Assembly Instructions

English

Grundig SAT Systems

Head-End Modulator FM
2xSAT+ASI to 12xFM

HDTV 1000 FM

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 IEC/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".**

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 FM
1 Brief assembly instructions
2 HF cables

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 (see page 30).

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

HF Input

Frequency range ..... 925 ... 2150 MHz
Level range ..... 60 dBµV ... 80 dBµV
Input impedance ..... 75 Ω
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

HF output

Frequency range ..... 87.50 MHz ... 108.00 MHz
Tuning steps ..... 50 kHz
Type of modulation ..... FM
Return loss ..... 8 dB
Output level ..... 93 dBµV
Signal-to-harmonics ratio ..... >60 dB

Output impedance ..... 75 Ω
External voltage difference
Mono ..... 66 dB
Stereo ..... 53 dB
Non-linear distortion factor
Mono 0,06%
Stereo 0,6%
Overall output frequency deviation ..... 75 kHz

FM modulator

Number of available services (programme locations) 12
RDS signal processing ..... 57 kHz
Pilot signal ..... 19 kHz
Preemphasis ..... 50 µs

ASI-Schnittstelle

Standard ..... DIN EN 50083-9
Format ..... MPEG ISO IEC 13818-1
Impedance ..... 75 Ω
User data rate ..... 2 ... 90 Mbit/s
Level ..... 800 mV_{PP}
Return loss ..... > 17 dB (5 ... 270 MHz)

Anschlüsse

SAT inputs ..... 2 F-Buchsen
HF output ..... 1 IEC-Buchse
ASI input ..... 1 BNC-Buchse
Connection strip 10-pin
For supply voltages and control circuits
Update interface ..... Buchse RS 232
Common Interface 1
Several channels can be descrambled

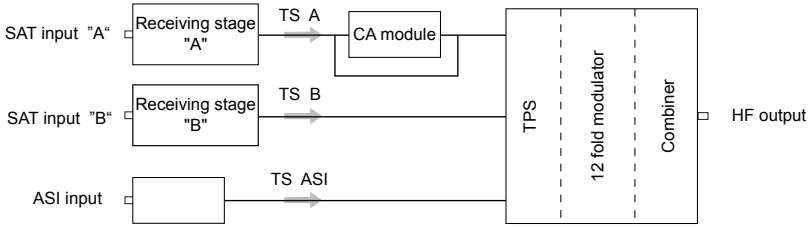
Remote maintenance

Remotely controllable (via PSW 1000*): ..... yes
Remote update (via BEflash*): ..... yes
(* and a corresponding management unit)

2.4 Description

The cassette converts 12 stereo audio channels from two DVB-S /DVB-S2 standard modulated transponders and the ASI input signal into 12 FM modulated stereo output channels.
The RDS station code is automatically taken from the station name of the transponder or can be entered manually.
Via SAT input A and a corresponding CA module scrambled channels can be descrambled.

Principle signal path:



The cassette is controlled with the head-end station control unit.
Two LEDs indicate by their colour the quality of the input signals (see figure on page 10).

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

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".

The cassette is designed for use in head-end stations of the standard line.

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

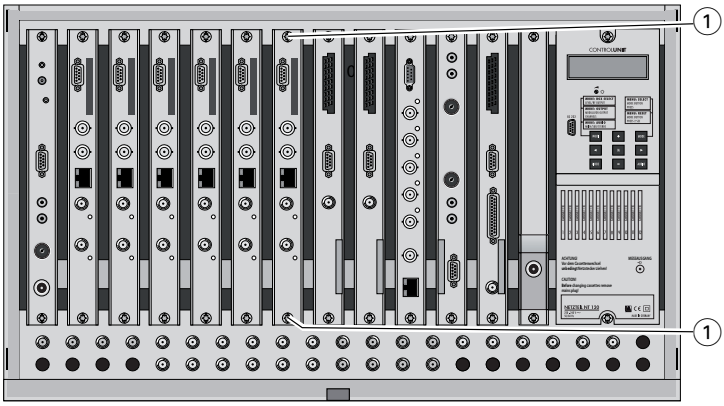
After activating the cassette the software version of the cassette is displayed (see page 15).

3 Assembly

3.1 Installing the cassette

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

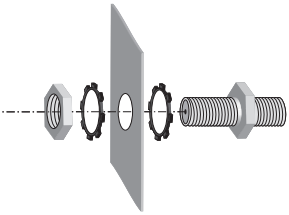
- Remove the fastening screws (1) of an unoccupied slot from the bracket of the head-end station.
- Insert the cassette in this slot and push it into the housing.
- Align the cassette and apply slight pressure to connect it to the connections of the board and the HF bus bar.
- Fasten the cassette with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



3.2 EMC REGULATIONS

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

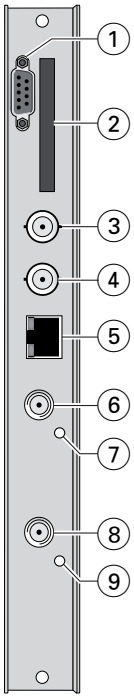
The attenuation of shielding of the connection lines for ASI and antenna must meet the requirements for "Class A".



- 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. not used
4. ASI input
5. not used
6. SAT input (tuner "**A**")
7. Status LED of input "**A**"
8. SAT input (tuner "**B**")
9. Status LED of input "**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***".

3.4 Connecting the cassette

- Connect the SAT input sockets "A" (tuner "A") and "B" (tuner "B") to the corresponding output sockets of the input distributor.
  Use a 6dB attenuator for a direct connection without the input distributor.
- Connect the ASI socket.
- Connect the head-end station to the mains.

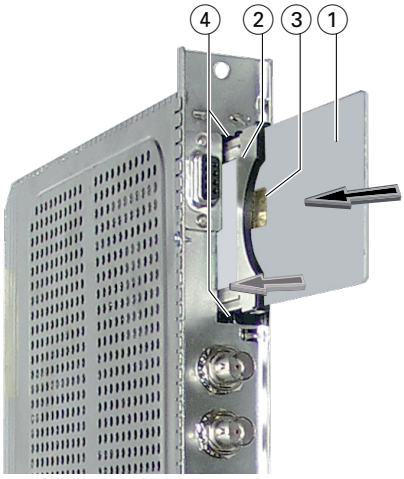
3.5 Retrofitting a CA module

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

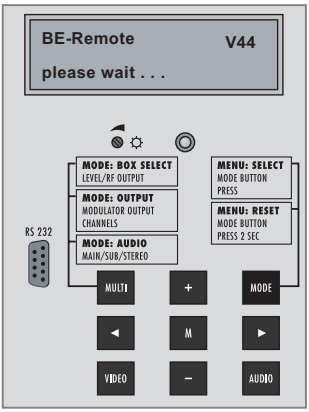


4 The control panel at a glance

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:

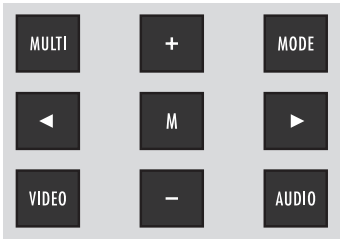
- Input parameters
- Deleting services (programme locations)
- Output parameters
- Output level
- Factory reset



4.2 Control panel

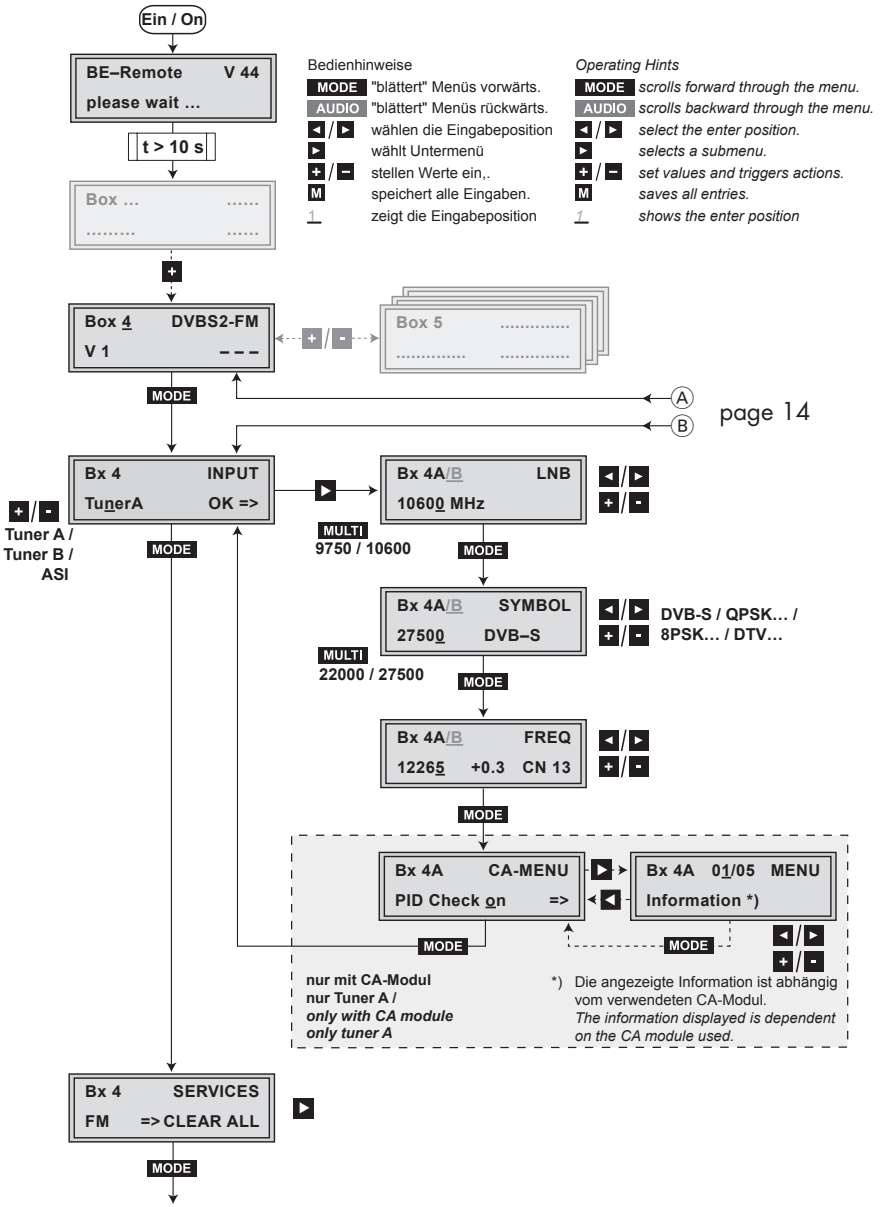
The key pad on the head-end station is used to scroll through the menus:

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



5 Programming

5.1 Programming procedure

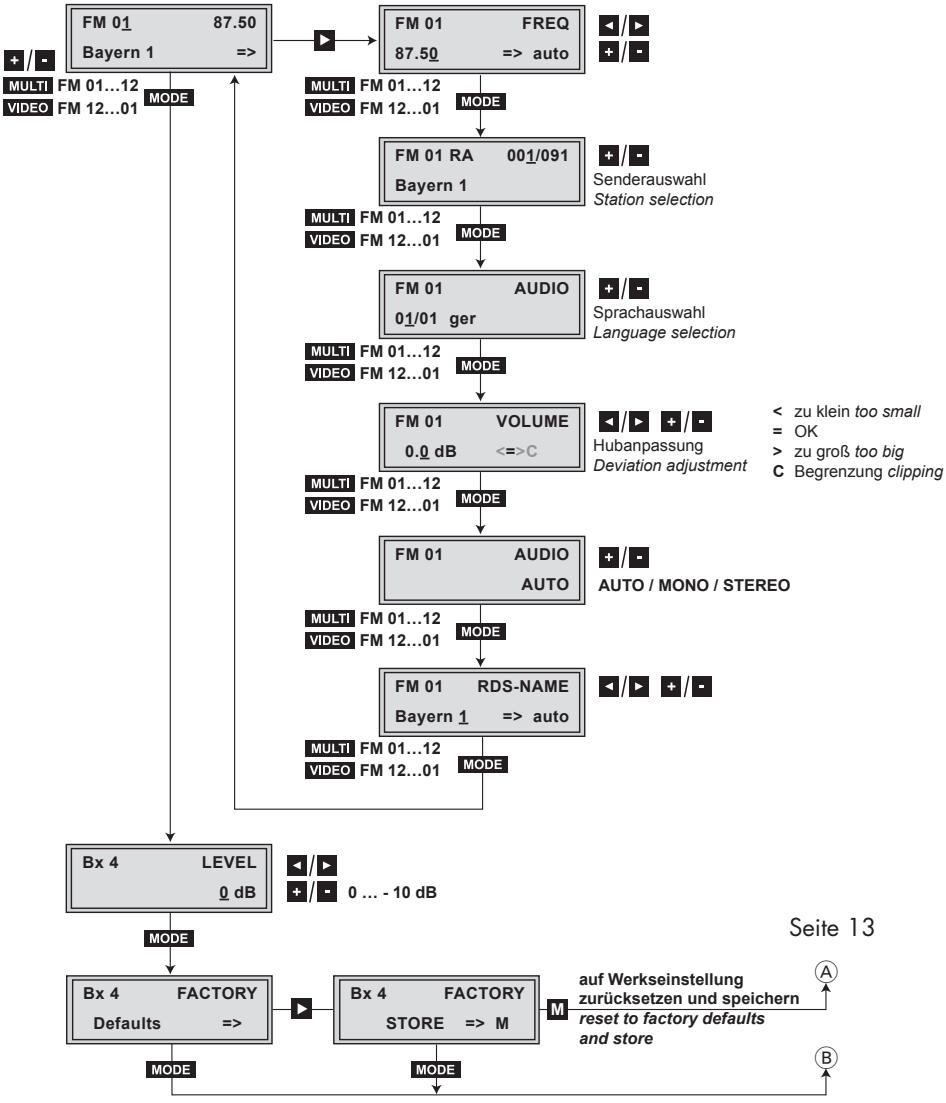


Bedienhinweise

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

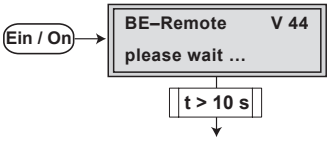
Operating Hints

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*


FM 01 87.50
Bayern 1 =>
+/-
MULTI FM 01…12
VIDEO FM 12…01
MODE
FM 01 FREQ
87.50 => auto
◄/►
+/-
FM 01 RA 001/091
Bayern 1
Senderauswahl
Station selection
FM 01 AUDIO
01/01 ger
Sprachauswahl
Language selection
FM 01 VOLUME
0.0 dB <=>C
Hubanpassung
Deviation adjustment
< zu klein too small
= OK
> zu groß too big
C Begrenzung clipping
FM 01 AUDIO
AUTO
AUTO / MONO / STEREO
FM 01 RDS-NAME
Bayern 1 => auto
Bx 4 LEVEL
0 dB
0 … - 10 dB
Bx 4 FACTORY
Defaults =>
Bx 4 FACTORY
STORE => M
M
auf Werkseinstellung zurücksetzen und speichern
reset to factory defaults and store
A
B

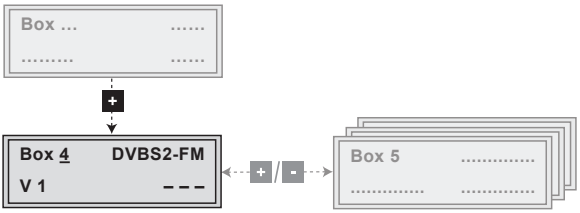
—> Pressing the **MODE** button for longer than 2 seconds cancels the programming procedure. This takes you back to the program item "Selecting the cassette" from any menu. Any entries that have not been saved are reset to the previous settings.
—> Entries in the menus can be saved by pressing the **M** 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 DVBS2-FM**":

"**Box 4**"	stands for slot 4,
"**DVBS2-FM**"	type of cassette
"**V 1**"	software version of the cassette

- Press the **MODE** button.

—> The "Input parameters" – "**INPUT**" main menu is activated.

Input parameters

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

—> The indication "**OK**" serve for information:
OK - input signal is present at tuner A.

- Use the **+**/**-** buttons to select the input ("**Tuner A**" / "**Tuner B**" / "**ASI**"), for which you would like to set the input parameters.

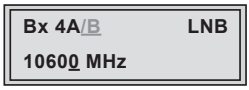
—> There are no input parameter settings for the **ASI input**. Select "ASI", in order to check whether a ASI input signal is present ("OK" is displayed).
—> To skip the settings of the input parameters press the **MODE** button. The "Delete programme locations" – "**SERVICES**" main menu is activated (page 21).

- Press the **►** button.

—> The "LNB oscillator frequency" – "**LNB**" submenu is activated.

LNB oscillator frequency

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



- 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 "Input symbol rate, DVB mode" – "**SYMBOL**" menu is activated.

INPUT SYMBOL RATE

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 manually to shorten the time for searching stations.

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.

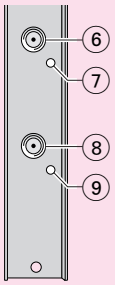
SETTING THE INPUT FREQUENCY

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 HF receiver has synchronised to the input signal, any offset to the target frequency is displayed in MHz, e.g. "**+0.3**".
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.

- 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. "**+ 1.3**") to less than 1.0 MHz by varying the input frequency using the + / - buttons.

—> The "**CN 13**" display indicates the signal to noise ratio of the signal received.

—> If stations are selected, the quality of the received transport stream (level and C/N) is indicated by a status LED.



(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

- Press the MODE button.

—> Using **a CA-Modul**, submenu "CA settings" – "**CA-MENU**" is activated.

—> **Not** using a **CA-Modul** you will be returned to the "Input parameter" – "**INPUT**" main menu (page 16).

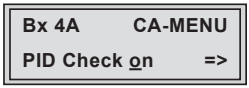
Operation with a CA module

In order to descramble scrambled channels, a corresponding CA module is needed.

PID monitoring

CA module

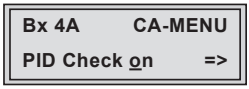
In this menu you can switch off the PID monitoring and configuring the CA module (dependent on the CA module).



PID monitoring

By default the PID monitoring is switched on.

If particular PIDs are not descrambled the CI module is reset. Additionally dropouts may occur if several stations are descrambled. To prevent this the PID monitoring can be switched off.

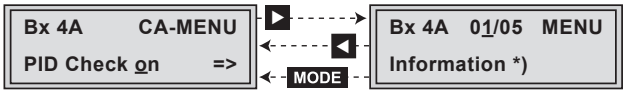


- Use the **+**/**-** buttons to switch "**off**" or "**on**" the PID monitoring.

Configuring the CA module

- Use the ▶ button to activate the menu of 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.



—> The display shows e.g.: **Bx 4 01/05 MENU Information**

Meaning of the indicators:

"**Bx 4**"	Slot 4
"**01/05**"	The first of five 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 "PID monitoring" – "**CA**" main menu.

—> By pressing the MODE button you can cancel the settings in the menu of the CA module and are returned to the "PID monitoring" – "**CA**" main menu.

- Press the MODE button.

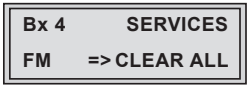
—> You will be returned to the "Input parameter" – "**INPUT**" main menu (page 16).

- Press the MODE button.

—> The menu "Delete programme locations" – "**SERVICES**" is activated.

DELETE PROGRAMME LOCATIONS

In this menu you can delete the programme locations preset in the factory resp. "old" programme locations (e.g. if the input parameter setting was changed).



- Delete the programme locations using the ▶ button.

—> All programme locations are deleted, the stored FM frequencies will be remain.
As long as no radio station is assigned to a programme location, the transmitter is switched off.

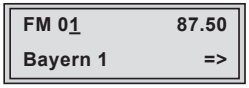
—> A "Factory Reset" resets to the programme locations preset in the factory.

- Press the **MODE** button.

—> The "Output parameters" – "**FM 01**" menu is activated.

SUBMENUS OUTPUT PARAMETERS

In this menu the programme locations of the 12 FM transmitters together with its transmitting frequencies are displayed. In addition you have access to the submenus to set the output parameters of the 12 Services (programme locations).



Programme locations:

—> The Display shows e.g.: **FM 01 87.50**
Bayern 1

Meaning of the indicators:

"**FM 01**"	Programme location FM 01
"**87.50**"	Transmitting frequency in MHz
"**Bayern 1**"	Channel name of the channel set to this programme location.
"**=>**"	Access to the submenus for the output parameters "Output frequency", "channel selection", "Language selection", "Kind of transmission" and "RDS" via button ▶

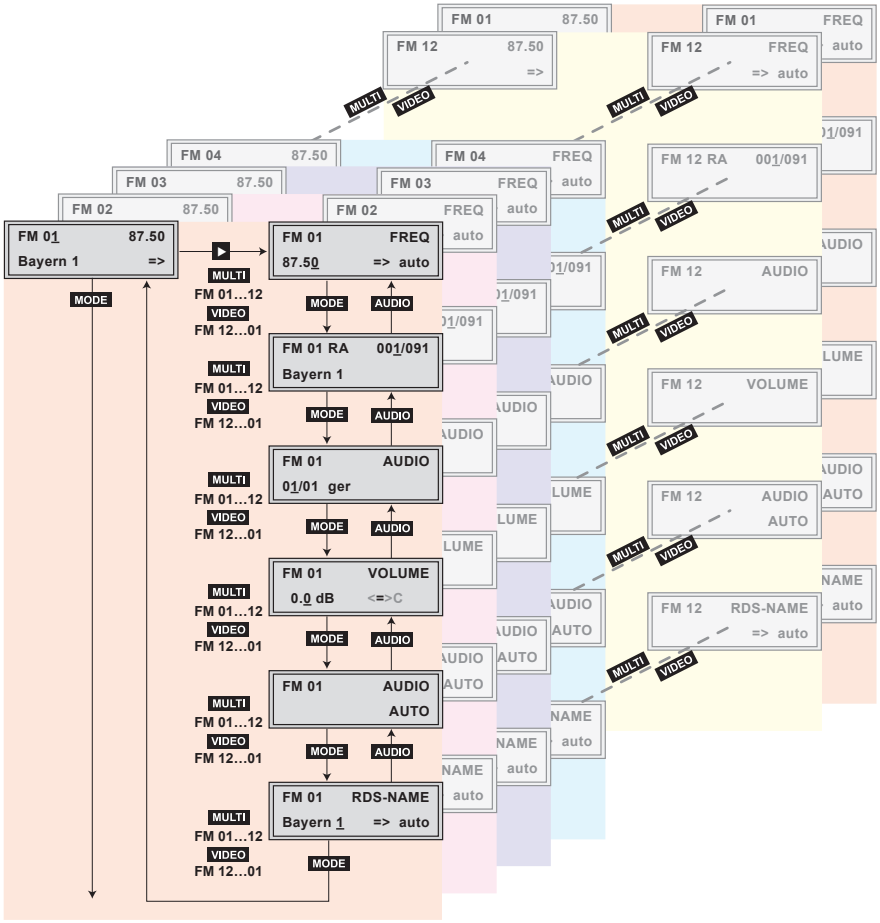
- Select the programme locations in ascending order via buttons **+** or **MULTI**, in descending order via buttons **-** or **VIDEO**.

Output parameters:

—> In order to skip the output parameter settings press button **MODE**. The "Output level" – "**LEVEL**" menu os activated (page 27).

The output parameter settings are to be done for each of the 12 programme locations.
The programme location is displayed in the upper left corner – e.g. FM 01 means programme location 01.

In every submenu it is possible to rotate through the 12 programme locations using buttons **MULTI** (ascending) and **VIDEO** (descending).
Navigation between the submenus is possible via buttons **MODE** (next menu) and **AUDIO** (previous menu).

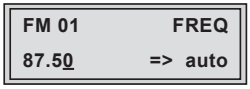


- Press the ▶ button.

—> Submenu "Output frequency" – "**FREQ**" is activated.

Output frequency

In this submenu set the output frequencies of the programme locations.



- 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.

—> Via the "auto" function it is possible to set the output frequencies of the following programme locations automatically in 300 kHz steps - from the displayed programme location on.

"auto" function:

- Press the ► button.

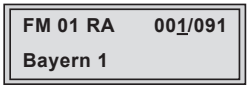
—> The output frequencies of the following programme locations are set automatically.

- Press the **MODE** button.

—> The "Channel selection" – "**001/xxx**" submenu is activated.

Channel selection

In this menu you assign which of the channels available (via tuner A, tuner B and ASI) is transmitted via the corresponding programme location.

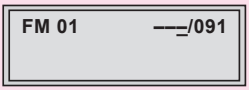


Meaning of the indicators:

"**FM 01**"	Programme location FM 01
"**RA**"	Radio channel
"**001/091**"	Channel 1 of 91
"**Bayern 1**"	Programme name of channel 1.

- Use the **+**/**-** buttons to select the channel wished.

—> To switch off the modulator of a programme location the channel selection must be set to "000". —> Indication



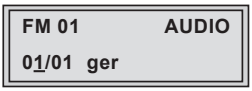
As long as no radio station is assigned to a programme location, the transmitter is switched off.

- Press the **MODE** button.

—> The "Language selection" – "**AUDIO**" submenu is activated.

LANGUAGE SELECTION

If more than one languages are available, in this submenu select the language wished (e.g. language 1 of 1 - German).



- Use the **+**/**-** buttons to select the language wished.

- Press the **MODE** button.

—> The "Frequency deviation adjustment" – "**VOLUME**" submenu is activated.

FREQUENCY DEVIATION ADJUSTMENT

In this submenu you can adjust the deviation. This has effects for the volume.

- With buttons **+**/**-** adjust the frequency deviation in 0.1 dB steps.

Meaning of the indicators:

"**<**" Frequency deviation too small
"**=**" Frequency deviation OK
"**>**" Frequency deviation too big
"**C**" Frequency deviation much too big - signal is clipping.

- Press the **MODE** button.

—> The "Kind of transmission" – "**AUDIO**" submenu is activated.

KIND OF TRANSMISSION

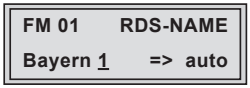
In this submenu the kind of transmission can be set (stereo/mono/automatic).

- Use the **+**/**-** buttons to select the kind of transmission wished.
- Press the **MODE** button.

—> The "RDS" – "**RDS-NAME**" submenu is activated.

RDS

In this submenu you can enter the RDS "Programme Service Name" (PS).



- Use the **◄**/**►** buttons to position the cursor under the digit of the name to be set.
- Press **+**/**-** to set the respective digit of the name.

—> Via the "auto" function you can adopt the RDS Programme Service Name automatically from the channel name of the transponder.

"auto" function:

- Press the ▶ button.

—> The RDS Programme Service Name will be adopted automatically from the channel name of the transponder.

- Press the **MODE** button.

—> You will be returned to the "Programme location" - "**FM 01**" main menu.
—> If necessary adjust another programme locations **+**/**-** —> ▶.

- Press the **MODE** button.

—> The "Output level" – "**LEVEL**" main menu is activated.

OUTPUT LEVEL

In this menu the output level can be adjusted (0 … -10 dB).

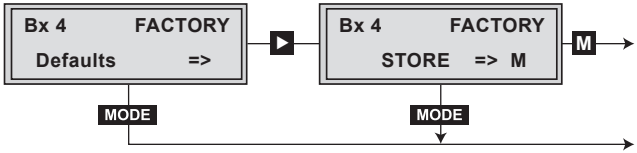
- With the **+**/**-** buttons adjust the output level wished.

- Press the **MODE** button.

—> The "Factory reset" – "**FACTORY**" main 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 "Input parameters" – "**INPUT**" **without** invoking the factory defaults (page 16).

- Press the **M** button.

—> The factory defaults are saved. The display shows "STORE"
—> Back to "Selecting the cassette" (page 15).
—> By pressing the **MODE** button, you will be returned to the menu item "Input parameters" – "**INPUT**" **without** invoking the factory defaults (page 16).

SAVING SETTINGS

- Press the **M** button.

—> Back to "Selecting the cassette" (page 15).
—> The settings are saved.

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).

Declaration of CE conformity

GSS	**Konformitätserklärung** **Declaration of Conformity / Déclaration de Conformité** **001/ 11**	CE

Der Hersteller/Importeur The manufacturer/importer Le producteur/importateur	**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: / déclare, que le produit:

Bezeichnung / Name / Description	**Head-End Modulator FM**
Type / Model / Type	**GSS HDTV 1000 FM**
Bestell-Nr. / Order-No. / Nº de réf.	**GAS 3900**

folgenden Normen entspricht:
is in accordance with the following specifications: / correspond aux normes suivantes:

EN 50083-2:	***2006***
EN 60065 :	***2002***
EN 60065 + A1 :	***2006***
EN 60065 + A11 :	***2008***

Das Produkt erfüllt somit die Forderungen folgender EG-Richtlinien:
Therefore the product fulfils the demands of the following EC-Directives:
Le produit satisfait ainsi aux conditions des directives suivantes de la CE:

2006/95/EG	**Richtlinie betreffend elektrische Betriebsmittel zur Verwendung innerhalb bestimmter Spannungsgrenzen** **Directive relating to electrical equipment designed for use within certain voltage limits** **Directive relatives au matériel électrique destiné à être employé dans certaines limites de tension**
2004/108/EG	**Richtlinie über die elektromagnetische Verträglichkeit** **Directive relating to electromagnetic compatibility** **Directive relatives à la compatibilité électromagnétique**

Nürnberg, 8. Februar 2011

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