BKtel

Headend Technology

Modern systems for future-proof installations

Our Company

The BKtel Group has its origin in the foundation of BKtel communications in 1997. The group was extended in 2002 with BKtel systems (merged with BKtel communications in 2009), BKtel components (2006), BKtel Photonics (2014) and BKtel networks in 2017. Further international offices were founded in China and Japan for the growing Asian market. The entire group has currently a workforce of over 130 employees worldwide, based in Germany in Hueckelhoven (near Düsseldorf), in Rosenheim (near Munich) and in Kornwestheim (near Stuttgart).

The company develops and manufactures products in the field of interactive FTTH-, Video Overlay-, RFoG- and HFC-networks for high performance data, telephone and cable TV services.
The high quality products as well as the comprehensive support in designing optical networks make BKtel to one of the leading suppliers in the FTTH and HFC market.

Our Products

The product portfolio includes a wide range of products starting from equipment for optical transmission such as optical transmitters, amplifiers, and receivers and customer premises equipment, CATV headends, coaxial cable amplifiers. BKtel manufacturing facilities guarantee a high quality standard (ISO 9001 certified). Furthermore the company offers a complete range of services such as planning, installation and training.

Headend Technology

NEO Series -
The Ideal Choice for Every Application

The BKtel NEO headend series comprises of four individual product lines, the X Series, P Series, M Series and N Series. Each of these series provides the customer an optimized system solution for their specific requirements.

- ✓ Full Digital Design
- ✓ Future-proof Architecture
- ✓ FPGA Signal Processing
- ✓ Expandable & Cascadable Systems
- ✓ Remote TCP Access
- ✓ Smart Configuration with HMT
- ✓ EASY Remote Software Update
- ✓ Quality Made in Germany
- ✓ Highly Energy Efficient

CE KLASSE A CLASS Energy saving Economical Quality made in Germany

NEO Series

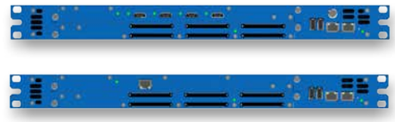
X series

The NEO X Series is a modular headend system that enables a customer specific configuration thereby providing the broadest range of features. A selection of various transmodulators, IP streamers and EDGE modulators, H.264 encoder and an advanced CI solution are available for the X10 rack.

M series

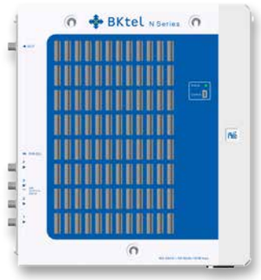
The NEO M Series is specialized on transmodulation in DVB-C or DVB-T. and facilitates the combined reception of DVB-S, S2, T, T2 and C signals. A six-way decoding option (CI) is available for each device.

P series



The NEO P-Series combines the advantages of modular head end technology in a 19 inch rack device. Extended multi-channel DVB-C transmodulation as well as an innovative IP streamer functionality together with advanced decoding options (CI) makes this product suitable for integration into professional applications and systems.

N series



The NEO N series is an 8 channel standalone FTA headend focused on reception of satellite signals and transmodulation for DVB-C distribution.

System overview

NEO X Series

The NEO X Series is the modular BKtel headend system that provides the broadest range of features giving the customer the flexibility to meet current and future signal processing requirements. The modular design enables a customer specific configuration in the X10 rack, which provides up to 10 insertion slots. A selection of various transmodulators, IP streamers and EDGE modulators, H.264 encoder and, last but not least, an advanced CI module are available for the X10 rack. Transport stream routing between all modules via a high speed backplane provides both an efficient and cost-effective complete system. Multiple X10 racks can be cascaded to enable a scalable evolution. Comprehensive baseband signal processing with program filter, NIT build and support for various LCN standards simplifies the operation of large scale deployments. The HMT software provides a user-friendly and intuitive interface which has been specially adapted for operating with the NEO Series. This software is freely available via the BKtel website. Programming is either performed locally on site or by remote access over a TCP/IP network. The X Series is not only compatible with standard 19" cabinets, but can also be wall mounted.

SPECIAL FEATURES

- Modular, expandable and future-proof headend system
- Unlimited cascadable via IP and internal switch
- Simultaneous reception of any DVB standard (DVB-S/S2/T/T2/C/IP)
- Completely flexible input, output and baseband configuration
- Remultiplex
- Flexible serial or parallel decoding and recoding
- HDMI H.264 Encoding
- Cross-module functions
- NIT generation and adjustments/change options
- LCN wizard, support for several LCN standards (NorDig, IEC 62216 and FRAN SAT PRO)
- High level of energy efficiency
- Low-noise fan with a very long service life
- Remote configuration via HMT PC software

NEO P Series

The NEO P Series follows a modular principle confined to a 19 inch form factor (1 HU). The P Series makes use of well-proven modular technology from the X Series, such as CI, HDMI encoding, transport stream routing via backplane. A highlight of this product is the new IP streamer functionality, which has significantly more MPTS / SPTS capacity and less restrictions for operations. Multiple devices can be cascaded to enable a scalable evolution in system architecture. Comprehensive baseband signal processing with program filter, NIT build and support for various LCN standards simplifies the operation of large scale deployments. The HMT software provides a user-friendly and intuitive interface which has been specially adapted for operating with the NEO Series. This software is freely available via the BKtel website. Programming is either performed locally on site or by remote access over a TCP/IP network.

SPECIAL FEATURES

- Expandable future proof headend system
- Unlimited cascadable via IP and internal switch
- Simultaneous reception of any DVB standards (DVB-S/-S2/-T/-T2/-C)
- Completely flexible input output and baseband configuration
- Flexible serial or parallel decoding up to 12 CAMs per Unit
- HDMI H.264 Encoding option
- NIT generation and adjustments/change options
- LCN wizard, support for several LCN standards (NorDig, IEC 62216 and FRAN SAT PRO)
- Two Wide Range Power Supplys, Redundancy mode
- Remote configuration via HMT

System overview

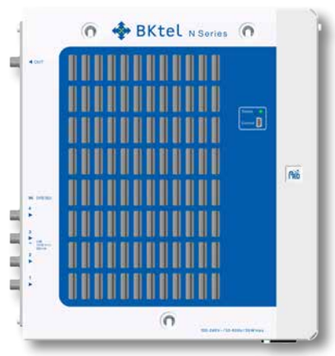
NEO M Series

While technically being closely related to the X and P Series, the NEO M Series distinguishes itself mainly due to its compactness. Specialized on DVB transmodulation in DVB-C or DVB-T the M Series family facilitates the combined reception of DVB-S, S2, T, T2 and C signals. Comprehensive baseband signal processing with program filter, NIT build and support for various LCN standards simplifies the operation of large scale deployments. The six-way decoding option (CI) available for each device features flexible serial or parallel decoding in a very wide field of applications. What's more, the NEO M Series provides power supply for LNBs and active antennas, thus minimizing the need for additional external equipment. The cascading functionality facilitates management and remote configuration via HMT PC Software of up to four units of the same output type as a single system. The high level of energy efficiency allows a fan-less design for silent operation without the need for maintenance.

SPECIAL FEATURES

- All-in-one solution
- Cascadable up to 4 units via USB
- Simultaneous reception of any DVB standards (DVB-S/-S2/-T/-T2/-C)
- Completely flexible input, output and baseband configuration
- Fanless design (no noise)
- Remote feeding for LNBs and active DVB-T antennas
- 6 CI slots for flexible individual or serial decoding
- Country-specific pre-programming
- Best in class energy efficiency
- LCN wizard, support for several LCN standards (NorDig, IEC 62216, FRANSAT PRO and FreeView NZ)
- NIT generation
- Remote configuration via HMT PC software

NEO N Series



The NEO N series is an 8 channel standalone FTA headend focused on reception of satellite signals and transmodulation for DVB-C distribution. Eight DVB-S(2) frontends, four Sat IF inputs, an internal multi-switch supporting DiSEqC 1.0 and remote power supply for one LNB, provide excellent values for the customer with a maximum of power and flexibility at the output. These features and the compact form factor, together with an attractive price performance ratio, are the key advantages specifically when upgrading to digital standards. Preconfigured upon delivery and with optional programming of customized channel packages via HMT, the N Series offers easy plug and play functionality.
The internal wide range power supply is highly energy efficient. The fan-less design offers silent operation without the need for maintenance.

SPECIAL FEATURES

- All-in-one solution
- Fully Flexible Output Configuration
- Four Sat IF Inputs with DiSEqC 1.0
- Wide Range Power Supply
- Configuration with HMT
- Very low power consumption (typ. 28W)
- Fanless design (no noise)
- Pre-programming of TV channels
- Simple programming thanks to channel packages

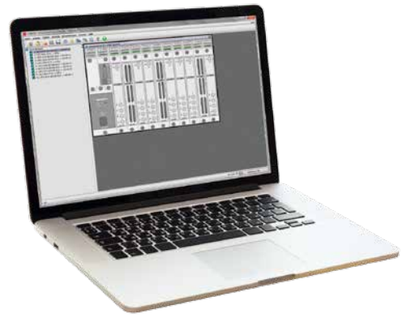
System overview

Features Overview

FEATURE	X Series	P Series	M Series	N Series
Modular / Partial Modular	✓	✓	✓	
DVB-S(2) DVB-C transmodulation	✓	✓	✓	✓
DVB-S(2)/T(2)/C DVB-C / -T transmodulation	✓	✓	✓	
Power supply LNB / active antennas		✓	✓	✓
CI function	✓	✓	✓	
TS routing	✓	✓	✓	
TS multiplexing	✓	✓		
IP streaming (RTP / UDP)	✓	✓		
EDGE modulation DVB-C / -T	✓			
HDMI encoding	✓	✓		
Program & PID Filter	✓	✓	✓	✓
TSID / ONID Remapping	✓	✓	✓	✓
SID / PID Remapping	✓	✓	✓	
NIT / LCN	✓	✓	✓	
SNMP	✓	✓		
RF amplifier / Preemphasis / 75Ω test port	✓	✓	✓	
Fanless / noiseless			✓	✓
System cascadable	✓	✓	✓	
Network compatible / remote configurable	✓	✓	✓	
Power Supply Redundancy	✓	✓		
Wide range power supply		✓	✓	✓

Central Management Software
HMT

The HMT software is required to operate a NEO X Series, P Series, M Series or N Series signal processing system and is available to download free of charge for Windows and Linux.



Features

- Central control of all parameters of the NEO X Series, P Series and the NEO M Series via TCP IP connection (locally or remote) including cascading, transport stream routing and advanced CI-functionality, etc.
- Control of all parameters of the NEO N Series via local USB connection
- User-friendly interface for easy set-up of the installation by means of wizards (e.g. NIT/LCN) and tool tips
- Simplified programming of channel units thanks to the use of channel lists and configuration templates that can be updated
- Transfer of saved configurations and channel lists into other installations

SNMP Monitoring

This software feature provides an SNMP interface through which all important status parameters such as module status, fan status, signal qualities etc. of a headend system can be monitored.

Features

- Provision of an SNMP interface for monitoring a system, comprising a base unit (master) and, as the case may be, one or more extension units (slaves)
- The SNMP agent runs exclusively on the base unit
- The SNMP agent is configured through SNMP. This includes the configuration of the access control, the SNMPv3 user and the notifications
- Support of all NEO X Series modules and P Series devices

FEATURES

- Easy remote access via TCP/IP connection
- Supports central software update for modules
- Offline configuration and favourite lists for managing large systems efficiently (e.g. in the hospitality sector)

The NEO X Series signal processing system

NEO X Series Base unit X10

Basic unit/module carrier with ten insert positions

Includes a power supply unit (X10-PS), backplane, central control module (X10-CM), fan unit, passive output RF combiner and cover.

Features

- Ten hot-plug insertion slots for NEO X Series® modules
- Three dedicated hot-plug system insertion slots for the power supply unit (X10-PS), control module (X10-CM) and extensions (e.g. X10-A1)
- NEO X Series modules are supplied with power and communicate with each other via the high-speed backplane
- Safe heat dissipation is ensured thanks to two energy-saving, monitored fans and optimised air ducting over the modules' cooling elements

FEATURES

- Installation height: Nine RUs for wall mounting or 19" rack
- Fully pre-assembled with power supply unit (X10-PS), output coupler, cover and control module (X10-CM)

Power supply unit for NEO X Series base unit X10-PS

Features

- Power supply unit for use in NEO X Series base units/module carriers (supplied with the X10 base unit/module carrier)
- Built in redundancy allowing parallel operation of two X10 in daisy chain mode via the cable X10-RC
- Easy to replace thanks to being installed at the front of NEO X Series base unit/module carrier
- Automatic overtemperature switch-off
- Low peak inrush current < 20 A

FEATURES

- High degree of efficiency: > 92%
- Capable of operating redundantly
- Front LED status display

X10-PS

X10-RC

The NEO X Series signal processing system

Central control module
X10-CM

Features

- Central control module for controlling all channel units in the NEO X Series signal processing system in conjunction with the HMT software (supplied with the X10 base unit/module carrier)
- Two Fast Ethernet ports for managing and unlimited cascading of base units without an external switch
- Management interface with a high level of performance thanks to parallel communication; also the interface to the inserted NEO X Series modules
- Power ON reset for NEO X Series series modules

FEATURES

- Flexible IP configuration (IPV 4/IPV 6, DHCP, zeroconf)
- Two USB ports (e.g. for software updates)
- Remote software update for modules

X10-CM

Amplifier
X10-A1

Features

- Amplifier can be inserted into the X10 base unit/module carrier directly
- Set-up via the X10-CM central control module in conjunction with the HMT software
- Level and slope range can be set in combination (four suitable pre-emphases)
- Test socket for the uninterrupted measurement of the output channels at the NEO X Series base unit/module carrier
- Lightning protection (1.2/50 μs 2 kV) at the RF output
- Excellent dynamic range under high channel loading

X10-A1

NEO X Series modules

NEO X Series modules

NEO X Series enables a wide range of TV signals to be processed in a very small space. The transmodulators feature four RF inputs, followed by a broadband RF matrix with DiSEqC™ capability for internally splitting the signals in a completely flexible way. Powerful program and PID filters, combined with the available multiplex function, ensure maximum flexibility.

All modules are characterised by a particularly low level of power consumption.They have been designed with push-pull technology, are capable of hot plugging and also feature voltage and temperature sensors. A status LED informs the user of the modules' operating condition at a glance.

XC08S ▸ Page 17
8-way transmodulator
DVB-S(2) – DVB-C (J.83A)

XC04S ▸ Page 17
4-way transmodulator
DVB-S(2) – DVB-C (J.83A)

XC06M ▸ Page 18
6-way multi-standard transmodulator
DVB-S(2)/T(2)/C – DVB-C (J.83A)

XT06M ▸ Page 18
6-way multistandard transmodulator
DVB-S(2)/T(2)/C – DVB-T

XC06M-X ▸ Page 19
6-way multi-standard transmodulator/ multiplexer
DVB-S(2)/T(2)/C – DVB-C (J.83A)

XT06M-X ▸ Page 19
6-way multi-standard transmodulator/ multiplexer
DVB-S(2)/T(2)/C – DVB-T

The NEO X Series signal processing system

XT04S ▸ Page 20
4-way transmodulator
DVB-S(2) – DVB-T

XI64S ▸ Page 21
8-way IP streamer
DVB-S(2) - DVB-IPTV

XI32M ▸ Page 21
4-way IP streamer
DVB-S(2)/T(2)/C - DVB-IPTV

XC08I ▸ Page 22
8-way transmodulator
DVB-IPTV – DVB-C (J.83)

XT08I ▸ Page 22
8-way transmodulator
DVB-IPTV – DVB-T

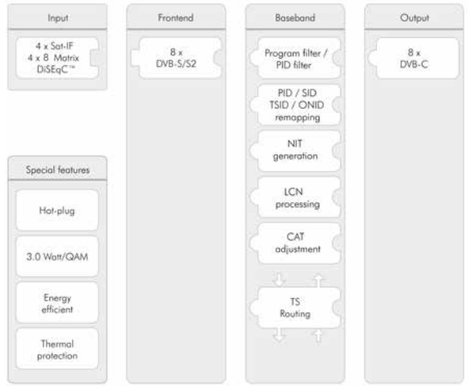
XB06-CI ▸ Page 23
6-way CI module

XB04H-EX ▸ Page 24
4 way HDMI Encoder

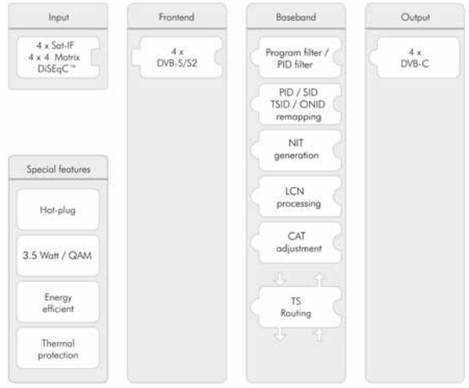
8/4-way transmodulator DVB-S(2) – DVB-C (J.83A)
XC08S, XC04S

Features

- 8-way (XC08S)/4-way (XC04S) transmodulator DVB-S/S2 – DVB-C (QPSK/8PSK – QAM)
- Flexible baseband data exchange with neighbouring modules, e.g. XB06-CI for decoding
- Outstanding data (MER ≥ 45 dB) through direct implementation as an FPGA solution
- Four Sat IF inputs with DiSEqC™1.0 functionality for sat multi-switches, flexibly distributable across eight/four frontends



XC08S



XC04S

FEATURES

- Comprehensive baseband signal processing with, e.g. extended channel filter functionality
- 8/4 DVB-C-compliant output channels (J.83A)
- High level of energy efficiency, power consumption: Typ. 24/14 W @ 12 V

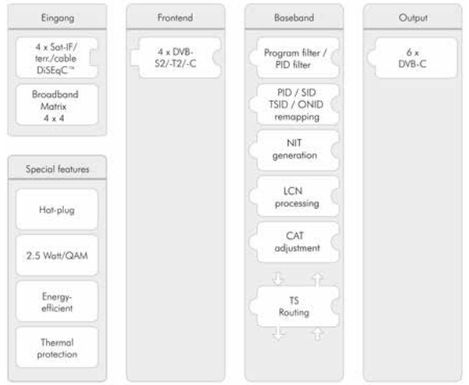
XC08S XC04S

The NEO X Series signal processing system

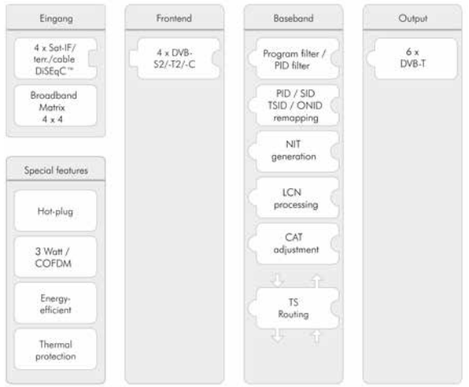
6-way transmodulator DVB-S2/T2/C – DVB-C (J.83A)/DVB-T
XC06M, XT06M

Features

- 6-way transmodulator DVB-S(2)/T(2)/C – DVB-C (J.83A)/DVB-T transmodulator with four-way multi-standard frontend and maximum six DVB-compliant output channels:
  · XC06M: six output channels in DVB-C (J.83A)
  · XT06M: six output channels in DVB-T
- Flexible baseband data exchange with neighbouring modules, e.g. XB06-CI for decoding
- Four Sat IF/terr./cable inputs with DiSEqC™1.0 functionality for sat multi-switches, flexibly distributable across four frontends



XC06M



XT06M

FEATURES

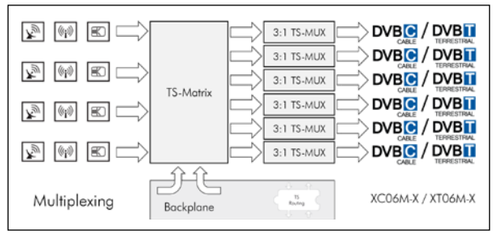
- Outstanding data (MER ≥ 45 / ≥ 42 dB) through direct implementation as an FPGA solution
- Comprehensive baseband signal processing with, e.g. extended channel filter functionality
- High level of energy efficiency, power consumption: Typically 14/17 W @ 12 V

XC06M
XT06M

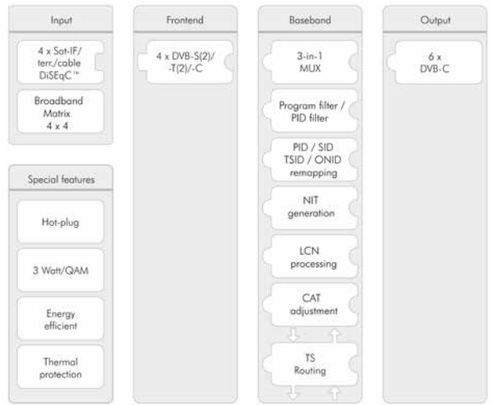
6-way transmodulator/multiplexer DVB-S(2)/T(2)/C – DVB-C (J.83A)/DVB-T
XC06M-X, XT06M-X

Features

- 6-way transmodulator/multiplexer DVB-S(2)/T(2)/C – DVB-C (J.83A)/DVB-T transmodulator with four-way multi-standard frontend and maximum six DVB-compliant output channels:
  · XC06M-X: six output channels in DVB-C (J.83A)
  · XT06M-X: six output channels in DVB-T
- 3-in-1 MUX per output channel:
  · Enables three freely selectable input transport streams (frontend or neighbouring modules) to be multiplexed per output channel
  · PSI/SI MUX provides the completely new configuration of PAT, SDT, EIT etc. Flexible baseband data exchange with neighbouring modules, e.g. XB06-CI for decoding



- Four Sat IF/terr./cable inputs with DiSEqC™1.0 functionality for sat multi-switches, flexibly distributable across four frontends
- Manually editable SID permits:
  · The generation of a channel list (for receivers without LCN)
  · The substitution of channels without having to perform another channel search in the receivers.
  This feature simplifies the operation of large scale deployments e.g. hotel resorts.



XC06M-X

XT06M-X

FEATURES

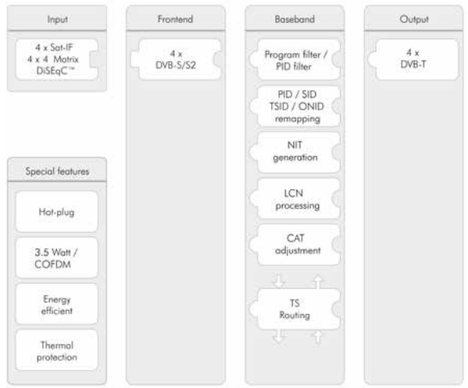
- Outstanding data (MER ≥ 45 / ≥ 42 dB) through direct implementation as an FPGA solution
- Comprehensive baseband signal processing with, e.g. extended channel filter functionality
- High level of energy efficiency, power consumption: Typically 17 W @ 12 V

XC06M-X
XT06M-X

The NEO X Series signal processing system

4-way transmodulator DVB-S(2) – DVB-T
XT04S

Features
- 4-way transmodulator DVB-S/S2 – DVB-T (QPSK/8PSK – COFDM)
- Flexible baseband data exchange with neighbouring modules, e.g. XB06-CI for decoding
- Four inputs with DiSEqC1.0™ functionality for sat multi-switches, flexibly distributable across four frontends
- Four DVB-T-compliant output channels, 47-862 MHz, 2k mode



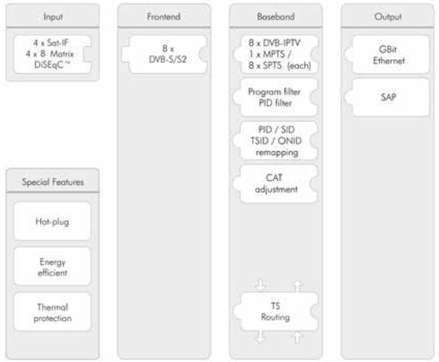
XT04S

FEATURES
- Outstanding data (MER ≥ 42 dB) through direct implementation as an FPGA solution
- Comprehensive baseband signal processing with, e.g. extended channel filter functionality
- High level of energy efficiency, power consumption: typically 14 W @ 12 V


XT04S

8-way IP streamer DVB-S(2) – DVB-IPTV
XI64S IP streamer

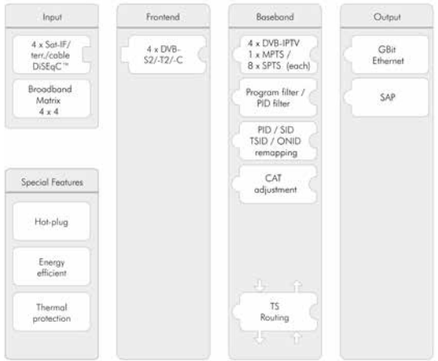
Features
- 8-way IP streamer DVB-S(2) – DVB-IPTV
- IP streamer with 8 DVB-S(2) front-ends
- Converts DVB-S(2) input signals into 8 x MPTS or 64 x SPTS
- Four Sat IF inputs with DiSEqC™ 1.0 functionality for Sat multi-switches, flexibly distributable across 8 frontends



XI64S

4-way IP streamer DVB-S(2)/T(2)/C – DVB-IPTV
XI32M

Features
- 4-way IP streamer DVB-S(2)/T(2)/C – DVB-IPTV
- IP streamer with four multi-standard front-ends DVB-S2/T2/C
- Converts multi-standard input signals into 4 x MPTS or 32 x SPTS
- Four Sat IF/terr./cable inputs with DiSEqC™1.0 functionality for sat multi-switches, flexibly distributable across four frontends



XI32M

FEATURES
- Flexible baseband data exchange with neighbouring modules, e.g. XB06-CI for decoding
- Comprehensive baseband signal processing with, e.g. extended channel filter functionality
- High level of energy efficiency, power consumption: Typically 18 W @ 12 V


XI64S

FEATURES
- Flexible baseband data exchange with neighbouring modules, e.g. XB06-CI for decoding
- Comprehensive baseband signal processing with, e.g. extended channel filter functionality
- High level of energy efficiency, power consumption: Typically 10 W @ 12 V

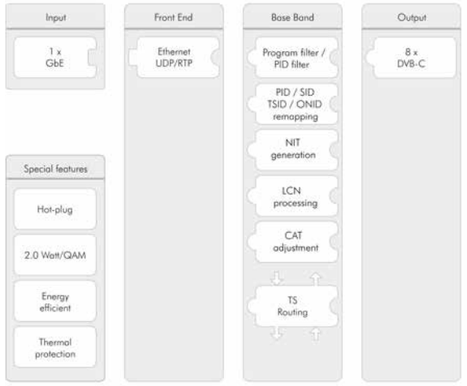

XI32M

The NEO X Series signal processing system

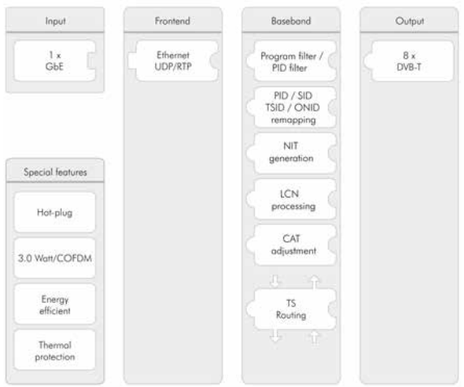
8-way transmodulator DVB-IPTV – DVB-C/DVB-T
XC08I, XT08I

Features

- 8-way transmodulator DVB-IPTV – DVB-C (J.83A) / DVB-T (COFDM)
  Converts DVB-IPTV input signals into eight output channels in DVB-C / DVB-T:
  · XC08I: EDGE-QAM (eight output channels in DVB-C (J.83A))
  · XT08I: EDGE-COFDM (eight output channels in DVB-T)
- Input: 1 GB Ethernet, eight x MPTS or SPTS
- Outstanding data (MER ≥ 45 / ≥ 42 dB) through direct implementation as an FPGA solution
- Manually editable SID



XC08I



XT08I

FEATURES

- Flexible baseband data exchange with neighbouring modules, e.g. XB06-CI for decoding
- Comprehensive baseband signal processing with, e.g. extended channel filter functionality
- High level of energy efficiency, power consumption: Typically 16/17 W @ 12 V

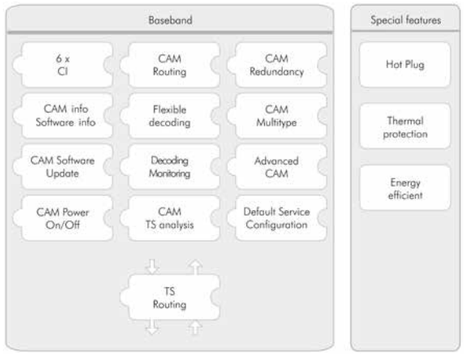
XC08I
XT08I

6-way CI module
XB06-CI

Features

- Flexible serial connection of up to three CAMs and assignment to input transport streams in order to increase decoding capacity
- Flexible parallel operation of up to three CAMs with automatic switching in case of a CAM error to increase decoding reliability (redundancy)
- Each CAM fitted can be individually reset and restarted (power ON reset) or permanently enabled/disabled

These features increases the service availability considerably.



XB06-CI

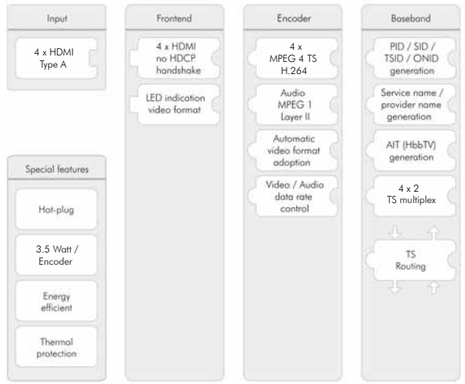
FEATURES

- Six CI slots, each intended to accommodate one CAM
- Flexible baseband data exchange with neighbouring modules, e.g. XC08S
- Monitoring of the decoding status and automatic reconfiguration in the event of an error

XB06-CI

4 way HDMI Encoder
XB04H-EX HDMI Encoder

Features
- 4 way HDMI Encoder with MPEG2 TS Multiplexing
- Supported video formats
  · 576i50, 720p50, 1080i50
- Two integrated MPEG2-TS multiplexers
  · 4 HDMI input signals can be multiplexed in any order into 1 or 2 MPEG2 transport streams
- Excellent picture quality
- Encoded signals can be transmitted via DVB-C (e.g. XC06M), DVB-T (e.g. XT06M) and IP (e.g. XI064S) by flexible data exchange with neighboured modules



XB04H-EX

FEATURES
- Flexible baseband data exchange with neighboured modules, e.g. for DVB-C and IP transmission
- Comprehensive baseband processing with e.g. extended program filter functionality
- High level of energy efficiency, 14W@12V


XB04H-EX

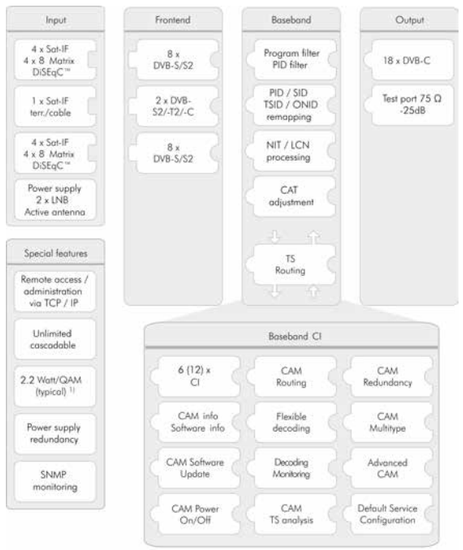
The NEO P Series Systems

18-way headend DVB-S(2)/T(2)/C – DVB-C
PC018SM-CI, PC018SM

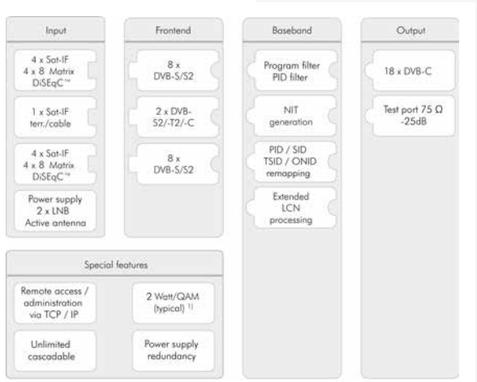
The PC018SM is a headend for transmodulation in DVB-C. It facilitates the combined reception of 16 x DVB-S, S2 transponders and 2 x DVB-S, S2, T, T2 and C signals. Remote power supply for two LNB and an active antenna minimizes the need for additional external equipment. The PC018SM follows a modular principle confined to a 19 inch form factor (1 RU). As a standard configuration, the PC018SM-CI is equipped with an advanced six-way decoding option (CI). Additional options are available on request.

Features

- Standalone headend with 16 DVB-S(2) frontends, 2 multi-standard frontends DVB-S(2)/(T2)/C and 18 flexibly adjustable output channels:
  · PC018SM-CI: 18 DVB-C compliant output channels with six CI slots
  · PC018SM: 18 DVB-C compliant output channels
- Eight Sat IF inputs with DiSEqCTM 1.0 functionality for Sat multi-switches and one Sat/terrestrial/cable input
- All transmission parameters can be set using the HMT management software
- Comprehensive baseband signal processing such as program & PID filter, TSID, ONID, SID, PID remapping, NIT & LCN functionality
- Two wide band power supplies in redundancy mode



PC018SM-CI



PC018SM

FEATURES

- Excellent output values thanks to direct implementation as an FPGA solution
- Remote maintenance and configuration
- Unlimited cascadable via IP and internal switch
- Comprehensive baseband signal processing (program filter, NIT, LCN…)

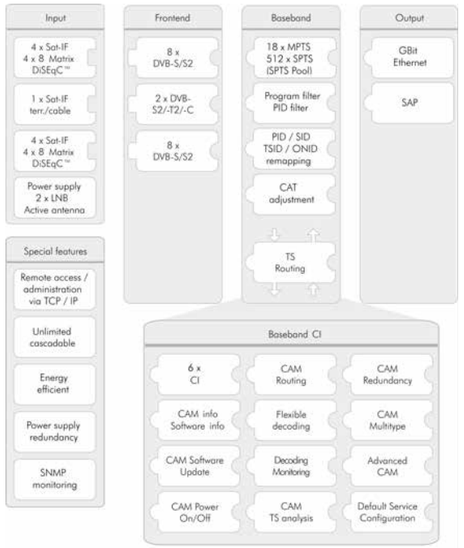
PC018SM-CI / PC018SM

DVB-IP Streaming headend
PI512SM-CI, PI512SM

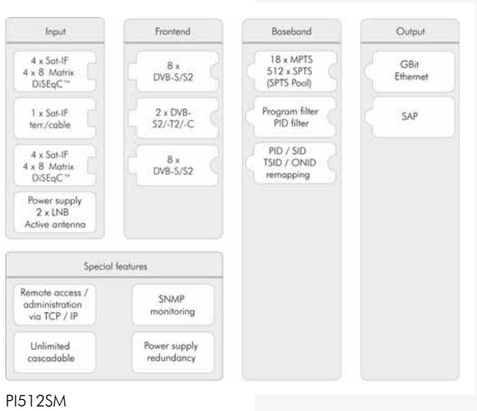
The PI512SM is a headend optimised for IP streaming with up to 512 SPTS. It facilitates the combined reception of 16 x DVB-S, S2 transponders and 2 x DVB-S, S2, T, T2 and C signals. Remote power supply for two LNB and an active antenna minimizes the need for additional external equipment. The PI512SM follows a modular principle confined to a 19 inch form factor (1 RU). As a standard configuration, the PI512SM-CI is equipped with an advanced six-way decoding option (CI).

Features

- DVB IP streaming headend with 16 DVB-S(2) frontends, 2 multi-standard frontends DVB-S(2)/(T2)/C:
  · PI512SM-CI: 18 DVB-C compliant output channels with six CI slots
  · PI512SM: 18 DVB-C compliant output channels
- Service pool, 18 MPTS / 512 SPTS
- Eight Sat IF inputs with DiSEqCTM 1.0 functionality for Sat multi-switches and one Sat/terrestrial/cable input
- All transmission parameters can be set using the HMT management software
- Comprehensive baseband signal processing such as program & PID filter, TSID, ONID, SID, PID remapping
- Two wide band power supplies in redundancy mode



PI512SM-CI



PI512SM

FEATURES

- Excellent output values thanks to direct implementation as an FPGA solution
- Remote maintenance and configuration
- Unlimited cascadable via IP and internal switch
- Service pool

PI512SM-CI / PI512SM

The NEO M Series Systems

18-way headend DVB-S(2)/T(2)/C – DVB-C
MC18SM-CI, MC18SM

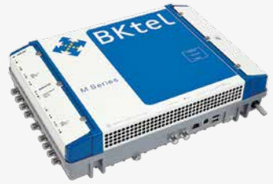
The MC18SM is an ultra compact headend for transmodulation in DVB-C. It facilitates the combined reception of 16 x DVB-S, S2 transponders and 2 x DVB-S, S2, T, T2 and C signals. Remote power supply for two LNB and an active antenna minimizes the need for additional external equipment. The MC18SM-CI is equipped with an advanced six-way decoding option (CI).

Features

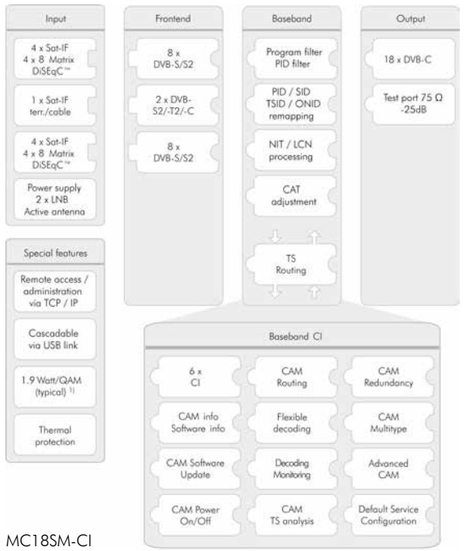
- Standalone headend with 16 DVB-S(2) frontends, 2 multi-standard frontends DVB-S(2)/(T2)/C and 18 DVB compliant output channels (flexibly adjustable):
  · MC018SM-CI: 18 DVB-C compliant output channels with six CI slots
  · MC018SM : 18 DVB-C compliant output channels
- Eight Sat IF inputs with DiSEqCTM 1.0 functionality for Sat multi-switches and one Sat/terrestrial/cable input
- All transmission parameters can be set using the HMT management software
- Comprehensive baseband signal processing such as program & PID filter, TSID, ONID, SID, PID remapping, NIT & LCN functionality
- Up to four units cascadable via USB link

FEATURES

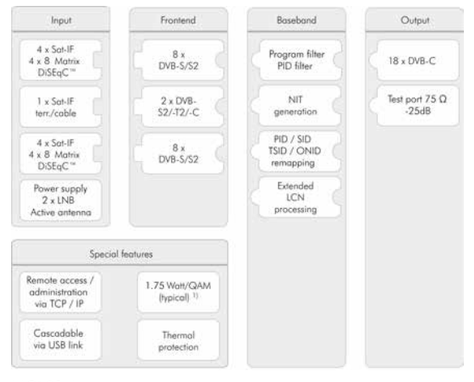
- Excellent output values thanks to direct implementation as an FPGA solution
- Remote maintenance and configuration
- Cascadable via USB
- Comprehensive baseband signal processing (program filter, NIT, LCN…)



MC18SM-CI/MC18SM



MC18SM-CI



MC18SM

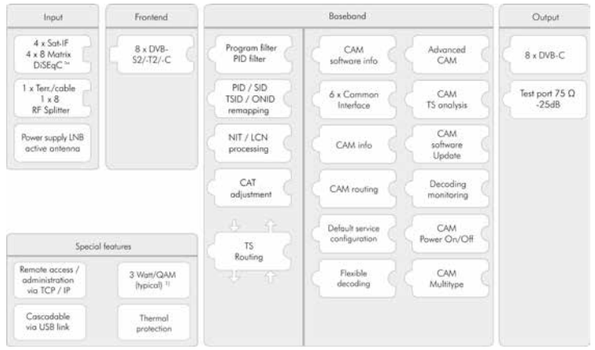
8-way headend DVB-S(2)/ T(2)/C – DVB-C
MC08M-CI, MC08M

The MC08M is a compact headend for transmodulation in DVB-C. It facilitates the combined reception of 8 x DVB-S, S2, T, T2 and C signals. Remote power supply for one LNB and an active antenna minimizes the need for additional external equipment. The MC08M-CI is equipped with an advanced six-way decoding option (CI).

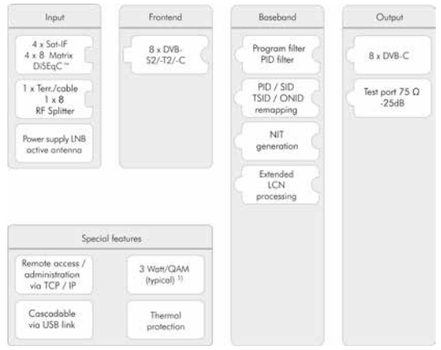
Features
- Standalone headend with eight-way multi-standard frontend DVB-S2/T2/C, 6-way decoding (CI) and eight DVB-compliant output channels (flexibly adjustable):
  · MC08M-CI: eight output channels in DVB-C with six CI slots
  · MC08M: eight output channels in DVB-C
- Four Sat IF inputs with DiSEqC™1.0 functionality for sat multi-switches and one terrestrial/cable input, flexibly distributable across eight multi-standard frontends
- All transmission parameters can be set using the HMT management software
- Comprehensive baseband signal processing such as program & PID filter, TSID, ONID, SID, PID remapping, NIT & LCN functionality
- Up to four units cascadable via USB link (16-way multi-standard frontend, 12-way decoding (CI) and 16 x QAM/COFDM)

FEATURES
- Excellent output values thanks to direct implementation as an FPGA solution.
- High level of energy efficiency
- Remote maintenance and configuration
- Cascadable via USB
- No fan, therefore no noise and no maintenance

MC08M-CI, MC08M



MC08M-CI



MC08M

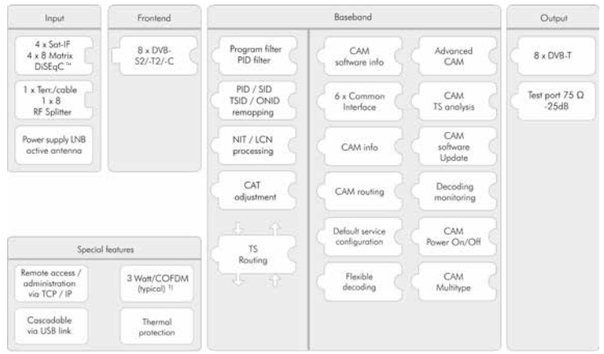
8-way headend DVB-S(2)/ T(2)/C – DVB-T
MT08M-CI, MT08M

The MT08M is a compact headend for transmodulation in DVB-T. It facilitates the combined reception of 8 x DVB-S, S2, T, T2 and C signals. Remote power supply for one LNB and an active antenna minimizes the need for additional external equipment. The MT08M-CI is equipped with an advanced six-way decoding option (CI).

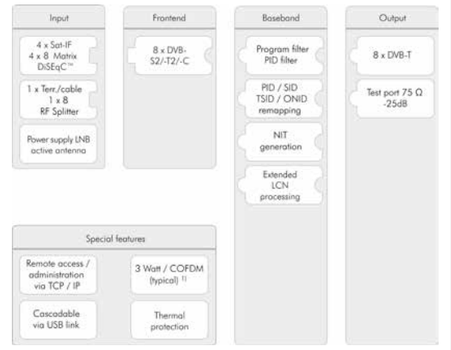
Features
- Standalone headend with eight-way multi-standard frontend DVB-S2/T2/C, 6-way decoding (CI) and eight DVB-compliant output channels (flexibly adjustable):
  · MT08M-CI: eight output channels in DVB-T with six CI slots
  · MT08M: eight output channels in DVB-T
- Four Sat IF inputs with DiSEqC™1.0 functionality for sat multi-switches and one terrestrial/cable input, flexibly distributable across eight multi-standard frontends
- All transmission parameters can be set using the HMT management software
- Comprehensive baseband signal processing such as program & PID filter, TSID, ONID, SID, PID remapping, NIT & LCN functionality
- Up to four units cascadable via USB link (16-way multi-standard frontend, 12-way decoding (CI) and 16 x QAM/COFDM)

FEATURES
- Excellent output values thanks to direct implementation as an FPGA solution.
- High level of energy efficiency
- Remote maintenance and configuration
- Cascadable via USB
- No fan, therefore no noise and no maintenance

MT08M-CI, MT08M



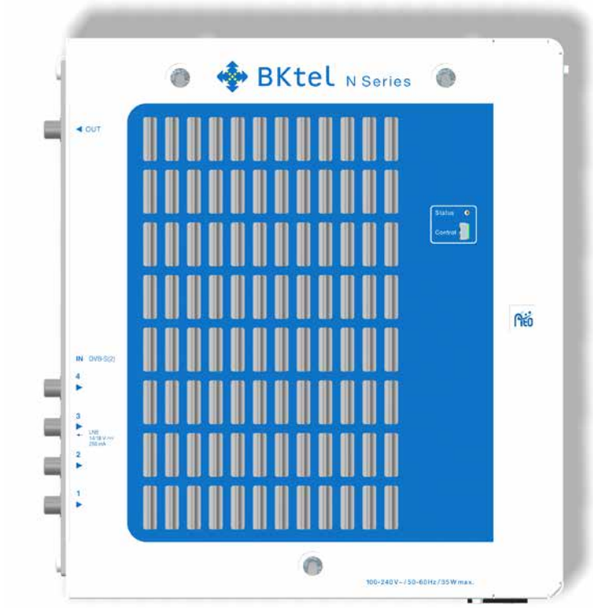
MT08M-CI



MT08M

The NEO N Series System

8-way DVB-S(2) - DVB-C transmodulation headend
NC08S



Features

- Standalone headend with 8 DVB-S(2) frontends, and 8 DVB-C compliant output channels (flexibly adjustable)
- Pre-programed TV channels and radio stations
- Four Sat IF inputs with DiSEqC™ 1.0 functionality for Sat multi-switches
- All transmission parameters can be set using the HMT management software
- Comprehensive baseband signal processing
  - For setting a constant output data rate (stuffing) with PCR correction
  - With program filter to hide specific TV channels and radio stations
- Fan-less design for wall mounting (no noise)

MAIN FEATURES

- All in one solution (integrated multiswitch), plug and play
- DiSEqC™ 1.0 and power supply for LNB
- Pre-programming of TV and radio channels
- Fanless design (no noise)
- High level of energy efficiency (28W)

NEO N Series tuning instructions

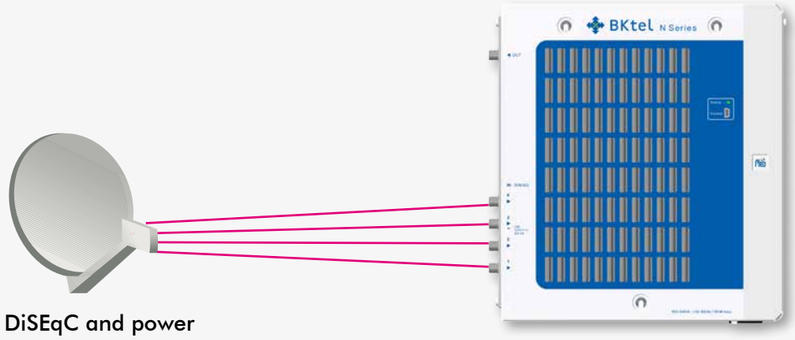
Its plug-and-play condition on delivery means the NEO N Series headend can be used without any further configuration work. Preconfiguerd upon delivery, 78 TV channels and nine radio stations will be available immediately (via Astra 19.2° East, transponder allocation; see table below).

Chan-nel unit	Input	Transponder/ Program	SD/ HD	Band	Polarisation	Transp. Frequency	Sat IF/ MHz	SR	Stan-dard	CR	Output channel	Symbol rate	Output level	QAM
1	A	Das Erste, BR, HR, SWR, WDR	SD	High	Horizontal	11836	1236	27500	DVB-S	3/4	S21	6.9	-2	64
2	A	ZDF, 3sat, KIKA, ZDFinfo, ZDFkul-tur, ZDF neo	SD	High	Horizontal	11954	1354	27500	DVB-S	3/4	S22	6.9	-2	64
3	A	MDR, NDR, RBB, SWR	SD	High	Horizontal	12110	1510	27500	DVB-S	3/4	S23	6.9	-2	64
4	A	RTL, N-TV, RTL2, RTL Living, RTLnitro, Vox	SD	High	Horizontal	12188	1588	27500	DVB-S	3/4	S24	6.9	-2	64
5	A	Pro Sieben, Sat1, Kabel eins, N24…	SD	High	Horizontal	12545	1945	22000	DVB-S	5/6	S25	6.9	-2	64
6	A	Anixe, Das Vierte, 1-2-3 TV, TLC Germany, Sixx Deutschland	SD	High	Horizontal	12460	1860	27500	DVB-S	3/4	S26	6.9	-2	64
7	B	VIVA, Nickelo-deon…	SD	High	Vertical	11973	1373	27500	DVB-S	3/4	S27	6.9	-2	64
8	B	Sport1, DMAX, HSE24, Sonnen-klarTV, Astro TV...	SD	High	Vertical	12480	1880	27500	DVB-S	3/4	S28	6.9	-2	64

NC08S condition on delivery, transponder Astra 19.2° East and output channel assignment

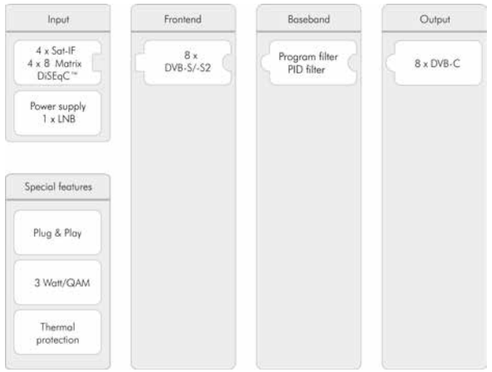
The settings and numeric values given in the following are only examples and may not necessarily match the condition on delivery. In future, additional pre-set configurations will be made available for the operation of two NEO N Series units or for reception from other satellites. These can be downloaded free on request via email: info@bktel.com. When operating two NEO N Series units, ensure that the relevant output channels do not overlap. The output signals of both headends can then be combined via RF splitters.

Connection example for NEO N Series installation



DiSEqC and power supply for LNB

NC08S



Technical data

NEO X Series processing

Type	X10
Order no.	690065
Type of mounting	Installation in 19" cabinets or for wall mounting
Number of insertion slots	Ten slots freely configurable Two pre-assembled slots (X10-PS / X10-CM) One for special functions (e.g. X10-A1)
Power-supply unit (X10-PS, 20610121)	
Mains voltage	230 V ± 10 % / 50 ... 60 Hz
Max. power consumption [W]	437
Secondary voltage/max. permissible current	12.3 V/32.5 A
Signaling (LED)	Green (normal operation) Red (undervoltage or overvoltage) Red flashing (overvoltage)
RF combiner	
Insertion loss [dB]	Typ. 15
General	
Fans	2
Dimensions (HxWxD) [mm]	399 x 483 x 266
Ambient temperature range [°C]	-20 ... +50
Weight [kg]	15.5

Type	X10-CM
Order no.	690067
System interfaces	
Control interface [Mbps]	12
Fast Ethernet	2 x RJ 45
USB	2 x Host (type A)
Reset	Button
System data	
Power consumption [W]	Typ. 4
Temperature range [° C]	-20 ... +50
Dimensions (HxWxD) [mm]	110.5 x 38.5 x 207
Weight [kg]	0.3

Type	X10-PS
Order no.	690066
Input	
Nominal input voltage [V]	230 ± 10 %
Mains frequency [Hz]	50 ... 60
Input power [W]	Max. 437
Nominal input current [A	< 1.9
Inrush current limitation [A]	≤ 20
Efficiency [%]	Typ. > 92
Power factor correction	EN 61000-3-2
Output	
Output power [W]	400
Output voltage/current	12.3 V / 0.5 ... 32.5 A
Output current limitation	36.5 < I_{sec} < 38.5 A (short-circuit proof)
Overvoltage protection [V]	> 14
Interference voltages	≤ 250 mV_{ss} (50 Hz to 1 MHz)
Redundancy	Parallel operation of two units possible
Monitoring	
Temperature sensor	Readout of internal temperature via software HMT
Module carrier fan units	Function/error status data via software, HMT
Remote control	Reset and start via software HMT
Signalling (LED)	
Green [V]	Normal operation (output voltage 11.3 ... 14)
Red [V]	Undervoltage (output voltage < 10.6)
Red (blinking) [V]	Overvoltage (output voltage > 14)
Red [A]	Overcurrent (output current > 35.5)
Safety (VDE approved)	
Protection class	1
Excess temperature switch-off	Automatic
System data	
Mains connection	Panel connector C14
Temperature range [° C]	-20 ... 50
Dimensions (HxWxD) [mm]	166 x 78 x 230
Weight [kg]	1.6

▸ more information on next page

Technical data

Type	X10-RC
Order no.	690087
Redundancy system	
Connection	2 x X10
Redundancy mode	Half-load parallel operation of both power supplies
Automatic switch-over in the event of failure [1]	Seamless (uninterrupted operation for the X10 system)
Power supply in the event of failure	One power supply takes over the power supply of X10 units
Max. power consumption of X10 units [W]	400
Power consumption X10 (X10-CM and fan unit) [W]	7
Power distribution between both X10 units	May be asymmetric
Hot pluggable	Replacing power units without affecting the headend operation
Signals in the event of failure	LED on power supply and HMT
Potential equalisation	According to DIN EN 60728-11 and DIN EN 60065
Data link cable	
Length [m]	1.1
Connectors	5-pin

[1] It is recommended to wire the two power supplies at different phases. This is beneficial if one phase failes in redundancy operation mode

Type	X10-A1
Order no.	690068
Input	
Input socket [Ω]	1 x F-Connector, 75
Frequency Range [MHz]	47 ... 1,006
Test output	
Test socket [Ω]	1 x F-Connector, 75
Level relative to the output [dB]	-25
Output	
Output socket [Ω]	1 x F-Connector, 75
Max. output level (at 862 MHz) [dBµV]	113
Max. output level (at 1006 MHz) [dBµV]	112

Type	X10-A1
Order no.	690068
System data	
Gain [dB]	Max. 30
Adjustable pre-emphasis [dB]	6, 9, 12, 15
Power consumption [W]	Typ. 14
Temperature range [° C]	-20 ... +50
Dimensions (H x W x D) [mm]	110.5 x 38.5 x 207
Weight [kg]	0.3

Type	XC08S	XC04S
Order no.	690069	690070
Inputs		
Sat IF Input [Ω]	4 x F-Connector, 75	
Frequency range [MHz]	950 ... 2,150	
Decoupling [dB]	> 25	
Return loss [dB]	Typ. 10	
DiSEqC™1.0	Vert./Horiz., Low/High; Sat.Pos. (A/B/C/D)	
Switching levels	14/18 V, 0/22 kHz	
Remote feed current	Max. 60 mA (per input)	
Front end		
DVB-S2	8 x	4 x
Frequency grid [MHz]	1	
AFC-control range [MHz]	± 3 (symbol rate <10 Ms/s) ± 5 (Symbol Rate> 10 Ms/s)	
Input level range [dBµV]	60 ... 110	
Permissible level difference [dB]	12	
Demodulation DVB-S		
Standard	EN 300 421 (1)	
Input symbol rate QPSK [MS/s]	1 ... 45	
Code rate (Viterbi)	1/2, 2/3, 3/4, 5/6, 6/7, 7/8	
Roll off [%]	35	
Demodulation DVB-S2		
Standard	EN 302 307 (2)	
Input symbol rate QPSK [MS/s]	1 ... 34	
Code rate (LDPC)	1/2, 3/5, 2/3, 3/4, 4/5, 5/6, 8/9, 9/10	
Input symbol rate 8PSK [MS/s]	1 ... 31.5	

Type	XC08S	XC04S
Code rate (LDPC)	3/5, 2/3, 3/4, 5/6, 8/9, 9/10	
Roll off [%]	20, 25, 35	
System interfaces		
Data interface [MBit/s]	800 net	
Control interface [Mbps]	12	
TS routing to backplane	Max. 2 x 16 transport streams (right and left)	
MPEG-TS processor		
Program filter	✓	
PID filter	✓	
PSI/SI processing	TSID, ONID, SID, PID remapping, CAT, PCR correction, Cable-NIT, LCN	
Stuffing	Automatic	
QAM modulator		
Output channels	8 x DVB-C (J.83A)	4 x DVB-C (J.83A)
QAM Constellation [QAM]	16, 32, 64, 128, 256	
Symbol rate [MS/s]	1.5 ... 7.15	
Roll off [%]	15	
RF output		
DVB-C Output [Ω]	1 x F-Connector, 75	
Frequency range [MHz]	47 ... 1,006 (fine adjustment in 125 kHz steps)	
Frequency range (channel list) [MHz]	47 ... 86/110 ... 862 (settable over the channel list)	
Return loss	14 dB (47 MHz) -1.5 dB/Oct.	
Output level [dBµV]	97	
Setting output level [dB]	-20 (in 0.5 dB steps)	
Signal stability [dB]	± 0.75	
Frequency stability [ppm]	35	
MER [dB]	≥ 45	
Shoulder attenuation [dB]	≥ 60 (at standard level)	
Spurious emissions [dB]	≥ 60	
System data		
Power consumption [W]	Typ. 24	Typ. 14
Temperature range [° C]	-20 ... +50	
Protective switch-off [°C]	> 70	
Dimensions (H x W x D) [mm]	265 x 36 x 220	
Weight [kg]	1.1	

Type	XT06M	XC06M
Order no.	690072	690071
Inputs		
Sat IF/terrestrial/cable [Ω]	4 x F-Connector, 75	
Decoupling [dB]	> 25	
Return loss [dB]	Typ. 10	
DiSEqC™1.0	Vert./Horiz., Low/High; Sat.Pos. (A/B/C/D)	
Switching Levels	14/18 V, 0/22 kHz	
Remote feed current [mA]	Max. 60 (per input)	
Front end		
DVB-S(2)/-T/-T2/-C	4 x	
Frequency grid [MHz]	1	
Input level range [dBµV]	60 ... 100	
Permissible level difference [dB]	20	
Demodulation DVB-S		
Standard	EN 300 421	
Frequency range [MHz]	950 ... 2,150	
Input symbol rate QPSK [MS/s]	1 ... 45	
Code rate (Viterbi)	1/2, 2/3, 3/4, 5/6, 7/8	
Roll off [%]	35	
AFC-control range [MHz]	± 5	
Demodulation DVB-S2		
Standard	EN 302 307, TR 102-376	
Input symbol rate QPSK [MS/s]	1 ... 45	
Code rate (LDPC)	1/2, 3/5, 2/3, 3/4, 4/5, 5/6, 8/9, 9/10	
Input symbol rate 8PSK [MS/s]	1 ... 45	
Code rate (LDPC)	3/5, 2/3, 3/4, 5/6, 8/9, 9/10	
Roll off [%]	20, 25, 35	
Demodulation DVB-T (COFDM)		
Standard	EN 300744, NorDig Unified 2.2.1, D-Book 7.0, Supports all C.R, G.I, LP and HP streams	
Frequency range [MHz]	50.5 ... 858	
Guard interval	1/4, 1/8, 1/16, 1/32	
FEC	1/2, 2/3, 3/4, 5/6, 7/8	
FFT mode [k]	2, 8	
Bandwidth [MHz]	6, 7, 8	
Constellation [QAM]	QPSK, 16, 64	

Technical data

Type	XT06M	XC06M
Demodulation DVB-T2 (COFDM)		
Standard	EN 302755-V1.31, DVB-T2 Lite compliant, Single and multiple PLP Support, NorDig Unified 2.2.1, D-Book 7.0	
Guard interval	1/128, 1/32, 1/16, 19/256, 1/8, 19/128, 1/4	
FEC	1/2, 3/5, 2/3, 3/4, 4/5, 5/6	
FFT mode [k]	1, 2, 4, 8, 16, 32	
Bandwidth [MHz]	1.7, 5, 6, 7, 8	
Constellation [QAM]	QPSK, 16, 64, 256	
Demodulation DVB-C		
Standard	EN 300429/ITU J.83 Annex A/C	
Frequency range [MHz]	48 ... 858	
Input symbol rate [MS/s]	1 ... 7.2	
Constellation [QAM]	4, 16, 32, 64, 128, 256	
MPEG-TS processor		
Program filter	✓	
PID filter	✓	
PSI/SI processing	TSID, ONID, SID, PID remapping, CAT, PCR correction, NIT, LCN	
Stuffing	Automatic	
Modulator		
Output channels	6 x DVB-T, 2k mode	6 x DVB-C (J.83A)
Constellation [QAM]	QPSK, 16, 64	16, 32, 64, 128, 256
Symbol rate [MS/s]	-	1.5 ... 7.15
Guard interval	1/4, 1/8, 1/16, 1/32	-
Code rate	1/2, 2/3, 3/4, 5/6, 7/8	-
Roll off [%]	-	15
RF output		
Output [Ω]	1 x F-Connector, 75	
Frequency range [MHz]	47 ... 1,006 (fine adjustment in 125 kHz steps)	
Frequency range (channel list) [MHz]	47 ... 96/114 ... 858 (settable over the channel list)	
Return loss	14 dB (47 MHz) -1.5 dB/Oct.	
Output level [dBµV]	92	97
Setting output level [dB]	-20 (in 0.5 dB steps)	
Signal stability [dB]	± 0.75	

Type	XT06M	XC06M
Frequency stability [ppm]	35	
MER [dB]	≥ 42	≥ 45
Shoulder attenuation [dB]	≥ 60 (at standard level)	
Spurious emissions [dB]	≥ 60	
System data		
Power consumption [W]	Typ. 17	Typ. 14
Temperature range [° C]	-20 ... +50	
Protective switch-off [°C]	> 70	
Dimensions (H x W x D) [mm]	265 x 36 x 220	
Weight [kg]	1.1	

Type	XT06M-X	XC06M-X
Order no.	690074	690073
Inputs		
Sat IF/terr./cable [Ω]	4 x F-Connector, 75	
Decoupling [dB]	> 25	> 25
Return loss [dB]	Typ. 10	
DiSEqC™1.0	Vert./Horiz., Low/High; Sat.Pos. (A/B/C/D)	
Switching levels	14/18 V, 0/22 kHz	
Remote feed current [mA]	Max. 60 (per input)	
Front end		
DVB-S(2)/-T/-T2/-C	4 x	
Frequency grid [MHz]	1	
Input level range [dBµV]	60 ... 100	
Permissible level difference [dB]	20	
Demodulation DVB-S		
Standard	EN 300 421	
Frequency range [MHz]	950 ... 2,150	
Input symbol rate QPSK [MS/s]	1 ... 45	
Code rate (Viterbi)	1/2, 2/3, 3/4, 5/6, 7/8	
Roll off [%]	35	
AFC-control range [MHz]	± 5	
Demodulation DVB-S2		
Standard	EN 302 307, TR 102-376	
Input symbol rate QPSK [MS/s]	1 ... 45	
Code rate (LDPC)	1/2, 3/5, 2/3, 3/4, 4/5, 5/6, 8/9, 9/10	

Type	XT06M-X	XC06M-X
Input symbol rate 8PSK [MS/s]	1 ... 45	
Code rate (LDPC)	3/5, 2/3, 3/4, 5/6, 8/9, 9/10	
Roll off [%]	20, 25, 35	
Demodulation DVB-T (COFDM)		
Standard	EN 300744, NorDig Unified 2.2.1, D-Book 7.0, Supports all C.R, G.I, LP and HP streams	
Frequency range [MHz]	50.5 ... 858	
Guard interval	1/4, 1/8, 1/16, 1/32	
FEC	1/2, 2/3, 3/4, 5/6, 7/8	
FFT mode [k]	2, 8	
Bandwidth [MHz]	6, 7, 8	
Constellation [QAM]	QPSK, 16, 64	
Demodulation DVB-T2 (COFDM)		
Standard	EN 302755-V1.31, DVB-T2 Lite compliant, Single and multiple PLP Support, NorDig Unified 2.2.1, D-Book 7.0	
Guard interval	1/128, 1/32, 1/16, 19/256, 1/8, 19/128, 1/4	
FEC	1/2, 3/5, 2/3, 3/4, 4/5, 5/6	
FFT mode [k]	1, 2, 4, 8, 16, 32	
Bandwidth [MHz]	1.7, 5, 6, 7, 8	
Constellation [QAM]	QPSK, 16, 64, 256	
Demodulation DVB-C		
Standard	EN 300429/ITU J.83 Annex A/C	
Frequency range [MHz]	48 ... 858	
Input symbol rate [MS/s]	1 ... 7.2	
Constellation [QAM]	4, 16, 32, 64, 128, 256	
MPEG-TS processor		
Program filter	✓	
PID filter	✓	
Conflict management	SID and PID conflicts are automatically solved	
SID can be edited manually	For program list creation and program exchange	
PSI/SI processing	TSID, ONID, SID, PID remapping, CAT, PCR correction, NIT, LCN	
Stuffing	Automatic	

Type	XT06M-X	XC06M-X
Multiplex		
3 in 1 Mux	3 freely selectable input transport streams (frontend or modules connected via backplane) per output channel	
PSI/SI MUX	PAT, SDT, EIT etc. are fully re-generated	
Modulator		
Output channels	6 x DVB-T, 2k mode	6 x DVB-C (J.83A)
Constellation [QAM]	QPSK, 16, 64	16, 32, 64, 128, 256
Symbol rate [MS/s]	-	1.5 ... 7.15
Guard interval	1/4, 1/8, 1/16, 1/32	-
Code rate	1/2, 2/3, 3/4, 5/6, 7/8	-
Roll off [%]	-	15
RF output		
Output [Ω]	1 x F-Connector, 75	
Frequency range [MHz]	47 ... 1,006 (fine adjustment in 125 kHz steps)	
Return loss	14 dB (47 MHz) -1.5 dB/Oct.	
Output level [dB microvolts]	92	97
Setting output level [dB]	-20 (in 0.5 dB steps)	
Signal stability [dB]	± 0.75	
Frequency stability [ppm]	35	
MER [dB]	≥ 42	≥ 45
Shoulder attenuation [dB]	≥ 60 (at standard level)	
Spurious emissions [dB]	≥ 60	
System data		
Power consumption [W]	Typ. 17 (at 12V)	
Temperature range [° C]	-20 ... +50	
Protective switch-off [°C]	> 70	
Dimensions (H x W x D) [mm]	265 x 36 x 220	
Weight [kg]	1.1	

▸ more information on next page

Technical data

Type	XT04S
Order no.	690075
Inputs	
Sat IF Input [Ω]	4 x F-Connector, 75
Frequency range [MHz]	950 ... 2,150
Decoupling [dB]	> 25
Return loss [dB]	Typ. 10
DiSEqC™1.0	Vert./horiz., low/high
Switching levels	14/18 V, 0/22 kHz
Remote feed current [mA]	Max. 60 (per input)
Front end	
DVB-S2	4 x
Frequency grid [MHz]	1
AFC-control range [MHz]	± 3 (symbol rate < 10 Ms/s) ± 5 (symbol rate > 10 Ms/s)
Input level range [dBµV]	60 ... 110
Permissible level difference [dB]	12
Demodulation DVB-S	
Standard	EN 300 421 (1)
Input symbol rate QPSK [MS/s]	1 ... 45
Code rate (Viterbi)	1/2, 2/3, 3/4, 4/5, 5/6, 7/8
Roll off [%]	35
Demodulation DVB-S2	
Standard	EN 302 307 (2)
Input symbol rate QPSK [MS/s]	1 ... 34
Code rate (LDPC)	1/2, 3/5, 2/3, 3/4, 4/5, 5/6, 8/9, 9/10
Input data rate 8PSK [MS/s]	1 ... 31.5
Code rate (LDPC)	3/5, 2/3, 3/4, 5/6, 8/9, 9/10
Roll off [%]	20, 25, 35
System interfaces	
Data interface [MBit/s]	800 net
Control interface [Mbps]	12
TS routing to backplane	Max. 2 x 16 transport streams (right and left)
MPEG-TS processor	
Program filter	✓
PID filter	✓
PSI/SI processing	TSID, ONID, SID, PID remapping, CAT, PCR correction, NIT, LCN
Stuffing	Automatic
COFDM modulator	
Output channels	4 x DVB-T, 2k mode
COFDM constellation [QAM]	QPSK, 16, 64

Type	XT04S
Guard interval	1/4, 1/8, 1/16, 1/32
Code rate	1/2, 2/3, 3/4, 5/6, 7/8
RF output	
DVB-T output [Ω]	1 x F-Connector, 75
Frequency Range [MHz]	47 ... 1,006 (fine adjustment in 125 kHz steps)
Frequency range (channel list) [MHz]	47 ... 86/110 ... 862 (settable over the channel list)
Return loss	14 dB (47 MHz) -1.5 dB/Oct.
Output level [dB dBµV]	92
Setting output level [dB]	-20 (in 0.5 dB steps)
Signal stability [dB]	± 0.75
Frequency stability [ppm]	35
MER [dB]	≥ 42
Shoulder attenuation [dB]	≥ 60 (at standard level)
Spurious emissions [dB]	≥ 60
System data	
Power consumption [W]	Typ. 14 (at 12 V)
Temperature range [° C]	-20 ... 50
Protective switch-off [°C]	> 70
Dimensions (H x W x D) [mm]	265 x 36 x 220
Weight [kg]	1.1

Type	XI32M	XI64S
Order no.	690076	690053
Inputs		
Sat IF/terr./cable [Ω]	4 x F-Connector, 75	
Decoupling [dB]	> 25	
Return path loss [dB]	Typ. 10	
DiSEqC™1.0	Vert./Horiz., Low/High; Sat.Pos. (A/B/C/D)	
Switching levels	14/18 V, 0/22 [kHz]	
Remote feed current [mA]	Max. 60 (per input)	
Front end		
DVB-S(2)/T/T2/C	4 x	
Frequency grid [MHz]	1	
Input level range [dBµV]	60 ... 100	60 .. 110
Permissible level difference [dB]	20	12
Demodulation DVB-S		
Standard	EN 300 421	
Frequency range [MHz]	950 ... 2,150	
Input symbol rate QPSK [MS/s]	1 ... 45	1 ... 34

Type	XI32M	XI64S
Code rate (Viterbi)	1/2, 2/3, 3/4, 5/6, 7/8	
Roll off [%]	35	
Demodulation DVB-S2		
Standard	EN 302 307	
Input symbol rate QPSK [MS/s]	1 ... 45	
Code rate (LDPC)	1/2, 3/5, 2/3, 3/4, 4/5, 5/6, 8/9, 9/10	
Input symbol rate 8PSK [MS/s]	1 ... 45	1 ... 31.5
Code rate (LDPC)	3/5, 2/3, 3/4, 5/6, 8/9, 9/10	
Roll off [%]	20, 25, 35	
Demodulation DVB-T (COFDM)		
Standard	EN 300744, NorDig Unified 2.2.1, D-Book 7.0, Supports all C.R, G.I, LP and HP streams	
Frequency range [MHz]	50.5 ... 858	
Guard interval	1/4, 1/8, 1/16, 1/32	
FEC	1/2, 2/3, 3/4, 5/6, 7/8	
FFT mode [k]	2, 8	
Bandwidth [MHz]	6, 7, 8	
Constellation [QAM]	QPSK, 16, 64	
Demodulation DVB-T2 (COFDM)		
Standard	EN 302755 V1.31, DVB-T2 Lite compliant, Single and multiple PLP Support, NorDig Unified 2.2.1, D-Book 7.0	
Guard interval	1/128, 1/32, 1/16, 19/256, 1/8, 19/128, 1/4	
FEC	1/2, 3/5, 2/3, 3/4, 4/5, 5/6	
FFT mode [k]	1, 2, 4, 8, 16, 32	
Bandwidth [MHz]	1.7, 5, 6, 7, 8	
Constellation [QAM]	QPSK, 16, 64, 256	

Type	XI32M	XI64S
Demodulation DVB-C		
Standard	EN 300429/ITU J.83 Annex A/C	
Frequency range [MHz]	48 ... 858	
Input symbol rate [MS/s]	1 ... 7.2	
Constellation [QAM]	4/16/32/ 64/128/256	
MPEG-TS processor		
Program and PID filter	✓	
PSI/SI processing	TSID, ONID, SID, PID remapping, CAT, PCR correction	
Stuffing	Automatic (MPTS)	
IP Output		
Interface	RJ45	
Transmission rate	1 GB Ethernet, 1000 BaseT	
Protocol	UDP/RTP	
Transmission mode	Unicast/Multicast	
Transport stream	32 x SPTS/4 x MPTS	64 x SPTS / 8 x MPTS
Max. output data rate per TS [Mbps]	1 ... 100	
IP services	IPv4, ARP, Ping, SAP	
System data		
Power consumption	Typ. 10 W (at 12 V)	typ. 18 W
Temperature range [° C]	-20 ... +50	-5 ... 50
Protective switch-off [°C]	> 70	
Dimensions (H x W x D) [mm]	265 x 36 x 220	
Weight [kg]	1.1	

▸ more information on next page

Technical data

Type	XC08I	XT08I
Order no.	690077	690078
Input		
IP	1 GB Ethernet, 1000BaseT	
Protocols	UDP/RTP	
Transmission mode	Unicast/Multicast	
Max. input data rate per TS [Mbit/s]	100	
TS inputs	8 x SPTS/MPTS	
IP services	IPv4, ARP, Ping, SAP, IGMP	
MPEG-TS processor		
Program and PID filter	✓	
SID can be edited manually	For program list creation	
PSI/SI processing	TSID, ONID, SID, PID remapping, CAT, PCR correction, NIT, LCN	
Stuffing	Automatic	
QAM modulator		
Output channels	8 x DVB-C (J.83A)	8 x DVB-T, 2k mode
Constellation [QAM]	16, 32, 64, 128, 256	QPSK, 16, 64
Symbol rate [MS/s]	1 ... 7.15	-
Guard Interval	-	1/4, 1/8, 1/16, 1/32
Code rate	-	1/2, 2/3, 3/4, 5/6, 7/8
Roll off [%]	15	-

Type	XC08I	XT08I
RF output		
Output [Ω]	1 x F-Connector, 75	
Frequency Range [MHz]	47 ... 1,006 (fine adjustment in 125 kHz steps)	
Frequency range (channel list) [MHz]	47 ... 86/110 ... 862 (settable over the channel list)	
Return Loss [MHz]	14 (47) -1.5 dB/Oct.	
Output level [dBµV]	97	92
Setting output level [dB]	-20 (in 0.5 steps)	
Signal stability [dB]	± 0.75	
Frequency stability [ppm]	35	
MER [dB]	≥ 45	≥ 42
Shoulder attenuation [dB]	≥ 60 (at standard level)	
Spurious emissions [dB]	≥ 60	
System data		
Power consumption [W]	Typ. 16	Typ. 17
Temperature range [° C]	-20 ... +50	
Protective switch-off [°C]	> 70	
Dimensions (H x W x D) [mm]	265 x 36 x 220	
Weight [kg]	1.1	

Type	XB06-CI	Remarks
Order no.	690079	
User interfaces		
6 CAM insert positions	PCMCIA interface	(As per EN 50221)
Supported CAM types [CAM]	5-V	(3.3 V CAMs are not supported)
System interfaces		
Data interface [MBit/s]	800 (net)	To adjacent modules
Control interface [Mbps]	12	To control module (X10-CM)
TS routing to backplane	Max. 2 x 16 transport streams (right and left)	Combined with NEO X Series® modules, for example XC08S, and configuration via HMT
Function and option		
MPEG-TS routing [CAM]	Free assignment of up to 6	In conjunction with the operation modes, can be operated in series or parallel
	Serial connection of up to 3	For one MPEG TS to increase decoding capacity
	Parallel operation of up to 3	Redundancy, automatic switch-over in case of error in a CAM
Decryption functions	Specific decryption configuration	Decryption/no decryption for each service or each PID
	Default configuration	Decoding/no decoding for all unconfigured services
	Decryption monitoring	Resending of CA PMTs or CAM reset if decoding fails
SI data processing	ES status monitoring and SI data analysis in front of and behind each CAM	Automatic reconfiguration in case of error
	Advanced configuration functions	PMT List Mode, Update Mode, CA-PMT optimisation
	Extraction of information on service and elementary streams from SI tables	For display in HMT
	Removal of decryption information (tables, descriptors, etc.)	Following successful decoding
CAM options and information	Supports decryption, encryption and processing CAMs	
	Displays status and names	For each CAM inserted
	Memo function	Can be edited individually for each CAM
	Power On/Off	Each inserted CAM can be individually activated/deactivated
	Mode for CAM software update	
CAM status detection	Slot empty, CAM inserted, CAM ready	
	CAM name	
System data		
Power consumption [W]	< 2.5/Typ. < 10	Without CAM/with 6 CAMs per 1.25W
Current drain per CAM [A]	Max. 0.5	
EMV [dBpW]	Max. 20	EN 50083-2, A1
Temperature range [° C]	-20 ... +50	
Protective switch-off [°C]	> 70	In case of excess temperature
Dimensions (H x W x D) [mm]	265 x 36 x 220	
Weight [kg]	1.1	Without CAMs

▸ more information on next page

Type	XB04H-EX
Order no.	690080
HDMI input	
HDMI connector	Standard 1.4a (Type A, 19 pins)
Status LED	green: video input signal ok / supported red: video input signal not supported off: HDMI source offline
Video	
Encoding ISO / IEC 14496-10	MPEG-4 AVC/H.264
H.264 Profile	High profile
H.264 Level	Level 3.0 / 3.2 / 4.0
Resolution	1920 x 1080 i50 (HD) 1280 x 720 p50 (HD) 720 x 576 i50 (SD)
Bit rate [Mbps]	2-25
Audio	
Encoding ISO / IEC 11172-3	MPEG-1, Layer II
Sampling frequency [kHz]	48
Bit rate	96, 128, 192, 256, 320, 384 kbps
Audio format	mono / stereo / 2-tone

Type	XB04H-EX
MPEG-TS processor	
SI data processing	PAT, PMT, SDT, AIT
Configuration of	service and provider name, TS-ID, ON-ID, service ID, PMT PID, video PID, audio PID, PCR PID
Multiplex	4 : 2 in any combination 4:0 / 3:1 / 2:2 / 1:3 / 0:4
System interfaces	
Data interface [MBit/s]	800 net
Control interface [Mbps]	12
TS routing to backplane	Max. 2 x 2 transport streams (right and left)
System data	
Power consumption [W]	Typ. 14 / max. 18
Temperature range [° C]	0 ... 50
Protective switch-off [°C]	> 70
Dimensions (H x W x D) [mm]	265 x 36 x 220
Weight [kg]	1.1

NEO P Series

Type	PC018SM	PC018SM-CI
Order no.	690106	690107
DVB-S(2)-frontends, inputs No. 1 - 8		
Sat IF input [Ω]	8 x F-Connector, 75	
Frequency grid [MHz]	1	
Input Level range [dBµV]	45 ... 90	
Decoupling [dB]	> 35	
Return loss [dB]	Typ. 12	
DiSEqC™1.0	Vert./Horiz., Low/High; Sat.Pos. (A/B/C/D)	
Switching levels	14/18 V, 0/22 [kHz]	
Remote feed current for LNB [mA]	Max. 250 (on F-type socket No. 3 and 7)	
Remote feed current sockets 1,2,4,5,6,8	Max. 100mA	
TS Bitrate per Transponder [MBit/s]	Max. 125	
Demodulation DVB-S		
Standard	EN 300 421	
Frequency range [MHz]	950 ... 2,150	
Input symbol rate QPSK [MS/s]	1 ... 45	
Code rate (Viterbi)	1/2, 2/3, 3/4, 5/6, 7/8	
Roll off [%]	35	
AFC-control range [MHz]	± 5	
Demodulation DVB-S2		
Standard	EN 302 307	
Roll off [%]	10, 20, 25, 35	
Input symbol rate QPSK [MS/s]	1 ... 45	
Code rate [LDPC]:	1/4, 1/3, 2/5, 1/2, 3/5, 2/3, 3/4, 4/5, 5/6, 8/9, 9/10	
Input symbol rate 8PSK [MS/s]	1 ... 45	
Code rate (LDPC)	3/5, 2/3, 3/4, 5/6, 8/9, 9/10	
Input symbol rate 16APSK [MS/s]	1 ... 31	
Code rate [LDPC]	2/3, 3/4, 4/5, 5/6, 8/9, 9/10	
Input symbol rate 32APSK [MS/s]	1 ... 25	
Code rate [LDPC]	3/4, 4/5, 5/6, 8/9, 9/10	

Type	PC018SM	PC018SM-CI
Multi standard front ends, input No. 9		
SAT / Terr. / cable input [Ω]	1 x F-Connector, 75	
DVB-S(2)/T(2)/C	2 x	
Frequency grid [MHz]	1	
Input level range [dBµV]	55 ... 100	
Remote feed current for active antenna (5 V) [mA]	Max. 50 (on F-type socket No. 9)	
Demodulation DVB-S		
Standard	EN 300 421	
Frequency range [MHz]	950 ... 2,150	
Input symbol rate QPSK [MS/s]	1 ... 45	
Code rate (Viterbi)	1/2, 2/3, 3/4, 5/6, 7/8	
Roll off [%]	35	
AFC-control range [MHz]	± 5	
Demodulation DVB-S2		
Standard	EN 302 307, TR 102-376	
Input symbol rate QPSK [MS/s]	1 ... 45	
Code rate (LDPC)	1/2, 3/5, 2/3, 3/4, 4/5, 5/6, 8/9, 9/10	
Input symbol rate 8PSK [MS/s]	1 ... 45	
Code rate (LDPC)	3/5, 2/3, 3/4, 5/6, 8/9, 9/10	
Roll off [%]	20, 25, 35	
Demodulation DVB-T (COFDM)		
Standard	EN 300744, NorDig Unified 2.2.1, D-Book 7.0, Supports all C.R, G.I, LP and HP streams	
Frequency range [MHz]	50.5 ... 858	
Guard interval	1/4, 1/8, 1/16, 1/32	
FEC	1/2, 2/3, 3/4, 5/6, 7/8	
FFT mode [k]	2, 8	
Bandwidth [MHz]	6, 7, 8	
Constellation [QAM]	QPSK, 16, 64	

Technical data

Type	PC18SM	PC18SM-CI
Demodulation DVB-T2 (COFDM)		
Standard	EN 302755-V1.31, DVB-T2 Lite compliant, Single and multiple PLP Support, NorDig Unified 2.2.1, D-Book 7.0	
Guard interval	1/128, 1/32, 1/16, 19/256, 1/8, 19/128, 1/4	
FEC	1/2, 3/5, 2/3, 3/4, 4/5, 5/6	
FFT mode [k]	1, 2, 4, 8, 16, 32	
Bandwidth [MHz]	1.7, 5, 6, 7, 8	
Constellation [QAM]	QPSK, 16, 64, 256	
Demodulation DVB-C		
Standard	EN 300429/ITU J.83 Annex A/C	
Frequency range [MHz]	48 ... 858	
Input symbol rate [MS/s]	1 ... 7.2	
Constellation [QAM]	4, 16, 32, 64, 128, 256	
MPEG-TS processor		
Program filter	✓	
PSI/SI processing	TSID, ONID, SID, PID remapping, CAT, PCR correction, Cable-NIT, LCN	
LCN Data	NorDig Descriptor V1	
Stuffing	Automatic	
6 CAM insert positions	-	PCMCIA interface
TS routing CAM	-	Individual and serial decoding
Modulator		
Output channels	18 x DVB-C (J.83A)	
Constellation [QAM]	16, 32, 64, 128, 256	
Symbol rate [MS/s]	1.5 ... 7.15	
Roll off [%]	15	
RF output		
Output [Ω]	1 x F-Connector, 75	
Frequency range [MHz]	47 ... 1,006 (fine adjustment in 125 kHz steps)	
Frequency range (channel list) [MHz]	47 ... 86/110 ... 862 (setting via channel list)	
Return path loss [dB]	14 (47) -1.5 dB/Oct.	
Output level [dBµV]	107	

Type	PC18SM	PC18SM-CI
Setting output level [dB]	-20 (In 0.5 steps)	
Signal stability [dB]	± 0.5	
Frequency stability [ppm]	35	
MER [dB]	≥ 45	
Shoulder attenuation [dB]	≥ 60 (at standard level)	
Spurious emissions [dB]	≥ 60	
Test output		
Test socket [Ω]	1 x F-Connector, 75	
Level relative to the output [dB]	25	
System data		
Power consumption typ. [W]	37 [1)]	40 [1, 2)]
Temperature range [° C]	-5 ... +45	
Mains voltage [V]	100 - 240	
Protective switch-off [°C]	> 70	
Dimensions (H x W x D) [mm]	44 x 482 x 488 (1 RU, 19"-Rack)	
Weight	Approx. 8.8 kg	Approx. 9.1 kg

1) The power consumption depends on the input and output configuration (information without LNB supply voltage or remote power supply for active antenna systems)
2) The power consumption depends on the CAM configuration (information without CAMs, please add typ. 1.25W per CAM inserted)

Type	PI512SM	PI512SM-CI
Order no.	690104	690105
DVB-S(2)-frontends, inputs No. 1 - 8		
Sat IF input [Ω]	8 x F-Connector, 75	
Frequency grid [MHz]	1	
Input Level range [dBµV]	45 ... 90	
Decoupling [dB]	> 35	
Return loss [dB]	Typ. 12	
DiSEqC™1.0	Vert./Horiz., Low/High; Sat.Pos. (A/B/C/D)	
Switching levels	14/18 V, 0/22 [kHz]	
Remote feed current for LNB [mA]	Max. 250 (on F-type socket No. 3 and 7)	
Remote feed current sockets 1,2,4,5,6,8	Max. 100mA	
TS Bitrate per Transponder [MBit/s]	Max. 125	
Demodulation DVB-S		
Standard	EN 300 421	
Frequency range [MHz]	950 ... 2,150	
Input symbol rate QPSK [MS/s]	1 ... 45	
Code rate (Viterbi)	1/2, 2/3, 3/4, 5/6, 7/8	
Roll off [%]	35	
AFC-control range [MHz]	± 5	
Demodulation DVB-S2		
Standard	EN 302 307	
Roll off [%]	10, 20, 25, 35	
Input symbol rate QPSK [MS/s]	1 ... 45	
Code rate [LDPC]:	1/4, 1/3, 2/5, 1/2, 3/5, 2/3, 3/4, 4/5, 5/6, 8/9, 9/10	
Input symbol rate 8PSK [MS/s]	1 ... 45	
Code rate (LDPC)	3/5, 2/3, 3/4, 5/6, 8/9, 9/10	
Input symbol rate 16APSK [MS/s]	1 ... 31	
Code rate [LDPC]	2/3, 3/4, 4/5, 5/6, 8/9, 9/10	
Input symbol rate 32APSK [MS/s]	1 ... 25	
Code rate [LDPC]	3/4, 4/5, 5/6, 8/9, 9/10	

Type	PI512SM	PI512SM-CI
Multi standard front ends, input No. 9		
SAT / Terr. / cable input [Ω]	1 x F-Connector, 75	
DVB-S(2)/T(2)/C	2 x	
Frequency grid [MHz]	1	
Input level range [dBµV]	55 ... 100	
Remote feed current for active antenna (5 V) [mA]	Max. 50 (on F-type socket No. 9)	
Demodulation DVB-S		
Standard	EN 300 421	
Frequency range [MHz]	950 ... 2,150	
Input symbol rate QPSK [MS/s]	1 ... 45	
Code rate (Viterbi)	1/2, 2/3, 3/4, 5/6, 7/8	
Roll off [%]	35	
AFC-control range [MHz]	± 5	
Demodulation DVB-S2		
Standard	EN 302 307, TR 102-376	
Input symbol rate QPSK [MS/s]	1 ... 45	
Code rate (LDPC)	1/2, 3/5, 2/3, 3/4, 4/5, 5/6, 8/9, 9/10	
Input symbol rate 8PSK [MS/s]	1 ... 45	
Code rate (LDPC)	3/5, 2/3, 3/4, 5/6, 8/9, 9/10	
Roll off [%]	20, 25, 35	
Demodulation DVB-T (COFDM)		
Standard	EN 300744, NorDig Unified 2.2.1, D-Book 7.0, Supports all C.R, G.I, LP and HP streams	
Frequency range [MHz]	50.5 ... 858	
Guard interval	1/4, 1/8, 1/16, 1/32	
FEC	1/2, 2/3, 3/4, 5/6, 7/8	
FFT mode [k]	2, 8	
Bandwidth [MHz]	6, 7, 8	
Constellation [QAM]	QPSK, 16, 64	

Technical data

Type	PI512SM	PI512M-CI
Demodulation DVB-T2 (COFDM)		
Standard	EN 302755-V1.31, DVB-T2 Lite compliant, Single and multiple PLP Support, NorDig Unified 2.2.1, D-Book 7.0	
Guard interval	1/128, 1/32, 1/16, 19/256, 1/8, 19/128, 1/4	
FEC	1/2, 3/5, 2/3, 3/4, 4/5, 5/6	
FFT mode [k]	1, 2, 4, 8, 16, 32	
Bandwidth [MHz]	1.7, 5, 6, 7, 8	
Constellation [QAM]	QPSK, 16, 64, 256	
Demodulation DVB-C		
Standard	EN 300429/ITU J.83 Annex A/C	
Frequency range [MHz]	48 ... 858	
Input symbol rate [MS/s]	1 ... 7.2	
Constellation [QAM]	4, 16, 32, 64, 128, 256	
MPEG-TS processor		
Program and PID filter	✓	
PSI/SI processing	TSID, ONID, SID, PID remapping, CAT, PCR correction	
LCN Data	NorDig Descriptor V1	
Stuffing	Automatic	
6 CAM insert positions	-	PCMCIA interface
TS routing CAM	-	Individual and serial decoding

Type	PI512SM	PI512M-CI
IP Output		
Interface	RJ45	
Transmission rate	1 GB Ethernet, 1000 BaseT	
Protocol	UDP/RTP	
Transmission mode	Unicast/Multicast	
Transport stream	512 x SPTS / 18 x MPTS	
Max. output data rate per TS [Mbps]	1 ... 100	
IP services	IPv4, ARP, Ping, SAP	
System data		
Power consumption typ. [W]	38 [1]	41 [1, 2]
Temperature range [° C]	-5 ... +45	
Mains voltage [V]	100 - 240	
Protective switch-off [°C]	> 70	
Dimensions (H x W x D) [mm]	44 x 482 x 488 (1 RU, 19"-Rack)	
Weight	Approx. 9 kg	Approx. 9.3 kg

[1] The power consumption depends on the input and output configuration (information without LNB supply voltage or remote power supply for active antenna systems)

[2] The power consumption depends on the CAM configuration (information without CAMs, please add typ. 1.25W per CAM inserted)

▸ more information on next page

NEO M Series

Type	MC18SM	MC18SM-CI
Order no.	690038	690039
DVB-S(2)-frontends, inputs No. 1 - 8		
Sat IF input [Ω]	8 x F-Connector, 75	
Frequency grid [MHz]	1	
Input Level range [dBµV]	45 ... 90	
Decoupling [dB]	> 35	
Return loss [dB]	Typ. 12	
DiSEqC™1.0	Vert./Horiz., Low/High; Sat.Pos. (A/B/C/D)	
Switching levels	14/18 V, 0/22 [kHz]	
Remote feed current for LNB [mA]	Max. 250 (on F-type socket No. 3 and 7)	
Remote feed current sockets 1,2,4,5,6,8	Max. 100mA	
TS Bitrate per Transponder [MBit/s]	Max. 125	
Demodulation DVB-S		
Standard	EN 300 421	
Frequency range [MHz]	950 ... 2,150	
Input symbol rate QPSK [MS/s]	1 ... 45	
Code rate (Viterbi)	1/2, 2/3, 3/4, 5/6, 7/8	
Roll off [%]	35	
AFC-control range [MHz]	± 5	
Demodulation DVB-S2		
Standard	EN 302 307	
Roll off [%]	10, 20, 25, 35	
Input symbol rate QPSK [MS/s]	1 ... 45	
Code rate [LDPC]:	1/4, 1/3, 2/5, 1/2, 3/5, 2/3, 3/4, 4/5, 5/6, 8/9, 9/10	
Input symbol rate 8PSK [MS/s]	1 ... 45	
Code rate (LDPC)	3/5, 2/3, 3/4, 5/6, 8/9, 9/10	
Input symbol rate 16APSK [MS/s]	1 ... 31	
Code rate [LDPC]	2/3, 3/4, 4/5, 5/6, 8/9, 9/10	
Input symbol rate 32APSK [MS/s]	1 ... 25	
Code rate [LDPC]	3/4, 4/5, 5/6, 8/9, 9/10	

Type	MC18SM	MC18SM-CI
Multi standard front ends, input No. 9		
SAT / Terr. / cable input [Ω]	1 x F-Connector, 75	
DVB-S(2)/T(2)/C	2 x	
Frequency grid [MHz]	1	
Input level range [dBµV]	55 ... 100	
Remote feed current for active antenna (5 V) [mA]	Max. 50 (on F-type socket No. 9)	
Demodulation DVB-S		
Standard	EN 300 421	
Frequency range [MHz]	950 ... 2,150	
Input symbol rate QPSK [MS/s]	1 ... 45	
Code rate (Viterbi)	1/2, 2/3, 3/4, 5/6, 7/8	
Roll off [%]	35	
AFC-control range [MHz]	± 5	
Demodulation DVB-S2		
Standard	EN 302 307, TR 102-376	
Input symbol rate QPSK [MS/s]	1 ... 45	
Code rate (LDPC)	1/2, 3/5, 2/3, 3/4, 4/5, 5/6, 8/9, 9/10	
Input symbol rate 8PSK [MS/s]	1 ... 45	
Code rate (LDPC)	3/5, 2/3, 3/4, 5/6, 8/9, 9/10	
Roll off [%]	20, 25, 35	
Demodulation DVB-T (COFDM)		
Standard	EN 300744, NorDig Unified 2.2.1, D-Book 7.0, Supports all C.R, G.I, LP and HP streams	
Frequency range [MHz]	50.5 ... 858	
Guard interval	1/4, 1/8, 1/16, 1/32	
FEC	1/2, 2/3, 3/4, 5/6, 7/8	
FFT mode [k]	2, 8	
Bandwidth [MHz]	6, 7, 8	
Constellation [QAM]	QPSK, 16, 64	

Technical data

Type	MC18SM	MC18SM-CI
Demodulation DVB-T2 (COFDM)		
Standard	EN 302755-V1.31, DVB-T2 Lite compliant, Single and multiple PLP Support, NorDig Unified 2.2.1, D-Book 7.0	
Guard interval	1/128, 1/32, 1/16, 19/256, 1/8, 19/128, 1/4	
FEC	1/2, 3/5, 2/3, 3/4, 4/5, 5/6	
FFT mode [k]	1, 2, 4, 8, 16, 32	
Bandwidth [MHz]	1.7, 5, 6, 7, 8	
Constellation [QAM]	QPSK, 16, 64, 256	
Demodulation DVB-C		
Standard	EN 300429/ITU J.83 Annex A/C	
Frequency range [MHz]	48 ... 858	
Input symbol rate [MS/s]	1 ... 7.2	
Constellation [QAM]	4, 16, 32, 64, 128, 256	
MPEG-TS processor		
Program & PID filter	✓	
PSI/SI processing	TSID, ONID, SID, PID remapping, CAT, PCR correction, Cable-NIT, LCN	
Stuffing	Automatic	
6 CAM insert positions	-	PCMCIA interface
TS routing CAM	-	Individual and serial decoding
RF output		
Output [Ω]	1 x F-Connector, 75	
Frequency range [MHz]	47 ... 1,006 (fine adjustment in 125 kHz steps)	
Frequency range (channel list) [MHz]	47 ... 86/110 ... 862 (setting via channel list)	
Return path loss [dB]	14 (47) -1.5 dB/Oct.	
Output level [dBµV]	107	
Setting output level [dB]	-20 (In 0.5 steps)	

Type	MC18SM	MC18SM-CI
Signal stability [dB]	± 0.5	
Frequency stability [ppm]	35	
MER [dB]	≥ 45	
Shoulder attenuation [dB]	≥ 60 (at standard level)	
Spurious emissions [dB]	≥ 60	
Test output		
Test socket [Ω]	1 x F-Connector, 75	
Level relative to the output [dB]	25	
System data		
Power consumption typ. [W]	31,5 [1)]	34 [1, 2)]
Temperature range [° C]	0 ... +45	
Mains voltage [V]	100 - 240	
Protective switch-off [°C]	> 70	
Dimensions (H x W x D) [mm]	97 x 350 x 244	
Weight	Approx. 4 kg	Approx. 4.5 kg

[1)] The power consumption depends on the input and output configuration (information without LNB supply voltage or remote power supply for active antenna systems)
[2)] The power consumption depends on the CAM configuration (information without CAMs, please add typ. 1.25W per CAM inserted)

Type	MT08M	MC08M	MT08M-CI	MC08M-CI
Order no.	690083	690081	690084	690082
Inputs				
Sat IF input [Ω]	4 x F-Connector, 75			
Terr. / cable input [Ω]	1 x F-Connector, 75			
Decoupling [dB]	> 25			
Return loss [dB]	Typ. 10			
DiSEqC™1.0	Vert./Horiz., Low/High; Sat.Pos. (A/B/C/D)			
Switching levels	14/18 V, 0/22 [kHz]			
Remote feed current for LNB [mA]	Max. 250 (on F-type socket No. 3)			
Remote feed current for active antenna (5 V) [mA]	Max. 50 (on F-type socket No. 5)			
Front end				
DVB-S(2)/-T/-T2/-C	8 x			
Frequency grid [MHz]	1			
Input level range [dBµV]	60 ... 100			
Permissible level difference [dB]	20			
Demodulation DVB-S				
Standard	EN 300 421			
Frequency range [MHz]	950 ... 2,150			
Input symbol rate QPSK [MS/s]	1 ... 45			
Code rate (Viterbi)	1/2, 2/3, 3/4, 5/6, 7/8			
Roll off [%]	35			
AFC-control range [MHz]	± 5			
Demodulation DVB-S2				
Standard	EN 302 307, TR 102-376			
Input symbol rate QPSK [MS/s]	1 ... 45			
Code rate (LDPC)	1/2, 3/5, 2/3, 3/4, 4/5, 5/6, 8/9, 9/10			
Input symbol rate 8PSK [MS/s]	1 ... 45			
Code rate (LDPC)	3/5, 2/3, 3/4, 5/6, 8/9, 9/10			
Roll off [%]	20, 25, 35			

Type	MT08M	MC08M	MT08M-CI	MC08M-CI
Demodulation DVB-T (COFDM)				
Standard	EN 300744, NorDig Unified 2.2.1, D-Book 7.0, Supports all C.R, G.I, LP and HP streams			
Frequency range [MHz]	50.5 ... 858			
Guard interval	1/4, 1/8, 1/16, 1/32			
FEC	1/2, 2/3, 3/4, 5/6, 7/8			
FFT mode [k]	2, 8			
Bandwidth [MHz]	6, 7, 8			
Constellation [QAM]	QPSK, 16, 64			
Demodulation DVB-T2 (COFDM)				
Standard	EN 302755-V1.31, DVB-T2 Lite compliant, Single and multiple PLP Support, NorDig Unified 2.2.1, D-Book 7.0			
Guard interval	1/128, 1/32, 1/16, 19/256, 1/8, 19/128, 1/4			
FEC	1/2, 3/5, 2/3, 3/4, 4/5, 5/6			
FFT mode [k]	1, 2, 4, 8, 16, 32			
Bandwidth [MHz]	1.7, 5, 6, 7, 8			
Constellation [QAM]	QPSK, 16, 64, 256			
Demodulation DVB-C				
Standard	EN 300429/ITU J.83 Annex A/C			
Frequency range [MHz]	48 ... 858			
Input symbol rate [MS/s]	1 ... 7.2			
Constellation [QAM]	4, 16, 32, 64, 128, 256			
MPEG-TS processor				
Program & PID filter	✓			
PSI/SI processing	TSID, ONID, SID, PID remapping CAT, PCR correction, NIT, LCN			
LCN Data	NorDig Descriptor V1, IEC 62216, FRANSAT PRO, FreeView NZ	NorDig Descriptor V1	NorDig Descriptor V1, IEC 62216, FRANSAT PRO, FreeView NZ	NorDig Descriptor V1
Stuffing	Automatic			
6 CAM insert positions	-	-	PCMCIA interface	
TS routing CAM	-	-	Individual and serial decoding	

▸ more information on next page

Technical data

Type	MT08M	MC08M	MT08M-CI	MC08M-CI
Modulator				
Output channels	8 x DVB-T, 2k mode	8 x DVB-C (J.83A)	8 x DVB-T, 2k mode	8 x DVB-C (J.83A)
Constellation [QAM]	QPSK, 16, 64	16, 32, 64, 128, 256	QPSK, 16, 64	16, 32, 64, 128, 256
Symbol rate [MS/s]	-	1.5 ... 7.15	-	1.5 ... 7.15
Guard interval	1/4,1/8, 1/16, 1/32	-	1/4,1/8, 1/16, 1/32	-
Code rate	1/2,2/3, 3/4,5/6, 7/8	-	1/2,2/3, 3/4,5/6, 7/8	-
Roll off [%]	-	15	-	15
RF output				
Output [Ω]	1 x F-Connector, 75			
Frequency range [MHz]	47 ... 1,006 (fine adjustment in 125 kHz steps)			
Frequency range (channel list) [MHz]	47 ... 86/110 ... 862 (setting via channel list)			
Return path loss [dB]	14 (47) -1.5 dB/Oct.			
Output level [dBµV]	105	110	105	110
Setting output level [dB]	-20 (In 0.5 steps)			
Signal stability [dB]	± 0.5			
Frequency stability [ppm]	35			
MER [dB]	≥ 42	≥ 45	≥ 42	≥ 45
Shoulder attenuation [dB]	≥ 60 (at standard level)			
Spurious emissions [dB]	≥ 60			

Type	MT08M	MC08M	MT08M-CI	MC08M-CI
Test output				
Test socket [Ω]	1 x F-Connector, 75			
Level relative to the output [dB]	25			
System data				
Power consumption typ. [W]	28 ... 31 [1)]	27 ... 30 [1)]	31 ... 34 [1, 2)]	30 ... 33 [1, 2)]
Temperature range [° C]	0 ... +45			
Mains voltage [V]	100 - 240			
Protective switch-off [°C]	> 70			
Dimensions (H x W x D) [mm]	97 x 350 x 244			
Weight	Approx. 4 kg		Approx. 4.5 kg	

[1)] The power consumption depends on the input and output configuration (information without LNB supply voltage or remote power supply for active antenna systems)

[2)] The power consumption depends on the CAM configuration (information without CAMs, please add typ. 1.25W per CAM inserted)

▸ more information on next page

NEO N Series

Type	NC08S
Order no.	690060
Inputs	
Sat IF Input [Ω]	4 x F-Connector, 75
Frequency range [MHz]	950 ... 2,150
Decoupling [dB]	> 25
Return loss [dB]	Typ. 10
DiSEqC™1.0	Vert./Horiz., Low/High; Sat.Pos. (A/B/C/D)
Switching level	14/18 V, 0/22 kHz
Remote feed current for LNB [mA]	max. 250 (on F-type Socket No. 3)
Remote feed current	Max. 60 mA (per input)
Front end	
DVB-S2	8 x
Frequency grid [MHz]	1
AFC-control range [MHz]	± 3 (symbol rate <10 Ms/s) ± 5 (Symbol Rate> 10 Ms/s)
Input level range [dBµV]	60 ... 110
Permissible level difference [dB]	12
Demodulation DVB-S	
Standard	EN 300 421 (1)
Input symbol rate QPSK [MS/s]	1 ... 45
Code rate (Viterbi)	1/2, 2/3, 3/4, 5/6, 6/7, 7/8
Roll off [%]	35
Demodulation DVB-S2	
Standard	EN 302 307 (2)
Input symbol rate QPSK [MS/s]	1 ... 34
Code rate (LDPC)	1/2, 3/5, 2/3, 3/4, 4/5, 5/6, 8/9, 9/10
Input symbol rate 8PSK [MS/s]	1 ... 31.5
Code rate (LDPC)	3/5, 2/3, 3/4, 5/6, 8/9, 9/10
Roll off [%]	20, 25, 35
System interface	
Control interface [Mbps]	12

Type	NC08S
MPEG-TS processor	
Program filter	✓
PID filter	✓
PSI/SI processing	PCR correction; TSID ONID remapping
Stuffing	Automatic
QAM modulator	
Output channels	8 x DVB-C (J.83A)
QAM Constellation [QAM]	16, 32, 64, 128, 256
Symbol rate [MS/s]	1.5 ... 7.15
Roll off [%]	15
RF output	
DVB-C Output [Ω]	1 x F-Connector, 75
Frequency range [MHz]	47 ... 1,006 (fine adjustment in 125 kHz steps)
Frequency range (channel list) [MHz]	47 ... 86/110 ... 862 (settable over the channel list)
Return loss	14 dB (47 MHz) -1.5 dB/Oct.
Output level [dBµV]	97
Setting output level [dB]	-20 (in 0.5 dB steps)
Signal stability [dB]	± 0.75
Frequency stability [ppm]	35
MER [dB]	≥ 45
Shoulder attenuation [dB]	≥ 60 (at standard level)
Spurious emissions [dB]	≥ 60
System Data	
Power consumption	typ. 28W (without DiSEqC and LNB power)
Temperature range [°C]	0 ... 40
Mains voltage	100 - 240V +- 10%
Dimensions (Hx W X D)	288 x 275 x 60
Weight [kg]	3.0

BKtel communications GmbH

Benzstrasse 4
41836 Hueckelhoven-Baal
Germany
Phone: +49 (0) 24 33 / 91 22-0
Fax: +49 (0) 24 33 / 91 22-99

Office Kornwestheim:
Bahnhofstrasse 82
70806 Kornwestheim
Germany
Phone: +49 (0) 71 54 / 1 59 90-0
Fax: +49 (0) 71 54 / 1 59 90-77

BKtel networks GmbH

Mangfallstrasse 37
83026 Rosenheim
Germany
Phone: +49 (0) 80 31 / 7 96 75-0
Fax: +49 (0) 80 31 / 7 96 75-99

Internet: www.bktel.com
Email: info@bktel.com

Representations:

BKtel Pacific Rim (Japan) Inc.
Katsukou Building 5F
1-2-8, Hourai-cho, Naka-ku,
Yokohama, Kanagawa 231-0048,
Japan
Phone: +81 45 350 5447
Fax: +81 45 350 5460

BKtel Latam
Oficina de Representación
Pedro Torres n.° 231, planta 302
Municipalidad de Ñuñoa
Santiago, Chile
Phone: +56 220 468 46
Email: berriozabal@bktel.com

BKtel local representatives:

France:
André Balva
balva@bktel.com

South East Asia:
Roland Wuerth
wuerth@bktel.com

05/2019 Headend Technology