

Entero® ESC emergency system controller

Entero®

TECHNICAL DATA SHEET



General description

The Entero® ESC emergency system controller is the main system controller in the Entero® Voice Alarm system. It monitors all connected 100 V & 8 ohm loudspeaker (A&B) lines, zone & backup amplifiers and emergency paging panels. It includes pre-recorded messages of which two can be played simultaneously, routed to different outputs. Any monitored fault will be indicated by the ERROR led, a message on the display and by Error output relay contact(s). The 230 Vac, 48 Vdc & ALARM status are also indicated by a LED and on the display.

Expansion of the 4 zones up to 12 zones (using 2 zone expansion cards) in one unit. Up to 32 ESC units can be combined in one Entero Voice Alarm system, providing a maximum of 384 zones. Up to a total combination of 32 Entero ESC fire panels, evacuation panels or fire detections system interfaces can be connected to a single Entero® ESC emergency system controller, to meet the system requirements. The ESC emergency system controller can be powered from both 230 Vac and 48 Vdc power supplies when redundant operation is required.

Basic system configuration can be done using the graphic display and navigations. For full and advanced system configuration the Entero ESC installer software can be used.

All system settings are stored on an internal exchangeable memory card.

Applications

Designed for a wide range of combined sound and voice alarm systems, including:

- Hospitality venues
- Retail
- Shopping malls
- Sports facilities
- Multi-purpose venues
- Schools and universities
- Public buildings
- Entertainment venues
- Offices

Key features

- **Loudspeaker A&B lines** per zone to increase system safety: if one line fails the other line is still available for announcements (only a 3 db SPL reduction in the room instead of no sound; IF speakers are equally spread on both lines).
- **Amplification:** use of a single amplifier channel to connect to 1, 2, 3 or all 4 zone outputs (within 1 zone expansion card).
- **Backup amplifier:** 1 backup amplifier channel for up to 12 outputs (within 1 ESC unit).
- **Advanced line monitoring:** both the + and – wire of the loudspeaker cables are monitored; multiple and selectable pilot tone frequencies are used; triple measurements take place for an average measurement result, before an error will be indicated.
- **Automatic load compensation:** compensates deviation of the line load due to temperature changes.
- **DSP processing functions:** delay, loudspeaker/room EQ, channel link, limiters, bass/treble control (input 1-4), 3-band parametric EQ for emergency inputs.

Technical Information

Audio line inputs (1-4)

Type: 4x analogue, electronically balanced, line level
Connectors: 3 pin Euro block
Sensitivity: -80 dBu to +6 dBu
Impedance: 100 kOhm
Input clip level: +12 dBu

Audio line outputs (1-4 & Aux)

Type: 5x analogue, electronically balanced, line level
Connectors: 3 pin Euro block
Impedance: 50 ohm
Max output level: +12 dBu (with input at +6 dBu)

Amplifier inputs, Loudspeaker A & B outputs

Connectors: 2 pin Euro block
100 V/8 A max for each zone

External signal input

Type: 1x analogue, transformer balanced, line level
Connector: 4 pin Euro block (incl. contact closure input)
Sensitivity: 0 dBu
Impedance: 600 ohm
Input clip level: +6 dBu

Alarm signal output

Type: 1x analogue, electronically balanced, line level
Connector: 4 pin Euro block (incl. relay contact output)
Impedance: 50 ohm
Max output level: 0 dBu

Frequency response

20 Hz – 18 kHz (+0 dB, -3 dB) for audio zones
60 Hz – 18 kHz (+0 dB, -3 dB) for Emergency panel Bus 1 & 2 and External signal input

THD (audio zones)

<0.1% (A-weighted, 0 dBu in/0 dBu out)

Channel separation

>90 dB @ 1 kHz, 0 dBu for audio zones

Signal to noise ratio

>90 dB, A-weighted for audio zones

Signal processing

Type: 28-bit Digital Signal Processor
Sampling rate: 48 kHz
Audio Latency: <1 ms
Delay (ch2 & ch3): 60 ms
AD/DA codecs: 24-bit, 48 kHz sampling rate

Communication ports

USB: USB type B (female)
Unit link In/Out: RJ45
Ethernet: RJ45 (requires optional Ethernet card)

Emergency Panel Bus 1 & 2

8 Pin Euro block, for dedicated connection to Emergency Panel(s)

Error inputs contacts

6 Pin Euro block, for dedicated error input connections

Output relay contacts

10 Pin Euro block, for dedicated contact closure (NO) outputs

48 Vdc input

2 Pin Euro block: 40-53 Vdc, 3 A max

230 Vac input

European AC inlet socket: 195-253 Vac (50 Hz), 150 W max
Fuse: 800 mA fast-blow (230 Vac)

LCD display

240 x 64 pixels, with backlight

Expansion cards

Entero® ESC 4x4 zone expansion card



Adds 4 audio/alarm zones, incl. A & B loudspeaker connections, 1 back up amplifier connection and 1 auxiliary output.

Entero® ESC zone controller card



Allows volume and source control of zone 1-4 (only) by using external user interfaces like the Bose® CC-4 room controller.

Entero® ESC ethernet card



Ethernet interface to connect the Entero ESC to a LAN network: for setup and monitoring of the system using the Entero® ESC Installer Software.

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Emergency panels

Entero® fire panel (FP)

Fire man's panel with highest priority in the system.



Features:

- Status indicators for presence of: 230 Vac, 48 Vdc, Alarm, Error & Buzzer
- Buttons for: reset buzzer, lamp test, reset/pause evacuation, select microphone/alarm signal/All zones and 4 group/message buttons
- Including hand-held microphone
- Key code to enable panel functionality (optional)

Entero® evacuation panel (EP)

Evacuation panel with 2nd highest priority in the system.



Features:

- Status indicators for presence of: 230 Vac, 48 Vdc, Alarm, Error & Buzzer
- Buttons for: reset buzzer, lamp test, reset/pause evacuation, select microphone/alarm signal/All zones and 4 group/message buttons
- Including goose-neck microphone
- Key code to enable panel functionality (optional)

Entero® fire detection system interface

Connects to the fire detection/alarm system for automatic activation of emergency messages, at 3rd highest priority level.



Features:

- Status indicator outputs for presence of: 230 Vac, 48 Vdc, Alarm, Error & Buzzer
- Contact closure inputs for: reset buzzer, lamp test, reset/pause evacuation, select microphone/alarm signal/All zones and 4 group/message buttons
- Microphone/Line input (selectable)

FP/EP/FDS expansion cards & accessories

Entero® FP/EP zone expansion module



Adds 12 buttons, incl. key pad with indicators, to a fire- or evacuation panel. Each buttons can be programmed to select a single or group of zones. Up to 16 cards (= 192 buttons max.), can be added to each panel. A text label can be inserted to reference zone(s).

Entero® FP/EP blind plate

Blind plate to cover a free expansion location in fire – or evacuation panel.

Entero® FDS zone expansion card



Adds 12 inputs, incl. led driver output, to a fire detection system interface. Each input can be programmed to select a single or group of zones. Up to 16 cards (= 192 inputs max.) can be added.

Entero® EP/FDS large enclosure



Large enclosure for evacuation panel or fire detection system interface to expand up to 48 buttons/inputs, when used with EP/FDS main board and expands up to a maximum of 72 buttons/inputs if main board is not mounted.

Entero® large enclosure 19" brackets

To mount a large EP/FDS enclosure into a 19" rack.

Entero® FP/EP/FDS 24 Vdc input card



Changes the FP/EP/FDS contact closure inputs to 24 Vdc inputs. Use e.g. if fire alarm system provides 24 Vdc outputs

Entero® FP/EP/FDS relay output card



To add relay contact closure outputs to the LED drive circuits of the FP/EP/FDS main board or 12 button/input expansion cards. Use e.g. for synoptic panel or to provide contact closure output per button/input.

Entero® FP/EP/FDS GPO relay card



Card with 12 contact closure outputs which can be linked to an alarm zone; for example to trigger a flashlight in a room or other device. The connection between the relay contact and external device is not monitored!

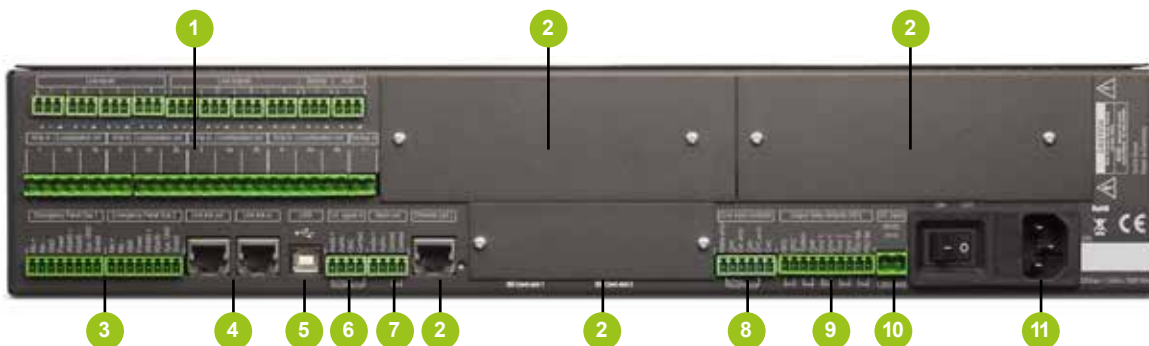
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1. POWER LED - GREEN: indicates the presence of the internal power supply
2. SYSTEM FAULT LED - YELLOW: indicates a system failure
3. GENERAL ERROR LED - YELLOW: indicates a general error
4. ALARM LED - RED: indicates a Voice Alarm condition



ESC emergency system controller rear view:

1. 4 zones with A & B loudspeaker connections, 1 backup amp and 1 Auxiliary output
2. Expansion slots for: two 4 x 4 expansion cards, 1 Ethernet card and 1 zone controller card
3. Emergency Panel Bus 1 & 2
4. Unit link out / in
5. USB port
6. External signal input
7. Alarm signal output
8. Error input contacts
9. Output relay contacts (NO)
10. 48 Vdc input
11. 230 Vac input

Entero® ESC emergency system controller ‘architects and engineers’ specifications

The emergency system controller shall be a DSP based controller and shall have 4 zones which can be expanded up to 12 zones. It shall have facility to connect a backup amplifier channel for each 4 zones and for combined use of the backup amplifier channel for up to 12 zones. The controller shall have A & B loudspeaker lines for each zone. It shall be possible to connect an amplifier channel for each zone and to combine the use of a single amplifier channel for up to 4 zones. The controller shall allow for low impedance, 50 V and 100 V loudspeaker line loads, with a maximum of 8 A per zone.

The controller shall have two emergency panel busses to connect up to 32 emergency panels and it shall have a link in and out to connect up to 32 controllers in a system. The controller shall have a USB port to connect to a computer and shall be expandable for Ethernet. External connected signals shall be routed to all zone outputs when an input contact closure is activated. The alarm signal output, including a contact closure output, shall provide the internal emergency message being played or the microphone signal from any emergency panel.

Line monitoring shall be performed using multiple pilot tone measurements with variable frequencies, including automatic load compensation.

The controller shall feature DSP processing functions like delay, loudspeaker/room PEQ, channel link, and gain for the zone outputs;

gain and bass/treble control (line 1-4) for the line inputs and limiters (mic inputs) & parametric EQ for the emergency inputs.

The controller shall have error inputs controlled via contact closure inputs and it shall have error output relay contacts.

A 230 Vac and 48 Vdc connection shall be possible. To reduce power consumption, the controller shall be able to turn off connected amplifiers when there is no Voice Alarm condition during 48 Vdc operation.

Configuration of the emergency system controller shall be possible by using the front panel display & navigation buttons and a dedicated PC software tool. Monitoring of the controller can be performed by using a dedicated PC-software application which allows error forwarding using e-mail messages.

It shall be possible to expand the controller with a user interface controller card allowing to connect external volume & source controllers which will control the source selection and output volume of the first 4 outputs in non-emergency situations.

All processing shall be done with 28-bit resolution and audio sampling rate shall be at 48 kHz.

The emergency system controller shall be the Entero® ESC emergency system controller.

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Regulatory information:

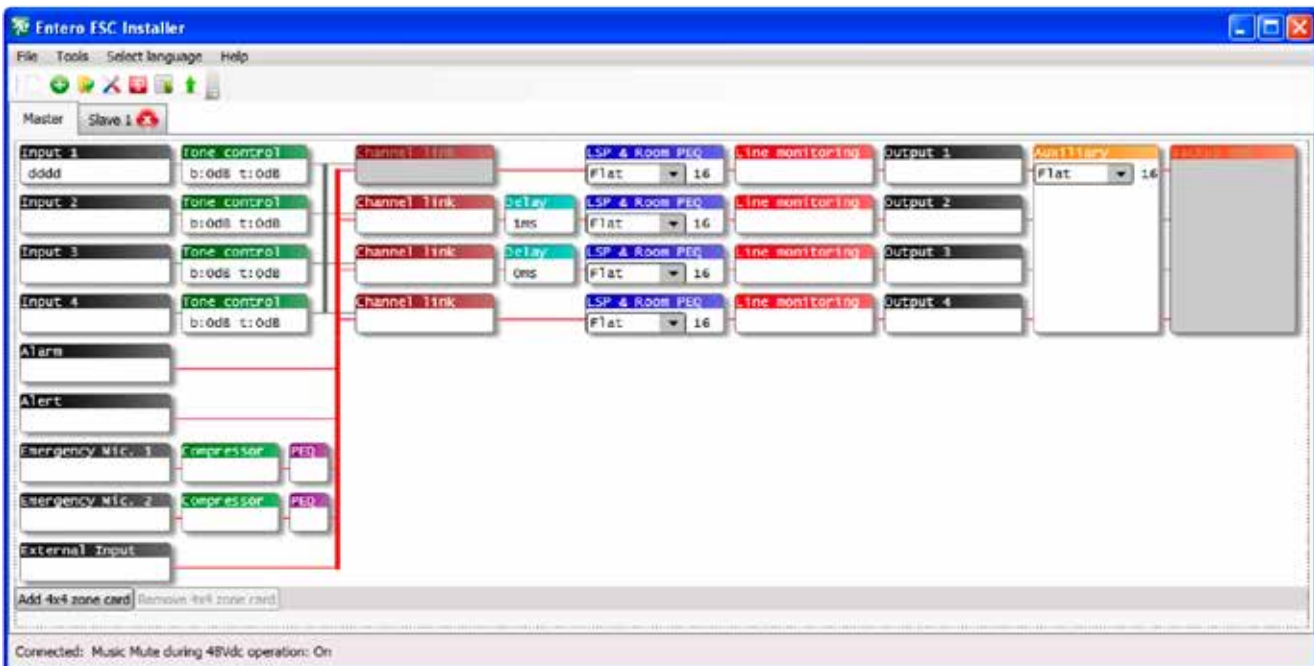
The Entero® ESC emergency system controller complies with the following regulations:

EMC: EN55022, EN55024, Safety: EN60065 6th edition
RoHS2 Directive 2011/65/EU
EN54-16 – when part of the Entero® Voice Alarm system

Warranty information:

The Entero® ESC emergency system controller is covered by a 5-year, transferable limited warranty.

Entero® ESC installer software



The installer software makes it easy to configure the Entero ESC emergency system controller(s), using a Windows PC. The Entero ESC installer software is a sound system software application, with the copyright owned by Bose. A copy of the Entero ESC installer software is included in the box with each ESC unit.

Features and control settings

- Input gain
- Input sensitivity
- VU-meter
- Monitoring
- Tone Control (input 1-4)
- Compressor limiter (Mic.1 and 2)
- 3-band parametric EQ (Mic.1 and 2)
- Channel link
- Delay (Output 2 and 3)
- Loudspeaker & Room PEQ (11-bands in total)
- Line monitoring setup
- Test signal
- Output gain
- Page gain
- Auxiliary setup
- Message selection
- Pre-announcement selection
- Paging matrix setup
- ABCD button configuration

System requirements for Entero® ESC installer software

Hardware

- Minimum 1 GHz Pentium based PC
- 56 MB free RAM
- CD-ROM player
- 50 MB free internal hard disk space
- Operating system(s) Windows 2000, Windows XP and higher

Display

- 1024 x 768 resolution (recommended minimum)
- 16 bit color (32-bit recommended)

For further information, contact the Bose Professional Systems Division.