Assembly Instructions

PR●FESSIONAL

Head-End DVB-T Converter to IP
DVB-T to SPTS

PTIS 1000

KLASSE **A** CLASS   CE

English

Contents

1   Safety regulations and notes

⚠️ • Assembly, installation and servicing should be carried out by authorised electricians.
• Switch off the operating voltage of the system before beginning with assembly or service work or pull out the mains plug.
• Do not perform installation and service work during thunderstorms.
• Install the system so it will not be able to vibrate…
    - in a dust-free, dry environment
    - in such a manner that it is protected from moisture, fumes, splashing water and dampness
    - somewhere protected from direct sunlight
    - not within the immediate vicinity of heat sources
    - in an ambient temperature of 0 °C to +50 °C. In case of the formation of condensation wait until the system is completely dried.
• Ensure that the head-end station is adequately ventilated. Do not cover the ventilation slots.
• Beware of short circuits
• No liability is accepted for any damage caused by faulty connections or inappropriate handling.
• Observe the relevant standards, regulations and guidelines on the installation and operation of antenna systems.
• The standards IEC/EN/DIN EN 50083 and IEC/EN/DIN EN 60728 must be observed.
• **For further information please read the assembly instructions for the head-end station used.**
• **Test the software versions of the head-end station and the cassette and update them if necessary. The current software versions can be found at "www.gss.de".**

Take action to prevent static discharge when working on the device!

Electronic devices should never be disposed of in the household rubbish. In accordance with directive 2002/96/EC of the European Parliament and the European Council from January 27, 2003 which addresses old electronic and electrical devices, such devices must be disposed of at a designated collection facility. At the end of its service life, please take your device to one of these public collection facilities for proper disposal.

2 General information

2.1 Packing contents

1 Cassette PTIS 1000
2 HF cables
1 CD (assembly instructions)
1 Brief assembly instructions
1 Measuring log

2.2 Meaning of the symbols used

⚠ Important note

—> General note

• Performing works

2.3 Technical specifications

The devices meet the following EU directives:
2006/95/EC, 2004/108/EC
The product fulfils the guidelines and standards for CE labelling.

Unless otherwise noted all values are specified as "typical".

HF input

Channels:	C05 … C12, C21 … C69
Frequency range:	177.5 … 226.5, 474 … 858 MHz
Input level:	60 dBµV … 80 dBµV
Loop through output gain	0 dB … 3 dB
Return loss:	> 8 dB
Impedance:	75 Ω
Symbol rate	acc. to EN 300744

LAN interface

Standard:	100-BASE-T
Data rate:	≤ 80 MBit
Protocols:	UDP (User Data Protocol), RTP (Real-Time Transport Protocol)

ASI interfaces

Standard: ....DIN EN 50083-9
Format:..MPEG ISO IEC 13818-1
User data rate: .... 2 … 90 Mbit/s
Impedance:.. 75 Ω
Level (input / output): .... 800 mV$_{pp}$ ± 10%
Return loss (input): .... > 17 dB (5 … 270 MHz)

Connections

HF inputs: ....2 IEC sockets
HF loop-through outputs:..2 IEC sockets
HF output:.. 1 IEC socket (no function)
LAN: .... 1 RJ 45 socket
ASI input: .... 1 BNC socket
ASI output:... 1 BNC socket
Connection strip (10-pin):...................for supply voltages and control circuits
RS 232 socket: .... serial interface for software update
Common Interface: .... 1 (several services can be descrambled).

2.4   Description

The cassette is a DVB-T / SPTS converter which combines COFDM-modulated services (programmes) and transport streams supplied via the ASI interface into one transport stream in the TPS module. This is emitted via the LAN interface and can contain up to 16 services. For operating the cassette in a LAN network it can be assigned its own IP address. The cassette is equipped with two tuners. The accompanying channel strips consist of the digital tuners and the digital signal processing levels. The resulting transport streams from the "**Tuner A**"/"**Tuner B**" channel strips and from the transport streams supplied via the ASI socket (ASI – Asynchronous Serial Interface according to DIN EN 50083-9) can take up to 16 services and are each assigned an IP address. The signal supplied into the ASI input is provided again via the ASI output.

Principle signal path:

	IP address:	Port:
Service 1	212.40.50.90	: 1234
Service 2	212.40.50.91	: 1234
Service 3	212.40.50.92	: 1234
Service 4	212.40.50.93	: 1234
Service 5	212.40.50.94	: 1234
Service 6	212.40.50.95	: 1234
Service 7	212.40.50.96	: 1234
Service 8	212.40.50.97	: 1234
Service 9	212.40.50.98	: 1234
Service 16	212.40.50.105	: 1234
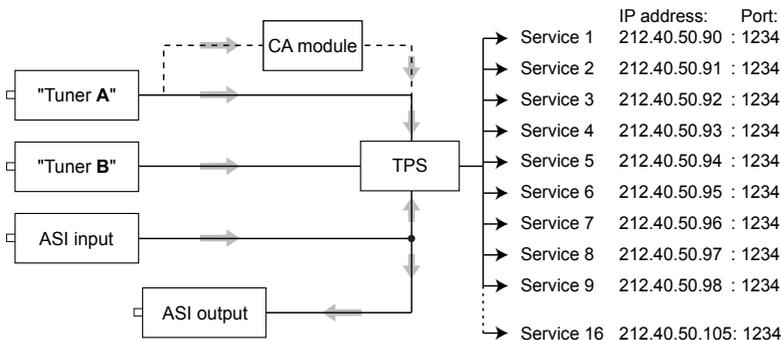
In the head-end station display, the channel strips of the cassette are indicated with "**Bx …A**" ("**Tuner A**") or "**Bx …B**" ("**Tuner B**"). The channel strip "**Tuner A**" can decode encoded services via a corresponding CA module and a dedicated smart card. The cassette is programmed using the head-end station control unit.

Two LEDs in the channel strips provide an indication with their colour whether an HF signal is present or not. In a menu, the transmission of DVB service information (EIT, TDT and SDT) or teletext (TXT) can be individually activated or deactivated.

EIT (Event Information Table):
For each service, event information is transmitted (such as starting time, duration, scrambling etc.)

TDT (Time Date Table):
The transmitted table contains the current time and date.

SDT (Service Description Table):
Information relating to the scrambling is also sent with the name of each service.

The LEDs for the LAN interface show whether a network connection exists and whether a data transfer is in progress.
When the head-end station is switched on, the two-line LC display shows the software version of the control unit.
To operate this cassette the software version of the control unit must be "**V 41**" or higher. You can find the current operating software for the control unit and the cassette, the software "**BE-Flash**" and the current assembly instructions on the website "***www.gss.de***".
The cassette is designed for use in the following head-end stations:
PSU 12, PSU 8, PGT 8 and PST 19-1.

2.5 Software query

Control unit
If necessary, you can activate the indication of the software version of the control unit manually:
• Press any two keys on the control unit of the head-end station simultaneously until the display goes dark and the software version, e.g. "**V 41**" appears.

Cassette
After activating the cassette the software version of the cassette is displayed (see page 17).

3 Assembly

3.1 Installing the cassette

⚠ – Ensure the head-end station is mounted so it will not be able to vibrate. Avoid, for example, mounting the head-end station onto a lift shaft or any other wall or floor construction that vibrates in a similar way.
– Before installing or changing a cassette unplug the power cable from the mains power socket.

- Remove the fastening screws ① of an unoccupied slot from the bracket of the head-end station.
- Insert the cassette in this slot and push it into the housing.
- Align the cassette and apply slight pressure to connect it to the connections of the board and the HF bus bar.
- Fasten the cassette with the screws ①.
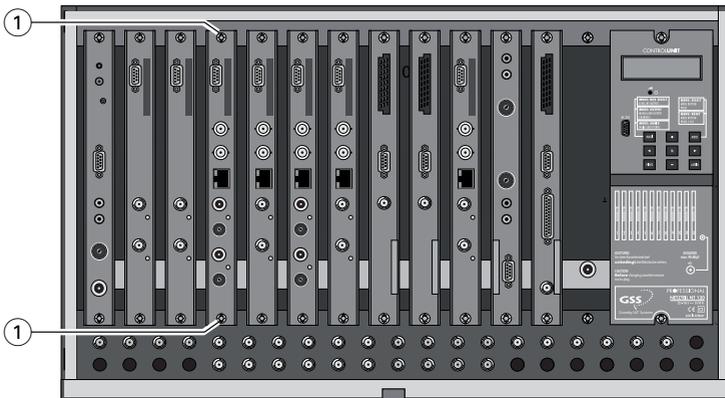
3.2 EMC regulations

⚠ **To comply with the current EMC regulations, it is necessary to connect the lines leading in and out of the head-end station using cable terminals.**
When mounting the cassette in a head-end station which is installed in a 19" cabinet, make sure the connections leading in and out for the 19" cabinet are made using cable terminals.

[A KLASSE CLASS] The attenuation of shielding of the connection lines for ASI and antenna must meet the requirements for "Class A".
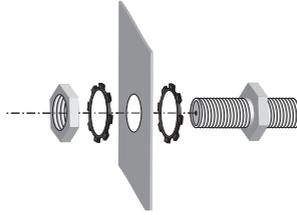
- Insert the required number of cable terminals in the openings provided in the head-end station or in the 19" cabinet.
—> Cable terminals are not included in the scope of delivery.

⚠ **Tighten the nuts of the cable terminals until the teeth on the lock washers** put under **have penetrated the exterior coating and a good connection is made between the housing / 19" cabinet and cable terminals.**

3.3 Overview of the cassette
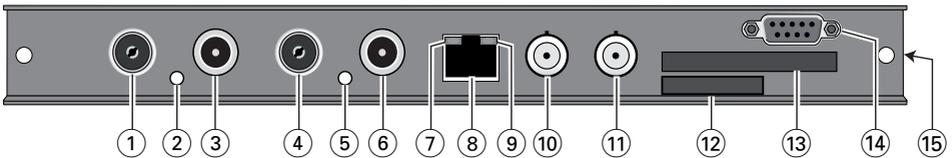
① HF input (channel strip "**B**")
② Status LED of the channel strip "**B**"
③ Loop-through output of HF input ①
④ HF input (channel strip "**A**")
⑤ Status LED of the channel strip "**A**"
⑥ Loop-through output of HF input ④
⑦ Status LED of the LAN interface (yellow LED – data transfer)
⑧ LAN socket
⑨ Status LED of the LAN interface (green LED – network connection)
⑩ ASI input
⑪ ASI output
⑫ Type label
⑬ Slot for a CA module
⑭ D-SUB socket "RS 232"
⑮ MAC address

3.4 Connecting the cassette

- Connect the HF connections to the inputs ④ (channel strip "**A**") and ① (channel strip "**B**").
- Connect the LAN socket ⑧.
- Connect the ASI input ⑩ and the ASI output ⑪ to the peripheral ASI devices.

3.5 Updating the software

The RS 232 interface of the cassette ⑭ enables you to use a PC or a notebook and the "**BE-Flash**" software to update the software of the cassette.
You can find the "**BE-Flash**" software and the current operating software of the cassette at the website "*www.gss.de*".

- Use a "one-to-one cable" to connect the cassette's RS 232 interface and the PC according to the wiring scheme below.

```
          1 ○──────────────○ 1
          2 ○──────────────○ 2
          3 ○──────────────○ 3
9-pin     4 ○──────────────○ 4     9-pin
D-SUB     5 ○──────────────○ 5     D-SUB socket
plug      6 ○──────────────○ 6
          7 ○──────────────○ 7
          8 ○──────────────○ 8
          9 ○──────────────○ 9
```
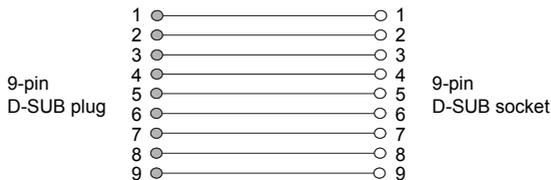
—> If necessary use a standard RS-232/USB adapter.

- Start the "**BE-Flash**" software and update the software of the cassette.

3.6 Retrofitting a CA module

The cassette is equipped with a common interface. It allows you to connect a CA module for various scrambling systems and service providers. Scrambled services can only be descrambled with a CA module suitable for the scrambling system and the corresponding smart card. The smart card contains all the information for authorisation, descrambling and subscription.

⚠ – Check with the distributor or manufacturer of the CA module to be used to ensure that it is suitable for descrambling several services.
– **The hardware and software of this cassette have been thoroughly prepared and tested.**
   Any changes made by service providers in the data structures might impair or even prevent this function.
– When working with the CA module, please read the corresponding operating manual from the respective provider.

• Insert the smart card ① into the CA module ② so that the chip ③ on the smart card faces the thicker side (top) of the CA module.
• Insert the CA module into the guide rails of the CA slot ④ with the top side of the CA module facing the top side of the cassette.
• Push the CA module without canting into the guide rails of the CA slot ④ and contact it to the common interface.
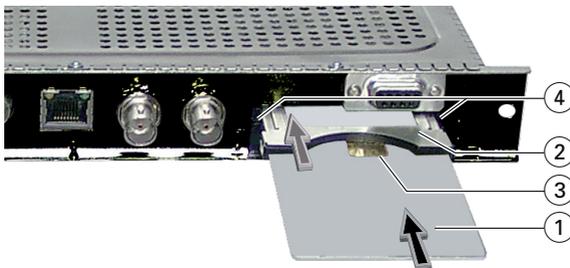
4 The control panel at a glance

4.1 Menu items

Programme the cassette using the buttons on the control unit of the head-end station. The two-line display of the control unit then shows the menus.
The parameters and functions to be set are underlined.

Use the **MODE** key to select the following main menu items:

– Setting Ethernet parameters
– Selecting the input
– Allocating the IP addresses
– Displaying the data rate
– Factory reset
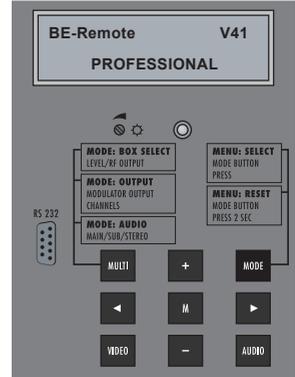
4.2 Control panel

The key pad on the head-end station is used to scroll through the menus:

MODE scrolls forward through the menus.
◄ / **►** select parameters in the menus.
+ / **-** set values, initiate actions.
MULTI selects sub-menus.
AUDIO scrolls backward through the menus.
M saves all entries.

5 Programming

5.1 Programming procedure

Channel strips "Tuner A" (without CA module) and "Tuner B"

Ein / On

```
BE–Remote      V 41
please wait …
```

t > 10 s

```
Box 1          ......
..........     ......
```

+

```
Box 4    DVBT-SPTS
V 12          – – –
```
+ / -
```
Box 5          ......
..........     ......
```

MODE

Ⓐ

Ⓑ   page 15

```
Bx 4      ETHERNET
stat  =>   Options
```
+ / -
stat / DHCP

▶

```
Bx 4       IP-ADDR
192.168.     0.128
```
◀ / ▶
+ / -

MODE

```
Bx 4       IP-MASK
255.255.255.     0
```
◀ / ▶
+ / -

MODE

```
Bx 4     IP-GATEWAY
192.168.    0.    1
```
◀ / ▶
+ / -

MODE

```
Bx 4      UDP-PORT
60000
```
◀ / ▶
+ / -   0 … 65535

MODE

+ / -
Tuner A /
Tuner B /
ASI

```
Bx 4        INPUT
Tuner A    OK  =>
```
Tuner A
▶
Tuner B

```
Bx 4A       INPUT
C30   (546.0)   OK
```
◀ / ▶   Frequenz / Feinabstimmung
        Frequency / Fine tuning
+ / -   C5…C12, C21…C69
        -64…+64

MODE

MODE

Ⓓ

page 16

Bx 4A   INPUT
Priority: high   ➕ / ➖   high / low

MODE

- - - - - - - - - - - - - - - → Ⓒ   page 16

Kanalzug "Tuner A" ohne CA-Modul,
Kanalzug "Tuner B" /
*Channel strip "Tuner A" without CA
module, Channel strip "Tuner B"*

Kanalzug "Tuner A" mit CA-Modul
*Channel strip "Tuner A" with
CA module*

➕ / ➖
**IP-OUT 1
…
IP-OUT 16**

Bx 4   IP-OUT 1
Das Erste   =>

MODE

▶

IP 1   MODE / PORT
on   UDP   _1234   ◀ / ▶   on / off
                                    ➕ / ➖   UDP / RTP,
                                    0 … 65535
                                    MULTI   copy

MODE

IP 1   PKTS / FEC
7   off   ◀ / ▶   off / 10/9 … 20/19
➕ / ➖   ➕ / ➖   Annex A / Annex B
1 … 7   **MULTI**   copy

MODE

IP 1   OUT-IP
227. 40. 50. 60   ◀ / ▶
                             ➕ / ➖
                             MULTI   auto

MODE

IP 1   TV   001/016   ➕ / ➖
Das Erste   **MULTI**   auto

MODE

IP 1   AUDIO
all   ➕ / ➖   all / 01/…

MODE

Bx 4   OPTIONS
EIT TDT TXT SDT   ◀ / ▶   EIT / eit, TDT / tdt,
                               ➕ / ➖   TXT / txt, SDT / sdt
                               (ON / off)
                               MULTI   copy

MODE

Bx 4   DATARATE
72.956 Mbps

MODE

Bx 4A   FACTORY
Defaults   =>   ▶   Werkeinstellwerte
                                       aufrufen
                                       invoke factory defaults

Bx 4A   FACTORY
STORE   => M   **M**   Ⓐ

MODE

MODE   Ⓑ

GSS   - 15 -   PTIS 1000

Channel strip "Tuner A" with CA module

Ⓒ

```
Bx 4A          CA
PID Check      on
```
[+]/[−] on / off

MODE

```
Bx 4A          CA
Menu <=    => Edit
```

[M] [MODE]

[◄]   [►]

[MODE]

```
Bx 4A  01/03  MENU
Information *)
```

[+]/[−]

*) Die angezeigte Information ist
   abhängig vom verwendeten
   CA-Modul.
   *The information displayed is
   dependent on the CA module
   used.*

```
Bx 4A   TV   X  04/09
. . . .
```

[+]/[−] X / 0

X – entschlüsseln
       descrambling
0 – nicht entschlüsseln
       no descrambling

[◄]/[►]
nächster Service
next service

Ⓓ

5.2 Programming the cassette

—> Pressing the **MODE** button for longer than 2 seconds cancels the programming procedure. This takes you back to the program item "Selecting the cassette" from any menu. Any entries that have not been saved are reset to the previous settings.

—> Entries in the menus can be saved by pressing the **M** key. You are taken back to the "Selecting the cassette" menu item.

—> Using the **AUDIO** button previous menus can be activated.

• Switch on the head-end station

—> The display shows the software version (e.g. V 41)

—> The processor reads the cassettes' data (approx. 10 seconds).
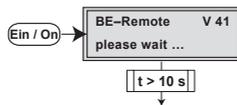
Selecting the cassette, displaying the software version
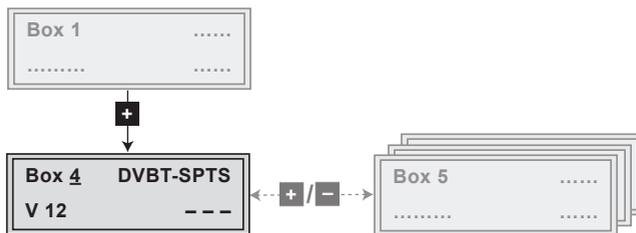
• Select the cassette you want to program (e.g. **Box 4**) by repeatedly pressing the button **+** / **-** if necessary.

—> The display shows e.g. the menu "**Box 4   DVBT-SPTS**":
    "**Box 4**"   stands for slot 4
    "**DVBT-SPTS**"   type of cassette
    "**V 12**"   software version of the cassette

• Press the **MODE** button.

—> The "Setting the Ethernet parameters" – "**ETHERNET**" menu is activated.

## Setting the Ethernet parameters

In this menu you specify whether the Ethernet parameters for the cassette are entered automatically by a connected server ("**DHCP**"), or whether you want to enter them manually ("**stat**"). To assign the cassette uniquely, each IPTV cassette must be allocated its own IP address.

```
Bx 4          ETHERNET
stat    =>      Options
```

- Press the **+**/**-** buttons to select manual setting ("**stat**") or automatic setting ("**DHCP**") of the Ethernet parameters.
- Press the **▶** button to activate the setting options ("**Options**").
—> The "Setting the IP address of the cassette" – menu "**IP-ADDR**" is activated.

Setting the IP address of the cassette

If you choose to enter the Ethernet parameters manually, set the IP address of the cassette in this menu. If "**DHCP**" is selected, the "**IP-ADDR**", "**IP-MASK**" and "**IP-GATEWAY**" sub-menus display the parameters that were assigned automatically by a connected server. If a server is not connected, "   0.   0.   0.   0*" appears in the corresponding menu. The star " * " in the display means that the data is provided by a DHCP server.

```
Bx 4            IP-ADDR
192.168.      0.128
```

- Use the **◀**/**▶** buttons to place the cursor under the digit of the IP address displayed to be set and use **+**/**-** to set the IP address wished.

- Press the **MODE** button.
—> The "Setting the address range" – "**IP-MASK**" menu is activated.

Setting the address range

In this menu you define the address range for the cassettes connected to the LAN network.

```
Bx 4          IP-MASK
255.255.255.      0
```

- Use the ◄/► buttons to place the cursor under the digit of the IP address displayed to be set and use +/- to set the IP address wished.

- Press the **MODE** button.
—> The "Setting the address of the gateway" – "**IP-GATEWAY**" menu is activated.

Setting the address of the gateway

The IP address of a gateway (server) can be set in this menu. If no gateway is used you can skip this setting.

```
Bx 4      IP-GATEWAY
192.168.    0.    1
```

- Use the ◄/► buttons to place the cursor under the digit of the IP address displayed to be set and use +/- to set the IP address wished.

- Press the **MODE** button.
—> The "Setting the UDP port" – "**UDP-PORT**" menu is activated.

Setting the UDP port

The UDP port setting is required if the cassette needs to be reached externally to make the setting, such as from another input frequency. This setting is intended for future functions and can be skipped for this cassette.

```
Bx 4          UDP-PORT
60000
```

- Use the ◄ / ► buttons to place the cursor under the digit of the port number displayed to be set and use **+** / **-** to set the port number wished ("**0**" … "**65535**").

- Press the **MODE** button.
—> The "Selecting the input transport stream" – "**INPUT**" menu is activated.

Selecting the input transport stream

In this menu you select the signal source for the selection of the services. The transport streams to be processed are provided by "**Tuner A**", "**Tuner B**" and the ASI interface "**ASI**".

```
Bx 4A          INPUT
Lan
```

- Press the **+** / **-** buttons to select the signal source of the input transport stream ("**Tuner A**", "**Tuner B**", "**ASI**").
—> "**OK**" indicates that an input signal is present. If there is no input signal available "**– –**" is displayed instead of "**OK**".

Input transport stream selected: "**ASI**"
- Press the **MODE** button.
—> The menu "Allocating IP addresses" – "**IP-OUT 1**" is activated (page 23).

Input transport stream selected: "**Tuner A**" or "**Tuner B**"
- Press the ► button.
—> The menu "Setting the input channel" – "**INPUT**" is activated.

Setting the input channel

⚠ Once the HF receiver has synchronised to the input signal, "**OK**" is displayed. If "**– –**" appears in the second line of the display, there is no input signal present. Check the configuration of the antenna system and the head-end station as well as the preceding settings of the cassette.

```
Bx 4A           INPUT
C30  (546.0)      OK
```

- Use the **+**/**-** buttons to set the desired input channel.
—> Beside the input channel set the relevant input frequency is displayed.
- If necessary use the **▶** button to activate the menu item "Fine tuning".
—> "**0**" is displayed instead of the frequency display.

```
Bx 4A           INPUT
C30      0        OK
```
+/**-** -64…+64

- Use **+**/**-** for fine tuning the input channel ("**-64**" … "**+64**").

In addition to the indicator in the display, there is also a status LED which indicates whether a transport stream is received or not:

Status LED
Channel strip "A"

Status LED
Channel strip "B"
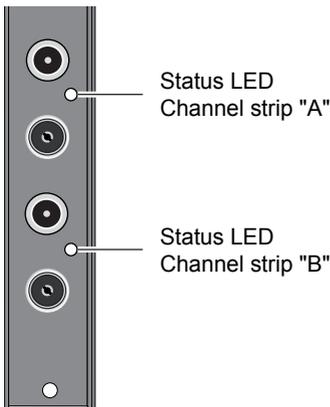
LED indicator	Indication
Green	Signal available
Red	No signal

- Press the **MODE** button.
—> The menu "Setting the hierarchical modulation" – "**INPUT   Priority:**" is activated.

Setting the hierarchical modulation

In order to attain with less field strength a greater range for broadcasters, with DVB-T so-called "hierarchical modulation" is used. In this process, several data streams are modulated onto a DVB-T data stream using "Quadrature Amplitude Modulation" (QAM). The robust "High Priority" data stream (HP) with a lower data rate is modulated onto the more sensitive "Low Priority" data stream, which possesses a higher data rate. In good reception conditions, the receivers can receive both data streams; in poorer reception conditions, only the "HP" portion.

```
Bx 4A          INPUT
Priority:      high
```

• By pressing **+** / **-** set to "**high**" or "**low**"
—> not relevant in the case of standard modulation.

• Press the **MODE** button.
—> The "Selecting the input transport stream" – "**INPUT**" menu is activated when the input signal source "**Tuner A**" without a CA module installed and "**Tuner B**" are programmed (page 19).
   Programming the input signal source "**Tuner A**" with a CA module installed the "Setting the PID monitoring" – "**CA**" menu is activated (page 31).
• Set channel strip "**Tuner B**" in the same way as channel strip "**Tuner A**".

• Press the **MODE** button.
—> The "Allocating the IP addresses" – "**IP-OUT 1**" menu is activated.

Allocating the IP addresses

In this menu up to 16 services that are contained in the data streams of the input source signals ("**Tuner A**", "**Tuner B**", "**ASI**") can be accessed. The services detected receive an IP address automatically.

In the following sub-menus you can set specific parameters for each service.

```
Bx 4          IP-OUT 1
Das Erste          =>
```

- Press the **+**/**-** buttons to select the IP outputs to be set ("**IP-OUT 1**" … "**IP-OUT 16**").
- —> In the second line of the display the service is indicated allocated to the IP output (e.g. "**Das Erste**").
- —> If no service is found or allocated the display shows "**– – –**" instead of the name of the service.

- Press the **▶** button.
- —> The "Switching the IP address off or on", "Selecting the transmission protocol", "Setting the port number" – "**MODE / PORT**" menu is activated.

## Switching the IP address off or on

Selecting the transmission protocol

Setting the port number

In this menu you can switch off the IP address displayed, and define the transmission protocol and the port number.

```
Bx 4A    MODE/PORT
on    UDP      _1234
```
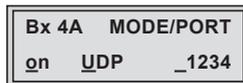
Switching the IP address off or on
- Press the **+**/**-** buttons to switch off ("**off**") or ("**on**") the output IP address and the service referred.
- —> In the second line of the "**IP-OUT …**" menu "**off**" is displayed instead of the service referred.

```
┌─────────────────────────────┐
│  Bx 4          IP-OUT 1      │   ▶
│  off               =>        │
└─────────────────────────────┘
         MODE
```
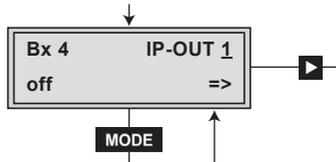
Selecting the transmission protocol

- Press the ▶ button to position the cursor under "**UDP**" or "**RTP**".
- Using the **+** / **-** buttons to select the transmission protocol wished:

"**UDP**" – The User Datagram Protocol is for the connectionless transmission of data to a certain application. The port number of the service is also sent which the data should obtain.

"**RTP**" – The Real-time Transport Protocol is for continuously transmitting multimedia data streams in an IP network. Unlike UDP, the header is transmitted which makes the data transmission more robust.

Setting the port number

- Press the ▶ button to position the cursor under the port number e.g. "_**1234**".
- Use the ◀ / ▶ buttons to position the cursor under the digit of the port number displayed to be set.
- Using the **+** / **-** buttons set the port number wished ("**0**" … "**65535**").

Copying the settings to all IP addresses

⚠
- Pressing the **MULTI** button the settings "Switching the IP address off or on", "Selecting the transmission protocol" and "Setting the port number" can be copied to all IP addresses.
—> The display shows "**copy**" for a short time.

- Press the **MODE** button.
—> The "Defining the quantity of data packets", "Setting the forward error correction" and "Setting the transmission channel" – "**PKTS / FEC**" menu is activated.

Defining the quantity of data packets

Setting the forward error correction

Setting the transmission channel

In this menu you set the quantity of the data packets to be transmitted, the forward error correction FEC and the transmission channel. If the forward error correction is used the data to be transmitted is encoded in a redundant way so that the addressee can correct transmission errors.

```
Bx 4A     PKTS / FEC

7         off
```

Defining the quantity of data packets
- Using the **+**/**-** buttons define the quantity of MPEG data packets in one IP data packet ("**1**" … "**7**").

Setting the forward error correction
- Press the **▶** button to position the cursor under "**off**" .
—> In position "**off**" the forward error correction (FEC) is switched off.
- Using the **+**/**-** buttons set the value of the FEC wished ("**off, 10/9**" … "**20/19**").

```
            ↓
IP 1      PKTS / FEC

7    10/09    AnnexB
```
MODE
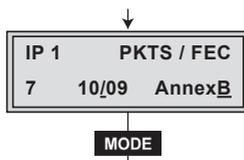
Setting the transmission channel
- Press the **▶** button to position the cursor under "**Annex…**".
- Use the **+**/**-** buttons to set the transmission channel wished ("**AnnexA**" / "**AnnexB**").

Copying the settings to all IP addresses

⚠
- Pressing the **MULTI** button the settings "Quantity of the data packets", Forward error correction" and "Transmission channel" can be copied to all IP addresses.
—> The display shows "**copy**" for a short time.

- Press the **MODE** button.
—> The "Setting IP addresses for services" – "**OUT-IP**" menu is activated.

Setting IP addresses for services

In this menu you set the IP address for the IP output selected. The software allows to allocate IP addresses to 16 services automatically in ascending order after setting the IP address.

```
Bx 4A          OUT-IP
227.  40.  50.  60
```

If an already available IP address is occupied, an exclamation mark " **!** " appears in the first line of the display beside the number of the IP output.

```
IP 1  !         OUT-IP
227.  40.  50.  60
```

Allocating IP addresses to services manually

- Press the ◄/► buttons to position the cursor under the digit of the IP address to be set.
- Using the **+**/**-** buttons set the IP address wished.

Allocating IP addresses to services automatically

- Pressing the **MULTI** button the first 16 of the present services are occupied with IP addresses in ascending order, starting from the IP address set.
—> The display shows "**auto**" for a short time.

- Press the **MODE** button.
—> The "Allocating services manually" menu is activated.

Allocating services manually

In this menu all services (programmes) supplied via "**Tuner A**", "**Tuner B**" and "**ASI**" can be displayed and each service is assigned a set IP address in the "**OUT-IP**" menu. The service can be accessed in the connected network using the given IP addresses for this output in the "**OUT-IP**" menu.

```
IP 1     TV    001/016

Das Erste
```

• Using the ➕/➖ buttons select the service wished.
—> The display shows e.g.: **IP 1   TV   001/016**
                                              Das Erste

Meaning of the indicators in the example:
"**IP 1**"   – IP address with the consecutive number "1"
"**TV**"   – Type of service "Television"
"**001/016**" – The 1st of 16 services is being allocated to the IP address.
"**Das Erste**" – Name of the service

Further possible terms displayed:
"**RA**" – Type of the service "Radio"
            For radio stations, the background of the screen of the connected TV or test receiver is darkened.
" ***** " – The star means that the TV or radio station selected is encoded. To enable the stations, the CA module and the appropriate smart card of the station provider are required.

—> If a service number (e.g. "**131**") appears instead of "**TV**" or "**RA**", this indicates that an unnamed station or an undefined data stream is being received.

⚠ If the service selected is already allocated to an IP address, in the first line of the display an exclamation mark " **!** " appears beside the type of the service.

```
IP 1      TV !  001/016

Das Erste
```

If no service is found the display shows "– – –" instead of the name of the service. In this case check the configuration of the antenna system including the head-end station and the previous settings of the cassette as well as the components connected to the ASI input.

- Press the **MODE** button.
—> The "Selecting the sound options of the service" – "**AUDIO**" menu is activated.

Selecting the sound options of the service

If several sound options in different languages, Dual sound ("**2ch**") or AC3 are transmitted in a service, you can select the desired audio stream from the transport stream in this menu.

```
IP 1              AUDIO
all
```

- Press **+** / **-** to select the desired sound option (e.g. "**all**", "**deu**" – German, "**2ch**" etc.).

- Press the **MODE** button.
—> The "Switching DVB service information on or off" – "**OPTIONS**" menu is activated.

Switching DVB service information on or off

In this menu the transmission of the DVB servic (EIT – Event Information Table, TDT – Time Date Table, TXT – Teletext, SDT – Service Description Table) can be activated or deactivated.

```
Bx 4            OPTIONS
EIT  TDT  TXT  SDT
```
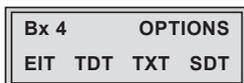
- Use the **◄** / **►** buttons to position the cursor under the transmission option to be activated or deactivated.
- Using the **+** / **-** buttons activate ("**EIT**", "**TDT**", "**TXT**", "**SDT**") or deactivate ("**eit**", "**tdt**", "**txt**", "**sdt**") the transmission option wished.
—> Activated options are shown with capital letters, deactivated with small letters.

Copying the settings to all IP addresses

⚠️

- Pressing the **MULTI** button the settings can be copied to all IP addresses.
—> The display shows "**copy**" for a short time.

- Press the **MODE** button.
—> The "Allocating the IP addresses" – "**IP-OUT …**" menu is activated (page 23).
- Repeat the settings until all services wished are allocated to an IP address.

- Press the **MODE** button.
—> The "Displaying the output data rate" – "**DATARATE**" menu is activated.

Displaying the output data rate

In this menu the current output data rate is displayed.

```
Bx 4A        DATARATE
72956 kbps
```
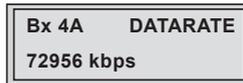
- Press the **MODE** button.
—> The "Factory reset" – "**FACTORY Defaults**" menu is activated.

Factory reset

In this menu you can reset all settings to the factory defaults.

Bx 4A FACTORY	**Werkeinstellwerte aufrufen**	Bx 4A FACTORY	Ⓐ
Defaults =>	▶ *invoke factory defaults*	STORE => M **M**	
MODE		**MODE**	Ⓑ
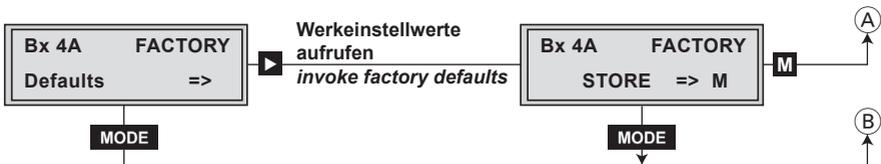
- Press the ▶ button.
—> The factory defaults are invoked ("**FACTORY STORE**").
—> By pressing the **MODE** button, you will be returned to the menu item "Setting the Ethernet parameters" **without** invoking the factory defaults (page 18).

- Press the **M** button.
—> The factory defaults are saved. The display shows "STORE"
—> Back to "Selecting the cassette" (page 17).
—> By pressing the **MODE** button, you will be returned to the menu item "Setting the Ethernet parameters" **without** saving the factory defaults (page 18).

Saving settings

- Press the **M** button.
—> The settings are saved.
—> You will be returned to the "Selecting the cassette" menu item (page 17).
—> By pressing the **MODE** button, you will be returned to the menu item "Setting the Ethernet parameters" "**ETHERNET**" **without** saving the programmed data (page 18).

5.2.1 Operation with a CA module

In order for this function of the CA module to be possible, in the "Selecting the input data stream" – "**INPUT**" menu (page 20) an input signal source must be selected whose data stream contains services which can be descrambled by the CA module you are using and your smart card. Where both scrambled stations and unscrambled regional services are transmitted, short-term picture loss may occur when switching between scrambled and unscrambled services.

Setting the PID monitoring

The factory default of the PID monitoring is switched on.
If particular PIDs are not descrambled the CI module is reset. Additionally dropouts may occur if several services are descrambled. To prevent this the PID monitoring can be switched off.

```
Bx 4A            CA
PID Check        on
```

• Use the [+]/[-] buttons to switch "**off**" or "**on**" the PID monitoring.

• Press the MODE button.
—> The "Configuring the CA module" – "**CA**" menu is activated.

Configuring the CA module

The menu varies according to which CA module you are using. For this reason, please refer to the operating manual of your particular CA module. The relevant information is shown in the display of the head-end station. This may appear as a fixed display or as scrolling text according to display capabilities.
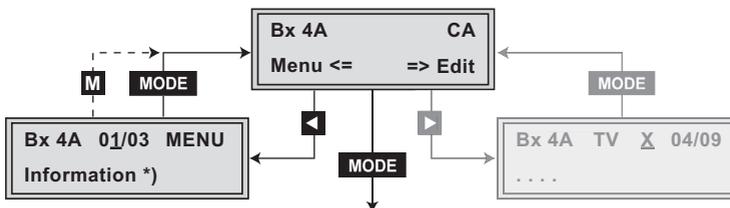
—> By pressing the `MODE` button you can skip the "Configuring the CA module" – "**CA**" menu and activate the "Selecting the input data stream" – "**INPUT**" menu (page 20).

• Press the ◄ button to activate the menu of the CA module.
—> The display shows e.g.: **Bx 4A   01/03   MENU**
                                     Information

Meaning of the indicators:
"**Bx 4A**" – Slot 4, channel strip "**Tuner A**"
"**01/03**" – The first of three menu items is activated.
"**MENU**" – The menu of the CA module is activated.

For the explanation of further details please use the operating instructions of the CA module used.

• Use the `+`/`-` buttons to activate the menu desired.
• Press the ▶ button to activate the menu.
• Use the `+`/`-` buttons to select the function desired.
• To set the CA module use the ◄/▶ and `+`/`-` buttons.
• All settings are saved by pressing the `M` button.
—> You will be returned to the "Configuring the CA module" – "**CA**" menu item.
—> By pressing the `MODE` button you can cancel the settings in the menu of the CA module and are returned to the "Configuring the CA module" – "**CA**" menu.

• Press the ▶ button.
—> The "Descrambling services" – "**Edit**" menu is activated.

Descrambling services

In this menu you select the services wished from the scrambled data stream, which are to be descrambled.

—> The display shows e.g.: **Bx 4A   TV   X   04/09**
. . . .
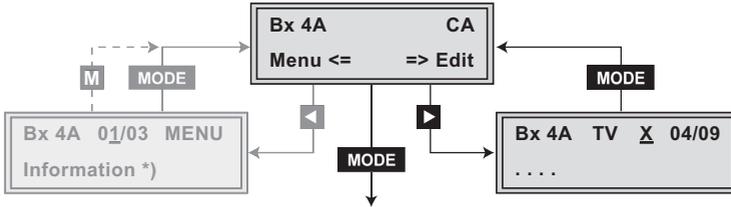
Meaning of the indicators in the example:

"**Bx 4A**" – Slot 4, channel strip "**Tuner A**"
"**TV**" – "Television" (type of service)
"**X**" – The currently selected service will be descrambled.
"**04/09**" – The 4th of 9 services read is being displayed.
"**. . . .**" – Name of the service

Further possible terms displayed:

"**RA**" – "Radio" (type of service)
"**0**" – The currently selected service remains unchanged.

• Use the ◄/► buttons to call up the services in sequential order which are to be decoded, then use +/- to decrypt ("**X**") or not to decrypt them ("**0**").

Save changes and activate the filter:

• Press the **MODE** button.
—> The filter is activated. The display shows the "Configuring the CA module" – "**CA**" menu.

• Press the **MODE** button.
—> The "Selecting the input data stream" – "**INPUT**" menu is activated (page 20).

6   Final procedures

⚠️ **After installing the head-end station, upgrading accessories or installing cassettes it is necessary to tighten all cable connections, cable terminals and cover screws in order to maintain compliance with current EMC regulations securely.**

- Securely tighten the cable bolted connections using an appropriate open-ended spanner.
- Mount the front cover (see assembly instructions of the head-end station).

Service:

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