

Professional Head End

Standard modules with a comprehensive range of functions

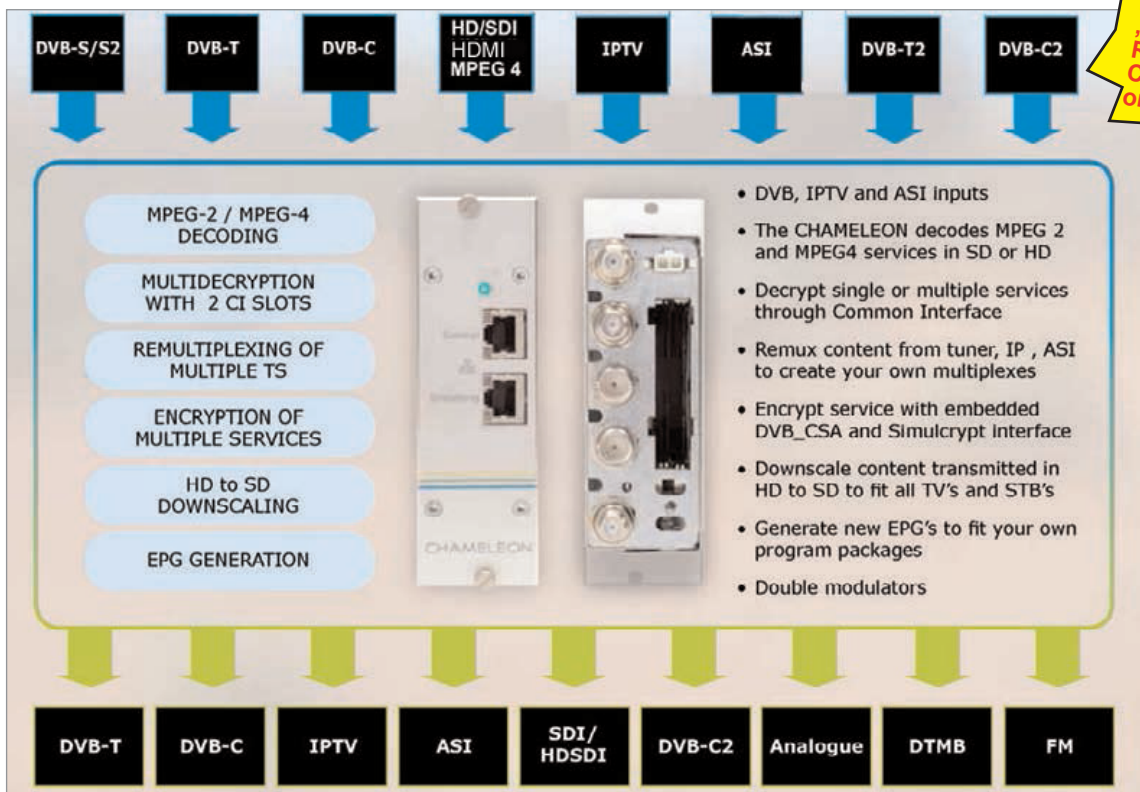


4 x HDMI in
MPEG2&4 encoding
DVB-T out



Rear View

Options configured by software license



Incredible Value
Two sat DVB-S/S2
Re muxed to 2 x
COFDM Muxes with
only one module



**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 accomidates 2 modules



Discontinued,
see alternative options below

Part Number

GN 01 W

Basic wall mounting unit for two modules

Technical data

Output Switch/Controller Category Multicast Protocolls

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

For Head Ends accomidates 2 modules

GN20B



£342.49

Part Number

GN 20 B GN20 R (Dual redundant power supply supply)

Technical data

Basic unit, 19", 1U Rack unit, for 2 modules Integrated power supply system

Built-in power supply and fan.

The GN 20W can be used individually or in conjunction with an existing installation to include additional modules.

Voltage AC 100...240 V (50/60 Hz) 18W

Dimensions 1U high rack

Gross Weight shipping unit 3.3 kg

GN20R With Redundant PSU



£422.67

Part Number

GN 40 W 0230

Technical data

Basic unit, 19", 4U Rack unit, for 10 modules

Output Switch/Controller Category Multicast Protocolls

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)

Gross Weight shipping unit 6.46 kg

For Head Ends accomidates 10 modules



£657.39

Part Number

GN 50 W 0230

Technical data

Basic unit, 230 V AC, 19", Rack 3U unit for 10 modules

Output Switch/Controller

Streaming-Ports 4 pcs. (1 Gbit/s)

Control-Ports 1 pcs. (100 Mbit/s) Category

Multicast Protocolls

Redundancy control Connections

Module slots 10 pcs.

RJ45 5 pcs.

Power supplys 1 pcs.

Optional redundant power

AC voltage 180... 265 V (47...63 Hz) <245 W

Dimensions (width x height x 443x132x475 mm)

Gross Weight shipping unit 12.44 kg

For IP Systems , accomidates 10 modules



£1,597.90

Modules and Licence options

Universal module
GN HWUW2



£842.56

MPEG 4 Encoder
module 2 x SDI
GN HWENCW



£1,709.22

MPEG 2/4 Encoder
4 x HDMI
GNHWENC2H



£2,136.00

GN HWENCW	Chameleon MPEG 4 HD Encoder module 2xSDI inputs	£1,709.22
GN HWUW2	Chameleon universal tuner, modulator module.	£842.56
GNHWENC2H	Chameleon MPEG 4&2 HD Encoder module 4x HDMI inputs	£2,136.00
RFinput		
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 QCMOD	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) GN	£120.52
DVMOD	License for two VSB outputs (Analogue TV) GN T2MOD	£109.57
License for one T2 output	Not yet available ,	£147.91
GN OCTFM	License for 8 FM Radio outputs	£350.61
BNC Connector		
GN ASI	ASI in/out License on BNC	£98.61
GN SSDI	License for SD SDI decoder on BNC	£169.83
GN HSDI	License for HD SDI decoder on BNC	£246.52
GN DASI	License for two ASI interfaces on BNC	£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 for IP in.	£383.48

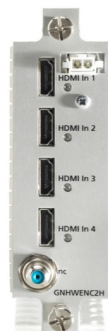
Licence options ,continued

Audio Codec		
GN DOL	License for Dolby Audio decoding.	£164.35
Common Interface		
GN CI	License for one CI slot	£61.36
GN DCI	License for two CI slots	£98.61
Overall System mamagment		
GN SYSMG	2 License for system management. Requires GN50 rack	£27.39
Tranport Stream Processing		
GN MUX	License for multiplexer incl. automatic SI/PSI computation independent of other modules.	£241.04
GN SYMUX	License for multiplexer incl. system SI/PSI tables computation for interconnected multiplexers of this network.	£306.78
Encryption		
GN SCR	License for simulcrypt scrambler for 64 PIDs per outgoing QAM , COFDM or ASI Transport Stream.	£657.39
Redundancy		
GN RED	License for IP input signal redundancy	£104.09
GN NRED	License for N+1 module redundancy	£542.35
Special Package		
GN ALL	4 Includes GNDS2, GNDT, GNDT2, GNDC, GNQCMOD, GNDTMOD, GNDVMOD, GNOCFTM, GNDASI, GNDSOI, GNHSDI, GNDCI, GNSCR, GNRED, GNSTR, GNMUX, GNSYMUX, No Dolby	£1,972.13
GN M1	(SSC) Software Service/Support Charge, 1 Year	£60.00
GN M3	(SSC) Software Service/Support Charge, 3 Year	£120.00

Specifications of Chameleon modules

DVB-S/S2 Satellite Receivers	
Input frequency	925 – 2175 MHz
Input level	-65 to -25 dBm , 44 to 84 dB_V
Symbol rates	1.0 – 45 Mbaud (max 100 Mbit/s)
Spectral inversion	Yes, selectable
LNB voltage	Auto, Off or 13/18V, programmable
LNB current	Max 800 mA total
22kHz to LNB	Auto, On or Off, programmable
DVB compliance	DVB-S (EN 300 421)
DVB-S2	(EN 302 307)
DiSEqC	Supporting control of up to 4 sat sources
IPTV Input / Output	
Input bit rate	Max 110 Mbit/s per IPTS, max 200 Mbit/s total
Output bit rate Max	100 Mbit/s per IPTS, max 200 Mbit/s total
Connectors	RJ45, or backplane GigE connector in GN50
Input/output protocol	UDP/RTP Multicast/Unicast
IPTS input format/capacity	CBR, max 20 SPTS / MPTS 1)
IPTS output format/capacity	VBR (analogue out only)
Time stamp & de-jitter	VBR/CBR, max 20 SPTS/MPTS 1)
	Yes
1) Number of IPTS (i.e. SPTS and/or MPTS) will depend on Operation Mode	
DVB-T/T2 Terrestrial receivers	
Input frequency	43 –1002 MHz
Input level (DVB-T)	39 to 79 dB_V, -70 to -30 dBm 1)
Input level (DVB-T2)	39 to 79 dB_V, -70 to -30 dBm 2)
Bandwidth (DVB-T)	6/7/8 MHz
Bandwidth (DVB-T2) 1	7/5/6/7/8 MHz and extended bandwidth
DVB compliance	DVB-T (EN 300 744) DVB-T2 (ETSI EN 302 755)
1) QEF reception with test signal: 8k, 64 QAM, _ guard interval, 2/3 FEC 2) QEF reception with test signal: 32K, 256-R QAM, 1/16 guard interval, 64k lpc, code rate 2/3, PP4, BW-8MHz, SISO	
DVB-C cable receivers	
Input frequency	43 –1002 MHz
Input level	49 to 79 dB_V, -60 to -30 dBm 1)
Bandwidth	8 MHz
Symbol rate	1 – 7.2 Mbaud
DVB compliance	DVB-C (EN 300 429 / ITU J.83 Annex A/Cc)
1) QEF reception with test signal: 64 QAM,C/N 26dB	
DVB-T Modulation	
Number of modulators	Up to 2 DVB-T muxes
COFDM mode	2k, 8k
Guard interval	1/4, 1/8, 1/16, 1/32
FEC	1/2, 2/3, 3/4, 5/6, 7/8
MER (at RF out)	>38 dB
Modulation	QPSK, 16QAM, 64QAM
Max output bit rate	31,7 Mbit/s
Output frequency	40 – 860 MHz (centre frequency)
Output level max	102 dB_V, 1 channel, 99 dB_V, 2 channels
Spurious suppression	> 60 dBc
Channel bonding	All outputs within 40 MHz band (5 channels @ 8 MHz)
DVB compliance	DVB-T (EN 300 744)
DVB-C and J.83 Annex B/C Modulation	
Number of modulators	DVB-C, J.83 Annex C: max 4 output muxes J.83 Annex B: max 2 output muxes
QAM modes	DVB-C: 16, 32, 64, 128 and 256 QAM J.83 Annex B/c: 64QAM, 256QAM
Symbol rate	DVB-C, J.83 Annex C: 2.4 – 13.6 Mbaud J.83 Annex B: 5,06/5,36 Msymb/s (64/256 QAM)
MER (at RF out)	> 43 dB for 256-QAM
Compliance	DVB-c (EN 300 429) , J.83 Annex B Level 2 for 6 MHz channel BW, J.83 Annex c
Output frequency	40 - 860 MHz
Output level max	105dB_V(1 channel) 102dB_V(2 channels) 99dB_V(3 channels, DVB-C and J.83 Annex C)

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; 2 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 GNSTR software option)
IP-Outputs	4 or 32 pcs. (32 with GNSTR 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/RTP+FEC Unicast and Multicast, IGMP v2 and v3
IP-Output protocol	UDP/RTP/RTP+FEC Unicast and Multicast, IGMP v2 and v3
IP-TS-Input format	SPTS CBR/VBR, MPTS CBR



GNHWENC2H
HDMI Encoder



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 pcs. (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

Specifications of Chameleon modules

FM Modulation		Analogue modulator	
Number of modulators	Up to 8 FM modulators	Number of modulators	Up to 2 analogue modulators
Audio decoder	MPEG-1 Layer I/II	Standards	PAL B/G, D/K, I, SECAM D/K, B/G, L
Sound	Mono, stereo, joint stereo	Group delay pre-correction	B/G general, D/K GOST20532-75, M FCC, none
Modulation	FM, ref ITU-R BS.450-3	Sound Mono,	NICAM stereo, A2 stereo
FM deviation limiter	Yes	Modulation audio Audio	FM or AM
RDS insertion	Yes, dynamic & static. Ref EN50067	Modulation video	VSF AM, neg. or pos.
Output frequency	87.5-108 MHz, 100 kHz step size	Video bandwidth	4.2, 5.0, 6.0 MHz
Output level per FM ch	Max 92 dB_V	Output frequency	48 – 855 MHz
S/N	> 60 dB (mono), > 55 dB (stereo)	Output level max	Max 111 dB_V (1 channel) , max 108 dB_V (2 channels)
C/N, broadband	Typical 65 dB	Video S/N	(weighted) > 65 dB
Spurious suppression	Typical 60 dBc (FM band 87.5-108 MHz) > 50 dBc (outside FM band)	C/N, broadband	> 70 dB (65 dB typical at adjacent channel)
		NICAM standards	NICAM 728 (EN 300 163)
		Spurious suppression	Typical 60 dBc
		Channel bonding	All outputs within 40 MHz
DTMB Modulation		SDI output	
Number of modulators	1 DTMB mux	Output video	SDI, audio embedded
Code rate	0.6	Output audio	Stereo, Mono or Dual Sound
Carrier mode	C = 3780 (multi-carrier)	Connector	BNC
Header length	PN420 / PN945 symbols	Compliance	SDI-SD SMPTE 259M-C, SMPTE 272M-DEF
Interleaving length	M = 240, M = 720		
MER	>38 dB		
Modulation	4QAM, 16QAM, 64QAM		
Output frequency	40 – 860 MHz		
Output level Max	101 dB_V		
Spurious suppression	> 60 dBc		
Compliance	GB 20600-2006		
DVB_CSA scrambler / Simulcrypt interface		MPEG Decoder – Audio / Video	
Interface	IP	Supported formats video	MPEG2 MP@ML, MPEG2 MP@HL, up to MPEG4 H.264 AVC, H.264, level 4
Number of encrypted	PIDs 64 PIDs per output	Supported formats audio	MPEG 1 layer II, AAC HE Dolby Digital AC-3 (requires specific HW)
Number of SCG	64 SCG per output (64 CWG per output)	Aspect Ratio	Letterbox, Pan/Scan, or conversion combined (14:9) programmable, WS
Scramble outputs	DVB-C, DVB-T, ASI	Teletext Subtitling	Teletext or DVB subtitling
Interface protocol version support	ECMG <=> SCG: V2 and V3 EMMG/PGD <=> MUX: V2 and V3		
DVB compliance	DVB-SimulCrypt (ETSI TS 103 197)		
		ASI input / output	
		Number of ports	2 BNC ports, configurable for in/out via UI
		Max payload bitrate IN	Typical 200 Mbit/s
		Max payload bitrate OUT	Typical 200 Mbit/s
		PCR restamping	Yes
		Packet size	188 byte
		Compliance	EN 50083-9:2002, ASI-C

Rack Enclosures and Accessories		
GN 01 W2	Two-module mounting Box including fans and 2 PS	£141.34
GN 50W 0230	19" 3HU professional subrack with GigE sw. + fan + 1PS 230VAC , prepared for redundancy	£1,698.26
GN 50W 0048	19" 3HU professional subrack with GigE sw. + fan + 1PS 48VDC , prepared for redundancy	£1,807.83
GN 40W 0230	19" 3HU Subrack + 1HU fan + 1PS + DC harness	£657.39
GN 20W	19" 1HU Subrack with PSU. Fans	£327.60
GN20 R	(Dual redundant power supply supply)	£333.00
GN 55W 0230	Redun. 230 VAC PS for GN 50	£322.32
GN 55W 0048	Redun. 48 VDC PS for GN 50	£432.78
DS 35 0035	Patchcord F-quick - F-quick, 35cm	£4.99
DS 35 0050	Patchcord F-quick - F-quick, 50cm	£4.99
GN 11 0025	ASI cable, 25cm	£9.86

GN 55W 0230 Redundant PSU

