

# airScreen tality™

## Professional 4RU Video Headend for Hospitality and Broadcast

Conceived to address the unique needs of hotels, schools, hospitals, MDUs and broadcast facilities, airScreen tality™ offers the flexibility, reliability and features required to deploy a secure CATV and/or IPTV solution simply, quickly and at an affordable budget.

### Compact & Powerful

The convenient 4RU package can host up to 16 hot-swappable modules to address the full range of functionalities required to deliver video over coax or IP networks including receiving, de-scrambling, encoding, multiplexing, re-scrambling and modulating a transport stream over QAM, OFDM or IP. For smaller scale deployments, a 1 RU solution with up to 6 hot-swappable modules can be used.

### Reliable & Energy efficient

airScreen tality™ boasts a compact form factor and an energy efficient system design. A built-in service level monitoring and with the optional dual power supply guarantee a non-stop 24/7 operation. Consequently, airScreen tality™ is an environmental, reliable and space saving design to keep your OPEX low for years to come.

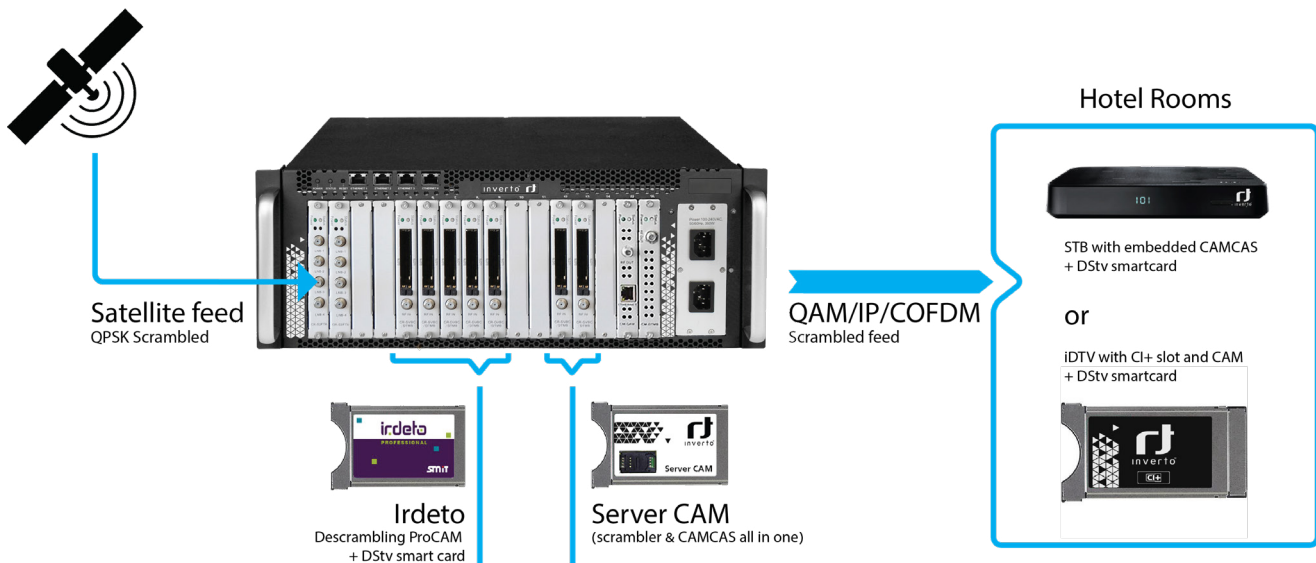
#### Product Features:

- 4RU with up to 16 functional modules
- Service level multiplexing
- SI/PSI analysis and regeneration
- Web-based configuration
- Up to 64 receive frequencies (DVB-C/T/T2/S/S2, 8VSB, DTMB, ISDBT)
- Up to 64 channels HD encoding (via HDMI in inputs)
- Up to 96 channels SD encoding (via CVBS inputs)
- Up to 256 QAM modulated frequency outputs

#### Reliability Features:

- Hot-swappable modules
- Service level monitoring
- Dual redundant power supply (optional)
- Low power consumption and high reliability
- MTBF ≥100,000 hours

## airScreen tality™ solution: case study as applied to DStv Business\* market needs



airScreen tality™ is a perfect choice for MATV/CATV/IPTV systems requiring secure, cost-effective and reliable distribution of video with a simple and easy to use centralized management.

The example illustrated above describes the application of airScreen tality™ to Multichoice's\* DStv Business hospitality TV deployments:

airScreen tality™ receives signals from a DVB-S/S2/S2X source, descrambles the encrypted programs utilizing CI CAMs. The programs are then multiplexed into new streams and QAM modulated over multiple channels. In this specific DStv Business case, they are also re-encrypted in real-time basis using an Inverto exclusive CAMCAS solution that is approved by MultiChoice and its studios and content owners. The output frequencies are then simply delivered via the traditional coaxial cable network or alternatively via an IP network (DVB TS over IP) to the hotel rooms:

### Coax networks:

With re-encryption, the content is displayed using either an HD zapper box or a Conditional Access Module (CI+ CAM) inserted in the TV set to de-scramble the transport stream.

### IP networks:

With re-encryption; the IP output will be sent, as multicast streams, to an IPTV zapper-box with HDMI out to the TV.

When in the clear, video can be streamed over IP (UDP/RTP) to users' PC or mobile devices using supporting player applications. All of this in 4 RU package, saving space and operating costs. On top, airScreen tality™ seamlessly integrates with existing or third-party solutions eg VOD, ad insertion or billing systems to offer a complete solution in a turnkey package (TBD on a case-by-case basis).

### Chassis

- 16 hot-swappable slots
- Dual redundant power supplies
- 4 x Gigabit RJ45 (embedded):
  - MPEG TS over UDP/RTP
  - SPTS/MPTS
- Max. 120 inputs and 120 outputs

### Physical & Environment

Input Voltage	100 VAC ~ 240 VAC
Power	350 W
Chassis dimension (W x H x D)	(480 x 177 x 345) mm
Operating temperature	0°C ~ 50°C
Storage temperature	-10°C ~ 70°C
Operating Humidity	<95%
MTBF	≥100,000 h

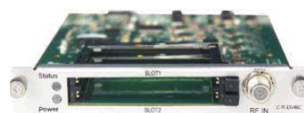
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## Receiver Modules



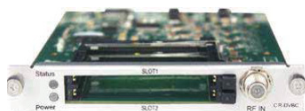
Module	DVB-S/S2/S2x FTA Receiver	DVB-S/S2/S2x FTA Receiver	DVB-T/T2 Receiver
Item	5809	6158	6173
Input	C/Ku Band, 4 channels via 4RF female connectors	C/Ku Band, 8 channels via 4 RF female connectors	4 channels via 1 RF female connector
LNB Power	Independent power supplies for each LNB	Independent power supplies for each LNB	
LNB Voltage	13 V/18 V	13 V/18 V	
LNB Current	Max. 400 mA	Max. 400 mA	
DiSEqC	1.0, 1.1	1.0, 1.1	
CI			2 x PCMCIA CI slots
CAM			Descrambled channel quantity depends on CAM capability, 2 CAMs could be different
CAS			Supports mainstream CAS
Frequency Range	950 MHz ~ 2150 MHz	950 MHz ~ 2150 MHz	47 MHz ~ 862 MHz
Constellation	DVB-S: QPSK DVB-S2: QPSK, 8PSK, 16APSK DVB-S2X: QPSK, 8PSK, 16APSK, 32APSK, 64APSK	DVB-S: QPSK DVB-S2: QPSK, 8PSK, 16APSK DVB-S2X: QPSK, 8PSK, 16APSK, 32APSK, 64APSK	DVB-T: QPSK/16QAM/64QAM DVB-T2: QPSK/16QAM/64QAM /256QAM
FEC	DVB-S: 1/2, 2/3, 3/4, 5/6, 7/8 DVB-S2: 1/2, 3/5, 2/3, 3/4, 4/5, 5/6, 8/9, 9/10 DVB-S2X: 11/15, 7/9, 4/5, 5/6 (Normal FEC FECFRAME)0	DVB-S: 1/2, 2/3, 3/4, 5/6, 7/8 DVB-S2: 1/2, 3/5, 2/3, 3/4, 4/5, 5/6, 8/9, 9/10 DVB-S2X: 11/15, 7/9, 4/5, 5/6 (Normal FEC FECFRAME)0	
FFT size			DVB-T: 2K, 8K DVB-T2: 8K, 16K, 32K
Descrambling	BISS, service level	BISS, service level	
Symbol Rate	DVB-S: 1 Msps ~ 45 Msps DVB-S2: 1 Msps ~ 45 Msps DVB-S2: 1 Msps ~ 34 Msps	DVB-S: 1 Msps ~ 45 Msps DVB-S2: 1 Msps ~ 45 Msps DVB-S2: 1 Msps ~ 34 Msps	
Signal Level	-70 dBm ~ -20 dBm	-70 dBm ~ -20 dBm	-80 MHz ~ -20 dBm
Roll-off Factor	0.15, 0.20, 0.25, 0.35	0.15, 0.20, 0.25, 0.35	
Consumption	Max. 38 W	Max. 70 W	Max. 8 W

## Receiver Modules



Module	DVB-S/S2/S2x with CI Receiver		DVB-C Receiver with CI (Annex A, C, DTMB)	
Item	6275		6403	
Mode			DVB-C	DTMB
Input	C/Ku Band, 4 channels via 2 RF female connectors, CH1 & CH2 via LNB-1, CH3 & CH4 via LNB-2		4 channels via 1 RF female connector	4 channels via 1 RF female connector
QAM mode			Annex A/C	
Modulation mode			TDS-OFDM	
LNB Power	CH1 & CH2 share LNB-1, CH3 & CH4 share LNB-2			
LNB Voltage	13 V/18 V			
LNB Current	Max. 400 mA			
DiSEqC	1.0, 1.1			
CI	2 x PCMCIA CI slots		2 x PCMCIA CI slots	2 x PCMCIA CI slots
CAM	Descrambled channel quantity depends on CAM capability, 2 CAMs could be different		Descrambled channel quantity depends on CAM capability, 2 CAMs could be different	Descrambled channel quantity depends on CAM capability, 2 CAMs could be different
CA System	Supports mainstream CAS		Supports mainstream CAS	
Frequency Range	950 MHz ~ 2150 MHz		47 MHz ~ 862 MHz	47 MHz ~ 862 MHz
Bandwidth			6 MHz/7 MHz/8 MHz	8 MHz
Constellation	DVB-S: QPSK DVB-S2: QPSK, 8PSK, 16APSK DVB-S2X: QPSK, 8PSK, 16APSK, 32APSK, 64APSK		16QAM/32QAM/64QAM/ 128QAM/256QAM	4QAM-NR/4QAM/16QAM/ 32QAM/64QAM
FEC	DVB-S: 1/2, 2/3, 3/4, 5/6, 7/8 DVB-S2: 1/2, 3/5, 2/3, 3/4, 4/5, 5/6, 8/9, 9/10 DVB-S2X: 11/15, 7/9, 4/5, 5/6 (Normal FEC FECFRAME)0			
FFT size				
Descrambling	BISS, service level			
Symbol Rate	DVB-S: 1 Msps ~ 45 Msps DVB-S2: 1 Msps ~ 45 Msps DVB-S2: 1 Msps ~ 34 Msps		3.6 Msps ~ 6.952 Msps	
Signal Level	-70 dBm ~ -20 dBm		40 dBuV ~ 80 dBuV	-65 dBm ~ -25 dBm
Roll-off Factor	0.15, 0.20, 0.25, 0.35			
Consumption	Max. 38 W		Max. 9 W	

## Receiver Modules



Module	DVB-C/ISDB-T Receiver		8VSB Receiver (ATSC)
Item	6558		6559
Mode	DVB-C (Annex B)	ISDB-T	
Input	4 channels via 1 RF female connector	4 channels via 1 RF female connector	4 channels via 4 RF female connector
QAM mode	Annex B		
Modulation mode		TDS-OFDM	8VSB
LNB Power			
LNB Voltage			
LNB Current			
DiSEqC			
CI	2 x PCMCIA CI slots	2 x PCMCIA CI slots	
CAM	Descrambled channel quantity depends on CAM capability, 2 CAMs could be different	Descrambled channel quantity depends on CAM capability, 2 CAMs could be different	
CA System	Supports mainstream CAS		
Frequency Range	47 MHz ~ 862 MHz	177.143 MHz - 863.143 MHz	Off-Air: 57 MHz - 803 MHz STD: 57 MHz - 861 MHz; IRC: 57 MHz - 861 MHz; HRC: 55.75 MHz - 859.75 MHz
Bandwidth	6 MHz	6 MHz/8 MHz	6 MHz
Constellation	64QAM/256QAM	DQPSK, QPSK, 16QAM, 64QAM	
FEC		1/2, 2/3, 3/4, 5/6, 7/8, Automatic	
Symbol Rate	5.057 Msps (64QAM) 5.360 Msps (256QAM)		
Signal Level	40 dBuV ~ 80 dBuV	-80 dBm ~ -20 dBm	-80 dBm ~ -20 dBm
Roll-off Factor			
Consumption	Max. 9 W		Max. 9.5 W

## Encoder Modules



Module	Commercial HDMI Encoder	HDMI Encoder with CVBS input
Item	6157	6315
Input	4 channels via 4 HDMI female connectors (HDMI 1.4)	2 channels via 2 HDMI Female connectors (HDMI1.4) CC via RCA connector
Video/Profile	H.264/AVC HD: MP/HP@L4.2 (1080P) H.264/AVC HD: MP/HP@L3.1(720P) SD: MP/HP@L3.0 (480/576)	H.264 (>1280x): MP/HP@L4.0/4.1/4.2 H.264 (1280x): MP/HP@L3.1/3.2/4.0/4.1/4.2 H.264 (<1280x): MP/HP@L2.2/3.0/3.1/3.2 MPEG-2 SD: MP @ML HD: MP@HL
Resolution	Input: 1080p@25/29.97/30/50/59.94/60 1080i@50/59.94/60 720p@50/59.94/60 720x576i, 720x480i Output: 1080p@29.97/30 720p@50/59.94/60	Input: 1080p@25/29.97/30/50/59.94/60 1080i@50/59.94/60 720p@50/59.94/60 720x576@50i 720x480@60i Output: 1080p@29.97/30 1080i@50/59.94/60 720p@50/59.94/60 720x576@50i/25p 720x480@60i/30p
HDCP	HDCP 1.4	HDCP 1.4
Bitrate Control	CBR	CBR
Video Bitrate	600 Kbps ~ 12 Mbps	800 Kbps ~ 18 Mbps
GOP Structure	IPPP	IBBP, IPPP, IBP, I
GOP Size	1 ~ 60	18 ~ 48
Aspect Ratio	Automatic or Manual	
Audio	MPEG-1 Layer II AC3 (optional) EAC3(optional) AAC (optional)	MPEG-1 Layer II AC3 AAC
Audio Bitrate	MPEG-1 layer II: 32 Kbps - 192 Kbps AAC: 32 Kbps - 192 Kbps AC3: 96 Kbps - 192 Kbps EAC3: 96 Kbps - 192 Kbps	MPEG-1 Layer II: 64 Kbps ~ 384 Kbps MPEG2 AAC: 64 Kbps ~ 384 Kbps MPEG4 AAC: 64 Kbps ~ 384 Kbps AC3: 128 Kbps ~ 384 Kbps
Audio Mode	Stereo (2.0, including downmix)	Stereo (2.0, including downmix)
Audio Sampling Rate	48 kHz	48 kHz
Audio Volume Leveling	-20 dB ~ 20 dB	-20 dB ~ 20 dB
OSD Overlay	Text, image, QR code	
Power consumption	Max. 12 W	Max. 17 W

## Encoder Modules



Module	HDMI Encoder with YPbPr/CC	Professional HDMI Encoder
Item	6371	6419
Input	2 channels via 2 HDMI or 2 component Female connectors (HDMI1.4) CC/Component input via DB15 port	4 channels via 4 HDMI female connectors (HDMI 1.4)
Video/Profile	H.264 (>1280x): MP/HP@L4.0/4.1/4.2 H.264 (1280x): MP/HP@L3.1/3.2/4.0/4.1/4.2 H.264 (<1280x): MP/HP@L3.1/3.2 MPEG-2 SD: MP @ML HD: MP@HL	H.264/AVC HD: MP/HP @L4.0/4.1/4.2/5.0/5.1/5.2 H.265/HEVC HD: MP (High Tier) @L4.0/4.1/4.2/5.0/5.1/5.2
Resolution	Input: 1080p@25/29.97/30/50/59.94/60 1080i@50/59.94/60 720p@50/59.94/60 720x576@50i 720x480@60i Output: 1080p@29.97/30 1080i@50/59.94/60 720p@50/59.94/60 720x576@50i/25p 720x480@60i/30p	Input: 1080i@50/59.94/60 1080P@25/29.97/30/50/59.94/60 720P@50/59.94/60 Output: H.265 (4 channel) output: 1080p@25/29.97/30/50/59.94/60 720p@50/59.94/60 H.264 (4 channel) output: 1080p@29.97/30 720p@50/59.94/60
HDCP	HDCP 1.4	HDCP 1.4
Bitrate Control	CBR	CBR
Video Bitrate	800 Kbps ~ 18 Mbps	600 Kbps ~ 12 Mbps
GOP Structure	IBBP, IPPP, IBP, I	IPPP, IBP
GOP Size	18 ~ 48	
Aspect Ratio		16:9
Audio	MPEG-1 Layer II AC3 AAC	MPEG-1 Layer II AC3 (optional) AAC (optional)
Audio Bitrate	MPEG-1 Layer II: 64 Kbps ~ 384 Kbps MPEG2 AAC: 64 Kbps ~ 384 Kbps MPEG4 AAC: 64 Kbps ~ 384 Kbps AC3: 128 Kbps ~ 384 Kbps	MPEG-1 Layer II: 32 Kbps ~ 192 Kbps AAC: 32 Kbps ~ 192 Kbps AC3: 96 Kbps ~ 192 Kbps
Audio Mode	Stereo (2.0, including downmix)	Stereo
Audio Sampling Rate	48 kHz	48 kHz
Audio Volume Leveling	-20 dB ~ 20 dB	-20 dB ~ 20 dB
OSD Overlay		2*Logo/QR code overlay (40*40 to 256*256) Or 1*static OSD overlay
Power consumption	Max. 17 W	Max. 20 W

## Encoder Modules



Module	Commercial HDMI Encoder	Professional HDMI Encoder
Item	6621	6622
Input	8 channels via 4 HDMI female connectors (HDMI 1.4)	4 channels via 4 HDMI female connectors (HDMI 1.4)
Video/Profile	H.264/AVC MP/HP@L3.1 (720P) H.265/HEVC MP@L3.1 (720P) H.264 MP/HP@L4.2 (1080P) H.265/HEVC MP@L4.1 (1080P)	H.264/AVC MP/HP@4.1 (1080P) H.264/AVC MP/HP3.1 (720P) H.265/HEVC MP@L4.1(1080P) H.265/HEVC MP@L3.1 (720P)
Resolution	Input: 1080p@29.97/30 1080i@29.97/30/50/59.94/60 720p@50/59.94/60,576i50 576p50,480i@59.94/60 480p@59.94/60 Output: 1080p@29.97/30 720p@50/59.94/60 576p50 480p@59.94/60  *Output supports progressive only.	Input: 1080p@29.97/30/50/59.94/60 1080i@29.97/30/50/59.94/60 720p@50/59.94/60 576i50,576p50 480i@59.94/60 Output: 1080p@29.97/30/50/59.94/60 720p@50/59.94/60 576p50 480p@59.94/60  *Output supports progressive only.
HDCP	HDCP 1.4	HDCP 1.4
Bitrate Control	CBR	CBR
Video Bitrate	600 Kbps ~ 10 Mbps	600 Kbps ~ 12 Mbps
GOP Structure	IPPP	IPPP, IBP
GOP Size	1 ~ 60	
Aspect Ratio	Automatic or Manual	16:9
Audio	MPEG-1 Layer II: 32 Kbps ~ 192 Kbps AAC: 32 Kbps ~ 192 Kbps AC3: 96 Kbps ~ 192 Kbps	MPEG-1 Layer II: 32 Kbps ~ 192 Kbps AAC: 32 Kbps ~ 192 Kbps AC3: 96 Kbps ~ 192 Kbps
Audio Bitrate	MPEG-1 layer II: 32 Kbps - 192 Kbps AAC: 32 Kbps - 192 Kbps AC3: 96 Kbps - 192 Kbps EAC3: 96 Kbps - 192 Kbps	32 Kbps ~ 192 Kbps
Audio Mode	Stereo	Stereo
Audio Sampling Rate	48 kHz, auto	48 kHz
Audio Volume Leveling	-20 dB ~ 20 dB	-20 dB ~ 20 dB
OSD Overlay	Rolling Text,Image,QR Code	2*Logo/QR code overlay (40*40 to 256*256) Or 1*static OSD overlay
Power consumption	Max. 21 W	Max. 20 W



## Encoder Modules



Module	Professional CVBS encoding module	Commercial CVBS encoding module
Item	6232	6233
Input	6 channels via 2 DB15 connectors each DB15 for 3 channels 2 x RCA-DB15 adaptor cables come along with module	8 channels via 4 HDMI female connectors (HDMI 1.4)
Video/Profile	H.264/AVC SD: MP/HP@L3.0/3.1/3.2 MPEG-2 SD: MP@ML)	H.264/AVC SD: MP/HP@L3.0
Resolution	SD: 576i50, 480i59.94	SD: 576i50, 480i59.94.
Bitrate Control	CBR, VBR	CBR
Video Bitrate	600 Kbps ~ 12 Mbps	600 Kbps ~ 6 Mbps
GOP Structure	IBBP, IPPP, IBP	IPPP
GOP Size	15	1 ~ 60
Aspect Ratio	Automatic or Manual	16x9(SD) 4X3(SD)
Audio	MPEG-1 Layer II	MPEG-1 Layer II
Audio Bitrate	64 Kbps ~ 384 Kbps	32 Kbps ~ 192 Kbps
Audio Mode	Stereo (2.0, including downmix)	Stereo (2.0, including downmix)
Audio Sampling Rate	48 kHz	48 kHz
Audio Volume Leveling	0 dB ~ 8 dB	-20 dB ~ 20 dB
OSD Overlay		Text, Image, QR Code
Power consumption	Max. 17 W	Max. 28 W

## Encoder Modules



Module	<b>SDI encoding module</b>
Item	6366
Input	2 channels via 2 SDI SDI via BNC connector
Video/Profile	H.264 (1080p/i): MP/HP@L4.0/4.1/4.2 H.264 (720p): MP/HP@L3.1/3.2/4.0/4.1/4.2 H.264 (576i/p; 480i/p): MP/HP@L2.2/3.0/3.1/3.2 MPEG-2 SD: MP@ML MPEG-2 HD: MP@HL
Resolution	Input: 1080p@25/29.97/30/50/59.94/60 1080i@50/59.94 /60 720p@50/59.94/60 720x576@50i 720x480@60i Output: 1080p@29.97/30 1080i@50/59.94/60 720p@50/59.94/60 720x576@50i/25p 720x480@60i/30p
Bitrate Control	CBR
Video Bitrate	800 Kbps ~ 20 Mbps
GOP Structure	IBBP, IPPP, IBP, I
GOP Size	15 ~ 48
Audio	MPEG-1 Layer II AAC AC3 AC3_Passthrough
Audio Bitrate	MPEG-1 layer II: 64 Kbps ~ 384 Kbps AC3: 128 Kbps ~ 384 Kbps MPEG4 AAC: 16 Kbps ~ 384 Kbps MPEG2 AAC: 64 Kbps ~ 384 Kbps
Audio Mode	Stereo (2.0, including downmix)
Audio Sampling Rate	48 kHz
Audio Volume Leveling	-20 dB ~ 20 dB
Power consumption	Max. 16 W

## Decoding Module



Module	<b>SDI decoding module</b>
Item	6607
Input	4xSDI,BNC female connector, 75Ω
Video/Profile	MPEG-2 SD MP@ML MPEG-2 HD MP@ML H.264 SD MP@L3/L3.1 H.264 HD MP@L4.1/HP@L4.1 H.265 Main/Main 10 profile@L5.1 High-tier AVS-P 16(AVS+) AVS2 P2 10-bit profile @Level 8.2.60
Resolution	Automatic/Manual mode (with manual mode resolution): 720x576i@25 720x480i@29.97 1280x720p@50/59.94/60 1920x1080i@25/29.97/30 1920x1080p@25/30/50/ 59.94/60
Bit depth	4:2:0 8 bit
Downscale	4K to HD/SD resolution HD to SD resolution
Aspect ratio	16:9 4:3
Audio process	*supports dual audio decoding of single channel (future option)
Audio	Mpeg-I Layer II Dolby Digital/AC-3(optional) Dolby Digital Plus/E-AC3(optional) AAC-LC/HE-AACV1/HE-AACV2(optional)
Audio Mode	Stereo
Audio volume control	0 ~ 100%
Audio sampling rate	48 kHz 44.1 kHz
Closed captions	*Closed Caption(CEA/EIA-608/708)(Future option)
Power consumption	Max. 25 W

## CI Scrambler/Descrambler Module



Module	<b>CI Scrambler/Descrambler</b>
Item	6172
Standard	EN 50221
Interface	2 PCMCIA CI slots
CAM Scrambling	Support Xcrypt CAMCAS
CAM Descrambling	Supports mainstream CAS Descrambled channel quantity depends on CAM capability, 2CAMs could be different
Power Consumption	Max. 6 W

## Modulation Modules



Module	<b>QAMA Modulation</b>	<b>OFDM Modulation</b>	<b>QAMA Modulation</b>	<b>OFDM Modulation</b>
Item	6617		6612	
Output	8 frequencies via 1 RF female connector 75 Ω		16 frequencies via 1 RF female connector 75 Ω	
Standard	ITU-T J.83 Annex A/C	ETSI EN 300744	ITU-T J.83 Annex A/C	ETSI EN 300744
Frequency Range	47 MHz ~ 862 MHz, non adjacent			
Bandwidth	6/7/8 MHz			
Constellation	16QAM / 32QAM / 64QAM / 128QAM / 256QAM	QPSK / 16QAM / 64QAM	16QAM / 32QAM / 64QAM / 128QAM / 256QAM	QPSK / 16QAM / 64QAM
Guard Interval	1/4, 1/8, 1/16, 1/32		1/4, 1/8, 1/16, 1/32	
FFT Size	2k		2k	
Code Rates	1/2, 2/3, 3/4, 5/6, 7/8		1/2, 2/3, 3/4, 5/6, 7/8	
Symbol Rate	6M: 4.035 ~ 5.217 Mbaud 7M: 4.035 ~ 6.087 Mbaud 8M: 4.035 ~ 6.956 Mbaud		6M: 4.035 ~ 5.217 Mbaud 7M: 4.035 ~ 6.087 Mbaud 8M: 4.035 ~ 6.956 Mbaud	
Output Level	Max. 105 dBμV	Max. 102 dBμV	Max. 105 dBμV	Max. 102 dBμV
MER	≥40 dB (all RF channel enabled)	≥32 dB (all RF channel enabled)	≥38 dB (all RF channel enabled)	≥32 dB (all RF channel enabled)
Consumption	Max. 23 W			

## Modulation Modules



Module	<b>OFDM Modulation</b>
Item	6370
Output	4 frequencies via 1 RF female connector 75 $\Omega$
Standard	ETSI EN 300744
Frequency Range	47 MHz ~ 862 MHz
Bandwidth	6/7/8 MHz
Constellation	QPSK/16QAM/64QAM
Guard Interval	1/4, 1/8, 1/16, 1/32
FFT Size	2K
Code Rates	1/2, 2/3, 3/4, 5/6, 7/8
Output Level	Max. 105 dB $\mu$ V
MER	$\geq 32$ dB (all RF channel enabled)
Consumption	Max. 12 W

## Modulation Modules



Module	QAMB Modulation		ISDBT Modulation	
Item	6616	6611	6615	6610
Output	8 frequencies via 1 RF female connector 75 Ω	16 frequencies via 1 RF female connector 75 Ω	8 frequencies via 1 RF female connector 75 Ω	16 frequencies via 1 RF female connector 75 Ω
Standard	ITU-T J.83 Annex B		ARIB STD-B31	
Frequency Range	47 MHz ~ 862 MHz (STD/IRC/HRC), non adjacent		47 MHz ~ 862 MHz, non adjacent	
Bandwidth	6 MHz		6 MHz	
Constellation	64QAM / 256QAM		QPSK / 16QAM / 64QAM	
Guard Interval			1/4, 1/8, 1/16, 1/32	
Transmission Mode			2k	
Code Rates			1/2, 2/3, 3/4, 5/6, 7/8	
Symbol Rate	5.057 MBaud: 64QAM 5.361 MBaud: 256QAM			
Output Level	Max. 105 dBμV	Max. 102 dBμV	Max. 105 dBμV	Max. 102 dBμV
MER	≥40 dB (all RF channel enabled)	≥38 dB (all RF channel enabled)	≥32 dB (all RF channel enabled)	≥32 dB (all RF channel enabled)
Consumption	Max. 23 W			

## Modulation Modules



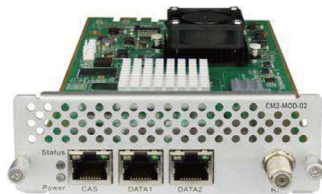
Module	8VSB Modulation		DTMB Modulation	
Item	6614	6609	6613	6608
Output	8 frequencies via 1 RF female connector 75 Ω	16 frequencies via 1 RF female connector 75 Ω	8 frequencies via 1 RF female connector 75 Ω	16 frequencies via 1 RF female connector 75 Ω
Standard	ATSC A/35		DTMB GB20600-2006	
Frequency Range	50 MHz ~ 860 MHz (Off-Air/STD/IRC/HRC)		48 MHz ~ 862 MHz, non adjacent	
Bandwidth	6 MHz			
Constellation	8VSB		4QAM / 16QAM / 32QAM / 64QAM	
Output Level	Max. 105 dBμV	Max. 102 dBμV	Max. 105 dBμV	Max. 102 dBμV
MER	≥32 dB (all RF channel enabled)		≥32 dB	
Consumption	Max. 19 W			

## Modulation Modules



Module	8VSB Modulation	ISDBT Modulation	QAMB Modulation	QAMA/C Modulation
Item	6551	6553	6555	6556
Output	4 frequencies via 1 RF female connector 75 Ω	4 frequencies via 1 RF female connector 75 Ω	4 frequencies via 1 RF female connector 75 Ω	4 frequencies via 1 RF female connector 75 Ω
Standard	ATSC A/35	ARIB STD-B31	ITU-T J.83 Annex B	ITU-T J.83 Annex A/C
Frequency Range	50 MHz ~ 860 MHz (Off-Air/STD/IRC/HRC)	47 MHz ~ 862 MHz	47 MHz ~ 862 MHz (STD/IRC/HRC)	47 MHz ~ 862 MHz
Bandwidth	6 MHz	6 MHz	6 MHz	6/7/8 MHz
Constellation	8VSB	QPSK / 16QAM / 64QAM	64QAM / 256QAM	16QAM / 32QAM / 64QAM / 128QAM / 256QAM
Guard Interval		1/4, 1/8, 1/16, 1/32		
Hierarchy Mode		Layer A		
Segment Mode		Full Seg		
Transmission Mode		2K		
RS Code		RS(204.188)		
FEC		1/2, 2/3, 3/4, 5/6, 7/8		
Symbol Rate			5.057 Mbaud (64QAM) 5.361 Mbaud (256QAM)	4.035 Mbaud ~ 6.9 Mbaud
Output Level	Max. 105 dBμV	Max. 105 dBμV	Max. 105 dBμV	Max. 105 dBμV
MER	≥32 dB (all RF channel enabled)	≥32 dB (all RF channel enabled)	≥40 dB (all RF channel enabled)	
Consumption	Max. 12 W	Max. 12 W	Max. 12 W	Max. 12 W

## Modulation Modules



Module	IPQAM Modulation	IPQAM Modulation	IPQAM Modulation	IPQAM Modulation
Item	6438	6469	6620	6619
<b>IPQAM</b>				
IP Input	2x100 Mbps / 1000 Mbps ports			
IP Encapsulation	MPEG TS over UDP/RTP			
MPEG TS	MPTS and SPTS			
I/O Processing	Up to 512 channels either via 2x GbE input			
Max. TS rate	1.6 Gbps			
Addressing	Unicast and multicast			
IGMP Version	IGMP v1, IGMP v2, IGMP v3			
<b>QAM Output</b>				
Output (1x RF port)	Max. 16 agile channels	Max. 32 agile channels	Max. 16 agile channels	Max. 32 agile channels
Standard	ITU-T J.83 Annex A/C		ITU-T J.83 Annex B	
QAM constellation <small>(Configurable for each frequency)</small>	Annex A: 6QAM / 32QAM / 128QAM / 256QAM / 256QAM		Annex B: 64 / 256QAM	
Symbol Rate	QAMA: 4.035 Mbaud ~ 6.956 Mbaud		QAMB: 5.057 Mbaud(64QAM), 5.361 Mbaud (256QAM)	
Output Level	Max. 105 dBuV			
Frequency Range	Annex A: 47 MHz ~ 999 MHz		Annex B: 47 MHz ~ 999 MHz (STD/IRC/HRC)	
Bandwidth	Annex A: 6/7/8 MHz		Annex B: 6 MHz	
MER	≥43 dB (all RF channel enabled)			
PCR Correction	Support			
<b>Multiplexing</b>				
Table Supported	SI/PSI			
PID Processing	Pass-through, remapping, filtering			
EIT Processing	Pass-through			
<b>Scrambling</b>				
Interface	1x 100 Mbps/1000 Mbps port			
Scrambling Algorithm	CSA			
SCS	Internal			
CAS Connection	Up to 4 different CA systems			
EMM Bitrate	Support major CA systems			
Consumption	Max. 40 W			



## Multi Protocol Module



Module	Multi Protocol
Item	6549
Network	3x RJ45 ports, 100/1000M
Input Protocols	UDP/RTP/SRT/RIST/Zixi/HLS *RTMP/RTMPS (future option)
Output Protocols	UDP/RTP/SRT/RIST/Zixi/RTMP *RTMPS (future option)
Processing Capability for typical Applications	HLS to UDP – up to 20 input streams, max. 150 Mbps (total bitrate) SRT to UDP – up to 20 input streams, max. 150 Mbps (total bitrate) UDP to SRT – up to 20 streams, max. 150 Mbps (total bitrate)
Number of Gateways	Default: 10 gateways, UDP/RTP/HLS input, UDP/RTP output  Notice: Additional licenses are required to support more gateways and network protocols
Consumption	Max. 12 W
*HDMI/USB: Only for module debugging function use, not for input/output	

## Processing Module



Module	EAS Processing
Item	6557
Input	Digital EAS input (SCTE-18) via 1 × RJ45 port Analogue EAS input via 3PIN contact closure CVBS input via 1 × RCA connector Audio L/R input via 2 × RCA connector TS input via 1 × BNC connector
Video	H.264 SD: MP/HP@L3.0 MPEG-2 SD: MP @ML (By default)
Resolution	SD: 480i59.94
ASI	500 Kbps ~ 100 Mbps
Contact Closure	3 PIN connector with dry contact or 5 VDC ~ 24 VDC input for EAS trigger
RJ45	10/100M Ethernet for SCTE-18 digital EAS input
Bitrate Control	CBR
Bitrate	1500 Kbps ~ 20000 Kbps
GOP Structure	IBBP, IPPP, IBP
GOP Size	6 ~ 63
Audio	MPEG-1 Layer II, AC3, AAC
Audio Mode	Stereo (2.0, including downmix)
Sampling Rate	48 kHz
Consumption	Max. 5 W

## Multiplexer Modules



Module	<b>ASI Multiplexer</b>
Item	6367
Connector	5x ASI port, BNC female
Bit Rate	500 Kbps ~ 150 Mbps
Reception/ Transmission Mode	Byte mode (Continuous mode)
Packet Length	188 Bytes or 204 Bytes
Working Mode	3 ASI input ports, 2 ASI output ports by default, output port
Multiplexing	Support PSI/SI or PSIP table regeneration External PID insertion
Consumption	Max. 8 W



Module	<b>EIT Multiplexing</b>
Item	6414
Input	DVB-S/S2/S2X/T/T2/C/ISDB-T/ DTMB/IP
Output	QAM/OFDM/ISDB-T/DTMB/IP
Standard	DVB standard
Processing Capability	32 TS stream input, 16 TS stream output Up to 100 services depending on the EIT complexity of signal source
EIT Enable/Disable Control	Module Level, TS Level, Service Level
Supported EIT Module in Each Chassis	1
Consumption	Max. 5 W

## Multiplexer Modules



Module	<b>IP Multiplexing</b>
Item	6602
Ethernet	2x RJ45, 100/1000Base-T
Input	UDP/RTP via Unicast/Multicast
Output	UDP/RTP via Unicast/Multicast
Channels	DATA 1: 128 input & output DATA 2: 120 input & output
Effective Bitrate	Maximum 700 Mbps (Single input or output) Maximum 420 Mbps (Simultaneous input and output)
IGMP Version	IGMP v1, IGMP v2, IGMP v3
Consumption	Max. 9 W

## Transcoder Module



Module	<b>Transcoding</b>
Item	6402
Network	2x RJ45 ports, 100/1000M auto-negotiation
Network Protocol	UDP, RTP,unicast,multicast
<b>Audio</b>	
Input Audio Format	Mpeg-1 Layer I, AAC, AAC-LC, AC-3, E-AC3, HE-AACV1, HE-AACV2
Output Audio format	none, pass-through, AAC-LC,AAC-MAIN, MPEG1/L2, AC-3, optional
Output Audio bitrate	32 Kbps ~ 384 Kbps
Audio Process	Up to 4 audio pairs
<b>Video</b>	
Input Video Format	MPEG-2 SD MP@ML MPEG-2 HD MP@ML H.264 SD High@L2.2 / 3.0 / 3.1 / 3.2 / 4.0 / 4.1 / 4.2 / 5.0 / 5.1 / 5.2 H.264 SD Main@L2.2 / 3.0 / 3.1 / 3.2 / 4.0 / 4.1 / 4.2 / 5.0 / 5.1 / 5.2 H264 HD High/Main@L2.2 / 3.0 / 3.1 / 3.2 / 4.0 / 4.1 / 4.2 / 5.0 / 5.1 / 5.2 H.265 HD Main@4.0 / 4.1 / 4.2 / 5.0 / 5.1 / 5.2 AVS+
Input Video Resolution	720x576i25, 720x480i29.97, 1280x720P50/60, 1920x1080i25/29.97/30, 1920*1080P25/30/50/59.94/60
Input Video Bitrate	1 Mbps ~ 40 Mbps
Output Video Format	MPEG-2 SD MP@ML MPEG-2 HD MP@ML H.264 HD High@L4.0,SD Main@L3.0 H.265 HD Main@L4.0,SD Main@L3.1 AVS+ (optional)
Output Video Resolution	Automatic/Manual modes (with manual mode resolution): 1920x1080P25/29.97/30/50/59.94/60 1920x1080i25/29.97/30/50 1280x720P25/29.97/30/50/59.94/60 1280x720i25/29.97/30/50 720x576P25/29.97/30/50/59.94/60 720x576i25/29.97/30/50 720x480P25/29.97/30/50/59.94/60 720x480i25/29.97/30/50
Output Video Bitrate	1 Mbps ~ 20 Mbps
Downscale	HD to SD resolution
Closed Captions	CEA/EIA-608/708
Power Consumption	Max. 56 W

## airScreen tality™ 4 RU modules and references:

Item	Description	Model
<b>Chassis</b>		
6174	airScreen tality™ Professional Hospitality Video Headend Chassis with dual PSU	IDLA-CHASO2-4RU00-OPW
<b>Receiver Modules</b>		
5809	airScreen tality™ Module DVB-S/S2/S2X FTA Receiver 4 Ch with DiSEqC	IDLA-RDVBS1-S2F4C-OPW
6158	airScreen tality™ Module DVB-S/S2/S2X FTA Receiver 8 Ch with DiSEqC	IDLA-RDVBS3-S2F8C-APW
6173	airScreen tality™ Module DVB-T/T2 Receiver	IDLA-RDVBT2-T2000-OPW
6275	airScreen tality™ Module DVB-S/S2/S2X with CI Receiver	IDLA-MDVBO1-SXCIR-OPW
6403	airScreen tality™ Module DVB-C Receiver with CI (Annex A, C, DTMB)	IDLA-MRECO1-YPBPR-OPW
6558	airScreen tality™ Module DVB-C/ISDB-T Receiver	IDLA-MRECO1-DVBIS-OPW
6559	airScreen tality™ Module 8VSB Receiver (ATSC) 4 Ch	IDLA-MR8VS1-RATSC-OPW
<b>Encoder Modules</b>		
6157	airScreen tality™ Module Commercial HDMI Encoder, H.264 HD/SD, MPEG1L2, 4 Ch (Hisilicon chip)	IDLA-EHDMI2-O0004-OPW
6232	airScreen tality™ Module Professional CVBS Encoder, H.264/MPEG-2 SD, MPEG1L2, 6 Ch (Socionext chip)	IDLA-ECVBS2-O6COO-APW
6233	airScreen tality™ Module Commercial CVBS Encoder, H.264, MPEG1L2, 8 Ch (Hisilicon chip)	IDLA-ECVBS2-O8COO-APW
6315	airScreen tality™ Module HDMI Encoder with CVBS input, H.264/MPEG-2 HD/SD, MPEG1L, 2 Ch (ViXS chip)	IDLA-EHDMI3-OCVBS-OPW
6366	airScreen tality™ Module SDI Encoder, H.264/MPEG-2 HD/SD, MPEG1L, 2 Ch	IDLA-ESDIO2-2COOO-OPW
6371	airScreen tality™ Module HDMI Encoder with YPbPr/CC, H.264/MPEG-2 HD/SD, MPEG1L, 2 Ch (ViXS chip)	IDLA-MENCO1-YPBPR-OPW
6419	airScreen tality™ Module Professional HDMI Encoder, H.264/H.265 HD, MPEG1L2, 4 Ch	IDLA-EHDMI4-O0000-OPW
6621	airScreen tality™ Module HDMI Encoder H.264/H.265 HD/SD, MPEG1L2, 8 Ch (Hisilicon chip)	IDLA-MHENO1-O008C-OPW
6622	airScreen tality™ Module HDMI Encoder H.264/H.265 HD/SD, MPEG1L2, 4 Ch (Hisilicon chip)	IDLA-MHENO1-O004C-OPW
<b>Decoder Module</b>		
6607	airScreen tality™ Module SDI H.265/H.264/MPEG-2 HD/SD Decoder 4 Ch	IDLA-MSDIO1-O0000-OPW
<b>CI Scrambler/Descrambler Module</b>		
6172	airScreen tality™ Module CI Scrambler/Descrambler	IDLA-SCAMO2-O0000-OPW
<b>Modulation Modules</b>		
6370	airScreen tality™ Module OFDM Modulation 4 Ch	IDLA-MFDMO1-004CH-OPW
6438	airScreen tality™ Module IPQAM Modulator Annex A/C 16 QAM Ch agile with built-in DVB CAS Scrambler	IDLA-MIPQO1-16CSC-OPW
6469	airScreen tality™ Module IPQAM Modulator Annex A/C 32 QAM Ch agile with built-in DVB CAS Scrambler	IDLA-MIPQO1-32CSC-OPW
6551	airScreen tality™ Module 8VSB (ATSC) modulator 4 Ch	IDLA-MMVSB1-00AT4-OPW
6553	airScreen tality™ Module ISDBT modulator 4 Ch	IDLA-MMISD1-O0004-OPW
6555	airScreen tality™ Module QAM Modulation Annex B 4 Ch	IDLA-MMQAM1-O0OB4-OPW
6556	airScreen tality™ Module QAM Modulation Annex A/C 4 Ch	IDLA-MMQAM1-O0AC4-OPW

Depending on configuration and expansion stages, licenses may be required

## airScreen tality™ 4 RU modules and references

Item	Description	Model
6608	airScreen tality™ Module DTMB Modulation 16 Ch Agile	IDLA-MDTMO1-OO16C-OPW
6609	airScreen tality™ Module 8VSB Modulation 16 Ch Agile	IDLA-M8VSO1-OO16C-OPW
6610	airScreen tality™ Module ISDBT Modulation 16 Ch Agile	IDLA-MISDO1-OO16C-OPW
6611	airScreen tality™ Module QAM Modulation Annex B 16 Ch Agile	IDLA-MQAMO1-OB16C-OPW
6612	airScreen tality™ Module QAM Modulation Annex A/C or OFDM 16 Ch Agile	IDLA-MQAMO1-AC16C-OPW
6613	airScreen tality™ Module DTMB Modulation 8 Ch Agile	IDLA-MDTMO1-OOO8C-OPW
6614	airScreen tality™ Module 8VSB Modulation 8 Ch Agile	IDLA-M8VSO1-OOO8C-OPW
6615	airScreen tality™ Module ISDBT Modulation 8 Ch Agile	IDLA-MISDO1-OOO8C-OPW
6616	airScreen tality™ Module QAM Modulation Annex B 8 Ch Agile	IDLA-MQAMO1-OOB8C-OPW
6617	airScreen tality™ Module QAM Modulation Annex A/C or OFDM 8 Ch Agile	IDLA-MQAMO1-OAC8C-OPW
6619	airScreen tality™ Module IPQAM Modulator Annex B 32 QAM Ch agile with built-in DVB CAS Scrambler (optional )	IDLA-MIPQO1-OB32Q-OPW
6620	airScreen tality™ Module IPQAM Modulator Annex B 16 QAM Ch agile with built-in DVB CAS Scrambler (optional)	IDLA-MIPQO1-OB16Q-OPW
<b>Processing Modules</b>		
6557	airScreen tality™ Module EAS Processing	IDLA-MPEAS1-OOOOO-OPW
<b>Multiplexer Module</b>		
6367	airScreen Tality™ Module 5-Port ASI Multiplexer	IDLA-MULTO-5PASI-OPW
6414	airScreen tality™ EIT multiplexing module, 32 x TS inputs and 16 x TS outputs	IDLA-MULTO-EIT32-OPW
6602	airScreen tality™ Module IP multiplexing with 2*GbE RJ45 ports, up to 120 IP stream IN/OUT on both ports, UDP/RTP Multicast/Unicast	IDLA-MMLXO1-2G50G-OPW
<b>Multi-Protocol Module</b>		
6549	airScreen tality™ IPTV gateway module with HLS input and UDP protocols	IDLA-MGIPT1-OOOOO-OPW
<b>Transcoder Module</b>		
6402	airScreen tality™ Module Transcoder MPEG2/H.264/H.265	IDLA-MTRNO1-OOOOO-OPW

Depending on configuration and expansion stages, licenses may be required

For purpose of brevity, some product descriptions in this sheet remain at platform level and may not be referred to as detailed datasheets of the products. Inverto Digital Labs reserves the right to amend, omit or add products, product-lines, and / or features without notice.

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