4" Silenceable Cone Speaker

965-1S Series

Features

- **POWERED FROM 70 VOLT AUDIO**
  All speakers are supplied with 'DC Blocking Capacitor' for audio circuit supervision.
- **HIGH dBA OUTPUT**
  High efficiency, mylar speaker cone with sealed construction produces 90 dBA at 2 watts.
- **MULTIPLE OUTPUT TAPS**
  Select for 1/4, 1/2, 1, or 2 watt operation using large terminal block.
- **SCREW TERMINAL WIRE CONNECTION**
  Large terminals speed installation and accept up to #12 AWG (2.5mm^2) wire.
- **FAIL SAFE SWITCH OPERATION**
  Should the switch wiring become open or shorted, the fire alarm signal will continue to sound.

Application

(based in part on the 1995 National Building Code of Canada)

An audible signal device located within a dwelling unit shall incorporate a means that enables the device to be silenced for a period of not more than 10 minutes, after which the device shall restore to its normal operation.

Description

The 965 silenceable speakers are designed for installations where it is necessary to provide silencing and resound of a local fire alarm speaker in accordance with the requirements of the National Building Code (1995). The 4" speaker design is connected to and powered from a 70-volt RMS fire alarm speaker circuit. The unit is equipped with an integral or remote silence switch. The remote switch can be wall mounted at a convenient location and height in a standard, single gang electrical box. An LED on the silence switch will illuminate to visually indicate the alarm signal status, even when the room speaker is silenced.

Activation of the silence switch will mute the connected speaker for not more than 10 minutes before resounding. If a page message is initiated from the control panel, a 3 second pre-announce tone is used to reactivate the speaker to allow the message to be heard. The speaker may be re-silenced again in the same manner. Power for the silence circuitry is very low at 0.3 watts and is obtained from the 70-volt speaker line. All speakers on the circuit remain fully supervised and require no additional wiring from the control panel. Silenceable and non-silenceable speakers may be mixed on a circuit and silencing of an individual speaker will not affect the operation of other speakers on the circuit.

965-1S Series

Speaker baffles are available in 7.35" (187mm) diameter round and 7" (178mm) square and are finished in an attractive white epoxy finish. The devices mount easily to EST's 960A series flush and surface boxes. Flush boxes are made from satin-coat steel and have flexible mounting straps for use with poured concrete forms.

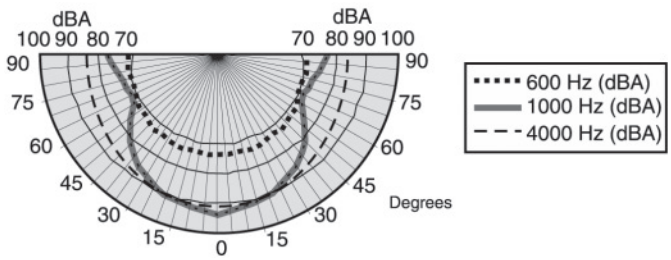
Audible Signal Application

Suggested sound pressure levels in each signaling zone for alert or alarm signals are at least 15 dB above the average ambient sound level or 5 dB above the maximum sound level having a duration of at least 60 seconds, whichever is greater, measured 5' (1.5 m) above the floor. The average ambient sound level is the RMS, A-weighted sound pressure measured over a 24-hour period.

Doubling the distance from the signal to the ear will theoretically cause a 6 dB reduction in the received sound pressure level. The actual effect depends on the acoustic properties of materials in the space. Doubling the power output of a device (e.g. speaker from 1W to 2W) will increase the sound pressure level by 3 dBA. A 3 dBA difference is a "just noticeable" change in volume.

Typical Sound Output Distribution

dBA measured at 10 feet (3.05 m) in anechoic chamber
965 Series CONE SPEAKER



Application Notes - CANADA

(Based in part on 1995 Canada National Building Code)

The fire alarm signal sound pressure level shall not exceed 110 dBA in any normally occupied area. The sound pressure level from an audible signal in a floor area used for occupancies other than residential occupancies shall be not less than 10 dBA above the ambient noise, and never less than 65 dBA. The sound pressure level in sleeping rooms from an audible signal shall not be less than 75 dBA when any intervening doors between the device and the sleeping room are closed. Audible signal devices shall be installed not less than 1.8 m to the center of the device above the floor (per CAN/ULC S524).

The fire alarm audible signal shall be supplemented by fire alarm strobes in any floor area where the ambient noise level exceeds 87 dBA, or where the occupants of the floor area use ear protective devices, are located within an audiometric booth, or are located within sound insulating enclosures.

This also applies to assembly occupancies in which music and other sounds associated with performances could exceed 100 dBA.

Specifications

Input/Operating Volts	**70 VRMS**		
Power Consumption	0.3 watts average (add .3 to the output wattage tap selected for power calculations)		
Speaker Taps/Output (note 1)	Measured at 10' (3.05 m): 2W = 90 dBA, 1W = 87 dBA, 1/2W = 84 dBA, 1/4W = 81 dBA		
Speaker Cone	4" (102 mm) mylar cone, sealed back construction, rated for 8 watts, 8 ohm voice coil		
INDOOR Operating Environment	85% @ 30°C relative humidity; 32-120°F (0-49°C) ambient temperature		
Wire Connections	Terminals - polarized inputs for Speaker, #12 AWG (2.5mm^2) maximum		
Housing/Baffle	Steel, White baked epoxy polyester powder-coat finish		
Mounting Wallbox - INDOOR	Flush Round: 960A-4RF	Flush Square: 960A-5SF	Surface Square: 960A-4SS
Agency Listings	ULC S541		

Note 1 - Measured at 10 feet (3.05 M) in anechoic chamber at 1000 Hz tone per ULC S541.

Engineering Specification

Supply and install, a 4" cone speaker with individual signal silence capability. The speaker shall have a [7.35" (187mm) round] [7" (178mm) square] baffle and operate at 70 volts RMS. Multiple taps shall be provided for ¼, ½, 1 and 2 watt outputs. The silence circuitry/timer shall be incorporated within the speaker housing and shall not require a separate power source. The circuitry shall obtain its power from the 70-volt audio signal and shall consume less than 0.3 watts of additional power. Standard and silenceable speakers may be mixed on the same circuit and all speakers shall remain fully supervised.

The silence switch shall be [remote from] [integral to] the speaker. The switch shall be a fail-safe design, ensuring an alarm sounds in the event of a short or open in the switch wiring. It shall be possible to connect up to 6 speakers within one dwelling unit to be silenced from up to 4 switches.

Operation of the silence switch shall mute the connected speaker(s) within the dwelling unit for a period of not more than ten minutes. No other signals outside of the dwelling unit will be affected from this operation. When the ten minute timer expires, the speaker shall resound if the alarm signal is still active. The speaker may then be re-silenced in the same manner. A pre-announce tone shall be used to alert occupants and reactivate silenced speakers, ensuring voice specific page announcements are heard in all dwelling units. An LED on the silence switch shall illuminate to visually indicate the alarm signal status in the normal and silenced state.

The speaker shall be an EST model 965-1S series and shall be flush or surface mounted as shown on the plans and specifications. The speaker shall be ULC S541 listed and shall be compatible with EST control panels. For additional compatibility information, refer to EST's Catalogue Sheet #89001-0009.

Compatibility Information

The **965-1S** Series of Silenceable Speakers has been tested compatible with the following EST control panels: **ESA, EST2, IRC3** and **8500**. All tones available were tested successfully unless specified below:

8500 - Slow Whoop is not compatible
EST2 - 20/120 does not have provision for 1KHz pre-announce tone

CONSIDERATIONS for 965 series 1KHz design

- 1 KHz steady can not be used as the signalling tone because the design uses this frequency to reactivate the speaker for paging.

Note: 1KHz coded signals (20/120, 3-3-3 etc.) are compatible

The **3-965-1S** Series of Silenceable Speakers was designed and tested for use with the EST3 control panel only. One of EST3's strengths is its field recordable message capability. While the variety of tones is unlimited, all standard factory tones were tested successfully including 1KHz steady.

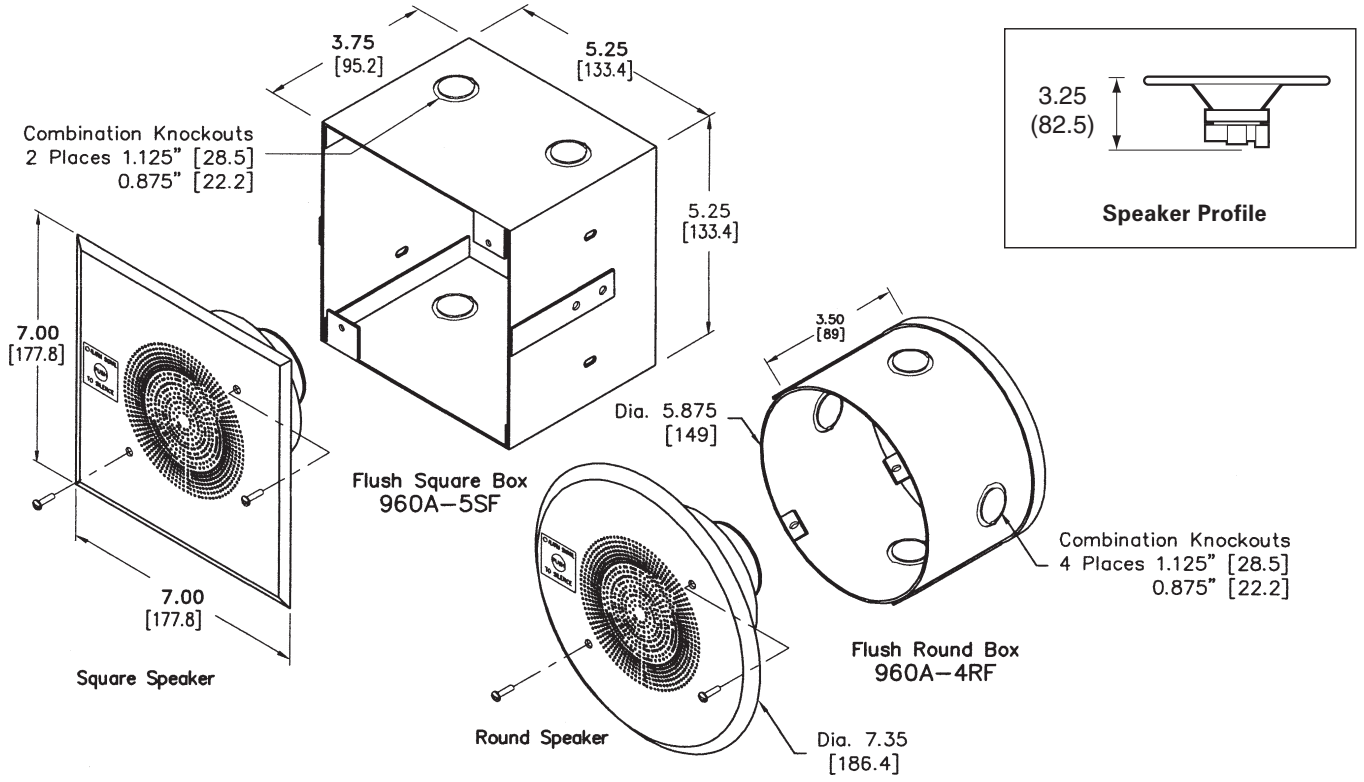
625 6TH STREET EAST, OWEN SOUND, ON N4K 5P8 PHONE 519-376-2430 FAX 519-376-7258 WEB: WWW.EDWARDS.CA
U.S. SALES: SARASOTA, FL 941-739-4200; FAX 941-727-0740 • **INTERNATIONAL SALES:** 905-270-1711; FAX 905-270-9553

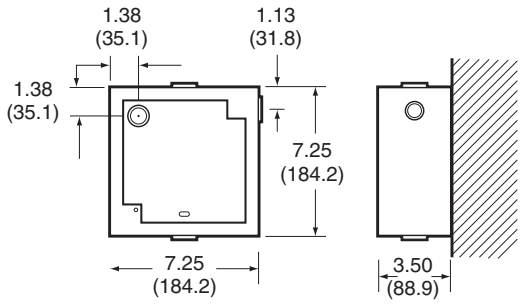
Installation and Mounting

The optional remote silence switch mounts to a standard single gang electrical box. Four #22 AWG (minimum) wires are required between the remote switch/LED and the speaker to a maximum of 100 feet (30m).

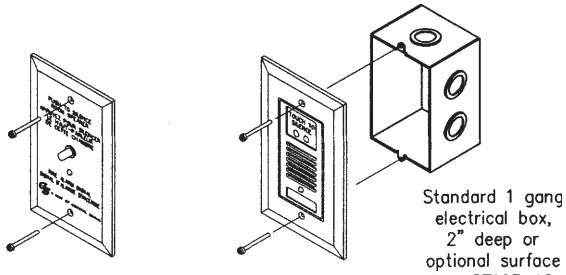
Square speakers can be surface or flush mounted using model 960A-4SS surface box or 960A-5SF flush box. Round speakers can be flush mounted only using a 960A-4RF box. Flush boxes are made from satin-coat steel and have flexible mounting straps for use with poured concrete forms. Surface mount boxes are finished in matching white epoxy paint.

EST recommends that fire alarm speakers always be installed in accordance with the latest recognized edition of national and local fire alarm codes.





Surface Square Box-960A-4SS
(for square speaker only)



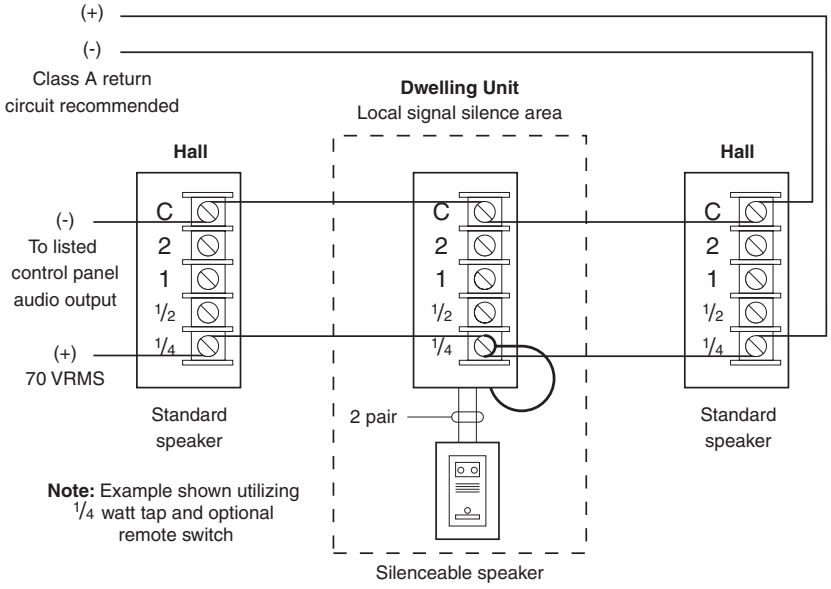
RPB–SS
Optional Remote Push Button Switch
Required when one switch is used to silence multiple (6 max.) speakers.

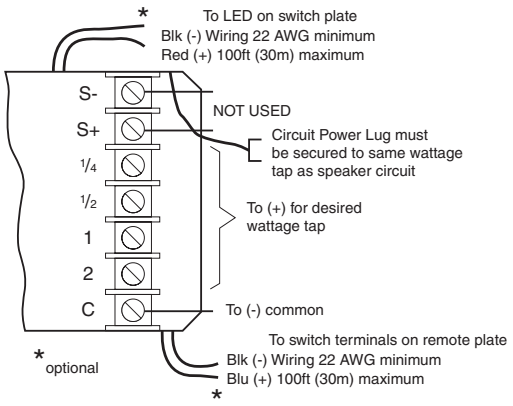
RTS–SS
Remote Touch Switch
Optional Remote Touch Switch used when silencing a single speaker

625 6TH STREET EAST, OWEN SOUND, ON N4K 5P8 PHONE 519-376-2430 FAX 519-376-7258 WEB: WWW.EDWARDS.CA
U.S. SALES: SARASOTA, FL 941-739-4200; FAX 941-727-0740 • **INTERNATIONAL SALES:** 905-270-1711; FAX 905-270-9553

Typical Wiring

Connect common (c) on the 965 speaker terminal block to the 70 VRMS audio circuit common (-). Connect the 70 VRMS positive (+)wire and the circuit power lug to the desired wattage tap on the speaker terminal block. If a remote switch is utilized, wire the remote switch/LED plate to the speaker using the wire leads as shown. The circuit loading must be calculated using 0.3 watts plus the wattage tap selected. For example, a silenceable speaker configured with a 0.5 watt tap results in 0.8 watts of load on the circuit.

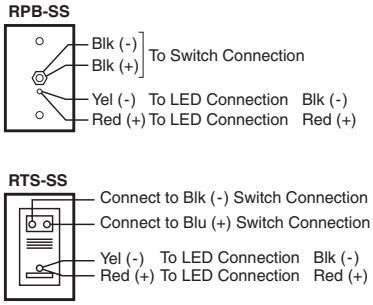




Notes:

1) The speaker must be connected to 70 VRMS audio circuits.
2) Although the code allows unsupervised devices and silencing in-suite signals, Edwards recommends the occupants take appropriate fire procedure action when alarm signals sound, and supervision be maintained for all devices.
3) In-suite circuit isolation may be required to meet local building codes. Refer to EST's model IDM-70 on cat sheet 89001-0025 for more information.

Optional Remote Switch Plate Wiring



Ordering Information

Model Number	Description	Ship Wt. lb (kg)
70 Volt Speakers c/w an Integral Silence Switch[1] [2]		
965-1S-4RW	Speaker, round, 70V amps using1KHz pre-annouce tone	3 (1.4)
965-1S-4SW	Speaker, square, 70V amps using1KHz pre-annouce tone	3 (1.4)
3-965-1S-4RW	Speaker, round, 70V for EST3 control panel only	3 (1.4)
3-965-1S-4SW	Speaker, square, 70V for EST3 control panel only	3 (1.4)
70 Volt Speakers Utilizing a Remote Silence Switch[1] [2] (order remote silence switch separately)		
965-1RS-4RW	Speaker, round, 70V amps using 1KHz pre-announce tone	3 (1.4)
965-1RS-4SW	Speaker, square, 70V amps using 1KHz pre-announce tone	3 (1.4)
3-965-1RS-4RW	Speaker, round, 70V for EST3 control panel only	3 (1.4)
3-965-1RS-4SW	Speaker, square, 70V for EST3 control panel only	3 (1.4)
Remote Silence Switches		
RTS-SS	Remote touch to silence switch[3]	.25 (.1)
RPB-SS	Remote pushbutton switch[4]	.25 (.1)
Mounting Accessories		
960A-4RF	Round flush box, for indoor round baffles	2 (1.0)
960A-5SF	Square flush box, for indoor square baffles	2 (1.0)
960A-4SS	Square surface box,white for indoor square baffles[5]	2 (1.0)
27193-16	Surface 1-gang box, white for RTS/RPB	.6 (.3)

Notes:

(1) Circuit loading is calculated using 0.3 watts plus the wattage tap selected. ie) 1/4 watt tap + 0.3 = 0.55 watt load.
(2) If silenceable speaker-strobes are required, use standard devices and the 684 silence switch powered from the strobe circuit.
(3) Use RTS-SS for silencing a single speaker. Up to 4 switches may be connected in parallel to one speaker.
(4) Use RPB-SS for silencing multiple (6 maximum) speakers. Up to 4 switches may also be connected to silence multiple speakers.
(5) For surface mounting, use square speaker with surface square box, and round flush box for indoor round baffles.