

Plena Message Manager



Security Systems

en | Installation and Operating Manual
LBB 1965

BOSCH

Important safeguards

- 1 Read instructions - All the safety instructions for use should be read before the system is operated.
- 2 Retain instructions - The safety instructions and instructions for use should be retained for future reference.
- 3 Heed warnings - All warnings on the unit and in the operating instructions should be adhered to.
- 4 Follow instructions - All operating instructions and instructions for use should be followed.
- 5 Cleaning - Unplug system units from the mains outlet before cleaning. Do not use liquid cleaners or aerosol cleaners. Use a damp cloth for cleaning.
- 6 Attachments - Do not use attachments not recommended by the product manufacturer as they may cause hazards.
- 7 Water and Moisture - Do not use this unit near water, for example near a bathtub, washbowl, kitchen sink, or laundry basket, in a wet basement, near a swimming pool, in an unprotected outdoor installation or any area which is classified as a wet location.
- 8 Accessories - Do not place this unit on an unstable stand, tripod, bracket or mount. This unit may fall, causing serious injury to a person and serious damage to the unit. Use only a stand, tripod, bracket or mount recommended by the manufacturer, or sold with the product. Any mounting of the unit should follow the manufacturer's instructions, and should use a mounting accessory recommended by the manufacturer. An appliance and cart combination should be moved with care. Quick stops, excessive force, and uneven surfaces may cause the appliance and cart combination to overturn.
- 9 Ventilation - Openings in the enclosure, if any, are provided for ventilation and to ensure reliable operation of the unit and to protect it from overheating. These openings must not be blocked or covered. The unit should not be placed in a built-in installation unless proper ventilation is provided or the manufacturer's instructions have been adhered to.
- 10 Power sources - Units should be operated only from the type of power source indicated on the marking label. If you are not sure of the type of power supply you plan to use, consult your appliance dealer or local power company. For units intended to operate from battery power, or other sources, refer to the "Installation and User Instructions".
- 11 Grounding or polarisation - This unit may be equipped with a polarised alternating current line plug (a plug having one blade wider than the other). This plug will fit into the power outlet only one way. This is a safety feature. If you are unable to insert the plug fully into the outlet, try reversing the plug. If the plug still fails to fit, contact your electrician to replace your obsolete outlet. Do not defeat the safety purpose of the polarised plug. Alternatively, this unit may be equipped with a 3-wire grounding type plug having a third (grounding) pin. This plug will only fit into a grounding-type power outlet. This is a safety feature. If you are unable to insert the plug into the outlet, contact your electrician to replace your obsolete outlet. Do not defeat the safety purpose of the grounding-type plug.
- 12 Power-Cord Protection - Power supply cords should be routed so that they are not likely to be walked on or pinched by items placed upon or against them, paying particular attention to cords and plugs, convenience receptacles, and the point where they exit from the appliance.
- 13 Overloading - Do not overload outlets and extension cords as this can result in a risk of fire or electrical shock.
- 14 Object and Liquid Entry - Never push objects of any kind into this unit through openings as they may touch dangerous voltage points or short-out parts that could result in a fire or electric shock. Never spill liquid of any kind on the unit.
- 15 Servicing - Do not attempt to service this unit yourself as opening or removing covers may expose to dangerous voltage or other hazards. Refer all servicing to qualified service personnel.
- 16 Damage Requiring Service - Unplug the unit from the outlet and refer servicing to qualified service personnel under the following conditions:
 - When the power-supply cord or plug is damaged.
 - If liquid has been spilled, or objects have fallen into the unit.
 - If the unit has been exposed to rain or water.
 - If the unit does not operate normally by following the instructions for use. Adjust only those controls that are covered by the instructions for use, as an improper adjustment of other controls may result in damage and will often require extensive work by a qualified technician to restore the units to their normal operation.
 - If the unit has been dropped or the unit has been damaged.
 - When the unit exhibits a distinct change in performance; this indicates a need for service.
- 17 Replacement Parts - When replacement parts are required be sure the service technician has used replacement parts specified by the manufacturer or parts which have the same characteristics as the original part. Unauthorised substitutions may result in fire, electric shock or other hazards.
- 18 Safety Check - Upon completion of any service or repairs to the units, ask the service technician to perform safety checks to determine that the unit is in proper operating condition.
- 19 Lightning - For added protection of the units during a lightning storm, or when it is left unattended and unused for long periods of time, unplug it from the wall outlet and disconnect the cable system. This will prevent damage to the unit due to lightning and power-line surges.

About this manual

This manual provides all the information required to install and operate the unit.

Conventions

**Warning**

Follow these instructions to prevent personal injury.

**Caution**

Follow these instructions to prevent damage to the equipment.

**Note**

Read these instructions for tips and other useful information.

Safety precautions

**Warning**

Do not open the unit when it is connected to the mains. The unit contains non-insulated parts, which can cause electric shock.

**Caution**

There are no user-serviceable parts inside the unit. Service must be done by qualified personnel.

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1 About the equipment

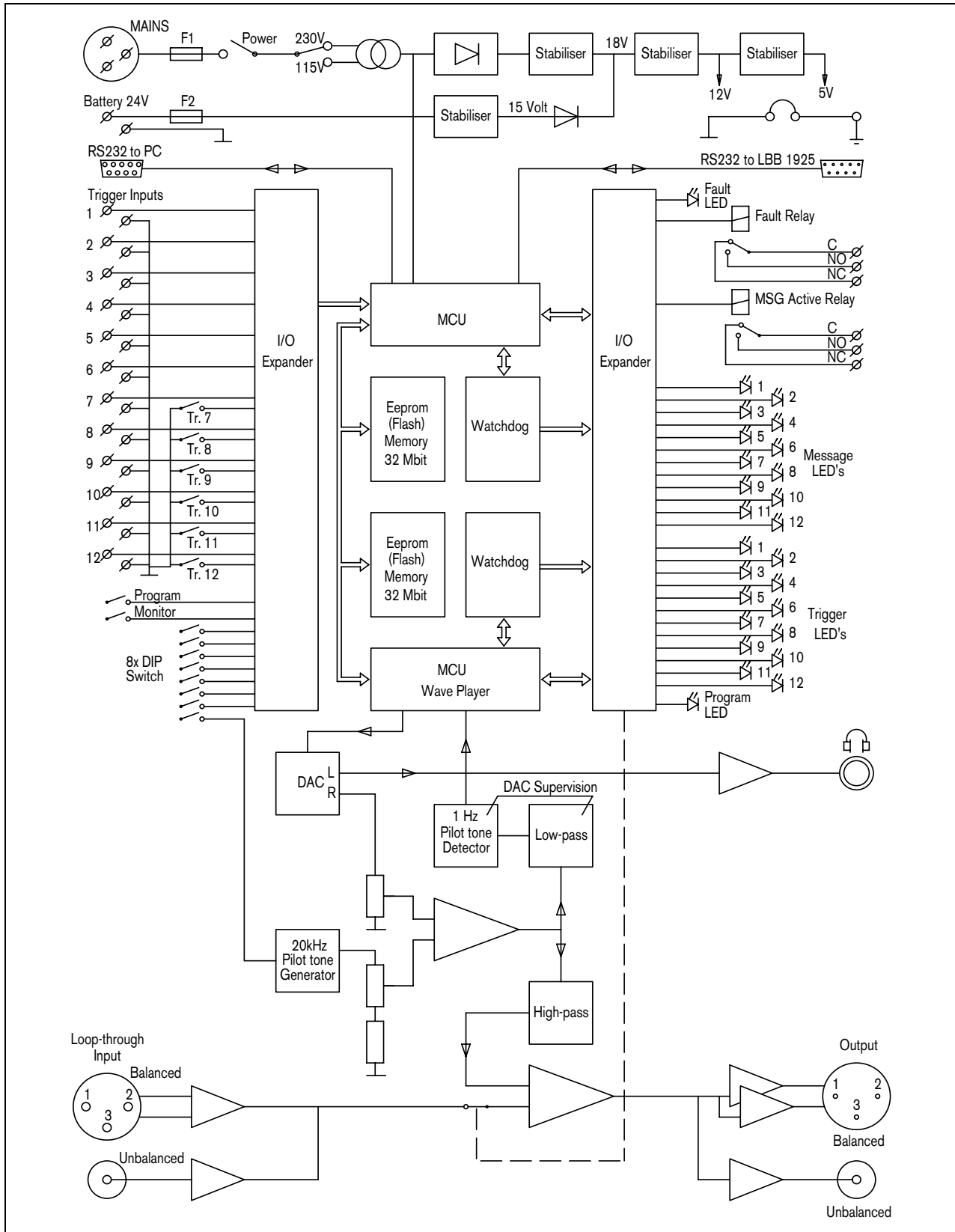


Figure 1.1

The Plena Message Manager functions as an audio source in the overall Plena PA-system. With this unit it is possible to play, via other Plena units, pre-recorded messages that are triggered from external sources or the unit's front panel switches.

These pre-recorded messages (that can be made on a PC in .wav-format) can be used for various purposes, e.g. routine messages or emergency calls. The messages are stored in solid state memories (Eeproms) and are continuously supervised on availability.

When the message manager is connected to the Plena System Pre-amplifier (LBB1925), it is also possible to distribute the messages in pre-programmed zones.

The unit is delivered with the mains voltage selector set to 230 Vac. This selector can be set to 115 Vac.

The unit is not provided with a separate power ON indication. One message LED on the front panel will always be lit (thus functioning as a power ON indication) as at least one message will be loaded. In case no messages are loaded, this fault situation is indicated by the fault LED.

1.1 Features

- Up to 12 different messages can be stored.
- Up to 12 message sequences or announcements (each consisting of up to 4 different messages + zone information) can be stored.
- Messages can be edited, assembled and uploaded by means of a PC.
- The message content is continuously supervised on availability.
- The cabling of trigger inputs 1 through 6 can be supervised on cuts and short-circuits.
- Mains supply voltage (230/115 Vac) can be supervised.
- Pilot tone can be added to supervise the audio connection to an amplifier or the sound system.
- Internal pilot tone to supervise the internal audio path.
- Support for various sample frequencies to balance audio quality versus message length

1.2 Capacity

The storage device of the messages is a built-in block-erasable EEPROM with fixed storage capacity of 8.38 MByte. The message manager accepts .wav-files with sample frequencies of 24, 22.050, 16, 12, 11.025 and 8 kHz. The word length is fixed to 16 bits. This means that the distortion and signal to noise level is of CD quality. Lower sample frequencies mean a decrease in audio quality (lower bandwidth), but an increase in message length. See the table below.

Sample frequency	24 kHz	22.050 kHz	16 kHz	12 kHz	11.025 kHz	8 kHz
Audio bandwidth (approx.)	11 kHz	10 kHz	7.3 kHz	5.5 kHz	5 kHz	3.6 kHz
Max. length of all 12 messages	170 s	180 s	250 s	335 s	360 s	500 s

1.3 Package

The message manager is packed with the following parts:

- 2x RS232 cable for connection with a PC and a system pre-amplifier (9-pin male/female)
- 1x mains cable
- 1x cable with Cinch connectors
- 1x cable with XLR connectors (3-pin male + female)
- 1x Installation and User Instructions
- 2x 19" brackets to install the unit in a 19" rack
- 1x CD-ROM with software to upload messages

1.4 Controls and indicators (front)

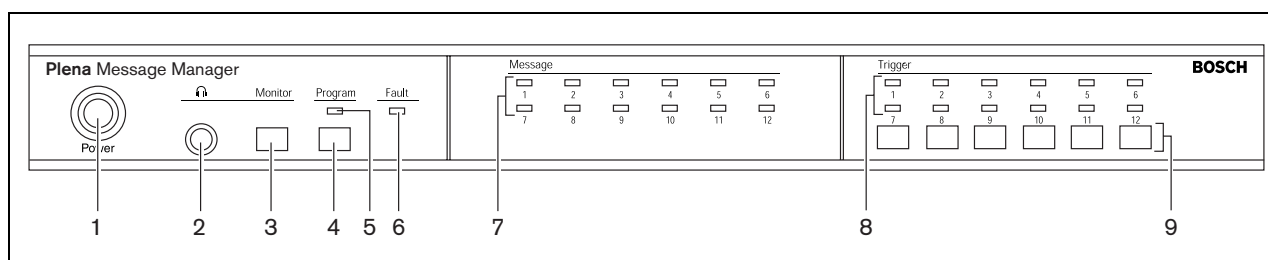


Figure 1.2

- | | |
|---|---|
| 1 Power ON/OFF button | 7 Message indicator LEDs |
| 2 Headphone output socket (6.3 mm phone jack) | 8 Trigger indicator LEDs |
| 3 Monitor pushbutton (= headphone selection) | 9 Pushbuttons for: |
| 4 Program mode pushbutton | - starting announcements 7-12 |
| 5 Program mode indicator LED | - manual (re)programming of trigger inputs 7-12 |
| 6 Fault indicator LED | |

1.5 Controls and connections (rear)

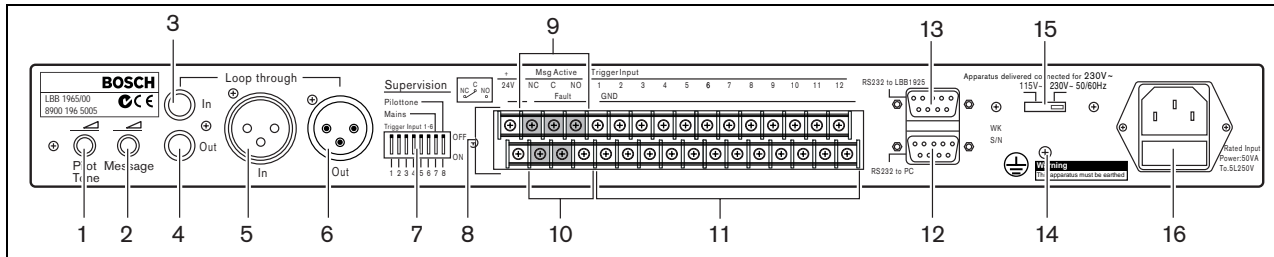


Figure 1.3

- | | |
|--|---|
| 1 Pilot tone volume control | 9 Message active control output (terminal) |
| 2 Message volume control | 10 Fault control output (terminal) |
| 3 Loopthrough input (Cinch) | 11 Trigger inputs (terminal) |
| 4 Line- and loopthrough output (Cinch) | 12 RS232 female socket for connection to a PC |
| 5 Loopthrough input (XLR female) | 13 RS232 male socket for connection to a system preamplifier (LBB1925/10) |
| 6 Line- and loopthrough output (XLR male) | 14 Earth connection screw |
| 7 DIP-switches (8 pcs) for supervision of trigger inputs 1 through 6, mains and pilot tone | 15 Mains voltage selector (115/230 Vac) |
| 8 24 Vdc input (terminal) | 16 Mains socket (3 pole) |

2 Installation in rack

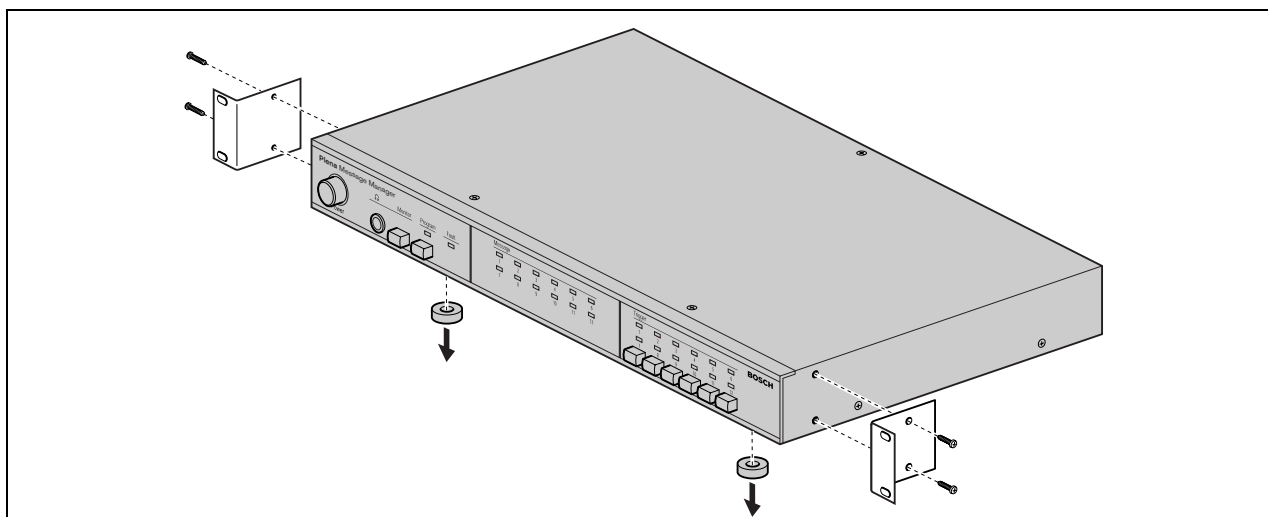


Figure 2.1

The message manager is delivered for tabletop use, but you can mount it in a 19" rack using the brackets supplied with the unit. In case of rack mounting, you must:

- remove the 4 feet from the bottom of the unit. Without the feet, the unit is 1U high.
- ensure that the ambient temperature of the unit in the rack does not exceed 55 °C.

3 External settings and connections

3.1 Connecting the DC supply (battery)

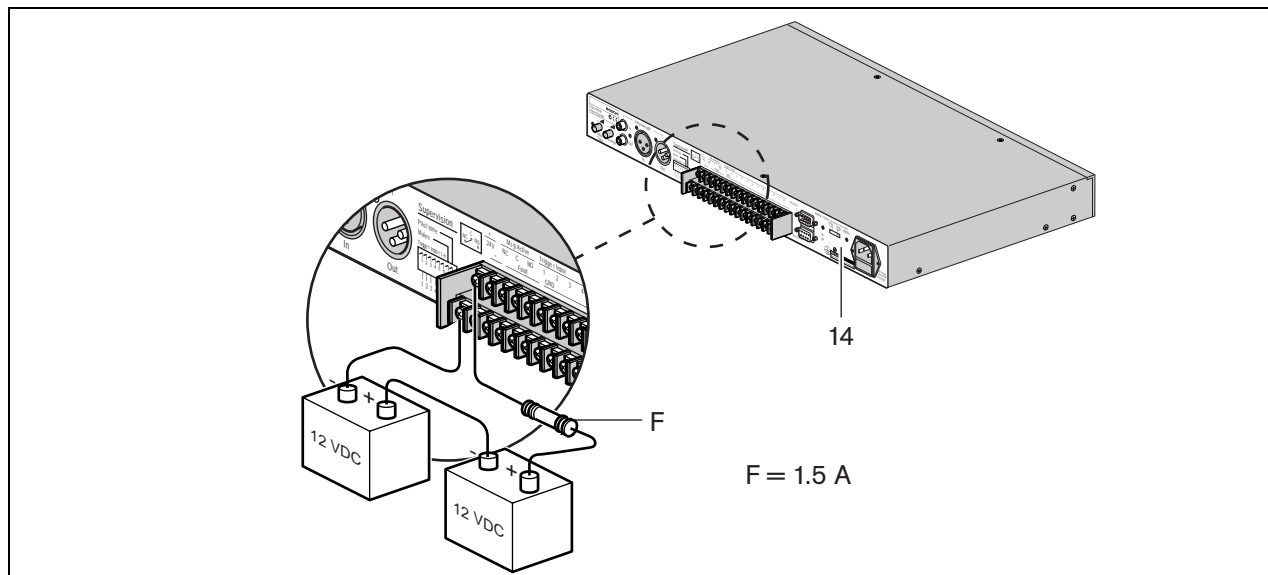


Figure 3.1

The message manager has a 24 Vdc input (screw terminal), which you can use to connect a back up power supply, e.g. batteries. You can earth (14) the unit to increase the electrical stability of the system.



Caution

The connection cable must have an in-line fuse. Use the type of fuse as mentioned in the illustration.

3.2 Normal audio connections

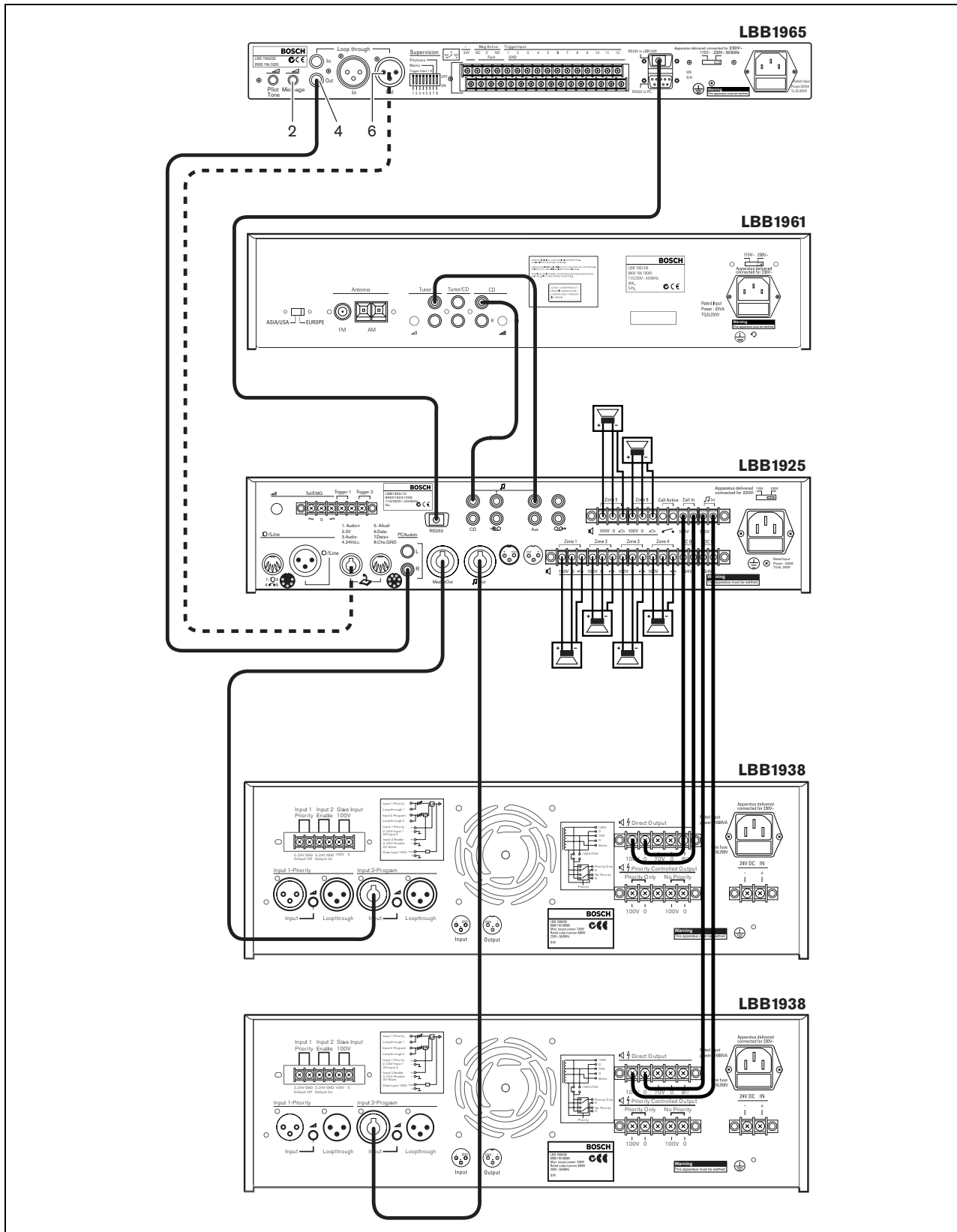


Figure 3.2

The message manager can be used with all Plena amplifiers via the Cinch output (4) or the XLR Output (6). The level of the messages can be set via the message volume control (2).

To fully benefit from the features of the message manager in the overall Plena system (e.g. to distribute pre-recorded messages to pre-programmed zones) the unit must be connected via the system pre-amplifier LBB1925. To do this, use the RS232 cable and the audio cable supplied.

There are several ways to connect the message manager to the system pre-amplifier:

- Connecting the Cinch output (4) of the message manager to the Cinch PC Audio In (R) line input of the system pre-amplifier, as shown in figure 3.2 (in which the LBB1961 functions as a BGM source).
- Connecting the XLR output (6) of the message manager to the points 1 and 3 of the 8-pole DIN socket of the system pre-amplifier.

3.3 Loophrough audio connections

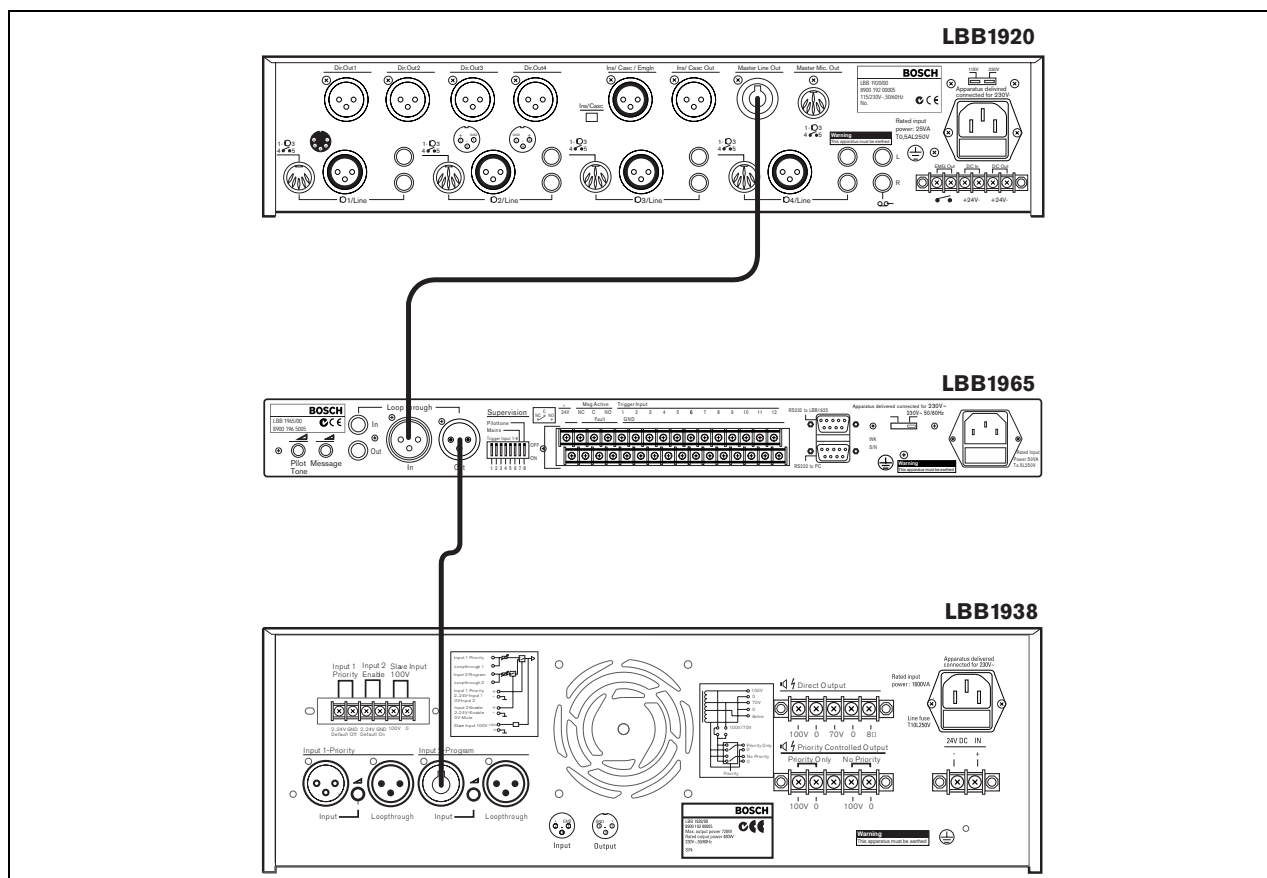


Figure 3.3

It is possible to connect the LBB1965 message manager between a mixer pre-amplifier and a power amplifier. When the message manager is not active, the mixer pre-amplifier is routed to the power amplifier. However, when the message manager becomes active, this loopthrough connection is interrupted and the message manager is switched to the power amplifier.

Figure 3.3 shows this configuration example in which the Plena Mixer Pre-amplifier LBB1920 is used with a Plena Power Amplifier LBB1938. This is a high priority application, as the message manager has absolute priority.

3.4 Trigger input connections

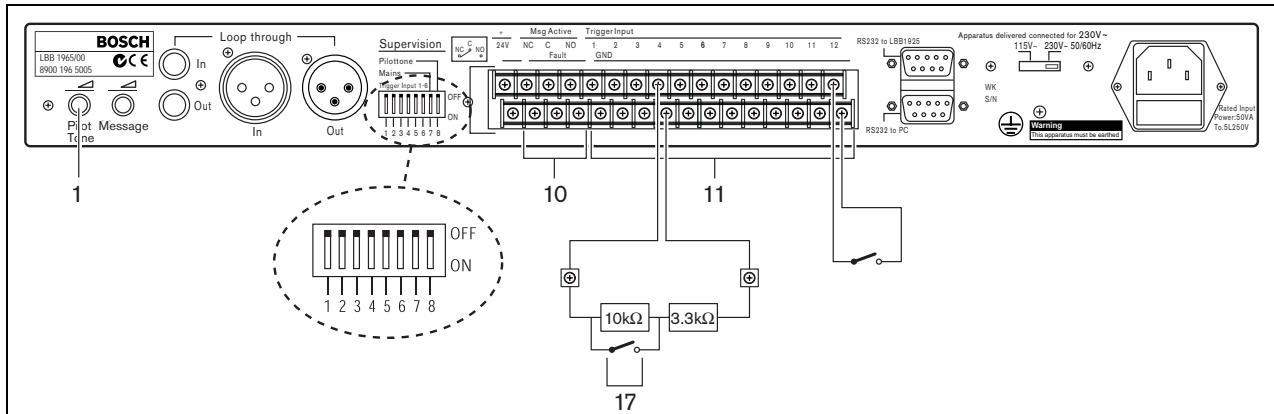


Figure 3.4

Message sequences or announcements are started with make contacts (17). These make contacts are connected to the trigger input screw terminals (11). The cabling of the first six trigger input contacts (1 through 6) can have supervision by means of a window comparator. Normal operation of these inputs requires two series connected resistors of 10 kOhm and 3.3 kOhm, permanently connected to the far end of the cable connected to each trigger input. Triggering occurs by short-circuiting the 10 kOhm resistor as shown in figure 3.4.

Open or short-circuited cables to such an input result in a fault situation that is detected by the window comparator. The fault indicator LED at the front will light up and the internal fault relay will be unpowered which gives a contact change on the screw terminals (10) at the rear.

Via the dipswitches 1 through 6 at the rear of the unit supervision of each individual trigger input (1 - 6) can be enabled ('ON') or disabled ('OFF'). When disabled these inputs act the same as inputs 7 through 12.

Via dipswitch # 7 it is possible to enable mains failure checking. When enabled ('ON') the fault indicator LED at the front will light up and the internal fault relay will go to the unpowered state upon mains failure, although the unit may continue to work on the 24 Vdc battery.

When disabled ('OFF') switching between mains and battery operation is automatic and will not be noticed.

Via dipswitch # 8 it is possible to switch ON a 20 kHz pilot tone to the output signal for supervision of the cable by connecting equipment. The level of the pilot tone is adjustable (from 'OFF' to -14dB with respect to maximum audio level) via the pilot tone volume control (1). The default volume level is -20 dB.

3.5 Mains connection

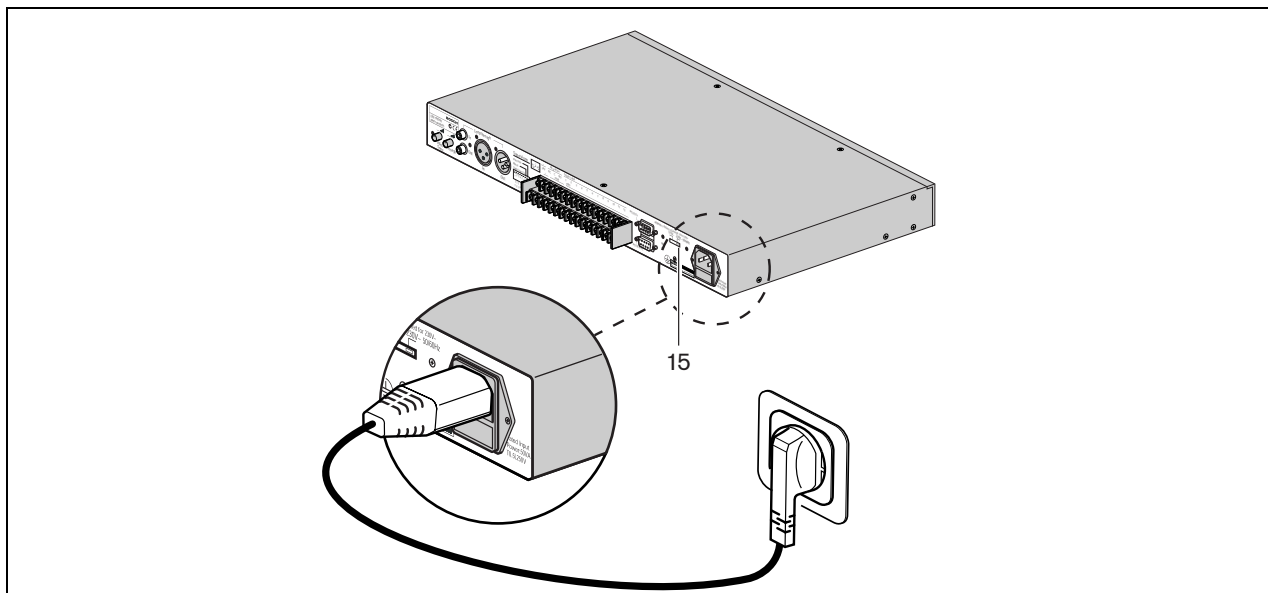


Figure 3.5

Use the supplied mains cord to connect the system to the mains supply.



Note

If necessary set the mains voltage switch (15) to the required voltage using a sharp object, e.g. a small screwdriver.

4 Operation

4.1 Uploading

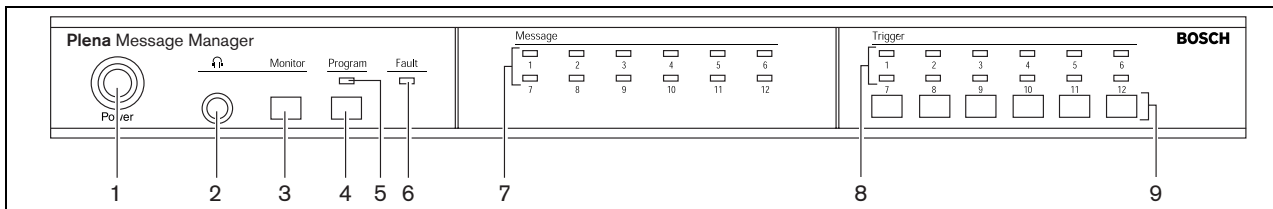


Figure 4.1

To upload the messages and to configure the sequence of the messages, a PC must be used that meets the following minimum requirements:

- Pentium processor with a clock frequency of 100 MHz or higher
- Operating system: Windows 95® or higher
- CD-ROM drive

To prepare and to record the messages the standard available Windows® operating system can be used, but it is also possible to purchase the messages from a studio. All messages must be stored as *.wav* files in the PC. Only mono *.wav* files with sample frequencies of 24, 22.050, 16, 12, 11.025 and 8 kHz and a word length of 16 bits can be used. The sample frequency for each separate message can be different. See §1.2.

To create messages or message sequences use the software on the CD-ROM supplied with the unit. To install this software proceed as follows:

- Close all applications that are open.
- Insert the CD-ROM into the CD-ROM drive.
- In case the Setup-program does not start up automatically, go to the next step. Otherwise follow the instructions on the screen.
- Choose *Run* from the Start-menu.
- Type 'd:\setup' (where 'd' is the CD-ROM drive).
- Click OK or press *Enter*.
- Follow the instructions on the screen.

Upon installation proceed as follows:

- Start the program. A screen similar to the following screen will appear.

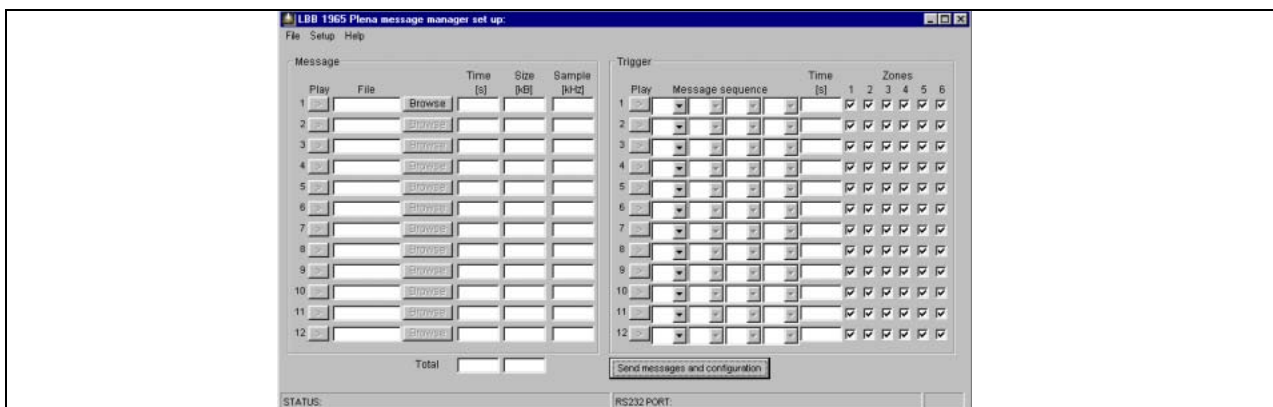


Figure 4.2

- In the left hand part of the screen the messages (max. 12) can be filled out. Proceed as follows:
 - Put the cursor in the *File* box of message # 1.
 - Type the message file name and location (or use the *Browse* box to go to the folder where the message is stored).
 - Proceed in the same way for all necessary messages. The *Time*, *Size* and *Sample* (sample rate) fields will automatically be filled out. During this process the program software will monitor the required memory capacity and the overall capacity that is available.
- In the right hand part of the screen the sequence of the messages can be determined per trigger input. Proceed as follows:
 - Click on the first [▼]-box to invoke a pull-down menu that contains all message numbers that have been filled out before.
 - Select one of the messages.
 - Select the next message, using the box to the right hand side of the first [▼]-box,. In this way up to four messages can be selected, thus creating a programmed message sequence. The total time (in s) for this message sequence will be displayed in the *Time* field.
 - If required click on the appropriate *Zone* number boxes in order to activate the corresponding zone(s). This option is only of interest when the message manager is connected to a system pre-amplifier LBB1925.
 - Proceed in the same way for the other message sequences.
 - By clicking on the *Play* boxes in both the (left hand) *Message* screen and the (right hand) *Trigger* screen, the programmed messages or message sequences will be audible over the PC's loudspeakers. Click again to stop this action.

The menu bar at the top of the screen provides access to the *File* menu, the *Setup* menu and the *Help* menu.

Upon selection of *File* a pull-down menu appears with the following options:

- *Open*: Opens the dialog box to select a configuration file
- *Save*: Saves the configuration file; it is recommended to create a separate folder for this purpose
- *Save as*: Opens the dialog box to save the current configuration file
- *Save as text file*: Opens Notepad for saving the configuration file as a *.txt* file or for printing; it is recommended to select font type Arial for optimum alignment
- *Exit*: Closes the program

Upon selection of *Setup* a pull-down menu appears with the options to:

- Select the RS232 Com port on the PC
- Select the language on the screen

Upon selection of *Help* you can select *About Plena message manager* to display the program release number.

- Connect the supplied RS232 cable between the PC and the message manager. Use the RS232 female socket at the rear of the unit.
- Use the *Com port* selection button (in the pull-down menu under the *Setup* box) to select Com port 1 or 2 of the PC.
- Click the *Send messages and configuration* button to transfer the file to the message manager. During this file transfer -which, depending on the file size of the messages, may take up to 45 minutes (at 115 kbps)- the *percentage ready bar* on the screen indicates the progress of the uploading process. During uploading the program mode indicator LED (5) on the front is lit. The message indicator LEDs (7) on the front of the unit will be continuously lit for each message that is present and available in the message manager.

The status bar at the bottom of the screen contains three fields:

- The *STATUS* field shows the progress of the uploading process.
- The *RS232 PORT* shows the RS232 data during uploading.
- The rightmost box of the status bar shows the actual upload time.

On the supplied CD-ROM you can find a copy of the program **R8brain** (r8brain.exe, available as freeware at www.voxenga.com).

With the help of this program the sample rate of the *.wav* files can be changed, if required. It is recommended to use the lowest sample rate that does not degrade the audio quality.

Proceed as follows:

- Start the program r8brain.exe.
- Browse to the *.wav* file that must be modified.
- Browse to the folder in which the modified file must be placed.
- If required, change the message file name in the *Browse* menu.
- Enter the output sample rate in the appropriate field or click on the output sample rate in the pull-down menu (sample rates like 12 kHz are not in the list, but can be entered from the keyboard).
- Select *16-bit for Output bit depth and High* or *Very High* for *Conversion quality*.
- Click on *Perform r8brain*. A progress bar shows the progress of the conversion.
- To convert from stereo *.wav* files to mono use the program **Sound Recorder** that comes with Windows®. Generally, you can find this program via *Start > Programs > Accessories > Entertainment > Sound Recorder*.

4.2 Play-back messages

When an announcement is started via a trigger contact, the corresponding trigger indicator LED (8) will light up. Single-shot triggering and repeating mode is provided. After pressing a trigger switch the announcement is played completely. If the trigger switch is still ON upon completion of the announcement, this announcement will be repeated until the trigger switch is released. Then it will complete the running announcement and stop.

Within an announcement there is no possibility for repetition loops of individual messages. However the same message may be programmed in the sequence more than once (max. 4).

Trigger inputs have serial priority, i.e. input 1 has priority over trigger input 2, 2 over 3, etc.

When an announcement is overridden with an announcement with a higher priority, the first indicator LED will extinguish and the new LED will light up. Lower priority triggers will be ignored.

The LED of the running message is flashing (2 Hz). If the current announcement is interrupted via RS232 by a higher priority call from the connected system pre-amplifier, the LED will stop flashing and light up continuously.

The front panel of the unit contains six pushbuttons (9) to activate announcements 7 to 12, effectively in parallel with the trigger inputs 7 to 12.

If the unit is connected to the LBB1925 via RS232, trigger inputs 1 through 6 will be processed with a priority equal to the high-priority setting of a connected LBB1946 call station. Trigger inputs 7 through 12 are processed with a priority equal to the low-priority setting of a connected LBB1946 call station.

This priority level affects only the priority of the announcements compared to other sources connected to the system pre-amplifier, e.g. call stations. It does not affect the priority between the trigger inputs of the message manager, which is serial.

If a repeating announcement is interrupted by a higher priority call via the system pre-amplifier LBB1925 or by a higher priority trigger input (lower contact number) and if, after the interruption, the original trigger input is still

active, this announcement will start again from the beginning. Non-repeating single-shot announcements are just cancelled without finishing.

4.3 Monitoring

The message manager comprises a 6.3 mm headphone output socket (2) with a momentary monitor pushbutton (3). When the unit is not active it is possible to select messages for monitoring. Note that memory supervision (checksum) is disabled during monitoring.

If during monitoring any trigger input contact for starting an announcement is made, the monitoring process is cancelled immediately and the normal play-back mode is resumed.

To select messages for monitoring simply press the momentary monitor pushbutton. A single push starts message #1. If the pushbutton remains pressed, message #2 will be played automatically upon completion of message #1, #3 after #2, etc., up to and including the last available message. Then it stops.

If during play-back of a message the monitor pushbutton is repeatedly pressed, the next message is started without finishing the previous one. During this monitoring process the corresponding message indicator LEDs are flashing. Running messages, triggered manually or started via the trigger contacts, can be heard on the monitor headphone as well. There is no monitor volume control.

4.4 Supervision

In conformity with the major standards for emergency sound systems like IEC 60849, the following features of the message manager are or can be supervised:

- Content of the message memory. The micro controller adds a checksum to the messages. This supervision requires no user intervention. If no messages are played the processor will read out the complete audio memory to compare its content to the checksum, automatically and continuously within a 100 s cycle.
- Availability of any message in the audio memory.
- Presence of mains supply.
- Trigger contacts and involved wiring of trigger inputs 1 to 6 (see also §1.4).
- Resetting of the internal processors by the 'watchdog' circuitry. The processors have a watchdog circuit to reset the processor if the normal program flow is halted or deviated from.
- Supervision of the DAC using a 1 Hz pilot tone.
- Supervision of audio connections using a 20 kHz pilot tone.

If during supervision a fault is pointed out, the fault indicator LED (6) will light up and the internal fault relay, which is normally activated when the power supply is connected and the unit is ON, will be switched to its unpowered state.

Potential free fault contacts (SPDT) and potential free message active relay contacts are provided at the rear of the unit.

4.5 Manual editing of messages

The program mode pushbutton (4) can be used to manually change the message sequence of trigger inputs 7 to 12 and the corresponding zone set-up. Manual editing is not possible for the trigger inputs 1 to 6; these input configurations must be uploaded from the PC to avoid abuse.

Manual editing of trigger inputs is done as follows:

- Press the program mode pushbutton (4) and keep it depressed for more than 3 s. The program mode indicator LED (5) will light up to indicate that the message manager is in the program mode.

- Briefly press one of the pushbuttons (9), e.g. #11. The corresponding trigger indicator LED (8) will flash and the (upper) trigger indicator LEDs 1 to 6 will indicate the stored zones for pushbutton #11. The message indicator LEDs (7) will only indicate the messages related to pushbutton #11. Their *place* in the sequence is not indicated.
- Use the pushbuttons (9) to toggle the zones 1 to 6 ON and OFF, thus indicating the new zone selection.
- Press the monitor pushbutton (3) briefly to clear the present message sequence for the selected pushbutton (9). Pressing the monitor pushbutton (3) once more causes the message indicator LED #1 to flash; subsequent pressing causes the message indicator LEDs #2, 3, 4, etc. to flash. If the monitor pushbutton is pressed for more than 3 s the message indicator LED that flashed is selected as the first message of a new sequence for the selected pushbutton (9). In this way up to four messages can be selected in a random order to be part of that announcement. After the fourth message no more messages will be accepted.
- Press the program mode pushbutton (4) once again for more than 3 s to enter the new configuration data and to exit the program mode.
- Repeat the above procedure for any of the other pushbuttons (9).
- If during this manual editing process a trigger input is activated, the unit will quit the program mode and the requested announcement will be started.
- If in the program mode no pushbutton is pressed for approx. 25 s, the unit will automatically resume its normal working mode, without storing the new configuration data.

5 Technical data

5.1 Electrical

Mains voltage	230/115 Vac, $\pm 10\%$, 50/60Hz
Max mains power consumption	50 VA
Max mains inrush current	3 A @ 230 Vac / 6A @ 115 Vac
Battery voltage	24 Vdc, $+20\%/-10\%$
Max battery current	1 A

5.2 Messages

Data format	<i>wav</i> -file, 16 bit PCM, mono
Supported sample rates (fs)	24 kHz, 22.050 kHz, 16 kHz, 12 kHz, 11.025 kHz, 8 kHz
Frequency response	@ fs = 24 kHz 100 Hz - 11 kHz (+1/-3 dB)
	@ fs = 22.050 kHz 100 Hz - 10 kHz (+1/-3 dB)
	@ fs = 16 kHz 100 Hz - 7.3 kHz (+1/-3 dB)
	@ fs = 12 kHz 100 Hz - 5.5 kHz (+1/-3 dB)
	@ fs = 11.025 kHz 100 Hz - 5 kHz (+1/-3 dB)
	@ fs = 8 kHz 100 Hz - 3.6 kHz (+1/-3 dB)
Distortion	< 0.1% @ 1 kHz
S/N (flat at max volume)	> 80 dB
Memory capacity	8.38 MByte EEPROM
Recording/playback time	500 s @ fs = 8 kHz - 167 s @ fs = 24 kHz
Max number of messages	12
Supervision EEPROM	continuous checksum control
Supervision DAC	1 Hz pilot tone
Data retention time	> 10 years

5.3 Inputs

Loophrough audio input 1 (3-pin XLR, balanced)

Sensitivity	1 V
Impedance	20 kOhm
CMRR	> 25 dB (50 Hz - 20 kHz)

Loophrough audio input 2 (Cinch, unbalanced)

Sensitivity	1 V
Impedance	20 kOhm

5.4 Outputs

Supervision pilot tone	20 kHz, $\pm 10\%$, level adjustable
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Line output 1 (3-pin XLR, balanced)

Nominal level	1 V, adjustable
Impedance	< 100 Ohm

Line output 2 (Cinch, unbalanced)

Nominal level	1 V, adjustable
Impedance	< 100 Ohm

5.5 Controls

Trigger inputs (Screw)

Activation	contact closure
Supervision	on trigger inputs 1-6, selectable
Supervision method	loop resistance check

Control outputs (Screw)

Message active relay	100 V, 2 A (voltage free, SPDT)
Fault relay	100 V, 2 A (voltage free, SPDT)

RS232 (9-pin D-sub)

PC to LBB1965/00	115 kb/s, N, 8, 1, 0 (upload)
LBB1965/00 to LBB1925/10	19.2 kb/s, N, 8, 1, 0 (zone control)

5.6 Environmental conditions

Operating temperature range	-10 to +55 °C
Storage temperature range	-40 to +70 °C
Relative humidity	< 95%

5.7 General

EMC emission	acc. to EN 55103-1
EMC immunity	acc. to EN 55103-2
Dimensions	56 x 430 x 270 mm (19" wide, 1U high, with feet)
Weight	approx. 3 kg
19" mounting brackets	included