

## LBB1990/00 Controller

### PLENA voice alarm



The LBB1990/00 Voice Alarm Controller unit is the heart of the Plena Voice Alarm System. It is the basis of the Plena Voice Alarm System, and has all the essential functionality for compliance with the EN 54-16 standard, including full system supervision, loudspeaker line impedance supervision, a supervised emergency microphone on the front panel and a supervised message manager.

The messages can be merged to allow even more flexible use of pre-recorded announcements and evacuation messages. The controller can be used as a stand-alone system with up to six zones, or expanded to up to 120 zones using additional six-zone routers. Up to eight call stations can be connected. Interconnections are made using standard RJ45 connectors and shielded CAT-5 cable.

A built-in 240 W amplifier provides the power for the emergency call channel and BGM. Additional amplifiers can be added to provide two-channel operation. All amplifiers are supervised. The audio output uses standard analog audio 100 V line switching for full compatibility with the product family of public address equipment and Bosch EVAC-compliant loudspeakers. The system is configured using DIP switches for basic functionality and a PC for more advanced functions.

#### Functions

The controller has two BGM source inputs and a mic/line input with configurable priority, speech filter, phantom power and selectable VOX activation. A total

- ▶ Heart of the Plena Voice Alarm System
- ▶ EN 54-16 certified
- ▶ Built-in message manager and 240 W amplifier
- ▶ Six-zone outputs
- ▶ 6 emergency and 6 business triggers

of 16 priority levels can be specified for microphone, call stations and trigger inputs for optimum system flexibility.

The powerful 240 W output section has six transformer-isolated 100 V constant-voltage outputs for driving 100 V loudspeakers in six separate zones. The 100 V-technique reduces line losses on longer distances and provides easy parallel connection of multiple loudspeakers. All zones may be individually selected from the front panel, and the BGM output level in each zone can be individually set in six steps. The controller supports A/B wiring.

The configuration software is provided on [www.boschsecurity.com](http://www.boschsecurity.com) from the software download section of the Plena Voice Alarm System controller. The software package also includes many useful programs, such as; MP3-ripping software, a sample-rate converter, various audio and visual tools, and free, MP3-coded music.

The amplifier output is also available as a separate output on 100 V and 70 V. A separate 100 V call-only output provides addressing for an area where BGM is not required but where priority announcements are. Six configurable volume-override output contacts are available for overriding local volume controls during priority calls. Both four-wire and three-wire schemes are supported. An LED meter monitors the output.

Up to 255 messages can be stored in the internal 16 MB flash ROM, without a need for battery backup. Each message can have any length within the total available capacity. Messages and configurations are

uploaded from a PC via USB 2 into the memory, after which the unit operates without a PC connection. The standard WAV-format is used for the messages, and sample rates of 8 kHz up to 24 kHz with 16-bit word length (linear PCM) are supported. This gives up to 17 minutes of recording time with CD-quality signal-to-noise ratio.

The unit has 12 contact trigger inputs for business and emergency (EMG) calls. Each can be configured for a message consisting of a sequence of up to eight wave files. In this way some wave files may be used in various combinations with other messages, optimizing flexibility and the amount of storage space used. Multiple messages can be merged to form one integrated message. A zone selection, together with this sequence can be configured for each trigger input.

### Controls and indicators

#### Front

- LED power meter
- 13 system fault LEDs
- Two fault state buttons
- Two emergency state buttons
- Six EMG zone status LED pairs
- Six EMG zone select buttons
- Six BGM zone select LEDs
- Six BGM zone select buttons
- Six BGM zone volume control knobs
- Two BGM source status LEDs
- Three knobs for BGM volume, treble, and bass levels
- All-call button
- Indicator test button
- EMG state button
- Alert message button

#### Back

- Three service settings DIP switches
- Calibration switch
- Four system configuration DIP switches
- Mains voltage selector
- Power switch
- Power cord socket
- Mic/line level switch
- Three DIP switches for VOX, speech, phantom power
- Microphone volume control knob
- Digital message volume control screw
- Monitoring speaker volume control knob

### Interconnections

#### Front

- Microphone socket

#### Back

- 12 loudspeaker outputs
- External amplifier input
- Amplifier output (on 100 V)
- Backup power input
- Call output
- Six volume override outputs
- Three status outputs
- 12 trigger inputs
- 24 VDC output
- Two call station connectors (redundant)
- USB 2 connector
- Two DE-9 connectors (reserved)
- External amplifier output
- Line output connectors
- Two BGM inputs
- PC call station input (reserved)
- Two RC station connectors (redundant)
- Connector to LBB1992/00 (router)

### Regulatory information

|           |                    |
|-----------|--------------------|
| Safety    | acc. to EN 60065   |
| Immunity  | acc. to EN 50130-4 |
| Emission  | acc. to EN 55103-1 |
| Emergency | acc. to EN 54-16   |

| Region | Regulatory compliance/quality marks |                          |
|--------|-------------------------------------|--------------------------|
| Europe | DOP                                 | EN54-16 PlenaVAS Issue 1 |
|        | CPR                                 | EN54-16 PlenaVAS Issue 1 |
|        | CPR                                 | 1438-CPR-0210_10.06.2022 |
|        | DOP                                 | EN54-16 PlenaVAS Issue 2 |
|        | CE                                  | DECL EC LBB1990_00       |
| Poland | CNBOP                               |                          |

### Installation/configuration notes

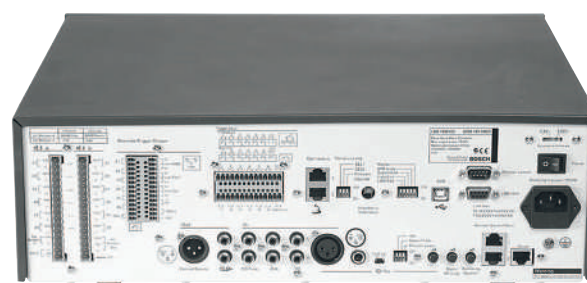


Fig. 1: LBB 1990/00 rear view

**Parts included**

| Quantity | Component                         |
|----------|-----------------------------------|
| 1        | LBB1990/00 Voice Alarm Controller |
| 1        | Power cord                        |
| 1        | Set of 19" mounting brackets      |
| 1        | Safety Instructions               |
| 1        | USB cable                         |

**Technical specifications****Electrical**

| <b>Mains power supply</b>       |                                                           |
|---------------------------------|-----------------------------------------------------------|
| Voltage                         | 230/115VAC, $\pm 15\%$ , 50/60 Hz                         |
| Current inrush                  | 8 A                                                       |
| Max power consumption           | 600 VA                                                    |
| <b>Battery power supply</b>     |                                                           |
| Voltage                         | 24 VDC, $+15\%$ / $-15\%$                                 |
| Current max                     | 14 A                                                      |
| <b>Performance</b>              |                                                           |
| Output power (rms/maximum)      | 240 W / 360 W                                             |
| Power reduction on backup power | -1 dB                                                     |
| Frequency response              | 60 Hz to 18 kHz ( $+1/-3$ dB at -10 dB ref. rated output) |
| Distortion                      | <1% at rated output power, 1 kHz                          |
| Bass control                    | -8/+8 dB at 100 Hz                                        |
| Treble control                  | -8/+8 dB at 10 kHz                                        |
| <b>Mic/line input</b>           |                                                           |
| Connector                       | XLR, 6.3 mm jack                                          |
| Sensitivity                     | 1 mV (mic), 1 V (line)                                    |
| Impedance                       | >1 kohm (mic); >5 kohm (line)                             |
| S/N (flat at max volume)        | >63 dB (mic); >70 dB (line)                               |
| S/N (flat at min volume/muted)  | >75 dB                                                    |

| CMRR                           | >40 dB (50 Hz - 20 kHz)                                     |
|--------------------------------|-------------------------------------------------------------|
| Headroom                       | >25 dB                                                      |
| Speech filter                  | -3 dB at 315 Hz, high-pass, 6 dB/oct                        |
| Phantom power supply           | 12 V (mic mode only)                                        |
| VOX trigger level              | -20 dB (100 $\mu$ V mic / 100 mV line) or via input contact |
| Limiter                        | Automatic                                                   |
| <b>Line input</b>              |                                                             |
| Connector                      | Cinch, stereo converted to mono, unbalanced                 |
| Sensitivity                    | 200 mV                                                      |
| Impedance                      | 22 kohm                                                     |
| S/N (flat at max volume)       | >70 dB                                                      |
| S/N (flat at min volume/muted) | >75 dB                                                      |
| Headroom                       | >25 dB                                                      |
| <b>Trigger Inputs</b>          |                                                             |
| Connectors                     | MC1,5 / 14-ST-3,5                                           |
| Activation                     | Programmable                                                |
| Supervision                    | On EMG inputs, programmable                                 |
| Supervision method             | Series / parallel resistor                                  |
| <b>100 V input</b>             |                                                             |
| Connector                      | MSTB 2,5 /16-ST                                             |
| Power handling capacity        | 1000 W                                                      |
| <b>Tape output</b>             |                                                             |
| Connector                      | Cinch, 2 x mono                                             |
| Nominal level                  | 350 mV                                                      |
| Impedance                      | <1 kohm                                                     |
| <b>Loudspeaker outputs</b>     |                                                             |
| Connectors                     | MSTB 2,5 /16-ST, floating                                   |
| 100 V output                   | 700 W rated per zone                                        |

|                             |                                                                                                      |
|-----------------------------|------------------------------------------------------------------------------------------------------|
| Volume override types       | 3-wire, 4-wire (24 V), 4-wire failsafe                                                               |
| BGM zone output Attenuation | 70 / 50 / 35 / 25 / 18 / 13 V for<br>0 / -3 / -6 / -9 / -12 / -15 dB<br>120 / 60 / 30 / 15 / 8 / 4 W |
| <b>Output Contacts</b>      |                                                                                                      |
| Connector Type              | MC 1,5/14-ST-3,5                                                                                     |
| Rating                      | 100 V, 2A, voltage free                                                                              |
| Emergency active relay      | NO / COM / NC                                                                                        |
| Call active relay           | NO / COM / NC                                                                                        |
| Fault relay                 | NO / COM / NC normally energized (failsafe)                                                          |
| General purpose relays      | NO / COM                                                                                             |

### Power consumption

|                         |                |
|-------------------------|----------------|
| <b>Mains operation</b>  |                |
| Max power               | 550 W          |
| -3dB                    | 440 W          |
| -6dB                    | 340 W          |
| Pilot tone*             | 136 W          |
| Idle                    | 60 W           |
| <b>24 VDC operation</b> |                |
| Max power               | 14.0 A (336 W) |
| -3 dB                   | 12.5 A (300 W) |
| -6 dB                   | 9.5 A (228 W)  |
| Pilot tone*             | 2.5 A (60 W)   |
| Idle                    | 0.9 A (22 W)   |

\* 20 kHz -20dB with maximum loudspeaker load

### Messages

|                             |                                       |
|-----------------------------|---------------------------------------|
| Data format                 | WAV-file, 16-bit PCM, mono            |
| Supported sample rates (fs) | 24 / 22.05 / 16 / 12 / 11.025 / 8 kHz |
| Frequency response          |                                       |
| at fs=24kHz                 | 100 Hz to 11 kHz (+1/-3 dB)           |

|                           |                                                          |
|---------------------------|----------------------------------------------------------|
| at fs=22.05kHz            | 100 Hz to 10 kHz (+1/-3 dB)                              |
| at fs=16kHz               | 100 Hz to 7.3 kHz (+1/-3 dB)                             |
| at fs=12kHz               | 100 Hz to 5.5 kHz (+1/-3 dB)                             |
| at fs=11.025kHz           | 100 Hz to 5 kHz (+1/-3 dB)                               |
| at fs=8kHz                | 100 Hz to 3.6 kHz (+1/-3 dB)                             |
| Distortion                | <0.1% at 1 kHz                                           |
| S/N (flat at max volume)  | >80 dB                                                   |
| Memory capacity           | 16 MB Flash ROM                                          |
| Recording / playback time | 1000 seconds at fs = 8 kHz<br>333 seconds at fs = 24 kHz |
| Number of messages        | 255 max                                                  |
| Supervision Flash ROM     | Continuous checksum control                              |
| Supervision DAC           | 1 Hz pilot tone                                          |
| Data retention time       | >10 years                                                |

### Mechanical

|                        |                                           |
|------------------------|-------------------------------------------|
| Dimensions (H x W x D) | 144 x 430 x 370 mm<br>(19" wide, 3U high) |
| Weight                 | Approx. 21.17 kg                          |
| Mounting               | 19" rack                                  |
| Color                  | Charcoal                                  |

### Environmental

|                                   |                                      |
|-----------------------------------|--------------------------------------|
| Operating temperature             | -10 °C to +55 °C (14 °F to +131 °F)  |
| Storage and transport temperature | -40 °C to +70 °C (-40 °F to +158 °F) |
| Relative humidity                 | <95%                                 |
| Acoustic noise level of fan       | <48 dB SPL at 1 m (max output)       |

### Ordering information

#### LBB1990/00 Controller

Fully supervised main control unit for the Plena Voice Alarm System applications, built-in 240 W amplifier.  
Order number **LBB1990/00 | F.01U.512.626**

## Services

### **EWE-PLNCTR-IW 12 mths wrty ext. Plena VAS Cntrlr**

12 months warranty extension

Order number **EWE-PLNCTR-IW | F.01U.360.688**

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