Architect & Engineer

Specifications

EN 54-16 Public Address, Background Music and Voice Alarm System



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# EN54 PA/VA MAIN CONTROLLER

## Public Address, Background Music and Voice Alarm System’s Main Controller 2 x 500 W

The public address, background music and voice alarm system’s main controller is a compact EN 54-16 certified PA/VA system that ensures a fast, safe and controlled emergency evacuation.

This unit is the most versatile and cost-effective PA/VA system, thanks to its cutting-edge features, excellent audio quality and flexibility in minimum space. It has 2 class D amplifiers, 6 zones, 3 audio inputs, 6x6 audio matrix, DSP and LCD display.

The system can be configurated without software or PC, thanks to the Plug & Set mode for PA/VA. Audio inputs and automatic mixing allow high versatility for PA use in small installations.

The main controller has an EN 54-4 battery charger and can operate with one 12V battery. This feature and its advanced power saving control reduce maintenance costs to the maximum.

A Wall & Rack innovative design makes this unit suitable for wall mounting and rack integration.

### General Features

* 3 audio inputs.
* Up to 8 multi-zone microphones or voice alarm panels connected with CAT5 UTP cable.
* 2 class D amplifiers with two configurations for 100V/70V lines up to 500 W.
* Digital audio matrix 6x6, expandable.
* 4 pre-amp outputs for external PA amplifiers connection.
* DSP: 3/7-band input/output parametric equalizer, loudness, sound enhancer, independent volume control per each input and output master.
* Access control by LCD display.
* Control for attenuators for each zone.
* 8 inputs +2 output ports, supervised for integration with fire alarm control panel.
* Interface MODBUS RTU. RS-485 Half Duplex

### Voice Alarm / Emergency Features

* Certified under EN 54-16, EN 54-4 and EN 60849 standards.
* Failure detection and indication in all emergency functions.
* Fire alarm control panel integration.
* Double player for pre-recorded evacuation messages.
* Manual control of emergency states with access control.
* Emergency log.
* Loudspeaker lines supervision.
* Line terminator without return for supervision.
* Backup amplifier included.
* 10 minutes storage for pre-recorded messages.

### Technical Specifications

| **Parameter** | **Specifications** |
| --- | --- |
| Power supply | 100 - 240V~ 50/60Hz |
| Power consumption | 350W max / 100W at 1/8 output power |
| Frequency response | 80 – 20000Hz +/-1dB |
| Signal to noise ratio | SNR~90dB, A-weighted |
| Distortion factor | <1% according to IEC 60268 -15dB <0,01% pre-out outputs |
| Gain adjustment per channel | -100dB +10dB, 1dB steps |
| DSP | Integrated - 48 kHz, 24 bits - 344 MIPS |
| BGM audio inputs | Up to 3 x balanced audio 1 Vrms. 10 KΩ, 3 Pin, Euroblock type |
| Priority audio inputs | 2 x balanced audio 1 Vrms. 10 KΩ, 4 Pin, Euroblock type (GPIO) |
| General control (GPIO) | 2 x control I/O, 0-5 V, 100 Ω, in PRIO audio inputs |
| ACSI Bus | 1 x balanced audio 1 Vrms. 10 KΩ, RJ-45 female, total 1000m / 3280,84ft |
| ACSI-Link connectivity | 2 x balanced audio 1 Vrms. 10 KΩ, RJ-45 female, total 500m / 1640,42ft |
| Pre-amp audio outputs | 4 x balanced audio 1 Vrms. 100 Ω, 3 Pin, Euroblock type |
| Attenuators control | 6 x override 24V DC, 6 x 30mA, 2 Pin, Euroblock type (4 pin connector) |
| Emergency control inputs | 8 x 0 - 5V DC, monitored inputs, 2 Pin, Euroblock type (4 pin connector) |
| Emergency control outputs | 2 x contact closure output, NO, max 60V DC 130mA, 2 Pin, Euroblock type (4 pin connector) |
| Virtual matrix | 15 x 24 maximum |
| Amplifier | 2 x 500W D class (200Wrms x 2) @ 70 / 100V. Min load 20 Ω |
| Backup amplifiers | 1 backup amplifier with automatic priority according to EN 54-16 |
| Speaker line outputs | 6 x 100V audio. Min. impedance: 20 Ω 500W (outputs 1 and 2), 80 Ω 120W (rest), 2 Pin, Euroblock type |
| Output power | 500 W (Pink Noise 1/8). 200 Wrms according to EN 54-16 |
| Protection | Over-temperature, infrasonic, short circuit, slow start-up, overload |
| Emergency power | 181x76x167mm battery housing, up to 22Ah |
| Battery charger | Integrated, smart charging up to 3 amperes |
| Display | Backlit LCD 2 rows x 16 characters |
| Operation conditions | -5 ºC to +45 ºC / 23 ºF to 113 ºF  5% to 95% relative humidity (without condensation) |
| Finish | Materials: Fe y AL  Colours: RAL7016 and RAL9005 |
| Weight | 7.5 kg / 15.76 lb |
| Dimensions (W x H x D) | 453mm x 88mm x 455mm / 18.2” x 3.46” x 18” |
| Accessories | Male Euroblock connectors, installation screws, 4 x rubber foot |

# EN54 PA/VA ACCESSORIES

## Communication Module

The expansion modules add an extra communication port to the public address, background music and voice alarm system’s main controller. That makes possible its interconnection, performing a united system up to 60 zones.

The communication module provides redundant communication so that the system is monitored and can be controlled according to EN54 requirements.

There are two available models that allow systems consisting of up to 4 units and 24 zones or up to 10 units and 60 zones.

### General Features

* Extend PA/VA systems up to 60 zones.
* Loop redundant communication.
* System control and monitoring
* Easy to install.

### Technical Specifications

| **Parameter** | **Specifications** |
| --- | --- |
| Models | 1) Up to 4 units or 24 zones  2) Up to 10 units or 60 zones |
| Description | Mini PCI-e format expansion module for PA/VA systems |
| Main use | Redundant closed loop connection |
| Communication | RS-485 |
| Wiring length | Up to 200m per node. Total max 800 m |
| Net weight | 150 g |
| Packaging dimensions  (H x W x D) | 120 x 100 x 80 mm |
| Gross weight | 250 g |

## Card for Battery Charger

Battery update and activation card EN54-4 certified for the public address, background music and voice alarm system’s main controller.

Once activated, the card becomes a key for the charger to work permanently.

### General Features

* Activates EN 54-4 certified function, Emergency Power System (EPS).
* Permanent installation with access control in the main controller.

### Technical Specifications

| **Parameter** | **Specifications** |
| --- | --- |
| Hardware | µSD card |
| Package dimensions  (W x H x D) | 190 x 20 x 140 mm / 7.5” x 0.8” x 5.5” |
| Gross weight | 0,1 kg / 0.22 lb |

## Wall Mounting Kit

The wall mounting kit allows to install a public address, background music and voice alarm system’s main unit on wall. Made of 1.5 mm galvanized sheet, it offers a solid fixing base for the equipment with only 5 mm deep. When the main unit is fixed, the mounting stays completely hidden.

The kit has four slotted holes for wall mounting and four fixings for the main unit.

### General Features:

* Wall mounting kit for PA/VA main unit.
* Made of galvanized sheet.
* 4 holes for wall mounting.
* Hidden after unit is installed.

### Technical Specifications

| **Parameter** | **Specifications** |
| --- | --- |
| Material | Galvanized Fe 1,5 mm / 0,15” |
| Color | Gray |
| Dimensions (W x H x D) | 416 x 432 x 25 mm / 16.4” x 17” x 1” |
| Wall mounting | Using 4 x holes 6.5 mm diameter. Distance between holes 300 mm / 11.8” |
| Main unit mounting | Using 4 x screws M4 x 16 mm |
| Net weight | 1,8 kg / 4 lb |
| Package dimensions  (W x H x D) | 490 x 50 x 420 mm / 19.3” x 2” x 16.3”” |
| Gross weight | 1,95 kg / 4.3 lb |
| Accessories | Screws for main unit fixing y wall mounting included |

## 19” Rack Fixed Mounting Kit

The rack mounting kit allows to install a PA/VA main unit in a 19” rack cabinet.

With only 2U high, including the installed main unit, it offers a solid fixing base for the equipment.

### General Features

* Fixed mounting for 19” rack.
* 19” 2U rack (including the main unit).

### Technical Specifications

| **Parameter** | **Specifications** |
| --- | --- |
| Material | Fe |
| Color | RAL 9005 Black |
| Dimensions (W x H x D) | Two 2U 19” rack pieces. 24 x 86 x 20 mm / 0.95” x 3.4” x 0.79” |
| Net weight | 0,16 kg / 0.35 lb |
| Package dimensions  (H x W x D) | 40 x 105 x 68 mm / 1.57” x 4.13” x 2.7” |
| Gross weight | 0,18 kg / 0.4 lb |
| Accessories | Screws for assembly included |

## Sliding Tray Mounting Kit for 19” Rack

The sliding tray mounting kit allows to install a PA/VA main unit in a 19” rack cabinet between 500 and 900 mm deep. With only 3U high, including the installed main unit, it offers a solid fixed base for the equipment and makes it reachable to ease the wiring and maintenance of the system.

The kit has two high-strength steel guides to move the main unit from the rack without disassembling it. The kit has locking handles to integrate the main unit with the rest of the rack cabinet equipment.

### General Features

* Removable mounting up to 550 mm.
* 19” 3U rack (including the main unit).
* Locking latches/handles.
* For 19” racks from 500 to 900 mm deep.

### Technical Specifications

| **Parameter** | **Specifications** |
| --- | --- |
| Material | Fe |
| Color | RAL 9005 Black |
| Dimensions | 19” 3U rack. Extendible rack depth from 500 to 900 mm / 19,7” - 35,4” |
| Tray extension | 550 mm / 21.6” |
| Net weight | 3,2 kg / 7 lb |
| Package dimensions  (W x H x D) | 490 x 50 x 420 mm / 19.3” x 2” x 16.3”” |
| Gross weight | 3.6 kg / 7.9 lb |
| Accessories | Screws for assembly and rack mounting included |

## Paging Microphone

High-performance desktop microphone for professional public address installations. It has lighting indicators in order to show active state.

Thanks to its internal microcontroller, it can work under different systems and with different operational modes: on/off button, push to talk button, TTL communication through 2 wires, advise-tone to initiate/cut communication and TTL control level selection.

It is an ideal paging microphone to be placed at any point of the installation due to its small dimensions, its elegant design and its high resistance material.

### General Features

* High performances dynamic capsule.
* Local power supply.
* Configurable contact relay for auxiliary system.
* Conceded-word indicator.
* Lighting indicator placed in the gooseneck.

### Technical Specifications

| **Parameter** | **Specifications** |
| --- | --- |
| Power supply | 5 V DC, 200 mA. |
| Frequency response | 200 - 15000 Hz (+/-2 dB). |
| Audio output | 750 mV 600 balanced |
| S/N ratio | 100 dB (A weighting) |
| Sensitivity | -43 dB at 1 kHz |
| Direction | Axial polar hypercardioid diagram |
| Transducer type | Dynamic with mobile coil. |
| Dimensions | 125 x 45 x 125 mm (width x height x depth) |
| Length of gooseneck | 350 mm |
| Power consumption | 1 W |

## Push-to-talk Microphone

The push-to-talk dynamic microphone adds more versatility to the main unit. This   
device allows you to have within your reach a public announcement input.

The microphone can be directly connected to the priority audio input to bypass the background music. As it is directly powered from the USB port inside the unit, you do not need to add an external power supply.

With the included support, you can hang this microphone to the main unit’s side for a fast and easy call.

### General Features

* Powered from main unit’s USB port.
* Easy to install and use

### Technical Specifications

| **Parameter** | **Specifications** |
| --- | --- |
| Cable length | 1 m spring cable |
| Packaging dimensions  (H x W x D) | 96 x 381 x 320 mm |
| Gross weight | 220 g |

## Multi-zone Paging Microphone

High-performance digital paging station for EN54 PA/VA systems.

Up to 8 paging microphones can be connected in a bus configuration to the ACSI bus of the system via CAT5 cable. The ACSI bus allows a maximum distance of 1 Km and provides priority levels between the devices connected to the bus.

It has 8 buttons for paging to 8 zones and additional zone buttons can be added with expansion keyboards.

It features an “all-call” button, busy line signal and auto-lock function. The sound processing has been configured to achieve high quality results on the voice paging, in terms of distortion, sensitivity, bandwidth and signal/noise ratio.

It has an iron chassis to provide a superior stability and protection against damages. All buttons are designed for an intensive use.

### General Features

* Recall function.
* Auto-lock function.
* LED indications for zone selection.
* LED indicators of the system's state (EMG, FLT or LINK).
* LED indicators of busy and conceded word.
* Power directly from system through the UTP cable.
* High performance durable microphone capsule.

### Technical Specifications

| **Parameter** | **Specifications** |
| --- | --- |
| Power supply | 5 V dc, Type A/B Mini USB connector |
| Power consumption | 1 A |
| Frequency response | 200- 15000 Hz (+/-2 dB). |
| Signal to noise ratio | R> 98 dB, A-weighted |
| Sensitivity | -43 dB at 1 kHz |
| Directional axis | Axial with hypercardioid polar diagram response. |
| Kind of transducer | Condenser. |
| Indicators | State: Emergency, Failure, Link, Busy, Busy Line, Conceded Word. 8 indicators Zone selected. Gooseneck includes illuminated ring for conceded word. |
| Buttons | Select / unselect all zones, 8 x zone selection, 1 x Talk |
| ACSI Bus | 2 x Balanced Audio (In+Loop)1Vp, 0,707 Vrms. 10 KΩ, 2 x RJ-45 Female, Total 1000 m. / 3280,84 ft |
| Aux Mic Input | 1 x Unbalanced input, 15 mV, 47 KΩ, 1 x Minijack Mono 3,5 mm |
| Dimensions without gooseneck (W x H x D) | 95 x 65 x 190 mm / 3,75” x 2,56” x 7,48” |
| Gooseneck length | 350 mm / 13,78” |
| Operating Conditions | -5 ºC to +45 ºC / 23 ºF to 113 ºF  5 % to 95 % Relative Humidity (no condensation) |
| Finish | Fe, Grey RAL 7016 |
| Weight | 0,93 kg |

## Expansion Keyboard for Multi-zone Paging Microphone

Expansion keyboard unit for multi-zone paging microphones.

It has an iron chassis to provide stability and protection against damages. All buttons are designed for an intensive use.

### General Features

* Can connect up to 7 units to a multi-zone paging microphone.

### Technical Specifications

| **Parameter** | **Specifications** |
| --- | --- |
| Buttons | 8 x zone selection |
| Operating conditions | -5 ºC to +45 ºC / 23 ºF to 113 ºF  5 % to 95 % relative humidity (no condensation) |
| Material | Fe 1,5 mm / 0,15” |
| Color | Grey RAL 7016 and Black RAL 9005 |
| Dimensions (W x H x D) | 86 x 75 x 200 mm / 3.4” x 2.9” x 7.9” |
| Net weight | 0,85 kg / 1.9 lb |
| Packaging dimensions (W x H x D) | 380 x 100 x 320 mm / 15” x 3.9” x 12.6”” |
| Gross weight | 1,2 kg / 2.6 lb |
| Accessories | Fixation elements, microphone connection and label for button identification |

## Voice Alarm Panel

The voice alarm panel is designed to provide EN54 PA/VA systems with evacuation system controls for different areas.

It allows to know the condition of the system and broadcast both live and pre-recorded alarm and evacuation warnings through up to 56 selection memories of evacuation zones.

This is possible because it can equip up to 7 expansion keyboards with 8 zone memories each one.

The equipment also offers the chance to choose the source of the power supply between local or supplied through the ACSI bus. The ACSI bus allows a maximum total wiring of 1000 m (914.4 yd) and offers priority levels for the devices connected in bus mode.

It has functions such as volume control, dynamic sound adjustment that allow other system functions such as pre-recorded messages broadcasting.

It has a metallic chassis that provides stability and protection against damage. All the buttons are designed for intensive use.

### General Features

* Up to 56 group memories of up to 8 zones per memory (448 zones of the system).
* Prior notice tone.
* Volume adjustment.
* Power supply indicator.
* Emergency condition general indicator.
* Fault condition general indicator.
* Link with system fault indicator.
* Power supply fault indicator.
* Emergency microphone fault indicator.
* Broadcasting of voice evacuation message indicator.
* Broadcasting of voice evacuation recorded message indicator.
* Broadcasting of voice alarm message indicator.
* Remote control indicator.
* Emergency controls, Reset, Acknowledge, Test, Alarm message, Evacuation message.
* Side port to connect up to 7 expansion keyboards.
* Priority configuration and operating parameters.
* Local or peripheral power supply.
* Wall or 19” rack installation.

### Technical Specifications

| **Parameter** | **Specifications** |
| --- | --- |
| Power supply | 4.5- 5.5 V DC, 1 x mini-USB AB |
| Power consumption | 200 - 500 mA (max with all the expansion keyboards) |
| Expansion keyboard consumption | 40 mA max |
| Frequency response | 200 Hz – 12000 Hz (+/- 2 dB) |
| Signal to noise ratio | >98 dB, A-weighted |
| Sensitivity | -43 dB (1 kHz) |
| Directionality | Axial, with hypercardioid type polar diagram |
| Type of transducer | Dynamic with moving coil |
| DSP | Integrated. 48 kHz, 24 bits – 172 MIPS |
| ACSI Bus | 2 x Identical ACSI ports: Balanced audio 1 Vp, 0,707 Vrms. 10 KΩ, female RJ-45, Total 1000 m / 3280 ft |
| Expansion Port | 1 x Pin row, 2 rows x 5 female contacts |
| Indicators | Condition: Emergency, General Fault, Remote Control  Fault: Link, Supply, Emergency microphone  Message in broadcast: Evacuation recorded, Warning recorded, live message |
| Buttons | Emergency, Reset, Confirmation, (EMG, RST, ACK)  1 button for talking (TALK)  Recorded message: Evacuation and Warning  Indicators test |
| Functions | Prior notice tone, volume control, DSA (Dynamic sound adjuster). Directionality until 448 system zones. |
| Microphone cable length | 500 mm / 13,75” |
| Dimensions without microphone (A x H x P) | 259 mm x 132 mm x 50 mm / 3,38” x 2,56” x 7,48” |
| Dimensions with microphone (A x H x P) | 259 mm x 132 mm x 93 mm / 3,38” x 2,56” x 7,48” |
| Keyboard/Rack complements dimensions (A x H x P) | 86 mm x 132 mm x 42 mm / 3,38” x 2,56” x 7,48” |
| Operating conditions | -5 ºC to +45 ºC / 23 ºF to 113 ºF  5 % to 95 % Relative Humidity (no condensation) |
| Finish | Fe, Grey RAL 7016 |
| Weight | 1 kg |
| Expansion keyboard weight | 0,5 kg |
| Voice alarm panel accessories | 1 x mini-USB AB male to USB A male  1x Power Supply USB connector Type C (EU Type)  1 x Ethernet cable 2 m / 6,56 ft.  2 x 19” Rack installation accessories  1 x block accessory for wall installation |
| Expansion keyboard accessories | 1 x expansion port adaptor 2 x 5 contacts male-male  1 x connecting piece to voice alarm panel  4 x countersunk screw (4 x 8 mm) |

## Expansion Keyboard for Voice Alarm Panel

Expansion keyboard for the voice alarm panel.

It has 8 buttons for paging to a maximum of 8 zones.

Each panel can equip up to 7 expansion keyboards through a port on the side that allows the installation on the right side of the main unit. Thus, it can address up to 448 zones.

### General Features

* 8 buttons.
* Up to 7 expansion keyboards can be connected together.
* Busy zone indicators.
* Metallic chassis that provides stability and protection against damage.
* Local power supply.

### Technical Features

| **Parameter** | **Specifications** |
| --- | --- |
| Buttons | 8 x zone selection |
| Operating Conditions | -5 ºC to +45 ºC / 23 ºF to 113 ºF  5 % to 95 % Relative Humidity (no condensation) |
| Finish | Fe, Grey RAL 7016 |
| Weight | 0,85 kg |