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.

Apollo's Information System

Apollo Fire Detectors publishes a datasheet for each type of sounder. 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 sounder datasheets. It has been decided to publish all this data collectively in a separate data sheet. This datasheet 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 sounder beacons. Only high volume setting data is, therefore, published for the 'Multi-tone Open-area Sounder Visual Indicator' range and any later ranges.

Sounders Included in This Datasheet

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

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

	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			
Angle	Minimum		Maximum		Minimum		Maximum	
	Horizontal	Vertical	Horizontal	Vertical	Horizontal	Vertical	Horizontal	Vertical
15°	76.14	75.94	80.34	78.74	76.04	78.64	80.84	83.34
45°	76.04	77.34	81.34	79.14	76.44	78.14	81.54	83.04
75°	81.44	81.24	86.54	85.74	82.44	83.54	87.74	88.44
105°	80.24	78.34	86.54	85.84	81.44	80.54	86.44	85.34
135°	75.14	78.24	80.74	83.14	77.14	79.44	82.44	83.34
165°	75.84	78.34	80.54	84.14	77.94	82.04	82.84	86.44

Intelligent Base Sounder, Slow Whoop, Part Number 45681-267
Intelligent Base Sounder with Isolator, Slow Whoop, Part Number 45681-268

	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			
Angle	Minimum		Maximum		Minimum		Maximum	
	Horizontal	Vertical	Horizontal	Vertical	Horizontal	Vertical	Horizontal	Vertical
15°	72.24	73.54	75.84	76.54	77.24	80.64	84.44	88.34
45°	71.14	71.94	75.94	75.74	78.24	80.04	85.74	87.94
75°	75.24	73.94	81.04	76.04	82.64	82.44	90.14	89.64
105°	74.14	76.94	81.14	81.04	81.74	82.64	90.04	89.54
135°	72.94	72.94	76.74	79.34	76.84	76.54	84.84	84.34
165°	75.44	73.94	76.94	80.24	75.34	75.14	83.74	82.74

Ancillary Base Sounder, Part Number 45681-276

	Apollo Standard			
	EVACUATE			
	Sound pressure level dB(A) Tone frequency: 630Hz for 0.5s / 990Hz for 0.5s			
Angle	Minimum		Maximum	
	Horizontal	Vertical	Horizontal	Vertical
15°	71.1	73.0	77.9	77.0
45°	69.7	72.0	75.0	77.0
75°	74.0	72.9	80.8	79.6
105°	75.0	73.2	80.0	79.4
135°	71.6	69.1	78.2	75.1
165°	73.4	65.0	79.0	67.0

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

	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			
Angle	Minimum		Maximum		Minimum		Maximum	
	Horizontal	Vertical	Horizontal	Vertical	Horizontal	Vertical	Horizontal	Vertical
15°	58.6	59.5	71.8	68.0	61.7	59.6	72.4	70.9
45°	59.5	57.0	72.4	69.7	60.8	59.3	72.4	70.3
75°	63.6	63.7	76.9	74.7	65.2	63.9	76.9	74.9
105°	64.2	63.6	76.7	75.1	64.5	64.7	76.8	75.5
135°	61.7	63.4	73.5	74.8	61.7	65.2	73.5	76.5
165°	62.8	66.0	74.3	75.0	64.0	66.8	75.9	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			
Angle	Minimum		Maximum		Minimum		Maximum	
	Horizontal	Vertical	Horizontal	Vertical	Horizontal	Vertical	Horizontal	Vertical
15°	62.75	61.0	73.86	72.0	62.8	62.0	70.0	75.0
45°	62.9	63.0	75.43	75.0	59.5	62.7	71.7	74.7
75°	63.6	65.7	78.4	80.7	65.6	65.5	77.1	78.0
105°	63.8	66.3	78.9	80.0	65.5	65.8	77.2	78.0
135°	63.5	61.3	73.0	75.1	62.3	61.3	74.7	74.5
165°	61.0	61.2	73.8	76.3	60.0	59.1	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			
Angle	Minimum		Maximum		Minimum		Maximum	
	Horizontal	Vertical	Horizontal	Vertical	Horizontal	Vertical	Horizontal	Vertical
15°	59.2	59.2	70.8	70.4	62.4	62.0	71.7	72.6
45°	62.9	61.4	74.4	71.5	61.8	62.6	72.4	72.7
75°	67.0	67.3	80.0	79.5	66.8	68.3	77.7	78.2
105°	68.0	67.8	80.5	79.5	67.7	67.8	78.4	78.4
135°	64.0	65.3	73.8	75.0	64.0	67.0	75.5	76.9
165°	63.5	65.0	74.9	70.0	64.0	65.0	75.0	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			
Angle	Minimum		Maximum		Minimum		Maximum	
	Horizontal	Vertical	Horizontal	Vertical	Horizontal	Vertical	Horizontal	Vertical
15°	62.5	59.0	73.0	70.0	62.8	60.0	70.0	71.0
45°	63.0	61.0	73.8	73.4	63.5	61.5	73.7	73.0
75°	64.5	66.5	77.5	78.0	64.5	65.6	77.3	78.0
105°	65.3	66.5	77.0	77.0	65.3	65.9	77.9	76.0
135°	62.0	64.0	72.4	74.7	62.3	61.9	73.0	74.6
165°	61.0	68.0	72.0	73.0	62.6	67.0	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			
Angle	Minimum		Maximum		Minimum		Maximum	
	Horizontal	Vertical	Horizontal	Vertical	Horizontal	Vertical	Horizontal	Vertical
15°	60.3	63.4	69.9	73.6	60.3	63.3	70.2	73.9
45°	65.0	62.7	72.0	76.1	60.9	62.2	72.0	75.7
75°	65.7	67.6	78.4	80.3	65.8	67.6	78.6	80.4
105°	65.9	67.6	78.6	80.0	66.0	67.7	78.6	80.2
135°	63.1	65.4	75.1	77.5	62.4	65.5	74.6	77.5
165°	62.0	68.1	73.3	79.2	62.0	68.3	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			
	Minimum		Maximum		Minimum		Maximum	
	Horizontal	Vertical	Horizontal	Vertical	Horizontal	Vertical	Horizontal	Vertical
15°	63.5	57.2	73.8	70.0	66.7	62.5	75.0	73.6
45°	63.1	61.0	74.5	73.0	63.9	61.6	75.3	74.3
75°	67.2	67.1	78.6	78.0	69.2	68.6	81.5	80.8
105°	66.7	66.9	78.4	78.0	69.4	68.0	81.4	81.0
135°	62.9	64.7	73.5	75.5	64.2	65.9	76.0	78.3
165°	62.1	68.0	72.3	75.0	66.6	70.0	75.0	75.5

Sounder Visual Indicator Base with Isolator, DIN Tone, Part Number 45681-334

Angle	DIN Tone							
	ALERT				EVACUATE			
	Sound pressure level dB(A) for continuous tone (not DIN) Tone frequency: 825Hz continuous				Sound pressure level dB(A) Tone frequency: 1200–500Hz over 1s			
	Minimum		Maximum		Minimum		Maximum	
	Horizontal	Vertical	Horizontal	Vertical	Horizontal	Vertical	Horizontal	Vertical
15°	63.0	60.3	73.2	69.8	64.0	61.7	74.6	71.8
45°	62.2	62.4	73.6	73.6	62.7	61.3	74.1	73.0
75°	66.7	67.4	79.4	79.0	67.0	67.2	78.4	78.4
105°	67.0	67.6	79.4	79.6	67.8	67.5	79.2	78.6
135°	64.0	64.6	75.0	75.8	64.0	65.9	75.5	76.4
165°	62.4	66.2	70.0	75.0	65.1	70.0	75.6	75.0

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°	75.1	70.5	75.0	70.6
45°	74.2	73.1	74.0	73.2
75°	78.8	78.4	78.8	78.4
105°	78.0	78.0	78.1	78.0
135°	73.2	76.7	73.2	76.6
165°	73.0	79.8	73.1	79.7

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	Vertical
15°	75.0	70.6	75.0	70.6
45°	75.2	73.0	75.0	71.8
75°	79.2	78.8	79.2	79.0
105°	78.1	78.1	78.1	78.1
135°	73.3	76.7	73.0	76.0
165°	73.1	80.4	73.1	80.4

Angle	EVACUATE (Tone 12) Sound pressure level dB(A) for alternating Fulleon & Hochiki tone Tone frequency: 626Hz for 0.25s / 925Hz for 0.25ms		ALERT (Tone 11) Sound pressure level dB(A) for continuous Fulleon & Hochiki tone Tone frequency: 925Hz continuous	
	Maximum		Maximum	
	Horizontal	Vertical	Horizontal	Vertical
15°	75.6	70.6	75.6	70.1
45°	72.3	67.0	64.2	66.2
75°	78.0	78.8	78.4	79.4
105°	78.2	78.0	76.7	78.0
135°	70.3	76.8	70.0	76.8
165°	75.5	81.2	75.2	81.1

Angle	EVACUATE (Tone 14) Sound pressure level dB(A) for Medium Sweep tone Tone frequency: 800Hz to 970Hz at 1Hz		ALERT (Tone 13) Sound pressure level dB(A) for continuous tone Tone frequency: 970Hz continuous	
	Maximum		Maximum	
	Horizontal	Vertical	Horizontal	Vertical
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

Angle	EVACUATE (Tone 18) Sound pressure level dB(A) for Swedish Fire tone Tone frequency: off for 0.15s / 660Hz for 0.15s		ALERT (Tone 2) Sound pressure level dB(A) for continuous tone Tone frequency: 825Hz continuous	
	Maximum		Maximum	
	Horizontal	Vertical	Horizontal	Vertical
15°	81.0	72.5	75.2	72.5
45°	77.3	76.9	74.0	64.3
75°	81.2	81.5	79.1	78.5
105°	81.2	81.1	78.3	78.5
135°	77.9	79.7	74.2	77.0
165°	81.7	84.6	74.1	80.2

Angle	ALERT (Tone 17) Sound pressure level dB(A) for Swedish All Clear Signal continuous tone Tone frequency: 660Hz continuous	
	Maximum	
	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			
Angle	Minimum volume, switch 2 on		Maximum volume, switch 2 off	
	Horizontal	Vertical	Horizontal	Vertical
15°	60.2	58.4	72.4	69.1
45°	61.5	60.0	74.0	72.0
75°	65.0	65.0	77.8	77.0
105°	65.0	66.0	77.8	78.0
135°	61.3	60.5	73.1	72.3
165°	60.5	57.3	71.0	68.4

Discovery Sounder VAD Base, Part Number 45681-700
Discovery Marine Sounder VAD Base, Part Number 45681-701
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	
Angle	Maximum		Maximum	
	Horizontal	Vertical	Horizontal	Vertical
15°	77.4	73.6	77.2	73.7
45°	80.1	78.7	80.0	80.3
75°	85.7	85.2	85.6	85.2
105°	86.3	86.6	86.2	86.1
135°	81.1	82.6	81.1	82.6
165°	77.9	81.6	77.6	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	
Angle	Maximum		Maximum	
	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 & Hochiki tone Tone frequency: 626Hz for 0.25s / 925Hz for 0.25ms		Sound pressure level dB(A) for continuous Fulleon & Hochiki tone Tone frequency: 925Hz continuous	
Angle	Maximum		Maximum	
	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	
Angle	Maximum		Maximum	
	Horizontal	Vertical	Horizontal	Vertical
15°	73.0	70.0	73.0	71.2
45°	70.8	66.8	71.4	69.8
75°	76.5	76.3	75.3	76.0
105°	75.6	76.1	76.4	76.6
135°	67.0	72.8	72.0	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	
Angle	Maximum		Maximum	
	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

	ALERT (Tone 17)	
	Sound pressure level dB(A) for Swedish All Clear Signal continuous tone Tone frequency: 660Hz continuous	
Angle	Maximum	
	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			
Angle	Minimum		Maximum		Minimum		Maximum	
	Horizontal	Vertical	Horizontal	Vertical	Horizontal	Vertical	Horizontal	Vertical
15°	73.6	75.6	77.6	79.7	79.2	83.5	82.4	86.9
45°	82.0	82.4	86.4	86.2	80.1	81.2	84.2	84.2
75°	85.9	86.2	90.0	90.2	83.2	82.8	86.6	86.2
105°	85.6	86.1	89.8	89.8	84.1	83.0	87.5	86.5
135°	82.1	83.0	86.0	87.3	81.8	80.0	85.3	83.2
165°	72.1	77.6	76.4	82.1	80.6	77.6	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			
Angle	Minimum		Maximum		Minimum		Maximum	
	Horizontal	Vertical	Horizontal	Vertical	Horizontal	Vertical	Horizontal	Vertical
15°	77.4	76.8	81.7	81.0	75.8	81.5	80.1	84.8
45°	83.6	82.6	89.5	87.3	81.1	82.2	85.2	86.3
75°	86.6	86.5	91.2	90.9	85.0	85.1	89.1	89.2
105°	85.9	86.6	90.8	90.8	84.7	84.8	98.9	88.9
135°	83.2	83.4	87.9	88.0	80.6	79.5	85.0	83.7
165°	77.8	81.5	82.3	86.0	77.3	76.4	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			
Angle	Minimum		Maximum		Minimum		Maximum	
	Horizontal	Vertical	Horizontal	Vertical	Horizontal	Vertical	Horizontal	Vertical
15°	80.2	75.6	83.2	78.5	78.2	74.9	82.0	78.8
45°	80.5	80.2	83.3	83.0	77.9	77.2	81.6	80.7
75°	85.3	84.8	88.1	87.7	82.5	82.4	86.2	86.0
105°	85.3	85.8	88.2	88.7	82.5	82.9	86.1	86.5
135°	79.9	81.9	82.8	84.8	77.5	80.3	81.2	84.0
165°	80.1	84.2	83.1	87.3	78.5	82.7	82.4	86.6

Intelligent Open-Area Sounders, Part Numbers 55000-001 & 55000-002
Intelligent Open-Area Sounder Visual Indicators, Part Numbers 55000-006 & 55000-006

	Apollo Standard			
	ALERT		EVACUATE	
	Sound pressure level dB(A) Tone frequency: off for 1s / 100-1000Hz over 1s		Sound pressure level dB(A) Tone frequency: 558Hz for 0.5s / 840Hz for 0.5s	
Angle	Maximum		Maximum	
	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	
Angle	Maximum		Maximum	
	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	
Angle	Maximum		Maximum	
	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 & 55000-275

	Apollo Standard			
	ALERT		EVACUATE	
	Sound pressure level dB(A) Tone frequency: off for 1s / 100-1000Hz over 1s		Sound pressure level dB(A) Tone frequency: 550–700Hz over 0.5s / 850–1000Hz over 0.5s	
Angle	Maximum		Maximum	
	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	
Angle	Maximum		Maximum	
	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

	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	
Angle	Maximum		Maximum	
	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 & 55000-279
Multi-Tone Open-Area Sounder Visual Indicators, Part Numbers 55000-291 & 55000-292
Multi-Tone Open-Area Sounder Visual Indicators with Isolator, Part Numbers 55000-293 & 55000-294

	Apollo Standard			
	ALERT		EVACUATE	
	Sound pressure level dB(A) Tone frequency: off for 1s / 100-1000Hz over 1s		Sound pressure level dB(A) Tone frequency: 550–700Hz over 0.5s / 850–1000Hz over 0.5s	
Angle	Maximum		Maximum	
	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	
Angle	Maximum		Maximum	
	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	
Angle	Maximum		Maximum	
	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

Multi-Tone Waterproof Open-Area Sounder Visual Indicators, Part Numbers 55000-296 & 55000-298
Multi-Tone Waterproof Open-Area Sounder Visual Indicators with Isolator, Part Numbers 55000-297 & 55000-299

	Apollo Standard			
	ALERT		EVACUATE	
	Sound pressure level dB(A) Tone frequency: off for 1s / 100-1000Hz over 1s		Sound pressure level dB(A) Tone frequency: 550–700Hz over 0.5s / 850–1000Hz over 0.5s	
Angle	Maximum		Maximum	
	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	
Angle	Maximum		Maximum	
	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

	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	
Angle	Maximum		Maximum	
	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

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

	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	
Angle	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

	Evacuate (Tone 4)	
	Sound pressure level dB(A) for DIN tone Tone frequency: 1200–500Hz over 1s	
Angle	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 & 58000-020

	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	
Angle	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 & 58000-040

	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	
Angle	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 & XPA-CB-14002
XPander Sounder Visual Indicator and Sounder Bases, Part Numbers XPA-CB-14003, XPA-CB-14004 & XPA-CB-14005

	(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	
Angle	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

	(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	
Angle	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

	(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	
Angle	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

	(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	
Angle	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-CB-14036
XPander Combined Sounder Visual Indicator and Detector Bases, Part Numbers XPA-CB-14037 & XPA-CB-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			
Angle	Minimum		Maximum		Minimum		Maximum	
	Horizontal	Vertical	Horizontal	Vertical	Horizontal	Vertical	Horizontal	Vertical
15°	67.34	69.34	66.44	69.44	75.54	79.14	78.04	81.14
45°	64.44	68.24	64.14	67.94	73.14	77.24	75.24	79.34
75°	72.04	72.14	71.74	72.14	81.14	81.24	83.14	83.44
105°	72.24	71.54	72.24	71.34	81.54	80.54	83.54	82.64
135°	68.64	60.34	68.74	59.84	78.24	70.84	80.54	73.24
165°	69.94	67.84	70.54	67.24	79.54	77.44	81.84	79.74

	(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			
Angle	Minimum		Maximum		Minimum		Maximum	
	Horizontal	Vertical	Horizontal	Vertical	Horizontal	Vertical	Horizontal	Vertical
15°	73.44	76.94	73.64	77.24	79.24	82.84	79.84	83.44
45°	70.84	75.54	70.94	75.34	76.74	81.24	77.34	81.84
75°	75.54	77.34	75.84	77.24	81.54	83.14	82.44	83.64
105°	76.74	75.24	76.94	74.94	82.54	80.64	83.24	81.84
135°	75.64	74.24	75.74	74.34	81.34	80.24	82.14	80.84
165°	76.64	73.84	76.74	73.94	81.94	79.64	82.44	80.14

	(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			
Angle	Minimum		Maximum		Minimum		Maximum	
	Horizontal	Vertical	Horizontal	Vertical	Horizontal	Vertical	Horizontal	Vertical
15°	75.34	76.84	75.44	76.84	81.34	82.64	81.94	83.44
45°	71.04	74.94	71.14	74.94	76.94	80.74	77.74	81.34
75°	76.36	78.14	76.44	77.84	82.34	83.64	83.04	84.44
105°	76.64	74.84	76.84	75.44	82.04	81.14	82.94	81.34
135°	73.94	74.44	73.94	74.54	80.14	80.24	80.64	80.74
165°	75.94	74.14	75.84	74.34	82.14	79.94	82.44	80.64

	(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			
Angle	Minimum		Maximum		Minimum		Maximum	
	Horizontal	Vertical	Horizontal	Vertical	Horizontal	Vertical	Horizontal	Vertical
15°	72.14	76.14	72.24	76.04	77.24	81.44	78.34	82.24
45°	71.84	76.24	72.04	76.14	77.04	81.34	78.14	82.14
75°	75.94	77.44	76.24	77.64	81.64	83.14	82.54	84.14
105°	76.84	75.14	76.74	75.14	82.54	80.94	83.24	81.04
135°	76.04	74.44	76.14	74.54	81.44	80.14	82.44	80.74
165°	76.44	73.64	76.74	73.74	81.94	79.54	83.04	80.14