TT1220 MPEG-2/DVB (4:2:0)
Professional Single Channel Receiver

The TT1220 receiver is a highly popular professional receiver for MPEG-2 4:2:0MP@ML applications.

Business Benefits

Cost Effective Solution
- The TT1220 is designed to be shipped in large volume, offering an unmatched price/performance in the professional receiver market.

Secure Transmission
- The TT1220 can be delivered with TANDBERG Director, NDS VideoGuard and Common Interface, which mean that it is compliant with all major CA systems.

Professional Monitoring
- With a selection of input interfaces and simple TS measurement, the TT1220 is ideal for the monitoring of Satellite networks.

Single Service Descrambler
- Equipped with either SDI or/and ASI output delivering a descrambled feed, the TT1220 will meet the need as a single channel descrambler.

Application

Cable Head-End

Capable of receiving digital feeds from Satellite links, Terrestrial compression centres or a main cable head-end, the TT1220 is a professional product with a wide range of interfaces and functionality ideal for the Cable Market.

The TT1220 is capable of descrambling one selected service and delivering it as an ASI output. A complete ASI service can be achieved by cascading several receivers.

A major function of a professional IRD at an analogue cable head-end is to provide excellent analogue audio and video signals. The TT1220 achieves this with its ability to handle all major composite formats including PAL, NTSC and SECAM.

Satellite Distribution & Contribution Application

The TT1220 can be used as a satellite receiver at receive sites and also for the monitoring of content delivery. The receiver supports a wide range of DVB open standards and proprietary scrambling systems making it well suited to operate in a large number of different satellite distribution systems.

The TT1220 can also be utilised in a highly secure TANDBERG Director network management and receiver control system. This system enables the operator to accurately control who receives their output and using the over air control facilities ensures that receivers are correctly tuned and their content scheduled. Again this removes the necessity for remote sites to be manned at all times.

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Base units

Transport Stream Input Options

The TT1220 can be selected to have either a QPSK or ASI Front-End Interface to make it suitable for a range of different applications. The ASI input accepts a DVB-ASI compliant signal (188 or 204 byte), at a maximum of 60 Mbit/s. The QPSK input interfaces directly to Low-Noise Block (LNB) and accepts an intermediate frequency input in the 950 – 2150 MHz (L-band) range. The unit can provide DC power, as well as a 22 kHz control signal.

Conditional Access

The TT1220 is integrated with all the major CA vendors and can handle the following systems:

TANDBERG Director	(Smart Card)
NDS VideoGuard BSkyB Version	(Smart Card)
DVB Common Interface	(Conditional Access Module)
BISS (Mode 0 and 1)	(Embedded)

Output Formats

One DVB-ASI BNC may be available on the unit depending on the chosen configuration. This provides a transport stream output with a maximum rate of 60Mbit/s. The selected service can be transmitted in the clear enabling the TT1220 to operate as a single channel descrambler.'

Two BNC composite analogue video outputs are present on the rear of the unit. If the factory fitted option of a SDI video output is present, it replaces one of the composite outputs.

One analogue stereo audio pair carried on a 9-pin D-SUB connector, is available. Depending on the input, it is menu configurable to allow one stereo, a dual-mono or two independent mono channels. The channels can carry different languages.

RS-232 asynchronous low speed data output carried on a 9-way D-sub connector, available on all models. The data output rate is configurable from 1200 bit/s to 115200 bit/s.

Control

The TT1220 is designed for unattended operation. Once set up, it requires no further attention except to ensure that the fan is working. There are three control modes associated with the receiver, local (keypad), remote (RS-232), and over the air control.

The Units

Common Interface: ASI input, ASI output	(TT1220/BAS/ASI/CI3)
Common Interface: ASI input, ASI output, extra audio, SDI	(TT1220/BAS/ASI/CI2)
Common Interface: QPSK input	(TT1220/BAS/QPSK/CI)
Common Interface: QPSK input, Russian SECAM	(TT1220/BAS/QPSK/CI2)
Common Interface: QPSK in, ASI out, extra audio, Russian SECAM	(TT1220/BAS/QPSK/RS)
Common Interface: QPSK input, ASI output, extra audio	(TT1220/BAS/QPSK/CI6)
TANDBERG Director CA: ASI input, ASI output, extra audio, 4 relay	(TT1220/BAS/ASI/NDS2)
TANDBERG Director CA: QPSK input, 4 relay	(TT1220/BAS/QPSK/NDS1)
TANDBERG Director CA: QPSK input, extra audio, 4 relay	(TT1220/BAS/QPSK/NDS2)
TANDBERG Director CA: QPSK input, ASI output, 4 relay	(TT1220/BAS/QPSK/NDS5)
TANDBERG Director CA: QPSK input, ASI output, 4 relay, SDI	(TT1220/BAS/QPSK/NDS6)
NDS BSkyB CA: ASI input, ASI out, extra audio	(TT1220/BAS/ASI/BSKYB1)
NDS BSkyB CA: ASI input, ASI out, extra audio, SDI	(TT1220/BAS/ASI/BSKYB2)
NDS BSkyB CA: QPSK input, 4 relay	(TT1220/BAS/QPSK/BSKYB1)
NDS BSkyB CA: QPSK input, ASI output, 4 relay	(TT1220/BAS/QPSK/BSKYB2)
NDS BSkyB CA: QPSK input, ASI output, 4 relay, SDI	(TT1220/BAS/QPSK/BSKYB3)
NDS BSkyB CA: QPSK input, extra audio, 4 relay, SDI	(TT1220/BAS/QPSK/BSKYB4)

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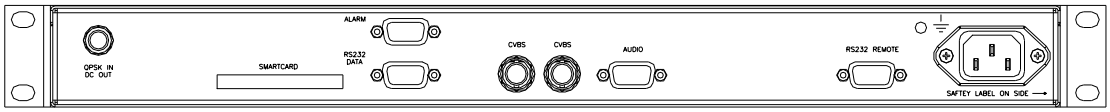
Sample configuration:



INPUTS	**DVB QPSK input**	
	Connector:	F-type (female), 75 ohm
	Frequency range:	950-2150MHz
	Symbol rates:	1-45 Mbaud/s
	LNC power:	13V, 18V or off
	22KHz tone	On/off
	Spectral inversion:	Normal/inverted
	DVB ASI input	
	Connector:	BNC (female), 50 ohm
	Sustained TS data rate:	60Mbps
	Maximum burst time:	370μs at 216 Mbit/s

OUTPUTS

Analogue Video Output
Connectors: 2 x BNC (female)
- PAL
- NTSC
- SECAM
- Russian SECAM (Optional)

Digital Video Output
Connector: 1xBNC (female) 75ohm
- Replaces one of the analogue video outputs
- EDH and VBI (VITS only)

Analogue Audio Output
Connectors: 9Dsub, balanced (male)
- One balanced analogue audio pair
- Optionally two balanced audio pairs (MPEG Layer II or Dolby® Pro Logic 2 channel downmix decompression)

Digital Audio Output
Connectors: 9Dsub, unbalanced (male)
- Dolby Digital® (AC-3) (on the two additional audio pairs)
- Serial Digital Audio (S/PDIF)

Audio Pass-Through Output
- Dolby Digital 5.1

Data Output
Connector: 9Dsub, male
- Asynchronous RS232

DVB ASI Output
Connector: BNC (female) 75 ohm
- Sustained transport stream data rate: 60 Mbit/s
- Enable/disable descrambling of selected service

FEATURES

Automatic selection of PAL/SECAM/NTSC

TS Handling
- Complete DVB PSI/SI processing
- PSI/SI disable for non-DVB streams
- ATSC service selection
- Auto selection of language for audio, subtitling and teletext

Flexible VBI handling (Composite)
- Transcoding of DVB teletext (WST), reinserted in PAL and SECAM outputs (VBI)
- Inverted teletext insertion
- Wide Screen Signalling (WSS) and Video Programming System (VPS)
- Test Signal (VITS) generation
- Closed Captioning, V.chip
- GCR
- DIDON

On-screen processing
- NCP fingerprinting (TANDBERG Director™)
- EBU-teletext subtitling
- DVB Subtitling

Flexible CA handling
- DVB Common Interface
  - Conax
  - Irdeto
  - Nagravision
  - CryptoWorks
  - Mediaguard
  - BetaCrypt
- TANDBERG Director
- NDS VideoGuard® BSkyB
- BISS (Mode-1 & E)

Format conversion
- Letterbox handling
- PAN/SCAN
- 14:9 Combination

Over the air software download (TANDBERG Director™)

On site 1 (optionally 4) configurable contact closure alarm relays

CONTROL	Front panel keypad and LCD TDC remote control In Band remote control with NCP (TANDBERG Director)
PHYSICAL AND POWER	**Dimensions:** (W x H x D) 435 x 275 x 44mm (19" x 10.75" x 1RU) **Input Voltage:** 110/240VAC **Cooling:** Integrated fan, units may be stacked on top of each other
ENVIRONMENTAL CONDITIONS	**Operating Temperature:** 0°C to +50°C (without DVB CI module) **Storage Temperature:** -20°C to +60°C **Relative Humidity:** 5 to 95%
COMPLIANCE	CE compliant

Europe, Middle East & Africa +44 (0)23 8048 4666
Americas +1 407 380 7055
Asia +852 2899 7000
Australasia +61 2 9356 8599
www.tandbergtv.com

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