

Chameleon Processor

Multi-standard Digital & Analog TV modulator

Input multiple sources 8VSB, QAM, ASI and/or IP • Output as QAM, Analog, HD/SD-SDI ASI and/or IP • BISS, AES, Samsung LYNK, Pro:Idiom Scrambling

Product Description

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

Features

- ✓ Headend processor for residential, regional and national network
- ✓ 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

Receive and Transmit
Multiple Formats
Simultaneously



HIGHLIGHTED SOFTWARE OPTIONS



GN MON
Monitoring & Logging



GN LYNK
Samsung Lynk Scrambler



GN NRED
N+1, 1+1 Module Redundancy



GN ASE
Transport Stream Monitoring



GN RED
IP Input Stream Redundancy



GN DOL
Dolby Digital Decoding

See all available software options on katalog.wisi.de or contact your WISI sales representative.

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Technical data	
RF-Inputs DVB-S/S2/S2X	
Number of tuner	2 pcs.
Modulation type	DVB-S/S2/S2X
Frequency range	950...2150 MHz
Level range	35...90 dBμV (-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 dBμV (-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 dBμV (-71...-19 dBm)
Bandwidth ISDB-T	06-07-2008 00:00:00 MHz
Compliance	ARIB STD-B31, Layer A
Compliance	DVB-C (EN 300 429), ITU-T J.83 Annex A
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

Technical data	
Connector	BNC connector 2
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
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 dBμV (-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	6/8 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 dBμV (-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
Streaming-In-/Output	
IP-Inputs	20, 32, 64, 128 pcs. (depends on operation mode)
IP-Outputs	20, 32, 128 pcs. (depends on 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

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Technical data

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	20 or 32 or 64 or 128 pcs. (with GNSTREC software option, number depends on 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

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)

SD-SDI OUTPUT

Number of outputs	2 pcs.
Video formats	720x576i@50, 720x480i@59.94
Connector	BNC connector 1 and/or 2

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

Technical data

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)

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 dBμV (1 ch), 75...102 dBμV (2 ch), 72...99 dBμV (3 ch), 69...96 dBμV (4 ch)
Spurious suppression	>60 dBc
Compliance	DVB-C (EN 300 429), ITU-T J.83 Annex A

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

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Channel bandwidth	4.2/5/6 MHz
Video carrier modulation depth	adjustable 80...90%, 1% steps
Video group delay pre-correction	adjustable 80...90%, 1% steps
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 dBμV (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)

PAL-625/SECAM/ Modulation (Analog TV)

Number of output channel	2 pcs.
Video standard	PAL/SECAM
TV systems	PAL B/G, B/H, D/K, I, Nc, SECAM B/G, D/K
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

Connectors

RJ45	2 pcs. (Streaming in/out 1 Gbps, Management 10/100 Mbps)
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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)

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

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
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 dBc
Compliance	ITU J.38 Annex C

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

Number of output channel	4 pcs.
Constellations	64-, 256-QAM
Spectrum	normal or inverted
Symbol rate	5.057 and 5.361 Mbaud

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Technical data	
Interleaving mode	l=8 J=16, l=16 J=8, l=32 J=4, l=64 J=2, l=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 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 dB
Compliance	ITU J.38 Annex B
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 dB μ V (1 ch), 72...99 dB μ V (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 dB μ V
Spurious suppression	>60 dBc
Compliance	GB 20600-2006
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

Technical data	
Encryption throughput	Max. 50/150/300/600 Mbps total (depends on 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 on operation mode)
Compliance	ETSI EN 300 468
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	3.2.2
Possible Software options	GNTRANS, GNIRD, GNGATE, GNEDGE, GNVEDGE, GNALL, GNDCMOD, GNQCMOD, GNDTMD, GNDMOD, GND-VMOD, GNDISMOD, GNOC-TFM, GNASI, GNDASI, GNSSDI, GNDSDI, GNHSDI, GNSSDMOD, GNDSDMOD, GNDOL, GNBS, GNFMADV, GNSTR, GNSTRX, GNSTREC, GNSYMUX, GNPSISI, GNT2MIDE, GNDT2MIDE, GNDT2MIPLP, GNQT2MIPLP, GNQT2MIPLP, GNXT2MIPLP, GNDCI, GNBISS, GNSCR, GNSCRX, GNAES, GNAESX, GNLYNK, GNLYNKX, GNPISCR8, GNPISCR16, GNPISCR24, GNRED, GNNRED, GNSYSM, GNMON, GNAE

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