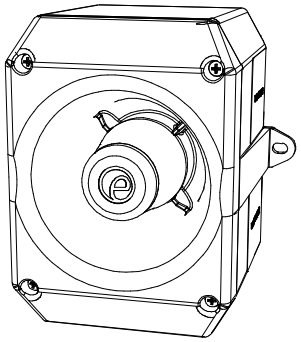
INSTRUCTION MANUAL
D2xS1 Alarm Horn
For use in Hazardous Locations



D2XS1

1) Product Table

Model	Nom. Voltage	Voltage Range	Operating Current	Max Current
D2xS1DC024	24Vdc	10-30Vdc	313mA	313mA @ 24Vdc
D2xS1DC048	48Vdc	38-58Vdc	181mA	218mA @ 48Vdc
D2xS1AC115	115Vac	103.5 – 126.5 60Hz	89mA	91mA @ 126.5Vac
D2xS1AC230	230Vac	207 – 253 50Hz	52mA	72mA @ 253Vac

Table 1: Electrical Ratings.

2) Introduction

The D2xS1 is an ATEX, IECEx, UKEX and UL certified alarm horn which produces a loud warning signal in a hazardous area. Sixty-Four first stage alarm sounds can be selected by internal switches and each one can be externally changed to a second, third or fourth stage alarm sound. The alarm horn may be used for Gas applications in Zone 2 / Class I Zone 2 / Class I, Division 2 as well as for Dust applications in Zone 22 / Class II Zone 22 / Class II Division 2 / Class III Division 1 & 2. A D2xC1 combined alarm horn & strobe is also available. The 24Vdc version is also listed for use in fire alarm systems – public mode in accordance with UL464 Tenth Edition / CAN/ULC-S525 Fourth Edition.

3) Warnings

SUITABLE FOR USE IN CLASS II, DIVISION 2, GROUPS A, B, C AND D HAZARDOUS LOCATIONS
SUITABLE FOR USE IN CLASS II, DIVISION 2, GROUPS E, F AND G HAZARDOUS LOCATIONS
WARNING: DO NOT OPEN WHEN EXPLOSIVE ATMOSPHERE IS PRESENT
WARNING – EXPLOSION HAZARD – SUBSTITUTION OF ANY COMPONENT MAY IMPAIR SUITABILITY FOR CLASS I, DIVISION 2.
WARNING – EXPLOSION HAZARD – SUBSTITUTION OF ANY COMPONENTS MAY IMPAIR SUITABILITY FOR CLASS II, DIVISION 2.

POTENTIAL ELECTROSTATIC CHARGING HAZARD – CLEAN ONLY WITH A DAMP CLOTH
USE HEAT RESISTANT CABLES AND CABLE GLANDS (RATED 90ºC OR HIGHER)
EXPLOSION HAZARD. DO NOT REMOVE OR REPLACE LAMPS, FUSES OR PLUG-IN MODULES UNLESS POWER HAS BEEN DISCONNECTED OR THE AREA IS KNOWN TO BE FREE OF IGNITIBLE CONCENTRATIONS OF FLAMMABLE GASES OR VAPORS.
EXPLOSION HAZARD. DO NOT DISCONNECT WHILE THE CIRCUIT IS LIVE OR UNLESS THE AREA IS KNOWN TO BE FREE OF IGNITIBLE CONCENTRATIONS.

4) Ratings and Markings

4.1. Fire Alarm Ratings

The 24Vdc version is listed for use in fire alarm systems. See fire instruction manual D189-00-001-IS-SC-UL

4.2. ATEX / IECEx / UKEX certification

The Type Examination Certificates:
DEMKO 14ATEX4786493904X, IECEx ULD14.0004X and UL21UKEX2131X have been issued by UL. This confirms compliance with the European ATEX Directive 2014/34/EU for Group II, Category 3G/D equipment. The alarm horn carries the Community Mark and subject to local codes of practice, may be installed in any of the EEA member countries. This instruction sheet describes installations which conform to the current issue of EN60079-14/IEC60079-14 Electrical Installation in Hazardous Areas; EN60079-10-1 / IEC 60079-10-1 Explosive Atmospheres - Classification of Areas. Explosive Gas Atmospheres; EN60079-10-2 / IEC 60079-10-2 Explosive Atmospheres - Classification of Areas. Explosive Dust Atmospheres. When designing systems for installation outside the UK, the local Code of Practice should be consulted.

Standards	
EN IEC 60079-0:2018 / IEC60079-0:2017 (Ed 7): Explosive Atmospheres - Equipment. General Requirements EN IEC 60079-7:2015 +A1:2018 / IEC 60079-7:2018 (Ed. 5.1): Explosive Atmospheres - Equipment Protection by Increased Safety "e" EN 60079-31:2014 / IEC 60079-31:2013 (Ed 2): Explosive Atmospheres - Equipment Dust Ignition Protection by Enclosure "t"	
Ratings	
D2XS1 :	Ex ec IIC T4 Gc (Ta -40ºC to +50ºC) Ex tc IIIC T90ºC Dc (Ta -40ºC to +50ºC)

Certificate No. DEMKO 14 ATEX 4786493904X
IECEx ULD 14.0004X
UL21UKEX2131X

ATEX Mark, Equipment Group and Category: **II 3G** **II 3D**

CE Marking

UKCA Marking

4.3. NEC & CEC Ratings

NEC & CEC Class / Division Ratings for US / Canada

Standards			
UL 121201-2021 (Ed. 9) CAN/CSA C22.2 No. 213-17 (Ed. 3)			
Ratings			
D2XS1:	Class I Div 2 Class I Div 2 Class I Div 2 Class II Div 2 Class II Div 2 Class III Div 1 & 2	ABCD T3C ABCD T4 ABCD T4A FG T5 FG T6	Ta -40ºC to +70ºC Ta -40ºC to +65ºC Ta -40ºC to +50ºC Ta -40ºC to +50ºC Ta -40ºC to +45ºC Ta -40ºC to +50ºC
Installation must be carried out in compliance with the National Electric Code / Canadian Electric Code			

NEC Class / Zone ratings US

Standards	
UL 60079-0 (Ed. 7): Explosive Atmospheres - part 0: Equipment - General Requirements UL 60079-7 (Ed. 5): Explosive Atmospheres - Equipment Protection by Increased Safety "e" UL 60079-31 (Ed. 2) Explosive Atmospheres - Equipment Dust Ignition Protection by Enclosure "t"	
Ratings	
D2XS1:	Class I, Zone 2 AEx ec IIC T4 Gc (Ta -40ºC to +50°C) Zone 22 AEx tc IIIC T90°C Dc (Ta -40ºC to +50°C)
Installation must be carried out in compliance with the National Electric Code.	

CEC Class / Zone ratings Canada

Standards	
CAN/CSA C22.2 No. 60079-0 (Ed. 4) 02/2019 Explosive Atmospheres - Part 0: Equipment - General Requirements CAN/CSA C22.2 No. 60079-7 (Ed. 2) Explosive Atmospheres - Equipment Protection by Increased Safety "e" CAN/CSA C22.2 No. 60079-31 (Ed. 2) Explosive Atmospheres - Equipment Dust Ignition Protection by Enclosure "t"	
Rating	
D2XS1:	Ex ec IIC T4 Gc X (Ta -40ºC to +50°C) Ex tc IIIC T90°C Dc (Ta -40ºC to +50°C)
Installation must be carried out in compliance with the Canadian Electric Code	

4) Zones, Gas Group, Category and Temperature Classification

When connected to an approved system the D2X alarm horn may be installed in:

Area Classification	
Zone 2	Explosive gas air mixture not likely to occur in normal operation, and if it does, it will only exist for a short time.
Zone 22	Explosive dust air mixture not likely to occur in normal operation, and if it does, it will only exist for a short time.
Gas Groupings	
Group IIA	Propane
Group IIB	Ethylene
Group IIC	Hydrogen and Acetylene
Temperature Classification for Gas Applications	
T1	450ºC
T2	300ºC
T3	200ºC
T4	135ºC
Dust Groupings (ATEX / IECEx / UKEX only)	
Group IIIA	Combustible Flyings
Group IIIB	Non-conductive Dust
Group IIIC	Conductive Dust
Maximum Surface Temperature for Dust Applications (ATEX / IECEx / UKEX only)	
D2XS1:	90°C
Equipment Category	
3G / 3D	
Equipment Level Protection	
Gc, Dc	
Ambient Temperature Range	
-40ºC to +70ºC (Class I Div 2 only) -40ºC to +50ºC	

IP Rating
IP66 to EN60529 To maintain the ingress protection rating, the two off cable entries must be fitted with suitably rated, certified cable entry and/or blanking devices during installation.
Type Rating
Per UL50E / NEMA250: 4 / 4X / 3R / 13

5) Special Conditions for Safe Use

Special Condition for safe Use as stated on the Type Examination Certificate DEMKO 14 ATEX 4786493904X / CoC IECEx ULD 14.0004X / UL21UKEX2131X:

End user shall adhere to the manufacturer's installation and instruction when performing housekeeping to avoid the potential for hazardous electrostatic charger during cleaning, by using a damp cloth.

The D2xS1 is not to be mounted with the horn facing upwards
The equipment shall only be used in end use with appropriately certified cable entry devices and blanking plugs

5.1. Installation

The product must only be installed by suitably qualified personnel in accordance with the latest issues of the relevant standards.

The installation of the units must also be in accordance with any local codes that may apply and should only be carried out by a competent electrical engineer who has the necessary training.
The alarm horn is not to be mounted with the horn facing upwards.

The equipment has not been assessed as a safety-related device (as referred to by Directive 2014/34/EU Annex II, clause 1.5).

The cable entry temperature may exceed +70ºC / the cable branching point may exceed 80ºC. Therefore suitable heat resisting cables and cable glands must be used, with a rated service temperature of at least 90ºC.

To maintain the ingress protection rating and mode of protection, the M20 x 1.5 cable entries must be fitted with suitably rated, certified cable glands and/or suitably rated, certified blanking devices during installation. If a high IP (Ingress Protection) rating is required then a suitable sealing washer must be fitted under the cable gland. For use in explosive gas atmospheres a minimum ingress protection rating of IP54 must be maintained. For use in explosive dust atmospheres a minimum ingress protection rating of IP64 must be maintained.

Only the front cover is to be used for access to the enclosure for installation, service and maintenance. Once the product is opened, the Type Rating cannot be maintained anymore unless a full verification of the gasket material is done and there is no damage.

Connections are to be made into the terminal blocks using solid or stranded wire, sizes 0.5-2.5mm2 / AWG 20-14. Wire insulation needs to be stripped 6-7mm. Wires may be fitted securely with crimped ferrules. Terminal screws need to be tightened down with a tightening torque of 0.56 Nm / 5 Lb-in.
Internal earthing connections should be made to the Internal earth terminal on the PCBA. The earth conductor should be at least equal in size and rating to the incoming power conductors. The internal earth bonding wire connects the PCBA earth terminal to the internal earth terminal in the enclosure back box.

External earthing connections should be made to the M5 earth stud, using a ring crimp terminal to secure the earth conductor to the earth stud. The external earth conductor should be at least 4mm^2 / AWG 11 in size.

Check that the earth bonding wire between the two castings is secure and the 'O' ring seal is in place and in good condition.

5.2 Maintenance, Repair and Overhaul

Maintenance, repair and overhaul of the equipment should only be carried out by suitably qualified personnel in accordance with the current relevant standards:

EN60079-19 / IEC60079-19 Explosive atmospheres - Equipment repair, overhaul and reclamation
EN 60079-17/ IEC60079-17 Explosive atmospheres - Electrical installations inspection and maintenance

Units must not be opened while an explosive atmosphere is present.

If opening the unit during maintenance operations a clean environment must be maintained and any dust layer removed prior to opening the unit.

Electrostatic charging hazard - Clean only with a damp cloth

6) Installation

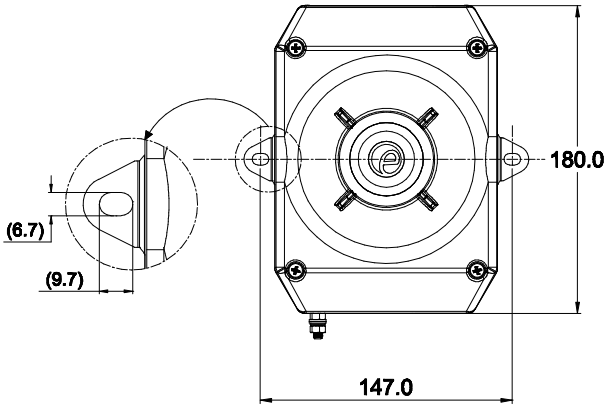


Fig. 1 Fixing locations.

D2xS1 alarm horn should only be installed by trained competent personnel.

6.1 Mounting

The D2xS1 alarm horn may be secured to any flat surface using the two 9.7 x 6.7mm, 147mm pitch fixing holes. The enclosure provides IP66 protection and is suitable for installation in exterior locations providing it is positioned so that water cannot collect in the horn, and the cable entry is sealed.

6.2 Installation procedure

a) Remove Secure the D2xS1 alarm horn to a flat surface via the two 9.7 x 6.7mm, 147mm pitch fixing holes in the mounting feet.

b) Remove the front of the alarm horn by unscrewing the four captive cover screws and pulling the front away from the enclosure.

c) Fit an M20x1.5 suitably rated, certified cable gland or conduit entry into the hole in the enclosure and connect the field wiring to the appropriate alarm horn terminals as shown in section 9 and fig 8 (DC) or section 8 fig 5 (AC) of this manual. The power supply terminals are duplicated so that alarm horns may be connected in parallel and for DC units only an end of line monitoring resistor may be fitted. If the second M20x1.5 entry is not used a suitably rated, certified stopping plug must always be fitted.

d) Select the required output tone by positioning the six switches as shown in Table 1 and Fig 2.

e) Adjust the internal volume control to provide the required sound level. (Refer to section 6)

f) Check that the O-ring seal in the front cover is in good condition and not damaged.

g) Replace the front of the alarm horn and tighten the four captive cover screws.

7) Volume Control

The output level of the D2xS1 alarm horn can be set by adjusting the volume control potentiometer (see Fig 2). For maximum output, set the potentiometer fully clockwise.

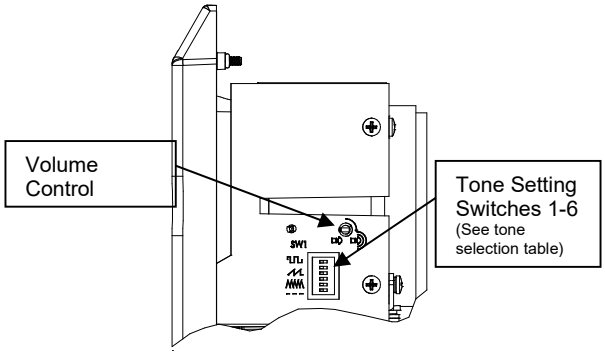
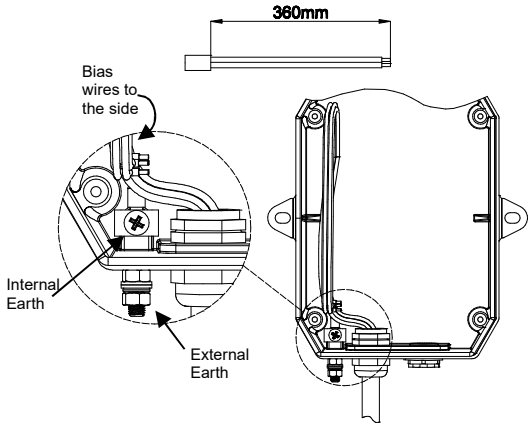


Fig. 2 Location of field controls

8) Cable Routing and Tone Selection

8.1 Cable Routing

Due to the compact design of the D2x units, it is important that the user strips off the outer sheath and biases any cables over the size of 1mm^2 as shown below.



*Glands and/or stopping plugs to be customer supplied to suit application.

Fig 3. Cables are to be stripped and biased toward side of unit with allocated spacing as shown.

8.2 Tone Selection

The D2xS1 alarm horns have 64 different tones. The tones are selected by operation of the tone setting DIP switches (see Fig. 2) on the PCB. The alarm horns can also be switched to sound the second, third and fourth stage alarm tones. The tone table (Table 1) shows the switch positions for the 64 tone and which tones are available for the second, third and fourth stages.

9) AC Wiring

Stage one (S1) operation: Simply connect the supply voltage to the L and N supply terminals (See fig. 5).
For further wiring schematics refer to document D189-06-001

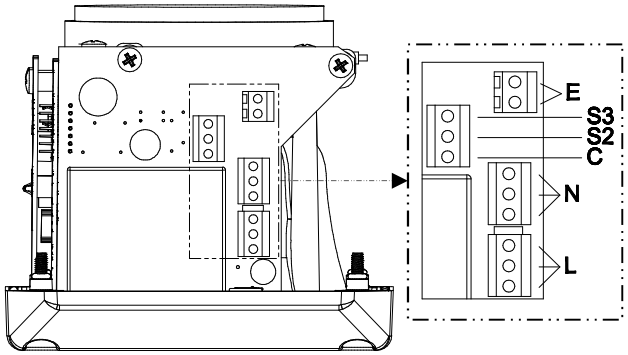


Fig. 5 AC Terminals

10) DC Wiring

The stage switches of the DC powered D2x units can be activated via Positive (+ve) or Negative (-ve) switching. All units are factory set to -ve switching as standard. If +ve switching is required, the two wire links should be removed from the '-' positions of the stage polarity control terminals and fitted to the '+' positions as shown in fig 6.

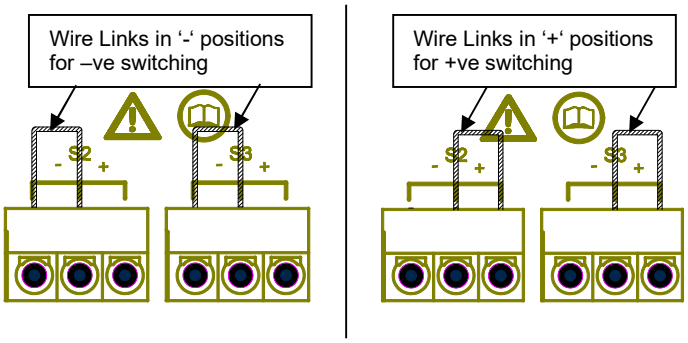


Fig. 6 Stage Polarity Control settings.

Stage one (S1) operation: Simply connect the supply voltage to the + and - supply terminals (See fig. 8).

For further wiring schematics refer to document D189-06-001

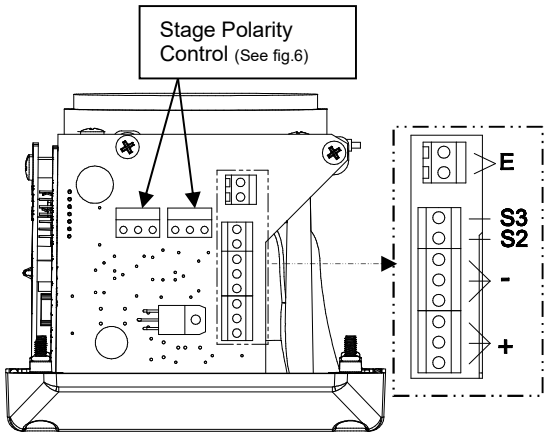


Fig. 8 DC Terminals

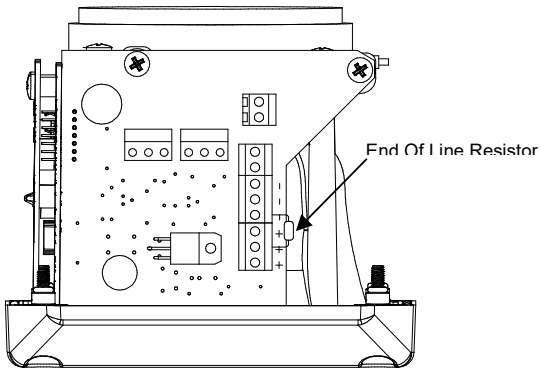


Fig. 9 End Of Line Resistor

11) Earthing

The unit has both internal and external earth terminals, (please see fig 3).
Internal earthing connections should be made to the internal earth terminal on the PCBA, (please see fig 8 for DC, fig 5 for AC). The earth conductor should be at least equal in size and rating to the incoming power conductors. The internal earth bonding wire connects the PCBA earth terminal to the internal earth terminal in the enclosure back box.

External earth connections should be made to the M5 earth stud, using a ring crimp terminal to secure the earth conductor to the earth stud. The external earth conductor should be at least 4mm^2 in size. The external earth crimp ring should be located between the two M5 plain washers provided and securely locked down with the M5 spring washer and M5 nut.

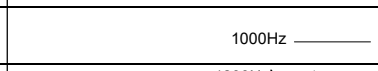
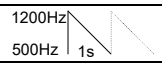
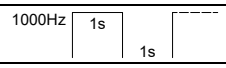
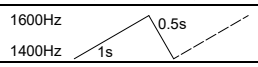
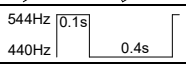
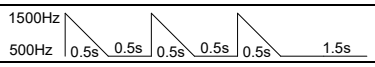
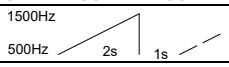
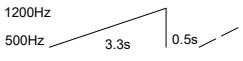
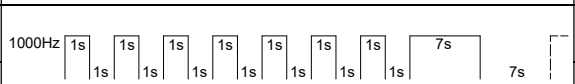
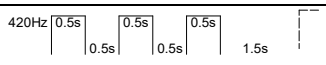
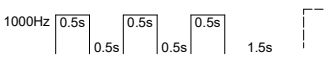
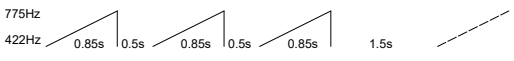
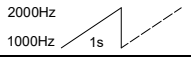
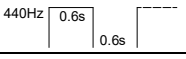
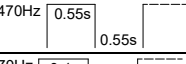
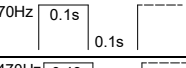
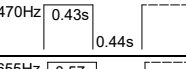
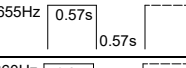
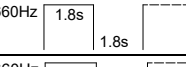
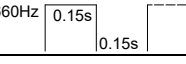
12) End Of Line Monitoring (DC Units Only)

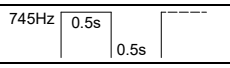
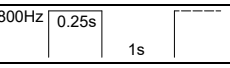
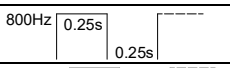
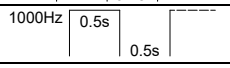
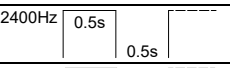
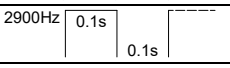
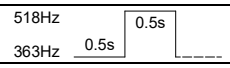
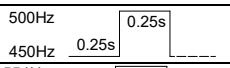
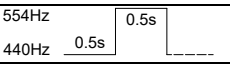
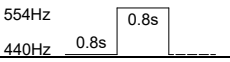
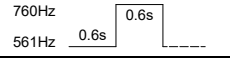
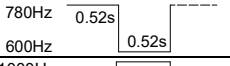
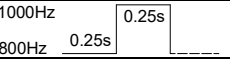
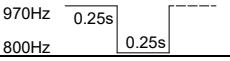
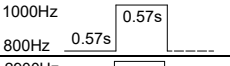
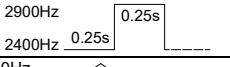
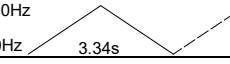
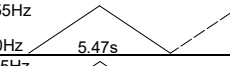
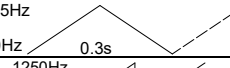
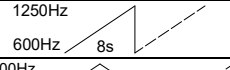
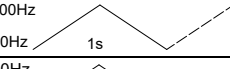
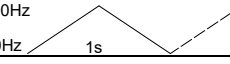
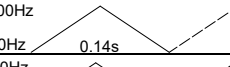
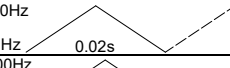
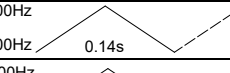
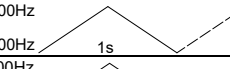
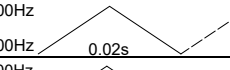
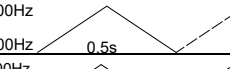
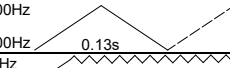
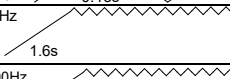
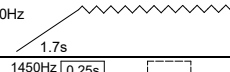
On D2xS1 DC units, dc reverse line monitoring can be used if required. All DC alarm horns have a blocking diode fitted in their supply input lines. An end of line monitoring resistor can be connected across the +ve and –ve terminals. If an end of line resistor is used it must have the following values:-

	Min. Resistance	Min. Power
24V DC	3.9KΩ	0.5W
	1KΩ	2W
48V DC	15KΩ	0.5W
	3.9KΩ	2W

The resistor must be connected directly across the +ve and –ve terminals as shown in the following drawing. 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.

Tone Selection – To select the required first stage tone set the tone switches 1 to 6 (see Fig 2) to the tone setting shown in the table below. The table also shows which 2nd, 3rd and 4th stage tones are available for use with the selected first stage tone if more than one tone output stage is required.

Stage 1 Tone No	Tone Description	Tone Visual	Switch Settings 1 2 3 4 5 6	Stage 2 Tone (S2)	Stage 3 Tone (S3)	Stage 4 Tone (S2 + S3)
1	1000Hz PFEER Toxic Gas		0 0 0 0 0 0	3	2	44
2	1200/500Hz @ 1Hz DIN / PFEER P.T.A.P.		1 0 0 0 0 0	1	3	44
3	1000Hz @ 0.5Hz(1s on, 1s off) PFEER Gen. Alarm		0 1 0 0 0 0	1	2	44
4	1.4KHz-1.6KHz 1s, 1.6KHz-1.4KHz 0.5s NF C 48-265		1 1 0 0 0 0	44	24	1
5	544Hz(100mS)/440Hz (400mS) NF S 32-001		0 0 1 0 0 0	52	19	1
6	1500/500Hz - (0.5s on , 0.5s off) x3 + 1s gap AS4428		1 0 1 0 0 0	7	44	1
7	500-1500Hz Sweeping 2 sec on 1 sec off AS4428		0 1 1 0 0 0	6	44	1
8	500/1200Hz @ 0.26Hz(3.3s on, 0.5s off) Netherlands - NEN 2575		1 1 1 0 0 0	44	24	35
9	1000Hz (1s on, 1s off)x7 + (7s on, 1s off) IMO Code 1a		0 0 0 1 0 0	18	34	1
10	1000Hz (1s on, 1s off)x7 + (7s on, 1s off) IMO Code 1a		1 0 0 1 0 0	21	34	1
11	420Hz(0.5s on, 0.5s off)x3 + 1s gap ISO 8201 Temporal Pattern		0 1 0 1 0 0	44	1	8
12	1000Hz(0.5s on, 0.5s off)x3 + 1s gap ISO 8201 Temporal Pattern		1 1 0 1 0 0	44	1	8
13	422/775Hz - (0.85 on, 0.5 off) x3 + 1s gap NFPA - Temporal Coded		0 0 1 1 0 0	44	1	8
14	1000/2000Hz @ 1Hz Singapore		1 0 1 1 0 0	23	3	35
15	300Hz Continuous		0 1 1 1 0 0	44	24	35
16	440Hz Continuous		1 1 1 1 0 0	44	24	35
17	470Hz Continuous		0 0 0 0 1 0	44	24	35
18	500Hz Continuous IMO code 2 (Low)		1 0 0 0 1 0	44	24	35
19	554Hz Continuous		0 1 0 0 1 0	64	24	35
20	660Hz Continuous		1 1 0 0 1 0	44	24	35
21	800Hz IMO code 2 (High)		0 0 1 0 1 0	44	24	35
22	1200Hz Continuous		1 0 1 0 1 0	44	24	35
23	2000Hz Continuous		0 1 1 0 1 0	15	3	35
24	2400Hz Continuous		1 1 1 0 1 0	48	20	35
25	440 @0.83Hz (50 cycles/minute) Intermittent		0 0 0 1 1 0	1	44	8
26	470 @0.9Hz - 1.1s Intermittent		1 0 0 1 1 0	1	44	8
27	470Hz @5Hz - (5 cycles/second) Intermittent		0 1 0 1 1 0	1	44	8
28	544Hz @ 1.14Hz - 0.875s Intermittent		1 1 0 1 1 0	44	24	8
29	655Hz @ 0.875Hz Intermittent		0 0 1 1 1 0	1	44	8
30	660Hz @0.28Hz - 1.8sec on, 1.8sec off Intermittent		1 0 1 1 1 0	44	24	8
31	660Hz @3.34Hz - 150mS on, 150mS off Intermittent		0 1 1 1 1 0	30	24	8

32	745Hz @ 1Hz Intermittent		1 1 1 1 1 0	44	24	8
33	800Hz - 0.25sec on, 1 sec off Intermittent		0 0 0 0 0 1	53	24	8
34	800Hz @ 2Hz IMO code 3.a (High) Intermittent		1 0 0 0 0 1	56	24	8
35	1000Hz @ 1Hz Intermittent		0 1 0 0 0 1	44	24	8
36	2400Hz @ 1Hz Intermittent		1 1 0 0 0 1	21	24	8
37	2900Hz @ 5Hz Intermittent		0 0 1 0 0 1	53	24	8
38	363/518Hz @ 1Hz Alternating		1 0 1 0 0 1	1	8	19
39	450/500Hz @ 2Hz Alternating		0 1 1 0 0 1	1	8	19
40	554/440Hz @ 1Hz Alternating		1 1 1 0 0 1	44	24	19
41	554/440Hz @ 0.625Hz Alternating		0 0 0 1 0 1	1	8	19
42	561/760Hz @0.83Hz (50 cycles/minute) Alternating		1 0 0 1 0 1	1	8	19
43	780/600Hz @ 0.96Hz Alternating		0 1 0 1 0 1	1	8	19
44	800/1000Hz @ 2Hz Alternating		1 1 0 1 0 1	5	24	19
45	970/800Hz @ 2Hz Alternating		0 0 1 1 0 1	1	8	19
46	800/1000Hz @ 0.875Hz Alternating		1 0 1 1 0 1	53	24	19
47	2400/2900Hz @ 2Hz Alternating		0 1 1 1 0 1	57	24	19
48	500/1200Hz @ 0.3Hz Sweeping		1 1 1 1 0 1	44	24	12
49	560/1055Hz @ 0.18Hz Sweeping		0 0 0 0 1 1	44	24	12
50	560/1055Hz @ 3.3Hz Sweeping		1 0 0 0 1 1	44	24	12
51	600/1250Hz @ 0.125Hz Sweeping		0 1 0 0 1 1	44	24	12
52	660/1200Hz @ 1Hz Sweeping		1 1 0 0 1 1	64	24	12
53	800/1000Hz @ 1Hz Sweeping		0 0 1 0 1 1	56	24	12
54	800/1000Hz @ 7Hz Sweeping		1 0 1 0 1 1	57	24	12
55	800/1000Hz @ 50Hz Sweeping		0 1 1 0 1 1	54	24	12
56	2400/2900Hz @ 7Hz Sweeping		1 1 1 0 1 1	57	24	12
57	2400/2900Hz @ 1Hz Sweeping		0 0 0 1 1 1	47	24	12
58	2400/2900Hz @ 50Hz Sweeping		1 0 0 1 1 1	54	24	12
59	2500/3000Hz @ 2Hz Sweeping		0 1 0 1 1 1	44	24	12
60	2500/3000Hz @ 7.7Hz Sweeping		1 1 0 1 1 1	44	24	12
61	800Hz Motor Siren		0 0 1 1 1 1	44	24	12
62	1200Hz Motor Siren		1 0 1 1 1 1	44	24	12
63	2400Hz Motor Siren		0 1 1 1 1 1	44	24	12
64	Simulated Bell		1 1 1 1 1 1	44	21	12

FIRE INSTRUCTION MANUAL
D2xS1 Alarm Horn
For use in Hazardous Locations

1) Introduction

D2xS1DC024 is listed for use in fire alarm systems – public mode in accordance with UL464 Tenth Edition / CAN/ULC-S525 Fourth Edition.

2) Warnings

DO NOT PAINT
NE PAS PEINTURER

3) Fire Alarm Ratings

The following model is approved for use as an audible signal appliance for fire alarm use – public mode (UL464) and produces a sound pressure level above 75dB(A) at 10 feet:

D2xS1DC024

For Fire Alarm applications, the Sounder Volume must be at the highest setting, (see volume control section).

For fire alarm use, the temporal pattern tone No. 12 as per the tone table provided in these instructions must be selected. This tone produces a minimum sound pressure level of:

CAN/ULC-S525: 100.4dB(A)* at 10 feet.
(*anechoic room)
UL464: 92.2dB(A)† at 10 feet.
(†reverberation room)

4) Sound Directional Characteristics for Canadian Fire CAN/ULC-S525

Horizontal Axis

Angle	OSPL	Angle	OSPL
Reference (90°)	101.2dB(A)	Reference (90°)	101.2dB(A)
115°	-3dB(A)	68°	-3 dB(A)
129°	-6dB(A)	55°	-6 dB(A)
180°	92.4dB(A)	0°	92.4

Vertical Axis

Angle	OSPL	Angle	OSPL
Reference (90°)	101.5dB(A)	Reference (90°)	101.5dB(A)
123°	-3 dB(A)	65°	-3 dB(A)
137°	-6 dB(A)	50°	-6 dB(A)
180°	91 dB(A)	0°	88.5 dB(A)

ISSUE	MOD No.	REASON - INITIAL - DATE
A		INTRODUCTION DH 17/05/2022

OPTIONAL LINE MONITORING RESISTOR, CUSTOMER SUPPLIED, REQUIRED MINIMUM VALUES:

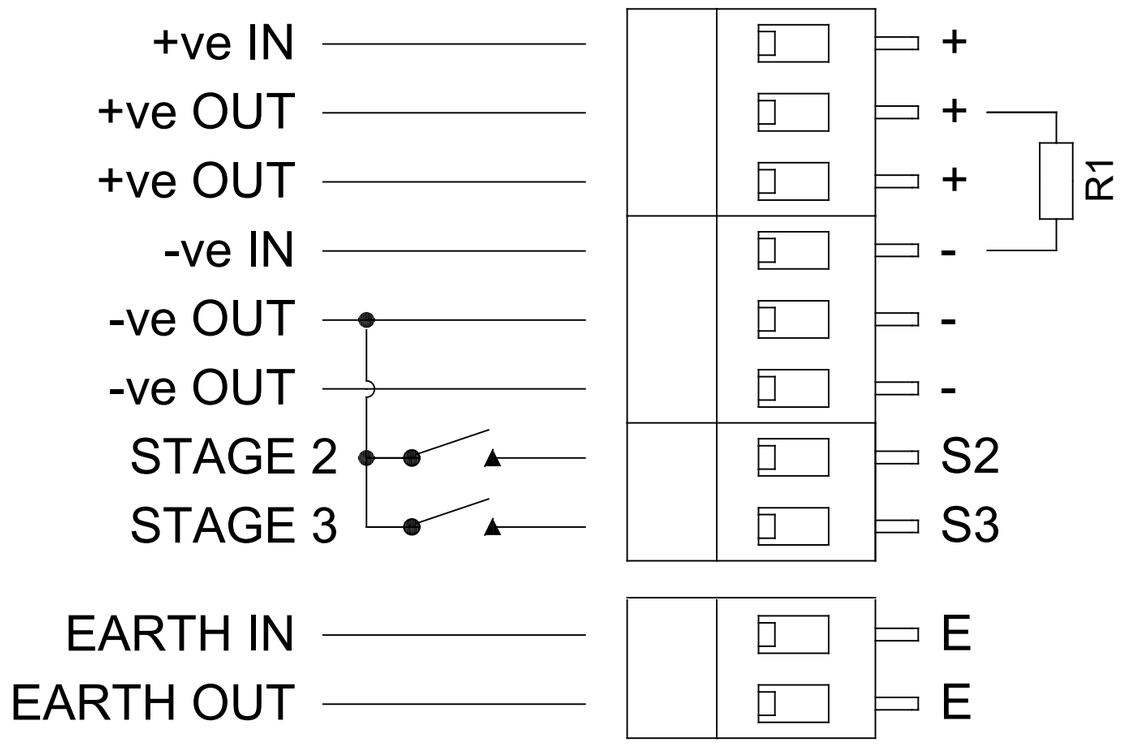
R1

24VDC : 1KΩ MIN, 2W MIN OR 3K9Ω MIN, 0.5W MIN
48VDC : 3.9KΩ MIN, 2W MIN OR 15KΩ MIN, 0.5W MIN

DC D2XS1 UNITS

Line Monitoring

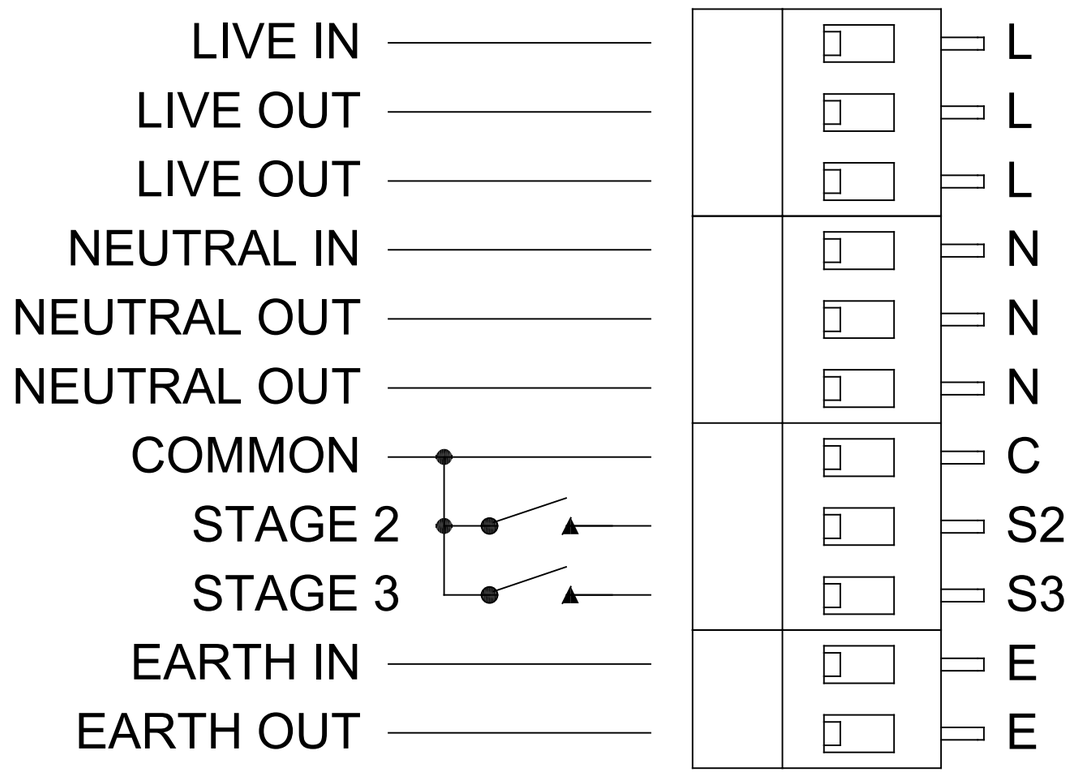
Stage 1: Apply power to Sounder +ve & -ve
Stage 2: (Default: -ve Switching) Apply power to Sounder +ve & -ve. Connect Stage 2 to -ve
Stage 3: (Default: -ve Switching) Apply power to Sounder +ve & -ve. Connect Stage 3 to -ve



AC D2XS1 UNITS

Power: Live & Neutral

Stage 1: Apply power to Sounder L & N
Stage 2: Apply power to Sounder L & N. Connect Stage 2 to Common
Stage 3: Apply power to Sounder L & N. Connect Stage 3 to Common



DRAWING TO BS8888:2000
GEOMETRIC TOLERANCES TO ISO1101:1983
LINEAR DIMENSIONAL TOLS
ANGULAR DIMENSIONAL TOLS

STANDARDS
Ex N

DRAWN	D.HOWGILL	DATE 20/05/2022
CHECKED	R.N.POTTS	DATE 20/05/2022
APPROVED	R.N.POTTS	DATE 20/05/2022

SURFACE FINISH | WEIGHT (Kg)

MATERIAL

ALTERNATIVE MATERIAL

e2S warning signals

EUROPEAN SAFETY SYSTEMS LTD
IMPRESS HOUSE
MANSELL ROAD
ACTON
LONDON W3 7QH

WWW.E2S.COM

ALL DIMENSIONS IN MM
IF IN DOUBT, ASK - DO NOT SCALE

A3

TITLE
D2xS1 SOUNDER WIRING DIAGRAMS

SCALE	SHEET	DRAWING NUMBER
NTS	1 OF 1	D189-06-001

EU Declaration of Conformity

Manufacturer:	European Safety Systems Ltd. Impress House, Mansell Road, Acton London, W3 7QH United Kingdom
Authorised Representative:	E2S Warnsignaltechnik UG Charlottenstrasse 45-51 72764 Reutlingen Germany
Equipment Type:	D2xS1, D2xC1X05, D2xC1X10 D2xB1X05, D2xB1X10, D2xB1LD2, D2xB1XH1, D2xB1XH2, D2xB1LD3 D2xC2X05, D2xC2X10, D2xC2LD2, D2xC2XH1, D2xC2XH2, D2xC2LD3 D2xJ1

Directive 2014/34/EU: Equipment and Protective Systems for use in Potentially Explosive Atmospheres (ATEX)

Notified Body for EU type Examination (Module B):	UL International Demko A/S Notified Body No.: 0539 Borupvang 5A, 2750 Ballerup, Denmark
EU-type Examination Certificate (Module B):	DEMKO 14 ATEX 4786493904X
Notified Body for Quality Assurance Notification / Conformity to EU-type based on quality assurance of the production process (Module D):	Sira Certification Service Notified Body No.: 2813 CSA Group Netherlands B.V, Utrechtseweg 310, 6812 AR, Arnhem, Netherlands
Quality Assurance Notification (Module D):	SIRA 05 ATEX M342
Provisions fulfilled by the equipment:	II 3G Ex ec IIC T6/T4/T3/T2/T1 Gc II 3D Ex tc IIIC Ex tc IIIC T55/75/80/85/90/95/105/110°C Dc IP66 Ingress / Dust Protection to EN60079-0 / EN60079-31
Standards applied:	EN IEC 60079-0:2018 EN IEC 60079-7:2015 +A1:2018 EN 60079-31:2014

Directive 2014/30/EU: Electromagnetic Compatibility Directive (EMC)

Standards applied:	EN 61000-6-1:2007 EN 61000-6-2:2005 EN 61000-6-3:2007 / A1:2011 / AC: 2012 EN 61000-6-4:2007 / A1: 2011

Directive 2011/65/EU: Restriction of the use of certain hazardous substances in electrical and electronic equipment (RoHS)

The product and all the components contained within it are in accordance with the restriction of the use of hazardous substances in electrical and electronic equipment, including amendment by Directive 2015/863/EU.

Regulation (EC) 1907/2006: Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH)

The product and all the components contained within it are free from substances of very high concern.

Other Standards and Regulations

EN 60529:1992+A2:2013 - Degrees of protection provided by enclosures (IP code) – enclosure rated IP66

EU Declaration of Conformity

On behalf of European Safety Systems Ltd., I declare that, on the date the equipment accompanied by this declaration is placed on the market, the equipment conforms with all technical and regulatory requirements of the above listed directives, regulations and standards.

This Declaration is issued under the sole responsibility of the manufacturer.

Martin Streetz
Quality Assurance Manager

Document No.: DC-061_Issue_J
Date and Place of Issue: London, 22/08/2022

UKCA Declaration of Conformity

Manufacturer:	European Safety Systems Ltd. Impress House, Mansell Road, Acton London, W3 7QH United Kingdom
Equipment Type:	D2xS1, D2xC1X05, D2xC1X10 D2xB1X05, D2xB1X10, D2xB1LD2, D2xB1XH1, D2xB1XH2, D2xB1LD3 D2xC2X05, D2xC2X10, D2xC2LD2, D2xC2XH1, D2xC2XH2, D2xC2LD3 D2xJ1

Directive UKSI 2016:1107 (as amended by UKSI 2019:696) – Schedule 3A, Part 1 : Product or Protective System Intended for use in Potentially Explosive Atmospheres (UKCA)

Notified Body for UK type Examination (Module B):	UL International (UK) Ltd Notified Body No.: 0843 Unit 1-3 Horizon Kingsland Business Park, Wade Road, Basingstoke, Hampshire RG24 8AH UK
UK-type Examination Certificate (Module B):	UL21UKEX2131X
Notified Body for Quality Assurance Notification / Conformity to EU-type based on quality assurance of the production process (Module D):	Sira Certification Service Notified Body No.: 0518 Rake Lane, Eccleston, Chester CH4 9JN, UK
Quality Assurance Notification (Module D):	CSAE 22UKQAN0046
Provisions fulfilled by the equipment:	II 3G Ex ec IIC T6/T4/T3/T2/T1 Gc II 3D Ex tc IIIC Ex tc IIIC T55/75/80/85/90/95/105/110°C Dc IP66 Ingress / Dust Protection to EN60079-0 / EN60079-31
Standards applied:	EN IEC 60079-0:2018 EN IEC 60079-7:2015 +A1:2018 EN 60079-31:2014

Directive 2014/30/EU: Electromagnetic Compatibility Directive (EMC)

Standards applied:	EN 61000-6-1:2007 EN 61000-6-2:2005 EN 61000-6-3:2007 / A1:2011 / AC: 2012 EN 61000-6-4:2007 / A1: 2011

Directive 2011/65/EU: Restriction of the use of certain hazardous substances in electrical and electronic equipment (RoHS)

The product and all the components contained within it are in accordance with the restriction of the use of hazardous substances in electrical and electronic equipment, including amendment by Directive 2015/863/EU.

Regulation (EC) 1907/2006: Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH)

The product and all the components contained within it are free from substances of very high concern.

Other Standards and Regulations

EN 60529:1992+A2:2013 - Degrees of protection provided by enclosures (IP code) – enclosure rated IP66

UKCA Declaration of Conformity

On behalf of European Safety Systems Ltd., I declare that, on the date the equipment accompanied by this declaration is placed on the market, the equipment conforms with all technical and regulatory requirements of the above listed directives, regulations and standards.

This Declaration is issued under the sole responsibility of the manufacturer.

Martin Streetz
Quality Assurance Manager

Document No.: DC-102_Issue_A
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