**a2b**
design for TV

**WISI**

# CHAMELEON

Control

Streaming

CHAMELEON

# CHAMELEON

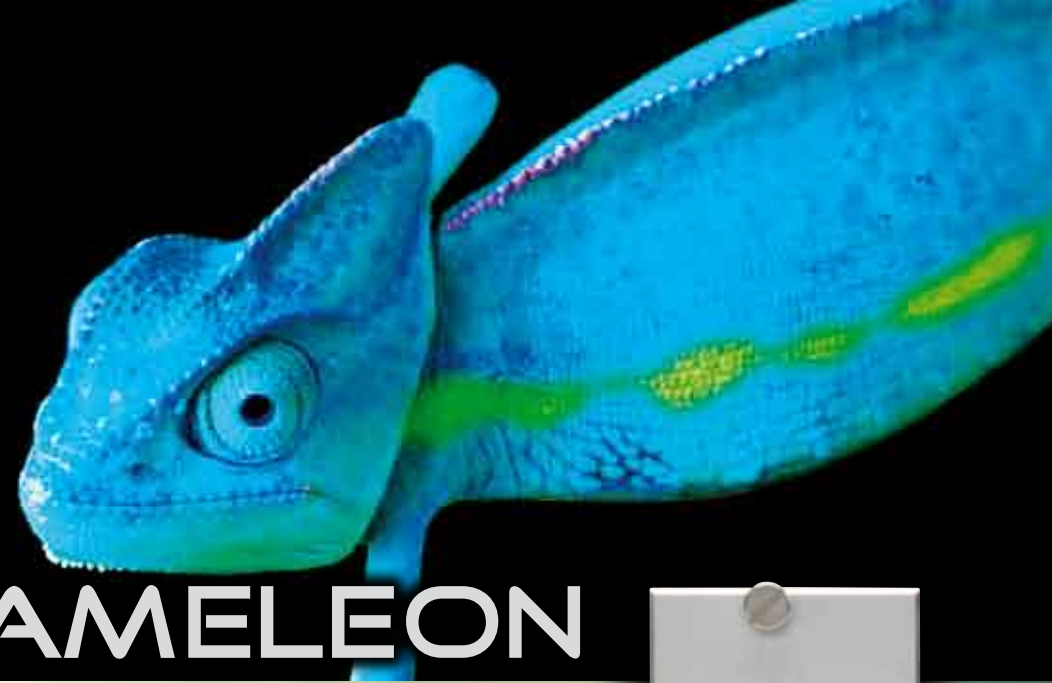Investing in your future

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

**Technology changes and increasing quality requirements for operators has always been tied to large investments for hardware and infrastructure.**

### 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 Head End.

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

### CHAMELEON-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.

### Create own 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 or analogue is as easy.

### Managing your Head End
You manage your Head End 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.

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.

### Future of CHAMELEON
New functions and applications will be developed over time and software updates will be available to you with our support service that will be offered to our customers.

### Proof of concept
To prove to you as a customer how versatile the product is we give all customers a 30 days trial of all released basic software applications for the CHAMELEON. Order the applications you want to keep from us and our distributors and the redundant applications will be shut off automatically after 30 days.

**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.

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

**Future proof**
One big reason for scrapping equipment is when technology requirements changes and the old equipment becomes obsolete. We have tried to avoid this through making the products open for software upgrades thus enhancing the products functionality over time.
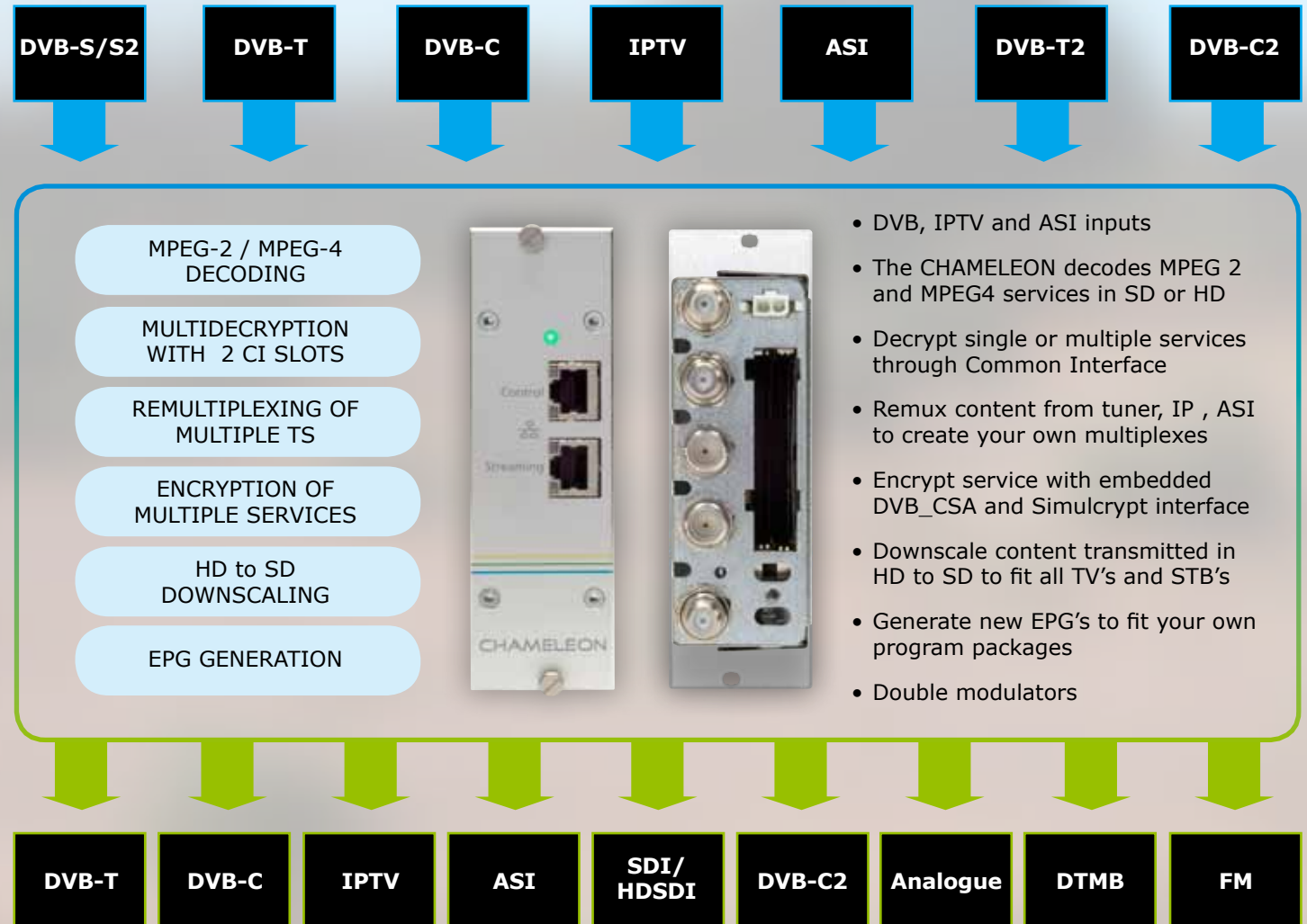
**Contribution for each sold unit**
Sometimes words are not enough, sometimes design efforts are not enough, sometimes we need to contribute to those who make a difference to our environment. A2B contributes to environmental projects with a fixed sum for every sold CHAMELEON to protect the worlds wildlife and environment.

**The CHAMELEON product line is the first ever to cover almost every need for Cable-TV and SMATV distribution with only one hardware.**

| DVB-S/S2 | DVB-T | DVB-C | IPTV | ASI | DVB-T2 | DVB-C2 |
|----------|-------|-------|------|-----|--------|--------|

- MPEG-2 / MPEG-4 DECODING
- MULTIDECRYPTION WITH 2 CI SLOTS
- REMULTIPLEXING OF MULTIPLE TS
- ENCRYPTION OF MULTIPLE SERVICES
- HD to SD DOWNSCALING
- EPG GENERATION

- DVB, IPTV and ASI inputs
- The CHAMELEON decodes MPEG 2 and MPEG4 services in SD or HD
- Decrypt single or multiple services through Common Interface
- Remux content from tuner, IP , ASI to create your own multiplexes
- Encrypt service with embedded DVB_CSA and Simulcrypt interface
- Downscale content transmitted in HD to SD to fit all TV's and STB's
- Generate new EPG's to fit your own program packages
- Double modulators

| DVB-T | DVB-C | IPTV | ASI | SDI/HDSDI | DVB-C2 | Analogue | DTMB | FM |
|-------|-------|------|-----|-----------|--------|----------|------|-----|

The different inputs and outputs are defined by software and hardware options and all software options can be updated at any time. The CHAMELEON includes receivers for DVB-S/S2 or DVB-T/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.

## The CHAMELEON – adapting to the environment
Just as the 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.

## CHAMELEON – Single HW product line
The trend has finally reached the point where there is a single hardware device 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 SW defined functionalities, all running on the same HW platform. All the software Functionality of CHAMELEON products can be modified and upgraded, at any time, without changing the installed hardware.

## CHAMELEON – "all aboard"
The CHAMELEON product line covers the functionality needs for all types of installations, ranging from single unit stand-alone or SMATV applications to complex head-ends in large CATV networks. Installations can easily be extended, in size by adding more units, and in functionality by adding more SW options.

## CHAMELEON - 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 products to new standards and technologies.

## CHAMELEON – 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 have defined products in the shape of functionality packages designed for the most common variants of network solutions.

To the right you can see some of these packages and features, but remember that there will continuously be new dishes on the CHAMELEON smorgasbord.

## CHAMELEON products
Receiver DVB-S/S2, single/double

Receiver DVB-T/C, single/double

Receiver DVB-T2/C2

Transmodulator to DVB-T, single/double

Transmodulator to DVB-C, single/double

Analogue VSB RF-modulator, single/double

Edge QAM, single/double

Edge COFDM, single/double

MPEG2/MPEG4 SD decoder, single/double

MPEG4 HD decoder

CI decryption, single/double

Remultiplexer multiple TS

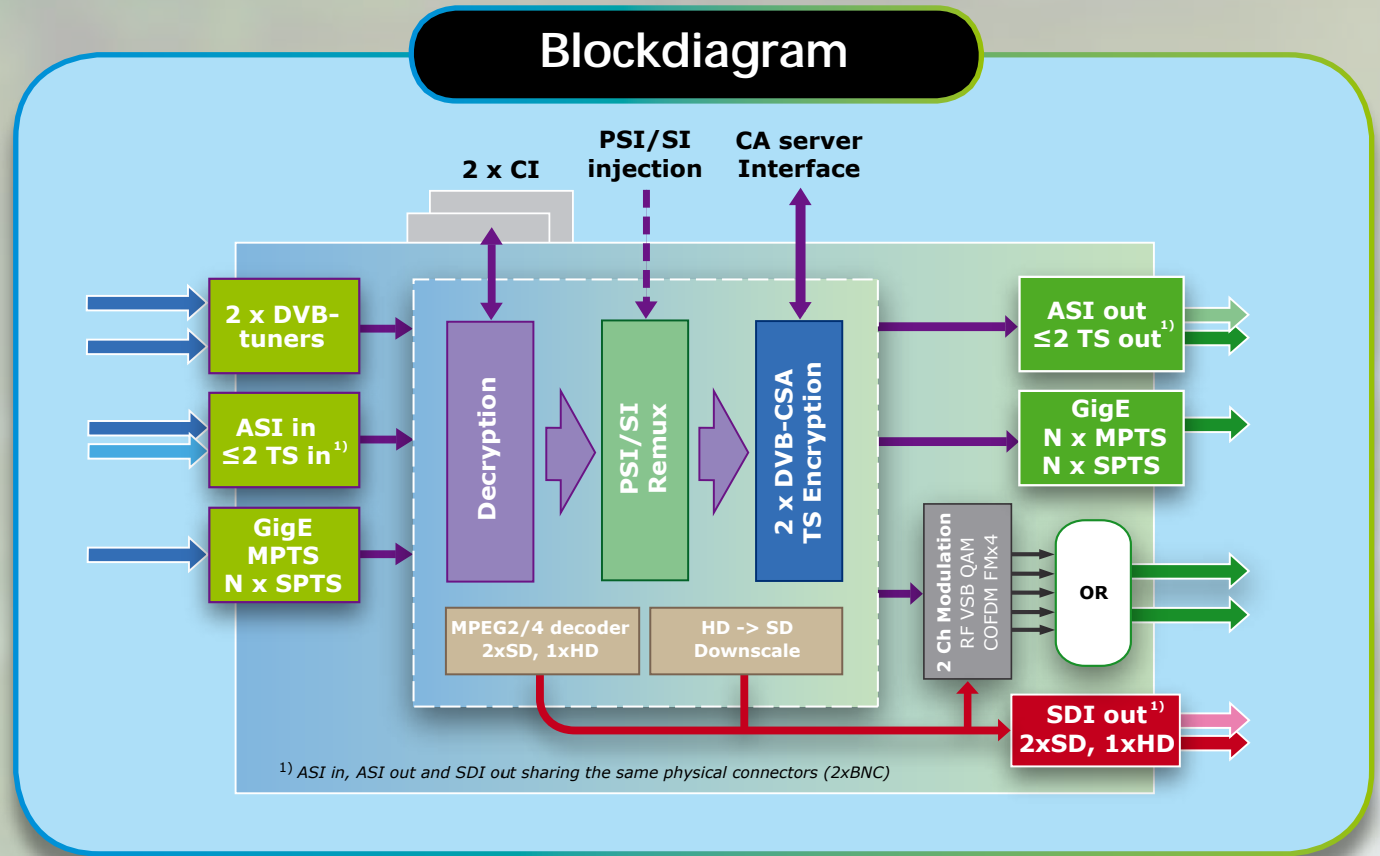DVB_CSA Scrambler, single/double

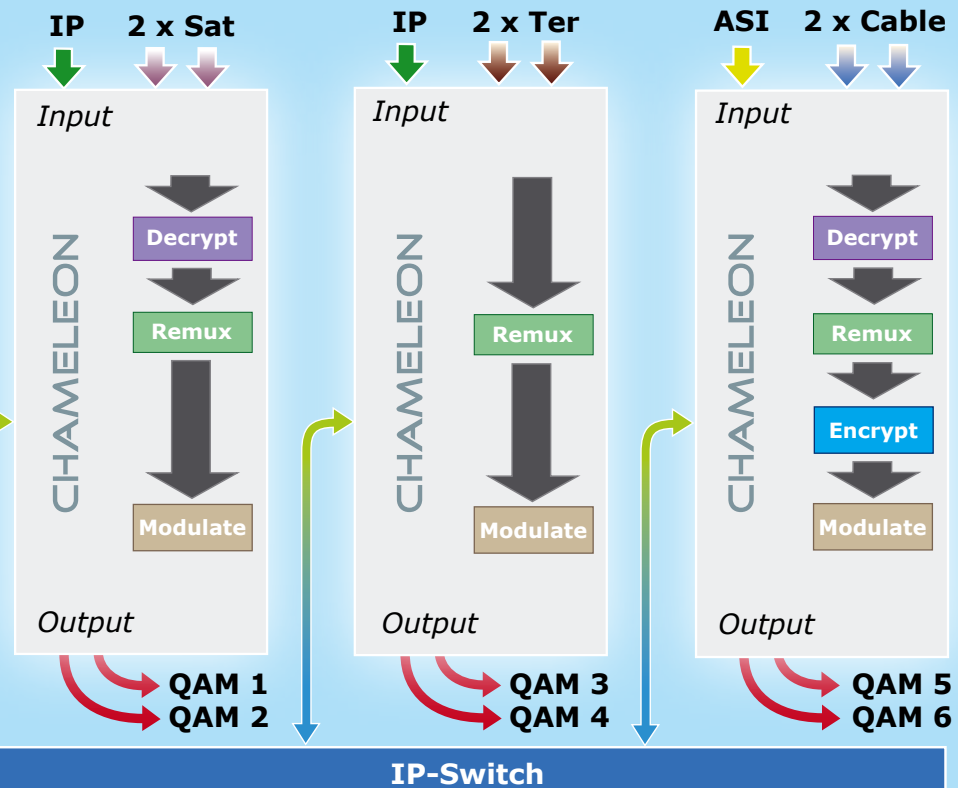IP streamer

ASI streamer

SDI generator, 2 SD/1 HD



## Density matters
Complete 200 programs Head end with reception, decoding, decryption and modulation of 20 multiplexes in 3 HU 19″.

# CHAMELEON

## Tranforming your reality



## Blockdiagram

2 x CI | PSI/SI injection | CA server Interface

2 x DVB-tuners → Decryption

ASI in ≤2 TS in [1] →

GigE MPTS N x SPTS →

Decryption → PSI/SI Remux → 2 x DVB-CSA TS Encryption

MPEG2/4 decoder 2xSD, 1xHD | HD -> SD Downscale

2 Ch Modulation RF VSB QAM COFDM FMx4

ASI out ≤2 TS out [1]

GigE N x MPTS N x SPTS

OR

SDI out [1] 2xSD, 1xHD

[1] ASI in, ASI out and SDI out sharing the same physical connectors (2xBNC)

Enable transition to digital
from any format to any format
for any size of network anywhere!

## Digital HE example

**IP**  **2 x Sat**
*Input*

CHAMELEON

Decrypt

Remux

Modulate

*Output*

→ QAM 1
→ QAM 2

**IP**  **2 x Ter**
*Input*

CHAMELEON

Remux

Modulate

*Output*

→ QAM 3
→ QAM 4

**ASI**  **2 x Cable**
*Input*

CHAMELEON

Decrypt

Remux

Encrypt

Modulate

*Output*

→ QAM 5
→ QAM 6

**IP-Switch**

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## IPTV Input/Output

| | |
|---|---|
| Input bit rate | < 800 Mbit/s |
| Output bit rate | < 800 Mbit/s |
| Connector | RJ45 / SGMII |
| Output protocol | UDP Multicast / Unicast, RTP |
| TS format | SPTS / MPTS |
| Time stamp & de-jitter | Yes |

## 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.

## SDI / HD-SDI output

| | |
|---|---|
| Connector | BNC |
| Compliance SDI-SD | SMPTE 259M, SMPTE 272M |
| Compliance SDI-HD | SMPTE 292M, SMPTE 299M |

## Connectors and Interfaces

| | |
|---|---|
| IPTV In/Out connector | RJ45 and SGMII (GigE) |
| Control connector | RJ45 (10/100) |
| RF input connector | F female, 75 Ω |
| RF output connector | F female, 75 Ω |
| ASI input connector | BNC, 75 Ω |
| ASI output connector | BNC, 75 Ω |
| SDI/HD-SDI connector | BNC, 75 Ω, shared with ASI |
| CAM connectors | 2 x PCMCIA (5 VDC) |
| LED Indicator lights | Power on (green) / Error (red) |

## Control and Management

Graphical User Interface for easy set up of complex systems. Simple handling of remultiplexing from any input.

Each Chameleon contains an embedded web server for management and control. Standard web browsers (Explorer, Mozilla etc.) are supported.

SNMP supporting all control and settings.
SNMP monitoring
Telnet CLI

## ASI Input / Output

| | |
|---|---|
| ASI bit rate | Max 270 Mbit/s |
| Max payload bit rates: | |
|    Input | < 90 Mbit/s |
|    Output | < 90 Mbit/s |
| PCR restamping | Yes |

## DVB_SCA scrambler / Simulcrypt interface

| | |
|---|---|
| Interface | IP |
| DVB compliance | DVB-SimulCrypt (ETSI TS 101 197) |

## Miscellaneous

| | |
|---|---|
| Power supply | 12 VDC nom. (9-14 VDC) |
| Power consumption | Typ. 16 W (excl. LNB, CAM load) |
| Dimensions | 230x105x40 mm (excl. connectors) |
| Weight | Approx. 600 g |
| Controller | Embedded web server, SNMP |
| Operating temperature | -20 to +50°C, non-condensing |
| Product grading | IEC60728-5, grade 1 |

## QPSK/8PSK Satellite Receivers

| | |
|---|---|
| Input frequency | 950 – 2150 MHz |
| Input level | -65 to -25 dBm , 49 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) |

## MPEG Decoder –Audio / Video

| | |
|---|---|
| Supported formats | MPEG2 MP@ML, MPEG2 MP@HL, up to MPEG4 H.264 AVC, HiP, level 4 MPEG 1 layer II, AAC HE (Audio) |
| Output video | SDI, HD-SDI, audio embedded |
| Output audio | Stereo, Mono or Dual Sound |
| Aspect Ratio | Letterbox, Pan/Scan, or conversion combined (14:9) programmable, WSS |
| Teletext | Subtitling Teletext or DVB subtitling |

## 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 mono | Audio FM or AM |
| Output frequency | 47 – 862 MHz |
| Output level | ≥ 110 dBuV (1 channel) |
| Video S/N (weighted) | ≥ 60 dB |
| C/N, broadband | ≥ 70 dB (65 dB typical at adjacent channel) |
| NICAM standards | NICAM 728 (EN 300 163) |
| Spur. suppression | ≥ - 60 dBc |

## QAM cable receiver / COFDM Terrestrial receiver

| | |
|---|---|
| Input frequency | 51-1006 MHz |
| Input level (DVB-T) | 39 to 79 dBµV [1] |
| Input level (DVB-C) | 49 to 79 dBµV [2] |
| Bandwidth (DVB-T) | 6/7/8 MHz |
| Bandwidth (DVB-C) | 6/7/8 MHz |
| DVB compliance | DVB-T (EN 300 744) |
| DVB-C (EN 300 429) | |

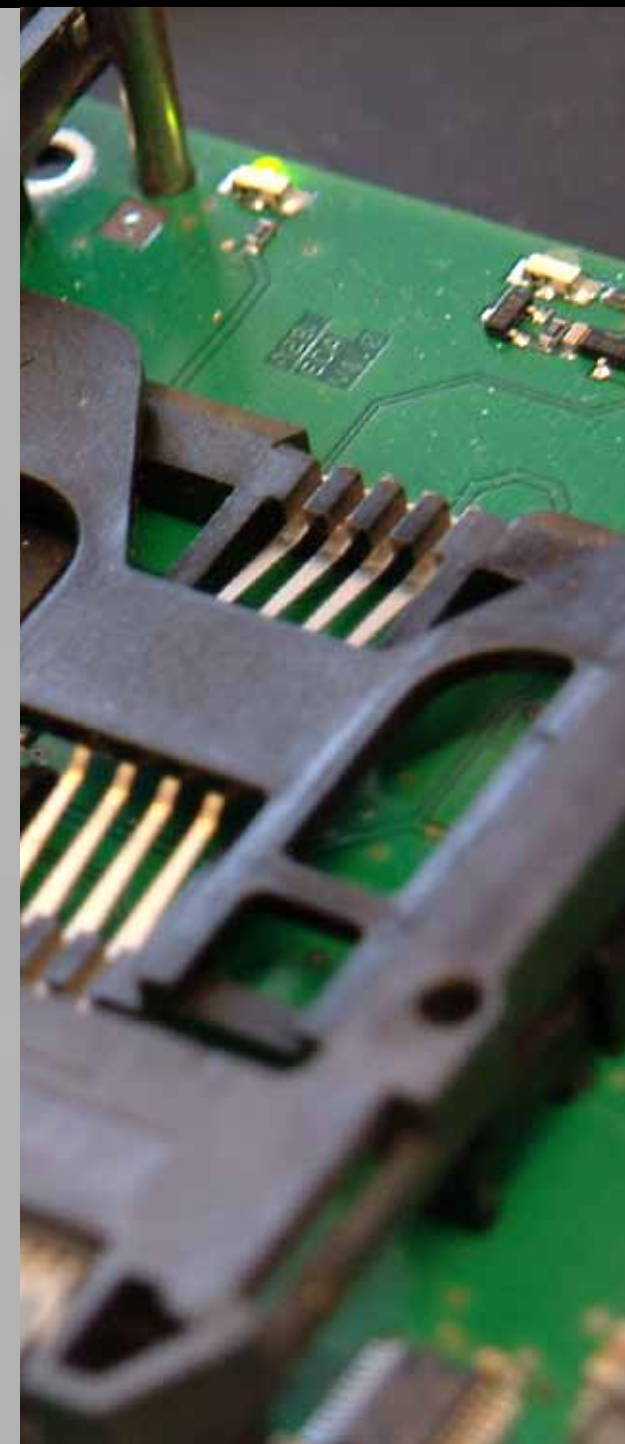[1] QEF reception with test signal :8K, 64 QAM, ¼ guard interval, 2/3 FEC
[2] QEF reception with test signal :64 QAM, C/N 26dB

## COFDM Modulation

| | |
|---|---|
| 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 | ≥ 44 dB |
| DVB compliance | DVB-T (EN 300 744) |
| Max output bit rate | 32 Mbit/s |
| Output frequency | 51 – 1006 MHz (centre frequency) |
| Output level | ≥ 102 dBuV (51-858 MHz) |
| Spur. suppression | ≥ - 60 dBc |

## QAM Modulation

| | |
|---|---|
| QAM modes | 16, 32, 64, 128 and 256 QAM |
| Symbol rate | 4 – 7.2 Mbaud/s |
| MER (at RF out) | ≥ 43 dB for 256-QAM |
| DVB compliance | DVB-C (EN 300 429) |
| Output frequency | 51 - 1006 MHz (centre frequency) |
| Output level | ≥ 105 dBuV (51-858 MHz) |
| Spur. suppression | ≥ - 60 dBc |

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**Chameleon**

**GN 50**

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**Wallmount Kit**

**Chameleon rack complete**
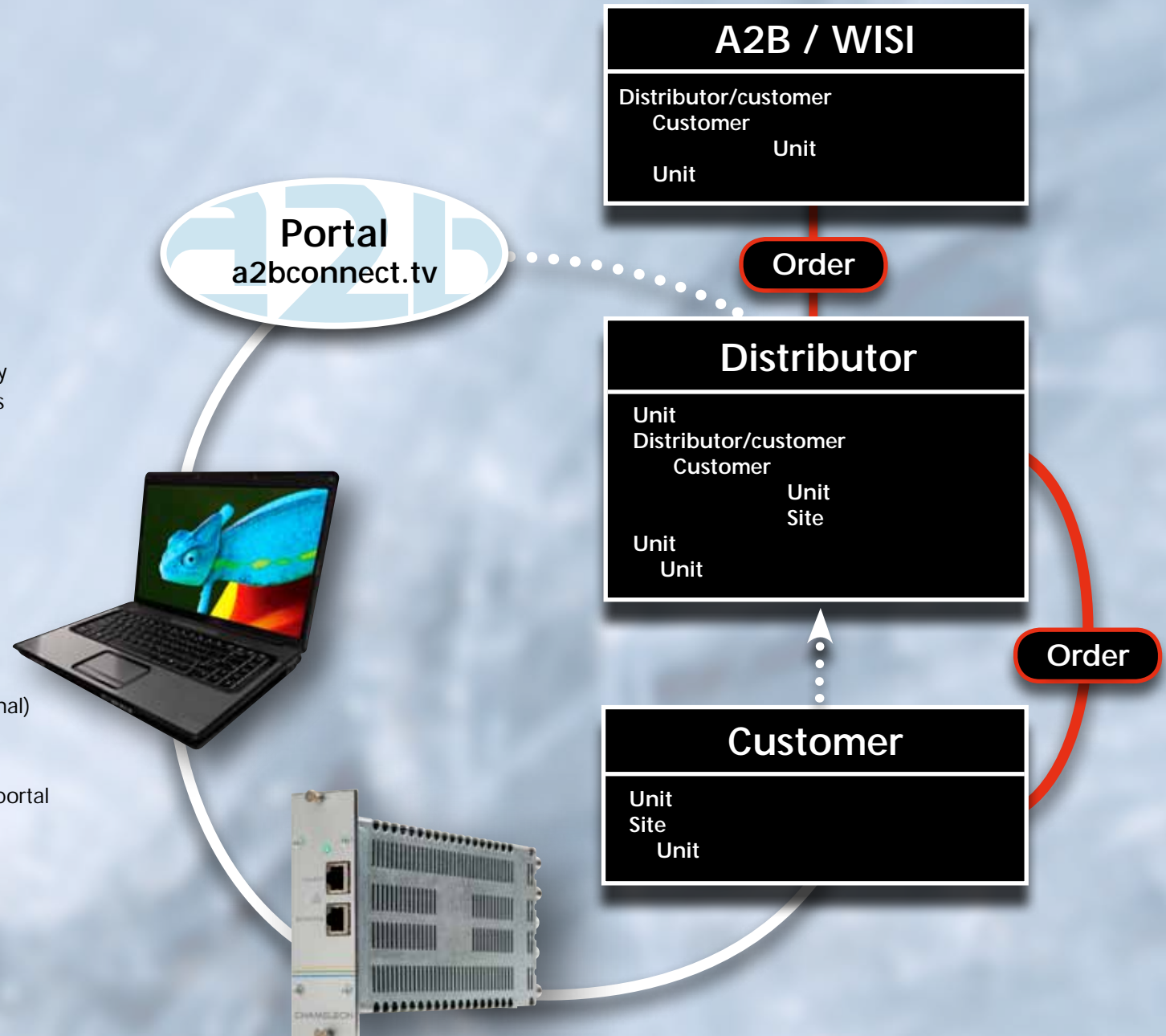
**Power Supply**

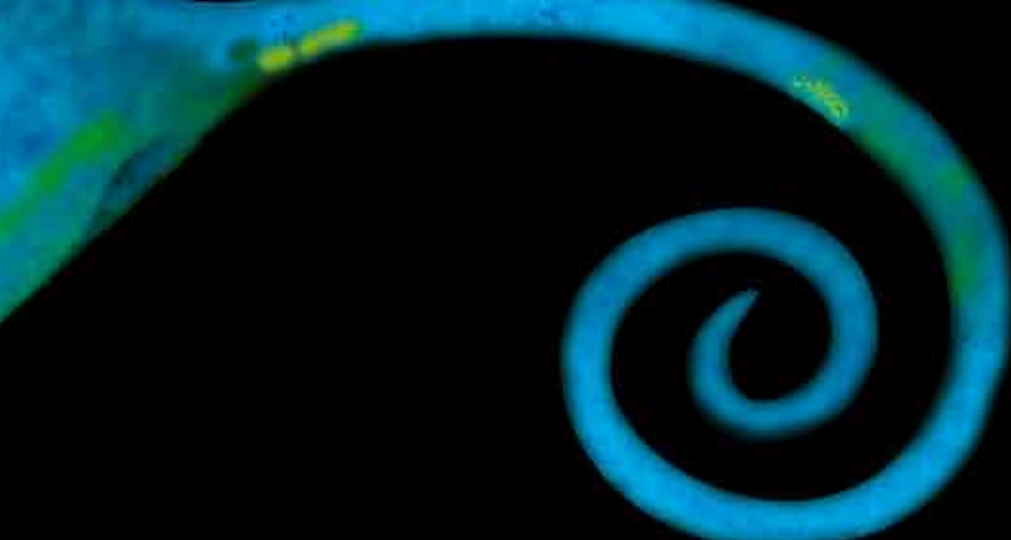**Cool Power**

# Chameleon portal
## "a2bconnect.tv"

**Single HW product line**
**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
- Additional SW options download via the portal
- The license agreement registered at
  first connection to a2bconnect.tv

**Support agreement gives:**

- installed base logging, unit status and site (optional)
- access to portal and FW upgrades for 12 months
- access to A2B/WISI support
- access to FAQ and additional information at the portal

**Portal**
a2bconnect.tv

### A2B / WISI

Distributor/customer
  Customer
          Unit
  Unit

**Order**

### Distributor

Unit
Distributor/customer
  Customer
          Unit
          Site
Unit
  Unit

**Order**

### Customer

Unit
Site
  Unit

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