



**Any Video from
any Source to
any Device**

CHAMELEON Single Hardware Headend

As important as it is to have a technically superior platform for your networks, as important is the commercial platform.

The CHAMELEON product line addresses technology changes and increased quality requirements without large investments for hardware and infrastructure.



CHAMELEON – Investing in Your Future

Imagine a product where you could go from one distribution method to another, just by the click of your computer mouse – this is CHAMELEON, the transforming headend.

The CHAMELEON will enhance the user experience for any Cable-TV or SMATV operator by its simplicity, flexibility and cost efficiency.

APPLICATIONS

Applications needed for your network can be purchased at any time depending of your needs. You might want to start with digital reception and analogue distribution. Any time afterwards you may upgrade to digital distribution.

This way of updating existing hardware is cost effective, time saving, environmentally friendly and last but not least it gives you, your subscribers and installers a positive experience of distributed Cable-TV and SMATV.

CREATE PROGRAM PACKAGES

Create your own program packages, decrypt and/or encrypt with your own selectable encryption system. If you prefer to distribute in IP-format through the embedded IPTV streamer it's just a few mouse clicks away. Distribution in QAM, COFDM, DTMB or analogue is just as easy.

MANAGING YOUR HEADEND

You manage your headend through the Web interface and can easily manage, monitor and modify functionality anywhere where you have an IP connection, be it in your smart phone, PC or other devices connected to the Internet.

PROOF OF CONCEPT

To prove to you as a customer how versatile the product is, we provide each CHAMELEON with a 30 days trial of all released software applications. The trial period of 30 days power up time is started from the date of registra-

tion of the CHAMELEON at the wisconnect.tv portal, and is valid for each CHAMELEON until permanent software options are ordered and installed. Order the software options you want to keep for permanent use from us or our distributors.

FUTURE OF CHAMELEON

New functions and software options will be developed over time and software updates will be available to you with our support service at the wisconnect.tv portal. This service will be offered to all customers.

LOW ENERGY CONSUMPTION

We design all products to generate as little heat as possible. This has positive effects on our environment as well as on the life time. Apart from the environmental benefits, it also gives a direct cost saving through the lower power consumption.

ULTRA LONG LIFE

Designing for long life cycle gives advantages for the environment through less scrapping, and repairing a product is worthwhile instead of scrapping if failures occur.

FUTURE PROOF

A major reason for scrapping equipment is when technology requirements change and the old equipment becomes obsolete. We avoid this through making the products open for software upgrades thus enhancing the products functionality over time.





CHAMELEON – The Gifted Headend

ADAPTING TO THE ENVIRONMENT

Just as a chameleon adapts its colours to the changing environment, the CHAMELEON product line can be adapted to any forms of receiving, processing and transmitting TV content.

SINGLE HARDWARE PRODUCT LINE

The trend has finally reached the point where there is a single hardware that gives you all the opportunities that you can imagine. And despite the versatility of the product, you only have to pay for what you need.

CHAMELEON products are software defined functionalities, all running on the same hardware platform. All the software functionality of CHAMELEON products can be modified and upgraded, at any time, without changing the hardware.

“ALL ABOARD”

The CHAMELEON product line covers the functionality needs for all types of installations, ranging from small stand-alone or SMATV applications to complex headends in large CATV networks. Installations can easily be extended, in size by adding more units and in functionality by adding software options.

ADAPTING TO YOUR FUTURE

Our industry is undergoing an accelerating pace of change and development. To facilitate investment decisions we have developed a platform flexible enough to meet all imaginable requirements, and at the same time make it affordable. With the CHAMELEON product line, you can adjust the product to your needs and we can adapt the product to new standards and technologies.

DISTRIBUTED PROCESSING

The CHAMELEON products are multi-functional products, where each unit is capable of all different kinds of processing. This distributed processing architecture will enable you to create any size of installation, and also to extend an installation incrementally.

THE DIGITAL SMORGASBORD

The selection of software configurations is extensive and you can pick what you need from our range of software options. To simplify the choice we provide a configuration tool to help you selecting the software options you need. To the right you can see some of the “products” that can be realized with the different software options, but remember that there will continuously be new dishes on the CHAMELEON smorgasbord.

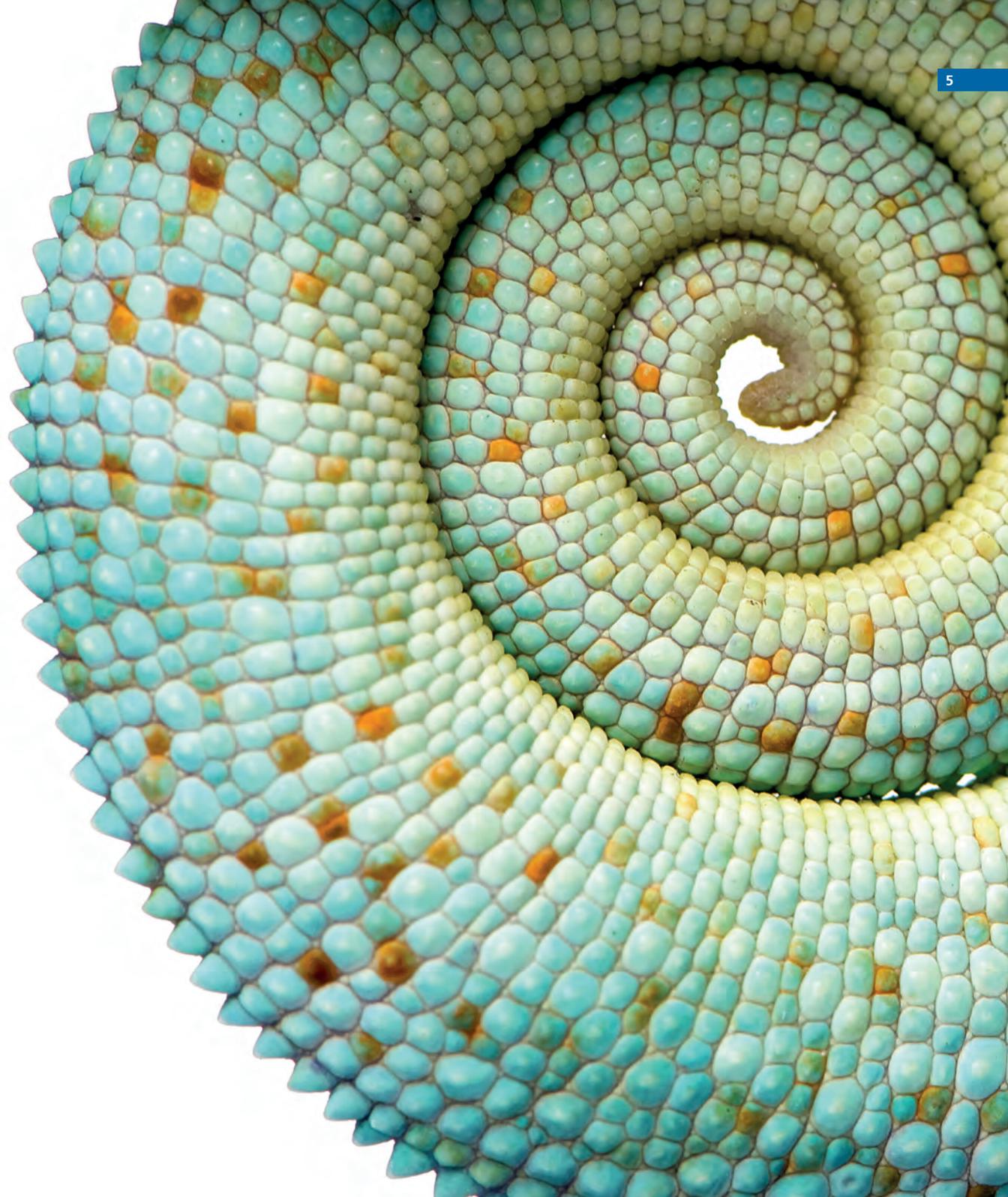
DENSITY MATTERS

Complete 300 programs headend with reception, decoding, decryption, encryption and modulation of 40 multiplexes in 3 U 19 inch.

All the software functionality of CHAMELEON products can be modified and upgraded, at any time, without changing the hardware.

CHAMELEON Product Realisation Examples

- Receiver DVB-S/S2, T/T2, C single/double
- Transmodulator to DVB-T, single/double
- Transmodulator to DVB-C, single/double/triple/quad
- Analogue VSB RF-modulator, single/double
- Edge QAM, single/double/triple/quad
- Edge COFDM, single/double
- Edge FM, up to 8 FM out
- MPEG2/MPEG4 SD decoder (single/double), HD decoder (single)
- CI decryption, single/double
- Remultiplexer multiple TS
- DVB_CSA Scrambler
- IP streamer
- ASI streamer



CHAMELEON Support



WISICONNECT.TV

At the start page of the portal, you can request access, or if you already have an account, you can log in. The main functionality of the portal is to provide you with a repository for information about your CHAMELEONS. All your registered CHAMELEONS will be listed, and you can add textual information such as installation site or the function for each CHAMELEON. For each CHAMELEON, you also have information about the purchased software options, and you can download the entitlement file (the license file enabling the software options).

Product documentation such as User Manuals, Release Notes etc. are available for download from the portal. All released firmware versions are also available for download. The FAQ and Forum gives additional help, and allows you to share questions and information with other CHAMELEON users.



THE WEB UI

The CHAMELEON is configured and managed via a web UI. Each CHAMELEON contains an embedded web server, and no propriety control software is needed. To connect to the UI of a CHAMELEON, simply start a browser on your computer and type the IP address of the CHAMELEON in the address field.

The web UI of CHAMELEON is structured to simplify configuration and management. Following the different parts of the UI in order, Inputs, Outputs, Service Management, will take you through all basic settings you need to do to set up a working configuration.



SUPPORT AND SLA

The CHAMELEON product platform is continuously enhanced and new functionality both in terms of new software options and as new firmware versions are released. To allow our CHAMELEON users to upgrade for added functionality, a Service Licence Agreement (SLA) is included in each purchase of a CHAMELEON.

The validity period of the SLA included is one year, and the SLA can be extended at any time. As long as a CHAMELEON has a valid SLA, new firmware versions can be uploaded, hence giving the user access to enhancements.

CHAMELEON Subracks

Visit wisi.de for more info about our products.

CHAMELEON is designed for all current and future applications and suited both for the transition from the analogue to the digital environment, and for the connection between HFC and IP distribution platforms.

CHAMELEON modules can be mounted in four different subracks. In high profile professional applications, the GN50 with redundant power supply and integrated GigE switch is recommended. For standard applications in 19" rack mounting, the GN 40 chassis is recommended. The GN20 B/R allows you to install one or two CHAMELEON in a 1 HU, 19" chassis. GN20 R includes dual redundant power supplies. For wall mount of one or two CHAMELEON modules, the GN01 can be used.

GN01



Features

Wall mount subrack for 1 or 2 CHAMELEONS

Embedded PSU and fan

GN20 B/R



Features

1 HU 19 inch subrack for 1 or 2 CHAMELEONS

Embedded PSU and fan

Dual redundant PSU (GN20 R)

GN40



Features

3 HU 19 inch subrack for up to 10 CHAMELEON modules

1 HU 19 inch PSU and fan unit

GN50



Features

3 HU 19 inch subrack with embedded GigE switch

Fitting up to 10 CHAMELEON modules

Embedded fans and PSU, optional redundant PSU

N+1 redundancy (SW option GNNRED)

CHAMELEON Software Options

Software options are license files that enable running the functions defined functionalities. The software options can be bought at the same time as the hardware, or alternatively as a separate order. You can add software options to an existing CHAMELEON at any time, come need for additional functionality. The CHAMELEON Configurator provides an on-line tool for selecting software options. Once an order has been processed, the entitlement file containing licences for the software options is available for download from the wisconnect.tv portal.

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INPUT

DVB-C Receivers

GNC, GNDC

DVB-S/S2 Receivers

GNS2, GNDS2

DVB-T/T2 Receivers

GNT, GNNT, GNT2, GNNT2

T2-MI input

GNT2MIDE, GNT2MIPLP

ASI input & output

GNASI, GNDAI

IP Streaming input & output

GNSTR, GNSTREC

PROCESSING

Common Interface Decryption

GNCI, GNDCI

Simulcrypt Scrambling

GNSCR

Remultiplexing

GNMUX, GNSYMUX, GNPSIS

Redundancy

GNRED

Dolby AC3

GNL

OUTPUT

DVB-C Modulators

GNCMOD, GNDCMOD,
GNTCMOD, GNQCMOD

J.83 Annex B / C Modulators

GNJ83B, GNDJ83B,
GNJDJ83C, GNQJ83C

DVB-T Modulators

GNTMOD, GNNTMOD

Analogue Modulators

GNVMOD, GNVMOD

FM Radio

GNDFM, GNOCFM

DTMB Modulator

GNDMOD

SDI & HD-SDI output

GNSSDI, GNDSDI, GNHSDI

ASI input & output

GNASI, GNDAI

IP Streaming input & output

GNSTR, GNSTREC

MISCELLANEOUS

System Management

GNSYSMG

Service License Agreement

GNM1, GNM3

All SW Options

GNALL

Functionalities enabled with SW options

- SW options to enable functional blocks
- Customer orders CHAMELEON and SW functionality
- CHAMELEONS delivered as HW without SW options
- Registration and SW options download
- License agreement mandatory for FW upgrades
- Registration on-line or off-line
- Added SW options download via the portal
- The license agreement starting from the date of registration at the wisconnect.tv

CHAMELEON Technical Specifications

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



- ✓ 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.
- ✓ 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.

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, J.83 Annex B/C and DTMB. Analogue RF in PAL and SECAM, GigE IP outputs, ASI outputs and SDI outputs.



DVB-S/S2 Satellite Receivers	
Input frequency	925 – 2175 MHz
Input level	-65 to -25 dBm
Symbol rates	1.0 – 45 Mbaud
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 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/VBR, max 20 SPTS/MPTS ¹⁾
IPTS output format/capacity	VBR/CBR, max 20 SPTS/MPTS ¹⁾
Time stamp & de-jitter	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)	-70 to -30 dBm ¹⁾
Input level (DVB-T2)	-70 to -30 dBm ²⁾
Bandwidth (DVB-T)	6/7/8 MHz
Bandwidth (DVB-T2)	5/6/7/8 MHz
DVB compliance	DVB-T (EN 300 744) DVB-T2 (ETSI EN 302 755)

¹⁾ QEF reception with test signal: 8k, 64 QAM, 1/4 guard interval, 2/3 FEC

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

DVB-C cable receivers	
Input frequency	43 – 1002 MHz
Input level	-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/C)

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 dBµV, 1 channel, 99 dBµV, 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	105 dBµV (1 channel) 102 dBµV (2 channels) 99 dBµV (3 channels, DVB-C and J.83 Annex C) 96 dBµV (4 channels, DVB-C and J.83 Annex C)
Spurious suppression	> 60 dBc

FM Modulation	
Number of modulators	Up to 8 FM modulators
Audio decoder	MPEG-1 Layer I/II
Sound	Mono, stereo, joint stereo
Modulation	FM, ref ITU-R BS.450-3
FM deviation limiter	Yes
RDS insertion	Yes, dynamic & static. Ref EN50067
Output frequency	87.5-108 MHz, 100 kHz step size
Output level per FM ch	Max 92 dB μ V
S/N	> 60 dB (mono), > 55 dB (stereo)
C/N, broadband	Typical 65 dB
Spurious suppression	Typical 60 dBc (FM band 87.5-108 MHz) > 50 dBc (outside FM band)

DTMB Modulation	
Number of modulators	1 DTMB mux
Code rate	0.6
Carrier mode	C = 3780 (multi-carrier)
Header length	PN420 / PN945 symbols
Interleaving length	M = 240, M = 720
MER	>38 dB
Modulation	4QAM, 16QAM, 64QAM
Output frequency	40 – 860 MHz
Output level	Max 101 dB μ V
Spurious suppression	> 60 dBc
Compliance	GB 20600-2006

DVB_CSA scrambler / Simulcrypt interface	
Interface	IP
Number of encrypted PIDs	64 PIDs per output
Number of SCG	64 SCG per output (64 CWG per output)
Scrambleable outputs	DVB-C, DVB-T, ASI
Interface protocol version support	ECMG <=> SCG: V2 and V3 EMMG/PDG <=> MUX: V2 and V3
DVB compliance	DVB-SimulCrypt (ETSI TS 103 197)

Analogue modulator	
Number of modulators	Up to 2 analogue modulators
Standards	PAL B/G, D/K, I, SECAM D/K, B/G, L
Group delay pre-correction	B/G general, D/K GOST20532-75, M FCC, none
Sound	Mono, NICAM stereo, A2 stereo
Modulation audio	Audio FM or AM
Modulation video	VSF AM, neg. or pos.
Video bandwidth	4.2, 5.0, 6.0 MHz
Output frequency	48 – 855 MHz
Output level max	Max 111 dB μ V (1 channel) , max 108 dB μ V (2 channels)
Video S/N (weighted)	> 65 dB
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

SDI output	
Output video	SDI, audio embedded
Output audio	Stereo, Mono or Dual Sound
Connector	BNC
Compliance SDI-SD	SMPTE 259M-C, SMPTE 272M-DEF

MPEG Decoder – Audio / Video	
Supported formats video	MPEG2 MP@ML, MPEG2 MP@HL, up to MPEG4 H.264 AVC, HiP, level 4
Supported formats audio	MPEG 1 layer II, HE-AAC Dolby Digital AC-3 (requires specific HW)
Aspect Ratio	Letterbox, Pan/Scan, or conversion combined (14:9) programmable, WSS
Teletext Subtitling	Teletext or DVB subtitling

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

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