WISI

CHAMELEON
Technical Specification

CHAMELEON
Single Hardware Headend

The CHAMELEON product line is the first ever to cover almost every need for Cable-TV and SMATV distrubution with only one hardware. The different inputs and outputs are defined by software and hardware options and all software options can be updated any time. The CHAMELEON includes receivers for DVB-S/S2, DVB-T/T2 and DVB-C, furthermore it includes decoding of MPEG-2 and MPEG-4 video formats as well as it supports MPEG, AAC HE and AC-3 audio decoding. Remultiplexing is just a mouse click away.

CHAMELEON OVERVIEW

Power Supply:	12 VDC nom. (9-14 VDC)
Power consumption	Typical 15 W, max 18 W
Dimensions:	230x105x40 mm (excl. connectors)
Weight:	Approx. 640g
Controller:	Embedded web server, SNMP, CLI
Op. temperature:	5°C to 45°C
Nominal temp. range:	15°C to 35°C

Inputs
The CHAMELEON has dual independent DVB tuners (S/S2, T/T2, C), GigE IP inputs and ASI inputs.

Processing
CI decryption, remultiplexing, PSI/SI regeneration, encryption and MPEG decoding.

Outputs
Digital RF modulation in DVB-T, DVB-C and DTMB. Analogue RF in PAL and SECAM, GigE IP outputs, ASI outputs and SDI outputs.

Control and Management
Graphical User Interface for easy set up of complex systems. Simple handling of service remultiplexing and automatic PSI/SI regeneration.

Each CHAMELEON contains an embedded web server for management and control. Standard web browsers (Explorer, Mozilla etc.) are supported.
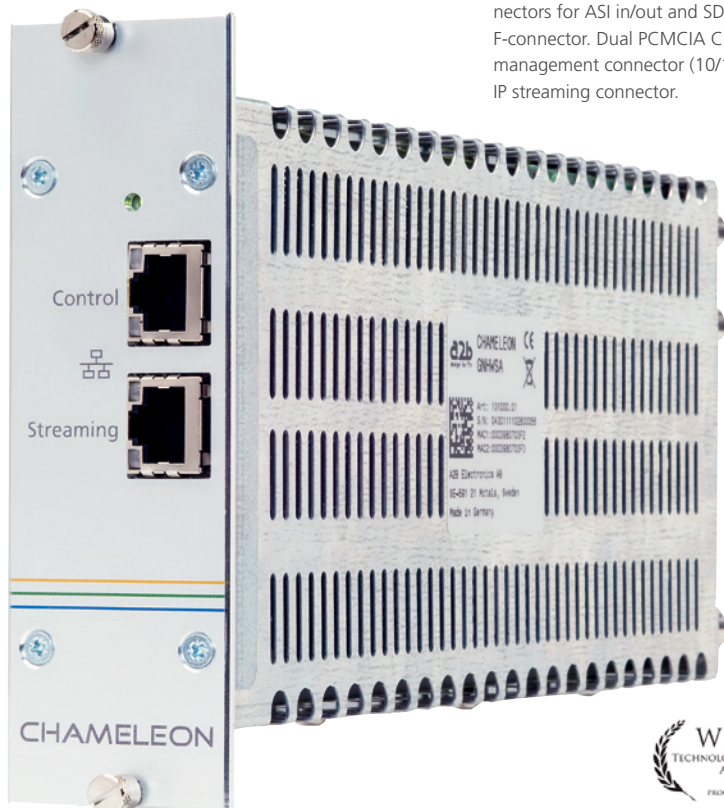
PSI/SI and remultiplexing
Remultiplexer with multiple inputs from tuners, IP and ASI. Multiple TS outputs to modulators, IP and ASI.

PSI/SI analysis and regeneration. PID dropping and PID remapping.

Connectors
Dual RF tuner F-connectors, dual BNC connectors for ASI in/out and SDI out. RF out F-connector. Dual PCMCIA CI slots. RJ45 IP management connector (10/100) RJ45 GigE IP streaming connector.

TECHNICAL INFORMATION

INPUTS & PROCESSING

DVB-S/S2 Satellite Receivers	
Input frequency	925-2175 MHz
Input level	-65 to -25 dBm, 44 to 84 dBµV
Spectral inversion	Yes, selectable
LNB voltage	Auto, Off or 13/18V, programmable
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 satellite sources

DVB-T / T2 Receiver	
Input frequency	43-1002 MHz
Input level	39 to 79 dBµV, -70 to -30 dBm [1] [2]
Bandwidth (DVB-T)	6/7/8 MHz
Bandwidth (DVB-T2)	1.7/5/6/7/8 MHz and ext. bandwidth
Compliance	DVB-T (EN 300 744) DVB-T2 (ETSI EN 302 755)

[1] QEF reception with test signal: 8K, 64QAM, 1/4 guard interval, 2/3 FEC

[2] QEF reception with test signal: 32K, 256-R QAM, 1/16 guard interval, 64k lpdc, code rate 2/3 PP4, BW-8MHz, SISO

DVB-C Receiver	
Input frequency	43-1002 MHz
Input level	49 to 79 dBµV, -60 to -30 dBm [1]
Bandwidth	8 MHz
Symbol rate	1-7.2 Mbaud
Compliance	DVB-C (EN 300 429 / ITU J.38 Annex A/C)

[1] QEF reception with test signal: 8K, 64QAM, 1/4 guard interval, 2/3 FEC

ASI input/output	
Max payload bit rates in/out	Typical 200 Mbit/s
PCR restamping	Yes
Compliance	EN 50083-9:2002, ASI-C

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
Input/output protocol	UDP/RTP Multicast/Unicast
Input/output format/capacity	CBR/VBR, max 20 IPTS [1]
Time stamp & de-jitter	Yes

[1] Number of IPTS in/out will depend on Operation Mode

CI Multidecryption	
Supported bit rates	55 / 62 / 72 Mbit/s
Compliance	EN 50221

DVB-CSA scrambler / Simulcrypt interface	
Interface	IP
Number of encrypted PIDs	64 PIDs per output
Number of SCG	64 SCG per output
DVB compliance	DVB-SimulCrypt (ETSI TS 101 197)

MPEG Decoder – audio/video	
Video formats	MPEG-2 MP@HL, MPEG-4 H.264 AVC, HiP, level 4
Audio formats	MPEG-1 layer II, AAC HE
Downscaling	HD to SD for 1 service
Aspect ratio	Letterbox, Pan/Scan, or conversion combined (14:9) programmable, WSS
Teletext	Subtitling Teletext or DVB subtitling

OUTPUTS

VSB – AM Modulation	
Standards	PAL B/G, D/K, I, SECAM D/K, B/G, L
Sound	Mono, NICAM stereo, A2 or A2* stereo
Modulation video	VSB AM, neg. or pos.
Modulation audio	Audio FM or AM
Output frequency	45-855 MHz
Output level	> 110/107 dBµV (1ch/2ch)
Video S/N (weighted)	> 65 dB
C/N, broadband	> 70 dB (65 dB typical at adjacent channel)
NICAM standards	NICAM 728 (EN 300 163)
Spur. suppression	> 60 dBc

SDI output	
Output video	SDI, audio embedded
Output audio	Stereo, Mono or DualSound
Compliance SDI-SD	SMPTE 259M, SMPTE 272M

FM Modulation radio	
Audio decoder	MPEG-1 Layer I/II
Sound	Mono, stereo, joint stereo
Modulation	FM, ref ITU-R BS.450-3
RDS insertion (dynamic and static)	Yes. Ref EN50067
Output frequency	87.5-108 MHz, 100 MHz step size
Output level per FM channel	> 93 dBµV
S/N	> 60 dB (mono) > 55 dB (stereo)
C/N, broadband	> 60 dB
Spur. suppression	> 50 dBc (outside FM brand)

DVB-C Modulation	
QAM mode	16, 32, 64, 128 and 256 QAM
Symbol rate	2.4-13.6 Mbaud/s
MER (at RF out)	> 43 dB for 256-QAM
QAM output frequency	43-1002 MHz
Output level	> 105/102/99/96 dBµV (1ch/2ch/3ch/4ch)
DVB compliance	DVB-C (EN 300 429)

DVB-T Modulation	
COFDM mode/modulation	2k, 8k / QPSK, 16QAM, 64QAM
Guard interval	1/4, 1/8, 1/16, 1/32
FEC	1/2, 2/3, 3/4, 5/6, 7/8
MER	> 38 dB, typical 40 dB
Output frequency	43-1002 MHz
Output level	> 103/100 dBµV (1ch/2ch)
DVB compliance	DVB-T (EN 300 744)

DTMB Modulation	
Header length	420 / 595 / 945 symbols
Interleaving length	M = 240, M = 720
Modulation	4QAM, 16QAM, 64QAM
Output frequency	43-1002 MHz
Output level (typical)	> 104 dBµV
Compliance	GB 20600-2006

AVAILABLE SOFTWARE OPTIONS

INPUT

DVB-C Receivers
GNC, GNDC

DVB-S/S2 Receivers
GNS2, GNDS2

DVB-T/T2 Receivers
GNT, GNDT, GNT2, GNDT2

T2-MI input
GNT2MIDE, GNT2MIPLP

ASI input & output
GNASI, GNDASI

**IP Streaming
input & output**
GNSTR, GNSTREC

PROCESSING

**Common Interface
Decryption**
GNCI, GNDCI

Simulcrypt Scrambling
GNSCR

Remultiplexing
GNMUX, GNSYMUX, GNPSISI

Redundancy
GNRED

Dolby AC3
GNDOL

OUTPUT

DVB-C Modulators
GNCMOD, GNDCMOD,
GNTCMOD, GNQCMOD

J.83 Annex B / C Modulators
GNJ83B, GNDJ83B,
GNJDJ83C, GNQJ83C

DVB-T Modulators
GNTMOD, GNDTMOD

Analogue Modulators
GNVMOD, GNDVMOD

FM Radio
GNDFM, GNOCTFM

DTMB Modulator
GNDMOD

SDI & HD-SDI output
GNSSDI, GNDSDI, GNHSDI

ASI input & output
GNASI, GNDASI

**IP Streaming
input & output**
GNSTR, GNSTREC

MISCELLANEOUS

System Management
GNSYSMG

Service License Agreement
GNM1, GNM3

All SW Options
GNALL

RELATED HARDWARE

CHAMELEON GN40

- 3 HU 19 inch subrack for up to 10 CHAMELEON modules
- 1 HU 19 inch PSU and fan unit

CHAMELEON GN50

- 3 HU 19 inch subrack with embedded GigE switch
- Fitting up to 10 CHAMELEON modules
- Embedded fans and PSU, optional redundant PSU
- N+1 reduncancy (SW option GNNRED)

CHAMELEON GN20 B/R

- 1 HU 19 inch subrack for 1 or 2 CHAMELEONS
- Embedded PSU and fan
  Dual redundant PSU (GN20 R)

CHAMELEON GN01

- Wall mount subrack for 1 or 2 CHAMELEONS
- Embedded PSU and fan

CHAMELEON DC28 & DM17

DC28
- 4 x 7 way input signal splitter

DM17
- 2 x 5 way output signal combiner

MPEG Encoder GNHWENCW

- Encoding of 1 HD-SDI or 2 SD-SDI / analogue video signals
- Gigabit Ethernet and ASI output
- Output: MPEG-4 SD/HD
- Control and management via web UI