Assembly Instructions

English

Grundig SAT Systems

PROFESSIONAL

Head-End HDTV Converter to IP
DVB-S2 to SPTS

PHIS 1000 S

KLASSE A CLASS

CE

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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 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/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 PHIS 1000 S
1 LAN cable
4 Lock washers
1 Brief assembly instructions
2 RF cables
2 F jack-to-jack adapter
2 Thin nuts
1 Measuring log

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 45).

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

RF input

Frequency range: ..... 925 ... 2150 MHz
Level range: ..... 60 dBµV ... 80 dBµV
Return loss: ..... > 8 dB
DVB-S modes: ..... QPSK $^1/_2$, $^2/_3$, $^3/_4$, $^5/_6$, $^7/_8$
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

LAN interface

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

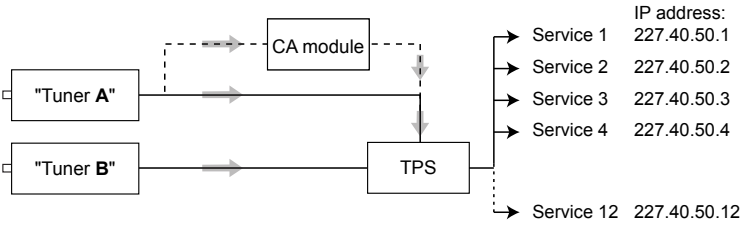
Connections

SAT inputs:..... 2 F sockets
RF output: .....1 IEC socket (no function)
LAN: ..... 1 RJ 45 socket
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.

2.4 Description

The cassette is a DVB-S2 / SPTS converter which combines modulated services (programmes) in accordance with the DVB-S-/DVB-S2 standard into one data stream in the TPS module. From this up to 12 data streams, containing one service each, are emitted at the LAN interface. 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 SAT tuners and the digital signal processing levels. From the resulting data streams of the "**Tuner A**" and "**Tuner B**" channel strips up to 12 services can be taken and assigned with each an IP address.

Principle signal path:



The channel strip "**Tuner A**" can descramble scrambled channels via a corresponding CA module. Two LEDs provide an indication of the signal quality with their colour. The transmission of the DVB service information EIT as well as teletext (TXT), subtitle (SUB) and AC3 tone can be individually activated or deactivated.

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

A control voltage for a DiSEqC controlled multi switch which is not suitable as power supply is present at the antenna input (use an external power supply).

The cassette is controlled with the head-end station control unit as well as with station tables which can be uploaded and stored to the cassettes via ethernet.

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 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 PROFI-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.

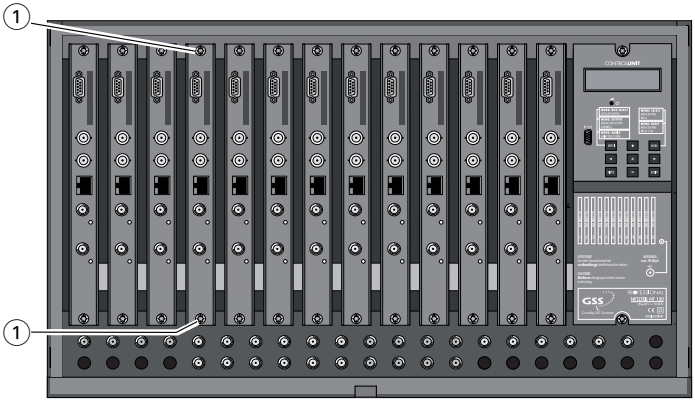
Cassette
After activating the cassette the software version of the cassette is displayed (see page 23).

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.

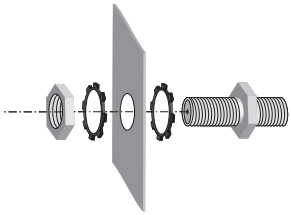
- Remove the fastening screws (1) of an unoccupied slot from the bracket of the head-end station.
- Insert the cassette in this slot and push it into the housing.
- Align the cassette and apply slight pressure to connect it to the connections of the board and the RF bus bar.
- Fasten the cassette with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



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.

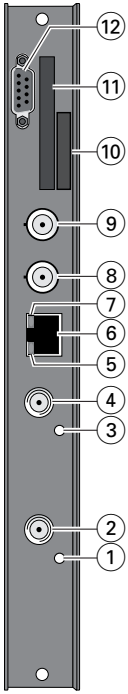
The attenuation of shielding of the connection lines for ASI and antenna must meet the requirements for "Class A".



- 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. Status LED of channel strip "**B**"
2. SAT IF input of channel strip "**B**"
3. Status LED of channel strip "**A**"
4. SAT IF input of channel strip "**A**"
5. Status LED of the LAN interface (data transfer)
6. LAN socket
7. Status LED of the LAN interface (network connection)
8. not used
9. not used
10. Type label
11. Slot for a CA module
12. D-SUB socket "RS 232"

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

- Connect the RF connections to the inputs (4) (channel strip "**Tuner A**") and (2) (channel strip "**Tuner B**"). To connect a DiSEqC controlled multi switch 2 F jack-to-jack adapters (cable connectors) are attached.

—> The control voltage for a DiSEqC controlled multi switch which is present at the antenna input is not suitable as its power supply.
Use an external power supply.

- Connect the LAN socket (6).

—> In order to avoid restrictions of the network data rate (and therefore possible disturbances) we recommend to operate other applications like e.g. Internet, VOIP telephony etc. in separated networks.
—> **Exclusively use "Layer 3 switches", which support the IGMP protocol.**

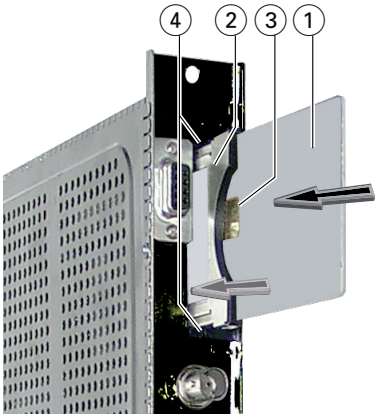
3.5 Retrofitting a CA module

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

⚠

- 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 to the data structures in the service 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 (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.



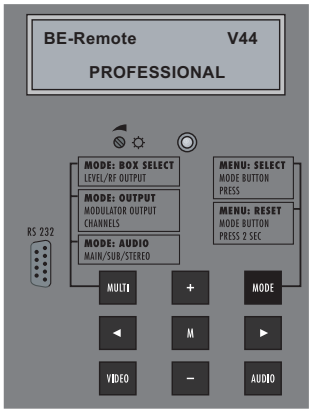
4 The control panel at a glance

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:

- Programme tables (optionally*)
- Setting Ethernet parameters
- Selecting the Input (optionally*)
- Assignment of the IP addresses (optionally*)
- Data Mode
- Displaying the data rate
- Factory reset

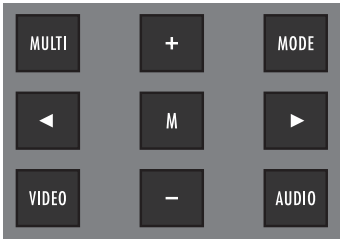
*) depending on the activation of the virtual station tables.



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 Overview

Points 5.2/5.5 describes the programming of the cassette via the operating unit of the head-end station.
The programming of the stations to be received can also be done via a text file (station tables) which is uploaded to the cassettes.

Function "Virtual Station Tables"

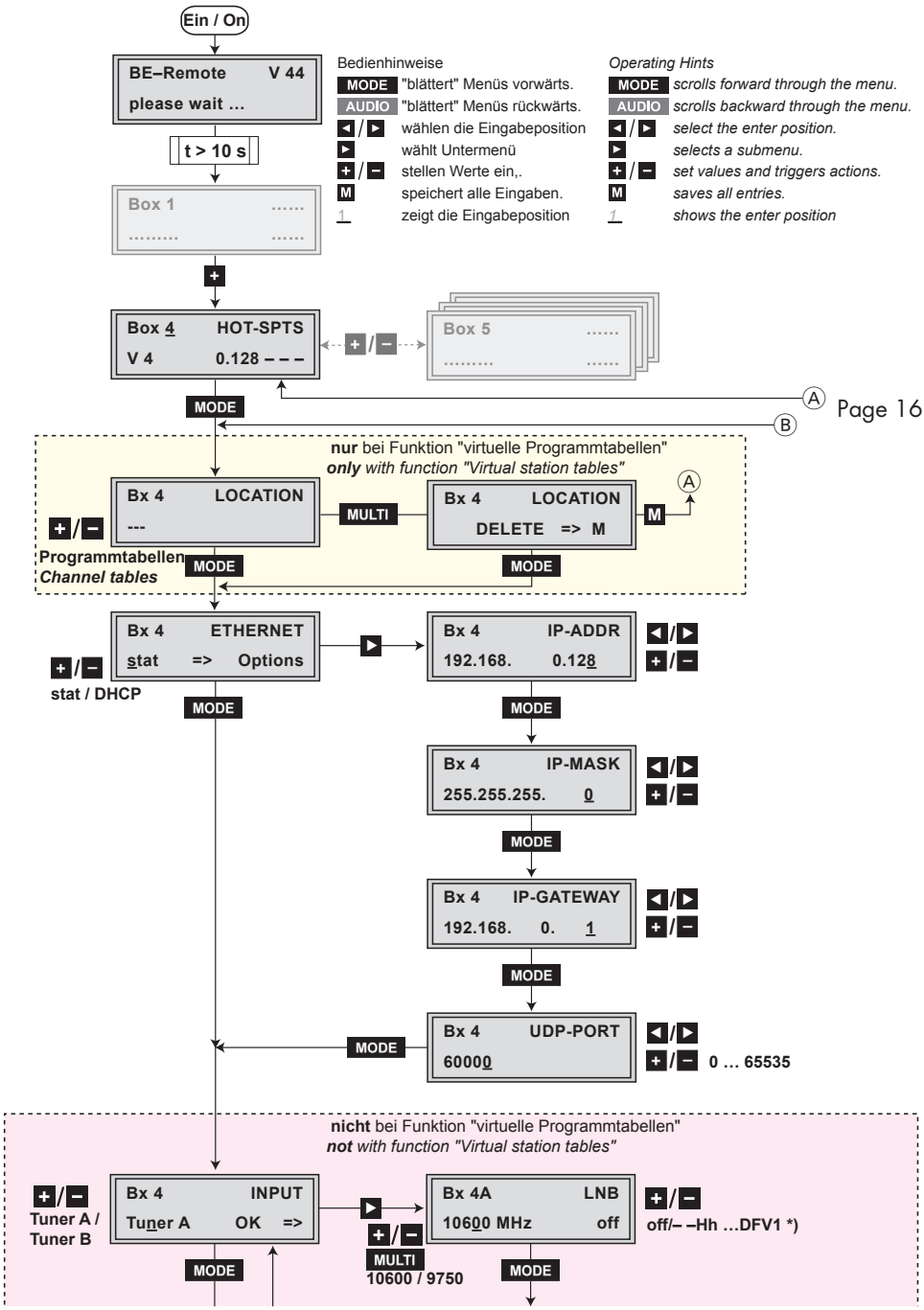
For special applications it is possible at a combination of cassettes PHIS 1000 S ("receiving cassettes") and PSPT/Q 1000 ("transmitting cassettes") to change the configuration quickly via "virtual station tables".
Here, the programming of several station tables (LOCATIONS) of the receiving cassettes as well as their assignment to the transmission channels (transponders) of the transmitting cassettes is done by a text file which must be uploaded to the cassettes.
The switchover of the different station tables is done via the menu "**LOCATION**" in the PHIS 1000 S cassettes. This menu only appears if station tables were uploaded before. The menus "**INPUT**" and "**IP-OUT**" then are hidden.

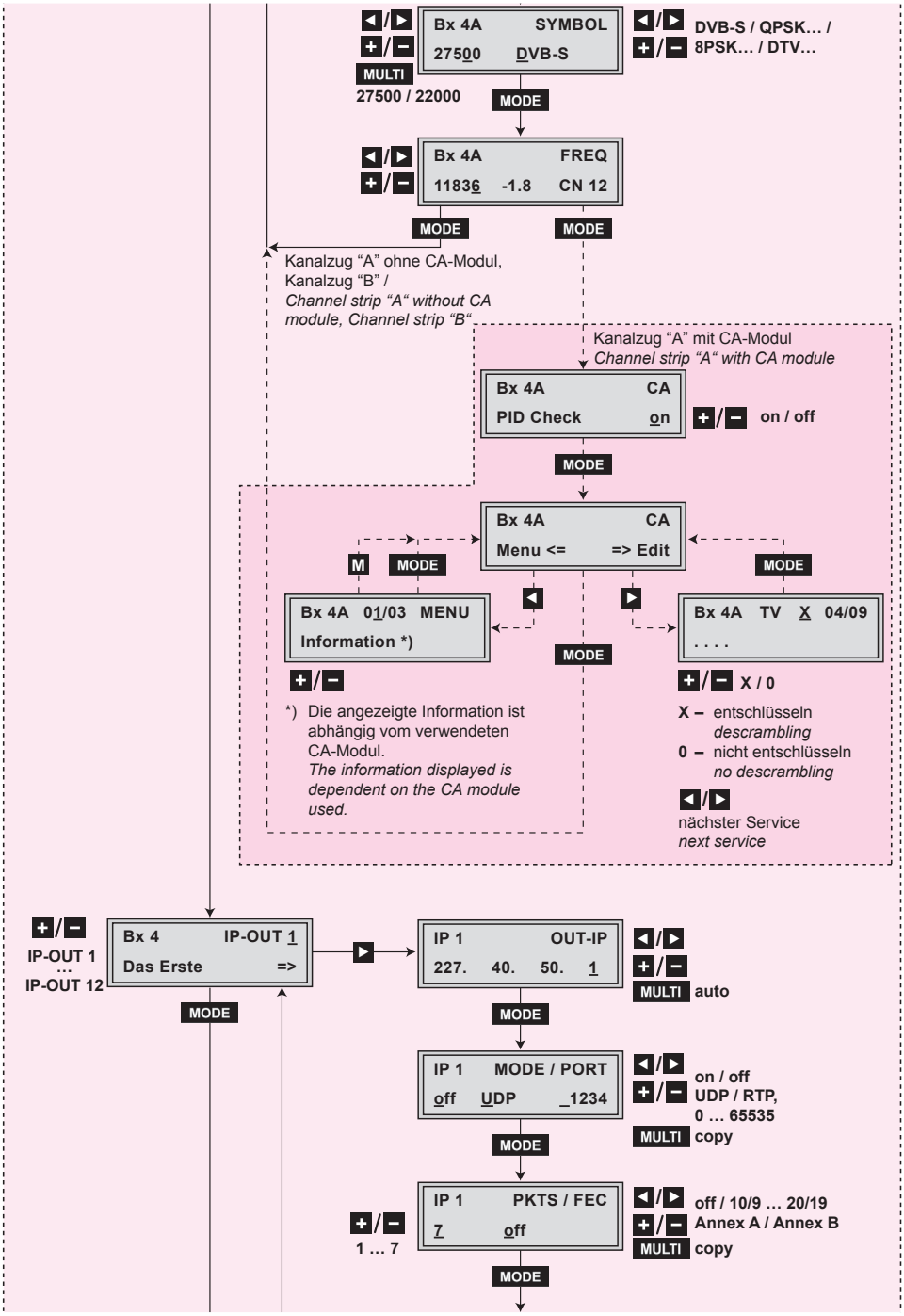
In point 5.3 the structure of a corresponding text file and in point 5.4 the programming of the cassettes (upload) is described.

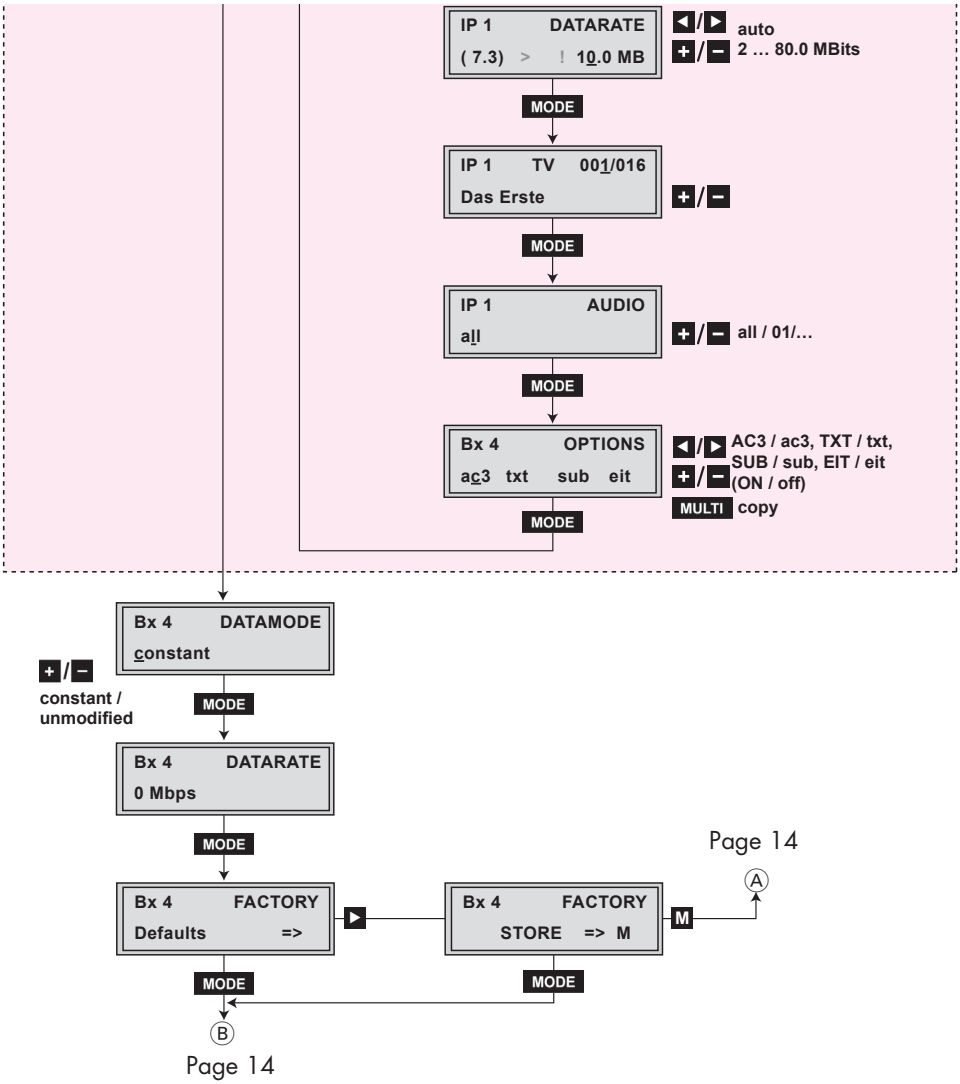
Programming via station tables

- First set the "hardware" IP addresses of all cassettes PHIS 1000 S and PSPT/Q 1000.
- Create the text file (station tables) using a text editor.
- Upload the text file (station tables) to the corresponding cassettes.
- Finally programme the cassettes.

5.2 Programming procedure




Bx 4A SYMBOL
27500 DVB-S
MULTI
27500 / 22000
DVB-S / QPSK... / 8PSK... / DTV...
MODE
Bx 4A FREQ
11836 -1.8 CN 12
MODE
MODE
Kanalzug "A" ohne CA-Modul, Kanalzug "B" /
Channel strip "A" without CA module, Channel strip "B"
Kanalzug "A" mit CA-Modul
Channel strip "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 *)
MODE
Bx 4A TV X 04/09
. . . .
X / 0
X – entschlüsseln
descrambling
0 – nicht entschlüsseln
no descrambling
nächster Service
next service
*) Die angezeigte Information ist abhängig vom verwendeten CA-Modul.
The information displayed is dependent on the CA module used.
IP-OUT 1
...
IP-OUT 12
Bx 4 IP-OUT 1
Das Erste =>
MODE
IP 1 OUT-IP
227. 40. 50. 1
MULTI
auto
MODE
IP 1 MODE / PORT
off UDP 1234
on / off
UDP / RTP,
0 ... 65535
MULTI
copy
MODE
IP 1 PKTS / FEC
7 off
1 ... 7
off / 10/9 ... 20/19
Annex A / Annex B
MULTI
copy
MODE


IP 1 DATARATE
(7.3) > ! 10.0 MB
◀/▶ auto
+/− 2 … 80.0 MBits
MODE
IP 1 TV 001/016
Das Erste
+/−
MODE
IP 1 AUDIO
all
+/− all / 01/…
MODE
Bx 4 OPTIONS
ac3 txt sub eit
◀/▶ AC3 / ac3, TXT / txt,
+/− SUB / sub, EIT / eit
(ON / off)
MULTI copy
MODE
Bx 4 DATAMODE
constant
+/−
constant /
unmodified
MODE
Bx 4 DATARATE
0 Mbps
MODE
Page 14
A
Bx 4 FACTORY
Defaults =>
▶
Bx 4 FACTORY
STORE => M
M
MODE
MODE
B
Page 14

The head-end station can be pre-programmed with different station allocations via the station tables. Then the configuration can be switched over by the menu "Location" of the cassette PHIS 1000 S.

The station tables are created using a text editor and stored e.g with the title "config.txt" in **one text file** (maximum file size 64kB).
The following example shows the structure of the text file:

PHIS 1000 S
Receiving table "Name 1"

SAT settings

```
L "Name 1"
I 227.40.50.0:1234

S 1,D1,9750,10600
S 2,D2,9750,10600
S 3,D3,10600,9750   // HI and LO interchanged at the inputs
S 4,D4,0,5150   // C band at the HI inputs
```

Transponder
Output IP
Service 1-6
Cassette 1
Tuner A

```
T 1,11836,H,27500  // ARD transponder
I  1,0x6DCA,0,AC3,10.2,EIT,"ARD" // ARD
I 16,0x6DCB       // BR3
I 17,0x6DCC       // HR3
I 18,0x6DCF       // WDR Köln
I 19,0x6DD1       // SWR
I 20,0x6DD0       // BR Alpha
```

Transponder
Output IP
Service 7-12
Cassette 1
Tuner B

```
T 1,10744,H,22000 // EinsExtra-Transponder
I 10,0x7031       // EinsExtra
I 11,0x7032       // EinsFestival
I 12,0x7033       // EinsPlus
I 22,0x7034       // Arte
I 23,0x7035       // Phoenix
…
…
…
…
```

PHIS 1000 S
Receiving table "Name 2"

Transponder
Output IP
Service 1-6
Cassette 1
Tuner A

```
L "Name 2"
I 227.40.50.0:1234

T 1,12480,V,27500 // DSF-Transponder
I 48,0x0384       // DSF
I 49,0x0033       // Tele5
I 50,0x0020       // Sonnenklar
```

Transponder
Output IP
Service 7-12
Cassette 1
Tuner B

```
T 1,11954,H,27500 // ZDF-Transponder
I  2,0x6D66       // ZDF
I 13,0x6D6B       // ZDF-Info
I 14,0x6D6E       // ZDF-Neo
I 15,0x6D70       // ZDF-Theater
I 21,0x6D67       // 3SAT
I 27,0x6D68       // KIKA
…
…
…
```

PSPT/Q 1000
Transmitting table

Input IP
LCN
Cassette 1
MOD B

Input IP
LCN
Cassette 1
MOD A

```
I 227.40.50.0:1234

O 474,0x0001,0x0100,6900,256
I 1,1
I
I
I
O 482,0x0002,0x0100,6900,256
I
I
I
I
```

—> Programming for the receiving cassette PHIS 1000 S

L "Name 1"

L	Identifier for "Location"
"Name 1"	arbitrary title, this title is shown in menu "Location" for selecting the configuration.

S 1,D1,9750,10600

S	Identifier SAT
1	Index, 1 = SAT configuration S1
,	**Commas are the separators between the items**
D1	Multi switch command — = no DiSEqC/tone burst T1 tone burst input 1 T2 tone burst input 2 D1 DiSEqC input 1 D2 DiSEqC input 2 D3 DiSEqC input 3 D4 DiSEqC input 4
9750	defines the LNB oscillator frequency of the low band input
10600	defines the LNB oscillator frequency of the high band input

—> By appropriate entries of the oscillator frequencies e.g. HI and LO can be interchanged at the inputs. Also C-band entry is possible. If an input is not used "0" must be entered for the oscillator frequency.
Example: "S 4,D4,**0**,**5150**" —>LO input not used,
C-band at the HI input

I 227.40.50.0:1234

I	Identifier for IP address (range)
227.40.50.0	IP address range e.g. 227.40.50.0-255 the IP address must be within the "multicast" range from 224.0.0.0 to 239.255.255.255.
:1234	Port

—> This sequence must be entered behind the "Location" sequence of every receiving table and before the transmitting table.

T 1,11836,H,27500 // ARD transponder

T	Identifier for transponder
1	Selection of the "SAT configuration" (S **1**,D1,9750,10600)
,	**Commas are the separators between the items**
11836	Downlink frequency
H	Polarity - H, L
27500	Symbol rate
// ARD...	Comment; following the "double slash" comments can be entered.

—> With this sequence the LNB settings of one tuner of one cassette are predefined. The order of the cassettes is defined by the order of the hardware IP addresses which are assigned to the cassettes manually (page 25).
Tuner A receiving cassette 1, tuner B receiving cassette 1, tuner A receiving cassette 2, tuner B receiving cassette 2, etc.

—> A DiSEqC controlled multi switch can be controlled by "SAT configuration" and "Polarity". The control voltage which is present at the antenna input is not suitable as power supply of the switch.
Use an external power supply.

I 1,0x6DCA,0,AC3,EIT,10.2,"ARD" // ARD

I	Identifier for IP address
1	Output IP address (fourth number) e.g. 227.40.50.**1**
,	**Commas are the separators between the items**
0x6DCA	Service ID (SID); can be entered in hexadecimal or decimal (28106) value. —> You can find the SIDs of the stations whished e.g. in the internet.
0	Audio PID, 0=all, 1=1st audio,...
AC3	AC3 flag
EIT	EIT flag
10.2	fixed data rate in MB
"ARD"	Individual station name

—> **The order of the first three settings is mandatory**

IP-Adresse , Service-ID , Audio-PID ,

from the example: I 1 , 0x6DCA , 0 ,

From the fourth setting on (behind the 3rd comma) the order is flexible!

—> AC3 and EIT are so called "Flags" (software switches), which set certain PIDs.

Possible Flags are:

AC3	—> AC3 tone
NOAC3	—> No AC3 tone
TXT	—> Teletext
SUB	—> DVB subtitle
EIT	—> Event Information Table, included information about the service (e.g. start time, duration, scrambling etc.).
NONE	—> suppresses other PIDs
ALL	—> passes through all PIDs
CA	—> Service shall be descrambled.
"text"	—> individual station name

—> If no flags are set, all PIDs and EIT are passed through.

—> **With the following sequence, for example, the same flags for all services of the hole table can be set:**

F TXT,AC3

F	—> Identifier for flag setting
TXT	—> Teletext
,	**Commas are the separators between the items**
AC3	—> AC3 tone

—> These flags are set for all services after this sequence, for which flags are not set individually, - until other flags are set with a new flag setting sequence.

Programming for the transmitting cassettes PSPT/Q 1000

O 474,0x0001,0x0100 (PSPT 1000)
O 474,0x0001,0x0100,6900,256 (PSPQ 1000)

O	Identifier for output settings.
474	Output frequency (e.g. 474.00 MHz).
,	**Commas are the separators between the items**
0x0001	Transport stream ID
0x0100	ORGNET-ID
6900	Symbol rate 1000...7500 (PSPQ 1000)
256	QAM modulation 64/256 (PSPQ 1000)

—> With this sequence the settings of one modulator of one cassette are predefined. The order of the cassettes is defined by the order of the hardware IP addresses which are assigned to the cassettes manually. Modulator A transmitting cassette 1, modulator B transmitting cassette 1, modulator A transmitting cassette 2, modulator B transmitting cassette 2, etc.

I 1,2

I	Identifier for IP address
1	Input IP address (fourth number) e.g. 227.40.50.**1**
,	**Commas are the separators between the items**
2	LCN; **L**ogical **C**hannel **N**umber

—> Because of a more easily explanation the digits 1 and 2 are used in this example. In order to retain an overview, we recommend to use the same digit for the IP address as well as the station number (e.g. I 1,1).

5.4 Uploading the station tables to the cassettes

To upload the station tables to the cassettes the software "HotelTransponder.exe" is needed. It can be downloaded from:
http://212.20.172.90/Kopfstation/CD/Software/Hotel/HotelTransponder.exe

—> Your PC must be connected to the cassettes via LAN (within the same IP address range as used for connecting the cassettes, page 25).

- Store the text file, for example, under the name "config.txt".
- Start the software "HotelTransponder.exe" by using the following string in the command line:

HotelTransponder.exe config.txt 1 60000 –O

HotelTransponder.exe	starts the software
config.txt	selects the text file
1	sets the default receiving table (for example table 1; the first table in the text file).
60000	sets the port. This port must be identical with the port set in the UDP port setting (page 27).
–O	textfile is also uploaded to the transmitter cassettes. If the text file shall be uploaded only to the receiver cassettes, "-O" must not be used in the string.

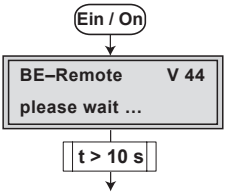
—> The software starts and loads the station tables included in the text file to the corresponding cassettes.
—> The order of the cassettes is defined by the order of the hardware IP addresses which are assigned to the cassettes manually.

5.5 Programming the cassette

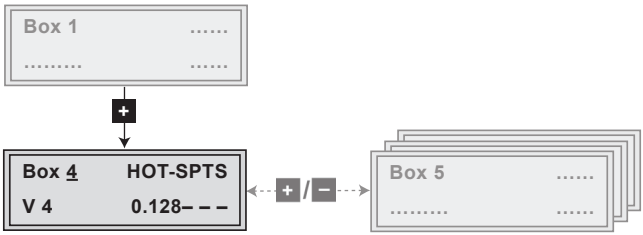
—> Pressing the **MODE** button for longer than 2 seconds cancels the programming procedure. This takes you back to the program item "Selecting the cassette" from any menu. Any entries that have not been saved are reset to the previous settings.
—> Entries in the menus can be saved by pressing the **M** key. You are taken back to the "Selecting the cassette" menu item.
—> Pressing the **AUDIO** button returns to the previous menus.

- Switch on the head-end station

—> The display shows the software version (e.g. V 44)
—> The processor reads the cassettes' data (approx. 10 seconds).



Selecting the cassette



- 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 HOT-SPTS**":

"**Box 4**"	stands for slot 4,
"**HOT-SPTS**"	type of cassette
"**V 4**"	software version of the cassette
192.168."**0.128**"	hardware IP address of the cassette

- Press the **MODE** button.

—> The "Selecting the station table" – "**LOCATION**" ("virtual station tables" is activated) or "Setting the Ethernet parameters" – "**ETHERNET**" ("virtual station tables" is **not** activated) menu is activated.

Selecting the station table

In this menu you select the receiving station table (LOCATION) from the text file e.g. "config.txt" to be used.

```
Bx 4        LOCATION
---
```

—> Instead of "–" the name of the table "Name 1" of the 1st receiving table from the text file is shown.

- Use the **+**/**-** buttons to select the receiving table wished.

- 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 hardware IP address of the cassette" – menu "**IP-ADDR**" is activated.

SETTING THE HARDWARE IP ADDRESS OF THE CASSETTE

—> **Two IP address ranges are used:**

– **"Hardware" IP addresses (menu ETHERNET), which are used to connect the cassettes in the network (e.g. 192.168.0.x).**

– **"IPTV" IP addresses (menu IP-OUT), which are used to send and receive the IPTV channels (e.g. 227.40.50.x). These IP addresses must be within the "multicast" range from 224.5.0.0 to 231.255.255.255.**

To operate the cassette in a network, an IP address must be assigned to each IPTV cassette. If a manually setting of the Ethernet parameters is selected, 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 DHCP server, e.g. "192.168. 0.128*". The star " * " in the display means that the data is provided by a DHCP server. If no server is connected, " **0. 0. 0. 0**" appears in the corresponding menu.

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 address of a gateway (server/router) 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 text file with the station tables can not be uploaded via port 60000 (default). The port set must match to the port for uploading the text file (page 18).

```
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 menu
– "Stuffing the data rate" – "**DATAMODE**" ("virtual station tables" is activated, continue on page 38) **or**
– "Selecting the input data stream" – "**INPUT**" ("virtual station tables" is **not** activated) is activated.

Selecting the input data stream

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

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

- Press the + / - buttons to select the signal source of the input data stream ("**Tuner A**", "**Tuner B**").

—> "**OK**" indicates that a transponder is received. If there is no input signal available "– –" is displayed instead of "**OK**".

—> Press the **MODE** button to skip the settings of the input parameters. The "Setting the output parameters" – "**IP-OUT 1**" menu is activated (page 31).

- Press the ► button.

—> The "Setting the LNB oscillator frequency" – "**LNB**" menu is activated.

Setting the LNB oscillator frequency

Set the oscillator frequency of the LNB used in this menu.

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

- Using the **MULTI** button the oscillator frequencies "**10600**" or "**9750**" can be selected directly.
- To set other oscillator frequencies use the ◄/► buttons to place the cursor under the digit of the oscillator frequency displayed to be set.
- Press **+**/**-** to enter the respective digit of the oscillator frequency of the LNB used.
- Repeat the procedure by the quantity of the digits to be set.

- Press the **MODE** button.

—> The "Setting the input symbol rate, setting the DVB mode" – "**SYMBOL**" menu is activated.

Setting the input symbol rate

Setting the DVB mode

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.
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
```

Setting the input symbol rate

- Using the **MULTI** button the symbol rates **27500**" or "**22000**" can be selected directly.
- To set other symbol rates use the ◄/► buttons to position the cursor under the digit of the symbol rate displayed to be set.
- Press **+**/**-** to enter the respective digit of the symbol rate needed.
- Repeat the procedure by the quantity of the digits to be set.

Setting the DVB mode

- 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 "Setting the input frequency" – "**FREQ**" menu is activated.

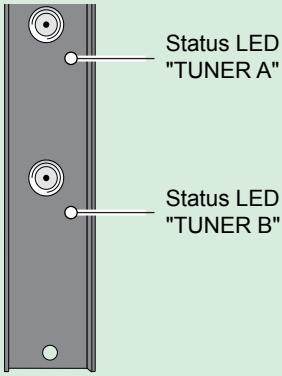
SETTING THE INPUT FREQUENCY

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.
Once the RF receiver has synchronised to the input signal, any offset to the target frequency is displayed in MHz, e.g. "**– 1.8**".
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
1183<u>6</u>	-1.8	CN 12

- Use the ◄/► buttons to position the cursor under the digit of the frequency displayed to be set.
- Press **+**/**-** to set the input frequency.
- Set the frequency offset shown in the display (e.g. "**– 1.8**") to less than 1 MHz by varying the input frequency using the **+**/**-** buttons.

—> The "**CN 12**" display indicates the signal to noise ratio of the signal received.
—> The quality of the received transport stream (level and C/N) is indicated by a status LED.
—> If the LED lights yellow the SAT IF input level and the signal to noise ratio must be tested.



LED indicator	Indication
Green	Signal quality is good
Yellow	Signal quality is insufficient
Red	No signal

- Press the **MODE** button.

Selection Tuner A and CA module installed:
—> The "Setting the PID monitoring" – "**CA_PID-Check**" menu is activated (page 41).

Selection Tuner B or Tuner A without CA module:
—> The "Selecting the input data stream" – "**INPUT**" menu is activated (page 27).
—> If necessary set the input parameters of the further input signal sources.

- Press the **MODE** button.

—> The "Setting the output parameters" – "**IP-OUT 1**" menu is activated.

Setting the output parameters

In this menu you select the IP output, for which you would like to set the output parameters in the submenus.

Bx 4	IP-OUT 1
off	=>

- Press the **+**/**-** buttons to select the IP output to be set ("**IP-OUT 1**" … "**IP-OUT 12**").

—> In the second line of the display the service is indicated allocated to the IP output (e.g. "**Das Erste**"). If "**off**" is shown, the output is deactivated.

—> To skip the settings of the output parameters press the **MODE** button. The "Stuffing the output data rate" – "**DATAMODE**" menu is activated.

- Press the ▶ button.

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

Setting the IP addresses for the outputs

In this menu you set the IP address for the IP output selected.

—> **"IPTV" IP addresses (menu IP-OUT), which are used to send and receive the IPTV channels (e.g. 227.40.50.x) must be within the "multicast" range from 224.5.0.0 to 231.255.255.255.**

The software allows to allocate the IP addresses to the further outputs automatically in ascending order.

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

If an already used IP address (in the cassette) is selected, 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.   1
```

Allocating IP addresses to the outputs 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 the outputs automatically

- Pressing the **MULTI** button the following outputs are allocated 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 "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.

```
IP 1      MODE / PORT
off    UDP       _1234
```

Switching the IP address off or on

- Press the **+**/**-** buttons to switch off ("**off**") or ("**on**") the IP address and the service referred.

```
Bx 4          IP-OUT 1
off                  =>
```

Selecting the transmission protocol

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

"**UDP**"– The User Datagram Protocol is for the connectionless transmission of data without acknowledgement from the receiver.

"**RTP**" – The Real-time Transport Protocol additional transmits time informations for runtime error correction at receiver side.

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.

Copying the settings to all IP outputs

- Pressing the **MULTI** button the settings can be copied to the IP autputs following from the selected on.

—> The display shows "**copy**" for a short time.

- Press the **MODE** button.

—> The "Defining the quantity of data packets, setting the forward error correction, 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 additional redundant data are transmitted, so that the addressee can correct transmission errors.

```
IP 1        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 "**7**" results the smallest overhead.

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
```

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 outputs

- Pressing the **MULTI** button the settings "Quantity of the data packets", Forward error correction" and "Transmission channel" can be copied to all IP outputs.

—> The display shows "**copy**" for a short time.

- Press the **MODE** button.

—> The "Setting the output data rate" – "**DATARATE**" menu is activated.

SETTING THE OUTPUT DATA RATE

In this menu you can set the output data rate of each IP output optionally to automatic (auto) or to a fixed value.

```
IP 1          DATARATE
( 7.3)  >   !  10.0 MB
```

—> The sum of the output data rates of all IP outputs must not exceed 80 Mbps (100-BASE-T interface).

The current needed data rate is shown on the left side in parentheses (e.g. 7.3 MBits). This indication is dropped at setting "auto".

- Use the ◄/► buttons to position the cursor under the digit of the data rate displayed to be set.
- Using the **+**/**-** buttons set the desired data rate.

—> **Indication ">"**: Current needed data rate of this IP output is higher than the data rate set (overflow).
Indication "!": The sum of all output data rates set is higher than 80 MBits.

- Press the **MODE** button.

—> The "Allocating services manually" menu is activated.

Allocating services manually

In this menu all services (programmes) supplied via "**Tuner A**" and "**Tuner B**" 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.
"**HD**"	HD reception.
" * "	The star means that the TV or radio station selected is scrambled. 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 output, 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.

- 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 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, 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 services (AC3 – AC3 sound, TXT – Teletext, SUB – subtitle, EIT – Event Information Table) can be activated or deactivated.

```
Bx 4          OPTIONS
ac3  txt   sub   eit
```

- Use the **◄**/**►** buttons to position the cursor under the transmission option to be activated or deactivated.
- Using the **+**/**-** buttons activate ("**AC3**", "**TXT**", "**SUB**", "**EIT**") or deactivate ("**ac3**", "**txt**", "**sub**", "**eit**") the transmission option wished.

—> Activated options are shown with capital letters, deactivated with small letters.

Copying the settings to all IP outputs

- Pressing the **MULTI** button the settings can be copied to all IP outputs.

—> The display shows "**copy**" for a short time.

- Press the **MODE** button.

—> The "Setting the output parameters" – "**IP-OUT 1**" menu is activated (page 31).

- Repeat the settings until all outputs are set.

- Press the **MODE** button.

—> The "Stuffing the output data rate" – "**DATAMODE**" menu is activated.

STUFFING THE OUTPUT DATA RATE

In this menu it is to set, whether the current output data rate remains "unmodified" or whether it is stuffed to a "constant" value. This value is a little bit higher than the current "maximum" output data rate and will be customized is necessary.

```
Bx 4        DATAMODE
constant
```

- Using the **+** / **-** buttons select the data mode whished.

- Press the **MODE** button.

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

Displaying the output data rate

In this menu the current data rate is displayed.

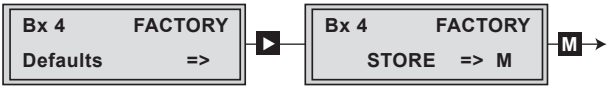
```
Bx 4        DATARATE
72.956 Mbps
```

- 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.



- Press the ▶ button.

—> The submenu "**FACTORY STORE**" is invoked.
—> By pressing the **MODE** button, you will be returned to the menu item "Selecting the station table" – "**LOCATION**" ("virtual station tables" is activated) or "Setting the Ethernet parameters" – "**ETHERNET**" ("virtual station tables" is **not** activated) **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 23).
—> By pressing the **MODE** button, you will be returned to the menu item "Selecting the station table" – "**LOCATION**" ("virtual station tables" is activated) or "Setting the Ethernet parameters" – "**ETHERNET**" ("virtual station tables" is **not** activated) **without** saving the factory defaults (page 24).

Saving settings

- Press the **M** button.

—> Back to "Selecting the cassette" (page 23).
—> The settings are saved.

Operation with a CA module

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.

Setting the PID monitoring

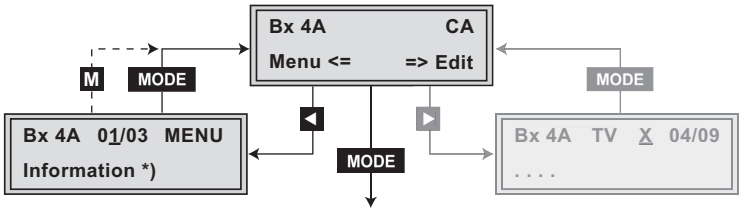
The factory default of the PID monitoring is switched on.
If particular PIDs are not descrambled the CA module is reset. If disturbances occur (CA module is reset continually), the PID monitoring can be switched off.

- 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.



—> 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 27).

- 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:

"**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 submenu desired.
- Press the ► button to activate the submenu.
- To set the CA module use the ◄ / ► and + / - buttons.
- Press the ◄ button to leave the submenu.
- Press the **MODE** button to return to the "Configuring the CA module" – "**CA**" menu.

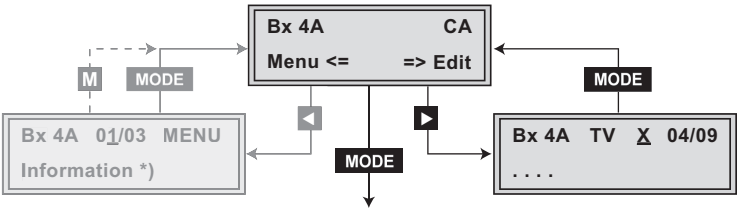
- Press the ► button.

—> 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)
"**HD**"	HD reception.
"**0**"	The currently selected service remains unchanged.

- Use the ◄/► buttons to call up the services in sequential order which are to be descrambled, then use +/- to descramble ("**X**") or to remain unchanged ("**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.

Bx 4A	CA
Menu <=	=> Edit

- Press the **MODE** button.

—> The "Selecting the input data stream" – "**INPUT**" menu is activated (page 27).

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).

GSS	Konformitätserklärung Declaration of Conformity 088/ 13	CE

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 HDTV Converter to IP DVB-S2 to SPTS**

Type / Model / Type — **GSS PHIS 1000 S**

Bestell-Nr. / Order-No. — **GAP 3400**

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

EN 50083-2:	*2012*	*EN 60065:*	*2002*
ETSI EN 300386 :	*2010*	*EN 60065 + A1:*	*2006*
EN 50581 :	*2012*	*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

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