Remote programming & monitoring via internet ipm option

Digital Freesat or Digital Freeview Converted to Freeview in one compact unit Amazing Value and Technology

DVB-T Digital modulators, HDMI in UHF-VHF analogue modulators with stereo options.
Digital sat receivers for free to air
Digital sat receivers with conditional access modules
FM radio tuner remodulator modules
Agile channel convert VHF/UHF DVB-T/T2 Freeview COFDM receiver to PAL Video
Sat, re mux to DVB-T

Specifications subject to change

www.taylorbros.co.uk     www.txsystems.co.uk

37
<table>
<thead>
<tr>
<th>Type</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>TSMP-2000pm</td>
<td>4U 19&quot; Rack base unit (177mm deep) and programmer. With remote monitoring and programming via the internet. PSU 180-265 AC &gt; Includes combiner for ten modules, 20dB test socket. 180-265VAC , max power consumption 115W, 50/60Hz. Power available for LNB's 18VDC 500mA per LNB total 1A.</td>
<td>£426.50</td>
</tr>
<tr>
<td>TSMP-200T</td>
<td>Base unit and programme for two twin modules. Requires PSU 12V 2.5A max.</td>
<td>£210.00</td>
</tr>
<tr>
<td>TSMP-H4TCT</td>
<td>DVB-T Modulator, 4 HDMI inputs, modules can be fitted into a TSMP2000 4U rack. that s a 24&quot; TV programs into digital TV format. Max six modules in TSMP 2000p.</td>
<td>£1,336.00</td>
</tr>
<tr>
<td>TSMP-UTCT</td>
<td>Converts 2 sat DVB/S2 or 2 terrestrial digital DVB-T2 multiplexes into. 2 DVB-T multiplexes. Functions include editing LCN,NIT and TSP. Via LAN connection using a PC.</td>
<td>£429.55</td>
</tr>
<tr>
<td>TSMP-UTCT-CI</td>
<td>As above (TSMP-UTCT) but with 2 x CAM slots.</td>
<td>£590.01</td>
</tr>
<tr>
<td>TSMP-MMQ</td>
<td>TV Modulator module Video in 1V pk –1dB 75%. Audio 500mV rms 10kΩ, adjustable –6dB . Frequency agile, adjacent channel performance, 47-860MHz. Multistandard B/G,D/K,I,M and N. Diff gain typ 5%, Diff phase typ 5 deg. Variable attenuator 10dB. Output level when fitted into base unit 100dBuV. AV in via 15 pin D socket</td>
<td>£113.74</td>
</tr>
<tr>
<td>TSMP-MMTQ</td>
<td>Twin TV Modulator module. Video in 1V pk –1dB 75%. Audio 500mV rms 10kΩ, adjustable –6dB. Frequency agile, adjacent channel performance, 47-860MHz. Multistandard B/G, D/K, I, M and N. Diff gain typ 5%, Diff phase typ 5 deg. Variable attenuator 10dB. Output level when fitted into base unit 100dBuV. AV in via 15 pin D socket</td>
<td>£180.41</td>
</tr>
<tr>
<td>TSMP-MSTQ</td>
<td>Twin TV Stereo Modulator module for B/G Video in 1V pk –1dB 75%. Audio 500mV rms 10kΩ, adjustable –6dB. Frequency agile, adjacent channel performance, 47-860MHz, PAL B/G. Diff gain typ 5%, Diff phase typ 5 deg. Variable attenuator 10dB. Output level when fitted into base unit 100dBuV. AV in via 15 pin D socket</td>
<td>£248.18</td>
</tr>
<tr>
<td>TSMP-MSTQ</td>
<td>Twin TV Stereo Modulator module for B/G Video in 1V pk –1dB 75%. Audio 500mV rms 10kΩ, adjustable –6dB. Frequency agile, adjacent channel performance, 47-860MHz, PAL B/G. Diff gain typ 5%, Diff phase typ 5 deg. Variable attenuator 10dB. Output level when fitted into base unit 100dBuV. AV in via 15 pin D socket</td>
<td>£248.18</td>
</tr>
<tr>
<td>TSMP-PSTI</td>
<td>QPSK Twin Digital Sat Receiver for free to air broadcasts. SKy and Free sat. AV output. Requires modulator LNB control 14-18V, 22kHz. Integrated CAM slot.</td>
<td>£367.64</td>
</tr>
<tr>
<td>TSMP-S2T</td>
<td>QPSK Digital Sat receiver demodulator LNB control 14-18V, 22kHz. DISEqC. With demodulation and remodulation to DVB-T COFDM. Output 90dBuV adjustable. Intergrated CAM slot. Up to 10 TV programs,selected from a sat multiplexes depending on the compression and bandwidth of each TV program and can be processed and modulated on to 88MHz COFDM UHF or VHF channels. Check out FTA programs available on each sat multiplex. Power consumption 12W. Max six modules in TSMP 2000p.</td>
<td>£591.82</td>
</tr>
<tr>
<td>TSMP-PT</td>
<td>Freeview DVB-T COFDM receiver 147-230MHz/470-862MHz. COFDM 2k,8k Video out 1vpk-pk,audio-6 to+6dB. Output connector 15 pin D socket</td>
<td>£225.11</td>
</tr>
<tr>
<td>TSMP-PTT</td>
<td>Twin Freeview DVB-T COFDM receiver 147-230MHz/470-862MHz. COFDM 2k,8k Video out 1vpk-pk,audio-6 to+6dB. Output connector via two 15 pin D sockets.</td>
<td>£251.61</td>
</tr>
<tr>
<td>TSMP-T2C-AVT</td>
<td>Twin Freeview DVB-T COFDM receiver 147-230MHz/470-862MHz. COFDM 2k,8k Video out 1vpk-pk,audio-6 to+6dB. Output connector via two 15 pin D sockets.</td>
<td>£428.59</td>
</tr>
<tr>
<td>TSMP-PTTI</td>
<td>Twin Freeview DVB-T COFDM receiver 147-230MHz/470-862MHz. COFDM 2k,8k Video out 1vpk-pk,audio-6 to+6dB. Output connector via two 15 pin D sockets.</td>
<td>£309.84</td>
</tr>
</tbody>
</table>

TSMP DBP 2m D plug to AV Phono lead £7.65
TSMP DB 2m D plug to BNC Video Phono audio lead £7.65 for 5m leads add £1.90
TSMP DS 2m D plug to scart lead £7.65
TSMP DBPS 2m D plug to AV stereo Phono lead £8.90

See bottom of page 37 for D to D leads
Compact Head End. OH50 range Rack or wall mounted

- Rack mounted head end that can be customized and monitored and controlled via the internet.
- Composite Video Audio modulated to PAL B/G D/K I,L
- DVB-S free to air MPEG 2&4 to PAL B/G D/K I,L M,N with CI interface
- DVB-S /S2 free to air MPEG 2&4 to PAL B/G D/K I,L M,N with CI interface
- DVB-T/C free to air MPEG 2&4 to PAL B/G D/K I,L M,N with CI interface
- DVB-S /S2 free to air MPEG 2&4 to COFDM with CI interface
- DVB-T/C free to air MPEG 2&4 to COFDM with CI interface
- DVB-S /S2 free to air MPEG 2&4 to QAM with CI interface
- Composite Video Audio and SDI modulated to QAM and COFDM

TX SYSTEMS

OH50 Base unit

OH51 Remote Monitoring module

OH41 Programmer £49.00

Freesat to Freeview typically £100 per TV ch

Additional FM input

-20 dB test point

Plug slots for up to 14 twin modules

Local serial interface to configure the OH 51 module

14 Slots

Ethernet interface to control the headend by a Web browser or a management system (SNMP)

Connection for OH41A handset, easy to program

USB update interface (for USB stick)

www.taylorbros.co.uk
**OH88H**

**Twin DVB-S/S2 to COFDM**

- **with CI**
- **Input frequency range**: 950–2150 MHz
- **Input frequency steps**: 1 MHz
- **Input level range**: 47–70 dB_V
- **AFC**: ± 10 MHz
- **Modulation scheme**: QPSK, 8PSK
- **Symbol rate**: 2–45 MS/s
- **FEC inner code**: LDPC (1/2, 3/5, 2/3, 3/4, 4/5, 5/6, 8/9, 9/10)
- **Spectral inversion**: C-Band/KU-Band
- **Output frequency range**: 110–858 MHz
- **Frequency steps**: 1 MHz
- **Stability of output frequency**: ± 30 kHz
- **Output channel bandwidth**: 2 x 8 MHz
- **Output level**: 95–105 dB_V
- **Stability of output level**: ± 1 dB
- **Spurious inside TV channel**: > 50 dB
- **Spurious outside TV channel**: > 50 dB
- **SNR**: ≥ 95 dB
- **MER**: ≥ 105 dB
- **Input frequency range**: 950–2150 MHz
- **Output frequency range**: 110–858 MHz
- **Frequency steps**: 1 MHz
- **Stability of output frequency**: ± 30 kHz
- **Output channel bandwidth**: 2 x 8 MHz
- **Output level**: 95–105 dB_V
- **Stability of output level**: ± 1 dB
- **Spurious inside TV channel**: > 50 dB
- **Spurious outside TV channel**: > 50 dB
- **SNR**: ≥ 95 dB
- **MER**: ≥ 105 dB

**OH892**

**Twin DVB-T/C to COFDM**

- **Input frequency range**: 110–858 MHz
- **Input frequency steps**: 250 kHz
- **Input level range**: 47–90 dB_V
- **Channel bandwidth**: 7/8 MHz
- **COFDM spectral**: 2k and 8k FFT
- **COFDM modulation scheme**: QPSK, 16QAM, 64QAM
- **COFDM guard interval**: 1/32, 1/16, 1/8, 1/4
- **COFDM FEC inner code**: Conv., K=7, G=1/2, 2/3, 3/4, 4/5, 5/6, 7/8
- **QAM modulation scheme**: 16-, 32-, 64-, 128-, 256 QAM
- **QAM symbol rate**: 1–7 MBaud
- **Output frequency range**: 110–858 MHz
- **Frequency steps**: 1 MHz
- **Stability of output frequency**: ± 30 kHz
- **Output channel bandwidth**: 2 x 8 MHz
- **Output level**: 95–105 dB_V
- **Stability of output level**: ± 1 dB
- **Spurious inside TV channel**: > 50 dB
- **Spurious outside TV channel**: > 50 dB
- **SNR**: ≥ 95 dB
- **MER**: ≥ 105 dB
- **Input frequency range**: 110–858 MHz
- **Output frequency range**: 110–858 MHz
- **Frequency steps**: 1 MHz
- **Stability of output frequency**: ± 30 kHz
- **Output channel bandwidth**: 2 x 8 MHz
- **Output level**: 95–105 dB_V
- **Stability of output level**: ± 1 dB
- **Spurious inside TV channel**: > 50 dB
- **Spurious outside TV channel**: > 50 dB
- **SNR**: ≥ 95 dB
- **MER**: ≥ 105 dB

**OH51A**

**Remote Monitoring module. Two OH50 units can be monitored and configured via the internet.**

**OH45**

**DVB-T/T2 ch conveter**

Useful for changing to lower frequencies and consequently lower cable losses.
**MPX-HDMI-AV DVBT**

1080p & 1080i encoding

**HDMI Encoding Section**

<table>
<thead>
<tr>
<th>Encoding</th>
<th>H.264, MPEG-2, 2/3/0/21/4.0</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Input</th>
<th>Output</th>
</tr>
</thead>
<tbody>
<tr>
<td>480i/59.94/59.94</td>
<td>480i/59.94/59.94</td>
</tr>
<tr>
<td>480p/59.94/60</td>
<td>480p/59.94/60</td>
</tr>
<tr>
<td>576i/50i</td>
<td>576i/50i</td>
</tr>
</tbody>
</table>

**Resolution**

- 720p/59.94/59.94/59.94/59.94/59.94
- 1080p/24/30/50/60
- 1080i/24/30/50/60
- 1080i/24/30/50/60

**Aspect Ratio**

- 5:9, 4:3

**Bit rate**

- 1,000 - 10,000 Mbps

**Audio Encoding**

- MPEG2 Layer 2

- Sample rate: 48kHz

- Bit rate: 96, 128, 192, 256, 384 kbps

---

**DVB-T Modulator Section**

- **Standard**: DVB-T COFDM
- **Bandwidth**: 6MHz, 7MHz, 8MHz
- **Constellation**: QPSK, 16QAM, 64QAM
- **Code rate**: 1/2, 2/3, 3/4, 3/5, 7/8
- **Guard Interval**: 1/2, 1/4, 1/2
- **Transmission Mode**: 2K, 8K
- **MER**: 26.8 dB
- **RF frequency**: 156.5 MHz, 0.1 MHz step
- **RF output level**: -47 ± 0 dBm (60-107 dBm), 1 dB step

**System**

- **RF mixer ATT**: 10 dB
- **Management**: Local LCD + control buttons
- **Upgrade**: USB

**General**

- **Power supply**: DC 12V
- **Dimensions**: 180 x 110 x 90 mm
- **Weight**: < 1 kg

**Specifications**

- Crisp Clear HD pictures on large screen TV
- Supplied with HDMI and RCA (Phono) Cables
- 1080p & 1080i encoding
- HDMI or COMPOSITE AV PAL

**MPEG 4 (H264) Encoder**

- **Input**: Video Audio via RCA or HDMI
- **Resolution**: 720p/59.94/59.94/59.94/59.94/59.94
- **Bit rate**: 1,000 - 10,000 Mbps
- **Audio**: MPEG2 Layer 2

---

**For MPEG 2 Encoding see page 40, 44, 47-49**

- HDMI sources sometimes have HDCP
- 1080i video can also be unstable if impulse electrical noise gets into the HDMI lead, a common problem with set top boxes, TV screens and DVRs. Also satellite receiver software updates sometimes require a re boot!
- A simple solution is to fit a remote power reset that can be purchased from B&Q for about £10.00.

---

**Supplied**

- Shipping post office: 3 days £3.90
- UPS next day £9.90 Ex VAT

---

**Prices subject to change without notice. Prices plus VAT**
Control via front panel or PC connected to modulator

Video and Audio MPEG 4 and 2 encoders to IP.
DVB-T COFDM version includes both DVB-T and IP out

Example

Composite Audio Video (PAL).
Into MPEG4 or 2 encoder and then modulated into DVB-T
RF loop through
* MPEG2/4 AVC H.262/H.264 encoding available
* LCN Function
* Modulation QPSK, 16QAM, 64QAM
* COFDM
* FFT mode 2K or 8K
* Channel bandwidth 7-8MHz
* Output level 97dB
* Level adjustment 15dB
* Audio Encoding MPEG1 Layer (1*Stereo or 2*mono)
* MER typ ≥42dB
* Guard intervals 1/4,1/8,1/16,1/32
* Code rate 1/2,2/3,3/4,5/6,7/8
* IP out
* ASI out
* LCD + control buttons
* Remote management Web NMS
* Mains power 100-240V AC
* Operation temperature 0-35 Deg C
* Standard EN300744

Please note, some older or non HD TV sets may need MPEG2 encoding.

All DVB-T modulators on this page also have IP out so as well as distributing on a CATV system for TV sets, the IP out can be connected to a computer network and PC, smartphone or tablets used to receive video and audio. The local area network needs to have the capacity in bandwidth to accommodate the number of TV programmes distributed.

Specificalion and prices subject to change without notice.
Prices excluding VAT

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>MPX AV4 DVB-T AV R</td>
<td>MPEG 4. Quad Encoder, COFDM modulator, rack mounted</td>
<td>£829.84</td>
</tr>
<tr>
<td>MPX AV8 DVB-T AV R</td>
<td>MPEG 4. Eightfold Encoder, COFDM modulator, rack mounted</td>
<td>£1,185.97</td>
</tr>
<tr>
<td>MPX AV4 DVB-T AV R 2</td>
<td>MPEG 2. Quad Encoder, COFDM modulator, rack mounted</td>
<td>£774.00</td>
</tr>
<tr>
<td>MPX AV8 DVB-T AV R 2</td>
<td>MPEG 2. Eightfold Encoder COFDM modulator, rack mounted</td>
<td>£1,034.00</td>
</tr>
</tbody>
</table>
1080p & 1080i encoding

DVB-T COFDM version includes both DVB-T and IP out, systems can be configured to provide all modulated programmes, distributed via coax and via a local area network at the same time.

Embedded Audio Encoding MPEG1 Layer II (1x Stereo or 2 x mono)

Example of MPEG 2 and 4 encoding

MPEG4 or MPEG2 can be configured then modulated into DVB-T.

DVB-T2 is not normally needed on CATV systems due to available bandwidth. A modulator above with 4 HD inputs has the capacity to modulate up to 16 mbit/s per HD TV program.

**Very low latency** when using MPEG 2 encoding, mode1. Example, 1080i@50, Encoding, typical latency utilising maximum available bandwidth (mgbits) 0.17 seconds, 720p@50, 0.086 seconds. This is typical latency using a good quality set top box or TV. MPEG4 encoding can have latency at approximately double of MPEG2. Very useful for time critical applications

**Specifications**

- **Encoding section**
  - Video
  - Encoding: MPEG4 or MPEG4 H.264, see options below
  - Input: HDMI x 4 & x 8 SDI x 4

- **Resolution**:
  - 1920*1080_60i, 1920*1080_50i, 1280*720_60p, 1280*720_50p, 720*480_60i, 720*576_50i
  - Option on request 1920*680_60p, 1920*680_50i

- **Low delay**: Normal, mode 1, mode 2

- **Symbol rate**:
  - J.83A: 5.000~9.000Mbits adjustable
  - J.83B:
    - Constellation: 16/32/64/128/256QAM
    - Bandwidth: 8M
  - J.83C:
    - Constellation: 64QAM/256QAM
    - Bandwidth: 6M
  - J.83D:
    - Constellation: 64QAM/256QAM
    - Bandwidth: 6M

- **Modulation options**

  - **DVB-T**
    - Standard: EN300744
    - Bandwidth: 6M, 7M, 8M
    - Constellation: QPSK, 16QAM, 64QAM
    - Code rate: 1/2, 2/3, 3/4, 5/6, 7/8
    - Guard interval: 1/32, 1/16, 1/8, 1/4
    - Transmission Mode:
      - 2K, 8K
    - MER: ≥42dB
    - RF Frequency: 30 to 960MHz, 1KHz steps
    - RF Out: OFDM DVB-T out
    - RF output level: 77 to 97 dBµV adjustable

  - **DVB-C**
    - Standard: J.83A, J.83B, J.83C
    - MER: ≥42dB
    - RF Frequency: 30 to 960MHz, 1KHz steps
    - RF output level: 77 to 97 dBµV Adjustable

**MPEG 4 (H264) and MPEG 2 (option) (H262) Encoder Modulators**

- **High definition or Standard definition DVB-T encoder. COFDM modulator. 30-860MHZ**

HDMI input is sometimes unable to capture from some copy protected HDMI sources, such as blue ray players, if HDCP encryption is embedded in the video/audio stream, doesn’t normally apply to set top boxes or normal DVD player. HDCP strippers are available from other vendors.

HDMI video, can also be unstable if impulse electrical noise gets into the HDMI lead, this can be due to the HDCP master key going corrupt due to electrical noise, so ensure screened HDMI cables are used and high voltage cables are not installed nearby.

All DVB-T COFDM modulators on this page also come with IP out unless otherwise stated.

**Specification** and prices subject to change without notice.

Prices plus VAT
MPEG 4 (H264) HDMI DVB-T Modulators
Up to 24 HDMI inputs in one, 1 U rack
High definition or Standard definition encoder. DVB-T COFDM modulator. 30-860MHz
Output Includes IP, into standard local area network.
Costs as low as £130.00 per HD/SD TV programme

Specifications

Video MPEG4 H264
Input

<table>
<thead>
<tr>
<th>Input resolutions</th>
<th>Output resolutions</th>
<th>Bit-rate</th>
<th>Rate Control</th>
<th>GOP Structure</th>
</tr>
</thead>
</table>

Audio

<table>
<thead>
<tr>
<th>Audio Gain</th>
<th>Bit-rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-255 Adjustable</td>
<td>64kbps, 128kbps, 192kbps, 224kbps, 256kbps, 320kbps, 384kbps</td>
</tr>
</tbody>
</table>

Multiplexing

<table>
<thead>
<tr>
<th>Maximum PID</th>
<th>PID remapping (automatically or manually)</th>
<th>Maximum simulcrypt CA</th>
</tr>
</thead>
<tbody>
<tr>
<td>180 input per channel</td>
<td>Automatically</td>
<td>automatically</td>
</tr>
</tbody>
</table>

RF output Options

<table>
<thead>
<tr>
<th>RF output level</th>
<th>DVB-C</th>
</tr>
</thead>
<tbody>
<tr>
<td>≥42 dB</td>
<td>GQM</td>
</tr>
<tr>
<td>RF frequency</td>
<td>J.83B</td>
</tr>
<tr>
<td>RF output level</td>
<td>16 non-adjacent carriers output (maximum bandwidth 162MHz)</td>
</tr>
</tbody>
</table>

DVB-T

<table>
<thead>
<tr>
<th>Bandwidth</th>
<th>8MHz</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard</td>
<td>EN300744</td>
</tr>
<tr>
<td>FFT mode</td>
<td>2K, 4K, 8K</td>
</tr>
<tr>
<td>Guard Interval</td>
<td>1/4, 1/8, 1/16, 1/32</td>
</tr>
<tr>
<td>FEC</td>
<td>1/2, 2/3, 3/4, 5/6, 7/8</td>
</tr>
<tr>
<td>MER</td>
<td>≥42 dB</td>
</tr>
<tr>
<td>RF frequency</td>
<td>50-960MHz, 1KHz step</td>
</tr>
<tr>
<td>RF output level</td>
<td>-20~+10 dBm (87-117 dBµV), 0.1dB step</td>
</tr>
</tbody>
</table>

Stream output

<table>
<thead>
<tr>
<th>Power</th>
<th>1000M Base-T Ethernet interface</th>
</tr>
</thead>
<tbody>
<tr>
<td>AC 110V±10%, 50/60Hz, AC 220±10%, 50/60Hz</td>
<td>HDMI input is sometimes unable to capture from some copy protected HDMI sources, such as blue ray players, if HDCP encryption is embedded in the video/audio stream, doesn’t normally apply to set top boxes or normal DVD player. HDCP strippers or HDMI splitters are available from other vendors.</td>
</tr>
</tbody>
</table>
H.265/HEVC and H.264/AVC, multiplexing and modulating functions in one standard 1U case.

Specification and prices subject to change without notice.
*Compact Head End. OH50 range Rack or wall mounted

*Rack mounted head end that can be customized and monitored and controlled via the internet.
*Composite Video Audio modulated to PAL B/G D/K I,L
*DVB-S free to air MPEG 2&4 to PAL B/G D/K I,L M,N with CI interface
*DVB-S /S2 free to air MPEG 2&4 to PAL B/G D/K I,L M,N with CI interface
*DVB-T/C free to air MPEG 2&4 to PAL B/G D/K I,L M,N with CI interface
*DVB-S /S2 free to air MPEG 2&4 to COFDM with CI interface
*DVB-T/C free to air MPEG 2&4 to COFDM with CI interface
*DVB-S /S2 free to air MPEG 2&4 to QAM with CI interface
*Composite Video Audio and SDI, modulated to QAM and COFDM

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OH 50

Base Unit (3U)

<table>
<thead>
<tr>
<th>Amplifier Frequency range</th>
<th>TV</th>
<th>47–682 MHz</th>
</tr>
</thead>
<tbody>
<tr>
<td>FM</td>
<td>87,5–108 MHz</td>
<td></td>
</tr>
<tr>
<td>Output level</td>
<td>110 dB_V</td>
<td></td>
</tr>
<tr>
<td>Output attenuator</td>
<td>15 dB / 1 dB steps</td>
<td></td>
</tr>
<tr>
<td>Input level (FM)</td>
<td>70–100 dB_V</td>
<td></td>
</tr>
<tr>
<td>FM attenuator</td>
<td>31 dB / 1 dB steps</td>
<td></td>
</tr>
<tr>
<td>Test output</td>
<td>-20 dB</td>
<td></td>
</tr>
<tr>
<td>Power supply</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Input voltage</td>
<td>180…-255 V AC (47±4 Hz)</td>
<td></td>
</tr>
<tr>
<td>Max. power consumption</td>
<td>&lt; 195 W</td>
<td></td>
</tr>
<tr>
<td>Efficiency</td>
<td>85%</td>
<td></td>
</tr>
<tr>
<td>LNB power</td>
<td>12.5 V / 2.1 A</td>
<td></td>
</tr>
<tr>
<td>Dimensions</td>
<td>443 x 132 (3 HU) x 351 mm</td>
<td></td>
</tr>
</tbody>
</table>

Connectors:
- RF input/output F-connector
- Test output 1 x F-connector
- Control RJ 11
- Software update USB
- Master slave operation

Operating temperature range: -20 °C to +40 °C

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DVB-S to Analogue UHF/VHF

With CI

<table>
<thead>
<tr>
<th>Input frequency range</th>
<th>950–2150 MHz</th>
</tr>
</thead>
<tbody>
<tr>
<td>Input frequency steps</td>
<td>1 MHz</td>
</tr>
<tr>
<td>Input level range</td>
<td>47–70 dB_V</td>
</tr>
<tr>
<td>Modulation scheme</td>
<td>QPSK</td>
</tr>
<tr>
<td>Symbol rate</td>
<td>1–4 MS/s</td>
</tr>
<tr>
<td>FEC symbol code</td>
<td>RS (204,16)</td>
</tr>
<tr>
<td>Inner code</td>
<td>Conv. (3,15)</td>
</tr>
<tr>
<td>Symbol rate</td>
<td>10–30 MS/s</td>
</tr>
<tr>
<td>MER</td>
<td>≥ 37 dB</td>
</tr>
<tr>
<td>Output level</td>
<td>82–97 dBµV</td>
</tr>
<tr>
<td>Stability of output frequency</td>
<td>± 30 kHz</td>
</tr>
</tbody>
</table>

With 22 kHz/DIEEEc modulator to control multiswitches

OH 66

Twin AV/SID/SDI to QAM, COFDM

Composite video input level 1.0 Vp-p (± 0.4 V)

Frequency range: 20 Hz…5 MHz

MPEG 2 Video processing ISO/IEC 13818–2, MPEG-4 (4.2.2)

Bit rate: CRV & VR 1.5 – 9 MHz in 1 MHz steps.

Picture size 720 pixel horizontal, 576 pixel vertical

Test pattern from analogue video signal

Picture format support for 4:3 and 16:9

Automatic detection by WSS

PMD setting automatic

Manual overwriting possible

P/SI settings automatic creation of PAT/PMT/SID

NIT setting with LCN Optional with CS77

Input audio

Input format Analogue (left/right) or digital

SDI with embedded audio

Frequency range: 40 Hz…15 kHz

OH 75

DVB-S/S2 to Analogue UHF/VHF

(CECIR-rec. 567–1)

<table>
<thead>
<tr>
<th>Output frequency range</th>
<th>≥ 58 dB</th>
</tr>
</thead>
<tbody>
<tr>
<td>Output frequency steps</td>
<td>250 kHz</td>
</tr>
<tr>
<td>Stability of output frequency</td>
<td>± 30 kHz</td>
</tr>
<tr>
<td>Output channel bandwidth</td>
<td>7/8 MHz</td>
</tr>
<tr>
<td>Output level (1dB steps)</td>
<td>95–105 dB_V</td>
</tr>
<tr>
<td>TV standards</td>
<td>B/G, D/K, I, L, M, N</td>
</tr>
<tr>
<td>Video standard</td>
<td>PAL, SECAM, NTSC</td>
</tr>
<tr>
<td>Video format</td>
<td>4.3: 16.9, 4:3-Zoom</td>
</tr>
<tr>
<td>Video decoder</td>
<td>MPEG-2 (ML, MP)</td>
</tr>
<tr>
<td>Audio decoder</td>
<td>MPEG-2 (ML, MP)</td>
</tr>
<tr>
<td>Audio format</td>
<td>Mono, Stereo, Dual</td>
</tr>
<tr>
<td>Audio input format</td>
<td>Mono, Stereo, Dual</td>
</tr>
<tr>
<td>Audio input level</td>
<td>(color test pattern)</td>
</tr>
<tr>
<td>Power consumption</td>
<td>&lt; 10 W</td>
</tr>
<tr>
<td>LNB power</td>
<td>12 V / 0.5 A max.</td>
</tr>
<tr>
<td>Operating temperature range</td>
<td>-20 °C to +40 °C</td>
</tr>
</tbody>
</table>

Modulation scheme: CCEFM

Output power 12 V / 0.5 A max.

Current consumption: ca. 0.80 A

OH 79

DVB-T/C to Analogue UHF/VHF

(CECIR-rec. 567–1)

<table>
<thead>
<tr>
<th>Input frequency range</th>
<th>110–858 MHz</th>
</tr>
</thead>
<tbody>
<tr>
<td>Input frequency steps</td>
<td>250 kHz</td>
</tr>
<tr>
<td>Input level range</td>
<td>47–70 dB_V</td>
</tr>
<tr>
<td>AFC</td>
<td></td>
</tr>
<tr>
<td>Modulation scheme</td>
<td>QPSK, 8PSK, 16QAM</td>
</tr>
<tr>
<td>Symbol rate</td>
<td>10–30 MS/s</td>
</tr>
<tr>
<td>MER</td>
<td>≥ 40 dB</td>
</tr>
<tr>
<td>Output frequency range</td>
<td>47–862 MHz</td>
</tr>
<tr>
<td>Stability of output frequency</td>
<td>± 30 kHz</td>
</tr>
<tr>
<td>Output channel bandwidth</td>
<td>7/8 MHz</td>
</tr>
<tr>
<td>Output level (1dB steps)</td>
<td>95–105 dB_V</td>
</tr>
<tr>
<td>TV standards</td>
<td>B/G, D/K, I, L, M, N</td>
</tr>
<tr>
<td>Video standard</td>
<td>PAL, SECAM, NTSC</td>
</tr>
<tr>
<td>Video format</td>
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<tr>
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<td>Audio input format</td>
<td>Mono, Stereo, Dual</td>
</tr>
<tr>
<td>Audio input level</td>
<td>(color test pattern)</td>
</tr>
<tr>
<td>Power consumption</td>
<td>&lt; 10 W</td>
</tr>
<tr>
<td>LNB power</td>
<td>12 V / 0.5 A max.</td>
</tr>
<tr>
<td>Operating temperature range</td>
<td>-20 °C to +40 °C</td>
</tr>
</tbody>
</table>

Modulation scheme: COFDM

Output power 12 V / 0.5 A max.

Current consumption: ca. 0.80 A

Video input level | 1 Ms (± 0.4 V)

Video input bandwidth | 20 Hz…5 MHz

Audio input impedance | 600 / 10 k Ohm

Audio input level (for nom. deviation) | -4 dB / 1 mV

Audio level range: 9 µV…+5 mV

Audio input bandwidth: 40–15000 Hz

Output impedance | 75 Ohm

Output audio frequency range | 47–862 MHz

Frequency steps | 250 kHz |

Stability of output frequency | ± 30 kHz |

Output channel bandwidth | 7/8 MHz |

Output level (1dB steps) | ± 1 dB |

TV standards | B/G, D/K, I, L, M, N |

Video standard | PAL, SECAM, NTSC |

Video format | 4.3: 16.9, 4:3-Zoom |

Video decoder | MPEG-2 (ML, MP) |

Audio decoder | MPEG-2 (ML, MP) |

Audio format | Mono, Stereo, Dual |

Audio input format | Mono, Stereo, Dual |

Audio input level | (color test pattern) | > 50 dB |

Power consumption | < 10 W |

LNB power | 12 V / 0.5 A max. |

Operating temperature range: -20 °C to +40 °C

OH 88

Twin AV Modulator

Video input level | 1 V ± 0.4 V

Video input bandwidth | 20 Hz…5 MHz

Audio input impedance | 600 / 10 k Ohm

Audio input level (for nom. deviation) | -4 dB / 1 mV

Audio level range: 9 µV…+5 mV

Audio input bandwidth: 40–15000 Hz

Output impedance | 75 Ohm

Output audio frequency range | 47–862 MHz

Frequency steps | 250 kHz |

Stability of output frequency | ± 30 kHz |

Output channel bandwidth | 7/8 MHz |

Output level (1dB steps) | ± 1 dB |

TV standards | B/G, D/K, I, L, M, N |

Video standard | PAL, SECAM, NTSC |

Video format | 4.3: 16.9, 4:3-Zoom |

Video decoder | MPEG-2 (ML, MP) |

Audio decoder | MPEG-2 (ML, MP) |

Audio format | Mono, Stereo, Dual |

Audio input format | Mono, Stereo, Dual |

Audio input level | (color test pattern) | > 50 dB |

Power consumption | < 10 W |

LNB power | 12 V / 0.5 A max. |

Operating temperature range: -20 °C to +40 °C

OH 87

DVB-S/S2 to Analogue UHF/VHF

<table>
<thead>
<tr>
<th>Input frequency range</th>
<th>950–2150 MHz</th>
</tr>
</thead>
<tbody>
<tr>
<td>Input frequency steps</td>
<td>1 MHz</td>
</tr>
<tr>
<td>Input level range</td>
<td>47–70 dB_V</td>
</tr>
<tr>
<td>Modulation scheme</td>
<td>QPSK</td>
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<tr>
<td>Symbol rate</td>
<td>1–4 MS/s</td>
</tr>
<tr>
<td>FEC symbol code</td>
<td>RS (204,16)</td>
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<tr>
<td>Inner code</td>
<td>Conv. (3,15)</td>
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<tr>
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<tr>
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<td>12 V / 0.5 A max.</td>
</tr>
<tr>
<td>Operating temperature range: -20 °C to +40 °C</td>
<td></td>
</tr>
</tbody>
</table>

OH 89

Twin AV Modulator

Video input level | 1 V ± 0.4 V

Video input bandwidth | 20 Hz…5 MHz

Audio input impedance | 600 / 10 k Ohm

Audio input level (for nom. deviation) | -4 dB / 1 mV

Audio level range: 9 µV…+5 mV

Audio input bandwidth: 40–15000 Hz

Output impedance | 75 Ohm

Output audio frequency range | 47–862 MHz

Frequency steps | 250 kHz |

Stability of output frequency | ± 30 kHz |

Output channel bandwidth | 7/8 MHz |

Output level (1dB steps) | ± 1 dB |

TV standards | B/G, D/K, I, L, M, N |

Video standard | PAL, SECAM, NTSC |

Video format | 4.3: 16.9, 4:3-Zoom |

Video decoder | MPEG-2 (ML, MP) |

Audio decoder | MPEG-2 (ML, MP) |

Audio format | Mono, Stereo, Dual |

Audio input format | Mono, Stereo, Dual |

Audio input level | (color test pattern) | > 50 dB |

Power consumption | < 10 W |

LNB power | 12 V / 0.5 A max. |

Operating temperature range: -20 °C to +40 °C

www.taylorbros.co.uk
**OH88H**

**Twin DVB-S/S2 to COFDM**

- Reception of two DVB-S/S2 signals and transmodulation into dual COFDM-TV channels
- 2 built-in CI interfaces
- Input frequency range 950–2150 MHz
- Output frequency range 110–858 MHz

**Specifications**

- **Symbol rate**: 2–45 MS/s
- **FEC inner code**: LDPC (1/2, 3/5, 2/3, 3/4, 4/5, 5/6, 8/9, 9/10)
- **Spectral inversion**: C-Band/KU-Band
- **Output level**: 95–105 dB_V
- **Stability of output level**: ± 1 dB
- **Spurious inside TV channel**: > 50 dB
- **Spurious outside TV channel**: > 50 dB
- **SNR**: ≥ 41 dB
- **MER**: ≥ 37 dB
- **Modulation**: QPSK, 16-, 64-QAM
- **FEC**: 1/2, 2/3, 3/4, 5/6, 7/8
- **Guard interval**: 1/4, 1/8, 1/16, 1/32
- **FFT Mode**: 2k, 8k
- **Bit stuffing**: yes
- **PID filtering**: yes
- **Connectors RF input/output**: F-connector
- **Power consumption**: < 10 W
- **Operating temperature range**: -20 °C to +40 °C

**OH892**

**Twin DVB-T/C to COFDM**

- Reception of two DVB-T/C signals and transmodulation into dual COFDM-TV channels
- Input frequency range 110–858 MHz
- Output frequency range 110–858 MHz

**Specifications**

- **Channel bandwidth**: 7/8 MHz
- **COFDM spectral**: 2k and 8k FFT
- **COFDM modulation scheme**: QPSK, 16QAM, 64QAM
- **COFDM guard interval**: 1/32, 1/16, 1/8, 1/4
- **COFDM FEC inner code Conv., K=7, G=1/2, 2/3, 3/4, 4/5, 5/6, 7/8
- **QAM modulation scheme**: 16-, 32-, 64-, 128-, 256 QAM
- **QAM symbol rate**: 1–7 MBaud
- **Output level**: 95–105 dB_V
- **Stability of output level**: ± 1 dB
- **Spurious inside TV channel**: > 50 dB
- **Spurious outside TV channel**: > 50 dB
- **SNR**: ≥ 41 dB
- **MER**: ≥ 37 dB
- **Modulation**: QPSK, 16-, 64-QAM
- **FEC**: 1/2, 2/3, 3/4, 5/6, 7/8
- **Guard interval**: 1/4, 1/8, 1/16, 1/32
- **FFT Mode**: 2k, 8k
- **Bit stuffing**: yes
- **PID filtering**: yes
- **Connectors RF input/output**: F-connector
- **Power consumption**: < 10 W
- **Operating temperature range**: -20 °C to +40 °C

**OH45**

**DVB-T/T2 ch converter**

- Useful for changing to lower frequencies and consequently lower cable losses

**OH51A**

**Remote Monitoring module**

- Two OH50 units can be monitored and configured via the internet.

**OH50**

Basic unit for 14 modules; FM amplifier, power supply, USB interface

**OH51A**

Management module, Web browser, SNMP

**OH45**

DVB-T/T2 ch convertor

Useful for changing to lower frequencies and consequently lower cable losses

**OH66**

Dual AV modulator, no channel bonding

**OH76**

DVB-S to PAL/Secam/NTSC

**OH77**

DVB-S/DVB-S2/MPEG2/MPEG4 to PAL/Secam/NTSC

**OH79D**

DVB-S2/MPEG4 to PAL/Secam/NTSC

**OH85H**

Dual DVB-S/DBV-S2 to QAM transmodulator; HD, 2 CI, bit stuffing,

**OH88H**

Dual DVB-S/DVB-S2 to COFDM transmodulator, HD, 2 CI, bit stuffing,

**OH892**

Dual DVB-T/DVB-C to COFDM transmodulator, 2 CI, bit stuffing, PCR,

**Basic unit for 14 modules; FM amplifier, power supply, USB interface**

**Management module, Web browser, SNMP**

**Dual AV modulator, no channel bonding**

**DVB-S to PAL/Secam/NTSC**

**DVB-S/DVB-S2/MPEG2/MPEG4 to PAL/Secam/NTSC**

**DVB-S2/MPEG4 to PAL/Secam/NTSC**

**Dual DVB-S/DBV-S2 to QAM transmodulator; HD, 2 CI, bit stuffing,**

**Dual DVB-S/DVB-S2 to COFDM transmodulator, HD, 2 CI, bit stuffing,**

**Dual DVB-T/DVB-C to COFDM transmodulator, 2 CI, bit stuffing, PCR,**
Professional Head End
Standard modules with a comprehensive range of functions

Options configured by software license

- DVB, IPTV and ASI inputs
- The CHAMELEON decodes MPEG 2 and MPEG4 services in SD or HD
- Decrypt single or multiple services through Common Interface
- Remux content from tuner, IP, ASI to create your own multiplexes
- Encrypt service with embedded DVB_CSA and Simulcrypt interface
- Downscale content transmitted in HD to SD to fit all TV’s and STB’s
- Generate new EPG’s to fit your own program packages
- Double modulators

One rack can re mux 20 DVBS/S2 muxes to 20 COFDM DVB-T muxes with only ten modules

Typical Cost for processing one Digital Free Sat TV program to one Digital DVB-T program is £136.00 per TV program. Based on five TV programs per multiplex
## Base Units

**Wall mounting** accommodates 2 modules

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Technical data</th>
</tr>
</thead>
</table>
| GN 01 W2       | **Output Switch/Controller** Category Multicast Protocols  
|                | **Redundancy control Connections**  
|                | Module slots 2 pcs.  
|                | F-socket 3 pcs.  
|                | **Power supply** 2 pcs.  
|                | Voltage AC 100...240 V (50/60 Hz) 18W  
|                | Dimensions (width x height x 295x216x105 mm depth)  
|                | Gross Weight shipping 1.975 kg  
|                | **£141.34**  

**For Head Ends** accommodates 10 modules

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Technical data</th>
</tr>
</thead>
</table>
| GN 40 W 0230   | **Output Switch/Controller** Category Multicast Protocols  
|                | **Redundancy control Connections**  
|                | **Power supply** 1pc  
|                | Voltage AC 180...265 V (47...63 Hz) Power input <245 W  
|                | Dimensions 4 U rack unit (width x height x 443x176x270 mm depth)  
|                | Gross Weight shipping unit 6.46 kg  
|                | **£657.39**  

**For IP Systems**, accommodates 10 modules

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Technical data</th>
</tr>
</thead>
</table>
| GN 50 W 0230   | **Output Switch/Controller** Category Multicast Protocols  
|                | **Streaming-Ports** 4 pcs. (1 Gbit/s)  
|                | **Control-Ports** 1 pcs. (100 Mbit/s)  
|                | **Redundancy control Connections**  
|                | Module slots 10 pcs.  
|                | RJ45 5 pcs.  
|                | **Power supply** 1 pcs.  
|                | Optional redundant power  
|                | AC voltage 180...265 V (47...63 Hz) <245 W  
|                | Dimensions (width x height x 443x132x475 mm depth)  
|                | Gross Weight shipping unit 12.44 kg  
|                | **£1,698.26**  

Specifications subject to change
## Specifications and prices subject to change

### Modules and Licence options

<table>
<thead>
<tr>
<th>Universal module</th>
<th>MPEG 4 Encoder module 2 x SDI</th>
<th>MPEG 2/4 Encoder 4 x HDMI</th>
</tr>
</thead>
<tbody>
<tr>
<td>GN HWUUW2</td>
<td>GN HWENCW</td>
<td>GNHWENC2H</td>
</tr>
<tr>
<td>£842.56</td>
<td>£1,709.22</td>
<td>£2,136.00</td>
</tr>
</tbody>
</table>

#### Modules
- **Universal module**
  - GN HWUUW2: Chameleon universal tuner, modulator module. £842.56
  - GNHWENC2H: Chameleon MPEG 4&2 HD Encoder module. £2,136.00

#### Licence options
- **Universal module**
  - GN S2: License for one DVB-S/S2 tuner £109.57
  - GN T: License for one DVB-T tuner £109.57
  - GN T2: License for one DVB-T2 tuner £164.35
  - GN C: License for one DVB-C tuner £109.57
  - GN DS2: License for two DVB-S/S2 tuners £158.87
  - GN DT: License for two DVB-T tuners £158.87
  - GN DT2: License for two DVB-T2 tuners £268.43
  - GN DC: License for two DVB-C tuners £158.87

- **Type of RF output**
  - GN CMOD: License for one QAM output £120.52
  - GN DCMOD: License for two QAM outputs £175.30
  - GN TCMOD: License for three QAM outputs £262.96
  - GN QC MOD: License for four QAM outputs £350.61
  - GN TMOD: License for one COFDM output £98.61
  - GN DTMOD: License for two COFDM outputs £175.30
  - GN DMOD: License for one DTMB output £175.30
  - GN VMOD: License for one VSB output (Analogue TV) £120.52
  - DVMOD: License for two VSB outputs (Analogue TV) £109.57
  - License for one T2 output: **Not yet available** £147.91

- **BNC Connector**
  - GN OCTFM: License for 8 FM Radio outputs £350.61
  - GN ASI: ASI in/out License £98.61
  - GN SSDI: License for SD SDI decoder £169.83
  - GN HSDI: License for HD SDI decoder £246.52
  - GN DASI: License for two ASI interfaces £197.22
  - GN DSDI: License for two SD, SDI outputs on BNC IP £339.65

- **Streaming**
  - GN STR: License for IP streaming £219.13
  - GN STREC: License for IP streaming with FEC £383.48
**Licence options, continued**

<table>
<thead>
<tr>
<th>Licence</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>GN DOL</td>
<td>License for Dolby Audio decoding.</td>
<td>£164.35</td>
</tr>
<tr>
<td>GN CI</td>
<td>License for one CI slot</td>
<td>£61.36</td>
</tr>
<tr>
<td>GN DCI</td>
<td>License for two CI slots</td>
<td>£98.81</td>
</tr>
<tr>
<td>GN SYSMG</td>
<td>License for system management. Requires GN50 rack</td>
<td>£27.39</td>
</tr>
<tr>
<td>GN MUX</td>
<td>License for multiplexer incl. automatic SI/PSI computation independent of other modules. License for multiplexer incl. system SI/PSI tables computation for interconnected multiplexers of this network.</td>
<td>£241.04</td>
</tr>
<tr>
<td>GN SYMUX</td>
<td>License for multiplexer incl. automatic SI/PSI computation independent of other modules. License for multiplexer incl. system SI/PSI tables computation for interconnected multiplexers of this network.</td>
<td>£306.78</td>
</tr>
<tr>
<td>GN SCR</td>
<td>License for simulcrypt scrambler for 64 PIDs per outgoing QAM, COFDM or ASI Transport Stream.</td>
<td>£657.39</td>
</tr>
<tr>
<td>GN RED</td>
<td>License for IP input signal redundancy.</td>
<td>£104.09</td>
</tr>
<tr>
<td>GN NRED</td>
<td>License for N+1 module redundancy.</td>
<td>£542.35</td>
</tr>
<tr>
<td>GN ALL</td>
<td>Includes GNDS2, GNDT, GNDT2, GNDC, GNQC, MOD, GNQMOD, GNQTMOD, GNQCFM, GNQASI, GNQSDI, GNQHSID, GNQDCI, GNQSR, GNQRED, GNQSTR, GNQMUX, GNSYMUX, No Dolby</td>
<td>£1,972.13</td>
</tr>
</tbody>
</table>

**Specifications of Chameleon modules**

### DVB-S/S2 Satellite Receivers
- **Input frequency**: 925 – 2175 MHz
- **Symbol rates**: 1.0 – 45 Mbaud (max 100 Mbps)
- **Spectral inversion**: Yes, selectable
- **LNB voltage**: Auto, Off or 13.18V, programmable
- **LNB current**: Max 500 mA total
- **DVB-C**: Auto, On or Off, programmable
- **DVB compliance**: DVB-S2 (EN 302 341)
- **C-ASIC**: Supporting control of up to 4 sat sources

### DVB-C cable receivers
- **Input frequency**: 43 – 1002 MHz
- **Symbol rate**: 1 – 72 Mbaud
- **DVB compliance**: DVB-C (EN 300 429 / ITU J.83 Annex A/C)

### Encryption
- **License for simulcrypt scrambler for 64 PIDs per outgoing QAM, COFDM or ASI Transport Stream.**

### Redundancy
- **License for IP input signal redundancy.**
- **License for N+1 module redundancy.**

### Special Package
- **Includes GNDS2, GNDT, GNDT2, GNDC, GNQC, MOD, GNQTMOD, GNQCFM, GNQASI, GNQSDI, GNQHSID, GNQDCI, GNQSR, GNQRED, GNQSTR, GNQMUX, GNSYMUX, No Dolby**

### GN M1 (SSC) Software Service/Support Charge, 1 Year
- £60.00

### GN M3 (SSC) Software Service/Support Charge, 3 Year
- £120.00

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**TX SYSTEMS**

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1) DVB-C: J.83 Annex C

2) DVB-C: 256-QAM, J.83 Annex C

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### Technical data

#### HDMI-Input
- HDMI number of ports: 4 pcs. (HDMI)
- Input format HDMI: 1080i50/60/59.94, 720p50/60/59.94, 576p50, 480p60/59.94, 576i50, 480i60/59.94
- Input format Audio: PCM (Pulse code modulation)
- Compliance: HDMI 1.4a (no scaling)
- HDCP Support: No

#### Video Encoding
- Encoding capacity: 4x HD/SD MPEG-2/MPEG-4
- Video system: MPEG-2 HD/SD and MPEG-4 HD/SD (H.264/AVC)
- Picture size: 1080i50/60/59.94, 720p50/60/59.94, 576p50, 480p60/59.94, 576i50, 480i60/59.94
- Profile MPEG-4: Baseline, Main, High
- Bit rate: MPEG-2 10-19Mbps, MPEG-4 6-13Mbps @ 1080i50/60/59.94, 720p50/60/59.94, MPEG-2 4-12Mbps, MPEG-4 2-6Mbps @ 576p50, 480p60/59.94, MPEG-2 2-8Mbps, MPEG-4 1-4Mbps @ 576i50, 480i60/59.94
- Chroma sample: 4:2:0
- Aspect ratio: 16:9 for HD; 4:3 for SD
- Subtitle DVB Support: No
- Subtitle OP47 Support: No
- Picture size conversion: Downscaling yes, Upscaling no
- Frame rate conversion: No
- Test pattern: No

#### Audio Encoding
- Audio-system: ISO 11173-3 (MPEG-1 L2), MPEG-2 AAC (LC)
- Number of audio channels: 1 per video input @ 4x HD/SD MPEG-2/MPEG-4, 4 per video input @ 2x HD/SD MPEG-2/MPEG-4
- Sampling frequency: 44.1, 48 kHz
- Bit rate: 64...288 Kbps (max. MPEG1 L2/ AAC)
- Audio modes: Stereo
- Sampling rate conversion: No

#### Streaming-In/Output
- IP-Inputs: 0 or 32 pcs. (32 with GNSTREC software option)
- IP-Outputs: 4 or 32 pcs. (32 with GNSTREC software option)
- IP-Compliance: ISO/IEC 13818
- IP-Input bitrate: Max. 425 Mbit/s per IPTS, Max. 850 Mbit/s total
- IP-Output bitrate: Max. 425 Mbit/s per IPTS, Max. 850 Mbit/s total
- IP-Input protocol: UDP/RTP/RTCP+FEC Unicast and Multicast, IGMP v2 and v3
- IP-Output protocol: UDP/RTP/RTCP+FEC Unicast and Multicast, IGMP v2 and v3
- IP-TS-input format: SPTS CBR/VBR, MPTS CBR

### Base Unit needed for modules. See page 46 on base units

#### Specification of Chameleon module

<table>
<thead>
<tr>
<th>Input</th>
<th>Output</th>
</tr>
</thead>
<tbody>
<tr>
<td>4 x HDMI in, GNHWENC2H</td>
<td>HDMI Encoderr</td>
</tr>
<tr>
<td>GNVWUUW2 PROCESSOR</td>
<td>GN HWUW2</td>
</tr>
</tbody>
</table>

![Diagram](image)

#### Technical data

- **IP-TS-Output format**: SPTS CBR/VBR, MPTS CBR
- **IP-FEC inputs**: 0 or 32 pcs. (with GNSTREC software option)
- **IP-FEC Outputs**: 4 or 32 pcs. (with GNSTREC software option)
- **IP-FEC compliance**: SMPTE 2022-1, SMPTE 2022-2
- **IP-Packet format**: MPEG over UDP/IP and RTP/IP
- **IP-Packet size**: 188 Byte
- **IP-PCR restamping**: Yes

#### Processing
- **Service remultiplexing**: Yes (GNSYMUX functionality is included)
- **PID filtering and remapping**: Yes
- **PCR correction and de-jitter**: Yes
- **Advanced PSI/SI regeneration**: Yes
- **NIT generation**: No
- **Compliance**: ETSI EN 300 468
- **Processing bitrate**: Max. 1200 Mbps total
- **Number of PIDs**: Max. 2000 PIDs total

#### Connectors
- **RJ45**: 2 pcs. (1x Management, 1x Streaming)
- **F-socket RF- output**: 1 pc. (not in operation, only for mounting in GN40 base unit)
- **HDMI input**: 4 pcs. (for type A connector)
- **GigE/Control/Power supply (Backplane)**: CompactPCI Type C (SGMII)

#### General data
- **Power consumption**: max. ≤18 W
- **Operating temperature range**: -5°C...+45°C, 23°F...113°F, (ETSI EN 300 019-1-3 Class 3.1)
- **Max. humidity, non condensing**: 95%
- **Electro Magnetic Compatibility (EMC)**: DIN EN 55022:2008-05
- **Safety compliance**: -
- **HDMI status LED**: green, red
- **Operation Mode**: -
- **Hardware revision**: 1000
- **Software version**: 3.0

---

**TX SYSTEMS**

**Specifications of Chameleon module**

4 x HDMI in, **GNHWENC2H**

---

**Base Unit needed for modules.** See page 46 on base units
# Specifications of Chameleon modules

## FM Modulation
- Number of modulators: Up to 8 FM modulators
- Audio decoder: MPEG-1 Layer I/II
- Modulation: FM, ref ITU-R BS.450-3
- FM deviation limiter: Yes
- Carrier mode: C = 3780 (multi-carrier)
- Interleave length: M = 240, M = 720
- Modulation: 4QAM, 16QAM, 64QAM
- Output frequency: 40 – 860 MHz
- Spurious suppression: > 60 dBc
- Compliance: DVB-Secondary Stream Protocol

## Audio decoder
- MPEG-1 Layer I/II
- FM or AM
- Modulation video: VSB AM, ref ITU-R BS.450-3
- Audio decoder: MPEG-1 Layer I/II
- MODULATION: FM, ref ITU-R BS.450-3

## FM Modulation Analogue modulator
- Number of modulators: Up to 8 FM modulators
- Audio decoder: MPEG-1 Layer I/II
- Modulation: FM, ref ITU-R BS.450-3
- FM deviation limiter: Yes
- Carrier mode: C = 3780 (multi-carrier)
- Interleave length: M = 240, M = 720
- Modulation: 4QAM, 16QAM, 64QAM
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- Interleave length: M = 240, M = 720
- Modulation: 4QAM, 16QAM, 64QAM
- Output frequency: 40 – 860 MHz
- Spurious suppression: > 60 dBc
- Compliance: DVB-Secondary Stream Protocol

## Analog Modulator
- Number of modulators: Up to 2 analogue modulators
- Standards: PAL, B/G, D/K, I, SECAM D/K, B/G, L
- Group Delay: pre-correction
- Sound Mono: NICAM stereo, A2 stereo
- Modulation audio: FM or AM
- Modulation video: VSB AM, ref ITU-R BS.450-3
- Audio decoder: MPEG-1 Layer I/II
- FM Modulation Analogue modulator: FM, ref ITU-R BS.450-3
- FM deviation limiter: Yes
- Carrier mode: C = 3780 (multi-carrier)
- Interleave length: M = 240, M = 720
- Modulation: 4QAM, 16QAM, 64QAM
- Output frequency: 40 – 860 MHz
- Spurious suppression: > 60 dBc
- Compliance: DVB-Secondary Stream Protocol

## DVB CSA scrambler / Simulcrypt interface
- Interface: IP
- Number of encrypted: 64 PDUs per output
- Number of SCG: 64 SCGs per output (64 PDUs per output)
- Scrambable outputs: DVB-C, DVB-T, ASI
- Interface protocol version support: ETSI TS 103 974
- DVB compliance: DVB-C SimulCrypt (ETSI TS 103 973)

## Rack Enclosures and Accessories

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>GN 01 W2</td>
<td>Two-module mounting Box including fans and 2 PS</td>
<td>£141.34</td>
</tr>
<tr>
<td>GN 50 W 0230</td>
<td>19” 3HU professional subrack with GigE sw. + fan + 1PS 230VAC , prepared for redundancy</td>
<td>£1,698.26</td>
</tr>
<tr>
<td>GN 50 W 0048</td>
<td>19” 3HU professional subrack with GigE sw. + fan + 1PS 48VDC , prepared for redundancy</td>
<td>£1,807.83</td>
</tr>
<tr>
<td>GN 40 W 0230</td>
<td>19” 3HU Subrack + 1HU fan + 1PS + DC harness</td>
<td>£657.39</td>
</tr>
<tr>
<td>GN 20 W</td>
<td>19” 1HU Subrack with PSU, Fans</td>
<td>£327.60</td>
</tr>
<tr>
<td>GN 55W 0230</td>
<td>(Dual redundant power supply supply)</td>
<td>£333.00</td>
</tr>
<tr>
<td>GN 55 W 0048</td>
<td>Redun. 48 VDC PS for GN 50</td>
<td>£322.32</td>
</tr>
<tr>
<td>DS 35 0035</td>
<td>Patchcord F-quick - F-quick, 35cm</td>
<td>£432.78</td>
</tr>
<tr>
<td>DS 35 0050</td>
<td>Patchcord F-quick - F-quick, 50cm</td>
<td>£4.99</td>
</tr>
<tr>
<td>GN 11 0025</td>
<td>ASI cable, 25cm</td>
<td>£9.86</td>
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</table>

GN 55W 0230 Redundant PSU
Specifications of Chameleon modules

<table>
<thead>
<tr>
<th>FM Modulation</th>
<th>Analogue modulator</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of modulators</td>
<td>Up to 8 FM modulators</td>
</tr>
<tr>
<td>Audio decoder</td>
<td>MPEG-1 Layer I/II</td>
</tr>
<tr>
<td>Modulation</td>
<td>FM, ref ITU-R BS 450-3</td>
</tr>
<tr>
<td>FM deviation</td>
<td>Yes</td>
</tr>
<tr>
<td>RDS insertion</td>
<td>Yes, dynamic &amp; static, ref EN50067</td>
</tr>
<tr>
<td>Output frequency</td>
<td>87.5-108 MHz, 100 kHz step size</td>
</tr>
<tr>
<td>Output level per FM ch</td>
<td>Max 52 dB, V</td>
</tr>
<tr>
<td>S/N</td>
<td>&gt; 60 dB (mono), &gt; 55 dB (stereo)</td>
</tr>
<tr>
<td>C/N, broadband</td>
<td>Typical 60 dB (FM band 87.5-108 MHz)</td>
</tr>
<tr>
<td>Spurious suppression</td>
<td>&gt; 50 dBc (outside FM band)</td>
</tr>
<tr>
<td>DTMB Modulation</td>
<td></td>
</tr>
<tr>
<td>Number of modulators</td>
<td>1 DTMB mod</td>
</tr>
<tr>
<td>Carrier mode</td>
<td>C = 3780 (multi-carrier)</td>
</tr>
<tr>
<td>Interleaving length</td>
<td>M = 240, M = 720</td>
</tr>
<tr>
<td>Output frequency</td>
<td>40 – 860 MHz</td>
</tr>
<tr>
<td>Output level Max</td>
<td>105 dB, V</td>
</tr>
<tr>
<td>Spurious suppression</td>
<td>&gt; 60 dBc</td>
</tr>
<tr>
<td>DVB CSA scrambler / Simulcrypt interface</td>
<td></td>
</tr>
<tr>
<td>Interface</td>
<td>P</td>
</tr>
<tr>
<td>Number of encrypted PIDs</td>
<td>64 PIDs per output (64 CWs per output)</td>
</tr>
<tr>
<td>Number of Scramble outputs</td>
<td>64 PIDs per output (64 CWs per output)</td>
</tr>
<tr>
<td>Scramble output</td>
<td>DVB-C, DVB-T, ASI</td>
</tr>
<tr>
<td>Interface protocol version</td>
<td>ETSI EN 300755, V5.0.1</td>
</tr>
<tr>
<td>EMM/PGP/OPP = MUX, V2 and V3</td>
<td></td>
</tr>
<tr>
<td>DVB compliance</td>
<td>DVB-SimulCrypt (ETSI TS 103 197)</td>
</tr>
<tr>
<td>SDI output</td>
<td></td>
</tr>
<tr>
<td>Output audio</td>
<td>Stereo, Mono or Dual Sound</td>
</tr>
<tr>
<td>MPEG Decoder – Audio / Video</td>
<td></td>
</tr>
<tr>
<td>Supported formats audio</td>
<td>MPEG-1 layer II, AAC HE, Dolby Digital AC-3 (requires specific HW)</td>
</tr>
<tr>
<td>Aspect Ratio</td>
<td>Letterbox, Pan/Scan, or conversion combined (14:9) programmable, WSS</td>
</tr>
<tr>
<td>ASI input / output</td>
<td></td>
</tr>
<tr>
<td>Number of ports</td>
<td>2 BNC ports, configurable for input via UI</td>
</tr>
<tr>
<td>Max payload bitrate</td>
<td>Typical 200 Mbit/s</td>
</tr>
<tr>
<td>Packet size</td>
<td>188 bytes</td>
</tr>
<tr>
<td>Compliance</td>
<td>EN 50083-9:2002, ASI-C</td>
</tr>
</tbody>
</table>

Rack Enclosures and Accessories

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>GN 01 W2</td>
<td>Two-module mounting Box including fans and 2 PS</td>
<td>£125.70</td>
</tr>
<tr>
<td>GN 50W 0230</td>
<td>19” 3HU professional subrack with GigE sw. + fan + 1PS 230VAC , prepared for redundancy</td>
<td>£1,431.72</td>
</tr>
<tr>
<td>GN 50W 0048</td>
<td>19” 3HU professional subrack with GigE sw. + fan + 1PS 48VDC , prepared for redundancy</td>
<td>£1,607.04</td>
</tr>
<tr>
<td>GN 40W 0230</td>
<td>19” 3HU Subrack + 1HU fan + 1PS + DC harness</td>
<td>£531.25</td>
</tr>
<tr>
<td>GN 20B</td>
<td>19” 1HU Subrack with PSU</td>
<td>£264.79</td>
</tr>
<tr>
<td>GN20 R</td>
<td>(Dual redundant power supply supply)</td>
<td>£333.00</td>
</tr>
<tr>
<td>GN 55W 0230</td>
<td>Redun. 230 VAC PS for GN 50</td>
<td>£291.27</td>
</tr>
<tr>
<td>GN 55W 0048</td>
<td>Redun. 48 VDC PS for GN 50</td>
<td>£384.77</td>
</tr>
<tr>
<td>DS 35 0035</td>
<td>Patchcord F-quick - F-quick, 35cm</td>
<td>£4.36</td>
</tr>
<tr>
<td>DS 35 0050</td>
<td>Patchcord F-quick - F-quick, 50cm</td>
<td>£4.36</td>
</tr>
<tr>
<td>GN 11 0025</td>
<td>ASI cable, 25cm</td>
<td>£8.83</td>
</tr>
</tbody>
</table>

GN 55W 0230 Redundant PSU
The Wisi Tangram video platform is a high density digital TV head end, for terrestrial satellite, Ethernet in to Coaxial RF UHF/VHF/ and DVB-IP Gateway out. This enables systems to be constructed and customised distributing TV and radio programs via coaxial, and Ethernet networks. With DVB and Radio stream editing and processing in a compact 1 U rack unit. Individual TV programs can be removed or time scheduled. Ideal for systems that require programme control, such as schools, hotels or any network requiring individual program control.

Cost effective in price and space

Tangram has 6 module slots on the rear. For example, this equals a 48 COFDM RF TV multiplex capability, or a mixture of analogue and or digital TV and FM radio, from a single 1U rack unit.
Digital TV via IP Networks and end to end IPTV solutions such as On Demand TV, Connected TV and OTT (Over The Top) Web TV. The platform is highly customizable and offers advanced DVB stream processing in a small footprint.

The TANGRAM platform can be used in a central or distributed headend architecture and provides the following processing functions in a central location.

DVB-IP Gateway for DVB-S/S2, -C, -T, -T2, Descrambling.
Remultiplexing, Scrambling, PSI/SI-Processing and Modulation.

In a decentralized architecture with regional Hubs, the modulation is done in the hub site and the aggregated digital TV streams are transported via an IP and or coaxial networks.

Example of modulator settings

![Modulator Settings](image1)

Note: Most settings can be left with the default settings for most applications.

Example of time scheduling.

![Time Scheduling](image2)
TX systems

System Overview

Combine RF outputs with a splitter combiner type TD8-12
See taps and splitters in the catalogue.

Tanagram basic units, 48 V DC OR 230 V AC

GT 01 O 0230
19” 1U chassis with backplane, 1 power supply, 230 V AC
£1,354.50

Dimensions (width x height x depth) 295x216x105 mm

Output
Switch/Controller
Streaming-Ports 4 pcs. (1 Gbit/s)
Control-Ports 1 pcs. (100 Mbit/s)
Category Laser type 2+
Multicast IGMP V2 + V3
Protocols RTP, UDP, http, ICMP, SNMPv2
Redundancy control Slots for n+1

Module slots 2 pcs.

GT 01 W 0230
19” 1 U chassis with backplane, 1 power supply, 230 V AC
£1,879.50

GT 01 W 0048
19” 1 U chassis with backplane, 1 power supply 48 VDC
£1,984.50

Dimensions (width x height x depth) 295x216x480 mm

8 slots for modules, 2 slots for PSU, 1 slot for fan unit
Slot 1 to 6: single function modules i.e. GT2x Edge module
Slot 7: GT11 Ethernet switch and control unit
Slot 8: GT12 Ethernet port extension,
Slot 9, 10: Power supply
Cooling: air flow from right to left (front sight), hot swappable fan unit
Passive backplane
All RF plugs on the back
Single function modules (SFM) are hot swappable from the back without service interruption on the remaining modules.

Output
Switch/Controller
Streaming-Ports 4 pcs. (1 Gbit/s)
Control-Ports 1 pcs. (100 Mbit/s)
Category Laser type 2+
Multicast IGMP V2 + V3
Protocols RTP, UDP, http, ICMP, SNMPv2
Redundancy control Slots for n+1

Power supplys included in basic units 1 piece

Optional redundant power supply units
GT 55 W 0048 48V DC
£599.75
GT 55 W 0230 230 V AC
£519.75
## GT 21 W
6 x VSB analogue modulator board

<table>
<thead>
<tr>
<th>Feature</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gigabit Ethernet MPEG-TS to analogue PAL /SECAM Decoder</td>
<td></td>
</tr>
<tr>
<td>Up to 6 PAL channels on 2 RF outputs</td>
<td></td>
</tr>
<tr>
<td>MPEG-2 &amp; MPEG-4 H.264 decoding (SD &amp; HD)</td>
<td></td>
</tr>
<tr>
<td>Test ports for the output signal</td>
<td></td>
</tr>
<tr>
<td>Outstanding signal parameters by direct digital modulation &amp; adapted output filter</td>
<td></td>
</tr>
<tr>
<td>User friendly configuration via standard web browser</td>
<td></td>
</tr>
<tr>
<td>Low power consumption</td>
<td></td>
</tr>
<tr>
<td>Temperature and Output level monitoring</td>
<td></td>
</tr>
<tr>
<td>UDP/RTP over IP protocol, auto-detected</td>
<td></td>
</tr>
<tr>
<td>Options can be activated via license key</td>
<td></td>
</tr>
<tr>
<td>Price</td>
<td>£2,892.75</td>
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</tbody>
</table>

## GT 22C
8 x FM modulator board

<table>
<thead>
<tr>
<th>Feature</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gigabit Ethernet MPEG-TS to analogue FM Decoder</td>
<td></td>
</tr>
<tr>
<td>Up to 8 FM channels on 1 RF output</td>
<td></td>
</tr>
<tr>
<td>Total of max. 48 FM channels in 1RU</td>
<td></td>
</tr>
<tr>
<td>Outstanding signal parameters by direct digital modulation</td>
<td></td>
</tr>
<tr>
<td>Digital FM modulation &amp; RDS insertion</td>
<td></td>
</tr>
<tr>
<td>User friendly configuration via standard web browser</td>
<td></td>
</tr>
<tr>
<td>Low power consumption</td>
<td></td>
</tr>
<tr>
<td>Test ports for the output signal</td>
<td></td>
</tr>
<tr>
<td>UDP/RTP over IP protocol, auto-detected</td>
<td></td>
</tr>
<tr>
<td>Extraction of RDS data</td>
<td></td>
</tr>
<tr>
<td>Price</td>
<td>£1,149.75</td>
</tr>
</tbody>
</table>

## GT 24W
8 x COFDM modulator board

<table>
<thead>
<tr>
<th>Feature</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gigabit Ethernet MPEG-TS to COFDM</td>
<td></td>
</tr>
<tr>
<td>Up to 8 COFDM channels on 2 RF outputs</td>
<td></td>
</tr>
<tr>
<td>Total of max. 48 COFDM channels in 1RU</td>
<td></td>
</tr>
<tr>
<td>Outstanding signal parameters by direct digital modulation &amp; adapted output filter</td>
<td></td>
</tr>
<tr>
<td>User friendly configuration via standard web browser</td>
<td></td>
</tr>
<tr>
<td>Low power consumption</td>
<td></td>
</tr>
<tr>
<td>Multi channel processor for up to 2x4 (2k-Mode)</td>
<td></td>
</tr>
<tr>
<td>Test ports for the output signal</td>
<td></td>
</tr>
<tr>
<td>COFDM channels individually switchable on/off</td>
<td></td>
</tr>
<tr>
<td>PCR correction</td>
<td></td>
</tr>
<tr>
<td>Price</td>
<td>£1,884.75</td>
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</tbody>
</table>

## GT 23W
8 x QAM modulator board

<table>
<thead>
<tr>
<th>Feature</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gigabit Ethernet MPEG-TS to QAM Modulator</td>
<td></td>
</tr>
<tr>
<td>Up to 8 QAM channels on 2 RF outputs</td>
<td></td>
</tr>
<tr>
<td>Total of max. 48 QAM channels in 1RU</td>
<td></td>
</tr>
<tr>
<td>Outstanding signal parameters by direct digital modulation &amp; adapted output filter</td>
<td></td>
</tr>
<tr>
<td>User friendly configuration via standard web browser</td>
<td></td>
</tr>
<tr>
<td>Low power consumption</td>
<td></td>
</tr>
<tr>
<td>Multi channel processor for up to 2x4 QAM channels</td>
<td></td>
</tr>
<tr>
<td>Test ports for the output signal</td>
<td></td>
</tr>
<tr>
<td>QAM channels individually switchable on/off</td>
<td></td>
</tr>
<tr>
<td>PCR correction</td>
<td></td>
</tr>
<tr>
<td>Price</td>
<td>£1,737.75</td>
</tr>
</tbody>
</table>
GT 31W
4x Universal DVB to IP module with DVB-S/S2/T2/C frontend
The GT 31 W module is part of the Tangram product portfolio. This module allows you to add up to 4 DVB- transport streams per module to your network.
Multi transport stream reception for DVB signals
4 x DVB-S / -S2 / -T/T2 / -C input
Gigabit Ethernet output for MPTS and SPTS signals
Redundancy for video streaming output
UDP & RTP over IP protocol, ProMPEG FEC (optional)
Demultiplex MPEG-2/MPEG-4 signals for SPTS transmission
Handling of teletext and EPG data
Configuration via Ethernet interface
Separate Fast Ethernet port for management (optional)
DVBqC (optional)
£355.95

GT 42W
4 x CI module
The GT 42 module is part of the Tangram product portfolio. The GT 42 W CI module is designed as descrambler to be optionally combined with other Tangram modules. All Common Interfaces can be cascaded to reduce costs by using standard CAMs.
Tangram is a very high density and highly flexible solution for all kinds of networks. The chassis uses a fully redundant concept (n+1, 1+1)
Descrambling + MUX function
Multi channel decryption support (MCD) for payload
loop-through to descramble multiple transport streams and different scrambling systems with standard CAMs.
Up to 4 CA modules
20 x MPTS or SPTS outputs
Modification of PSI/SI tables
Block PID, PID remapping
User friendly configuration via standard web browser
Low power consumption
£355.95