Assembly Instructions

GSS

Grundig SAT Systems

Head-End Digital Transmodulator
HDTV Digital QAM

HDTV 1000 ASI D

KLASSE **A** CLASS   CE

CONTENTS

⚠ • 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 EN/DIN EN 50083 resp. 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/en".**

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 HDTV 1000 ASI D
2 RF cables
2 Cable terminals
4 Contact washers
1 Brief assembly instructions

2.2 MEANING OF THE SYMBOLS USED

⚠ Important note

—> General note

• Performing works

2.3 TECHNICAL DATA

The devices meet the following EU directives:
2006/95/EC, 2004/108/EC
The product fulfils the guidelines and standards for CE labelling (page 46).

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

RF input

Frequency range: .... 925 … 2150 MHz
Level range: .... 60 dBµV … 80 dBµV
DVB-S modes: ....DVB-S $^1/_2$, $^2/_3$, $^3/_4$, $^5/_6$, $^7/_8$
DVB-S2 modes: ....QPSK $^1/_2$, $^3/_5$, $^2/_3$, $^3/_4$, $^4/_5$, $^5/_6$, $^8/_9$, $^9/_{10}$
8PSK $^3/_5$, $^2/_3$, $^3/_4$, $^5/_6$, $^8/_9$, $^9/_{10}$
Symbol rate DVB-S:..QPSK: 2 … 45 MSymb/s
Symbol rate DVB-S2:..QPSK: 10 … 30 MSymb/s
8PSK: 10 … 31 MSymb/s
LNB control voltage (sound/DiSEqC) ....**max. 65 mA** (switchable)

RF output

Channels: .... S21 … C69

Frequency range: .... 42.0 MHz … 860.0 MHz

Output level: .... 97 dBµV

Output impedance: .... 75 Ω

Connections

SAT inputs:.. 2 F sockets

RF output: .... 1 IEC socket

ASI input: ....1 BNC socket, 75 Ω

ASI output:..1 BNC socket, 75 Ω

Connection strip (10-pin): ....for supply voltages and control circuits

RS-232 socket: .... serial interface for software update

Conditional access:.........................several channels can be descrambled.

Remote maintenance

Remotely controllable (via PSW 1000*): .... yes

Remote update (via BEflash*): .... yes

(* and a corresponding management unit)

2.4   DESCRIPTION

The double transmodulator cassette is a QPSK-converter, which converts stations modulated according to DVB-S / DVB-S2 standard into two QAM-modulated cable signals.

DiSEqC commands can be output via the SAT inputs.

The cassette has two digital SAT IF inputs and one RF output. Additionally it is equipped with an ASI input and an ASI output (ASI – Asynchronous Serial Interface acc. DIN EN 50083-9).

The transport stream fed via the ASI socket can be inserted into the transport streams of the receiving stages via the TPS module. The signal path is set in the menu items input signal path "**INROUTE**" and output signal path "**OUTROUTE**".
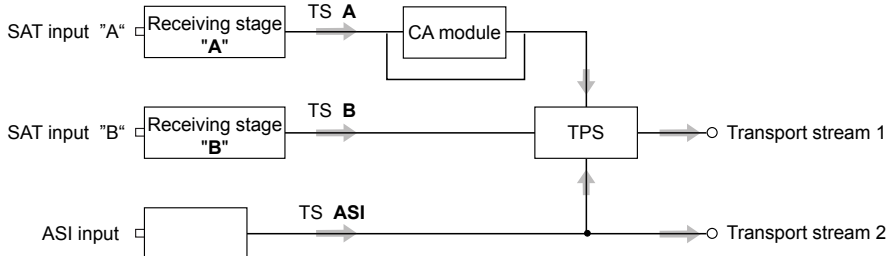
MENU SETTING "A+ASI = 1   B+ASI = 2"

The transport streams of the receiving stage "TS **A**" and of the ASI input "TS **ASI**" generate the transport stream 1. The transport streams of the receiving stage "TS **B**" and of the ASI input "TS **ASI**" generate the transport stream 2.
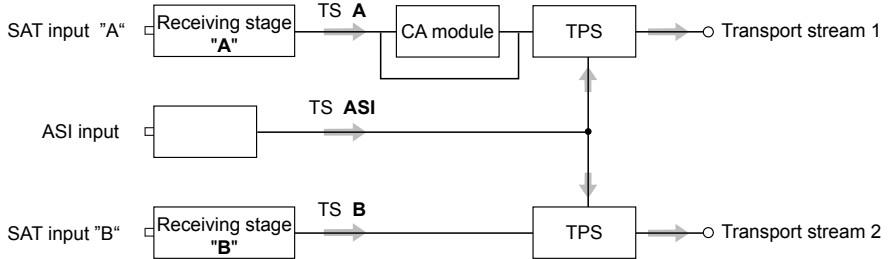
MENU SETTING "A+B+ASI = 1   ASI = 2"

The transport streams of the receiving stages "TS **A**" and "TS **B**" and of the ASI input "TS **ASI**" generate the transport stream 1. The "TS **ASI**" transport stream fed via the ASI input generates the transport stream 2.
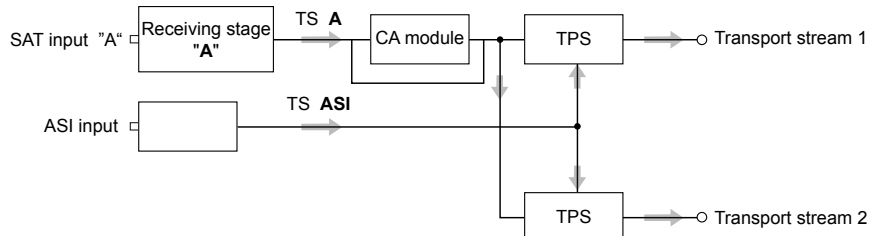

MENU SETTING "A+ASI = 1   A+ASI = 2"

The transport streams of the receiving stage "**A**" "TS **A**" and of the ASI input "TS **ASI**" are split into transport stream 1 and 2. Receiving stage "**B**" is not used.

Output signal path "OUTROUTE"

Menu setting "ASI => ASI"

Transport stream 1 is made available via modulator "**A**", transport stream 2 via modulator "**B**" and the transport stream from the ASI input "TS **ASI**" via the ASI output.
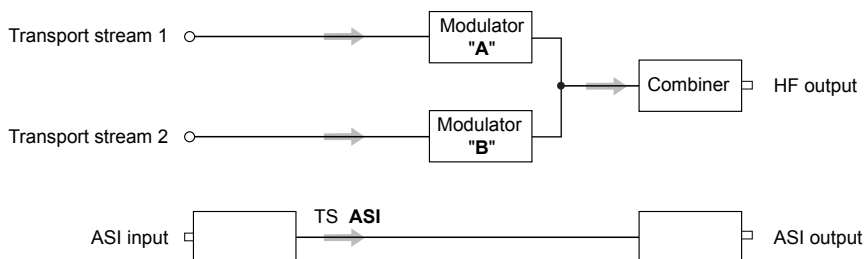
Menu setting "1 => ASI   ASI => MA"

Transport stream 1 is made available via the ASI output, transport stream 2 via modulator "**B**" and the transport stream from the ASI input "TS **ASI**" via modulator "**A**" (MA).

Menu setting "2 => ASI   ASI => MB"

Transport stream 1 is made available via modulator "**A**", transport stream 2 via the ASI output and the transport stream from the ASI input "TS **ASI**" via modulator "**B**" (MB).

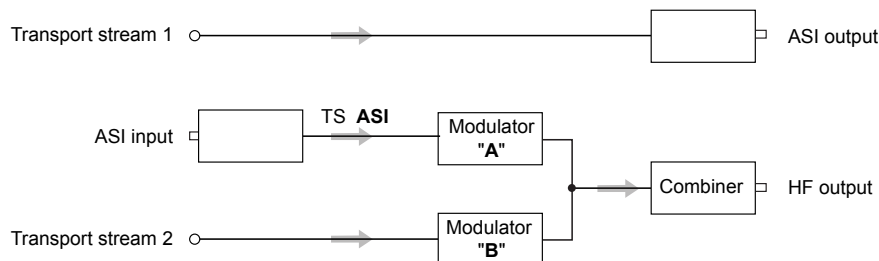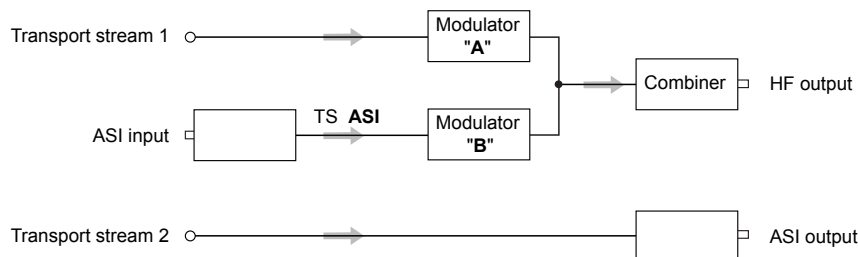The cassette is equipped with two channel strips ("**A**" and "**B**"). The channel strips consist of the digital tuners, the digital signal preparation units and the output converter. The channel strips are indicated in the head-end station display with "**Bx ...A**" and "**Bx ...B**". Using an adequate CA module scrambled channels can be descrambled via channel strip "**A**". The control of the cassette takes place via the control unit of the head-end station.

Two LEDs indicate if the respective channel strip is switched on (LED illuminates) or off, and also provide an indication of the signal quality based on their colour. Additionally the quality of the transport stream received is displayed ("**CN...**").

The integrated TPS module (Transport Stream Processing) processes the data from the demodulated transport streams.

The RF output signals are sent through the RF output of the cassette to the output collector. The common output level of the channel strips can be set at the output collector. Additionally a transport stream is made available via the ASI output dependent on the signal path set.

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 44**" 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/en***".

The cassette is intended for use in the STANDARD LINE head-end stations.

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 44**" appears.

Cassette

After activating the cassette the software version of the cassette is displayed (see page 21).

After decoding QPSK- or 8PSK-modulated signals, the demodulated data stream can be accessed via the integrated TPS module. This data stream, also called transport stream, contains several stations in all their components (video, audio, data and service information), which can be changed using the TPS module.

STATION FILTER

Individual stations can be deleted. This reduces the data rate and, consequently, the output symbol rate required. Additionally stations of the different transport streams can be assembled to a new transport stream.

STUFFING

The transport stream is padded using what is known as zero data. This ensures a steady and constant output symbol rate.

CHANGING THE TRANSPORT STREAM AND ORGNET-ID

The transport stream ID can be changed. If the stations of a transponder are split into the transport streams of the channel strips "A" and "B", one of the both transport streams a new identification must be allocated to realise the channel search of the settop boxes connected without mistakes.
If the ORGNET-ID is changed a new NIT must be generated.

CHANGING THE NIT

The transport stream contains data in the form of tables which the receivers evaluate and require for convenient use. The TPS module can adjust the "Network Information Table" (NIT) to accommodate the new station data. The "NIT" contains data which is required by the set-top box for the automatic search feature.

CHANGING THE OPERATOR ID (CAT)

Some network operators transmit an operator ID in the data stream (e.g. visAvision). By changing the CAT the operator ID can be adjusted to the demands.

Modulation schemes such as QPSK and QAM transmit multiple bits simultaneously. These are referred to as symbols. In addition to the user data flow which transmits video and audio information, error correction bits are transferred. The FEC number states the ratio of user bits to the complete transmitted bits. The output symbol rate is calculated as follows:

256-QAM: **SR (A)** = FEC x $^1/_4$ x SR (E)
128-QAM: **SR (A)** = FEC x $^2/_7$ x SR (E)
 64-QAM: **SR (A)** = FEC x $^1/_3$ x SR (E)
 32-QAM: **SR (A)** = FEC x $^2/_5$ x SR (E)
 16-QAM: **SR (A)** = FEC x $^1/_2$ x SR (E)
  4-QAM: **SR (A)** = FEC x $^1/_1$ x SR (E)

Example:
Output symbol rate 64-QAM, FEC= $^3/_4$,
Input symbol rate SR (E) = 27,500 kSymb/s

SR (A) = $^3/_4$ x $^1/_3$ x 27,500 kSymb/s = **6,875 kSymb/s**

—> If no "FEC" is stated in the station lists, it can be assumed to be "FEC = $^3/_4$".

RECEPTION FROM A TRANSPONDER WITH A VERY LOW SYMBOL RATE

SCPC station
The extremely low data rate means that the output symbol rate is very low. If there are reception problems with different digital receivers, set output symbol rate to a higher value.

DEFINED SYMBOL RATES

Some cable operators specify a fixed symbol rate (e.g. 6,900 kSymb/s).

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 RF bus bar.
- Fasten the cassette with the screws ①.
- If you need the DiSEqC control the input signal must not be fed via the input distributor. Insert the cable terminals together with the contact washers in corresponding openings (knock-outs). Therefore observe the EMC regulations on page 13.
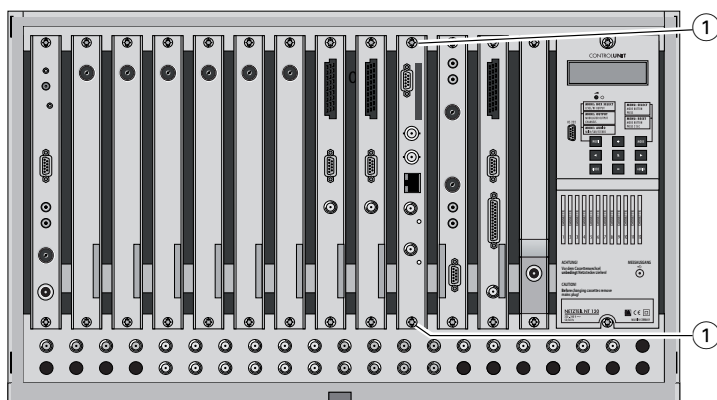
3.2 EMC REGULATIONS

⚠ **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 **The attenuation of shielding of the connection lines for ASI and antenna must meet the requirements for "Class A".**
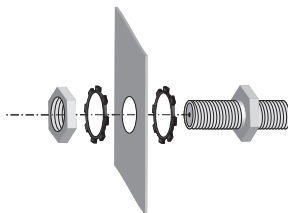
- Insert the required number of cable terminals in the openings provided in the head-end station or in the 19" cabinet.

⚠ **Tighten the nuts on the cable terminals until the teeth on the lock washer have penetrated the exterior coating and a good connection is made between the housing and cable terminals.**

3.3 Cassette overview

① D-SUB socket "RS 232"

② Slot for CA module

③ ASI output

④ ASI input

⑤ LAN connector not used
   (intended for additional functions)

⑥ SAT input (tuner "**A**")

⑦ Status LED of channel strip "**A**"

⑧ SAT input (tuner "**B**")

⑨ Status LED of channel strip "**B**"
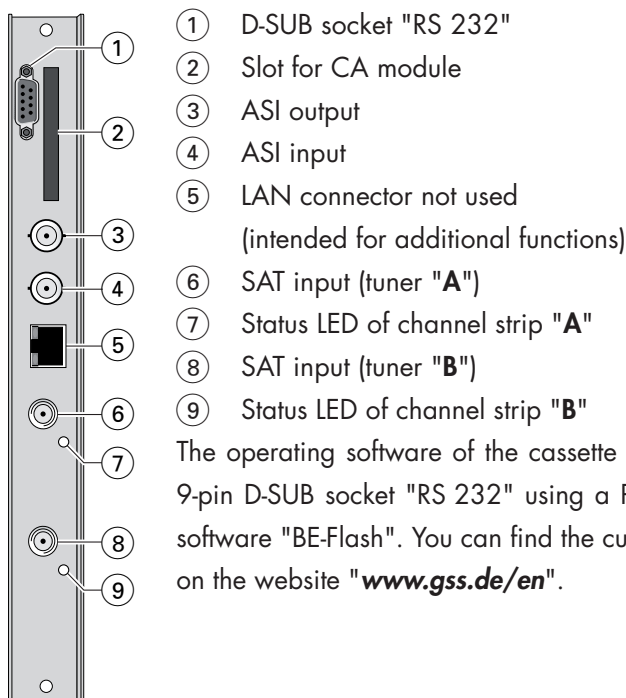
The operating software of the cassette can be updated via the 9-pin D-SUB socket "RS 232" using a PC or notebook and the software "BE-Flash". You can find the current operating software on the website "*www.gss.de/en*".

3.4 Connecting the cassette

• Plug the SAT input cables into the SAT input sockets "**SAT input A**" ⑥ (channel strip "A") and "**SAT input B**" ⑧ (channel strip "B").

> —> If you need the DiSEqC control the input signal must not be fed via the input distributor.

• Connect the ASI sockets ③ and ④.
• Connect the head-end station to the mains power supply.

The cassette is equipped with a common interface. It allows you to connect a CA module for various scrambling systems and service providers. Scrambled channels 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.

⚠ **Caution**
– Check with the distributor or manufacturer of the CA module to be used to ensure that it is suitable for descrambling several channels.
– **The hardware and software of this cassette have been thoroughly prepared and tested.**
– **Any changes made by programme providers to the structures in the programme data 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 into the CA module so that the chip ③ on the smart card ① faces the thicker side (top) of the CA module ②.
• Insert the CA module into the slot ④ with the top side of the CA module facing the RS-232 socket 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.
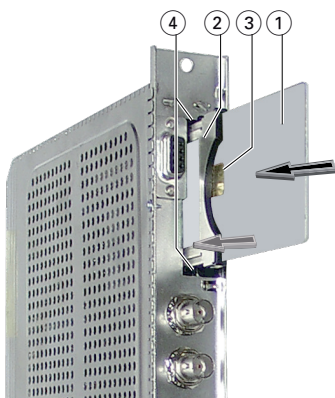
4.1 MENU ITEMS

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:

– Input signal path
– Output signal path
– Channel strip
– Selecting channel / frequency setting
– Output channel / output frequency
– Output level
– LNB oscillator frequency / control voltage
– Input symbol rate
– Input frequency
– Station filter
– QAM modulation
– Stuffing
– Substitute signal
– Transport stream and ORGNET-ID
– Network Information Table (NIT)
– Network/operator identification
– Deleting a PID
– Renaming a PID
– Factory reset
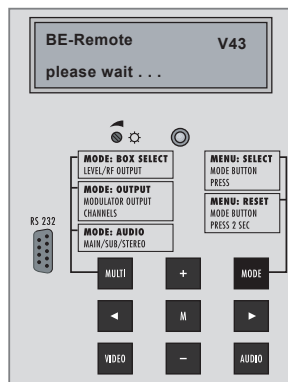
4.2 CONTROL PANEL

The key pad on the head-end station is used to scroll through the menus and menu items one at a time:

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
(in menu "DEFAULT" -> Factory reset).
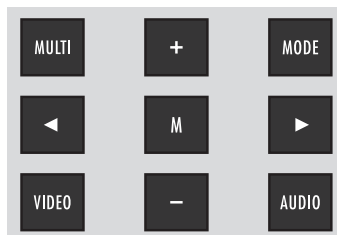
5   PROGRAMMING

5.1   PREPARATION

- Connect the test receiver to the RF output or the test output of the head-end station.
- Set the output channel / output frequency of the cassette (see page 24) and adjust the TV test receiver to this channel.
- Switch on the channel strip (modulator) if necessary (see page 26). For each channel strip, there is a status LED which indicates if the channel strip is switched on.

Status LED   Status LED
Channel strip   Channel strip
    "B"   "A"
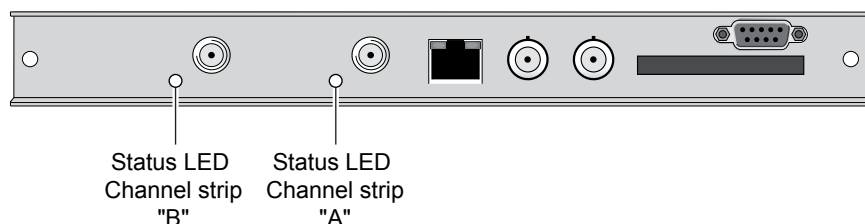
- Balance the output levels of the channel strips "**A**" and "**B**" if the difference in level is ≥ 1 dB (page 26).

5.2   NOTES ON LEVEL SETTING

In order to prevent interference within the head-end station and the cable system, the output level of the cassette must be decreased by 10 dB compared to analogue cassettes at 64 QAM, and by 4 dB compared to analogue cassettes at 256 QAM.

- Measure the output levels of the other cassettes and tune them to a uniform output level using the appropriate level controls or software dependent on the head-end station used. Please regard the assembly instructions of the respective head-end station.

Ein / On →

```
BE–Remote    V 44
please wait …
```

| t > 10 s |

```
Box …          ……
……….         ……
```

+

```
Box 4    DVBS2-TPI
V 31   C      – – –
```

+ / − ← →
```
Box 5    ……………
……………  ……………
```

Ⓐ Page 20

MODE

```
Bx 4      INROUTE
A+ASI=1     B+ASI=2
```
+ / −
A+ASI=1   B+ASI=2 /
A+B+ASI=1   ASI=2 /
A+ASI=1   A+ASI=2

MODE

```
Bx 4      OUTROUTE
ASI=>ASI
```
+ / −
1=>ASI   ASI=>MA
2=>ASI   ASI=>MB
ASI=>ASI

MULTI →
```
Bx 4      ASI RATE
108000 KBits
```
◄ / ►
+ / −

MODE

```
Bx 4     ASI OPTION
188  pos.  cont.
```
◄ / ►   188 / 204
+ / −   positive / negativ
        continuous / burst

MODE

Ⓑ Page 20

MODE

```
Bx 4        LINE
Line A <=  => Line B
```
◄ / ►
Line A / Line B

◄ / ►

```
Bx 4A/B    OUTPUT
Freq.
```
+ / −   Channel / Freq.

MODE

```
Bx 4A/B    OUTPUT
850.00 MHz      on
```
+ / −   ◄ / ►   + / −
                 on / off

MODE

```
Bx 4A/B     LEVEL
-3 dB
```
+ / −   0 … -10 dB

MODE

Bedienhinweise

MODE	"blättert" Menüs vorwärts.
AUDIO	"blättert" Menüs rückwärts.
◄ / ►	wählen die Eingabeposition
►	wählt Untermenü
+ / −	stellen Werte ein,.
M	speichert alle Eingaben.
1	zeigt die Eingabeposition

Operating Hints

MODE	*scrolls forward through the menu.*
AUDIO	*scrolls backward through the menu.*
◄ / ►	*select the enter position.*
►	*selects a submenu.*
+ / −	*set values and triggers actions.*
M	*saves all entries.*
1	*shows the enter position*

Bx 4A/B   **LNB**
10600 MHz   **off**

off / abcd
a = T (Ton/*sound*) / D (Diseq)
b = A,B / 0…15 (0…F hex)
c = H / V (horizontal / vertical)
d = h / l (high / low)

DiSEqC details page 27

MODE

Bx 4A/B   **SYMBOL**
27500   **DVB-S**

DVB-S / DVB-S 2 …

MODE

Bx 4A/B   **FREQ**
11835   **-0.7**   **CN 15**

MULTI

Bx 4A/B   **C/N**
15.3 dB   **(+ 11.3) OK**

Anzeige: Signalqualität
Display: Signal quality

MODE

Abhängig von Einstellung INROUTE
Depending on setting INROUTE

Bx 4A/B   **PROGRAM**
Filter   **off**

M

Bx 4A TV   **±**   **01/10**
Das Erste

Programme entfernen / hinzufügen
Removing / activating stations

nächster Service (Programm)
next service (station)

MODE

Bx 4B TV   **±**   **02/19**
SWF3

M

Programme entfernen / hinzufügen
Removing / activating stations

nächster Service (Programm)
next service (station)

MODE

MODE

ASI   **TV**   **±**   **01/10**
. . . . .

M

Programme entfernen / hinzufügen
Removing / activating stations

nächster Service (Programm)
next service (station)

MODE

Bx 4A   **CA**
PID Check   **on**

on / off

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

MODE

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

MODE

X / 0

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

X – entschlüsseln
descrambling
0 – nicht entschlüsseln
no descrambling

MODE

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

nächster Service
next service

MODE

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

Bx 4A/B   **QAM**
4 … 256   ◄/►   25**6**-QAM   **n**ormal   +/−   normal / inverse

MODE

Bx 4A/B   **STUFFING**
SR=690**0**   (6325)   ◄/►   +/−

MODE

Bx 4A/B   **FAILURE**
Single Carrier   +/−   Null Packets … Single Carrier

MODE

Bx 4A/B   **TS/ONID**
0x000**1**,0100   **off**   ◄/►   +/−   on / off

MODE

Bx 4A/B   **NIT**
on / off   +/−   **o**ff   => Make   ►   Make

MODE

Bx 4A/B   **CAT-ID**
◄/►   +/−   0XDE0**0**   **off**   ◄/►   +/−   on / off

MODE

Bx 4A/B   **DROP**
◄/►   +/−   PID 0x000**0**   **off**   ◄/►   +/−   on / off

MODE

Bx 4A/B   **REMAP**
◄/►   +/−   0x000**0** –> 0000   **off**   ◄/►   +/−   on / off

MODE

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Bx 4   **FACTORY**
Defaults   =>   ►   **Bx 4**   **FACTORY**   **STORE => M**   M   auf Werkseinstellung zurücksetzen und speichern   Ⓐ
reset to factory defaults and store

M   MODE   MODE   Ⓑ

speichern / store   Ⓐ

—> Pressing the **MODE** button for longer than 2 seconds cancels the programming procedure. This takes you back to the programme 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.

• Switch on the head-end station

—> The display shows the software version (e.g. V 44)

—> The processor reads the cassettes' data (approximately 10 seconds).

```
(Ein / On)  →   BE–Remote      V 44
                please wait …
                       │
                  [ t > 10 s ]
                       ↓
```

SELECTING THE CASSETTE

```
        Box ...          ......
        .........        ......
             │
            [+]
             ↓
  Box 4       DVBS2-TPI   [+]/[−]   Box 5        .............
  V 31            – – –                          .............   ............
```
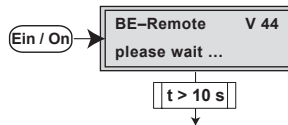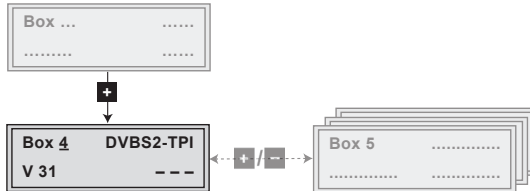
• Select the cassette you want to programme (e.g. **Box <u>4</u>**) by repeatedly pressing the button **+** if necessary.

—> The display shows e.g. the menu : **Box 4   DVBS2-TPM**
                                                     V31

"**Box 4**"   stands for slot 4
"**DVBS2-TPM**"   Type of cassette
"**V 31**"   Software version of the cassette

• Press the **MODE** button.

—> The "Selecting the input signal path" – "**INROUTE**" menu is activated.

In this menu you define the signal path of the input transport streams.
Menu setting "**A+ASI = 1   B+ASI = 2**" (page 7).
Menu setting "**A+B+ASI = 1   ASI = 2**" (page 7).
Menu setting "**A+ASI = 1   A+ASI = 2**" (page 7).

```
Bx 4           INROUTE
A+ASI=1       B+ASI=2
```

• Use the **+**/**-** buttons to select the signal path wished.

• Press the **MODE** button.

> —> The "Selecting the output signal path" –
>   "**OUTROUTE**" menu is activated.

OUTPUT SIGNAL PATH

In this menu you define the signal path of the output transport streams.
Menu setting "**ASI => ASI**" (page 8).
Menu setting "**1 => ASI   ASI => MA**" (page 8).
Menu setting "**2 => ASI   ASI => MB**" (page 8).

```
Bx 4        OUTROUTE
      ASI=>ASI
```

• Use the **+**/**-** buttons to select the signal path wished.

• If you do not want to do ASI settings, press the **MODE** button.

> —> The "Channel strip" – "**LINE**" menu is activated (page 24).

• Press the **MULTI** button.

> —> The "ASI transfer rate" – "**ASI RATE**" menu is activated.

ASI TRANSFER RATE

In this menu you set the transfer rate for the ASI component connected.
For this setting please take the required information from the documentation (technical data) of the ASI component to be connected.

```
Bx 4          ASI RATE
108000 KBits
```
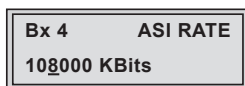
- Use the ◀/▶ buttons to place the cursor under the digits to be set for the transfer rate then use the +/− buttons to set the transfer rate wished.

- Press the **MODE** button.

> —> The "ASI options" – "**ASI OPTION**" menu is activated.

ASI OPTIONS

In this menu you define the size of the data packets, their polarity and the type of transmission.
For this setting please take the required information from the documentation (technical data) of the ASI component to be connected.

```
Bx 4        ASI OPTION
188   pos.   cont.
```

- Press the +/− buttons to set the size of the data packets ("**188**" or "**204**" bits).

- If the polarity of the data to be transmitted has to be changed, press the ◀/▶ buttons to place the cursor under "**pos.**" (positive – standard) and using the +/− buttons set to "**neg.**" (negative).

- To change the type of transmission press the ◀/▶ buttons to position the cursor under "**cont.**" (continuous – standard) and using the +/− set to "**burst**".

> —> Setting "**cont.**"
> The data packets of the user data are spaced out evenly in the transport stream.

—> Setting "**burst**"
  The data packets of the user data are collected to a great data packet in the transport stream.

• Press the **MODE** button.

—> The "Channel strip" – "**LINE**" menu is activated.

CHANNEL STRIP

```
Bx 4              LINE
Line A <=   => Line B
```

• By pressing ◄ select channel strip "**A**" ("**Line A**") or select channel strip "**B**" ("**Line B**") by pressing the ► button.

—> The "Channel / Frequency setting" – "**OUTPUT**" menu is activated.

CHANNEL / FREQUENCY SETTING

In this menu, you can select the channel or frequency setting for the adjustment of the RF output. The channel setting covers the range of channels S21 … C69, the frequency setting covers the range from 42.0 MHz to 860.0 MHz. The QAM signal is normally transmitted with a bandwidth of 8 MHz. This means that you can only use the channel centre frequency of the existing channel grid in the range of channels S21 … C69 (frequency grid 8 MHz). The CCIR channel grid is 7 MHz in the range of the lower frequency bands (channels C2 … S20). Therefore the frequency setting is used here. If one uses the existing channel grid of 7 MHz in these channel ranges, this will result in interference (overlapping) with the 8 MHz QAM signal packages, thus causing transmission problems.
For programming in these channel ranges and in the frequency ranges below them, we recommend starting with channel S21 / 306 MHz going back in steps of 8 MHz (see frequency table on page 45), or reducing the bandwidth of the QAM output signal by removing stations.

```
┌─────────────────────────┐
│ Bx 4A         OUTPUT    │
│ Freq.                   │
└─────────────────────────┘
```
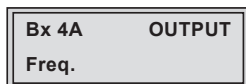
- Use **+**/**-** to select channel setting "**Channel**" or frequency setting "**Freq.**".

- Press the **MODE** button.

> —> The "Output channel" or "Output frequency" – "**OUTPUT**" menu is
> activated.

OUTPUT CHANNEL

In this menu you set the output channel of the channel strip. Additionally the modulator of the channel strip can be switched off or on (page 26).

```
┌─────────────────────────┐
│ Bx 4A         OUTPUT    │
│ C68               on    │
└─────────────────────────┘
```
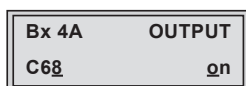
- Use the **+**/**-** buttons to set the output channel.

OUTPUT FREQUENCY

In this menu you set the output frequency of the channel strip (42.0 … 860.0 MHz). Additionally the modulator of the channel strip can be switched off or on (page 26).

```
┌─────────────────────────┐
│ Bx 4A         OUTPUT    │
│ 850.00 MHz        on    │
└─────────────────────────┘
```
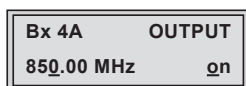
- Use the **◄**/**►** buttons to place the cursor under the digit to be set for the frequency display then use **+**/**-** to set the output frequency wished.

- To switch off the modulator place the cursor under "**on**" using the ▶ button and switch "**off**" the modulator of the channel strip using the + / - buttons.

  —> The switched off modulator is indicated by " **- - -** " in the display.
  —> The status LED is switched off (see also page 14).

- If the modulator is switched "**off**" use the + / - to switch it "**on**".

- Press the **MODE** button.

  —> The "Output levels of the channel strips" – "**LEVEL**" menu is activated.

This menu item is used to set the output levels of the modulators **of the channel strips "A" and "B" to the same value**.

```
Bx 4A          LEVEL
      -3 dB
```

- Measure and note down the output level of the channel strip. To adjust the output level to the output levels of the other cassettes please pay attention to chapter 6 "Final procedures" (page 44).
- By repeatedly pressing the **AUDIO** button scroll back to the "Selecting the channel strip" menu.
- Select the other channel strip (page 24) and set the following menu items:
- "Selecting channel / frequency setting" (page 24).
- "Setting the output channel" or "Setting the output frequency" (page 25).
- Switch on the modulator if necessary (page 26).
- Measure and note down the output level.
- Activate the "**LEVEL**" menu of the channel strip with the higher output level.
- By pressing + / - adjust the higher output level of one channel strip to the lower output level of the other channel strip incrementally from "**0**" to "**−10 dB**".
- Press the **MODE** button.

  —> The "LNB oscillator frequency / control voltage" – "**LNB**" menu is activated.

LNB OSCILLATOR FREQUENCY / CONTROL VOLTAGE

In this menu set the oscillator frequency of the LNB used and, if necessary, a LNB control voltage.

```
Bx 4A            LNB
10600 MHz        off
```

LNB OSCILLATOR FREQUENCY

- Use ◄ / ► to position the cursor under the digit to be set for the frequency display.
- Press + / - to enter the oscillator frequency of the LNB used.

DiSEqC COMMANDS

- In order to set a DiSEqC command, position the cursor under "off" using button ► .
- Using buttons + / - select the desired control voltage.
  "abcd" are place-holders for the following setting options:

```
Bx 4A            LNB
10600 MHz        abcd
```

Place-holder	Value	Description
a	_	No function
	T	Sound
	D	DiSEqC
b	_	No function
	A, B	Sound A or B
	0…F	Hexadecimal value for DiSEqC command 0…15
c:	H	Horizontal polarisation
	V	Vertical polarisation
d:	h	High-Band
	l	Low-Band

Example: **DAHh** means **D**iSEqC position **10**, **H**orizontal **h**igh

—> **The control voltage only serves to control multiswitches and is not suitable for power supply of upstreamed components (maximum load 65mA).**

—> GSS Multiswitches must be triggered by the following DiSEqC comands:

Input group A —> DiSEqC command D0

Input group B —> DiSEqC command D1

Input group C —> DiSEqC command D2

Input group D —> DiSEqC command D3

Example: In order to trigger input group B for horizontal polarisation and high band **D1Hh** must be set.

• Press the **MODE** button.

—> The "Input symbol rate / DVB mode" – "**SYMBOL**" menu is activated.

INPUT SYMBOL RATE

The symbol rates of the satellite transponders can be found in the current channel table of the satellite operator, in various satellite magazines and in the Internet.

```
Bx 4A        SYMBOL
27500        DVB-S
```

• Use ◄/► to position the cursor under the digit to be set for the symbol rate displayed.
• Press +/- to enter the values of the symbol rate.

-

DVB MODE

The cassette recognizes the transmitted DVB mode and switches over between the normal QPSK mode (DVB-S) and the DVB-S2 mode. Receiving stations with DVB-S2 mode, we suggest to preset the DVB mode to shorten the time for searching stations.

```
Bx 4A        SYMBOL
27500        DVB-S
```

- Use the ▶ button to place the cursor under "**DVB-S**" and set the required DVB-S2-mode with the buttons **+**/**-** .
- Press the **MODE** button.

> —> The "Input frequency" – "**FREQ**" menu is activated.

If three dots " **...** " appear in the second line of the display, the cassette is in the "**station search**" mode. Please wait until the process has finished.

Bx 4A	FREQ
11835	-0.7 CN 15

←**MULTI**→

Bx 4A	C/N
15.3 dB	(+ 11.3) OK

Once the RF receiver has synchronised to the input signal, any offset to the target frequency is displayed in MHz, e.g. "**– 0.7**".

If a question mark "**?**" appears in the second line of the display, there is no input signal present. Check the configuration of the antenna system and head-end station as well as the preceding settings of the cassette.

Bx 4A	FREQ
11835	-0.7 CN 15
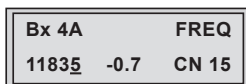
- Use ◀/▶ to position the cursor under the digit to be set of the frequency displayed.
- Press **+**/**-** to set the input frequency.
- Set the frequency offset shown in the display (e.g. "**– 1.7**") to less than 1.0 MHz by varying the input frequency using the **+**/**-** buttons.

- Press the **MULTI** button.

> —> The "Testing the signal to noise ratio" – "**C/N**" menu is activated.

In this menu you can estimate the quality of the input signal.

```
 ┌──────────────────────────┐
 │ Bx 4A              C/N   │
 │ ⎛15.3 dB⎞ ⎛+ 11.3⎞⎛OK⎞   │
 └──────────────────────────┘
      ①          ②     ③
```
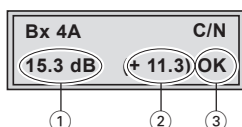
① Current signal to noise ratio

② This value shows the difference between the quality of the input signal and the threshold of the tuner at this type of modulation.

⚠ At a value lower than "**5**" picture dropouts can occur.

③ If "**OK**" is shown, the signal to noise ratio is ok.
  If a value < 5 is shown under ② the display changes from "**OK**" to "**??**". In this case test the input signal.

—> In addition to the indicator in the display, there is also a status LED which indicates the quality of the received transport stream:
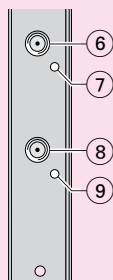
⑦ Status LED Tuner A
⑨ Status LED Tuner B

LED indicator	Indication
Green	Signal quality is good
Yellow	Signal quality is insufficient
Red	No signal
Off	The channel strip (modulator) is switched off

• Press the **MULTI** button to return to the main menu.

⚠ If the input signal path "**A+B+ASI=1   ASI=2**" is selected the station filter of channel strip "**B**" is used in the channel strip "**A**". Therefore perform the settings for channel strip "**B**" according to the pages 29/30, before activating the "Setting the station filter" – "**PROGRAM**" menu.

If the input signal path "**A+ASI=1   B+ASI=2**" or "**A+ASI=1   A+ASI=2**" is selected the channel strips can be programmed one after the other.

• Press the **MODE** button.

—> The "Station filter" – "**PROGRAM**" menu is activated.

STATION FILTER

The default setting for the station filter is "**off**". In this menu you define the stations received to be transmitted. If stations are activated the output symbol rate increases.

If the station filter is switched off (factory default) all stations of the transport stream passes the station filter. As soon as the station filter is activated all stations are inactive and can be added to the transport stream selectively.

⚠ The figure of the menu below is dependent on the setting of the "Selecting the input signal path" menu (page 22).

The menu shows the setting "**A+B+ASI = 1   ASI = 2**".

With this setting the transport stream of channel strip "**B**" is routed to the transport stream of channel strip "**A**" and therefore cannot be set in channel strip "**B**". Programming channel strip "**B**" the transport stream coming from the ASI input can be processed only.

MENU SETTING "A+B+ASI = 1   ASI = 2".

Channel strip "**A**"
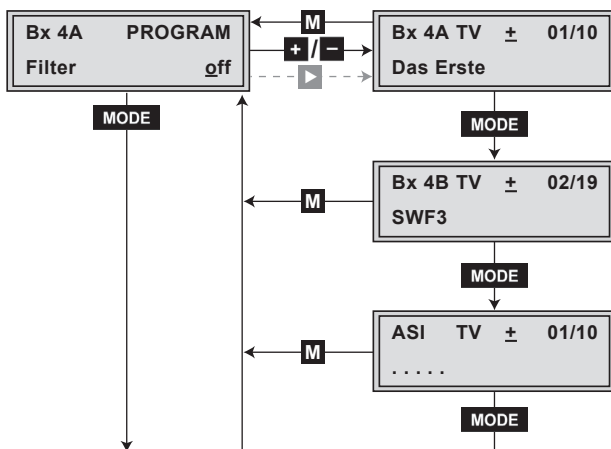
—> "Setting the station filter" menu of channel strip "**B**"

| Bx 4B   PROGRAM | | **M** | | ASI   TV   =   01/10 |
| Filter   <u>off</u> | | **+** / **—** ▶ | | . . . . . |

MODE   MODE
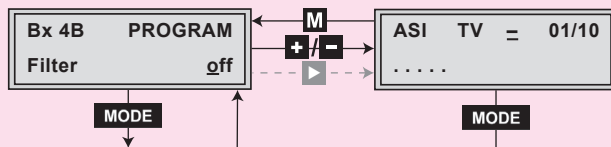
• Press the **+** / **—** button.

—> All stations from the channel strip will be read, and then displayed with name and station type.
—> If no station is found, the following error message will appear in the display: "**FILTER   no Service**".
   In this case, check the configuration of the antenna system and head-end station, as well as the previously adjusted settings for the cassette and the components connected to the ASI input.
—> The display shows e.g.:   **Bx 4A   TV   +   01/10**
                                        Das Erste

Meaning of the indicators in the example:
"**Bx 4A**"   Slot 4, channel strip "**A**"
"**TV**"   TV channel type
" **+** "   The currently selected station is switched on.
"**01/10**"   The 1st of 10 stations is being displayed.
"**Das Erste**"   Station name

Further possible terms displayed:
"**RA**"   Radio channel type
                        For radio stations, the background of the screen of the connected TV or test receiver is darkened.
" **–** "   The currently selected station is switched off.
" ***** "   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.

- Use the ◀/▶ buttons to call up the stations in sequential order, then use
  +/- to activate (indicated by " **+** ") or to remove them (" **−** ").
  Factory default: All stations are deactivated.

- Press the **MODE** button.
- Set the station filters of channel strip "**B**" and "**ASI**" in the same way as channel strip "**A**".
- To save changes and to activate the station filter press the **MODE** button.

> —> The filter is activated.
>   The display shows "**PROGRAM   Filter   on**".
> —> If stations are activated the corresponding PIDs (audio, video, text) are inserted into the data stream and the PAT and SDT tables are updated.

Test the status of the individual stations:

If the filter is switched on, press the ▶ button. In this mode you can test the settings of the station filters again or change them if necessary.

- In the "**PROGRAM   Filter   on**" menu the station filters switched on can be switched "**off**" using the buttons +/- if necessary.

MENU SETTING "A+ASI=1/B+ASI=2", "A+ASI=1/A+ASI=2".

Channel strip "**A**"
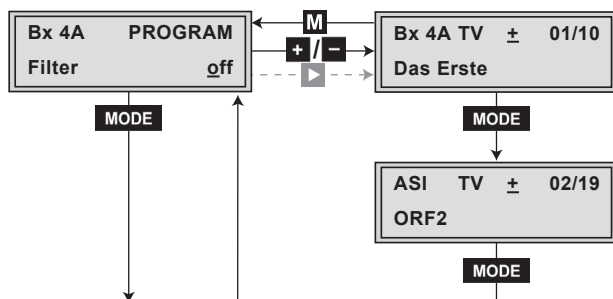
- Set the channel strip "**A**" or "**B**".

—> The setting of the channel strips "**A**" and "**B**" is identical and follows the description above.

- Press the **MODE** button.

—> The "QAM modulation" – "**QAM**" menu is activated when the channel strips "**A**" without a CA module installed and "**B**" are programmed.
—> Programming the channel strip "**A**" with a CA module installed the settings for the CA module are activated (see page 41).

QAM MODULATION

In this menu, you can set the QAM modulation and invert the user signal.

```
Bx 4A          QAM
256-QAM      normal
```
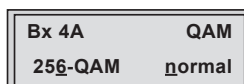
- Use **+**/**-** to set the QAM modulation ("**4**" … "**256**").

—> For higher QAM modulation, the output symbol rate is lowered. An output QAM modulation of > 64 QAM places a large burden on the cable network. Due to noise, delay and frequency response problems, reception of the converted output signal can be affected.

INVERTING THE USER SIGNAL

For exceptional cases and "older" digital cable receivers, the spectral position of the user signal can be inverted.

- Use **◄**/**►** to place the cursor under "**normal**".
- Use **+**/**-** to set the spectral position to "**inverse**".

- Press the **MODE** button.

—> The "Setting stuffing" – "**STUFFING**" menu is activated.

```
┌─────────────────────────────┐
│  Bx 4A        STUFFING      │
│  SR=6900  (6325)            │
└─────────────────────────────┘
       Zahl 1       Zahl 2
```

SR=6900 (= "Number 1"): Active output symbol rate
(**6325**) (= "Number 2"): The current measured output symbol rate.
If the station filter is activated, this value is lower than the value of the "Number 1". The value fluctuates, since the data rates of individual stations are dynamically modified by the broadcasters.

—> "Number 2" is not displayed in the channel strips "**A**" or "**B**" at the settings "**OUTROUTE 1=>ASI   ASI=>MA**" or "**2=>ASI   ASI=>MB**", for the symbol rate of the ASI input signal cannot be measured. The ASI input signal therefore must be built in such a way so that the output symbol rate ("Number 1") is not exceeded.
The symbol rates of the transport streams built by the cassette can be measured at the setting "**OUTROUTE ASI=>ASI**" and be displayed in the respective channel strip.

• Use the ◄/► buttons to place the cursor under the number to be changed ("Number 1") and set the symbol rate with the buttons +/- .
The value set corresponds to the new output symbol rate.

Increasing the value of "Number 1".

—> The "Number 1" can be increased to any value up to 7500.

Reducing the value of "Number 1".

—> With the station filter switched "**on**", the "Number 1" can be decreased. To do this, observe the "Number 2" for approximately 30 seconds and note the highest value. Add roughly 10 % to this value. Do not decrease the "Number 1" lower than the value of "Number 2". Is the "Number 1" lower than "Number 2" question marks "**??**" appear in the display.

```
┌─────────────────────────────┐
│  Bx 4A        STUFFING      │
│  SR=6500  (6650) ??         │
└─────────────────────────────┘
```

• Press the **MODE** button.

SUBSTITUTE SIGNAL IN THE CASE OF AN INCORRECT INPUT SIGNAL

You use this menu to set whether a QAM signal filled with "**Null Packets**", a QAM signal filled with null packets and self-made tables "**Tables**" or a "**Single Carrier**" signal should be provided as an output signal whenever an incorrect input signal occurs. Self-made tables are transmitted furthermore.

```
Bx 4A          FAILURE
Single Carrier
```
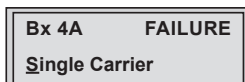
• Use the **+** / **-** buttons to set the output signal required.

• Press the **MODE** button.

TRANSPORT STREAM ID AND THE ORGNET-ID

If the stations of a transponder are split into the transport streams of the channel strips "**A**" and "**B**", one of the both transport streams a new identification must be allocated to realise the channel search of the settop boxes connected without mistakes.
If the ORGNET-ID is changed a new NIT must be generated (page 37).

```
Bx 4A          TS/ONID
0x0001,0100         off
```
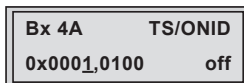
• Use the **◄** / **►** buttons to position the cursor under the digit of the hexadecimal number to be set.
• Press **+** / **-** to set the respective digit of the hexadecimal number.
• Repeat the procedure by the quantity of the digits to be set.
• Using the **►** button place the cursor under "**off**" and switch "**on**" the transmitter identification using the **+** / **-** buttons.

• Press the **MODE** button.

NETWORK INFORMATION TABLE (NIT)

```
Bx 4A              NIT
off           => Make
```

• To switch NIT on/off ("**on**"/"**off**") press the **+**/**-** buttons.

⚠ • Press the ► button to activate NIT "**Make**".
All active …-QAM cassettes must be set and ready for reception.

⚠ • To switch off the new NIT ("**off**") press the **-** button.
The cable NITs of the other …-QAM cassettes will stay switched on. When the cable NIT of the cassette is switched on again ("**on**") by pressing the **-** button, the previously generated NIT is added again. If you have changed parameters in the meantime, you must first select "**Make**" to generate a new, up-to-date NIT.

• Press the **MODE** button.

In this menu, you can change the network/operator identification (CAT-ID – **C**onditional **A**ccess **T**able - **Id**entification), for example of the visAvision transponder (Eutelsat 8° West).

```
Bx 4A          CAT-ID
0XDE00            off
```

CAT is not to be changed.
• Press the **MODE** button.

> —> The "Deleting a PID" – "**DROP**" menu is activated (page 39).

CAT is to be changed.
The network operator e.g. requires that you set the operator ID of the visAvision transponder to "2".

• Use the ◄/► buttons to position the cursor under the digit to be set.
• Use +/− to change the operator ID from "**0xDE00**" to "**0xDE02**".
• Use the ► button to position the cursor under "**off**," then use +/− to activate the new CAT "**on**".

> —> The menu display switches to "**modified**".
> —> If you try to change the network/operator identification (operator ID) of a transponder which cannot be modified, "**not modified**" appears in the display.

• Press the **MODE** button.

> —> The "Deleting a PID" – "**DROP**" menu is activated.

DELETING A PID

In this menu a PID of the transport stream can be deleted.

```
Bx 4A            DROP
PID 0x0000        off
```

- Use the ◀/▶ buttons to place the cursor under the respective digit of the hexadecimal number of the PID to be deleted ("**0x0000**") and set the hexadecimal number using +/- .
- Use ▶ to set the cursor to "**off**" and switch to "**on**" (delete) using the +/- buttons.

- Press the **MODE** button.

—> The "Renaming a PID" – "**REMAP**" menu is activated.

RENAMING A PID

In this menu you can allocate a new address to a PID retaining the complete data content.
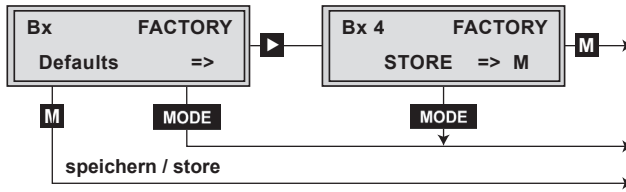
```
Bx 4A          REMAP
0x0000 –> 0000    off
```

- Use the ◀/▶ buttons to place the cursor under the respective digit of the hexadecimal number of the PID to be changed ("**0x0000**") and set the hexadecimal number using +/- .
- Use the ◀/▶ buttons to place the cursor under the respective digit of the hexadecimal number of the new PID ("**–> 0000**").
- Set the hexadecimal number using +/- .
- Use ▶ to set the cursor to "**off**" and switch to "**on**" (rename) using the +/- buttons.

- Press the **MODE** button.

—> The "Factory reset" – "**FACTORY Defaults**" menu is activated.

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

```
┌──────────────────────┐        ┌──────────────────────┐
│ Bx          FACTORY  │   ▶    │ Bx 4        FACTORY  │   M  →
│ Defaults        =>   │        │    STORE   =>  M     │
└──────────────────────┘        └──────────────────────┘
        M      MODE                          MODE
        │        │                             │
        │        └─────────────────────────────┴──────────→
        └──── speichern / store ─────────────────────────→
```

- Press the ▶ button.

> —> The factory defaults are invoked.
> —> By pressing the **MODE** button, you will be returned to the menu item "Selecting the channel strip" **without** invoking the factory defaults (page 24).

- Press the **M** button.

> —> The factory defaults are saved. The display shows "STORE"
> —> Back to "Selecting the cassette" (page 21).
> —> By pressing the **MODE** button, you will be returned to the menu item "Selecting the channel strip" **without** saving the factory defaults (page 24).
> —> If necessary set channel strip "**B**".

- Press the **M** button.

> —> Back to "Selecting the cassette" (page 21).
> —> The settings are saved.
> —> If functions of the TPS module are activated, their status is shown in the second line of the display:
> > "**M**"   Station filter is switched on.
> > "**N**"   NIT is activated.
> > "**C**"   Network/operator identification CAT is activated.
> —> If necessary set channel strip "**B**".

Operation with a CA module

In order for this function of the CA module to be possible, stations capable of being descrambled by the CA module you are using and your smart card must be selected in the "Setting the station filter" – "**PROGRAM**" menu (page 31).
Short-term picture loss may occur when switching between scrambled and unscrambled broadcasts within one service (e.g. scrambled stations and un-scrambled regional broadcasters).

—> The "Setting the PID monitoring" – "**CA**" menu is activated (page 41).

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. If dropouts occur during the decoding of several stations 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.

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

—> By pressing the **MODE** button you can skip the "Configuring the CA module" – "**CA**" menu and activate the "Setting the QAM modulation" – "**QAM**" menu (page 34).

- Press the ◄ button to activate the menu of the CA module.

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

—> The display shows e.g.: **Bx 4A 01/03 MENU**
                                                              Information

Meaning of the indicators:

"**Bx 4A**"   Slot 4, channel strip "**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 "Setting the station filter" – "**Edit**" menu is activated.

In this menu you select the stations wished from the encoded data stream, which are to be decoded.

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

—>   The display shows e.g.: **Bx 4A   TV   X   04/09**

                                   . . . .

Meaning of the indicators in the example:

"**Bx 4A**"	Slot 4, channel strip "**A**"
"**TV**"	TV channel type
"**X**"	The currently selected station is to descramble.
"**04/09**"	The 4th of 9 stations read is being displayed.
"**. . . .**"	Station name

Further possible terms displayed:

"**RA**" –	Radio channel type
"**0**" –	The currently selected station is not to descramble.

- Use the ◄/► buttons to call up the stations in sequential order which are to be descrambled, then use +/- to descramble ("**X**") or not to descramble ("**0**") them.
- Save changes and activate the station filter:
- Press the **MODE** button.

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

```
Bx 4A          CA
Menu <=     => Edit
```
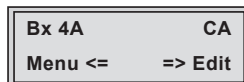
- Press the **MODE** button.

—>   The "Setting the QAM modulation" – "**QAM**" menu is activated (page 34).

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 connections using an appropriate open-ended spanner.
- Measure the output levels of the other cassettes and tune them to a uniform output level using the appropriate level controls or software dependent on the head-end station used. Please regard the assembly instructions of the respective head-end station.
- Mount the front cover (see assembly instructions of the head-end station).

Advice for a frequency grid (8 MHz) in the Band I/III

Frequenzraster Frequency grid [MHz]	Frequenzraster Frequency grid [MHz]	Frequenzraster Frequency grid [MHz]	Frequenzraster Frequency grid [MHz]	Frequenzraster Frequency grid [MHz]	Frequenzraster Frequency grid [MHz]
42.00	82.00	146.00	186.00	226.00	266.00
50.00	114.00	154.00	194.00	234.00	274.00
58.00	122.00	162.00	202.00	242.00	282.00
66.00	130.00	170.00	210.00	250.00	290.00
74.00	138.00	178.00	218.00	258.00	298.00

CCIR – Hyperband (Frequency grid 8 MHz)

Kanal Channel	Kanalmittenfrequenz Channel centre frequency [MHz]	Kanal Channel	Kanalmittenfrequenz Channel centre frequency [MHz]	Kanal Channel	Kanalmittenfrequenz Channel centre frequency [MHz]	Kanal Channel	Kanalmittenfrequenz Channel centre frequency [MHz]	Kanal Channel	Kanalmittenfrequenz Channel centre frequency [MHz]
S 21	306.00	S 26	346.00	S 30	378.00	S 34	410.00	S 38	442.00
S 22	314.00	S 27	354.00	S 31	386.00	S 35	418.00	S 39	450.00
S 23	322.00	S 28	362.00	S 32	394.00	S 36	426.00	S 40	458.00
S 24	330.00	S 29	370.00	S 33	402.00	S 37	434.00	S 41	466.00
S 25	338.00								

CCIR – Band IV/V (Frequency grid 8 MHz)

C 21	474.00	C 31	554.00	C 41	634.00	C 51	714.00	C 61	794.00
C 22	482.00	C 32	562.00	C 42	642.00	C 52	722.00	C 62	802.00
C 23	490.00	C 33	570.00	C 43	650.00	C 53	730.00	C 63	810.00
C 24	498.00	C 34	578.00	C 44	658.00	C 54	738.00	C 64	818.00
C 25	506.00	C 35	586.00	C 45	666.00	C 55	746.00	C 65	826.00
C 26	514.00	C 36	594.00	C 46	674.00	C 56	754.00	C 66	834.00
C 27	522.00	C 37	602.00	C 47	682.00	C 57	762.00	C 67	842.00
C 28	530.00	C 38	610.00	C 48	690.00	C 58	770.00	C 68	850.00
C 29	538.00	C 39	618.00	C 49	698.00	C 59	778.00	C 69	858.00
C 30	546.00	C 40	626.00	C 50	706.00	C 60	786.00		

Declaration of CE conformity

<table>
<tr><td>GSS</td><td>Konformitätserklärung
Declaration of Conformity
028/ 13</td><td>C E</td></tr>
</table>

Der Hersteller/Importeur
The manufacturer/importer

GSS Grundig SAT Systems GmbH

Anschrift / Address / Adresse

Beuthener Straße 43, D-90471 Nürnberg, Germany

erklärt hiermit eigenverantwortlich, daß das Produkt:
declare under their sole responsibility that the product:

Bezeichnung / Name /
Description

**Head-End Digital Transmodulator
HDTV Digital QAM**

Type / Model / Type

GSS HDTV 1000 ASI D

Bestell-Nr. / Order-No.

GAS 1260

folgenden Normen entspricht:
is in accordance with the following specifications:

EN 50083-2:	*2012*	*EN 60065:*	*2002*
EN 50581:	*2012*	*EN 60065 + A1:*	*2006*
		EN 60065 + A11:	*2008*
		EN 60065 + A2:	*2010*
		EN 60065+ A12:	*2011*

Das Produkt erfüllt somit die Forderungen folgender EG-Richtlinien:
Therefore the product fulfils the demands of the following EC-Directives:

2006/95/EG **Richtlinie betreffend elektrische Betriebsmittel zur
Verwendung innerhalb bestimmter Spannungsgrenzen
Directive relating to electrical equipment designed for
use within certain voltage limits**

2004/108/EG **Richtlinie über die elektromagnetische Verträglichkeit
Directive relating to electromagnetic compatibility**

2011/65/EG **Richtlinie zur Beschränkung der Verwendung bestimmter
gefährlicher Stoffe in Elektro- und Elektronik Altgeräten
Directive on the restriction of the use of certain hazardous substances
in electrical and electronic equipment**

Nürnberg, 11. Juni 2013

Michael Bierschneider
Leiter Entwicklung
Manager Development / Directeur Dèveloppement