INSTRUCTION & SERVICE MANUAL
E2xCS112-5UL COMBINED
ALARM HORN SOUNDER / BEACON
For Use In Hazardous Locations

- 45 Tones 3 stage Alarm Horn Sounder / 5 Joule Beacon
- Automatic Synchronisation (sounder)
- Volume control
- Type 4 / 4X / 13
- Operating Temperature Range
  -20ºC to +55ºC

Unit Type No. E2xCS112-5UL **7KA1**

Input Voltages: DC Units 12V or 24V or 48V
AC Units 120V or 230V 50/60Hz

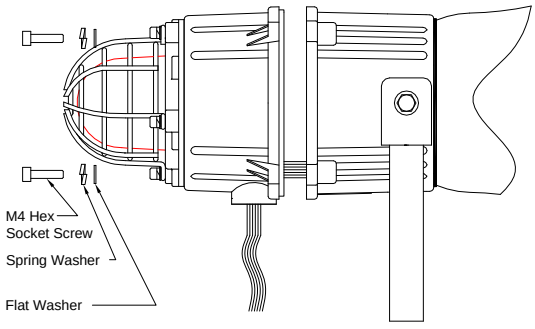
Max. Operating Temperature / Code at +55º Ambient	
Hazardous Location	**Temperature Code**
Class I, Division 2, Groups A, B, C, D	T2D (215ºC)
Class II, Division 2, Groups F and G	T6 (85ºC)
Class III, Divisions 1 and 2	T6 (85ºC)

Max. Operating Temperature / Code at +40º Ambient	
Hazardous Location	**Temperature Code**
Class I, Division 2, Groups A, B, C, D	T3 (200ºC)

The equipment is suitable for use in the hazardous locations listed above or non-hazardous locations only.

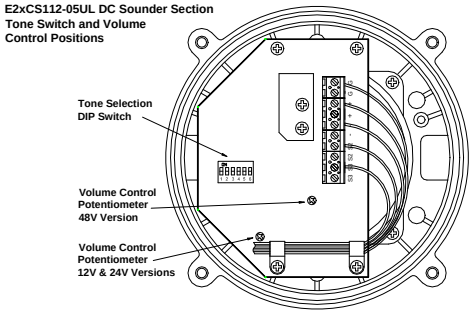
PRE-INSTALLATION

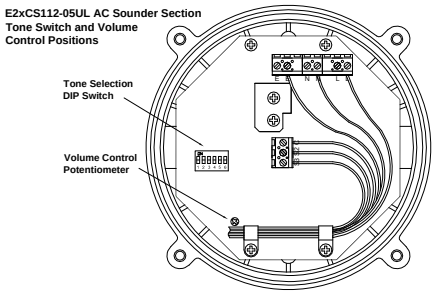
WARNING - Before the E2xCS112-5UL combined sounder / beacon is installed the required tone and output volume must be set. *Note the units are factory set to tone 2 (800/1000Hz alternating at 2Hz) and maximum output*. If necessary the unit should be connected to a suitable power supply in a safe area to determine what tone pattern and output level is required.



WARNING – NOT TO BE USED AS A VISUAL PUBLIC MODE NOTIFICATION APPLIANCE

WARNING – HIGH VOLTAGE SHOCK HAZARD. WAIT 5 MINUTES AFTER REMOVING POWER BEFORE OPENING THE ENCLOSURE

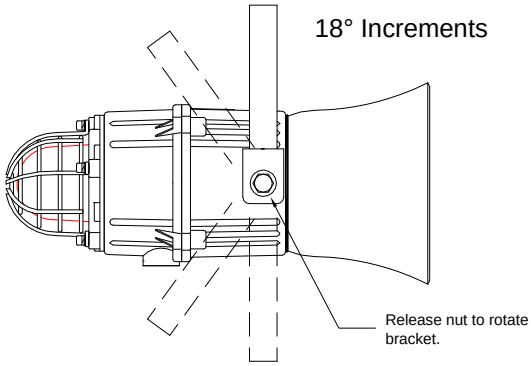




WARNING - EXPLOSION HAZARD - SUBSTITUTION OF COMPONENTS MAY IMPAIR SUITABILITY FOR CLASS I, II DIVISION 2.

MOUNTING

The E2xCS112-5UL combined sounder / beacon must be mounted using the rotating bracket as shown. If the cover has been removed to set the tone or volume control ensure that it has been correctly replace before the sounder is mounted.



WIRING INSTALLATION

The E2xCS112-5UL combined sounder /beacon is provided with 2 off M20 x 1.5 cable entries.
1 x ½" NPT adaptor and 1 x M20 stopping plug are provided.

Installation using Field Wiring Leads and Conduit

If the sounder is supplied pre-wired with flying leads, these are colour coded and should be connected as shown in the diagram below.
The conduit running from the supply to the sounder must include an equipment grounding conductor that is at earth

potential to facilitate ground connection of the device. A number of sounders can be connected in a chain to the same supply using field installed wiring compartments that are appropriate for the hazardous location, provided that the conductor at earth potential can be readily connected to the ground lead on each sounder in the chain.

Installation using Cable Glands without Field Wiring Leads

If the sounder is supplied without field wiring leads, the cable connections are made into the terminal blocks on the electronic PCB assembly. Terminal blocks are suitable for field wiring (AWG 18-12). Strain relief has to be ensured by installation with a suitable cable gland. Follow the markings for the terminals on the PCB and install wiring as shown in the diagram below.

Cable glands need to be UL certified to ANSI/UL 2225 or C22.2 NO. 174-M1984. and to UL514B / CSA-C22.2 No. 18.3-12, ratings for hazardous locations must be equal to or better than the rating of the sounder used.
If a high IP (Ingress Protection) rating is required then a suitable sealing washer must be fitted under the cable gland.

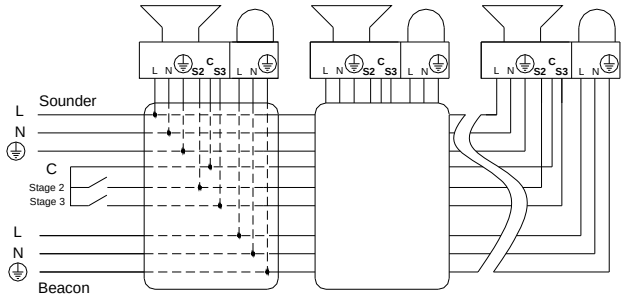
WARNING - ALL ELECTRICAL WIRING MUST BE INSTALLED IN ACCORDANCE TO THE NATIONAL ELECTRICAL CODE

AC Sounder Section

Black	(S)	Live	Violet	(S)	C
White	(S)	Neutral	Orange	(S)	S2
Green/Yellow	(S)	Ground	Yellow	(S)	S3

AC Beacon Section

Black	(B)	Live
White	(B)	Neutral
Green/Yellow	(B)	Ground



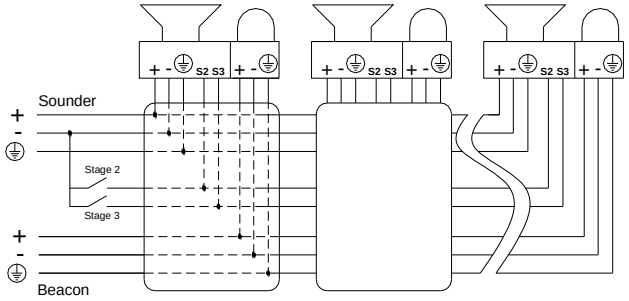
NOTE if the second and third stage wires are not used they must be individually insulated to ensure that cannot make contact to any other wires.

DC Sounder Section

Red	(S)	Positive
Black	(S)	Negative
Orange	(S)	S2
Yellow	(S)	S3
Green/Yellow	(S)	Ground

DC Beacon Section

Red	(B)	Positive
Black	(B)	Negative
Green/Yellow	(B)	Ground



NOTE if the second and third stage wires are not used they must be individually insulated to ensure that cannot make contact to any other wires.

POWER SUPPLY SELECTION

It is important that a suitable power supply is used to run the combined units. The power supply selected must have the necessary capacity to provide the input current to all of the units connected to the system.

Sounder Section

Unit Type	Input Voltage	Input @ 1kHz Current	Max. I/P Volts
E2xCS112-5UL	24V DC	284mA	30V
E2xCS112-5UL	48V DC	146mA	58V
E2xCS112-5UL	230V 50/60Hz AC	54mA	253V
E2xCS112-5UL	120V 50/60Hz AC	104mA	132V

Beacon Section

Unit Type	Input Voltage	Input Current	Max. I/P Volts
E2xCS112-5UL	24V DC	275mA	30V
E2xCS112-5UL	48V DC	145mA	58V
E2xCS112-5UL	230V 50/60Hz AC	30mA	253V
E2xCS112-5UL	120V 50/60Hz AC	80mA	132V

TONE SELECTION

The E2xCS112-5UL sounder section has 45 different tones that can be selected for the first stage alarm. The sounder can then be switched to sound second and third stage alarm tones. The tones are selected by operation of a DIP switch on the pcb in the sounder section for both DC and AC units. The tone table shows the switch positions for the 45 tones and which tones are available for the second and third stages. To operate the sounder on stage one simply connect the supply voltage to the flying leads Red (S) and Black (S) for DC units, Black (S), White (S) and Green/Yellow for AC units.

The operation of the second and third stages is different for DC and AC units.

<u>DC Units Second and Third Stage Tone Selection</u>
To activate the second stage, remotely switch the S2 orange wire to the negative supply. To activate the third stage, remotely switch the S3 orange wire to the negative supply. NOTE the DC power supply to the Red (S) and Black (S) wires must be maintained for 2nd and 3rd stages.

<u>AC Units Second and Third Stage Tone Selection</u>
To select the second and third stages on the E2xCS112-5UL AC sounder the Common (C) Violet wire must be remotely connected to the S2 orange wire for the second stage and to the S3 yellow wire for third stage. NOTE the AC power supply to the Black (S) and White (S) wires must be maintained for 2nd and 3rd stages.

VOLUME CONTROL

The volume on the E2xCS112-5UL sounder can be set using the volume control (see figures 2 and 3). For maximum output level the potentiometer should be set to the fully clockwise position.

WARNING – HIGH VOLUME MAY CAUSE HARM TO PERSONNEL IN CLOSE PROXIMITY

TONE SELECTION TABLE

Stage 1	Frequency Description	Switch 1 2 3 4 5 6	Stage 2	Stage 3
1	340Hz Continuous	0 0 0 0 0 0	Tone 2	Tone 5
2	800/1000Hz @ 0.25 sec Alternating	1 0 0 0 0 0	Tone 17	Tone 5
3	500/1200Hz @ 0.3Hz sec Slow Whoop	0 1 0 0 0 0	Tone 2	Tone 5
4	800/1000Hz @ 1Hz Sweeping	1 1 0 0 0 0	Tone 6	Tone 5
5	2400Hz Continuous	0 0 1 0 0 0	Tone 3	Tone 20
6	2400/2900Hz @ 7Hz Sweeping	1 0 1 0 0 0	Tone 7	Tone 5
7	2400/2900Hz @ 1Hz Sweeping	0 1 1 0 0 0	Tone 10	Tone 5
8	500/1200/500Hz @ 0.3Hz Sweeping	1 1 1 0 0 0	Tone 2	Tone 5
9	1200/500Hz @ 1Hz - DIN *PFEER P.T.A.P.*	0 0 0 1 0 0	Tone 15	Tone 2
10	2400/2900Hz @ 2Hz Alternating	1 0 0 1 0 0	Tone 7	Tone 5
11	1000Hz @ 1Hz Intermittent	0 1 0 1 0 0	Tone 2	Tone 5
12	800/1000Hz @ 0.875Hz Alternating	1 1 0 1 0 0	Tone 4	Tone 5
13	2400Hz @ 1Hz Intermittent	0 0 1 1 0 0	Tone 15	Tone 5
14	800Hz 0.25 sec on, 1 sec off Intermittent	1 0 1 1 0 0	Tone 4	Tone 5
15	800Hz Continuous	0 1 1 1 0 0	Tone 2	Tone 5
16	660Hz 150mS on, 150mS off Intermittent	1 1 1 1 0 0	Tone 18	Tone 5
17	544Hz (100mS)/440 Hz (400m/S) - NF S 32-001	0 0 0 0 1 0	Tone 2	Tone 27
18	660Hz 1.8 sec on, 1.8 sec off Intermittent	1 0 0 0 1 0	Tone 2	Tone 5
19	1.4KHz - 1.6KHz 1s, 1.6KHz - 1.4 KHz 0.5s - NFC48-265	0 1 0 0 1 0	Tone 2	Tone 5
20	660Hz Continuous	1 1 0 0 1 0	Tone 2	Tone 5
21	554Hz/440Hz @ 1Hz Alternating	0 0 1 0 1 0	Tone 2	Tone 5
22	544Hz @ 0.875 sec Intermittent	1 0 1 0 1 0	Tone 2	Tone 5
23	800Hz @ 2Hz Intermittent	0 1 1 0 1 0	Tone 6	Tone 5
24	800/1000Hz @ 50Hz Sweeping	1 1 1 0 1 0	Tone 29	Tone 5
25	2400/2900Hz @ 50Hz Sweeping	0 0 0 1 1 0	Tone 29	Tone 5
26	Bell	1 0 0 1 1 0	Tone 2	Tone 15
27	554Hz Continuous	0 1 0 1 1 0	Tone 26	Tone 5
28	440Hz Continuous	1 1 0 1 1 0	Tone 2	Tone 5
29	800/1000Hz @ 7Hz Sweeping	0 0 1 1 1 0	Tone 7	Tone 5
30	300Hz Continuous	1 0 1 1 1 0	Tone 2	Tone 5
31	660/1200Hz @ 1Hz Sweeping	0 1 1 1 1 0	Tone 26	Tone 5
32	Two tone chime	1 1 1 1 1 0	Tone 26	Tone 15
33	745Hz @ 1Hz Intermittent	0 0 0 0 0 1	Tone 2	Tone 5
34	1000 & 2000Hz @ 0.5 sec Aletrnating - Signapore	1 0 0 0 0 1	Tone 38	Tone 45
35	420Hz @ 0.625 Sec Australian Alert	0 1 0 0 0 1	Tone 36	Tone 5
36	500-1200Hz 3.75 sec /0.25 sec Australian Evac.	1 1 0 0 0 1	Tone 35	Tone 5
37	1000Hz Continuous - *PFEER Toxic Gas*	0 0 1 0 0 1	Tone 9	Tone 45
38	2000Hz Continuous	1 0 1 0 0 1	Tone 34	Tone 45
39	800Hz 0.25 sec on, 1 sec off Intermittent	0 1 1 0 0 1	Tone 23	Tone 17
40	544Hz (100mS)/440Hz (400mS) - NF S 32-001	1 1 1 0 0 1	Tone 31	Tone 27
41	Motor Siren - slow rise to 1200Hz	0 0 0 1 0 1	Tone 2	Tone 5
42	Motor Siren - slow rise to 800Hz	1 0 0 1 0 1	Tone 2	Tone 5
43	1200Hz Continuous	0 1 0 1 0 1	Tone 2	Tone 5
44	Motor Siren - slow rise to 2400Hz	1 1 0 1 0 1	Tone 2	Tone 5
45	1KHz 1s on, 1s off Intermittent - *PFEER Gen. Alarm*	0 0 1 1 0 1	Tone 38	Tone 34

SWITCH POSITION EXPLANATION

1 = Switch in the ON position.
0 = Switch in the OFF position..

END OF LINE MONITORING

On E2xCS112-5UL DC units, dc reverse line monitoring can be used on both the sounder section and the beacon section if required. All DC combined units have a blocking diode fitted in the supply input lines to both the sounder and the beacon. An end of line monitoring resistor can be connected across the +ve and –ve terminals. If an end of line resistor is used it must have the following values:-

24V DC Sounders

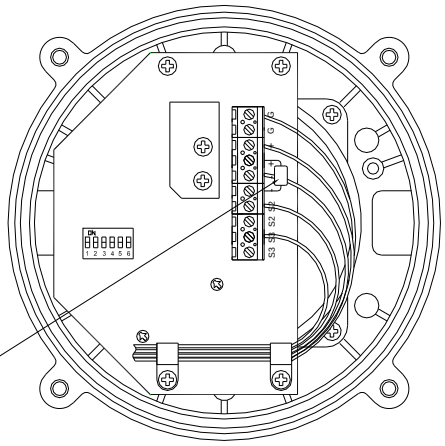
Minimum Resistance 3k9 ohms Minimum wattage 0.5W
Minimum Resistance 1k ohms Minimum wattage 2.0W

48V DC Sounders

Minimum Resistance 15k ohms Minimum wattage 0.5W
Minimum Resistance 3k9 ohms Minimum wattage 2.0W

The resistor must be connected directly across the +ve and –ve terminals as shown in the following drawings. Whilst keeping its leads as short as possible, a spacing of at least 1/16 inch (1.58mm) must be provided through air and over surfaces between uninsulated live parts.

E2xCS112-5UL DC Sounder Section End of Line Resistor



E2xCS112-5UL DC Beacon Section End of Line Resistor