
	EMM	: Yes
	Entropy reduction	: Yes for DVB No for AES
EPG (ETSI EN 300 458 V1.9.1) (ETSI TR 101 211 V1.9.1)	Ingest	: EIT table from any port
	Output :	Re-generated EIT table
	Maximum data-rate	: Maximum data-rate playout rate: 40
	Number of services per module	: Number of services per module: 250

OUTPUT PROCESSING SPECIFICATIONS

PSI/SI	Function	: PSI/SI input analysis, regeneration based on input and operations performed on the signal
	Pass-through of scrambled services	: Yes, on TS level. For SPTS output only
	PSI/SI handling	: Automatically regenerated
	Tables supported	: PAT, PMT, CAT, SDT, NIT, EIT p/f, TDT, TOT
PSIP	Function	: PSIP input analysis
	Tables supported	: PAT, PMT, MGT, VCT, EIT, ETT, STT
Multiplexing	Supported on	: ASI output (standard) and IP output (option)
	Video format	: Transport stream, MPEG-2 SD/HD and MPEG-4 SD/HD

VIDEO AND AUDIO MONITORING

Video Output	Connector	: BNC female, 75Ohm
	Output format	: PAL and SECAM
	Decoding	: MPEG-2 MP@ML (max. bit rate 15Mbits/s)
	VBI Insertion	: Teletext (WST/EBU), WSS, VPS, VITS
	Subtitling	: DVB and EBU
Audio Output	Number of stereo outputs per video	: 1
	Connector	: Mini-XLR or D-SUB (depends on module)
	Decoding of the following formats is supported	: MPEG-1 layers 1 and 2 (Musicam) : MPEG-2 layer

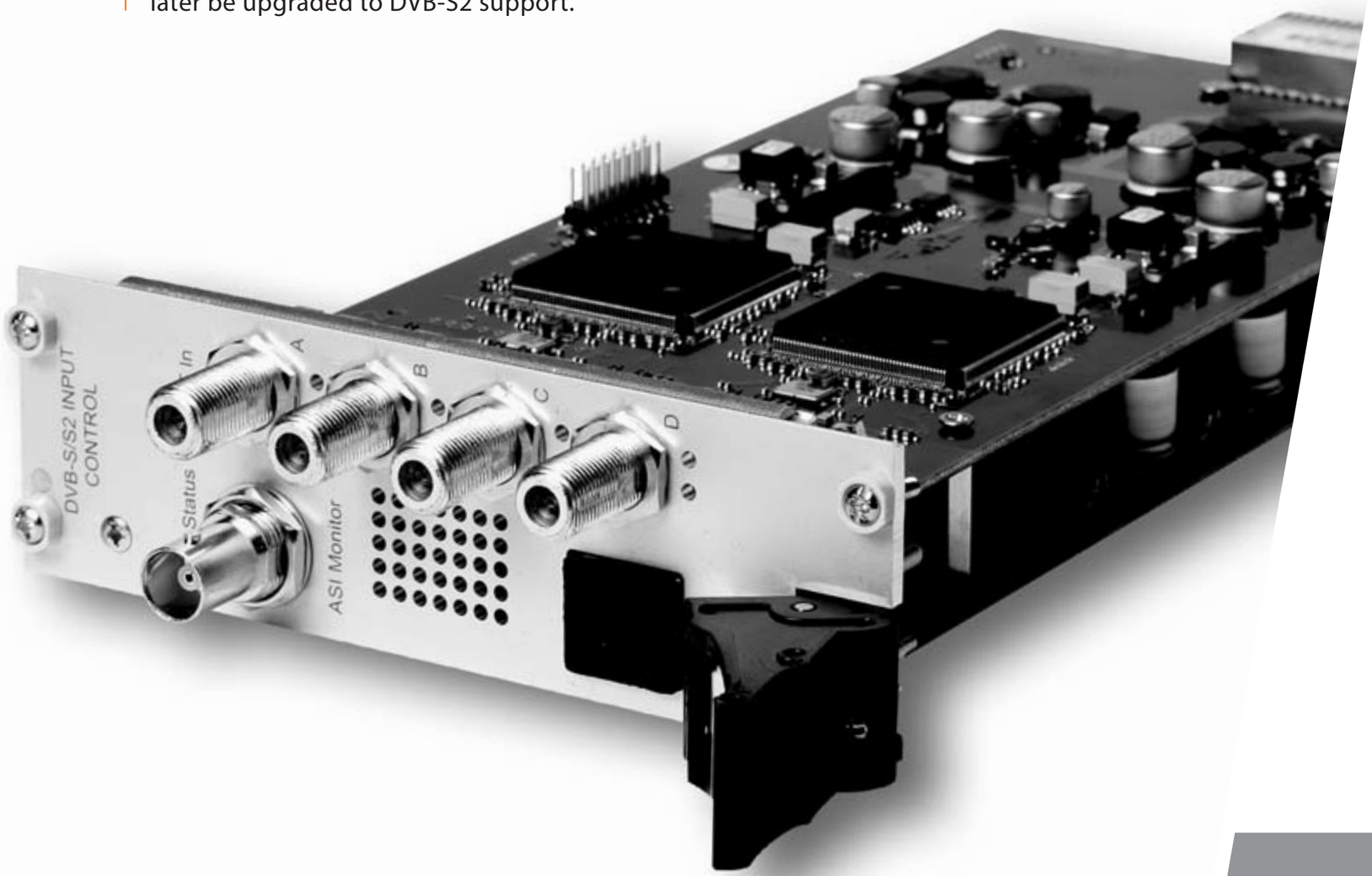
ENVIRONMENTAL SPECIFICATIONS

Conditions	Operational temperature	: 0˚C to +40˚C
	Operational humidity	: 0% to 95% (non-condensing)
	Storage temperature	: -20˚C to +70˚C
	Storage humidity	: 5% to 95% (non-condensing)
Power	AC Power 4RU and 1RU	: Input voltage 110V/240V, 50/60 Hz
	DC Power 4RU	: Input voltage -35 to -75 V DC, F250 16A fuse
	AC Power supply rating 4 RU chassis	: Option 1. 325W each, T250V 5A fuse : Option 2. 400W each, T250V 6A fuse
	Control 4RU chassis	: Power supplies are monitored from GUI and via LEDs on chassis
	Mounting 4RU chassis	: Hot-swappable, mounted on opposite side of input/output Modules
	DC Power supply rating 4 RU chassis	: 360W each
	Number of power supplies 4RU chassis	: 1 or optionally 2 (not possible to combine AC and DC)
	Power supply rating 1RU chassis	: 200W, T250V 4A fuse
	Number of power supplies 1RU Chassis	: 1
	Mounting 1RU chassis	: Internally mounted
Fans	Cooling 4RU chassis	: Hot-swappable fans (airflow front-to-back)
	Number of fans 4RU chassis	: 4
	Control 4RU chassis	: Fans are monitored from GUI and via LEDs on chassis
	Cooling 1RU chassis	: Integrated fans (airflow right to left side)
	Number of fans 1RU chassis	: 6
Physical	Dimensions 4RU chassis	: 19” 4RU (w*h*d mm) 440 (480 with ears) * 180 * 400
	Mounting options 4RU chassis	: Telco – cable in front, Broadcast style – cable in back
	Dimensions 1RU chassis	: 19” 1RU (w*h*d mm) 440 (480 with ears) * 45 * 480
	Mounting options 1RU chassis	: Broadcast style – cable in back and front

Specifications and product availability are subject to change without notice.

APPEAR TV's DVB-S/S2

Appear TV's DVB-S2 input module is used by operators to receive HD channels. The module supports both DVB-S and DVB-S2. The DVB-S2 demodulation is supported as a SW option, so the card can later be upgraded to DVB-S2 support.



DVB-S/S2 - SOFTWARE OPTIONS AVAILABLE

REDUNDANCY

(AWARD WINNING)

INTELLIGENT SOFTWARE

Appear TV's intelligent redundancy software provides seamless integration between broadcast equipment and IP networks.

Appear TV's redundancy solution is unique in being the only software solution in the IP television market to take a holistic view of operation and network management. Redundancy configurations are simplified and automated, and operational routines are significantly reduced.

Appear TV's holistic approach is built upon a single software core capable of handling failures on both inputs and outputs. This redundancy solution offers operators using IP for video distribution significant quality of service benefits and improved network efficiency. The system provides automatic backup in case of service stream failure on an operator's network, without requiring complex control software.

IP Output Redundancy

With Appear TV, operators can now determine a redundancy, maintenance and repair strategy appropriate for their operations, their customer base and services offered.

The IP output redundancy system presents a network with multiple sources from which it is possible to obtain the same service. Should the service from one source be corrupted, the network can receive the service from another source.

For a full redundancy scenario, identical Appear TV chassis can be configured to receive, process and stream identical services. In a typical deployment, a service is broadcast from two locations using the same IP multicast source address. As long as all sources have the same IP source address, the network will route just a single copy of the multicast stream forward to the receiver. In the event of a service issue within, or prior to, the Appear TV chassis, the IP output module exploits standard IP protocols to trigger external routers to switch to secondary sources.

Where full redundancy is not required, partial redundancy strategies can be implemented. Systems can be configured to provide full redundancy of only selected premium or 'must-carry' services. Operators can then choose not to replicate the input and descrambling functions of lower priority services, but still equip the chassis with multiple IP output modules to provide limited fault tolerance.

FEATURES

- Provides unmatched service availability
- Rapid switching
- Utilizes general level 3 IP - routing protocols to perform the switching (or signal selection)
- Can switch an entire port or just one service (SPTS)
- Minimal network setup required
- Redundancy structure supports multiple site distribution