

PRODUCT NAME: SB-125-150-2-3-4-J- EXPLOSION-PROOF SOUNDER/HORN & BEACON  
 DOC NO.: EX-TECH-SIG-SAS-12-SB125-150-2-3-4-J-TM-EN-REV03-10.08.16.IE  
 EXPLOSION PROOF SOUNDER & BEACON COMBINATION TYPE

 II 2G EEx d IIC T4~T6, IP66/67  
 SB-125-150 SERIES


**EX-TECH SIGNALLING SAS**

**SB125-150-2/3/4/J EXPLOSION PROOF SOUNDER/HORN & BEACON**

**TECHNICAL MANUAL**



Type :

CE 0470  II 2 GD	ATEX 13 NEMKO 1565X
Ex d IIC T4 Gb Ex tb IIIC T135°C	IP 66 IECEX, NEM 13.0035X CNEEx 10.2115X
T. amb: - 40°C < Ta < +70°C	P 50/75/100/125 Watt max
	U <input type="checkbox"/> VDC <input type="checkbox"/> AC50/60Hz
Serial N° :	

WARNING - DO NOT OPEN WHEN  
 AN EXPLOSIVE ATMOSPHERE IS PRESENT



**Ex-tech Signalling SAS**

Ex-tech Signalling SAS, Champniers, France - www.ex-tech.no

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.



## 1.0 INTRODUCTION

SB-125 series Explosion-proof Sounder/Horn & Beacon is designed according to EN60079-0, EN60079-1 and EN 54 (BS 5879) standard. Enclosure material is UV and corrosion resistance GRP (Glass Reinforced Polyester). This product is certified for use and installation in Zone 1 and Zone 2 areas with gases groups of IIA, IIB, IIC and temperature classification of T4~T6. It specially applies to Oil & Gas, Offshore Platform, Chemical, Petrochemical, Refinery and Marine Industries etc. Users can choose from single or combination types. The design of 3 in 1 sounder, loudspeaker and beacon is unique. During normal operation, the device can be used as loudspeaker & beacon. When emergency arises, alarm tone will turn on and result in loudspeaker signal being cut off. Then the device can be used as sounder & beacon. According to user control system, 4 stages of alarm tones can be sent out. 63 tones are selectable. Tone can be preset during installation. At the same time, four stages of alarm light can also be sent out.

## 2.0 EXPLOSION-PROOF LABELING

All products have a rating label, which carries the following important information:

Product order no.:

e.g. **SB125-3GRBX05DCNNNARDN**

(Refer to the datasheet for product order selection)

Input voltage: 12/24V DC or 30-60V DC or 100-240V AC

Code: SB125-1101400001

Exd IIC T4 (-40°C <Ta<+70 °C) ~ T6 (-40°C <Ta<+55 °C)

Nemko ATEX Certificate No.: Nemko 07ATEX 1239

China CQST Certificate No.: CNEx 07.0508X

ATEX Mark:



Gas Group and Category: II 2G

CE Mark:



Mark No.: 0470

Warning: **DO NOT OPEN WHEN AN EXPLOSIVE GAS ATMOSPHERE IS PRESENT**

Finish product serial no. SB125-110160004

## 3.0 TYPE APPROVAL STANDARD

The SB125 series products have an EC Type Examination Certificate issued by Nemko and have been approved to the following standards:

EN 60079-0:2006 General Requirements

EN 60079-1:2004 Flameproof Enclosed

## 4.0 ZONES, GASGROUP, CATEGORY AND TEMPERATURE CLASSIFICATION

The SB125 series products have been certified Ex d IIC T4~T6. This means that the units can be installed in locations with the following conditions:

### Area Classification:

**Zone 1:** Explosive gas air mixture likely to occur in normal operation.

**Zone 2:** Explosive gas air mixture not likely to occur, 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

**Equipment Category:** 2G

**Temperature Range:** -40 °C <Ta < 70 °C

## 5.0 INSTALLATION

### General Requirement

The product must be installed in accordance with the latest issued relevant requirements in the EN60079-0 and EN60079-1 specification or the equivalent IEC specification– Selection, Installation and Maintenance of electrical apparatus for use in potentially explosive atmosphere. Product installation must be carried out in accordance with any local codes that may apply and

should only be carried out by a competent electrical engineer.

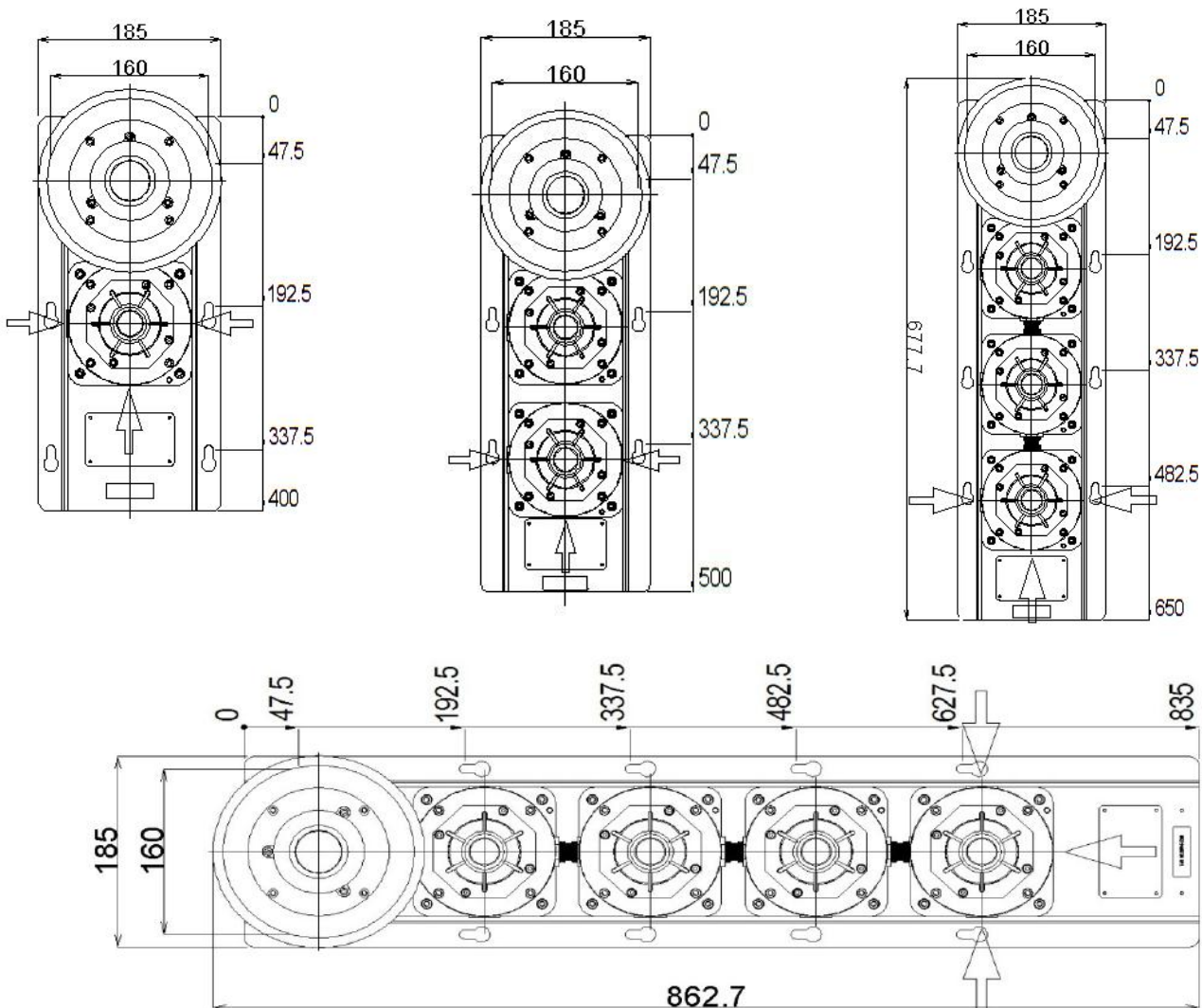
### Location

The location of the unit should be made with due regard to the area over which both the sounder and beacon warning signal must be audible and visible. The unit should only be fixed to services that can carry the weight of the unit.

### Mounting

#### **COMBINED UNIT**

As for the combined unit it come with either one or two beacons and can be mounted on a vertical surface via a stainless steel mounting plate (see Fig 1 A/B/C/D). The fixing holes on the mounting plate are designed to fit M8 Allen Screw only. The diameter is 9mm. Use of stainless steel fastener is recommended by EX-TECH SIGNALLING SAS.



## 6.0 WIRING

### General Requirement

EX-TECH SIGNALLING SAS recommends that all cables and cores should be fully identified (suggest using cable from 2.0 to 2.5 mm<sup>2</sup>).

Ensure that all nuts, bolts and screws are secured. Ensure that only the right and certified cable glands are used and earthed correctly. Ensure that only the right and certified stopping plugs are used to blank off unused gland entry points. In order to maintain the IP rating of the product, we recommend SS316L for this application.

### Cable Connection

The cable connection is connected with the terminal blocks on the electronic **PCB/Terminal Blocks** assembly located in the bottom unit which can be **Beacon Component** (Fig 2) or Push Button or Junction Box. Cable connection should be carried out in accordance with relevant technical requirement.

### Remove End Cover (Beacon Component)

**CAUTION:** Before removing the cover, ensure the power to the product is isolated.

Unscrew the 4 (for SB125) or 5 (for SB150) M5 retained hex socket head screws of the **Beacon Component** (See Fig 2) to open the cover. Twist the cover gently clockwise and anti-clockwise, whilst pulling away from the base, until it comes off.

**Note; it recommended to open one bling plug to avoid internal vacuum in the unit.**

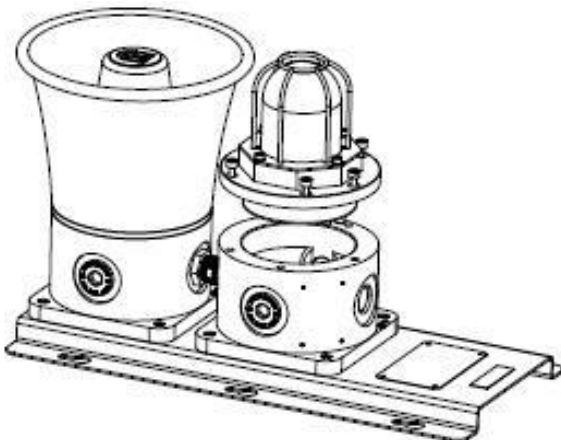


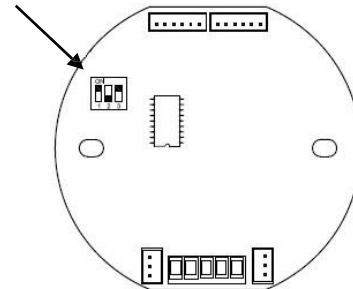
Fig 2

This will release the cover from the base and allow the cover to hang on the retaining wire strap. Before replacing the cover, check that the flameproof joints are clean and not damaged, the gasket is still retained in its groove. As lubrication/grease for the flameproof joint, a thin film of Acid free Vaseline(soap-thickened mineral oils) or mineral oil can be used, excessive lubrication / gresae shall be removed before assembling.

Reinstall the cover in similar way, but operate in reverse manner as above.

**Recommended Bolt Torque for M5 lid screws are 4.5Nm**

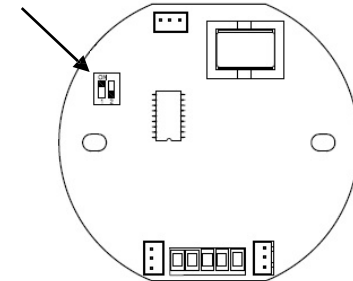
**Power Supply :** 12/24V DC or 30-60V DC or 100-240V AC  
**DIP Switch**



LNS0S1S2

**LED PCB**

**DIP Switch**



LNS0S1S2

**Xenon PCB**

Fig 3

**PCB Wiring Terminals** (See Fig 3)

Apply power supply 12V/24V/36V/48V DC 100-250V AC to 'L' & 'N' (See Fig 3)

### 7.1 STATUS CHOSEN AND FLASHING FREQUENCY ADJUSTMENT

#### LED Beacon

The LED beacon provides flashing and rotary status to be

selected

Use **DIP Switch** with 3 binary codes on the **LED Beacon PCB** to select flashing or rotary status (including steady status), the 3<sup>rd</sup> binary code is for high and low frequency chosen.

**LED Status Selection Switch**

1<sup>st</sup> & 2<sup>nd</sup> DIP Switch: ON=1, OFF=0;

3<sup>rd</sup> DIP Switch: HIGH= 1, LOW= 0

S1/S2: ON= Connect with 0/COM, OFF= Disconnect with 0/COM

Use **DIP Switch** with 2 binary codes on the **Xenon Beacon PCB** (see Fig 3) for frequency adjustment.

**Xenon Beacon Flashing Frequency Adjustment**

DIP Switch: ON=1, OFF=0

S1/S2: ON= Connect to COM, OFF= Disconnect to COM

**7.0 TONE SELECTION**

The sounder provides 63 tones to be selected for the alarm stage 2 to 4. Three stages of alarm tones can be preset via switch on the Sounder PCB.

**Tone Selection Switch**

Use the three (3) DIP switches with 6 binary codes on the **Sounder PCB** to select tones (See Fig 4).

**Tone Selection Table (see attached table 1)**

DIP Switch			S1/S2		S1=OFF S2=OFF	S1=ON S2=OFF	S1=OFF S2=ON	S1=ON S2=ON
1 <sup>st</sup> DIP	2 <sup>nd</sup> DIP	3 <sup>rd</sup> DIP	Alarm Stage 1	Alarm Stage 2	Alarm Stage 3	Alarm Stage 4	Alarm Stage 4	Alarm Stage 4
0	0	0(1)	OFF	Flash 60 (75) times/min.	Flash 75 (90) times/min.	Steady		
1	0	0(1)	OFF	Rotary 60 (75) times/min	Rotary 75 (90) times/min	Steady		
0	1	0(1)	OFF	Triple Flash 60 (75) times/min.	Triple Flash 75 (90) times/min.	Triple Flash 100(120) times/min.		
1	1	0(1)	OFF	Flash &Rotary 60 (75) times/min	Flash &Rotary 75 (90) times/min	Flash &Rotary 100(120) times/min		

**Xenon Beacon**

S1/S2 DIP Switch		S1 = OFF S2 = OFF	S1 = ON S2 = OFF	S1 = OFF S2 = ON	S1 = ON S2 = ON
1	2	Alarm Stage 1	Alarm Stage 2	Alarm Stage 3	Alarm Stage 4
1	1	OFF	60 times/min (1)	90 times/min (1)	120 times/min (1)
0	1	OFF	60 times/min (2)	60 times/min (3)	60 times/min (4)
1	0	OFF	60 times/min (3)	60 times/min (4)	60 times/min (5)
0	0	OFF	60 times/min (4)	60 times/min (5)	60 times/min (6)

All the value in ( ) are the number of flash by time

The Xenon Beacon provides flashing status

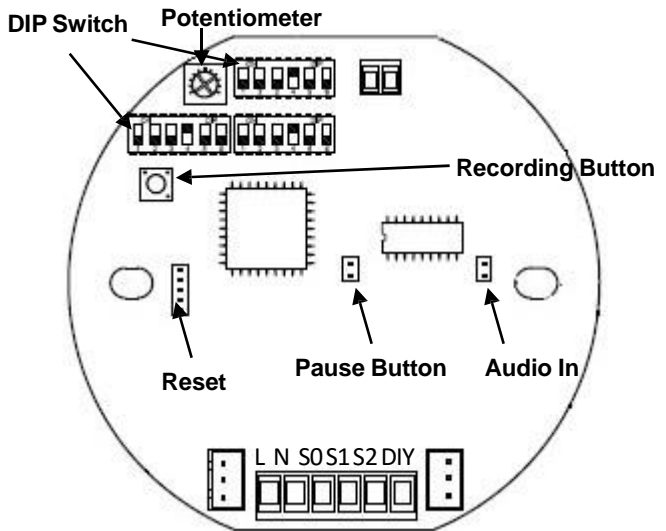


Fig 4

**8.0 VOLUME CONTROL**

The sounder has a volume control to adjust the output volume of the sounder component. To set the required output volume, adjust the potentiometer-VR1 on the PCB (See Fig 4). The potentiometer should be set to fully clockwise position if maximum output volume is needed.

**10.0 SOUNDER RECORDING**

The sounder can provide 4 tones can be recorded by the user. Use the Audio In and Recording Button (See Fig 4) to record.

## Recording Procedure

1. Turn off S1 and S2;
2. Set up any DIP Switches as Tone 60-63 (refer to Attached Table 1- Tone Selection Table);
3. Insert the Audio IN plug;
4. Press the Recording Button and hold the button until the recording is finished.

**CAUTION:** The sounder will begin to record after 3 seconds from pressing the button. Don't release the button when the recording is in process. The maximum of recording time is 20 seconds.

### 11.0 SOUND PAUSE

The sound can pause by pressing the Recording Button. (See Fig 4)

As the pausing period, please refer to the below table:

Pressing Times	Default Setting	Option
1	1 minute	10 minute
2	5 minute	30 minute
3	10 minute	60 minute
4	Restore to the sound	Restore to the sound

In order to have the option function, please inform EX-TECH SIGNALLING SAS in advance before EX-TECH SIGNALLING SAS begin the production of the sounder.

### 11.0 CABLE GLAND

The SB125 series product has cable gland entries. Only cable glands approved for Ex 'd' applications can be used, which must be suitable for the type of cable being used and also meet the requirements of the Ex 'd' flameproof installation standard EN 60079-14.

**SAFETY WARNING:** If the SB125 is used at high ambient temperatures, i.e. over +40°C, then the cable entry temperature may exceed +70°C and therefore suitable heat resisting cable glands must be used, with a rated service temperature of at least 95°C.

If a high IP (Ingress Protection) rating is required, a suitable sealing washer must be fitted under the cable gland.

When only one cable entry is used, the other one must be closed with an Ex 'd' flameproof blanking plug, which must

be suitably approved for the installation requirements.

### 12.0 END OF LINE MONITORING

An end of line monitoring diode or an end of line monitoring resistor can be connected across the 24V+ and 0 terminals. If an end of line monitoring resistor is used, it must have a maximum resistance value of 3k ohms and a minimum wattage of 0.5 Watts; or a minimum resistance value of 1.2k ohms and a maximum wattage of 2 Watts.

### 13.0 MAINTENANCE

During working life of the product, little or no maintenance is required. GRP are resistant to most of the acids, alkalis and chemicals. If abnormal or unusual environmental conditions occur due to accident etc., visual inspection is recommended.

As to avoid electrostatic charge build-up, only exterior of the product can be cleaned with a damp cloth. If spare parts are required, these can be supplied by EX-TECH SIGNALLING SAS Company.

**SAFETY WARNING:** In the case of Anti-Static and UV Resistant GPR, the painting of the enclosure surface has been processed specially. To maintain the product to be Anti-Static, extra normal painting is not allowed.

If any failure occurs but not cause by human factor, the product can be returned to EX-TECH SIGNALLING SAS for free repair or replacement during warranty period.

### 14.1 CONDITIONS FOR SAFETY USE

- This apparatus is suitable to be used only in ambient temperature as stated below:

Type	Ambient Temp.
SB-125	-40 to +70 °C

- Other than product manufacturer, painting and surface finishing are not permitted by the third party.
- When used in dusty atmosphere, flameproof cable entry devices or stopping plugs have to be selected and installed carefully in order to maintain the IP rating (IP66/67) of the product.

**Specific Condition for Use**

Repairs of the flameproof points must be made in compliance with the structural specifications provided by the manufacturer.

Repairs must not be made on the basis of values specified in tables 1 and 2 of EN/IEC 60079-1.

**Please contact Ex-Tech Signalling SAS for further details.**

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Attached Table 1-Tone Selection Table

ITEM	DESCRIPTION				Max dB	SW1,SW2,SW3,SW4
Tone	Frequency	Tone Description	Tone Application	Waveform	(DB)@1M	Bit 123456
0	0	0	0	0	0	000000
01	300Hz	Continuous			105	100000
02	340Hz	Continuous			105	010000
03	440Hz	Continuous			105	110000
04	554Hz	Continuous			106	001000
05	660Hz	Continuous	All-clear, Sweden		104	101000
06	800Hz	Continuous			105	011000
07	1000Hz	Continuous	PFEER Toxic Gas		109	111000
08	1200Hz	Continuous			106	000100
09	2000Hz	Continuous			105	100100
10	2400Hz	Continuous			103	010100
11	2850Hz	Continuous			102	110100
12	420Hz@0.625 sec	intermittent	Australian, AS2220		100	001100
13	544Hz@0.875 sec	intermittent			104	101100
14	660Hz@150ms on,150ms off	intermittent	Swedish Fire Alarm		100	011100
15	660Hz@1.8sec on,1.8sec off	intermittent	Swedish Fire Alarm		103	111100
16	745Hz@500ms on,500ms off	intermittent			102	000010
17	800Hz@250ms on,250ms off	intermittent			102	100010
18	800Hz@250ms on,1sec off	intermittent			100	010010
19	1000Hz@250ms on,250ms off	intermittent			105	110010
20	1000Hz@500ms on,500ms off	intermittent	Back-up Alarm(LF)		105	001010
21	1000Hz@250ms on,1sec off	intermittent			105	101010
22	1000Hz@1sec on,1sec off	intermittent	PFEER Gen, Alarm		105	011010
23	2400Hz@250ms on,250ms off	intermittent			101	111010
24	2400Hz@500ms on,500ms off	intermittent			100	000110
25	2850Hz@1sec on,1sec off	intermittent	Back-up Alarm(HF)		101	100110
26	2850Hz@150ms on,100ms off	intermittent	Pelican Crossing		101	010110
27	970Hz@0.5sec on/0.5sec off,1.5sec off	3 Pulses	ISO 8201 Low tone		105	110110
28	2850Hz@0.5sec on/0.5sec off,1.5sec off	3 Pulses	ISO 8201 Low tone		101	001110
29	700Hz@2sec on/2sec off	intermittent	Air-raid, Sweden		105	101110
30	700Hz@125ms on/125ms off	intermittent	Local warning, Sweden		105	011110
31	720Hz@0.7sec on/0.3sec off	intermittent	Industrial alarm, Germany		105	111110
32	544Hz/440Hz@500ms	Alternating	Swedish Fire Alarm		101	000001
33	544Hz/440Hz@100ms/400ms	Alternating	AFNOR,NFS 32-001		101	100001
34	544Hz/440Hz@1sec	Alternating	Turn-out, Sweden		100	010001
35	800Hz/1000Hz@125ms	Alternating	Increased Urgency		104	110001
36	2400Hz/2900Hz@125ms	Alternating	Security Deterrent		100	001001
37	800Hz/1000Hz@250ms	Alternating	Fire Alarms		104	101001
38	800Hz/1000Hz@580ms	Alternating			104	011001
39	1000Hz/2000Hz@500ms	Alternating			104	111001
40	2400Hz/2900Hz@250ms	Alternating	Security Alarms		100	000101
41	500Hz--1000Hz@6Hz	Fast whoop			103	100101
42	500Hz--1200Hz@0.3Hz	Sweeping			102	010101
43	660Hz--1200Hz@1Hz	Sweeping			101	110101
44	800Hz--1000Hz@1Hz	Med Sweeping(LF)			101	001101
45	800Hz--1000Hz@7Hz	Fast Sweeping(LF)			102	101101
46	2400Hz--2900Hz@1Hz	Sweeping			100	011101
47	2400Hz--2900Hz@7Hz	Fast Sweeping			100	111101
48	800Hz--1000Hz@50Hz	Low Freq Buzz	Buzz		100	000011
49	2400Hz--2900Hz@50Hz	High Freq Buzz	Buzz		100	100011
50	500Hz--1200Hz@2.5sec  0.5sec	Slow Whoop			102	010011
51	500Hz--1200Hz@5sec ↑ , 0.25sec ↓	Slow Whoop	Evacuation,Netherlands		102	110011
52	1200Hz--500Hz@1Hz	Reverse sweeping	Evacuation,Germany		102	001011
53	1400Hz--1600Hz@1sec ↑ , 0.5sec ↓	sweeping	NFC 48-265		100	101011
54	Simulated Bell	Fast Shake	Bell		98	011011
55	800Hz/660Hz	Tow tone chime	Int'l evacuation alarm		102	111011
56	800Hz/1000Hz	ISO 8201 Evacuation	Int'l evacuation alarm		102	000111
57	250Hz--1200Hz@3sec ↑ , 6sec 3sec ↓	Motor Siren-slow rise			104	100111
58	250Hz--800Hz@3sec ↑ , 6sec 3sec ↓	Motor Siren-slow rise			105	010111
59	250Hz--2400Hz@6sec ↑ , 6sec 6sec ↓	Motor Siren-slow rise			100	110111
60	Client Spare recording					001111
61	Client Spare recording					101111
62	Client Spare recording					011111
63	Client Spare recording					111111

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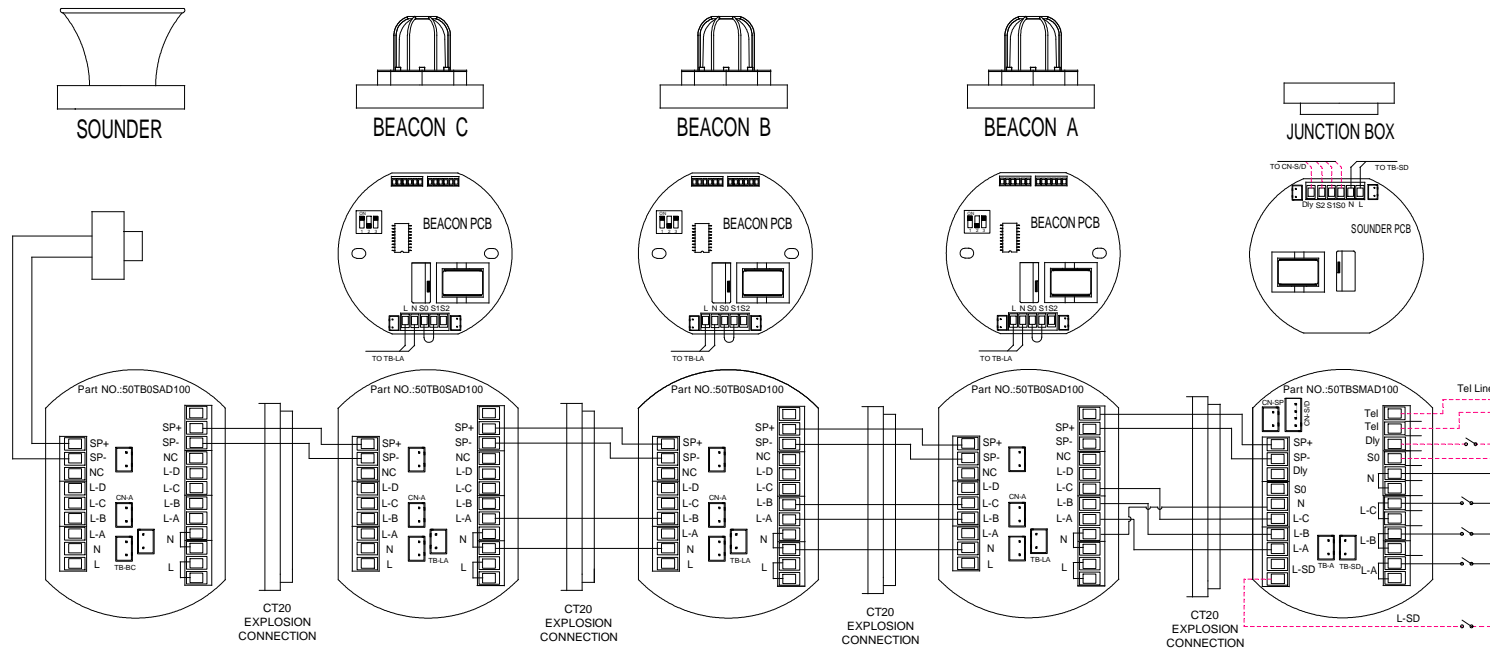
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### Wiring For Customer

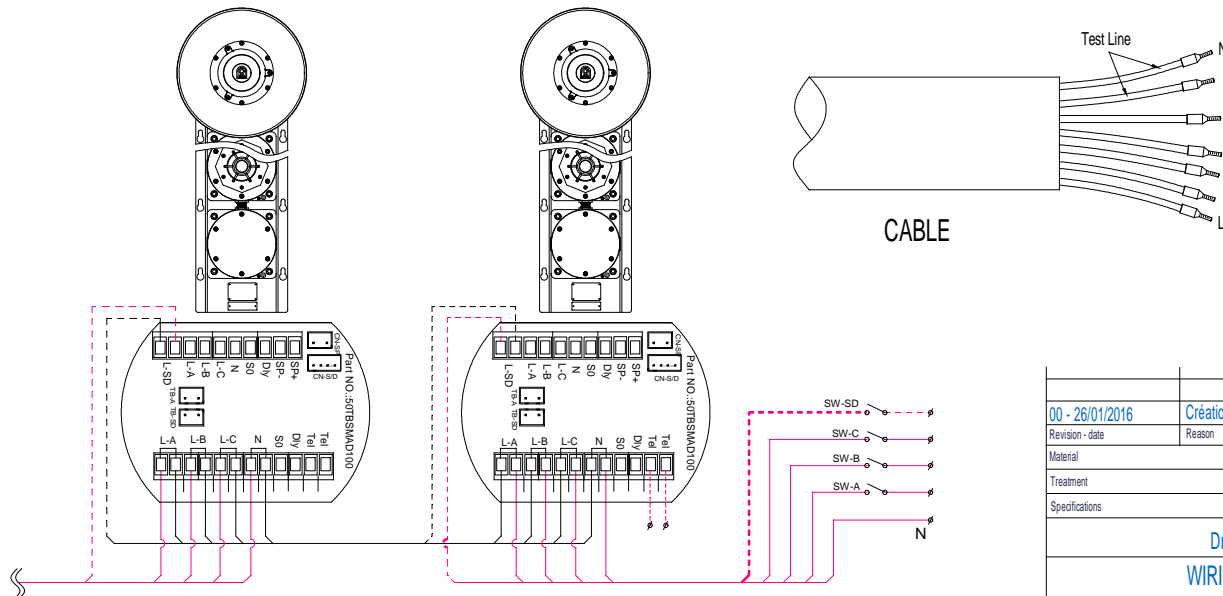
**CAUTION OF WIRING AND FUNCTION:**  
**FOR DC POWER SUPPLY:**  
 "L" EQUAL "B+", "N" EQUAL "0"  
**APPLY POWER SUPPLY**  
 AC 100-230V OR DC 12V-48V TO  
 "L"&"N"  
**CONNECT SW-A TO START BEACON A**  
**CONNECT SW-B TO START BEACON B**  
**CONNECT SW-C TO START BEACON C**  
**CONNECT SW-SD TO START SOUNDER**

**CONNECT TO Tel-1 & Tel-2 FOR TELE-INITIATION ( OPTIONAL )**

**IF YOU NEED TO ADD A RESISTANCE, PLEASE CONNECT THE RESISTANCE BETWEEN "L" & "N"**

**TO ADJUST THE BEACON'S FLASHING FREQUENCY, PLEASE REFER TO THE INSTRUCTION IN THE PRODUCT'S TECHNICAL MANUAL.**

**DO NOT SUPPLY AC OR DC POWER TO S0/S1/S2/Dly.**



#### Cable Selection

Please select suitable size cable according to the distance between control room & the terminals and the quantity of equipments used.

Normal size for AC power supply cable L & N is 1.5mm<sup>2</sup>. Normal size for DC power supply cable L & N is 2.5mm<sup>2</sup>.

Please select the quantity of control cables ( 2 to 7) according to the actual requirement. Normal size for control cable is 1mm<sup>2</sup>.

00 - 26/01/2016	Creation		
Revision - date	Reason		
Material			
Treatment			
Specifications			
Drawing part <b>WIRING DIAGRAM</b> SB100/125/150 WITH JB		Scale:	1 : 1
		Drawn by:	P. TRAUMAT
Date:	26/01/2016	Project / N° PO	Dossier
		N° Drawing	Index
		SB100_125_150_JB	01
		Folio	1/1

