

**The D1xL1 & D1xL2 Loudspeakers are certified by UL as Audible-signal Appliances for Use in Hazardous Locations**

### 1) Introduction

The D1xL1 & D1xL2 are UL certified loudspeakers which produce a loud warning signal in a hazardous area. The loudspeakers are approved for use in Gas applications in Class I Division 1 & 2 as well as Class I Zone 0, 1 and 2. D1xS1 & D1xS2 alarm horns and D1xC1 & D1xC2 Combined alarm horn & Strobe are also available as well as variants for Explosive Dust Atmospheres.

### 2) Warnings

**CAUTION**

TO REDUCE THE RISK OF IGNITION OF HAZARDOUS ATMOSPHERES:

DISCONNECT FROM SUPPLY BEFORE OPENING.  
KEEP TIGHTLY CLOSED WHEN IN OPERATION.

**WARNING**

FIT SEALING FITTING IN CONDUIT RUNS WITHIN 18 INCHES FROM ENCLOSURE.

EQUIPMENT MUST NOT BE INSTALLED WITH THE HORN FACING UPWARDS OF HORIZONTAL

**ATTENTION**

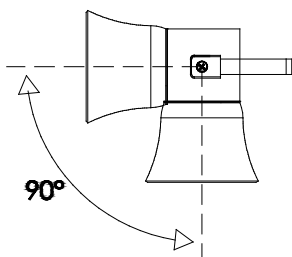
POUR REDUIRE LE RISQUE D'INFLAMMATION DES ATMOSPHÈRES DANGEREUSES:

COUPER L'ALIMENTATION AVANT OUVERTURE.  
CONSERVER FERMÉ PENDANT LE FONCTIONNEMENT.

**AVERTISSEMENT**

CONDUITS DOIVENT ÊTRE SCELLÉS EN MOINS DE 18 POUCHES.

ÉQUIPEMENT NE DOIT PAS ÊTRE INSTALLÉ AVEC LE KLAXON TOURNÉE VERS LE HAUT DE HORIZONTAL.



### 3) Ratings and Markings

#### 3.1 Class / Division Ratings for US and Canada

The D1x Loudspeakers comply with the following standards for hazardous locations:

UL 1203  
CSA C22.2 NO. 30-M1986

The D1xL1 & D1xL2 Loudspeakers also comply with the following standards for signaling equipment:

UL1480  
CSA C22.2 NO. 205-12

#### 3.1 Class / Division Ratings for US & Canada

Class I Div 1    ABCD    T6    Ta -40°C to +70°C

Installation must be carried out in compliance with the National Electric Code / Canadian Electric Code

#### 3.2 Class / Zone ratings US and Canada

Class I Zone 1    IIC T6    Ta -40°C to +70°C

Installation must be carried out in compliance with the National Electric Code / Canadian Electric Code.

#### 3.3 Ambient Temperature Range:

-40°C to +70°C

#### 3.4 Enclosure Ratings

The product is rated for ingress protection as follows:

IP rating per EN60529:                    IP66  
Type rating per UL50E / NEMA250: 4 / 4X / 3R / 13

#### 3.5 Electrical Ratings

| Model No.  | Input    | Power (Watts) | Max I/P Volts |
|------------|----------|---------------|---------------|
| D1xL1-V070 | 70V Line | 15            | 70            |
| D1xL1-R008 | 8 Ohm    | 15            | 10.95         |
| D1xL1-R016 | 16 Ohm   | 15            | 15.49         |
| D1xL2-V070 | 70V Line | 25            | 70            |
| D1xL2-R008 | 8 Ohm    | 25            | 14.14         |
| D1xL2-R016 | 16 Ohm   | 25            | 20            |

#### 3.6 Frequency Range

All models: 400Hz to 8000 Hz

### 4) Installation

#### 4.1 Safe Installation Requirements

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 the NEC / CEC and any local regulations and should only be carried

out by a competent electrical engineer who has the necessary training.

The Equipment must not be installed with the horn facing upwards of horizontal.

To maintain the ingress protection rating and mode of protection, the cable entries must be fitted with suitably rated cable entry and/or blanking devices during installation. If conduit is used for installation, seal conduit within 18 inches from the enclosure.

If entries are fitted with adaptors they must be suitably rated for the application. Fitting of blanking elements into adaptors is not permitted.

If a high IP (Ingress Protection) rating is required then a suitable sealing washer or O-ring must be fitted under any cable gland or blanking device with metric threads.

Only the explosionproof cover is to be used for access to the enclosure for installation, service and maintenance.

Connections are to be made into the terminal blocks using solid or stranded wire, sizes 0.5-4.0mm<sup>2</sup> / AWG 20-12. 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 0.4 Nm / 3.5 Lb-in.

Earthing connections should be made to the Internal Earth terminal in the explosionproof chamber or the external earth stud.

Check that the 'O' ring seal is in place before replacing the explosionproof cover.

#### 4.2 Mounting

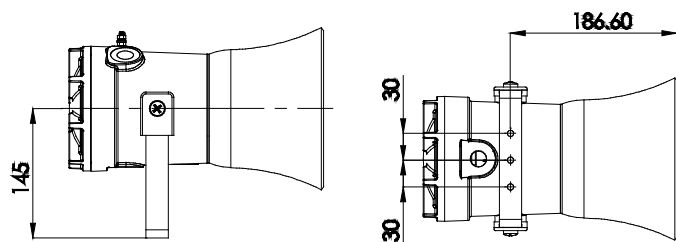


Fig. 1 Fixing locations.

D1x Loudspeakers should only be installed by trained competent personnel.

The D1x Loudspeakers may be secured to any flat surface using the three 7mm fixing holes. The enclosure provides IP66 protection and is suitable for indoor and outdoor use providing it is positioned so that water cannot collect in the horn, and the cable entry is sealed.

#### 4.3 Installation procedure

- Secure the D1x Loudspeaker to a flat surface via the three 7mm fixing holes in the mounting bracket.
- Remove the explosionproof cover of the loudspeaker by unscrewing it, taking care not to damage the threads in the process (Refer to section 5).
- Fit an M20x1.5 suitably certified cable gland or 1/2" NPT conduit into the corresponding entry in the enclosure and connect the field wiring to the appropriate loudspeaker terminals as shown in section 6 / Fig 3 (70V Line In) or section 7 / Fig 4 (Low Impedance) of this manual. The power supply terminals on the low impedance units are duplicated so that units may be connected in parallel. An end of line monitoring resistor may be fitted to either type

of unit. Additional entries which are not used must always be fitted with suitably certified blanking elements

- Replace the explosionproof cover of the loudspeaker, taking care not to damage the explosionproof threads and checking that the O-ring seal is in place. Tighten the cover fully.

#### 4.4 Hornless Variants

The D1x Loudspeaker is also available as a variant with no horn fitted in the factory. The Horn threaded nose portion has a fitment thread of 1-3/8" – 18 UNF (to BS1580 or ANSI B1.1). The customer is responsible for sourcing and correctly fitting a suitable horn that meets all of the relevant safety requirements.

#### 5) Access to the Explosionproof Enclosure

In order to connect the electrical supply cables to the loudspeaker it is necessary to remove the explosionproof cover to gain access to the explosionproof chamber. This can be achieved by unscrewing the explosionproof cover, taking extreme care not to damage the explosionproof threads in the process

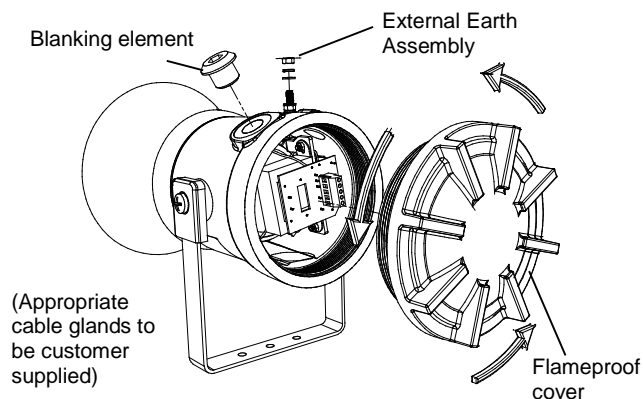


Fig. 2 Accessing the Explosionproof Enclosure.

On completion of the cable wiring installation the explosionproof threads should be inspected to ensure that they are clean and that they have not been damaged during installation. Also check that the 'O' ring seal is in place, on the thread diameter in contact with the flat face of the explosionproof cover. When replacing the explosionproof cover ensure that it is tightened fully.

#### 6) 70V Line In Wiring

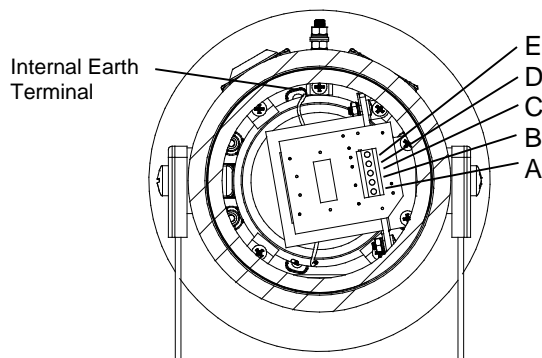


Fig. 3 Line in Terminals

The cable connections are made into the terminal blocks on the PCB assembly located in the explosionproof enclosure. See section 5 of this manual for access to the explosionproof enclosure. The 70V Line loudspeakers are fitted with a five way terminal block. Terminal A is common and one of the other

terminals B, C, D or E should be selected depending on what output level is required (see table below).

| Terminals | D1xL2 (25W) | D1xL1 (15W) |
|-----------|-------------|-------------|
| A - B     | 25W         | 15W         |
| A - C     | 12.5W       | 7.5W        |
| A - D     | 6W          | 3W          |
| A - E     | 2W          | 1W          |

A single wire with a cross sectional area of up to 4.0mm<sup>2</sup> / AWG12 can be connected to each terminal way or if an input and output wire is required two wires up to 2.5mm<sup>2</sup> wires can be connected to each terminal way. If more than one wire is fitted into a terminal a ferrule should be used to secure the wires. When connecting wires to the terminals great care should be taken to dress the wire so that when the cover is inserted into the chamber the wires do not exert excess pressure on the terminal blocks.

## 7) Low Impedance Wiring

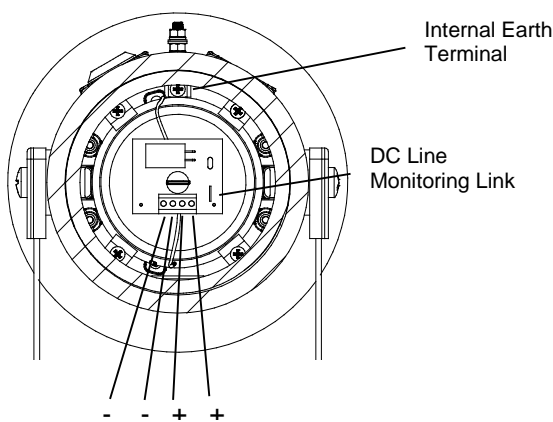


Fig. 4 Low Impedance Terminals

D1xL2 and D1xL1 8 ohm and 16 ohm low impedance loudspeakers have dual input terminals on the PCB assembly for input and output wiring. A cable of up to 4.0mm<sup>2</sup> can be connected to each terminal. If DC line monitoring is used cut the link on the board (see Fig. 4).

## 8) Earthing

The unit has both a primary internal and secondary external earth fixing point.

Internal earth connections should be made to the internal Earth terminal (see Fig. 3 and 4). It should be fitted to the internal earth point using a ring crimp terminal to secure the earth conductor.

In addition, external earth connections can be made to the M5 earth stud (see Fig. 2), using a ring crimp terminal to secure the earth conductor to the earth stud. 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.

The earth conductor should be at least equal in size and rating to the incoming power conductors but at least a minimum of 0.82mm<sup>2</sup> / 18AWG in size.

## 9) End of Line DC Monitoring

On D1xL2 and D1xL1 Loudspeakers, DC line monitoring can be used if required. Both the 70V Line units and the Low Impedance

units have blocking capacitors fitted. It should be noted that each loudspeaker has a 1M ohm bleed resistor connected across the blocking capacitor and this should be taken into account when selecting the value of the end of line monitoring resistance.

The end of line monitoring resistor can be connected across the terminals on the end of line unit.

On 70V line units the end of line resistor used must have a minimum resistance value of 4k7 ohms and a minimum wattage of 2.5 watts

On low impedance units the end of line resistor used must have a minimum resistance value of 2k ohms and a minimum wattage of 0.5 watts or a minimum resistance value of 500 ohms and a minimum wattage of 2 watts. On the low impedance units care must be taken with the polarity of the monitoring voltage. If an end of line resistor is fitted to a unit the links on the printed circuit boards of all loudspeakers in the line must be cut for the dc blocking capacitors to be in circuit in order to dc monitor the line (see Fig 4).

## 10) 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 and regulations.

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.

The threaded flamepath joints are not intended to be repaired.