



# Sound Pressure Levels

Sounders and Base Sounders



## Introduction

Apollo Fire Detectors offers a choice of sounders for installation in intelligent fire detection systems.

These sounders are either base sounders for use with individual detectors or wall-mounted sounders for installation in open areas.

## Sounders and EN 54

Sounders used as part of a fire detection and alarm system are subject to the requirements of the European standard EN 54-3 when they are installed in the countries of the European Union.

The standard requires the publication of information sufficient for engineers to be able to design and install the sounders competently.

## The Apollo information system

Apollo Fire Detectors publishes a datasheet for each type of sander. These include full information on the function and features of the sounders and, where necessary, the use of the digital communications protocol.

The standard requires the sound pressure levels and tone frequencies to be published but these have not been included in individual sander datasheets. It has been decided to publish all this data collectively in a separate publication. This publication contains information available at the time of printing. Further information on sound pressure levels and frequencies will be added at intervals as this information becomes available.

### Notes:

1. The data given represents the lowest sound levels that might be achieved in actual use.

2. As of July 2006 BRE, the UK fire testing organisation, has discontinued the requirement to publish data for the low volume setting of sounders and sander visual indicators. Only high volume setting data is, therefore, published for the 'Multi-tone Open-area Sander Visual Indicator' range and any later ranges.

## Sounders included in this publication

- Intelligent Base Sander
- Intelligent Base Sander with Isolator
- Intelligent Base Sander, Slow Whoop
- Intelligent Base Sander with Isolator, Slow Whoop
- Ancillary Base Sander
- Integrated Base Sander with Isolator
- Integrated Base Sander
- Integrated Base Sander with Isolator, Slow Whoop
- Integrated Base Sander, Slow Whoop
- Integrated Base Sander, DIN Tone
- Sander Visual Indicator Base with Isolator
- Sander Visual Indicator Base
- Sander Visual Indicator Base with Isolator, Slow Whoop
- Sander Visual Indicator Base with Isolator, DIN Tone
- Discovery Sander Visual Indicator Base
- AlarmSense Sander
- AlarmSense Open-Area Sander Visual Indicator
- AlarmSense Open-Area Sander
- Discovery Sander VAD Base
- Discovery Marine Sander VAD Base
- Discovery Sander Base
- Sander VAD Base
- Sander VAD Base with Isolator, Slow Whoop
- Sander VAD Base with Isolator, DIN Tone
- Intelligent Open-Area Sander
- Intelligent Multi-tone Open-Area Sander Visual Indicator
- Multi-tone Waterproof Open-Area Sander
- Multi-tone Open-Area Sander
- Multi-tone Open-Area Sander Visual Indicator
- Multi-tone Open-Area Sander Visual Indicator with Isolator
- Multi-tone Waterproof Open-Area Sander Visual Indicator
- Multi-tone Waterproof Open-Area Sander Visual Indicator with Isolator
- Discovery Open-Area Sander Visual Indicator
- Discovery Open-Area Voice Sander
- Discovery Open-Area Voice Sander Visual Indicator
- XPander Sander and Sander Base
- XPander Sander Visual Indicator and Sander Base
- XPander Combined Sander and Detector Base
- XPander Combined Sander Visual Indicator and Detector Base
- XP95 Category C Sander Visual Alarm
- XP95 Category W Sander Visual Alarm

**Intelligent Base Sounder, Part Number 45681-265**  
**Intelligent Base Sounder with Isolator, Part Number 45681-266**

Angle	Apollo Standard			
	ALERT		EVACUATE	
	Sound pressure level dB(A) Tone frequency: off for 1s / 510Hz for 1s		Sound pressure level dB(A) Tone frequency: 510Hz for 0.5s / 610Hz for 0.5s	
	Maximum		Maximum	
	Horizontal	Vertical	Horizontal	Vertical
15°	80.3	78.7	80.8	83.3
45°	81.3	79.1	81.5	83.0
75°	86.5	85.7	87.7	88.4
105°	86.5	85.8	86.4	85.3
135°	80.7	83.1	82.4	83.3
165°	80.5	84.1	82.8	86.4

**Intelligent Base Sounder, Slow Whoop, Part Number 45681-267**

Angle	Slow Whoop			
	ALERT		EVACUATE	
	Sound pressure level dB(A) Tone frequency: 970Hz continuous		Sound pressure level dB(A) Tone frequency: off for 0.5s / 500Hz-1200Hz over 3.5s	
	Maximum		Maximum	
	Horizontal	Vertical	Horizontal	Vertical
15°	75.8	76.5	84.4	88.3
45°	75.9	75.7	85.7	87.9
75°	81.0	76.0	90.1	89.6
105°	81.1	81.0	90.0	89.5
135°	76.7	79.3	84.8	84.3
165°	76.9	80.2	83.7	82.7

**Ancillary Base Sounder, Part Number 45681-276**

Angle	Apollo Standard	
	EVACUATE	
	Sound pressure level dB(A) Tone frequency: 630Hz for 0.5s / 990Hz for 0.5s	
	Maximum	
	Horizontal	Vertical
15°	77.9	77.0
45°	75.0	77.0
75°	80.8	79.6
105°	80.0	79.4
135°	78.2	75.1
165°	79.0	67.0

**Integrated Base Sounder with Isolator, Part Number 45681-277**  
**Integrated Base Sounder, Part Number 45681-278**

Angle	Apollo Standard			
	ALERT		EVACUATE	
	Sound pressure level dB(A) Tone frequency: off for 1s / 800Hz-1000Hz for 1s		Sound pressure level dB(A) Tone frequency: 500Hz-700Hz for 0.5s / 800Hz-1000Hz for 0.5s	
	Maximum		Maximum	
	Horizontal	Vertical	Horizontal	Vertical
15°	71.8	68.0	71.8	68.0
45°	71.0	69.7	70.5	69.7
75°	76.9	74.7	76.8	74.7
105°	76.7	75.1	76.7	75.1
135°	70.7	74.3	70.2	71.2
165°	72.8	75.0	70.6	75.0



## Integrated Base Sounder with Isolator, Slow Whoop, Part Number 45681-290 Integrated Base Sounder, Slow Whoop, Part Number 45681-291

	Slow Whoop			
	ALERT		EVACUATE	
	Sound pressure level dB(A) Tone frequency: 800-1000Hz		Sound pressure level dB(A) Tone frequency: off for 0.5s / 500-1200Hz over 3.5s	
	Maximum		Maximum	
Angle	Horizontal	Vertical	Horizontal	Vertical
15°	73.8	72.0	70.0	70.9
45°	75.4	74.9	71.7	71.3
75°	78.4	80.7	77.1	78.0
105°	78.9	80.0	77.2	78.0
135°	73.0	75.1	71.6	74.5
165°	73.8	76.3	73.3	72.3

## Integrated Base Sounder with Isolator, DIN Tone, Part Number 45681-300

	DIN Tone			
	ALERT		EVACUATE	
	Sound pressure level dB(A) for continuous tone (not DIN) Tone frequency: 870Hz continuous		Sound pressure level dB(A) Tone frequency: 1200-500Hz over 1s	
	Maximum		Maximum	
Angle	Horizontal	Vertical	Horizontal	Vertical
15°	70.8	70.3	71.7	71.5
45°	72.4	71.2	72.4	70.6
75°	78.4	78.4	77.7	78.2
105°	78.0	77.5	78.4	78.4
135°	70.5	74.2	72.0	75.6
165°	73.9	71.1	73.9	70.0

## Sounder Visual Indicator Base with Isolator, Part Number 45681-330

	Apollo Standard			
	ALERT		EVACUATE	
	Sound pressure level dB(A) Tone frequency: off for 1s / 825Hz for 1s		Sound pressure level dB(A) Tone frequency: 550Hz for 0.5s / 825Hz for 0.5s	
	Maximum		Maximum	
Angle	Horizontal	Vertical	Horizontal	Vertical
15°	73.0	70.0	70.0	69.9
45°	73.8	71.9	73.7	72.0
75°	77.5	78.0	77.3	78.0
105°	77.0	77.0	77.9	76.0
135°	72.4	74.7	73.0	74.6
165°	72.0	73.0	73.0	73.0

## Sounder Visual Indicator Base, Part Number 45681-331

	Apollo Standard			
	ALERT		EVACUATE	
	Sound pressure level dB(A) Tone frequency: off for 1s / 825Hz for 1s		Sound pressure level dB(A) Tone frequency: 550Hz for 0.5s / 825Hz for 0.5s	
	Maximum		Maximum	
Angle	Horizontal	Vertical	Horizontal	Vertical
15°	69.9	73.6	70.2	73.9
45°	72.0	76.1	72.0	75.7
75°	78.4	80.3	78.6	80.4
105°	78.6	80.0	78.6	80.2
135°	75.1	77.5	74.6	77.5
165°	73.3	79.2	73.3	79.4

## Sounder Visual Indicator Base, Slow Whoop, Part Number 45681-332

Angle	Slow Whoop			
	ALERT		EVACUATE	
	Sound pressure level dB(A) Tone frequency: 825Hz continuous		Sound pressure level dB(A) Tone frequency: off for 0.5s / 500–1200Hz over 3.5s	
	Maximum		Maximum	
	Horizontal	Vertical	Horizontal	Vertical
15°	73.8	70.0	75.0	73.6
45°	74.5	73.0	75.3	74.3
75°	78.6	78.0	81.5	80.8
105°	78.4	78.0	81.4	81.0
135°	73.5	75.5	76.0	78.3
165°	72.3	75.0	75.0	75.5

## Discovery Sounder Visual Indicator Base, Part Number 45681-393

Angle	Apollo Standard			
	ALERT (Tone 0)		EVACUATE (Tone 1)	
	Sound pressure level dB(A) Tone frequency: off for 1s / 825Hz for 1s		Sound pressure level dB(A) Tone frequency: 550Hz for 0.5s / 825Hz for 0.5s	
	Maximum		Maximum	
	Horizontal	Vertical	Horizontal	Vertical
15°	73.2	70.5	73.1	70.6
45°	71.5	70.4	71.5	70.2
75°	77.1	77.1	77.1	77.1
105°	76.6	76.5	76.5	76.5
135°	71.3	73.1	71.2	73.1
165°	71.1	79.5	71.1	79.4
Angle	EVACUATE (Tone 3)		EVACUATE (Tone 4)	
	Sound pressure level dB(A) for Dutch Slow Whoop tone Tone frequency: off for 0.5s / 500–1200Hz over 3.5s		Sound pressure level dB(A) for DIN tone Tone frequency: 1200–500Hz over 1s	
	Maximum		Maximum	
		Horizontal	Vertical	Horizontal
15°	75.0	70.6	75.0	70.6
45°	73.4	71.8	72.7	70.5
75°	79.2	78.8	79.2	79.0
105°	78.1	78.1	78.1	78.1
135°	73.3	76.7	72.8	76.0
165°	73.1	80.4	73.1	80.4
Angle	EVACUATE (Tone 12)		ALERT (Tone 11)	
	Sound pressure level dB(A) for alternating Fulleon and Hochiki tone Tone frequency: 626Hz for 0.25s / 925Hz for 0.25ms		Sound pressure level dB(A) for continuous Fulleon and Hochiki tone Tone frequency: 925Hz continuous	
	Maximum		Maximum	
		Horizontal	Vertical	Horizontal
15°	75.6	70.6	75.6	70.1
45°	72.3	64.9	64.2	62.9
75°	78.0	78.6	78.4	78.7
105°	78.2	78.0	76.7	78.0
135°	70.3	76.2	70.0	76.0
165°	75.2	81.2	75.2	81.1
Angle	EVACUATE (Tone 14)		ALERT (Tone 13)	
	Sound pressure level dB(A) for Medium Sweep tone Tone frequency: 800Hz to 970Hz at 1Hz		Sound pressure level dB(A) for continuous tone Tone frequency: 970Hz continuous	
	Maximum		Maximum	
		Horizontal	Vertical	Horizontal
15°	72.9	70.4	74.8	67.3
45°	69.9	64.4	71.6	64.2
75°	78.8	79.3	76.1	76.4
105°	78.6	78.4	75.4	75.8
135°	70.0	75.8	71.0	74.2
165°	75.2	80.7	74.5	77.7



Assessed to ISO 9001:2008  
Cert/LPCB ref: 010



Assessed to ISO 14001:2004  
Cert/LPCB ref: 010 EMS



Cert/LPCB ref: 010

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## Discovery Sounder Visual Indicator Base, Part Number 45681-393 (cont'd)

	EVACUATE (Tone 18)		ALERT (Tone 2)	
	Sound pressure level dB(A) for Swedish Fire tone Tone frequency: off for 0.15s / 660Hz for 0.15s		Sound pressure level dB(A) for continuous tone Tone frequency: 825Hz continuous	
	Maximum		Maximum	
Angle	Horizontal	Vertical	Horizontal	Vertical
15°	81.0	72.5	74.2	70.3
45°	77.3	76.9	72.2	64.3
75°	81.2	81.5	77.8	78.0
105°	81.2	81.1	77.4	77.2
135°	77.9	79.7	71.5	73.6
165°	81.7	84.6	71.7	79.0

  

	ALERT (Tone 17)	
	Sound pressure level dB(A) for Swedish All Clear Signal continuous tone Tone frequency: 660Hz continuous	
	Maximum	
Angle	Horizontal	Vertical
15°	81.2	73.9
45°	78.7	77.0
75°	83.5	83.2
105°	83.7	81.9
135°	79.0	81.2
165°	84.0	86.4

## AlarmSense Sounder Visual Indicator Base, Part Number 45681-509

### AlarmSense Sounder Base, Part Number 45681-510

	Apollo Standard	
	EVACUATE (Tone 7)	
	Sound pressure level dB(A) Tone frequency: 550Hz for 0.5s / 825Hz for 0.5s	
	Maximum volume, switch 2 off	
Angle	Horizontal	Vertical
15°	73.0	68.9
45°	70.1	67.8
75°	76.1	76.3
105°	75.5	75.2
135°	69.5	73.8
165°	73.5	79.3

## AlarmSense Open-Area Sounder Visual Indicator, Part Number 55000-017

### AlarmSense Open-Area Sounder, Part Number 55000-018

	Apollo Standard	
	EVACUATE	
	Sound pressure level dB(A) Tone frequency: 558Hz for 0.5 s / 840Hz for 0.5 s	
	Maximum	
Angle	Horizontal	Vertical
15°	83.2	83.2
45°	88.6	88.9
75°	89.7	89.5
105°	89.7	89.6
135°	88.6	89.0
165°	83.2	82.9

## Discovery Sounder VAD Base, Part Number 45681-700

## Discovery Sounder Base, Part Number 45681-702

Apollo Standard				
ALERT (Tone 0)			EVACUATE (Tone 1)	
Sound pressure level dB(A) Tone frequency: off for 1s / 850Hz for 1s			Sound pressure level dB(A) Tone frequency: 567Hz for 0.5s / 850Hz for 0.5s	
Maximum			Maximum	
Angle	Horizontal	Vertical	Horizontal	Vertical
15°	77.1	71.2	77.0	71.2
45°	76.2	74.5	76.2	74.4
75°	80.8	80.5	80.9	80.5
105°	80.9	81.2	80.9	81.2
135°	74.3	77.7	74.3	77.6
165°	75.8	81.3	75.8	81.2
EVACUATE (Tone 3)			EVACUATE (Tone 4)	
Sound pressure level dB(A) for Dutch Slow Whoop tone Tone frequency: off for 0.5s / 500–1200Hz over 3.5s			Sound pressure level dB(A) for DIN tone Tone frequency: 1200–500Hz over 1s	
Maximum			Maximum	
Angle	Horizontal	Vertical	Horizontal	Vertical
15°	80.1	84.8	73.2	69.8
45°	85.2	86.3	72.0	68.8
75°	89.1	89.2	76.2	76.9
105°	88.9	88.9	75.8	76.9
135°	85.0	83.7	70.0	73.0
165°	81.6	79.4	73.7	78.1
EVACUATE (Tone 12)			ALERT (Tone 11)	
Sound pressure level dB(A) for alternating Fulleon and Hochiki tone Tone frequency: 626Hz for 0.25s / 925Hz for 0.25ms			Sound pressure level dB(A) for continuous Fulleon and Hochiki tone Tone frequency: 925Hz continuous	
Maximum			Maximum	
Angle	Horizontal	Vertical	Horizontal	Vertical
15°	73.0	68.0	73.2	78.5
45°	70.0	64.0	61.2	63.2
75°	75.0	76.4	75.4	76.4
105°	75.2	75.0	73.7	75.0
135°	67.3	73.8	67.0	73.8
165°	72.5	78.2	72.2	78.1
EVACUATE (Tone 14)			ALERT (Tone 13)	
Sound pressure level dB(A) for Medium Sweep tone Tone frequency: 800Hz to 970Hz at 1Hz			Sound pressure level dB(A) for continuous tone Tone frequency: 970Hz continuous	
Maximum			Maximum	
Angle	Horizontal	Vertical	Horizontal	Vertical
15°	73.0	70.0	73.0	71.2
45°	70.8	66.8	69.8	66.7
75°	76.5	76.3	75.3	76.0
105°	75.6	76.1	76.4	76.6
135°	67.0	72.8	71.9	70.1
165°	72.2	78.3	72.7	73.8
EVACUATE (Tone 18)			ALERT (Tone 2)	
Sound pressure level dB(A) for Swedish Fire tone Tone frequency: off for 0.15s / 660Hz for 0.15s			Sound pressure level dB(A) for continuous tone Tone frequency: 850Hz continuous	
Maximum			Maximum	
Angle	Horizontal	Vertical	Horizontal	Vertical
15°	78.0	69.5	74.2	73.5
45°	74.3	73.9	72.2	61.7
75°	78.2	78.5	79.5	79.0
105°	78.2	78.1	79.0	80.5
135°	74.9	76.7	71.7	77.7
165°	78.7	81.6	75.3	80.7



Discovery Sounder VAD Base, Part Number 45681-700		(cont'd)	
Discovery Sounder Base, Part Number 45681-702		ALERT (Tone 17)	
		Sound pressure level dB(A) for Swedish All Clear Signal continuous tone Tone frequency: 660Hz continuous	
		Maximum	
Angle	Horizontal	Vertical	
15°	78.2	70.9	
45°	75.7	74.0	
75°	80.5	80.2	
105°	80.7	78.9	
135°	76.0	78.2	
165°	81.0	83.4	

Sounder VAD Base with Isolator, Part Number 45681-705				
Apollo Standard				
ALERT			EVACUATE	
Sound pressure level dB(A) Tone frequency: off for 1s / 850Hz for 1s			Sound pressure level dB(A) Tone frequency: 567Hz for 0.5s / 850Hz for 0.5s	
Maximum			Maximum	
Angle	Horizontal	Vertical	Horizontal	Vertical
15°	77.6	79.7	82.4	86.9
45°	86.4	86.2	84.2	84.2
75°	90.0	90.2	86.6	86.2
105°	89.8	89.8	87.5	86.5
135°	86.0	87.3	85.3	83.2
165°	76.4	82.1	84.8	80.7

Sounder VAD Base with Isolator, Slow Whoop, Part Number 45681-706				
Slow Whoop				
ALERT			EVACUATE	
Sound pressure level dB(A) Tone frequency: 850Hz continuous			Sound pressure level dB(A) Tone frequency: off for 0.5s / 500-1200Hz over 3.5s	
Maximum			Maximum	
Angle	Horizontal	Vertical	Horizontal	Vertical
15°	81.7	81.0	80.1	84.8
45°	89.5	87.3	85.2	86.3
75°	91.2	90.9	89.1	89.2
105°	90.8	90.8	98.9	88.9
135°	87.9	88.0	85.0	83.7
165°	82.3	86.0	81.6	79.4

Sounder VAD Base with Isolator, DIN Tone, Part Number 45681-707				
DIN Tone				
ALERT			EVACUATE	
Sound pressure level dB(A) Tone frequency: 850Hz continuous			Sound pressure level dB(A) Tone frequency: 1200-500Hz over 1s	
Maximum			Maximum	
Angle	Horizontal	Vertical	Horizontal	Vertical
15°	83.2	78.5	82.0	78.8
45°	83.3	83.0	81.6	80.7
75°	88.1	87.7	86.2	86.0
105°	88.2	88.7	86.1	86.5
135°	82.8	84.8	81.2	84.0
165°	83.1	87.3	82.4	86.6



## Intelligent Open-Area Sounders, Part Numbers 55000-001, 55000-002, 55000-003 and 55000-004

## Intelligent Open-Area Sounder Visual Indicators, Part Numbers 55000-005, 55000-006, 55000-007 and 55000-008

Apollo Standard					
ALERT			EVACUATE		
Sound pressure level dB(A) Tone frequency: off 1s / 840Hz $\pm$ 20Hz for 1s			Sound pressure level dB(A) Tone frequency: 558Hz for 0.5s / 840Hz for 0.5s		
Maximum			Maximum		
Angle	Horizontal	Vertical	Horizontal	Vertical	
15°	85.4	86.0	85.0	86.0	
45°	86.3	86.7	87.1	86.4	
75°	91.3	91.4	91.4	91.4	
105°	91.1	91.4	91.3	91.5	
135°	85.3	85.9	85.4	85.7	
165°	87.0	85.9	86.0	86.0	
Slow Whoop					
ALERT			EVACUATE		
Sound pressure level dB(A) Tone frequency: 825Hz continuous			Sound pressure level dB(A) Tone frequency: off for 0.5s / 500–1200Hz over 3.5s		
Maximum			Maximum		
Angle	Horizontal	Vertical	Horizontal	Vertical	
15°	85.7	86.7	85.5	86.4	
45°	87.1	86.3	87.7	87.1	
75°	91.6	91.5	91.5	91.4	
105°	91.4	91.2	91.4	91.5	
135°	85.5	86.6	86.7	87.6	
165°	87.4	84.5	85.9	84.9	
DIN Tone					
ALERT			EVACUATE		
Sound pressure level dB(A) Tone frequency: 825Hz continuous			Sound pressure level dB(A) Tone frequency: 1200–500Hz over 1s		
Maximum			Maximum		
Angle	Horizontal	Vertical	Horizontal	Vertical	
15°	85.7	86.7	83.9	84.6	
45°	87.1	86.3	85.6	85.8	
75°	91.6	91.5	89.5	89.4	
105°	91.4	91.2	89.3	89.4	
135°	85.5	86.6	84.7	85.7	
165°	87.4	84.5	84.7	83.6	

## Multi-Tone Waterproof Open-Area Sounders, Part Numbers 55000-274 and 55000-275

Apollo Standard					
ALERT			EVACUATE		
Sound pressure level dB(A) Tone frequency: off 1s / 970Hz $\pm$ 20Hz for 1s			Sound pressure level dB(A) Tone frequency: 550–700Hz over 0.5s / 850–1000Hz over 0.5s		
Maximum			Maximum		
Angle	Horizontal	Vertical	Horizontal	Vertical	
15°	77.0	77.2	77.7	75.8	
45°	87.8	87.8	85.9	86.5	
75°	93.2	93.0	91.9	91.8	
105°	92.7	92.9	92.9	92.9	
135°	86.4	87.2	85.9	86.7	
165°	68.6	71.6	69.5	71.4	
Slow Whoop					
ALERT			EVACUATE		
Sound pressure level dB(A) Tone frequency: continuous 800–1000Hz			Sound pressure level dB(A) Tone frequency: off for 0.5s / 500–1200Hz over 3.5s		
Maximum			Maximum		
Angle	Horizontal	Vertical	Horizontal	Vertical	
15°	77.8	75.7	77.7	80.7	
45°	88.9	87.6	87.3	88.1	
75°	93.8	93.0	92.5	92.7	
105°	93.6	92.7	92.8	92.9	
135°	87.2	87.0	87.7	88.1	
165°	70.3	74.2	73.5	74.0	



## Multi-Tone Waterproof Open-Area Sounders, Part Numbers 55000-274 and 55000-275 (cont'd)

	DIN Tone			
	ALERT		EVACUATE	
	Sound pressure level dB(A) Tone frequency: continuous 800-1000Hz		Sound pressure level dB(A) Tone frequency: 1200-500Hz over 1s	
	Maximum		Maximum	
Angle	Horizontal	Vertical	Horizontal	Vertical
15°	77.8	75.7	77.5	77.9
45°	88.9	87.6	86.5	87.3
75°	93.8	93.0	92.0	91.5
105°	93.6	92.7	92.0	92.2
135°	87.2	87.0	86.4	87.4
165°	70.3	74.2	71.6	73.1

## Multi-Tone Open-Area Sounders, Part Numbers 55000-278 and 55000-279

## Multi-Tone Open-Area Sounder Visual Indicators, Part Numbers 55000-291 and 55000-292

## Multi-Tone Open-Area Sounder Visual Indicators with Isolator, Part Numbers 55000-293 and 55000-294

	Apollo Standard			
	ALERT		EVACUATE	
	Sound pressure level dB(A) Tone frequency: off 1s / 970Hz ±20Hz for 1s		Sound pressure level dB(A) Tone frequency: 550-700Hz over 0.5s / 850-1000Hz over 0.5s	
	Maximum		Maximum	
Angle	Horizontal	Vertical	Horizontal	Vertical
15°	80.6	81.3	78.2	79.6
45°	91.1	91.1	87.7	88.3
75°	93.7	93.6	90.7	90.9
105°	92.5	93.1	91.7	91.6
135°	89.4	89.4	88.2	88.7
165°	75.8	78.2	71.7	73.9

  

	Slow Whoop			
	ALERT		EVACUATE	
	Sound pressure level dB(A) Tone frequency: continuous 800-1000Hz		Sound pressure level dB(A) Tone frequency: off for 0.5s / 500-1200Hz over 3.5s	
	Maximum		Maximum	
Angle	Horizontal	Vertical	Horizontal	Vertical
15°	80.8	81.2	80.0	80.4
45°	91.4	90.6	89.1	89.2
75°	93.5	92.9	92.2	91.9
105°	93.2	92.4	92.0	92.1
135°	89.7	89.6	89.4	89.7
165°	76.1	76.5	77.5	77.0

  

	DIN Tone			
	ALERT		EVACUATE	
	Sound pressure level dB(A) Tone frequency: continuous 800-1000Hz		Sound pressure level dB(A) Tone frequency: 1200-500Hz over 1s	
	Maximum		Maximum	
Angle	Horizontal	Vertical	Horizontal	Vertical
15°	80.8	81.2	78.3	79.5
45°	91.4	90.6	88.2	87.5
75°	93.5	92.9	91.0	90.8
105°	93.2	92.4	91.3	91.1
135°	89.7	89.6	88.2	88.5
165°	76.1	76.5	75.2	76.2

## Discovery Open-Area Sounder Visual Indicator, Part Number 58000-005

Angle	EVACUATE (Tone 1)		Evacuate (Tone 3)	
	Sound pressure level dB(A) Tone frequency: 558Hz for 0.5s / 840Hz for 0.5s		Sound pressure level dB(A) for Dutch Slow Whoop tone Tone frequency: off for 0.5s / 500–1200Hz over 3.5s	
	Maximum		Maximum	
	Horizontal	Vertical	Horizontal	Vertical
15°	82.9	81.7	81.3	82.2
45°	86.6	85.8	83.3	84.5
75°	89.2	89.0	87.5	87.5
105°	88.7	88.4	87.2	87.5
135°	82.8	82.3	82.1	82.2
165°	84.2	84.3	82.8	83.4

  

Angle	Evacuate (Tone 4)	
	Sound pressure level dB(A) for DIN tone Tone frequency: 1200–500Hz over 1s	
	Maximum	
	Horizontal	Vertical
15°	81.3	80.2
45°	81.9	82.8
75°	84.5	86.0
105°	84.3	85.6
135°	79.4	80.5
165°	80.0	80.8

## Discovery Open-Area Voice Sounders, Part Numbers 58000-010 and 58000-020

Angle	Apollo Standard			
	ALERT (Tone 0)		EVACUATE (Tone 1)	
	Sound pressure level dB(A) Tone frequency: off for 1s / 825Hz for 1s		Sound pressure level dB(A) Tone frequency: 550Hz for 1s / 825Hz for 1s	
	Maximum		Maximum	
	Horizontal	Vertical	Horizontal	Vertical
15°	76.2	77.5	75.8	77.7
45°	84.8	84.1	84.6	84.2
75°	88.4	88.6	88.7	88.6
105°	88.4	87.9	88.1	87.8
135°	84.7	83.4	84.8	83.6
165°	75.6	71.7	73.6	72.4

## Discovery Open-Area Voice Sounder Visual Indicators, Part Numbers 58000-030 and 58000-040

Angle	Apollo Standard			
	ALERT (Tone 0)		EVACUATE (Tone 1)	
	Sound pressure level dB(A) Tone frequency: off for 1s / 825Hz for 1s		Sound pressure level dB(A) Tone frequency: 550Hz for 1s / 825Hz for 1s	
	Maximum		Maximum	
	Horizontal	Vertical	Horizontal	Vertical
15°	77.7	73.3	77.7	73.5
45°	85.2	84.6	84.9	84.9
75°	89.0	88.8	89.0	89.2
105°	88.8	88.9	88.9	88.9
135°	84.8	84.4	84.6	84.6
165°	77.2	76.0	77.7	76.3

**XPander Sounder and Sounder Bases, Part Numbers XPA-CB-14001 and XPA-CB-14002**

**XPander Sounder Visual Indicator and Sounder Bases, Part Numbers XPA-CB-14003, XPA-CB-14004 and XPA-CB-14005**

Angle	(Tone 1)		(Tone 2)	
	Sound pressure level dB(A) Tone frequency: 970Hz continuous		Sound pressure level dB(A) for continuous tone Tone frequency: 800/970Hz Alternating 2Hz	
	Maximum		Maximum	
	Horizontal	Vertical	Horizontal	Vertical
15°	81.7	81.0	84.6	85.0
45°	89.0	88.8	88.2	88.0
75°	88.9	89.0	89.9	90.0
105°	88.9	89.4	90.4	90.1
135°	89.2	89.3	89.5	89.9
165°	80.3	80.7	81.4	80.6
Angle	(Tone 3)		(Tone 4)	
	Sound pressure level dB(A) for Swedish Fire tone Tone frequency: 800/970Hz Sweep @ 2Hz		Sound pressure level dB(A) for continuous tone Tone frequency: off for 0.1s / 970Hz for 0.1s	
	Maximum		Maximum	
	Horizontal	Vertical	Horizontal	Vertical
15°	86.4	86.4	84.3	83.9
45°	90.2	90.6	90.0	90.1
75°	92.3	92.4	89.9	90.1
105°	92.3	92.4	89.9	90.0
135°	90.5	90.6	89.9	88.6
165°	82.1	82.9	84.7	84.9
Angle	(Tone 5)		(Tone 6)	
	Sound pressure level dB(A) for Medium Sweep tone Tone frequency: 630Hz for 0.5s / 970Hz for 0.5s		Sound pressure level dB(A) for continuous tone Tone frequency: 440Hz for 0.4s / 554Hz for 0.1s	
	Maximum		Maximum	
	Horizontal	Vertical	Horizontal	Vertical
15°	83.3	83.0	83.0	83.4
45°	90.3	90.2	85.4	86.1
75°	89.9	89.9	88.8	89.3
105°	89.9	89.8	88.6	89.0
135°	89.9	88.8	86.9	89.4
165°	84.2	84.2	77.8	78.4
Angle	(Tone 7)		(Tone 13)	
	Sound pressure level dB(A) for Swedish Fire tone Tone frequency: off for 0.5s / 500-1200Hz over 3.5s		Sound pressure level dB(A) for continuous tone Tone frequency: 1200-500Hz Sweep @ 1Hz	
	Maximum		Maximum	
	Horizontal	Vertical	Horizontal	Vertical
15°	85.6	85.6	84.4	84.5
45°	89.1	90.1	88.5	88.2
75°	91.4	91.5	90.4	90.7
105°	91.5	91.3	90.5	90.6
135°	90.2	90.2	89.2	89.4
165°	81.9	81.9	80.2	80.5

## XPander Combined Sounder and Detector Base, Part Number XPA-WB-14036

## XPander Combined Sounder Visual Indicator and Detector Bases, Part Numbers XPA-WB-14037 and XPA-WB-14038

	(Tone 1) Low volume setting		(Tone 1) High volume setting	
	Sound pressure level dB(A) Tone frequency: 970Hz continuous		Sound pressure level dB(A) for continuous tone Tone frequency: 970Hz continuous	
	Maximum		Maximum	
Angle	Horizontal	Vertical	Horizontal	Vertical
15°	66.4	69.4	78.0	81.1
45°	64.1	67.9	75.2	79.3
75°	71.7	72.1	83.1	83.4
105°	72.2	71.3	83.5	82.6
135°	68.7	59.8	80.5	73.2
165°	70.5	67.2	81.8	79.7
	(Tone 2) Low volume setting		(Tone 2) High volume setting	
	Sound pressure level dB(A) for Swedish Fire tone Tone frequency: 800/970Hz Alternating 2Hz		Sound pressure level dB(A) for continuous tone Tone frequency: 800/970Hz Alternating 2Hz	
	Maximum		Maximum	
Angle	Horizontal	Vertical	Horizontal	Vertical
15°	73.6	77.2	79.8	83.4
45°	70.9	75.3	77.3	81.8
75°	75.8	77.2	82.4	83.6
105°	76.9	74.9	83.2	81.8
135°	75.7	74.3	82.1	80.8
165°	76.7	73.9	82.4	80.1
	(Tone 3) Low volume setting		(Tone 3) High volume setting	
	Sound pressure level dB(A) Tone frequency: 800/970Hz Sweep @ 2Hz		Sound pressure level dB(A) for continuous tone Tone frequency: 800/970Hz Sweep @ 2Hz	
	Maximum		Maximum	
Angle	Horizontal	Vertical	Horizontal	Vertical
15°	75.4	76.8	81.9	83.4
45°	71.1	74.9	77.7	81.3
75°	76.4	77.8	83.0	84.4
105°	76.8	75.4	82.9	81.3
135°	73.9	74.5	80.6	80.7
165°	75.8	74.3	82.4	80.6
	(Tone 4) Low volume setting		(Tone 4) High volume setting	
	Sound pressure level dB(A) for Swedish Fire tone Tone frequency: 630Hz for 0.5s / 970Hz for 0.5s		Sound pressure level dB(A) for continuous tone Tone frequency: 630Hz for 0.5s / 970Hz for 0.5s	
	Maximum		Maximum	
Angle	Horizontal	Vertical	Horizontal	Vertical
15°	72.2	76.0	78.3	82.2
45°	72.0	76.1	78.1	82.1
75°	76.2	77.6	82.5	84.1
105°	76.7	75.1	83.2	81.0
135°	76.1	74.5	82.4	80.7
165°	76.7	73.7	83.0	80.1

**XP95 Category C Sounder Visual Alarm, Part Numbers 55000-074APO and 55000-075APO**  
**XP95 Category W Sounder Visual Alarm, Part Numbers 55000-076APO and 55000-077APO**

Apollo Standard				
Alert			Evacuate	
Sound pressure level dB(A) for continuous pulsed tone. Tone frequency: 970Hz for 1 sec off/ 1 sec on			Sound pressure level dB(A) for continuous alternating tone. Tone frequency: 970Hz/630 Hz alternating for 0.5 seconds continuous	
Maximum			Maximum	
Angle	Horizontal	Vertical	Horizontal	Vertical
15°	91	91	93	93
45°	93	93	87	87
75°	97	97	97	97
105°	97	97	97	97
135°	93	93	87	87
165°	91	91	88	93
Slow Whoop				
Alert			Evacuate	
Sound pressure level dB(A) for continuous tone. Tone frequency: 970Hz continuous			Sound pressure level dB(A) . Tone frequency: 500 - 1200 Hz 3.5 secs/0.5 sec off	
Maximum			Maximum	
Angle	Horizontal	Vertical	Horizontal	Vertical
15°	89	89	93	95
45°	93	93	85	85
75°	98	98	94	94
105°	98	98	94	94
135°	93	93	85	85
165°	91	91	93	95
DIN Tone				
Alert			Evacuate	
Sound pressure level dB(A) for continuous tone. Tone frequency: 970Hz continuous			Sound pressure level dB(A) for continuous pulsed tone. Tone frequency: 1200 Hz - 500 Hz at 1 Hz	
Maximum			Maximum	
Angle	Horizontal	Vertical	Horizontal	Vertical
15°	89	89	90	93
85	93	93	85	85
75°	98	98	93	92
105°	98	98	93	92
135°	93	93	85	85
165°	91	91	91	91





**Apollo Fire Detectors Ltd.**

**36 Brookside Road  
Havant  
Hampshire  
PO9 1JR  
UK**

**Web: [www.apollo-fire.co.uk](http://www.apollo-fire.co.uk)**

**Tel: +44(0)2392 492 412**

**Fax: +44(0)2392 492 754**

**email: [enquiries@apollo-fire.com](mailto:enquiries@apollo-fire.com)**



Assessed to ISO 9001:2008  
Cert/LPCB ref: 010



Assessed to ISO 14001:2004  
Cert/LPCB ref: 010 EMS



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