# FIRECLASS

# Visual Alarm Device Open Class Base Sounder Beacon
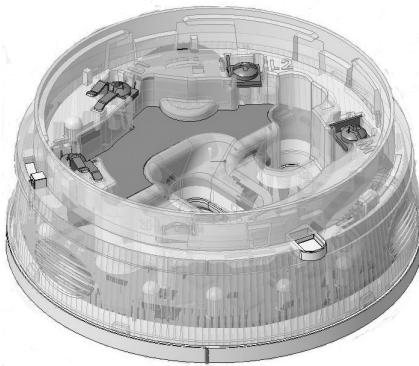


The FC442AVB Open Class Visual Alarm Device Sounder Beacon is a loop powered unit driven from an addressable control panel.

The FC442AVB has an integral two port loop short circuit isolator.

The FC442AVB also has a base for fitting a fire detector, or alternatively a blanking cap can be used.

Settings for the tones, beacon flash rate and volume levels are all configurable using the control panel.

The selectable flash rates are as follows:
- 1Hz (one flash every second)
- 0.5Hz (one flash every two seconds)

## Summary of the range

| Product | Details | Order number |
|---|---|---|
| FC442AVB | Addressable OC Base Sounder Beacon | 576.440.015 |
| **Accessories** | | |
| B-CAP | Blanking Cap For Sounder/VID/VAD Bases | 557.080.001 |
| A-CON | Conduit Adaptor For Sounder/VID/VAD Bases | 557.080.002 |

*Table 1: Summary of the range*

## Performance characteristics

| | FC442AVB |
|---|---|
| **Mounting orientation** | Ceiling |
| **Indoor type A/outdoor type B** | Indoor |
| **Weight (g)** | 154 |
| **Housing material** | PC |
| **Housing colour** | Clear |
| **Operating temperature (°C)** | -25 to +70 |
| **Storage temperature (°C)** | -25 to +70 |
| **Humidity** | Up to 95% non-condensing |
| **Pressure** | Sounder SPL output quoted for 1000 mBar |
| **Sounder volume settings** | 4 |
| **EN54-17 isolator** | Yes |
| **EN54-3 sounder** | Yes |
| **EN54-23 visual alarm** | Yes |
| **Vibration, shock, corrosion, EMC** | Complies with EN54 series requirements |
| **Beacon flash rates** | 0.5 and 1 Hz |
| **Ingress protection** | IP21C |
| **Typical Sounder output at 1 metre** | |
| **High volume** | 90 dBA |
| **Mid High volume** | 80 dBA |
| **Mid Low volume** | 70 dBA |
| **Low volume** | 60 dBA* |
| **Beacon performance** | |
| **Flash colour** | White |
| **Electrical characteristics** | |
| **Addressable loop voltage** | 20 V - 40 V, 35 V Typical |

*Table 2: Performance characteristics*

*The Low setting on the FC442AVB does not meet the volume level requirements of EN54-3.
**Note:** For IP21C protection, a fire detector or blanking cap must be fitted.

## Beacon performance

The FC442AVB is a category O - open class device (see Fig.1). The data applies to both the Slow Flash (1/2 Hz) and the Fast Flash (1 Hz) while it is fitted with either a detector or a blanking cap.

The light distribution is cylindrically symmetrical about an axis at a right angle (Alpha of 90°) to the surface on which the device is mounted, i.e. when the device is mounted on a horizontal ceiling, the light distribution is symmetrical about an axis extending vertically downwards through the centre of the device. The light distribution in Fig.1 represents a cross-section through the volumetric shape using the values as indicated in table 3.

| Alpha [degrees] | Distance [metres] |
|---|---|
| 90 | 0 |
| 75 | 0 |
| 60 | 1 |
| 45 | 1.4 |
| 30 | 1.75 |
| 15 | 1.95 |
| 0 | 1.85 |

*Table 3: Beacon-Sounder - 0.4 lm/m2 illumination distance*
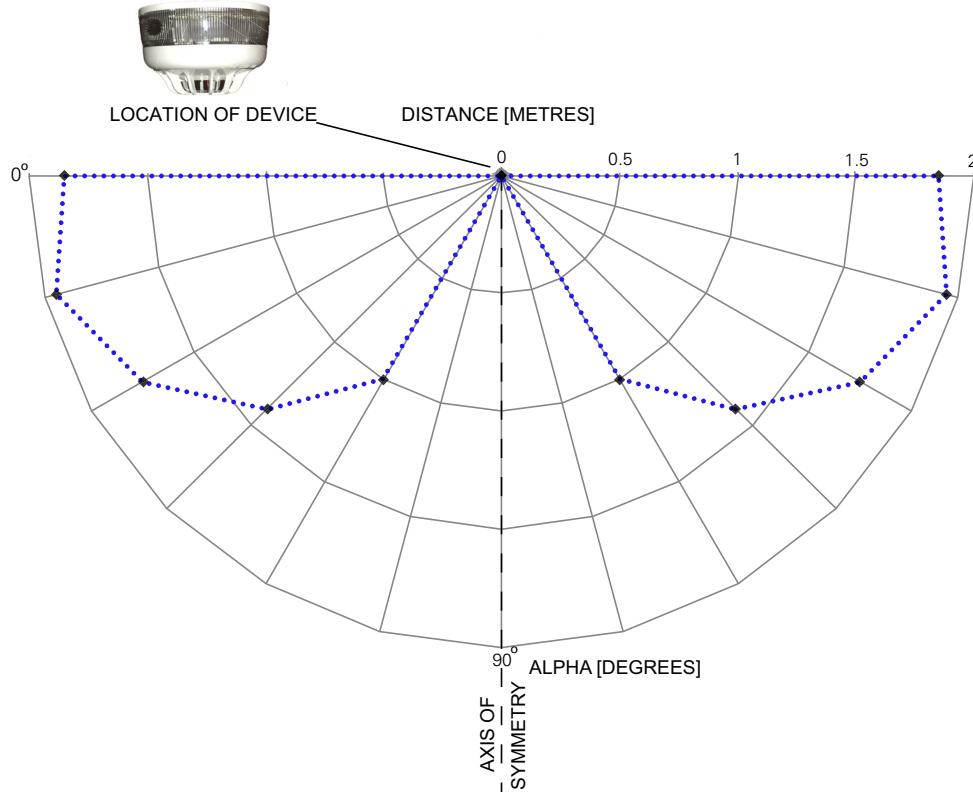


*Fig. 1: Beacon-Sounder - ceiling mount light distribution*

## Address programming

Default address = 255. Set the address before installation using either the FC490ST service tool with its ancillary lead.

## Isolator characteristics

| Parameter | Isolator | |
|---|---|---|
| $V_{min}$, $V_{max}$, $V_{nom}$ | Line voltage range | 20 V-40 V, 35 V nominal |
| $V_{SO\ min}$, $V_{SO\ max}$ | Isolator trip threshold range | 18.5 V - 19.99 V |
| $V_{SC\ min}$, $V_{SC\ max}$ | Isolator recovery threshold | 2.5 V, 3.5 V |
| $I_{C\ max}$ | Maximum rated continuous current | 1.1 A |
| $I_{L\ max}$ | Leakage current into short circuit (isolated tripped) | 10 mA |
| $I_{S\ max}$ | Maximum rated switching current | 1.1 A non-inductive |
| $Z_{C\ max}$ | Maximum series impedance | 0.5 Ω |
| $Z_{C\ typ}$ | Typical series impedance | 0.25 Ω |

*Table 4: Isolator characteristics*

## Sounder tones and performance

| Tone name | Tone description | | | Configurable/monitored (only if volume is 80 dB or above) |
|---|---|---|---|---|
| | **Pattern** | **Frequency** | **Rate** | **Ceiling** |
| Dutch Slow Whoop | Sweep | 500 to 1200 | Rising over 3.5 s, 0.5 gap | Yes/Yes |
| 7 Hz Fast Sweep | Sweep | 800 to 970 | 142.8 ms ramp 7 Hz | Yes/Yes |
| BS 1 Hz Sweep | Sweep | 800 to 970 | 1 Hz | Yes/Yes |
| 2 Tone | Alternating | 660 / 880 | 500 ms per tone | Yes/Yes |
| Temporal 4 | Intermittent | 880 | 500 ms On 500 ms Off x 4 then 1 second gap | Yes/Yes |
| Temporal 3 | Intermittent | 880 | 500 ms On 500 ms Off x 3 then 1 second gap | Yes/Yes |
| March Time Beep | Intermittent | 880 | 500 ms On 500 ms Off | Yes/Yes |
| Continuous 970 | Continuous | 970 | Steady | Yes/Yes |
| DIN 1 Hz Sweep | Sweep | 1200 to 500 | Falling over 1 s | Yes/Yes |
| Banshee LF Buzzer | Sweep | 800 to 950 | 120 Hz | Yes/Yes |
| 3 Hz Banshee | Sweep | 800 to 950 | 3 Hz | Yes/Yes |
| 9 Hz Banshee | Sweep | 800 to 950 | 9 Hz | Yes/Yes |
| Alternating | Alternating | 554/440 | 554 Hz for 100 ms and 440 Hz for 400 ms | Yes/Yes |
| Yodalarm | Alternating | 800/1000 | 250 ms for each frequency | Yes/Yes |
| Conventional Bell | Continuous | 1450 | Steady | Yes/Yes |

*Table 5: Sounder tones and performance*
**Note 1:** If the pulse pattern is assigned by the control panel, then only continuous tones can be configured.
**Note 2:** The conventional bell is a simulated tone with limited bandwidth. It is not advisable to mix conventional bells with electronic sounders producing a simulated bell tone.

## Loop loading

| Sounder volume | Beacon flash rate | Alarm current |
|---|---|---|
| OFF | OFF | 0.35 mA |
| LOW | OFF | 2.45 mA |
| HIGH | OFF | 4.32 mA |
| HIGH | 0.5 Hz | 8.10 mA |
| HIGH | 1 Hz | 11.30 mA |

*Table 6: Loop loading*
**Note:** Please refer to the loop loading calculator for these units.

## Sounder performance Volume HIGH

| Volume HIGH | | Ceiling devices - sound performance horizontal (dBA at 1 m) | | | | | | Ceiling devices - sound performance vertical (dBA at 1 m) | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Tone** | Angle | 15° | 45° | 75° | 105° | 135° | 165° | 15° | 45° | 75° | 105° | 135° | 165° |
| Dutch Slow Whoop | 40V | > 95 | > 87 | > 83 | > 82 | > 80 | > 80 | > 94 | > 87 | > 82 | > 81 | > 84 | > 87 |
| | 20V | > 93 | > 86 | > 82 | > 80 | > 78 | > 78 | > 92 | > 83 | > 80 | > 79 | > 82 | > 87 |
| 7 Hz Fast Sweep | 40V | > 93 | > 85 | > 81 | > 79 | > 77 | > 78 | > 92 | > 85 | > 81 | > 80 | > 81 | > 87 |
| | 20V | > 91 | > 83 | > 79 | > 77 | > 76 | > 76 | > 90 | > 82 | > 79 | > 78 | > 80 | > 86 |
| BS 1 Hz Sweep | 40V | > 94 | > 86 | > 82 | > 81 | > 78 | > 79 | > 93 | > 86 | > 82 | > 80 | > 83 | > 88 |
| | 20V | > 92 | > 85 | > 81 | > 79 | > 77 | > 77 | > 91 | > 83 | > 79 | > 79 | > 82 | > 86 |
| 2 Tone | 40V | > 94 | > 86 | > 83 | > 82 | > 76 | > 80 | > 94 | > 86 | > 82 | > 80 | > 84 | > 88 |
| | 20V | > 93 | > 85 | > 82 | > 80 | > 76 | > 78 | > 91 | > 83 | > 79 | > 79 | > 82 | > 85 |
| Temporal 4 | 40V | > 98 | > 90 | > 87 | > 85 | > 80 | > 84 | > 97 | > 89 | > 84 | > 84 | > 88 | > 92 |
| | 20V | > 93 | > 87 | > 84 | > 82 | > 77 | > 81 | > 95 | > 87 | > 79 | > 79 | > 82 | > 89 |
| Temporal 3 | 40V | > 98 | > 90 | > 87 | > 85 | > 80 | > 84 | > 97 | > 90 | > 84 | > 84 | > 88 | > 92 |
| | 20V | > 95 | > 87 | > 84 | > 82 | > 77 | > 81 | > 95 | > 88 | > 82 | > 82 | > 85 | > 89 |
| March Time beep | 40V | > 98 | > 90 | > 87 | > 85 | > 80 | > 84 | > 97 | > 90 | > 84 | > 84 | > 87 | > 91 |
| | 20V | > 95 | > 87 | > 84 | > 82 | > 77 | > 81 | > 96 | > 88 | > 81 | > 81 | > 87 | > 91 |
| Continuous 970 Hz | 40V | > 92 | > 82 | > 79 | > 77 | > 77 | > 74 | > 92 | > 83 | > 79 | > 76 | > 79 | > 83 |
| | 20V | > 91 | > 79 | > 77 | > 75 | > 75 | > 72 | > 90 | > 81 | > 79 | > 75 | > 79 | > 83 |
| DIN 1 Hz Sweep | 40V | > 94 | > 86 | > 81 | > 79 | > 78 | > 78 | > 93 | > 86 | > 81 | > 81 | > 82 | > 87 |
| | 20V | > 91 | > 83 | > 79 | > 77 | > 75 | > 75 | > 91 | > 83 | > 80 | > 79 | > 81 | > 86 |
| Banshee LF Buzzer | 40V | > 94 | > 86 | > 81 | > 79 | > 77 | > 77 | > 93 | > 85 | > 81 | > 80 | > 82 | > 87 |
| | 20V | > 91 | > 84 | > 78 | > 75 | > 75 | > 73 | > 91 | > 84 | > 79 | > 79 | > 80 | > 85 |
| 3 Hz Banshee | 40V | > 94 | > 86 | > 82 | > 82 | > 77 | > 78 | > 93 | > 85 | > 81 | > 80 | > 82 | > 87 |
| | 20V | > 91 | > 83 | > 79 | > 77 | > 75 | > 76 | > 91 | > 83 | > 79 | > 78 | > 81 | > 86 |
| 9 Hz Banshee | 40V | > 94 | > 85 | > 81 | > 78 | > 76 | > 77 | > 92 | > 85 | > 81 | > 80 | > 81 | > 87 |
| | 20V | > 92 | > 83 | > 79 | > 76 | > 74 | > 75 | > 90 | > 83 | > 79 | > 78 | > 80 | > 85 |
| Alternating | 40V | > 95 | > 86 | > 82 | > 80 | > 78 | > 79 | > 94 | > 87 | > 81 | > 81 | > 84 | > 87 |
| | 20V | > 91 | > 84 | > 79 | > 76 | > 76 | > 76 | > 92 | > 85 | > 79 | > 79 | > 82 | > 86 |
| Yodalarm | 40V | > 94 | > 85 | > 81 | > 78 | > 76 | > 78 | > 93 | > 86 | > 81 | > 80 | > 81 | > 87 |
| | 20V | > 90 | > 82 | > 78 | > 76 | > 75 | > 75 | > 90 | > 83 | > 79 | > 79 | > 80 | > 85 |
| Conventional Bell | 40V | > 91 | > 83 | > 78 | > 79 | > 76 | > 77 | > 91 | > 83 | > 81 | > 79 | > 81 | > 86 |
| | 20V | > 89 | > 81 | > 78 | > 77 | > 75 | > 76 | > 89 | > 82 | > 80 | > 78 | > 79 | > 84 |

*Table 7: Sounder performance Volume HIGH*

## Sounder performance Volume MID-LOW

| Volume MID-LOW | | Ceiling devices - sound performance horizontal (dBA at 1 m) | | | | | | Ceiling devices - sound performance vertical (dBA at 1 m) | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Tone** | Angle | 15° | 45° | 75° | 105° | 135° | 165° | 15° | 45° | 75° | 105° | 135° | 165° |
| Dutch Slow Whoop | 40V | > 77 | > 69 | > 64 | > 63 | > 61 | > 62 | > 75 | > 68 | > 64 | > 62 | > 66 | > 71 |
| | 20V | > 77 | > 69 | > 64 | > 63 | > 61 | > 62 | > 75 | > 68 | > 64 | > 62 | > 66 | > 71 |
| 7 Hz Fast Sweep | 40V | > 71 | > 63 | > 59 | > 59 | > 59 | > 65 | > 70 | > 63 | > 59 | > 59 | > 61 | > 66 |
| | 20V | > 71 | > 63 | > 59 | > 59 | > 59 | > 65 | > 70 | > 63 | > 59 | > 59 | > 61 | > 66 |
| BS 1 Hz Sweep | 40V | > 71 | > 64 | > 60 | > 60 | > 61 | > 66 | > 71 | > 62 | > 62 | > 58 | > 57 | > 55 |
| | 20V | > 71 | > 64 | > 60 | > 60 | > 61 | > 66 | > 71 | > 62 | > 62 | > 58 | > 57 | > 55 |
| 2 Tone | 40V | > 72 | > 65 | > 59 | > 59 | > 61 | > 66 | > 73 | > 63 | > 61 | > 59 | > 57 | > 56 |
| | 20V | > 72 | > 65 | > 59 | > 59 | > 61 | > 66 | > 73 | > 63 | > 61 | > 59 | > 57 | > 56 |
| Temporal 4 | 40V | > 80 | > 72 | > 67 | > 66 | > 62 | > 65 | > 79 | > 71 | > 66 | > 66 | > 69 | > 73 |
| | 20V | > 80 | > 72 | > 67 | > 66 | > 62 | > 65 | > 79 | > 71 | > 66 | > 66 | > 69 | > 73 |
| Temporal 3 | 40V | > 80 | > 72 | > 67 | > 66 | > 62 | > 65 | > 79 | > 71 | > 66 | > 66 | > 69 | > 73 |
| | 20V | > 80 | > 72 | > 67 | > 66 | > 62 | > 65 | > 79 | > 71 | > 66 | > 66 | > 69 | > 73 |
| March Time beep | 40V | > 79 | > 72 | > 69 | > 67 | > 62 | > 65 | > 79 | > 72 | > 65 | > 65 | > 70 | > 73 |
| | 20V | > 79 | > 72 | > 69 | > 67 | > 62 | > 65 | > 79 | > 72 | > 65 | > 65 | > 70 | > 73 |
| Continuous 970 Hz | 40V | > 72 | > 62 | > 60 | > 60 | > 59 | > 61 | > 72 | > 61 | > 59 | > 59 | > 59 | > 61 |
| | 20V | > 72 | > 62 | > 60 | > 60 | > 59 | > 61 | > 72 | > 61 | > 59 | > 59 | > 59 | > 61 |
| DIN 1 Hz Sweep | 40V | > 73 | > 66 | > 61 | > 61 | > 62 | > 67 | > 74 | > 66 | > 62 | > 61 | > 63 | > 68 |
| | 20V | > 73 | > 66 | > 61 | > 61 | > 62 | > 67 | > 74 | > 66 | > 62 | > 61 | > 63 | > 68 |
| Banshee LF Buzzer | 40V | > 71 | > 63 | > 59 | > 59 | > 60 | > 65 | > 72 | > 63 | > 61 | > 59 | > 57 | > 57 |
| | 20V | > 71 | > 63 | > 59 | > 59 | > 60 | > 65 | > 72 | > 63 | > 61 | > 59 | > 57 | > 57 |
| 3 Hz Banshee | 40V | > 71 | > 63 | > 59 | > 59 | > 60 | > 65 | > 72 | > 63 | > 62 | > 59 | > 57 | > 57 |
| | 20V | > 71 | > 63 | > 59 | > 59 | > 60 | > 65 | > 72 | > 63 | > 62 | > 59 | > 57 | > 57 |
| 9 Hz Banshee | 40V | > 70 | > 63 | > 59 | > 58 | > 59 | > 65 | > 72 | > 62 | > 61 | > 59 | > 57 | > 56 |
| | 20V | > 70 | > 63 | > 59 | > 58 | > 59 | > 65 | > 72 | > 62 | > 61 | > 59 | > 57 | > 56 |
| Alternating | 40V | > 76 | > 68 | > 64 | > 64 | > 65 | > 70 | > 76 | > 69 | > 64 | > 63 | > 66 | > 70 |
| | 20V | > 76 | > 68 | > 64 | > 64 | > 65 | > 70 | > 76 | > 69 | > 64 | > 63 | > 66 | > 70 |
| Yodalarm | 40V | > 70 | > 63 | > 60 | > 60 | > 61 | > 63 | > 72 | > 65 | > 60 | > 61 | > 61 | > 66 |
| | 20V | > 70 | > 63 | > 60 | > 60 | > 61 | > 63 | > 72 | > 65 | > 60 | > 61 | > 61 | > 66 |
| Conventional Bell | 40V | > 70 | > 63 | > 61 | > 58 | > 59 | > 65 | > 71 | > 62 | > 62 | > 58 | > 57 | > 55 |
| | 40V | > 70 | > 63 | > 61 | > 58 | > 59 | > 65 | > 71 | > 62 | > 62 | > 58 | > 57 | > 55 |

*Table 8: Sounder performance Volume MID-LOW*

## Installation information

| Dimensions | Cabling and wiring | Contact | Function |
|---|---|---|---|
|  *Fig. 2: Base unit* 1– Temporary park plunger and indicator (yellow) for short circuit isolator 2– Address flag holder |  *Fig. 3: Wiring* | L | Not used |
| | **Wiring notes** ■ All wiring must comply with local installation regulations and local fire system design requirements. ■ Ensure all conductors are free of earths. ■ Verify correct wiring and wiring polarity before connecting the devices to the addressable loop. | L1 | Positive line in and out |
| | | L2 | Negative line (isolator in or out) |
| | | M | Negative line (isolator in or out) |
| | | R | Remote LED out, wired only if a remote indicator is required |
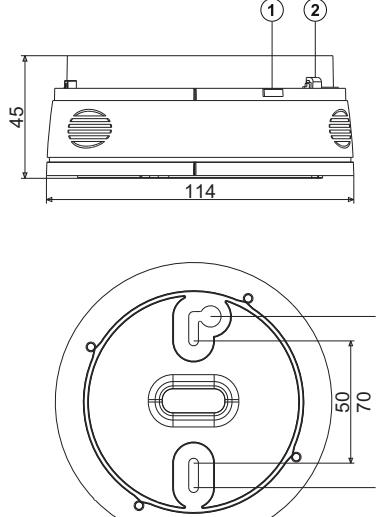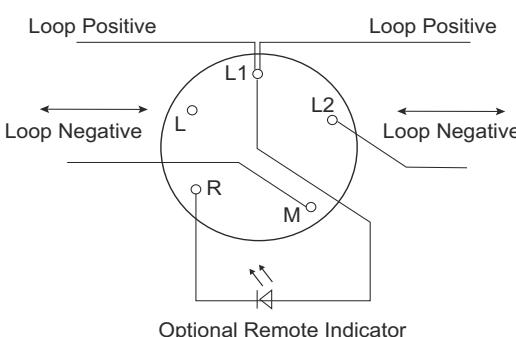
# Mounting and fixing instructions

This unit either fits directly to the ceiling or to an optional ceiling adaptor. The ceiling mounted variants provide a base for fitting a fire detector. Alternatively, a blanking cap is fitted. See Fig 4.
See Fig 5 for fitting the locking pin. To remove a detector from a base with a locking pin, complete these steps:

1    Insert a suitable tool into the access hole to depress the locking pin in the detector cover.
2    Rotate the detector to remove.

This unit can be used with the Ceiling Tile Adapter (CTA) kit (517.050.060) by using the CTA Adaptor Plate, CTA-AP (517.050.058).
Use the knock outs for the cabling as required.
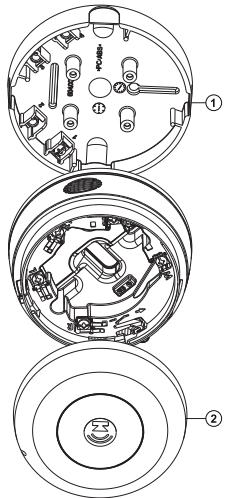


Fig. 4: Fitting the base units
1–  A-CON
2–  B-CAP
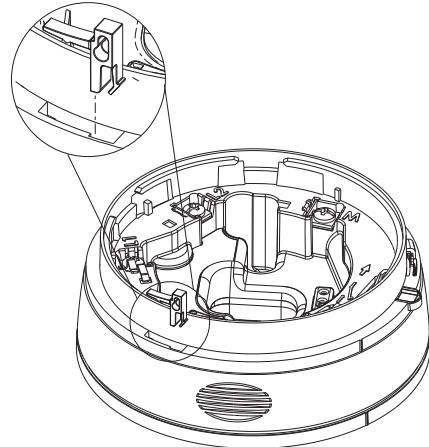


Fig. 5: Fitting the locking pin

## Approvals

| | | CPR APPROVAL | | | EUROPEAN TYPE APPROVALS | | | | | INTERNATIONAL LISTINGS | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | CE 2831   UKCA 0832<br>**TYCO FIRE & SECURITY GMBH<br>NEUHAUSEN AM RHEINFALL 8212<br>SWITZERLAND<br>21/2831 22/0832** | EN54-3 | EN54-23 | EN54-17 | LPCB | VDS | BOSEC | FNO | DBI | FPANZ | HKFSD | TFTF |
| FC442AVB | DOP-2020-4276 / 2831-CPR-F4572 / 0832-UKCA-CPR-F0103 | ● | ● | ● | ● | | ● | | | | | |

*Table 9: Approvals*

All required declarations and certificates are publicly available on the website www.fireclass.co.uk and are searchable by number or model name.
The above fire detection products are components designed for use in addressable systems exclusively available to registered partners only. They are intended for installation by trained registered personnel only. Systems should be installed and configured according to local regulations.

# FIRECLASS