



Technical Manual for the  
Horn - DB1PUL  
DB1HP UL

Please note that every care has been taken to ensure the accuracy of our technical manual. We do not, however, accept responsibility for damage, loss or expense resulting from any error or omission. We reserve the right to make alterations in line with technical advances and industry standards.

## 1. INTRODUCTION

These horn units have been designed for use in harsh environmental conditions.

## 2. INSTALLATION

### General

When installing and operating explosion-protected electrical equipment, requirements for selection, installation and operation should be referred to eg. IEC 60079-14 worldwide and the 'National Electrical Code' in North America. Additional national and/or local requirements may apply.

Ensure that all nuts, bolts and fixings are secure.

Ensure that only the correct UL listed stopping plugs are used to blank off unused gland entry points and that the NEMA/IP rating of the unit is maintained.

The unit is mounted via 2 x  $\text{Ø } 0.31''$  (8 mm) fixing holes in the base. The fixing holes have been designed to accept an M6 screw or bolt. MEDC recommend the use of stainless steel screws.

### Cable Termination

**CAUTION: Before removing the cover assembly, ensure that the power to the unit is isolated.**

Unscrew and remove the 4 off screws holding the cover assembly to the base. Keep in a safe, accessible location.

Twist the cover gently clockwise and anti-clockwise, whilst pulling it away from the unit. Remove to gain access to the interior of the base.

Cable termination should be in accordance with specifications applying to the application. MEDC recommend that all cables and cores should be fully identified.

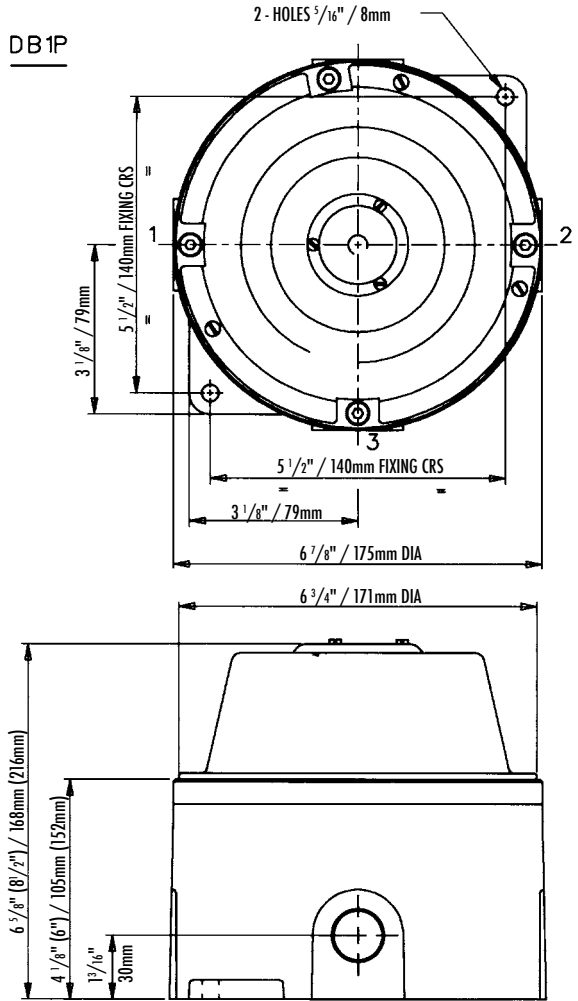
Ensure that only correct UL Listed cable glands are used and that the assembly is shrouded and correctly earthed.

All cable glands should be of an equivalent NEMA/IP rating to that of the unit and integrated with the unit such that this rating is maintained.

The internal earth terminal (where fitted), must be used for the equipment grounding connection and the external terminal is for a supplementary bonding connection where local codes or authorities permit or require such a connection.

Once termination is complete, carefully push the cover back onto the unit, avoiding damage to the mating surfaces. Replace & tighten the 4 off cover screws evenly, to ensure maintenance of the required gap between the cover and enclosure.

# GENERAL ARRANGEMENT



NOTE :- DB1HP DIMENSIONS IN BRACKETS

ALL DIMENSIONS IN INCHES AND MILLIMETERS

	tone FREQ/DESCRIPTION	SWITCH SETTING 12345	tone DESCRIPTION
1	Alt Tones 800/970 Hz at 1/4 sec	11111	
2	Sweeping 800/970 Hz at 7Hz	11110	Fast Sweep(LF)
3	Sweeping 800/970 Hz at 1 Hz	11101	Med Sweep(LF)
4*	Continuous at 2850 Hz	11100	
5	Sweeping 2400-2850 Hz at 7 Hz	11011	Fast Sweep
6	Sweeping 2400-2850 Hz at 1 Hz	11010	
7	Slow Whoop	11001	Slow Whoop
8	Sweep 1200-500 Hz at 1 Hz	11000	Din Tone
9	Alt Tones 2400/2850 Hz at 2 Hz	10111	
10	Int Tone of 970 Hz at 1 Hz	10110	Back-Up Alarm(LF)
11	Alt Tones 800/970 Hz at 7/8 Hz	10101	
12	Int Tone at 2850 Hz at 1Hz	10100	Back Up Alarm(HF)
13	970Hz at 1/4 sec on 1 sec off	10011	
14*	Continuous at 970 Hz	10010	
15	554Hz for 100mS / 440 Hz for 400mS	10001	French Fire Sound
16	Int 660 Hz 150 mS on 150 mS off	10000	Swedish Fire Alarm
17	Int 660 Hz 1.8 sec on 1.8 sec off	01111	Swedish Fire Alarm
18	Int 660 Hz 6.5 sec on 13 sec off	01110	Swedish Fire Alarm
19*	Continuous 660 Hz	01101	Swedish Fire Alarm
20	Alt 554/440 Hz at 1 Hz	01100	Swedish Fire Alarm
21	Int 660 Hz at 7/8 Hz	01011	Swedish Fire Alarm
22	Int 2850 Hz 150 mS on 100 mS off	01010	Pelican Crossing
23	Sweep 800-970 Hz at 50 Hz	01001	Low Freq Buzz
24	Sweep 2400-2850 Hz at 50 Hz	01000	High Freq Buzz
25	3 970Hz pulses 0.5on/0.5off, 1.5 off	00111	
26	3 2850Hz pulses 0.5on/0.5off, 1.5 off	00110	
27	Int 3100 Hz 0.32s on / 0.68s off	00101	
28	Spare/Custom Tone	00100	
29	Spare/Custom Tone	00011	
30	Spare/Custom Tone	00010	
31	Spare/Custom Tone	00001	
32	Spare/Custom Tone	00000	

\* **DB1P Tone 4** is acceptable for Public mode use. **DB1P Tones 14 & 19** are acceptable for Private mode use. **DB1HP Tones 4 & 14** are acceptable for Public mode use.  
**DB1HP Tone 19** is acceptable for Private mode use

### 3. OPERATION

3.1 The unit is initiated directly from the power source.

The DB1P & DB1HP units include two 5-way DIL switches to select any two tones from the list. Use SW2 to select tone 1 & SW1 to select tone 2.

3.2 Single Stage Alarm (d.c. version only)

To operate as a single stage alarm, set the appropriate tone using SW1 and connect input wires to TB1 (+ve) (red) and TB5 (-ve) (blue). Loop in and loop out is then TB2 and TB6.

To operate in supervisory mode, reverse the voltage between TB1 and TB5 (such that TB1 is -ve and TB5 +ve).

Note that there is a diode mounted on the PCB which will inhibit the operation of the sounder in the supervisory (reverse voltage) mode.

3.3 Two Stage alarm (d.c. version only)

To operate as a two stage alarm, set the required tones using SW2 for tone 1 and SW1 for tone 2.

3.3.1 Reverse Polarity Set Up

Connect input wires to TB1 (+ve) (red) and TB3 (-ve) (black), tone 1 will sound. Reverse the voltage so that TB3 is +ve and TB1 is -ve, tone 2 will sound.

3.3.2 Common +ve Set Up

Connect input wires to TB1 (+ve) and separate -ve's to TB3 and TB5. When TB3 is -ve tone 1 will sound, when TB5 is -ve tone 2 will sound.

3.4 Single Stage Alarm (a.c. version)

When the unit is powered with a.c. only a single stage alarm is available. Tones should be selected using SW1. Connect input wires between TB1 and TB3.

Note: In all set ups, loop in and loop out is facilitated by TB2, TB4 and TB6 as appropriate.

### 4. MAINTENANCE

During the working life of the unit, little or no maintenance is required. However, if abnormal or unusual environmental conditions occur due to plant damage or accident etc., then visual inspection is recommended.

If a fault should occur, it is recommended that the unit be returned to MEDC for repair. All parts are replaceable.

If you have acquired a significant quantity of units, it is recommended that spares are also made available. Please discuss your requirements with the Technical Sales Engineers at MEDC.

## 5. CERTIFICATION/APPROVALS

Please refer to marking on the unit for specific approval details.

- UL listed for use in USA (USL) Class 1, Division 1, Groups C & D  
Class 1, Zone 1, Groups IIA & IIB.
- UL Standards UL1203 & UL464.
- Suitable for hazardous location fire-alarm applications.

## 6. CERTIFIED TEMPERATURE

-25°C to +55°C

-13°F to +131°F

## 7. FUNCTIONAL SAFETY - DB1H

### Introduction

The DB1H Sounder has been designed for use in potentially explosive atmospheres and harsh environmental conditions. The marine grade alloy or stainless enclosures are for use offshore or onshore, where light weight combined with corrosion resistance and strength is required.

The safety function of the Sounder is to provide a pre-determined audible warning sound when required if the correct voltage is applied to the unit. The DC version of the Sounder is designed to operate on a supply voltage tolerance of +/- 20%,

Under No fault (Normal) Operating conditions the DB1 Sounder will provide an audible warning sound when required by the system.

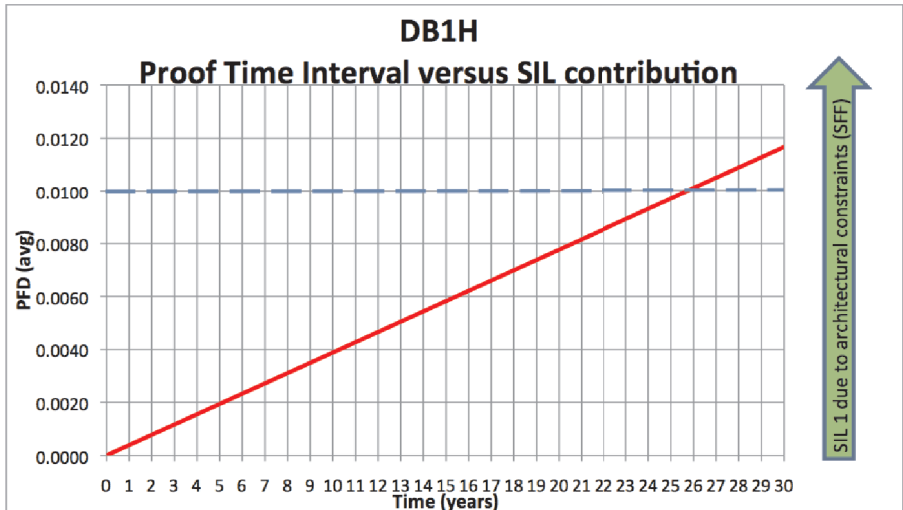
Under fault conditions the failure mode of the Sounder is a failure to provide an audible warning sound. For the failure rate associated with this failure mode please refer to the table below.

### Assessment of Functional Safety

This Sounder is intended for use in a safety system conforming to the requirements of IEC61508. UL has conducted a Failure Modes Effect and Diagnostic Analysis (FMEDA) of the DC version of DB1H Sounder against the requirements of IEC 61508-2 using a Proof Test Interval of 8760hrs.

The results are shown below and are based on Route 1<sub>H</sub>  
The Sounder is classed as a Type B device

DB1H SOUNDER			
Safety Function of DB1H Sounder: <i>To provide a pre-described audible warning sound when required'</i>			
Summary of Clauses 2/7.4.2 and 2/7.4.4	DB1H Sounder		Verdict
	Single Mode (1oo1)	Redundant Mode (1oo2)	
Architectural constraints Safe Failure Fraction (SFF)	HFT=0	HFT=1	Type B
	65%	65%	SIL 1(1oo1) SIL 2 (1oo2)
Random hardware failures: [h <sup>-1</sup> ]	$\lambda_{DD}$ $\lambda_{DU}$	6.45E+09 8.87E-08	6.45E+10 8.87E-09
Random hardware failures: [h <sup>-1</sup> ]	$\lambda_{SD}$ $\lambda_{SU}$	0.00E+00 1.59E-07	0.00E+00 1.59E-08
PFD @ PTI = 8760Hrs MTTR = 8 Hrs	3.89E-04	3.89E-05	SIL 3(1oo1)
Average freq. of dangerous failure (high demand-PFH)[h <sup>-1</sup> ]	8.86E-08	8.86E-09	SIL 3(1oo1)
Hardware safety integrity compliance	Route 1 <sub>H</sub>		
Systematic safety integrity compliance	Route 1 <sub>s</sub>		
Systematic Capability (SC1, SC2, SC3, SC4)	SC2		
Hardware safety integrity achieved	Limited to: SIL 1 (1oo1) & SIL 2 (1oo2) due to SFF value.		



# Conditions of Safe use

The following conditions apply to the installation, operation and maintenance of the assessed equipment. Failure to observe these may compromise the safety integrity of the assessed equipment:

1. The user shall comply with the requirements given in the manufacturer's user documentation (This Safety Manual and Technical manual) in regard to all relevant functional safety aspects such as application of use, installation, operation, maintenance, proof tests, maximum ratings, environmental conditions, repair, etc;
2. Selection of this equipment for use in safety functions and the installation, configuration, overall validation, maintenance and repair shall only be carried out by competent personnel, observing all the manufacturer's conditions and recommendations in the user documentation.
3. **All information associated with any field failures of this product should be collected under a dependability management process (e.g., IEC 60300-3-2) and reported to the manufacturer.**
4. The unit should be tested at regular intervals to identify any malfunctions; in accordance with this safety manual.
5. If the product is used in a redundant installation, both hardware safety integrity and systematic safety integrity for SIL 2 can be achieved. The installation must be such as to ensure sufficient protection against common cause failures and independence from cascading failures.

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