

# INTEGRATED BASE SOUNDER WITH ISOLATOR (DIN TONE)

## FUNCTION

Apollo Fire Detectors offers a loop-powered sounder combined with a standard XP95/Discovery mounting base which is used to signal a fire alarm in enclosed areas.

## FEATURES

The sounder offers:

- two volume ranges 55–75dB(A) and 75–91dB(A)
- an 'emergency signal' tone to DIN 33404 Part 3 and a discretionary constant tone for non fire emergency use
- synchronisation of 'DIN' and 'constant' tones
- individual and group addressing
- supplied with a built-in isolator
- unique acoustic self-test

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.

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.



**Integrated Base Sounder** shown with an optical detector

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.

## ELECTRICAL CONSIDERATIONS

The integrated base sounder is line powered and 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 sounder is published in a separate document available from Apollo Fire Detectors PP2203.



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## ADDRESSING

The integrated base sounder 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 pulsed-mode 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 integrated base sounder 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 integrated base sounder is normally polled by its individual address. It responds as described below (See **PROTOCOL BIT USAGE**). If more than one integrated base sounder is activated it is possible for the sounders to be out of synchronisation with the result that the signal is 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 sounders 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 integrated base sounder simultaneously. To enable this, sounders may be controlled as a group and given a group address which is common to all sounders in the group. When a device recognises its group address, it will process the forward command 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 integrated base sounder: when

it is switched on it tests itself by checking the actual sound output. If no sound is detected within 5 seconds of the Integrated Base Sounder being switched on it will transmit an analogue value of 1 (= sounder fault) when it is next polled.

This 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 is working properly.

## PROTOCOL COMPATIBILITY

The sounder will operate only with control equipment using the Apollo XP95 or Discovery protocol. The features of the Integrated base sounder are available only when the sounder 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 'constant' tone is sounded.

When **output bit 0** is set to logic 1 on two or more consecutive pollings, the 'emergency signal' tone to DIN 33404 is sounded. The sounder 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. These bits may also be set to zero to enable the unit to respond to the embedded address '0'.

*After the integrated base sounder 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.

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 is not operated and to logic '1' to indicate that the sounder has been switched to operate in 'constant' mode.

**Bit 0** is set to logic '0' when the sounder 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 sounder is in 'evacuate' mode.

The **type bits** are used to identify the type of unit responding. The type code of the Integrated base sounder 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 integrated base sounder 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.

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 integrated base sounder.

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 the sounder has no alarm reporting function.

#### **SYNCHRONISATION**

Sounders are able to recognise address 0 and synchronise, as in the case of the 100dB sounder, the Intelligent Base Sounder and the Sounder Control Unit. This method of synchronisation depends on the design and configuration of the control panel. The manufacturer of the panel should be consulted to determine whether this feature is available or not.

#### **TYPE CODE**

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

#### **MECHANICAL CONSTRUCTION**

The integrated base sounder is moulded in polycarbonate and has stainless steel contacts that accept solid or stranded cables of up to 2.5mm<sup>2</sup>.

**DIMENSIONS AND WEIGHT**

Part no	Description	Dimensions	Weight
45681-300	DIN Tone Sounder with isolator	115 x 38mm	140g
45681-292	White Cap	100 x 9mm	20g
45681-293	Red Cap	100 x 9mm	20g

**Table 1** Dimensions and weights

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	'constant' mode	1 = on 0 = off	1	'constant' mode confirmed	1 = on 0 = off
0	'DIN 33404 emergency signal' mode	1 = on 0 = off	0	'DIN 33404 emergency signal' mode confirmed	1 = on 0 = off

**Table 2** Function of input and output bits

**TECHNICAL DATA**

Operating voltage (polarity sensitive)	17-28V DC
Protocol pulses	5-9V
Current consumption at 24V	
switch-on surge, <1s	1.2mA
quiescent	200µA
sounder operated 50-75dB(A)	
or 75-91dB(A)	5mA
Maximum sound output at 90°	91db(A)
Maximum sound output to EN54	83dB(A)
Sound pressure level data is published in PIN sheet PP2203 available from Apollo	
Isolator operation and specification data is published in PIN sheet PP2090 available from Apollo.	
Operating temperature	-20°C to +60°C
Humidity (no condensation)	0-95%
IP rating (standard version)	21D

**Notes**

1. *The Integrated Base Sounder complies with EN54-3 when it is used in the higher tone range.*
2. *The lower tone range does not comply with EN54-3 and should not be used as part of an alarm application.*  
  
*The purpose of the lower tone range is to provide a warning in specific cases such as hospital staff stations.*
3. *The Integrated Base Sounder is a Type A sounder, ie, for indoor use only.*