

WISI GNHWUW2

Chameleon Processor (DVB-C/T/T2/S/S2/S2X and ISDB-T Receiver)



Description

Chameleon a Software-Based Headend Platform. The Chameleon headend platform is designed with all current and future applications in mind. It is superbly suited for the transition from the analog to the digital environment, and has a unique flexibility that allows you to change functionality by the click of a button. The CHAMELEON product line covers the functionality needs for all types of installations. These can easily be extended, in size by adding more units, and in functionality by adding software options. The software functionality can be modified and upgraded at any time, without changing the hardware. This Chameleon version (GNHWUW2) is equipped with multi-tuner support for DVB-C/T/T2/S/S2/S2X and ISDB-T reception.

Scope of delivery

- 1x Chameleon Processor GNHWUW2 module
- 1x Quick Guide

At a glance:

- Headend processor for residential, regional and national networks
- Customizable functionality via software
- Regeneration of Service Information
- ASI input and output
- SDI input and output
- Audio/video decoding
- Common Interface for Descrambling
- Multi-standard DTV tuner
- Multi-standard Digital and Analog TV modulator
- IPTV input and output

Technical data

HF-Eingänge DVB-S/S2/S2X

Number of tuner	2 pcs.
Modulation type	DVB-S/S2/S2X
Frequency range	950...2150 MHz
Level range	35...90 dB μ V (-74...-19 dBm)
Symbol rate	1...45 MS/s (<100 Mbit)
FEC inner DVB-S2	LDPC 1/2, 3/5, 2/3, 3/4, 4/5, 5/6, 8/9, 9/10
Return loss	>12 dB
DiSEqC	DiSEqC 1.0
LNB electrical power supply	0.4 A 13/ 18 V max.
Compliance	DVB-S (EN 300 421), DVB-S2 (EN 302 307-1), DVB-S2X (EN 302 307-2)

RF-Inputs DVB-T/T2

Number of tuner	2 pcs.
Modulation type	DVB-T/T2
Frequency range	47...862 MHz
Level range	39...79 dB μ V (-70...-30 dBm)
COFDM-Spectrum DVB-T	2 k and 8 k FFT
Guard Interval	1/32, 1/16, 1/8, 1/4
FEC inner code DVB-T/T2	Conv., K=7, G=1/2, 2/3, 3/4, 4/5, 5/6, 7/8
Bandwidth DVB-T/T2	6/7/8 MHz, 1.7/5/6/7/8 MHz
DVB-T2 PLP	automatic/manuell
Return loss	>18 dB @ 47 MHz, >12 dB @ 862 MHz
Compliance	DVB-T (EN 300 744), DVB-T2 (ETSI EN 302 755)

RF-Inputs ISDB-T

Number of tuner	2 pcs.
Modulation type	ISDB-T
Frequency range	47...862 MHz
Level range	38...90 dB μ V (-71...-19 dBm)
Bandwidth ISDB-T	06-07-2008 00:00:00 MHz
Compliance	ARIB STD-B31, Layer A

RF-Inputs DVB-C/QAM J.83 Annex A

Number of tuner	2 pcs.
Modulation type	DVB-C/QAM
Frequency range	47...862 MHz
Level range	45...90 dB μ V (-64...-19 dBm)
Symbol rate	1...7.2 Mbaud
Constellations	16-, 32-, 64-, 128-, 256-QAM
Return loss	>18 dB @ 47 MHz, >12 dB @ 862 MHz
Bandwidth	06-08-2017 00:00:00 MHz
Compliance	DVB-C (EN 300 429), ITU-T J.83 Annex A

RF-Inputs QAM J.83 Annex B/C

Number of tuner	2 pcs.
Modulation type	QAM Modulations
Frequency range	47...862 MHz
Level range	45...90 dB μ V (-64...-19 dBm)

Symbol rate	5.057 and 5.361 Mbaud 1-5.3097 Mbaud
QAM mode	64-, 256-QAM
Return loss	>18 dB @ 47 MHz, >12 dB @ 862 MHz
Bandwidth	6 MHz
Compliance	ITU-T J.83 Annex B/C
ASI-In-/Output	
ASI-Inputs	max. 2 pcs.
ASI-Outputs	max. 2 pcs.
ASI-Impedance	75 Ω
ASI-Frequency range	<270 MHz
ASI-Return loss	>17 dB (27...270 MHz)
ASI-Compliance	EN 50083-9:2002
ASI-Packet size Input/Output	188, 204/188 Byte
ASI-PCR restamping	Yes
ASI-Input/Output max. payload bit rate	Typ. 200 Mbit/s
Streaming-In-/Output	
IP-Inputs	32, 64, 128 pcs. (depends of operation mode)
IP-Outputs	32, 128 pcs. (depends of operation mode)
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
IP-TS-Output format	SPTS CBR/VBR, MPTS CBR
IP-FEC Inputs	32 or 64 or 128 pcs. (with GNSTREC software option, number depends of operation mode)
IP-FEC Outputs	32 pcs. (with GNSTREC, Streaming mode)
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
IP-Dejittering	Yes, per default 100ms, individual adjustable
HD-SDI Output	
Number of outputs	1 pcs.
Video formats	1920x1080i@50/60, 1280x720p@50/60
Stereo mode	Stereo, Dual mono, Dual left/right
OSD Test pattern	Yes
Audio sampling frequency	32/44,1/48 kHz
Compliance SDI-HD	SMPTE 292M, SMPTE 299M, SMPTE 291
Connector	BNC connector 2
SD-SDI Output	
Number of outputs	2 pcs.

Technical data

Video formats 720x576i@50, 720x480i@59.94

Connector BNC connector 1 and/or 2

MPEG Decoder - Video/Audio

Video decoder MPEG-2 SD (MP@ML) 1,5..15 MBit/s, MPEG-4 SD (MP@ML) Level 4.1, MPEG-4 HD (MP@HL) Level 4.1

Audio decoder ISO 13818-3 MPEG-1 (L1/L2) MPEG-2 (L1/L2), Dolby AC-3 (Dolby and the double-D symbol are trademarks of Dolby Laboratories. Manufactured under license from Dolby Laboratories)

Video downscaling HD to SD for 1 Service

Video-Scaling Auto, Ignore, Letterbox, Pan and scan, Combined, Forced

Subtitle DVB and Teletext (EBU) EN 300 743, SCTE 27

Audio format Mono/Stereo/Dual NICAM mono/ BTSC/SAP/A2 Stereo/A2 Dual mono, AC-3

Compliance ISO 13818-2 (MPEG-2/H.262); ISO 14496-10 (MPEG-4/H.264/ AVC)

PAL-625/SECAM/NTSC Modulation (Analog TV)

Number of output channel 2 pcs.

Video standard PAL/SECAM/NTSC

TV systems PAL B/G, B/H, D/K, I, Nc, SECAM B/G, D/K, NTSC M

Audio system A2 Stereo, NICAM, Mono, A2 Dual mono, NICAM Dual mono, AC-3

OSD Test pattern Yes

WSS fade in Yes, Auto, Off, Forced 4:3/14:9/16:9

Stereo mode Stereo, Dual mono, Dual left/right

VPS Signaling Yes, from Teletext or EIT

Channel bandwidth 4.2/5/6 MHz

Video carrier modulation depth adjustable 80...90%, 1% steps

Video group delay pre-correction Yes, B/G general, D/K GOST 20532-75, M FCC

Test lines Yes

Audio gain adjustable 12...-12 dB, 1 dB steps

Audio subcarrier level Auto, -10...30 dBc, 1 dB steps

Output frequency 45...862 MHz

Frequency table OIRT, EIA, CCIR, OI

S/N Video, weighted (CCIRrec. 567-1) typ. 64 dB

C/N, broadband >70 dB (65 dB typical at adjacent channel)

Spurious suppression >60 dBc

PAL-M/NTSC Modulation (Analog TV)

Number of output channel 1 pcs.

Video Standard PAL/NTSC

TV systems PAL B/G, B/H, D/K, I, Nc, SECAM B/G, D/K, NTSC M

Audio system Mono, MTS + SAP (BTSC)

OSD Test pattern Yes

Closed captioning Yes

Stereo mode Dual mono, Dual left/right

Channel bandwidth 4.2/5/6 MHz

Video carrier modulation depth adjustable 80...90%, 1% steps

Video group delay pre-correction Yes, B/G general, D/K GOST 20532-75, M FCC

Test lines Yes

Audio gain adjustable 12...-12 dB, 1 dB steps

Audio subcarrier level Auto, -10...30 dBc, 1 dB steps

Output level 84...111 dB μ V (1 ch)

Frequency table OIRT, EIA, CCIR, OI

S/N Video, weighted (CCIRrec. 567-1) typ. 64 dB

C/N, broadband >70 dB (65 dB typical at adjacent channel)

Spurious suppression >60 dBc

FM Modulation (Analog Radio)

Number of output channel 8 pcs.

Audio decoder ISO 13818-3 MPEG-1 (L1/L2); MPEG-2 (L1/L2)

Audio format Mono, Stereo, Joint Stereo

Modulation type FM (Reference ITU-R BS.450-3)

FM-modulation depth limit Yes

RDS insertion Yes, UECP SPB490 (dynamic and static)

Output frequency 87,5...108 MHz (100 kHz step size)

Audio-S/N mono >60 dB, stereo >55 dB

C/N, broadband typ. 65 dB

Spurious suppression typ. 60 dB typ. 60 dBc (FM band 87.5...108 MHz); >50 dBc (outside FM band)

DVB-C Modulation (Digital TV/Radio)

Number of output channel 4 pcs.

Constellations 16-, 32-, 64-, 128-, 256-QAM

Spectrum normal or inverted

Symbol rate 2.4...13.6 Mbaud

MER (at RF out) > 43 dB @ 256-QAM

Output frequency 45...862 MHz

Frequency table OIRT, EIA, CCIR

Output level 78...105 dB μ V (1 ch), 75...102 dB μ V (2 ch), 72...99 dB μ V (3 ch), 69...96 dB μ V (4 ch)

Spurious suppression >60 dBc

Compliance DVB-C (EN 300 429), ITU-T J.83 Annex A

J.83 Annex B Modulation (Digital TV/Radio)

Number of output channel 4 pcs.

Technical data	
Constellations	64-, 256-QAM
Spectrum	normal or inverted
Symbol rate	5.057 and 5.361 Mbaud
Interleaving mode	I=8 J=16, I=16 J=8, I=32 J=4, I=64 J=2, I=128 J=1/2/3/4/5/6/7/8
MER (at RF out)	> 43 dB @ 256-QAM
Metadata support	DVB-PSI/SI
Output frequency	45...862 MHz
Frequency table	OIRT, EIA, CCIR
Output level	78...105 dBμV (1 ch), 75...102 dBμV (2 ch), 72...99 dBμV (3 ch), 69...96 dBμV (4 ch)
Spurious suppression	>60 dB
Compliance	ITU J.38 Annex B

J.83 Annex C Modulation (Digital TV/Radio)

Number of output channel	4 pcs.
Constellations	64-, 256-QAM
Spectrum	normal or inverted
Symbol rate	2.4...13.6 Mbaud
MER (at RF out)	> 43 dB @ 256-QAM
Metadata support	DVB-PSI/SI
Output frequency	45...862 MHz
Output level	78...105 dBμV (1 ch), 75...102 dBμV (2 ch), 72...99 dBμV (3 ch), 69...96 dBμV (4 ch)
Spurious suppression	>60 dBc
Compliance	ITU J.38 Annex C

DVB-T Modulation (Digital TV/Radio)

Number of output channel	2 pcs.
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	>38 dB
Constellations	QPSK, 16-, 64-QAM
Max output bit rate	31,7 Mbit/s (64-QAM, FEC 7/8, GI 1/32)
Frequency table	OIRT, CCIR
Bandwidth	5/6/7/8 MHz
Output level	75...102 dBμV (1 ch), 72...99 dBμV (2 ch)
Spurious suppression	>60 dBc
Compliance	DVB-T (EN 300 744)

DTMB Modulation (Digital TV/Radio)

Number of output channel	1 pcs.
Constellations	4-, 16-, 64-QAM

Header length	420/595/945 symbols
Interleaving length	M = 240, M = 720
Code rate	0.6, 0.8
Frequency table	OIRT, CCIR
Output level	81...100 dBμV
Spurious suppression	>60 dBc
Compliance	GB 20600-2006

ISDB-T Modulation (Digital TV/Radio)

Number of output channel	1 pcs.
Output spectrum (mode)	Mode 1 (2k), Mode 2 (4k), Mode 3 (8k)
Guard Interval	1/4, 1/8, 1/16, 1/32
Spectrum	normal or inverted
Output S/N	>45 dB
Output MER	>41 dB (typ. 43 dB)
Frequency table	OIRT, EIA, CCIR, ABNT
Output level	75...102 dBμV
Spurious suppression	>60 dBc
Bandwidth	6 MHz
Constellation (layer A)	DQPSK, QPSK, 16-, 64-QAM
Code rate (layer A)	1/2, 2/3, 3/4, 5/6, 7/8
Time interleaving length (layer A)	0, 4, 8, 16
Number of segments	13 (layer A)
Compliance	ARIB STD-B31, Layer A

CI and decryption

Bit rate	55/62/70/82/98 Mbps
Multiplexing before scrambling	Yes
Watch dog decryption	Yes
Multichannel decryption	Yes
Service and PID level decryption	Yes
Compliance HDMI	EN 50221
CA PMT mode	Yes, normal or first PMT or with the lowest program number

Processing

Service remultiplexing	Yes, with GNSYMUX software option
PID filtering and remapping	Yes
PCR correction and de-jitter	Yes
Advanced PSI/SI regeneration	Yes
Encryption	Yes, DVB-CSA, AES, Samsung LYNK, Pro:Idiom
Encryption throughput	Max. 50/150/300/600 Mbps total (depends of operation mode)
Decryption	Yes, with CAM and Smart Card
Decryption throughput	Depending of the CAM, max. 850 Mbps total
Processing bitrate	Max. 1200 Mbps total
Number of PIDs	Max. 2000/4000 PIDs total (depends of operation mode)
Compliance	ETSI EN 300 468

Connectors

RJ45	2 pcs. (Streaming in/out, Management)
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Technical data

F connector RF input	2 pcs.
F-socket RF- output	1 pcs.
BNC-socket	2 pcs. (ASI in/out, SDI out)
Common Interface for Descrambling	2 pcs.
SGMII socket	1 pcs. (Streaming and management interface for GN50)

General data

Power consumption	typ. 16 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 %
EMC	EN 50083-2, FCC CFR 47 Part 15 (Class A)
Safety compliance	CE, UL/CSA/CAN 60950-1
Signalling	Multicolor LEDs (Power on - green, Error - red)
Operation Mode	DTMB, DVB-C, DVB-T, FM, HD-SDI, ISDB-T, J.83 Annex B, J.83 Annex C, PAL-625/SECAM, PAL-M/NTSC, Pro:Idiom, SDI to PAL-625/NTSC, Streaming
Hardware revision	2001
Software version	3.1.1
Tuner	067
Possible Software options	GNTRANS, GNIRD, GNGATE, GNDEDGE, GNVEDGE, GNALL, GNDCMOD, GNQCMOD, GNDTMOD, GNDMOD, GND- VMOD, GNDISMOD, GNOCT- FM, GNASI, GNDASI, GNSSDI, GNDSDI, GNHSDI, GNSSDMOD, GNDSMOD, GNDOL, GNBTS, GNFMADV, GNSTR, GNSTRX, GNSTREC, GNSYMUX, GNPSISI, GNT2MIDE, GNNT2MIDE, GNNT- 2MIPLP, GNQT2MIPLP, GNNT2MI- PLP, GNXT2MIPLP, GNDCI, GN- BISS, GNSCR, GNSCRX, GNAES, GNLYNK, GNOPISCR, GNRED, GNNRED, GNSYSMG

Packaging data

Sales unit	1 pcs.
Dimensions (WxHxD) sales unit	260x130x40 mm
Packaging volume sales unit	1,4 dm ³
Gross weight sales unit	0,72 kg
Shipping unit	1 pcs.
Dimensions (WxHxD) shipping unit	310x160x50 mm
Packaging volume shipping package	2,5 dm ³
Gross weight shipping unit	0,86 kg
EAN	4010056733575
Article number	73357
Customs tariff number	85437090