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SOUNDER BEACON BASE

FUNCTION

The Sounder Beacon Base is a loop-powered sounder and beacon combined with a standard XP95/Discovery mounting base. It is used to signal a fire alarm in enclosed areas.

The Sounder Beacon Base can be used either with a detector fitted or with a cap for operation as a stand-alone alarm device.

The Sounder Beacon Base is supplied with a built-in isolator. A version without an isolator is also available.

FEATURES

The product offers:

- two volume ranges 55–75dB(A) and 75–91dB(A)

- beacon flash rate of once per second

- synchronisation of 'alert' and 'evacuate' tones

- synchronisation of beacon flash

- individual and group addressing

- unique acoustic self-test

- unique beacon self-test

In addition to the standard tone a version with slow whoop tone to Dutch standard NEN2575 is available

The low volume range is useful in areas such as hospitals where a fire alert is initially intended to warn staff only. The sounder is set to the high range for general use.

Sounder Beacon Base *shown with a multisensor detector*

Synchronisation of tones ensures the integrity of the signal—tones from different sounders do not merge into one signal that could be mistaken for a different tone.

Group addressing is a simple method of alerting an entire area or group of rooms without delay.

For systems requiring isolators at every point the built-in isolator saves installation time and cost.

The acoustic self-test means that the sounder listens to itself when it is switched on. If no sound is detected a fault signal is transmitted when the sounder is polled.

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The beacon self test is achieved by means of an LED monitoring circuit. If the LEDs do not draw current when the sounder beacon base has been switched on a fault signal is transmitted when the device is next polled.

ELECTRICAL CONSIDERATIONS
The Sounder Beacon Base is loop powered so needs no external power supply. It operates at 17–28V DC and is polarity-sensitive.

TONE FREQUENCY AND VOLUME CONTROL
The tone frequency of the sounders, together with sound pressure levels, is published in a separate document, PP2203 available from Apollo.

ADDRESSING
The Sounder Beacon Base responds to its own individual address set with a DIL switch. It also responds both to a group address, set by means of a 4-segment DIL switch and to a synchronisation address which is embedded in the unit.

Addresses 1 to 111 are used exclusively for individual addresses; addresses 112 to 126 are used for group addressing, while the synchronisation address, to which all units respond, is '0'. Any Sounder Beacon Base on a loop may be freely assigned to a group. The address for any group *must* be chosen from the range 112–126.

Addresses 112–126 *may* be used as individual addresses but *only* if the 4-segment DIL switch is not used ie, group addressing is disabled. If the 4-segment DIL switch were set to any number other than the default 127, a pre-set analogue value of 4 would be transmitted to indicate a fault.

The Sounder Beacon Base is normally polled by its individual address. It responds as described below (See **PROTOCOL BIT USAGE**). If more than one Sounder Beacon Base is activated it is possible for the sounders to be out of synchronisation with the result that the signal in not clear.

To prevent this, it is recommended that the synchronisation address '0' be sent by the control panel at regular intervals to align the internal clock of all sounders. The result is that the sounder beacons are synchronised with each other in both 'alert' and 'evacuate' modes.

NB: Units on two or more loops can be synchronised only if the panel transmits address '0' to all loops synchronously.

GROUP ADDRESSING
It may be desirable, in alarm conditions, to switch more than one Sounder Beacon Base simultaneously. To enable this, devices may be controlled as a group and given a group address which is common to all sounder beacon bases in the group. When a device recognises its group address, it will process the output bits but it will not return any data to the control panel on that address. If it is required to confirm the status of the outputs of devices under group address control, it is necessary to interrogate all devices in the group at their individual addresses.

SELF TEST
An important safety feature has been incorporated into the Sounder Beacon Base: when it is switched on it tests itself by checking the actual sound output and flash operation. If no sound is detected within 5 seconds of the Sounder Beacon Base being switched on it will transmit an analogue value of 1 (= sounder fault) when it is next polled. If no current is drawn by the LEDs an analogue value of 2 (= beacon fault) is transmitted. If neither element is operating an analogue value of 3 (= sounder and beacon fault) is transmitted on the next polling.

This feature can also be used during commissioning or periodical maintenance testing. Simply activate the sounder for at least 5 seconds and check the control panel for a fault signal. If none is received, the sounder beacon base is working properly.

PROTOCOL COMPATIBILITY
The Sounder Beacon Base will operate only with control equipment using the Apollo XP95 or Discovery protocol. The features of the Sounder Beacon Base are available only when it is connected to a control panel with the appropriate software.

PROTOCOL BIT USAGE
The **output (or forward command) bits** from the control panel have the following function:

> **Output bit 2** is used to apply the required address mode — group addressing or individual addressing.
>
> Group addressing is selected by setting output bit 2 of the individual address to logic 0 on two or more consecutive cycles and output bit 2 of the group address to logic 1 on two or more consecutive pollings. All other output bit 2 combinations result in the application of the individual address mode.
>
> Whichever address mode — individual or group — is applied in any polling, the use of the other output bits is identical:
>
> When **output bit 1** is set to logic 1 on two or more consecutive pollings, the 'alert' tone is sounded.

When **output bit 0** is set to logic 1 on two or more consecutive pollings, the 'evacuate' tone is sounded. The sounder beacon base will also operate continuously if both output bit 1 and output bit 0 are set to logic 1 on two or more consecutive pollings.

The **seven bits** which are then transmitted by the control panel correspond to the individual or the group **address (as set on the relevant DIL switch)** of the device or devices to be polled.

After the Sounder Beacon Base has been addressed by the control equipment, it returns data if (and only if) its individual address has been applied. No data is returned when the group address is polled. The response after individual addressing will, however, reflect whatever commands have been set, whether by individual or by group address mode. The response is as follows:

The **interrupt bit** is always set to '0'.

The **analogue value bits** are set to report a pre-set analogue value of 16 in quiescent condition and 4 if the group address is incorrectly set. A value of 1 is reported if the sounder fails to emit a sound after being switched on. '2' is reported if the beacon is in fault and '3' if both sounder and beacon are in fault.

The **input bits** confirm the execution of the commands given by the output bits as follows:

Bit 2 is set to logic '1' for group addressing and to logic '0' if individual addressing has been applied.

Bit 1 is set to logic '0' when the sounder beacon is not operated and to logic '1' to indicate that it has been switched to operate in 'alert' mode.

Bit 0 is set to logic '0' when the sounder beacon is not operated and to logic '1' when it is operated in 'evacuate' mode. If both bits 1 and 0 are set to '1', this also indicates that the device is in 'evacuate' mode.

The **type bits** are used to identify the type of unit responding. The type code of the Sounder Beacon Base is 001 00 (bits 2, 1, 0, 4, 3). Bits 2, 1 and 0 of the type code are sent immediately after the input bits. The remaining two bits are sent in the XP95 protocol extension.

The Sounder Beacon Base transmits **seven bits** to confirm its address and then places **one bit** to indicate that the device is using the XP95 protocol.

The **alarm flag** is not placed by the Sounder Beacon Base.

The next **two bits** sent are the **extended type code** bits (bits 4, 3) which, in this case, are '00'.

The following **five bits**, extension of the analogue value, are not used by the Sounder Beacon Base.

The **parity bit** is set to '0' or '1' in the same way as it is by XP95 detectors.

The **final seven bits**, alarm/interrupt address, are not used, since this product has no alarm reporting function.

Output Bit	Function	Bit usage	Input Bit	Function	Bit usage
2	group mode	1 = off 0 = on	2	group mode confirmed	1 = group 0 = individual
1	'alert' mode	1 = on 0 = off	1	'alert' mode confirmed	1 = on 0 = off
0	'evacuate' mode	1 = on 0 = off	0	'evacuate' mode confirmed	1 = on 0 = off

Table 1 *Function of input and output bits*

SYNCHRONISATION

It is possible to synchronise the sound and flash outputs of all Sounder Beacon Bases connected to a loop. This is achieved by setting the three output bits to '0' and the address bits to '0' for one polling cycle. Other alarm devices, including the 100dB Sounder, the Integrated Base Sounder, the Intelligent Base Sounder, the Sounder Circuit Controller and the Loop-powered Beacon, may be synchronised in exactly the same way.

This method of synchronisation depends on the design and configuration of the control panel. Further information should be sought from the manufacturer of the panel.

TYPE CODE

The sounder beacon type code is 001 00. (bits 210 43).

MECHANICAL CONSTRUCTION

The Sounder Beacon Base is moulded in polycarbonate and has stainless steel contacts that accept solid or stranded cables of up to 2.5mm².

Notes

1. *The Sounder Beacon Base complies with EN54–3 when it is used in the higher volume range.*

2. *The lower volume range does not comply with EN54–3 and should not be used as part of an alarm application.*

   The purpose of the lower volume range is to provide a warning in specific cases such as hospital staff stations.

3. *The Sounder Beacon Base is a Type A device, ie, for indoor use only.*

4. *The isolating circuit of the Sounder Beacon Base conforms to EN54–17*

5. *For information on isolating circuits see publication PP2090 available on request from Apollo.*

DIMENSIONS AND WEIGHT

Part no	Description	Dimensions	Weight
45681-330	Sounder Beacon Base with Isolator	115 x 38mm	160g
45681-331	Sounder Beacon Base		
45681-332	Slow whoop Sounder Beacon Base with Isolator		
45681-292	White Cap	100 x 9mm	20g
45681-293	Red Cap		

Table 2 *Dimensions and weights*

TECHNICAL DATA

Operating voltage (polarity sensitive)	17–28V DC
Protocol pulses	5–9V
Current consumption at 24V	
switch-on surge, <1s	1.2mA
quiescent	300µA
device operated at 55–75dB or 75–91dB	8mA
Maximum sound output at 90°	91dB(A)

Sound pressure level data is published in PIN sheet PP2203 available from Apollo

Operating temperature	–20°C to +60°C
Humidity (no condensation)	0–95%
IP rating	21D