

## TSMP range of analogue digital modulators receivers and re-modulators

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

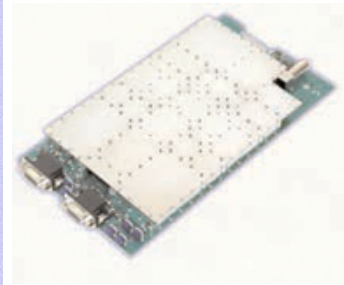
Specifications subject to change



### 19" RACK 4U

Brackets also supplied for wall mounting

### TSMP-MMTQ



Twin analogue modulator

Remote programming & monitoring via internet ipm option



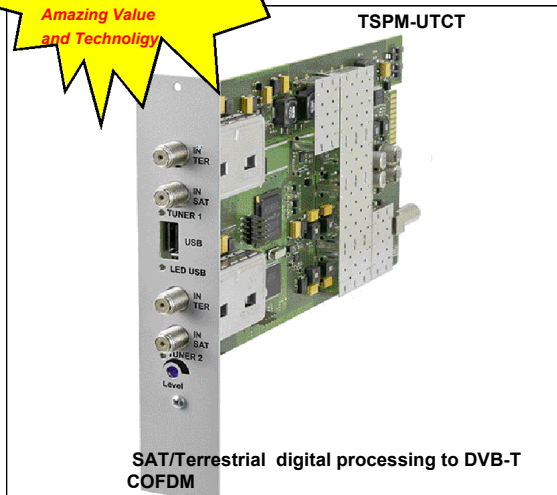
**Digital Freesat or Digital Freeview Converted to Freeview in one compact unit**  
 Amazing Value and Technology



Twin Freeview to PAL AV out receiver



Modulator  
 Multistandard  
 PAL/SECAM/NTSC  
 Agile 47-860MHz



SAT/Terrestrial digital processing to DVB-T  
 COFDM

### TSMP-200 for two single modules



### TSMP-H4TCT



DVB-T modulator  
 MPEG4 encoding  
 4x HDMI inputs

### TSMP-H4TCT Specification

Video Encoding	MPEG-4 AVC / H.264
Input	HDMI
Encoding	1920x1080_60P ; 1920x1080_50P ; 1920x1080_60i ; 1920x1080_50i Full HD 1280x720_60P ; 1280x720_50P – HD ready
Audio Encoding	MPEG1 Layer II / AAC/LC
Sampling Rate / Sample rate	48 KHz
Output	DVB-C or DVB-T
Bandwidth	7, 8 MHz
Modulation	16 QPSK, 16 QAM, 64 QAM
MER	≥ 38 dB
Frequency	112–862 MHz
RF output level	80 dBμV
Power consumption	15 W
Operation temp.	0...45 °C

### TCLP2.9 12VDC3A

Switch mode psu  
 For TSMP 200 £16.35



### DTL 2

Link lead between twin sat receiver and analogue modulators

£14.75



### DTL 1

Link lead between receiver and analogue modulator

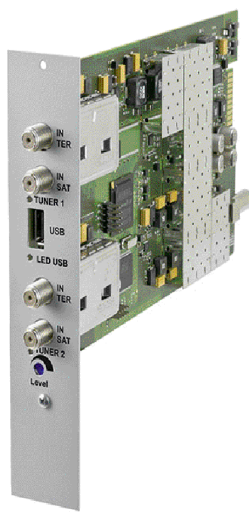


£4.90

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

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

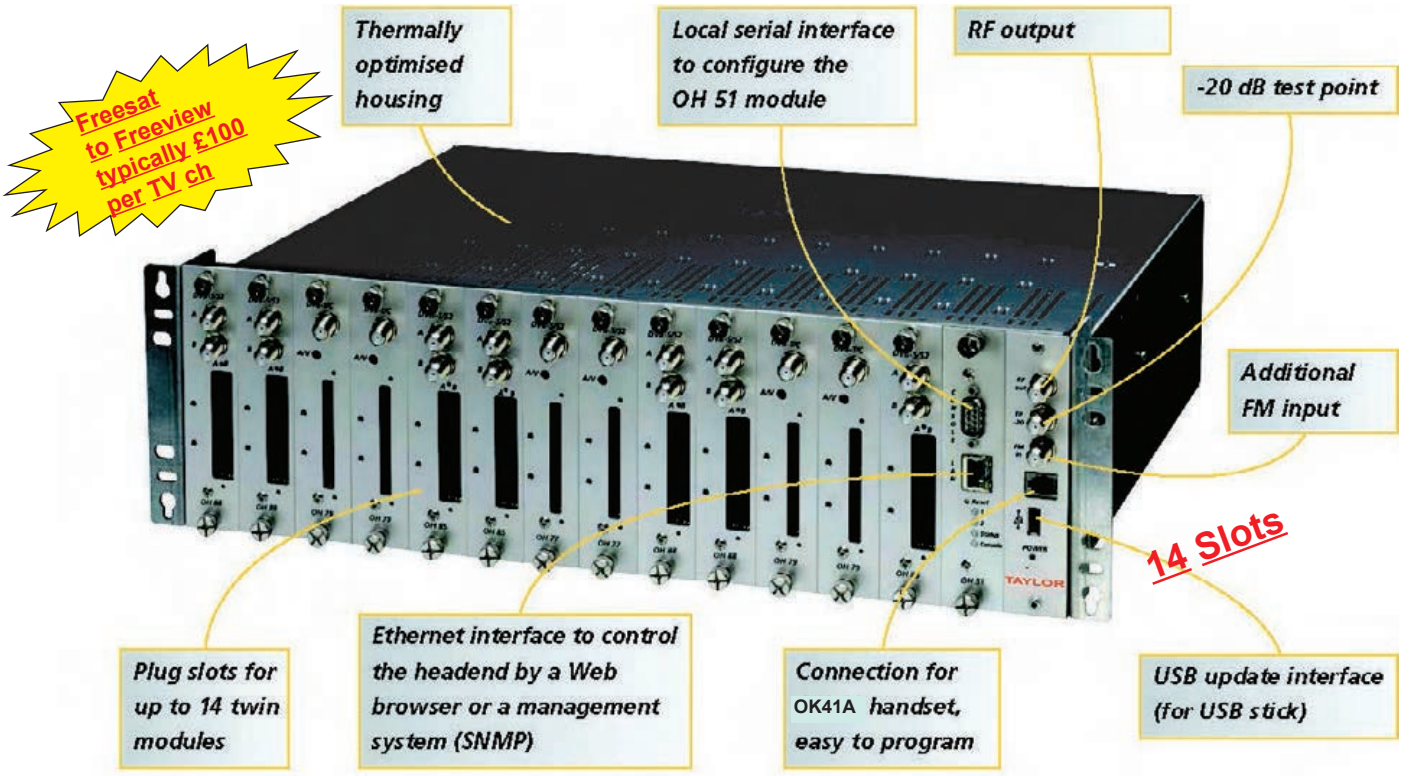
Type	Description	Price
<b>TSMP-2000ipm</b>	4U 19" Rack base unit (177mm deep) and programmer. With remote monitoring and programming via the internet. PSU 180-265 AC > Includes combiner for ten modules, 20dB test socket. 180-265VAC , max power consumption 115W ,50/60Hz. Power available for LNB's 18VDC 500mA per LNB total 1A .	£487.00
<b>TSMP-200T</b>	Base unit and programme for two twin modules. Requires 12V PSU ,2.5A max	£210.00
<b>TSMP-H4TCT</b>	DVB-T Modulator , 4 HDMI Inputs, modules can be fitted into a TSMP2000 4U rack ,that s 24 , TV programs into digital TV format.Max six modules in TSMP 2000ip	£1,418.48
<b>TSMP-UTCT</b>	Converts 2 sat DVBS/S2 or 2 terrestrial digital DVB-T/2 multiplexes into, 2 DVB-T multiplexes ,Functions include editing LCN,NIT,and TSP, Via LAN connection using a PC.	£491.74
<b>TSMP-UTCT-CI</b>	As above (TSMP-UTCT) but with 2 x CAM slots.	£590.01
<b>TSMP-MMQ</b>	TV Modulator module Video in 1V pk -1dB 75%. Audio 500mV rms 10K%, 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	£113.74
<b>TSMP-MMTQ</b>	Twin TV Modulator module. Video in 1V pk -1dB 75%. Audio 500mV rms 10K%, 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	£180.41
<b>TSMP-MSTQ</b>	Twin TV Stereo Modulator module for B/G Video in 1V pk -1dB 75%. Audio 500mV rms 10K%, 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	£248.18
<b>TSMP-MSTQ</b>	Twin TV Stereo Modulator module for B/G Video in 1V pk -1dB 75%. Audio 500mV rms 10K%, 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	£248.18
<b>TSMP-PSTI</b>	QPSK Twin Digital Sat Receiver for free to air broadcasts.Sky and Free sat . AV output. . Requires modulator .LNB control 14-18V ,22kHz ,DISEqC. With CAM module .Two tuners ,select any programs from any multiplex.	£367.64
<b>TSMP-S2T</b> <small>Discontinued see above TSMP-UTCT TSMP-UTCT-CI</small>	QPSK Digital Sat receiver demodulator LNB control 14-18V ,22kHz ,DISEqC. With demodulation and remodulation to DVB-T COFDM. Output 90dB uV adjustable. Intergrated CAM slot. Up to 10 TV programs,selected from a sat multipexes depending on the compression and bandwidth of each TV program and can be processed and modulated on to <a href="#">8MHz COFDM</a> UHF or VHF channels. Check out FTA programs available on each sat multi[plex. Power consumption 12W . Max six modules in TSMP 2000ip.	£591.82
<b>TSMP-TV-TVDTQ</b>	Twin frequency agile UHF/VHF channel convertor with AGC. Freq range input and output 47-862MHz. Input 65-85dBuV, F connector. TV standards B/G, D/K I, M, N COFDM digital. Very low phase noise synthesizers,improves MER.	£380.86
<b>TSMP-PT</b>	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	£225.11
<b>TSMP-PTT</b>	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.One tuner ,select any two programs from one multiplex.	£251.61
<b>TSMP-T2C-AVT</b>	Twin Freeview <a href="#">DVB/T2</a> COFDM receiver 147-230mHz/470-862mHz .COFDM 2k,8k Video out 1vpk- pk,audio-6 to+6dB. Output connector both channels via one 15 pin D socket.Use this on new installations!	£428.59
<b>TSMP-PTTI</b>	Twin Freeview DVB-T COFDM receiver 147-230mHz/470-862mHz .COFDM 2k,8k Video out 1vpk-pk,audio-6 to+6dB. Output connectors two 15 pin D sockets. Two tuners ,select any two programs from any multiplex.	£309.84



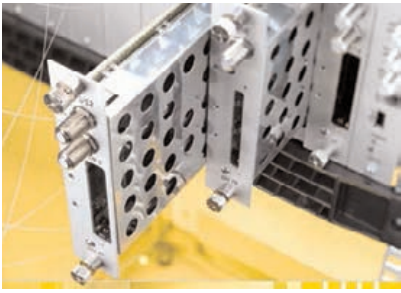
- TSMP DBP 2m D plug to AV Phono lead** £7.65
  - TSMP DB 2m D plug to BNC Video Phono audio lead** £7.65 for 5m leads add £1.90
  - TSMP DS 2m D plug to scart lead** £7.65
  - TSMP DBPS 2m D plug to AV stereo Phono lead** £8.90
- [See bottom of page 37 for D to D leads](#)



- \*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 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



**Freesat to Freeview typically £100 per TV ch**

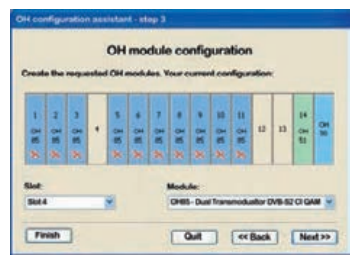


**OH50 Base unit**



**OH41 Programmer £49.00**

**OH51 Remote Monitoring module**





Wall or rack mounting brackets

- \* Headend basic unit for analog and digital TV signals
- \* Slots for up to 14 modules (28 channels max.)
- \* 19" rack mounting or wall mounting
- \* Integrated FM amplifier
- \* Easy programming with OH 41 handset
- \* Update and pre-programming via USB stick
- \* Remote monitoring module OH 51 is available
- \* High output power

OH 50	Base Unit (3U)
Amplifier Frequency range	
TV	47–862 MHz
FM	87.5–108 MHz
Output level	110 dB <sub>V</sub>
Output attenuator	15 dB / 1 dB steps
Input level (FM)	70–100 dB <sub>V</sub>
FM attenuator	31 dB / 1dB steps
Test output	- 20 dB
Power supply	
Input voltage	180...265 V AC (47-63 Hz)
Max. power consumption	< 195 W
Efficiency	≥ 85 %
LNB power	12.5 V 1.2 A
Dimensions	443 x 132 (3 HU) x 351 mm
Connectors	
FM input/RF output	2 x F-connector
Test output	1 x F-connector
Control	RJ 11
Software update	USB
Master slave operation	RJ 12
Operating temperature range	- 20 °C to + 40 °C

- \* Reception of a DVB-T/C signal and processing to an analog-TV-channel per module
- \* Demultiplexing and decoding of MPEG-2 and MPEG-4 signals
- \* Built-in CI interface
- \* NICAM audio processing
- \* Input frequency range 110–858 MHz
- \* Output frequency range 45–862 MHz
- \* Vestigial sideband modulator



OH79D	DVB-T/C to Analogue UHF/VHF
with CI (MPEG-4)	
Input frequency range	110–858 MHz
Input frequency steps	250 kHz
Input level range	47–90 dB <sub>V</sub>
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	45–862 MHz
Frequency steps	250 kHz
Stability of output frequency	± 30 kHz
Output channel bandwidth	7/8 MHz
Output level (1dB steps)	95–105 dB <sub>V</sub>
Spurious inside TV channel	> 55 dB
Spurious outside a TV channel	> 55 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)H.264 (MPEG-4)
Audio decoder	MPEG-2 (L1/L2), AAC
Audio format	Mono, Stereo, Dual, NICAM
S/N video (CCIR-rec. 567-1)	> 58 dB
S/N audio (color test pattern)	> 50 dB
Stability of output level	± 1 dB
Connectors RF input/output	F-connector
Current consumption	ca. 0.80 A
Power consumption	< 10 W
LNB power*	12 V / 0.5 A max.
Operating temperature range	- 20 °C to + 40 °C

- \* Reception of a DVB-S signal and processing to an analog-TV-channel
- \* Demultiplexing and decoding of MPEG-2 signals
- \* Built-in CI interface
- \* Input frequency range 950–2150 MHz
- \* Output frequency range 45–862 MHz
- \* Frequency agile vsb modulator



OH 76	DVB-S to Analogue UHF/VHF
With CI	
Input frequency range	950–2150 MHz
Input frequency steps	1 MHz
Input level range	47–70 dB <sub>V</sub>
Modulation scheme	QPSK
Frequency steps	1 MHz
Symbol rate	1–45 MS/s
FEC outer code	RS (204,16)
FEC inner code	Conv. (1/2, 2/3, 3/4, 5/6, 7/8)
Output frequency range	45–862 MHz
Frequency steps	250 kHz
Stability of output frequency	± 30 kHz
Output channel bandwidth	7/8 MHz
Output level (1dB steps)	95–105 dB <sub>V</sub>
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 (L1/L2)
Audio format	Mono, Stereo, Dual
S/N video (CCIR-rec. 567-1)	≥ 58 dB
S/N audio (color test pattern)	> 50 dB
Stability of output level	± 1 dB
Spurious inside TV channel	> 55 dB
Spurious outside TV channel	> 55 dB
Connectors RF input/output	F-connector
Current consumption	ca. 0.80 A
Power consumption	< 10 W
LNB power*	12 V / 0.5 A max.
Operating temperature range	- 20 °C to + 40 °C

\* with 22 kHz/DiSEqC modulator to control multiswitches

- \* Reception of a DVB-S/S2 signal and processing to an analog-TV-channel
- \* Demultiplexing and decoding of MPEG-2 and MPEG-4 signals
- \* Built-in CI interface
- \* NICAM audio processing
- \* Input frequency range 950–2150 MHz
- \* Output frequency range 45–862 MHz
- \* Vestigial sideband modulator



OH77	DVB-S/S2 to Analogue UHF/VHF
with CI (MPEG-4)	
Input frequency range	950–2150 MHz
Input frequency steps	1 MHz
Input level range	47–70 dB <sub>V</sub>
AFC	± 10 MHz
Modulation scheme	QPSK, 8PSK
Symbol rate	10–30 MS/s
FEC inner code LDPC	(1/2, 3/5, 2/3, 3/4, 4/5, 5/6, 8/9, 9/10)
Spectral inversion X	C-Band/KU-Band
Output frequency range	45–862 MHz
Frequency steps	250 kHz
Stability of output frequency	± 30 kHz
Output channel bandwidth	7/8 MHz
Output level (1dB steps)	95–105 dB <sub>V</sub>
Spurious inside TV channel	> 55 dB
Spurious outside a TV channel	> 55 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)H.264 (MPEG-4)
Audio decoder	MPEG-2 (L1/L2), AAC
Audio format	Mono, Stereo, Dual, NICAM
S/N video (CCIR-rec. 567-1)	> 58 dB
S/N audio (color test pattern)	> 50 dB
Stability of output level	± 1 dB
Connectors RF input/output	F-connector
Current consumption	ca. 0.80 A
Power consumption	< 10 W
LNB power*	12 V / 0.5 A max.
Operating temperature range	- 20 °C to + 40 °C

\* with 22 kHz/DiSEqC modulator to control multiswitches

- \* Modulation of 2 AV or SDI signals to 2 QAM or COFDM TV channels
- \* Video resolution adjustable from 1.5-9Mb/s
- \* Connectors for audio/video with BNC/3.5mm jack
- \* Connectors for SDI with BNC/3.5mm /jack
- \* SDI audio input embedded or 2 x 3.5mm Jack



OH66	Twin AV/SDI, MPEG 2 to QAM, COFDM.
Composite video Input level 1 V <sub>ss</sub> (± 0.4V), Frequency range 20 Hz ... 5 MHz	
MPEG 2 Video processing ,ISO/IEC 13818-2, MP@ML (4:2:2)	
Bit rate ,CBR & VBR 1,5 – 9 Mb/s in 1.5Mb/s steps;	
Picture size 720 pixel horizontal, 576 pixel vertical	
Teletext extraction from analogue video signal	
Picture format support for 4:3 and 16:9 automatic detection by WSS	
PID setting automatic;	
Manual overwriting possible	
PSI/SI settings automatic creation of PAT/PMT/SDT	
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	
Audio processing	
Sampling frequency 32/44,1/48 kHz	
Encoding standard MPEG 1 L1/L2 ISO/IEC 13818-3	
Bit rate up to 192 kbit/s	
Mode stereo, joint stereo, dual, mono	
Output	
QAM or COFDM* modulation can be selected by the control software	
Output frequency range 47–862 MHz	
Spurious outside TV channel ≥ 50 dB	
QAM-Mode	
Modulation scheme 16-, 32-, 64-, 128-, 256-QAM	
Output frequency steps 500 kHz	
Output channel bandwidth 8 MHz	
Output level 88–103 dB <sub>μ</sub> V	
MER ≥ 40 dB	
Symbolrate 3.45–6.9 MS/s	
Bit stuffing yes	
PCR correction yes	
COFDM-Mode*	
Modulation scheme COFDM	
Output frequency steps 250 kHz	
Output channel bandwidth 7/8 MHz	
Output level 82–97 dB <sub>μ</sub> V	
MER ≥ 37 dB	
Modulation of single carriers 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	
General data	
Connectors	
Video- / Audio-input per channel 1 x BNC / 1 x stereo jack socket 3.5 mm	
RF-output F-connector	
Operating temperature range - 20°C to +55°C	

- \* Modulation of 2 AV signals to 2 analog TV channels
- \* Multi standard operation
- \* Stereo capable vestigial sideband modulator, independently adjustable in 250 kHz steps
- \* Interface for audio/video with BNC/Phono(RCA)
- \* Output frequency range 45–862 MHz



OH38	Twin AV-Analogue 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. deviativ)	- 4 dBm / 1 kHz
Audio level range -	9 dB... + 5 dB
Audio input bandwidth	40–15000 Hz
Output impedance	75 Ohm
Output frequency range	45–862 MHz
Frequency steps	250 kHz
Stability of output frequency	± 30 kHz
Output channel bandwidth	7/8 MHz
Output level (1 dB steps)	± 1 dB
TV standards	B/G, D/K, I, L
Audio format	Mono, Stereo, Dual(not NICam)
S/N video (CCIR-rec. 567-1)	> 58 dB
S/N audio (color test pattern)	> 50 dB
Stability of output level	± 1 dB
Spurious inside TV channel	> 55 dB
Spurious outside TV channel	> 55 dB
Power consumption	< 8 W
Operating temperatur range	- 20 °C to + 40 °C



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



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	≥ 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
Current consumption	ca. 0.85 A
Power consumption	< 10 W
LNB power* 1	2 V / 0.5 A max.
Operating temperature range	- 20 °C to + 40 °C

\* with 22kHz/DiSEqC modulator to control multiswitches

- \* Reception of two DVB-T/C signals and transmodulation into dual COFDM-TVchannels (bonded)
- \* Input frequency range 110–858 MHz
- \* Output frequency range 110–858 MHz



OH892	Twin DVB-T/C to COFDM
with CI	
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	≥ 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
Current consumption	ca. 0.85 A
Power consumption	< 10 W
LNB power* 1	2 V / 0.5 A max.
Operating temperature range	- 20 °C to + 40 °C

**OH51A.**  
Remote Monitoring module. Two OH50 units can be monitored and config-ured via the internet.

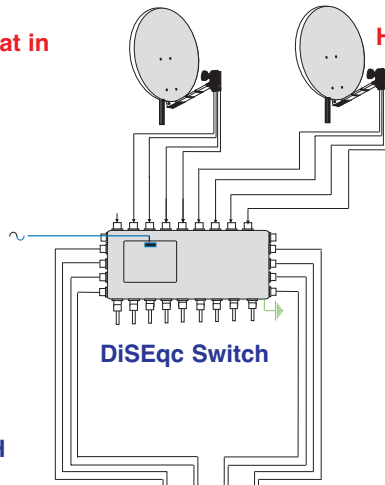


**OH45**  
DVB-T/T2 ch converter  
Useful for changing to lower frequencies and consequently lower cable losses



Freesat in

Hotbird in



1 x OH 50  
4 x OH 88H  
Dual units

8 x Freeview DVB-T muxes out using 4 modules ,add more modules for more multiplexes



OH 50	Basic unit for 14 modules; FM amplifier, power supply; USB interface	£429.75
OH 51A	Management module, Web browser, SNMP	£108.47
OH 38	Dual AV modulator, no channel bonding	£246.38
OH 45	Terrestrial DVB-T/T2 channel converter 45-862 MHz,internal SAW filter.7/8 MHz	£240.38
OH 66	Twin AV or SDI input MPEG 2 encoder to QAM or COFDM. 82- 97dBuV , 47-862MHz	£684.18
OH 76	DVB-S to PAL/Secam/NTSC	£212.89
OH 77	DVB-S/DVB-S2/MPEG2/MPEG4 to PAL/Secam/NTSC	£378.55
OH 79D	DVB-S2/MPEG4 to PAL/Secam/NTSC	£447.57
OH 85H	Dual DVB-S/DBV-S2 to QAM transmodulator; HD, 2 CI, bit stuffing,	£459.08
OH 88H	Dual DVB-S/DVB-S2 to COFDM transmodulator, HD, 2 CI, bit stuffing,	£564.26
OH 892	Dual DVB-T/DVB-C to COFDM transmodulator, 2 CI, bit stuffing, PCR,	£619.04

USB Interface Updates:  
Received via internet can be transferred to the Headend by USB stick without PC.  
Preprogramming:  
Can be done in office and transferred  
To the Headend for quick installation.

