



FEDERAL SIGNAL

Safety and Security Systems / Industrial

Advancing security and well-being.

E C H O

**Model E1
Flame-Proof
Digital Intercom Station**

**ATEX and IECEx
Certified**



Handset Model E1-HND shown

***Installation and
Maintenance Instructions***

25500090A
REV. A0 1013
Printed in U.S.A.



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Safety Messages to Installers and Users

⚠ WARNING

It is important to follow all instructions shipped with this product. This device is to be installed by trained personnel who is thoroughly familiar with the country electric codes and will follow these guidelines as well as local codes.

The selection of mounting location for the device, its controls and the routing of the wiring is to be accomplished under the direction of the facilities engineer and the safety engineer. In addition, listed below are some other important safety instructions and precautions you should follow:

Read and understand all instructions before installing or operating this equipment.

- Disconnect intercom from the power supply before any installation or maintenance is performed.
- Power is only to be provided from the Central Control. This intercom is not for stand-alone use.
- After installation, test the unit to ensure that it is operating properly.
- After testing is complete, provide a copy of these instructions to all operating personnel.
- This equipment is suitable for use in ATEX Zone 1 applications
- Establish a procedure to routinely check the intercom installation for integrity and proper operation.
- The product nameplate, which may contain cautionary or other information of importance to maintenance personnel, should not be obscured in any way.

Failure to follow all safety precautions and instructions may result in property damage, serious injury, or death.

Overview of Model E1 Intercom Station

The Federal Signal Model E1 ECHO Intercom Stations provide safe and efficient two-way voice communications in large and small ECHO Digital Intercom Systems. The E1 is ATEX and IECEx certified for use in Hazardous Areas. The E1 ECHO station provides instantaneous high-speed connections and clear, crisp digital voice quality. Each station offers single-button all call, priority emergency paging, group paging, speed dial, conference call, and relay output.

The E1 station keypad is designed to provide tactile and audible feedback via an external powered speaker for positive activation.

Any station can call any one or more stations in an ECHO Digital Intercom System. With the headset or gooseneck microphone options, each is capable of hands-free voice communication. Because the ECHO Digital Central Exchange provides 30 channels of simultaneous communication, calls are processed and connected immediately without dial tone or delay.

Each E1 station is comprised of a stainless steel enclosure containing a printed circuit board assembly providing the communications and safety functions. A relay output module is provided as a standard feature. The relay operates when the intercom is in Ring Mode. A single normally-open contact is provided with, which is rated at 240 Vac, 3 A.

Each station may be programmed for four levels of privacy for receiving calls: non-private, semi-private, full privacy, and do-not-disturb. The volume for voice and signal levels is easily adjusted on the keypad.

The E1 Intercom Stations must be powered from an Echo Central Control. The data/power is supplied from the Central Control line cards. For full operational details of the Echo system, refer to the instructions provided with the Central Control.

Installation and Maintenance Instructions

Table 1 Product specifications

Operating voltage:	24 Vdc nominal (line driven from ECHO control)
Current idle:	25 mA
Current connected:	100 mA max.
Handset microphone type:	Dynamic
Handset material:	Moulded polycarbonate/ABS blend. Anti-static.
Handset cord:	Polyurethane
Stubby microphone type:	Dynamic
Stubby microphone sensitivity:	-54 dBA
Stubby microphone enclosure:	Stainless steel
Audio output:	2.7 Vrms, 1 k Ω load
Volume control via keypad:	30 dBA in 10 steps
Line attenuation:	24 dBA at KBps Max
Loop resistance	170 Ω max.
Distance:	1.2 miles 2.0 kms max.
Cable:	One twisted pair, non-shielded
Cable entries:	3 x 3/4" NPT
Operating temperature range:	-40 °C to +65 °C
Termination:	DIN rail mount tensioned clamp terminals
Relay switching capacity:	3 A at 240 Vac
Net weight:	11.4 kg
Shipping weight:	13.6 kg
Shipping dimensions:	524 mm x 359 mm x 346 mm

Certifications

Models:	E1-SM, E1-GM1, E1-GM2, E1-GM3, E1-HND, E1-JS
Certificate nos.:	ATEX Cert No.: Demko 13 ATEX 1213079X IECEX Cert No.: IECEX UL 13.0028X
ATEX coding:	 II 2 G
Protection:	Ex d ib IIB T4 Gb (-40 °C ≤ Ta ≤ +65 °C) Ex d [ib] IIB T4 Gb (for Model E1-JS)
Standards:	EN 60079-0: 2009, EN 60079-1: 2007, EN 60079-11:2011 IEC 60079-0: 5 th Ed., IEC 60079-1: 6 th Ed., IEC 60079-11: 6 th Ed.
I.S. ratings	Um = 250 V (Additionally, for Model E1-JS, refer to control drawing 850000218A.)

Special Conditions for Safe Use

- All cable entry devices and blanking elements shall be certified in type of explosion protection flameproof enclosure “d” suitable for the conditions of use and correctly installed.
- This device uses 3/4-inch NPT cable entries
- Unused apertures shall be closed with suitable blanking elements.
- For ambient temperatures below -10 °C and above +60 °C, use field wiring suitable for both minimum and maximum ambient temperature.
- All conduit runs must have a properly certified sealing fitting connected within 2 inches (51 mm) of the enclosure.
- **Warning:** Do not open when an explosive atmosphere may be present.
- **Warning:** Do not open when energized.
- The flamepath joint differs from Table 2 of EN 60079-1. The enclosure has a joint width of 37 mm, maximum allowable gap of 0.038 mm. The distance “I” of 22.6 mm is measured from the edge of the O-ring groove to the cover bolt per Figures 3 and 5 of EN 60079-1.

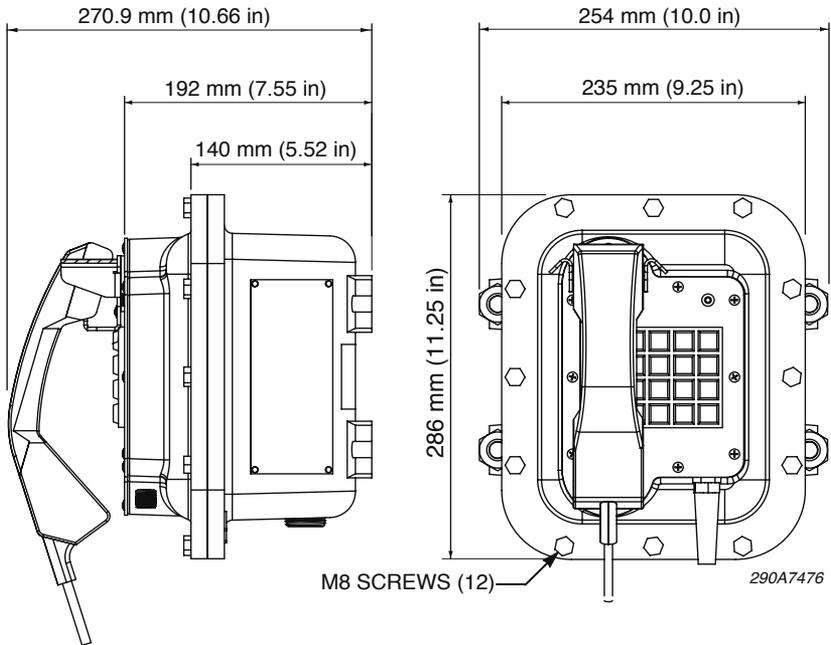
Unpacking the Product

After unpacking the product, examine it for damage that may have occurred in transit. If it has been damaged, do not attempt to install or operate it. File a claim immediately with the carrier, stating the extent of the damage. Carefully check all envelopes, shipping labels, and tags before removing or discarding them. Disposal of all shipping materials must be carried out in accordance with national and local codes and standards. If any parts are missing, please call Federal Signal Customer Support at +1 708-534-4756 or +1 877-289-3246.

Mounting and Wiring the Model E1

The Model E1 ECHO intercoms are designed for mounting on a flat horizontal or vertical surface. Four installer-supplied M10 bolts are required. For mounting dimensions, see Figure 1.

Figure 1 Dimensions

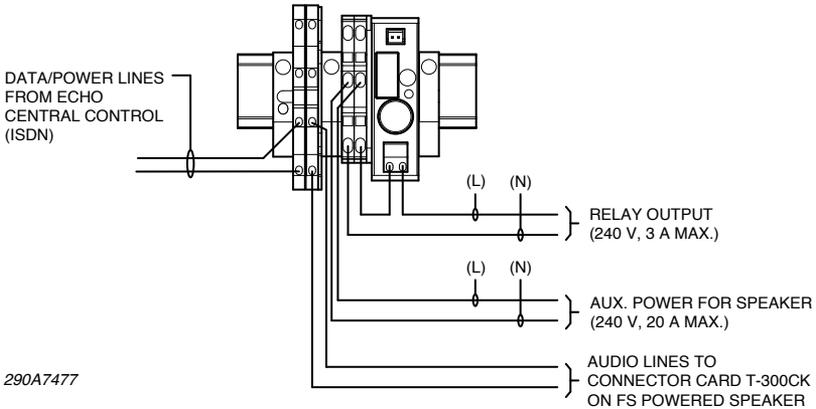


Installation and Maintenance Instructions

To install the Model E1 intercom:

- 1. Access to internal wiring:** See Figure 1 on page 9. Remove the 12 M8 stainless-steel screws securing the cover to the enclosure and carefully lift the cover. Note that the cover is attached with a bonding wire to secure it to the enclosure as well as to provide strain relief for the internal wiring.
- 2. Conduit entrances:** See Figure 2. The Model E1 has three conduit/cable entrances for field wiring. Entries can be used for connection of data/power from the Central Control, external loudspeaker connections, or relay output connection.

Figure 2 Wiring diagram



NOTE: The internal grounding terminal shall be used as the grounding equipment means. The external terminal is only a supplemental bonding connection where local authorities permit or require such a connection.

- 3. Terminals:** For field wiring, the Model E1 has a series of DIN rail terminal blocks with these connections (see Figure 2):
 - ✓ Relay output: 18-12 AWG (0.75 – 4 mm²), tightening torque
 - ✓ 0.4 N•m (3.4 in-lb), 240 Vac, 3.0 A max.
 - ✓ Audio/ISDN: 26-12 AWG (0.25 – 4 mm²), Cu conductors only

4. Upon completion of the field wiring, secure the cover to the enclosure with the M8 screws to ensure weather- and dust-tightness and hazardous location ratings.

Safety Messages to Maintenance Personnel

⚠ WARNING

Listed below are some important safety instructions and precautions you should follow:

- Read and understand all instructions before maintaining or operating this system.
- Any maintenance to the unit must be performed by properly trained personnel.
- Any maintenance to the intercom must be done with power turned off.
- Never alter the unit in any manner. Safety in hazardous locations may be endangered if additional openings or other alterations are made in units specifically designed for use in these locations.
- The nameplate, which may contain cautionary or other information of importance to maintenance personnel, should NOT be obscured in any way. Ensure that the name-plate remains readable when the housing's exterior is painted.
- After performing any maintenance, test the intercom system to ensure that it operates properly.

Failure to follow all safety precautions and instructions may result in property damage, serious injury, or death.

Ordering Replacement Parts

Due to certification, certain component parts are not available for field replacement. Intercoms with this type of damage must be either replaced entirely or returned to Federal Signal for service. For spare parts availability and part numbers, please call Federal Signal Customer Support at 708-534-4756 or 877-289-3246.

Getting Repair Service or Technical Assistance

Products returned for repair require a Return Authorization form from your local distributor or from Federal Signal. To obtain repair service or technical assistance from Federal Signal, call 708-534-4756 or 877-289-3246. For instruction manuals and information on related products, visit: <http://www.federal-signal-indust.com>.

Returning the Product for Credit

Product returns for credit require a return authorization from your local distributor prior to returning the product to Federal Signal. Please contact your distributor for assistance.

A product is qualified to be returned for credit when the following conditions are met:

- Product is resalable and in the original cartons
- Product has not been previously installed
- Product is the current revision
- Product has not been previously repaired
- Product is a standard product
- Product is not a service part

All returns are subject to a re-stock fee.

Defective products that are returned within the warranty period will be repaired or replaced at Federal Signal's sole discretion. Defective products do not include those products with lamp failure. Circumstances other than those listed above will be addressed on a case-by-case basis.