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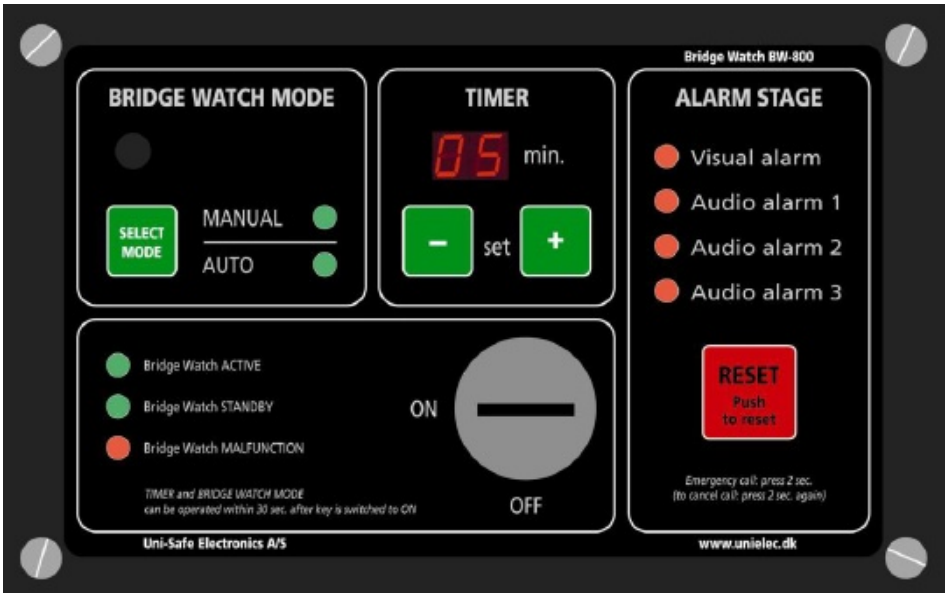
**Instruction and installation manual for**
**BNWAS BW-800**




**Index:**

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**Document History**

| Version: | Description: |
|---|---|
| 1.A | First version |
| 1.Ab | Diagram changed and type approval added to the manual. |
| 1.Ac | Unpacking instructions, new diagrams with AMS interface, mounting tips for 811, 812 and 813, |

## UNPACKING

*Take all the parts carefully out of the box and check for any mechanical damages which might have appeared during transportation.*
*Please retain the packaging until the installation has been properly commissioned. It can be used to return the parts for warranty purpose.*

## SAFETY GUIDELINE

*Warning!*

- *If this equipment is used in a manner not specified by the manufacturer/supplier, the protection provided might be impaired!*
- *All installation and commissioning of this equipment must be carried out by electrically competent persons!*

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## 1) General description

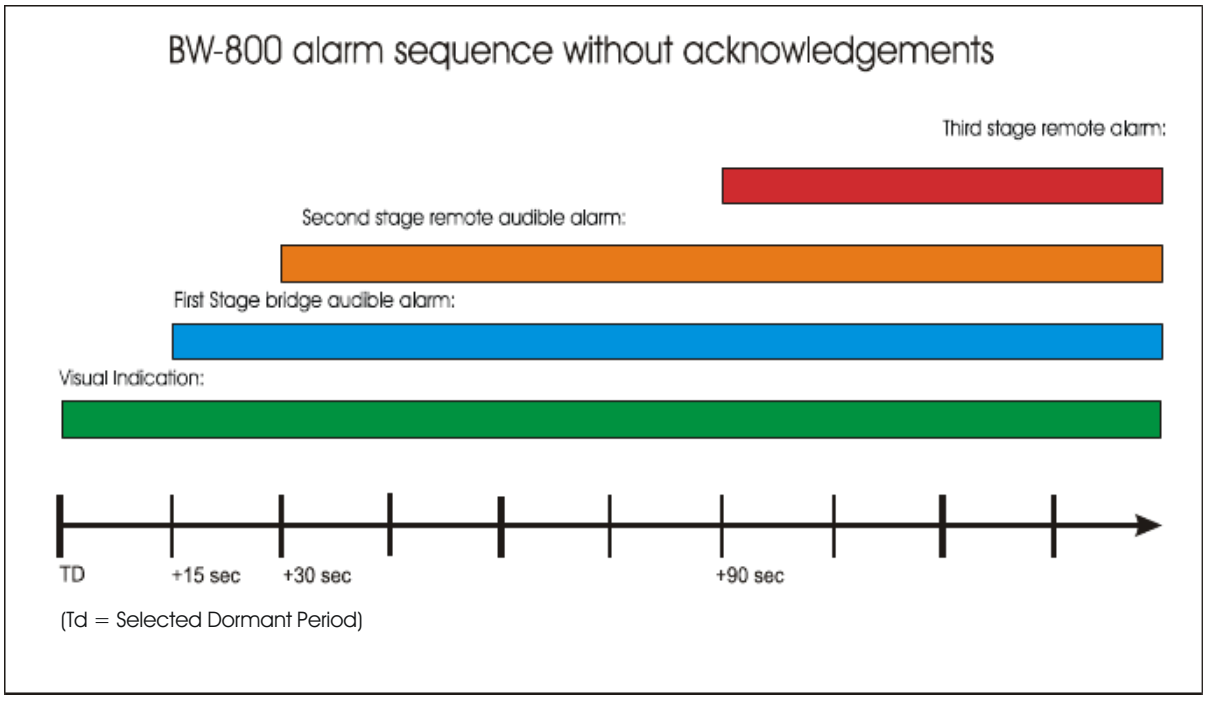
The purpose of a bridge navigational watch alarm system (BNWAS) is to monitor bridge activity and detect operator disability which could lead to marine accidents. The system monitors the awareness of the Officer of the Watch (OOW) and automatically alerts the Captain or another qualified OOW if for any reason the OOW becomes incapable of performing the OOW's duties. This purpose is achieved by a series of indications and alarms to alert first the OOW and, if he is not responding, then to alert the Captain or another qualified OOW. Additionally, the BNWAS may provide the OOW with a means of calling for immediate assistance if required. The BNWAS should be operational whenever the ship's heading or track control system is engaged, unless inhibited by the Captain.

New regulations from IMO's Maritime Safety Committee (MSC) will require carriage of a Bridge Navigational Watch Alarm System (BNWAS) complying with IMO performance standards. For existing ships, the equipment should be installed in connection with the first survey after the following deadlines:

- Existing passenger ships and ships over 3,000 GT: 1 July 2012.
- Existing ships over 500 GT: 1 July 2013.
- Existing ships over 150 GT: 1 July 2014.
- New ships over 150 GT and all new passenger ships constructed after 1 July 2011 shall be equipped with a Bridge Navigational Watch Alarm System.

**Complies with following standards:**

IMO A.694(17)
IMO A.830(19)
IMO MSC. 128(75)
IEC 62616
IEC 60945
IEC 62288
IEC 61162



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## 2) Operating instructions

The Bridge Watch can only be activated and deactivated by use of a key. Therefore, only authorised personnel (usually the captain) can decide if the bridge watch alarm should be active or not.

When the key is turned on, it is possible to change BRIDGE WATCH MODE and TIMER for 30 seconds.

**BRIDGE WATCH MODE:**

**Select MANUAL:**
In this mode BW-800 is always on and LED for “Bridge Watch ACTIVE” is illuminated.

**Select AUTO:**
In this mode BW-800 is only active when the ship's heading or track control system is engaged.
When active: The LED for “Bridge Watch ACTIVE” is illuminated.
Not active: The LED for “Bridge Watch STANDBY” is illuminated.

**Timer setting:**
Turn the key on and adjust the timer by activating the + or – button.
The display on the BW-800 unit is always showing the dormant setting indication.

**Visual alarm:**
When the timer has run out, a visual warning is activated. This gives the OOW time to reset the timer before the audio alarm 1 is activated. If the OOW of the ship has not reset the timer within 15 seconds, audio alarm 1 will be activated. The reset of the timer can be done in two different ways: manually by activating a **reset button** or by ensuring a constant movement (activity) sensed by the motion sensor on the bridge.

**Audio alarm 1:**
This alarm is placed on the bridge and is meant to ensure a wakening of e.g. a drowsy ships master. Both visual alarm and audio alarm 1 is now active. The alarm can be switched off by resetting the timer manually by activating a reset button. If the timer is not reset after 15 seconds audio alarm 2 is activated.

**Audio alarm 2:**
This alarm is placed where the back-up officer and/or master (captain) is presumed to be. Now visual alarm and audio alarm 1 and 2 are active. The timer can be set from 60-180 seconds during installation, to give time to the back-up officer to react on the alarm. If the alarm is not switched off and there is still no activity on the bridge after 60-180 seconds audio alarm 3 is activated.

**Audio alarm 3:**
This alarm is placed at the locations of further crew members capable of taking corrective actions. All alarms remain active until the reset button is activated.

**Selector unit:**
With the Selector unit it is possible for the OOW to select individually any of the navigation officers or the captain as being the assigned back-up officer for receiving the second stage remote audible alarm. Whenever captain is not selected as the assigned back-up officer, the captain cabin and office shall be included in the list of locations receiving the third stage remote audible alarm.

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**Emergency calls:**
BW-800 also has an option for connection of emergency calls. This will be in the form of a push button. When activated for 2 seconds the alarm will automatically go to alarm 2 and subsequently to alarm 3 if no action is taken. Using this function the ships master/OOW is able to call for assistance if needed.
**The emergency call can be switched off by a push on the reset button for 2 seconds.**

**Alarm Transfer input:**
BW-800 can be inter-connected with an alarm management system (AMS) for activation of the BNWAS sequence of indications and alarms when Category A alarms are not acknowledged or silenced in due time. Activation of the reset function during these sequences will cancel the alarm transfer but will not silence or acknowledge the relevant Category A alarm on the AMS. The alarm can be switched off by a push on the reset button for 2 seconds.

## 3) Installation

**Main Power:**
Connect power cables (24Vdc) via external fuse from ships main power supply.
Maximum 4 Ah fuse.

**Backup power supply:**
Connect power cables (24Vdc) via external fuse from a battery backup system able to supply BW-800 for a period of 6 hours (min. 6 Ah battery backup)
Maximum 4 Ah fuse.

**Reset units:**
Connect external reset units with visual alarm (801). The reset function should only be available in positions on the bridge giving proper look out and preferably adjacent to visual indications. The reset function should be easily accessible from the conning position, the workstation for navigating and manoeuvring, the workstation for monitoring and the bridge wings.

**Motion sensor:**
Mount the Motion sensor/sensors.
Connect the motion sensor wire to pin 5, 6 and 7.
Use the standard mounting bracket when mounting the motion sensor.
In addition, a few important rules must be observed while selecting a mounting location:

- **A.** Microwave radiation passes through glass and non-metallic walls. Be sure to adjust the MW range so that it does not exceed the room limits, or else motion in the next room or moving traffic along the outer side of the wall will cause the MW detector to trip.
- **B.** Large reflecting objects (especially metals) in the coverage area can distort the microwave detector's coverage pattern.
- **C.** If two motion sensors are installed in the same room or on opposite sides of a shared wall, they should not face each other and must be mounted at least 2 meters apart.
- **D.** The motion sensor area shall only be available in positions on the bridge giving proper look out. Find more information about settings in chapter 11.

**Heading or track control system:**
Connect the ship's heading or track control system (e.g. the auto pilot) to the remote activation input. Low voltage (0Vdc) will activate BW-800 (normally done by a closed contact).
If the Auto pilot has no output for BNWAS: Some times the technician have used the voltage to the "autopilot active" lamp inside the autopilot to activate a relay. If it is not possible to connect the autopilot: Mount a wire from pin 9 to pin 10 and BW-800 will be always on in AUTO mode.

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**Reset 2 input (activity input):**
Connect other equipment on the bridge, capable of registering operator actions in positions giving proper look out, to Reset 2 (Radar, ECDIS…). A high or low pulse will reset timer.

**VDR:**
Connect the NMEA data output to the ship's VDR.

**Malfunction:**
Connect failure relay output to an external alarm panel.
24Vdc out when BW-800 is okay.

**Audio alarm 1:**
Mount the 802 unit with visual and audio alarm. The volume can be adjusted by the potentiometer at the PCB on the 802 alarm unit. To change tone or modulation, move the jumpers as shown at the dimension drawing for the Alarm Unit 802 (chapter 12).

**Audio alarm 2:**
For ships with only 1 backup officer: Mount the 802 alarm unit with visual and audio alarm in the back-up officer's and/or Captain's (Master's) location. For ships with more than 1 backup officer: Mount the backup officer selector switch 803 and 802 alarm units with visual and audio alarm in the back-up officer's and/or Captain's (Master's) location.

**Selector unit for backup officer:**
Mount all backup officer alarm to the switch starting with the Master/Captain.
Mount the Master/Captain at the backup officer 1 position. The selected backup officer will be warned by audio alarm 2. All backup officers (off duty) will be warned by audio alarm 3.
Jumpers on Backup officer selector switch:
If you do have 1 or 2 backup officers, be sure that all jumpers are mounted.
If you do have 3 backup officers, remove jumper A
If you do have 4 backup officers, remove jumper A + B
If you do have 5 backup officers, remove jumper A + B + C
If you do have 6 backup officers, remove jumper A + B + C + D
Mark the selector switch with text (Dymo label): Master, 1. Officer, 2. Officer, Mess room...

**Audio alarm 3:**
Mount the 802 unit with visual and audio alarm at the locations of further crew members capable of taking corrective actions. In vessels other than passenger vessels, the second or third stage remote audible alarms may sound in all the above locations at the same time. If the second stage audible alarm is sounded in this way, the third stage alarm may be omitted.

**Automatic dimmer control:**
The BW-800 and the reset unit (801) have an automatic dimmer control.
This can be adjusted on the back of the unit at installation.

**Third stage delay setting:**
In larger vessels, the delay between the second and third stage alarms may be set to a longer value on installation, from 90 sec. Minimum up to a maximum of 3 min, to allow sufficient time for the back-up officer and/or Master to reach the bridge. Setting is done by adjusting the potentiometer on the backside of BW-800.

**Alarm Transfer input:**
BW-800 can be inter-connected (connector pin 8) with an alarm management system (AMS). A pulse of 2 seconds will activate the BNWAS sequence of indications and alarms. When the reset unit is pushed for 2 seconds the AMS alarm is cancelled. The reset will not silence or acknowledge the relevant Category A alarm on the AMS.

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## 4) Installation considerations:

**A.1 General**
Follow requirements in IMO resolution MSC.128(75) concerning the installation of the BNWAS.

**A.2 Location of reset function**
(128/A4.1.3.1) It shall not be possible to initiate the reset function or cancel any audible alarm from any device, equipment or system not physically located in areas of the bridge providing proper look out.

**A.3 Reset facilities**
(128/A5.1.4) Means of activating the reset function shall only be available in positions on the bridge giving proper look out and preferably adjacent to visual indications. Means of activating the reset function shall be easily accessible from the conning position, the workstation for navigating and manoeuvring, the workstation for monitoring and the bridge wings.

**A.4 Visual indications**
(128/A5.2.2 part) Flashing indications shall be visible from all operational positions on the bridge where the OOW may reasonably be expected to be stationed.

**A.5 First stage bridge audible alarm (alarm 2)**
(128/A5.2.3 part) This alarm shall be audible from all operational positions on the bridge where the OOW may reasonably be expected to be stationed.
NOTE: Bridge includes wheelhouse and bridge wings.

## Extracts from the Regulations:

To find out how many reset units you will have to install, please see IMO rec MCS 128-75 chapter: 5.1.4
"Means of activating the reset function should be easily accessible from the **conning position**, the **workstation for navigating and manoeuvring**, the **workstation for monitoring** and **the bridge wings**."

To find out how many alarm units you will have to install, please see IMO rec MCS 128-75 chapter: 4.1.2.4 - 4.1.2.6
"The BNWAS should additionally sound **a first stage audible alarm on the bridge** 15 s after the visual indication is initiated. If not reset, the BNWAS should additionally sound a second stage remote audible alarm in the **back-up officer.s and/or Master.s location** 15 s after the first stage audible alarm is initiated. If not reset, the BNWAS should additionally sound a third stage remote audible alarm at the **locations of further crew members capable of taking corrective actions** 90 s after the second stage remote audible alarm is initiated."

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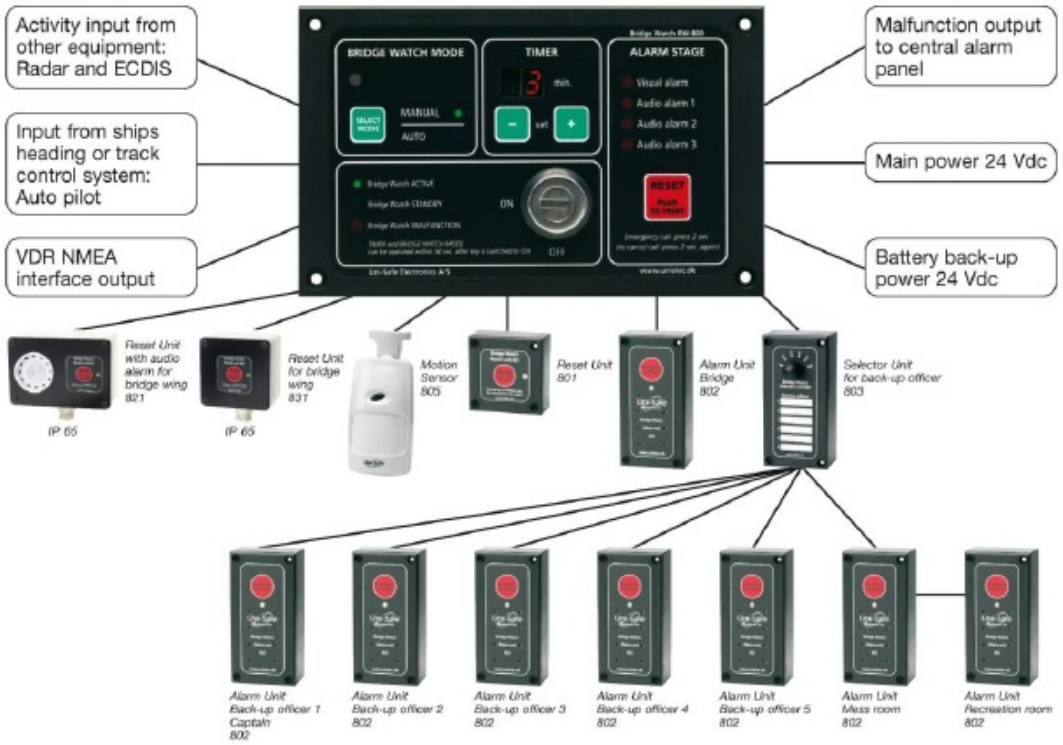
## 5) VDR interface:

BW-800 provides an interface according to IEC 61162-1, ALR sentence, with the following message content:
– hhmmss.ss: this part is left blank as the BNWAS does not include UTC time information
– xxx: Designation of source of alarm or source of reset command. The automatic mode is designated as "000".
– A: A = Dormant period exceeded
V = Dormant period not exceeded
– A: A = Alarm acknowledged
V = Alarm unacknowledged
– c - - c: BNWAS mode (see 3.1.1): c1; c2; c3
c1 = AUT or MAN or OFF
c2 = Dormant period in min, (03 – 12)
c3 = Alarm stage: 1, 2 or 3. (left blank = no alarms)

**Example:**
$BNALR,,000,A,V,C1=AUT;C2=03;C3=1*hh<CR><LF>
The alarm message is sent with any change of the BNWAS settings for mode or dormant period, and with any activated and reset alarm.

**Settings:**
Bit: 4800
Databit: 8
Parity: N
Stop bit: 1
Flow: Hardware

## 6) Block diagram



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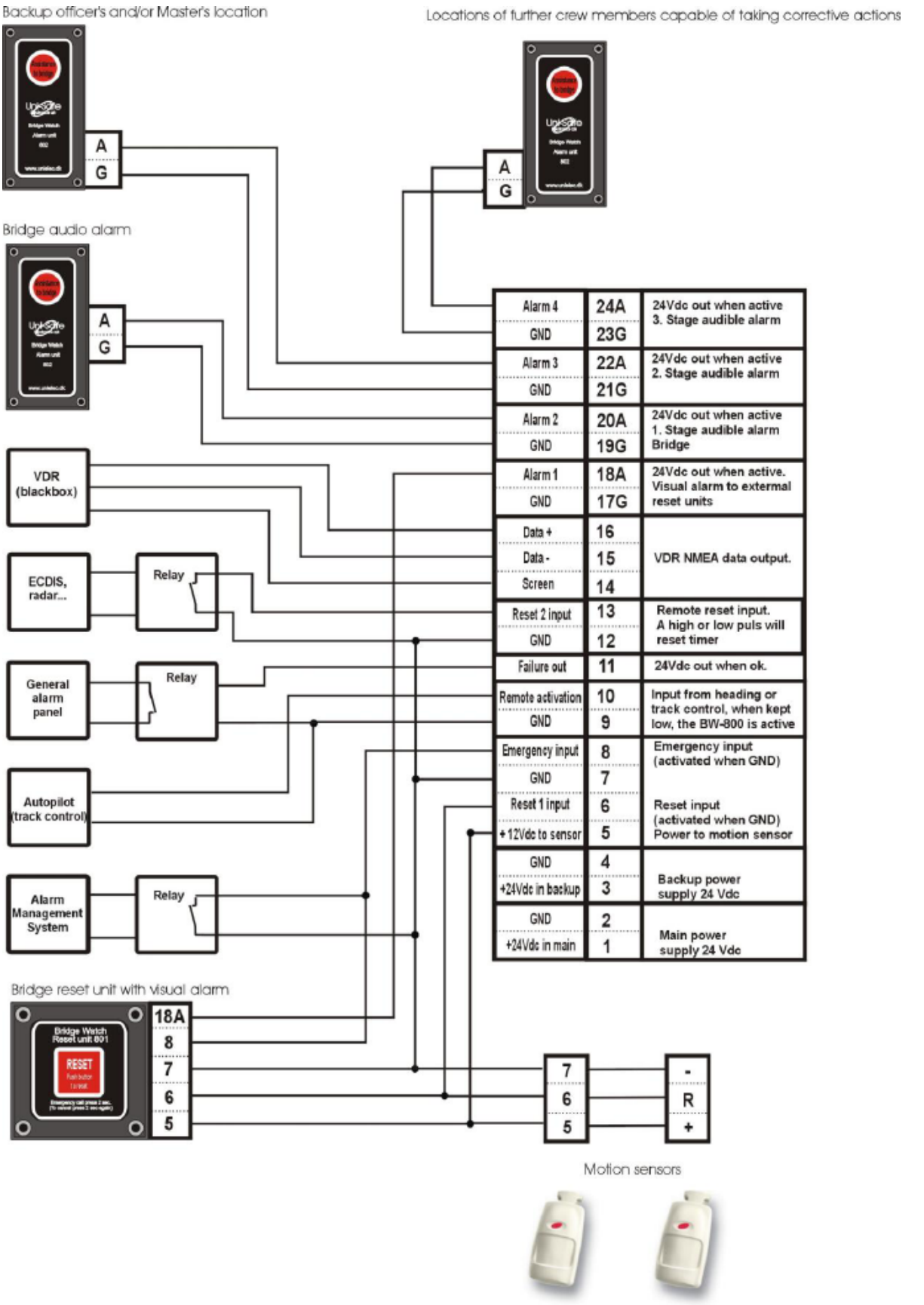
## 7) Installation diagram for small vessels without backup officer selector switch



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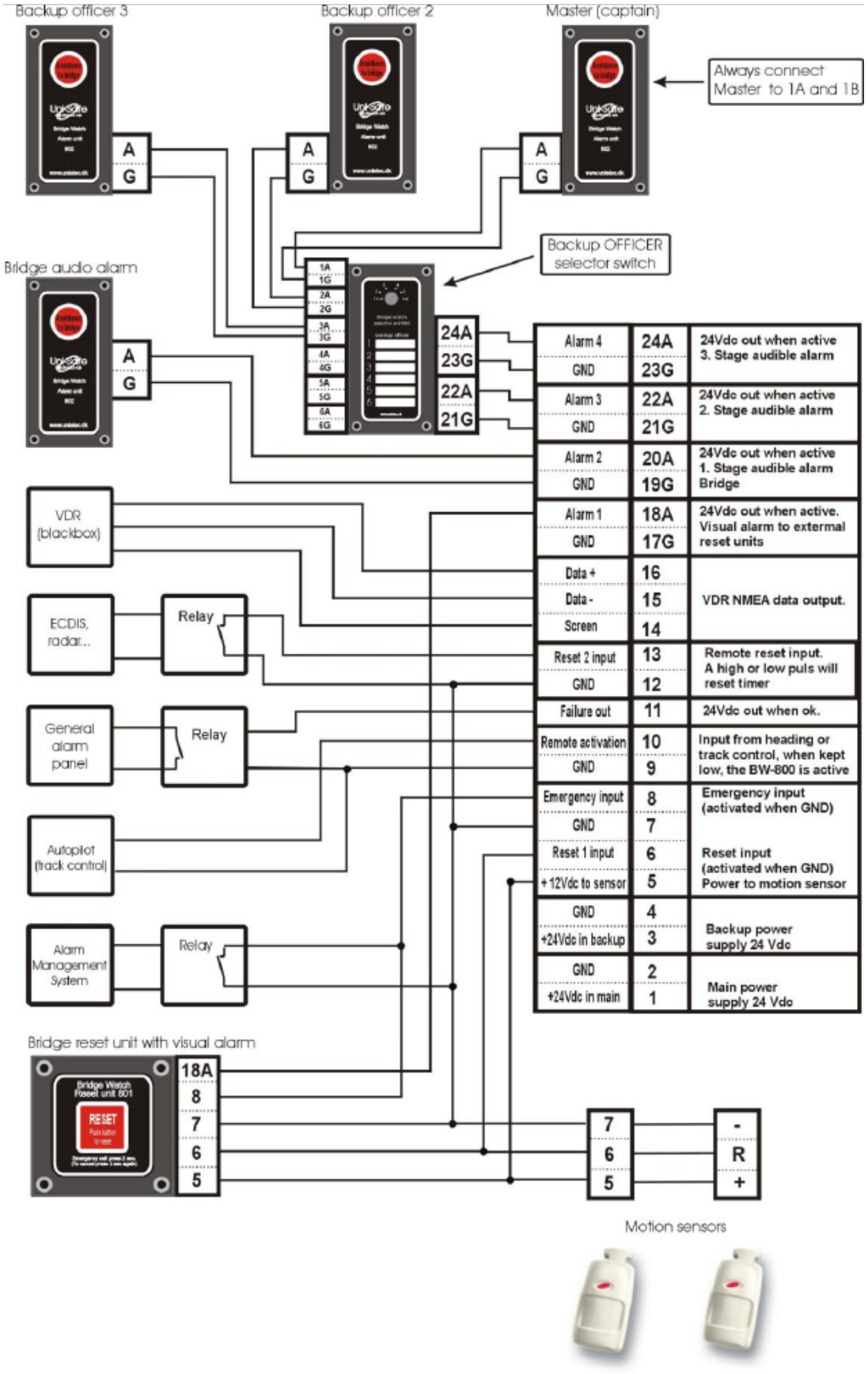
## 8) Installation diagram for vessels with backup officer selector



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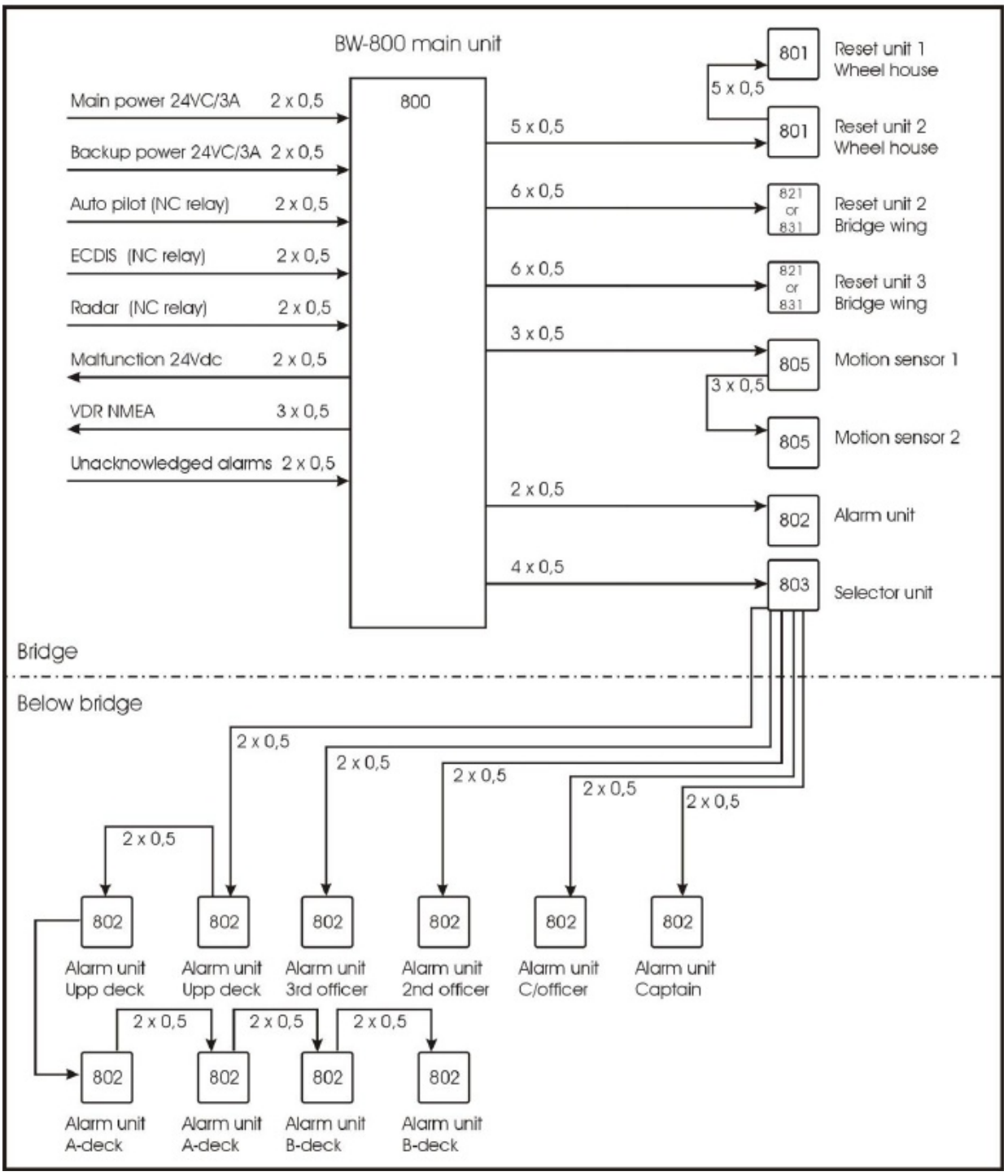
## 9) Cable diagram BNWAS BW-800



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## 10) Commissioning check list:

| | After installation of the system, please test as follows: | OK: |
|---|---|---|
| 1 | Turn BW-800 on, set the timer on 3 minutes and the bridge watch mode in manual. | |
| 2 | Go to the external reset unit and do not move for 3 minutes.<br>After 3 minutes check that the reset unit is flashing and it stops if you move or press the reset button. | |
| 3 | Leave the bridge for 3 minutes and check that first audible alarm (alarm 2) on the bridge sounds. | |
| 4 | Go to the captain/master and/or the officer cabins and check that the second stage remote audible alarm (alarm 3) sounds 15 seconds after first audible alarm. | |
| 5 | Go to the crew area and check that alarm 4 sounds 90-180 seconds after second audible alarm. | |
| 6 | Go to the bridge and reset all alarms by pushing the reset button. | |
| 7 | Press and hold the reset button for 2 seconds. Check that the LED for alarm 3 and subsequently alarm 4 is illuminated.<br>Cancel the alarm again: Press 2 seconds again. | |
| 8 | Remove the fuse from main power and check that the LED for Bridge Watch MALFUNCTION is illuminated.<br>Mount the fuse again. | |
| 9 | Remove the fuse from backup power and check that the LED for Bridge Watch MALFUNCTION is illuminated. | |
| 10 | Check that equipment connected to the Failure relay output is activated.<br>Mount the fuse again. | |
| 11 | If other equipment on the bridge capable of registering operator actions in positions giving proper look out is connected to Reset 2, check that the units can reset the timer. | |
| 12 | If the VDR/Black box output is used, check that the VDR is receiving data from BW-800. | |
| 13 | Turn the key off and on again. Select AUTO mode.<br>Check that the LED for Bridge Watch ACTIVE is illuminated when the ship's heading or track control system is activated. | |
| 14 | Check that the VDR receives the VDR data information from BW-800. | |
| 15 | If mounted: Turn the Backup officer selector switch to an unused position and check that alarm 3 sounds at the last backup officer.<br>Check all unused and used positions. Emergency call can be used for this test. | |
| 16 | Check that motion in areas without proper lookout is not registered by the motion sensor. | |

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## 11) Troubleshooting check list

| Step: | Problem: | Description: | Possible Causes: |
|---|---|---|---|
| 1 | No reset from motion sensor. | Check voltage on Reset 1 input (BW-800 connector pin 6).<br>Low voltage when LED in motion sensor is red.<br>If constant low, remove the wire to the motion sensor and check again. | Standard mounting bracket not used and screws behind the PCB is shortcutting the sensor.<br>Remove the screws and use the standard mounting bracket. |
| 2 | No lights in BW-800 | Check external fuses<br>Check DC power on terminal 1-4 (24Vdc)<br>Check the cable connections | BW-800 has no power |
| 3 | No alarm on bridge and Alarm LED 2 and 3 are always on | Check DC power on terminal 6 on BW-800 (0V/low, only when reset button is pushed or a movement is detected)<br>Movement detector: When the red LED is on, a low pulse is sent from terminal “R”<br>If constantly low:<br>1) Turn the BW-800 off (key in position off)<br>2) Remove all wires from terminal 6<br>3) Set the alarm to 3 minutes and set the key in position on<br>4) Check that “alarm 1” starts after 3 minutes (BW-800 is then ok)<br>5) Turn the BW-800 off<br>6) Mount the wire from one reset button to terminal 6<br>7) Set the key in position on<br>8) Check that “alarm 1” starts after 3 minutes<br>9) Check that you can reset the alarm by pushing the reset button (reset button 1 is ok)<br>10) Turn the BW-800 off<br>11) Mount the wire from one movement detector to terminal 6<br>12) Set the key in position on and don’t move<br>13) Check that “alarm 1” starts after 3 minutes<br>14) Check that you can reset the alarm by walking around (movement detector is ok)<br>15) Check additional reset buttons and movement detectors by the same procedure as above | Installation failure<br>Movement detectors defective<br>Reset button defective |
| 4 | No alarm 1-3 and the LED’s for alarm 1-3 are on | Check the cable connections.<br>Check 24Vdc power at the terminals on the alarm units. | Cable failure<br>Alarm units defective |

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| Step: | Problem: | Description: | Possible Causes: |
|---|---|---|---|
| 5 | Malfunction light always on | Check the power cable connections. Check 24Vdc power at main power (terminal 1 and 2) and Backup power (terminal 3 and 4) | Cable failure<br>Backup power not connected. |
| 6 | No VDR output | Data + and – have been connected wrong. Change the 2 cable connections. | Cable failure |

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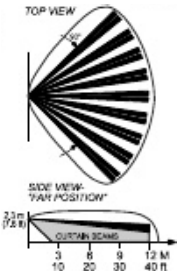
## 12) Motion sensor

1. FEATURES

**Input Voltage:** 9 to 16 VDC
**Current Drain:** About 28 mA @ 12 VDC
**Size (H x W x D):** 117 x 65 x 47 mm.
**Weight:** 0,15 kg

**PIR SECTION**
**Detector:** Low noise dual-element pyroelectric sensor
**Tripping Indication:** LED flashes green for up to 5 seconds
**Motion Event Verification Counter:** Selectable, 1 or 2 events
**Max. Coverage:** 12 x 12 m (40 x 40 ft) / 90° field of view
**Vertical Adjustment:** FAR and NEAR, by sliding the circuit board along a two-position scale.

**MW SECTION**
**Oscillator:** Microstrip DRO-stabilized Doppler module
**Detection Range:** Adjustable from 25% to 100% (3 m to 12 m)
**Tripping Indication:** LED glows green for up to 5 seconds
**Alarm Indication:** LED glows red for 1.3 to 5 seconds if both detectors trip




**MOUNTING**
**Height**: Up to 3.6 m (12 ft)
**Room Size:** 8 -12 m (24 - 40 ft) in the "FAR" position; 2 - 8 m (6 - 24 ft) in the NEAR position.
**Bracket Adjustment**: 20° downward, 20° left and right.
**Installation Options**: Surface or corner (without bracket); surface or ceiling (with bracket)

**ENVIRONMENTAL**
**RFI Protection:** >30 V/m up to 1000 MHz.
**Operating Temperatures:** -10°C to 50°C (14°F to 122°F).
**Storage Temperatures:** -20°C to 60°C (-4°F to 140°F).

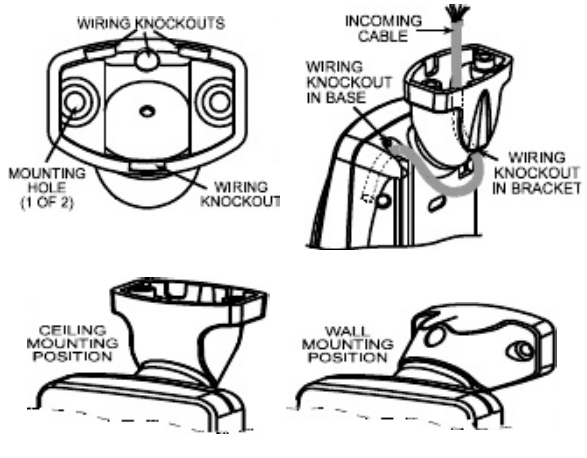
**In addition, a few important rules must be observed while selecting a mounting location:**

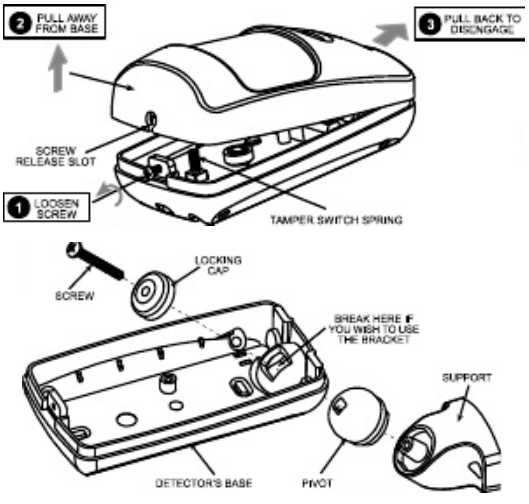
a. Microwave radiation passes through glass and non-metallic walls. Be sure to adjust the MW range so that it does not exceed the room limits, or else motion in the next room or moving traffic along the outer side of the wall will cause the MW detector to trip.

b. Large reflecting objects (especially metals) in the coverage area can distort the microwave detector's coverage pattern.

c. If two motion sensors are installed in the same room or on opposite sides of a shared wall, they should not face each other and must be mounted at least 2 meters apart.

**Mounting with Swivel Bracket**
A. Remove the front cover.
B. Remove the PCB and put it temporarily aside.
C. Punch out the large knockout in the round bulge at the top part of the base.



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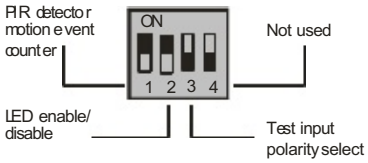
**Visual Indications**
The dual color LED is used to signal various alarm and trouble messages as shown :

| Visual Indication: | Significance: |
|---|---|
| None | No detection |
| Steady green (5 s) | MW walk-test detection |
| Flashing green | PIR walk-test detection |
| Steady red (5 s) | Alarm: MW + PIR detection |
| Flashing red and green (alternately) | - Trouble or masking is being detected by the self test circuitry<br>- Initial warm-up routine (stops 60 seconds after power up). |

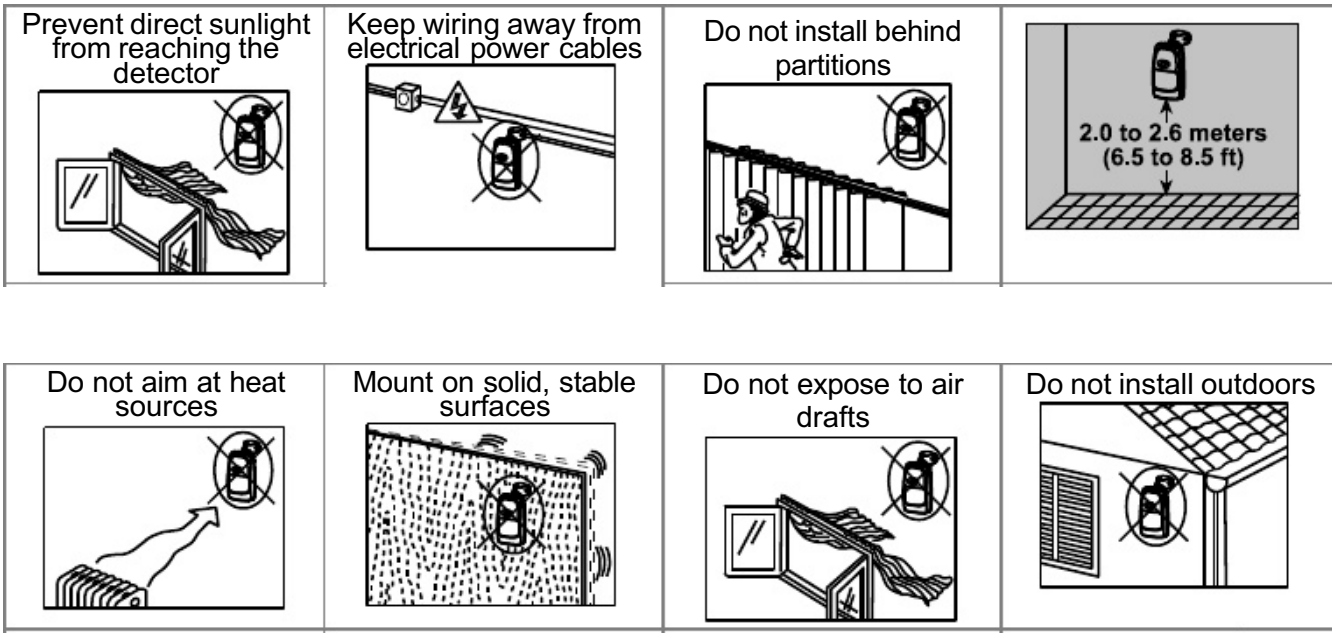
**Notes:**
During walk testing, the green light glows steadily (MW detection) or flashes (PIR detection), depending on which one of the two detectors discovered the movement first. Upon subsequent discovery of the movement by the other detector, the green light goes off and the red light glows (alarm).
If the LED maintains alternate red and green flashing beyond the warm-up period, a malfunction or masking has been diagnosed. Replace the unit without delay.

The DIP switch mode selector is mounted on the unit's PC board (see Figure 5). It controls four functions as demonstrated in the figure below:




The picture above shows the normal setting of the DIP switch.

**Installation hints:**



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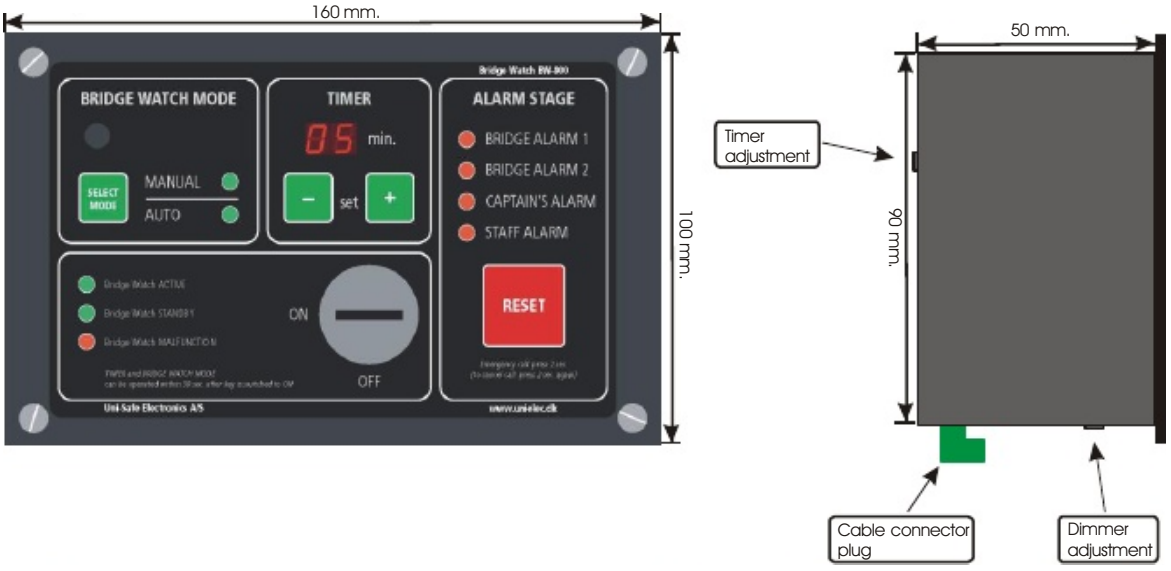
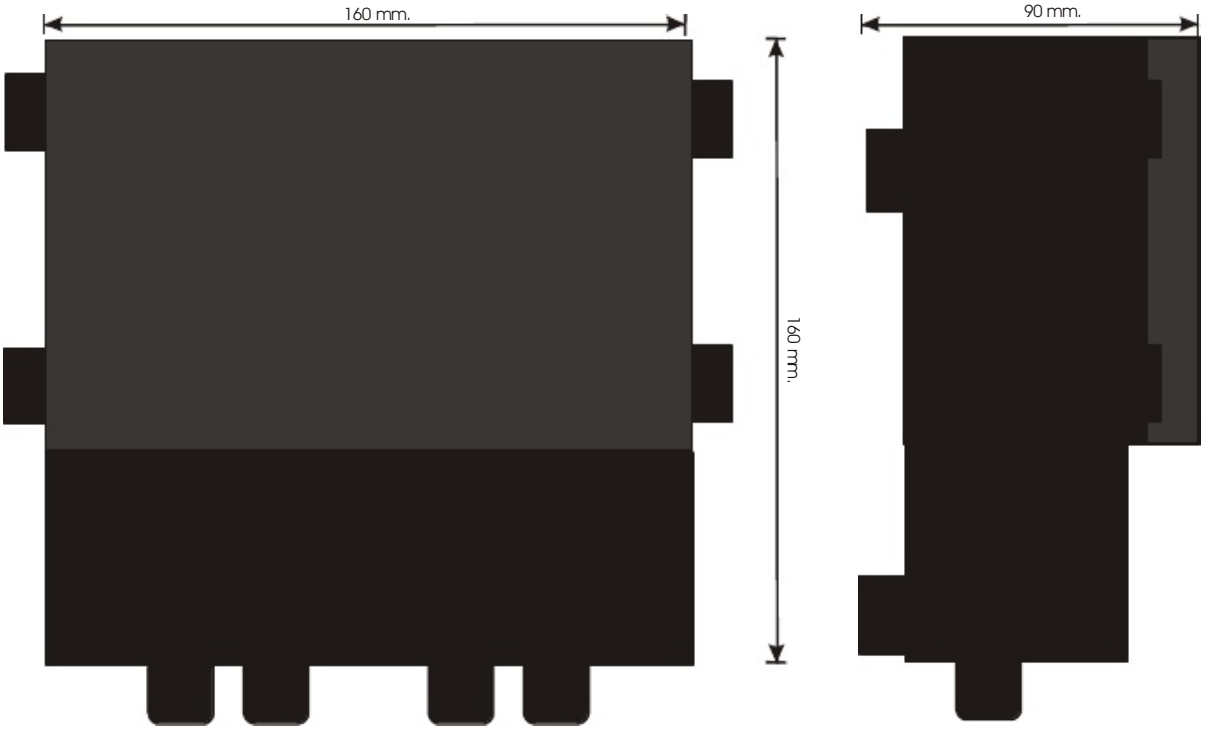
## 13) Dimension drawings

**Panel/flush mounting (standard):**
Front: 160 mm x 100 mm
Cut out: 136 mm x 96 mm
Depth: 55 mm
Weight: 0,7 kg




**810 Wall mounting box (optional):**
Front: 160 mm x 160 mm
Depth: 90 mm
Weight: 0,5 kg



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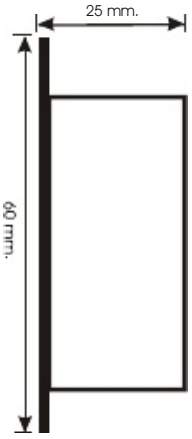
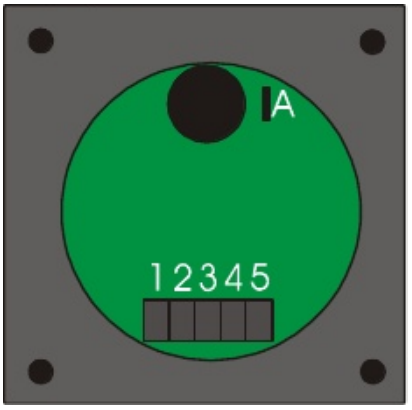
**801 Reset unit for panel/flush mounting (standard):**
Front: 60 mm x 60 mm
Cut out: Ø = 48 mm.
Depth: 25 mm
Weight: 0,10 kg

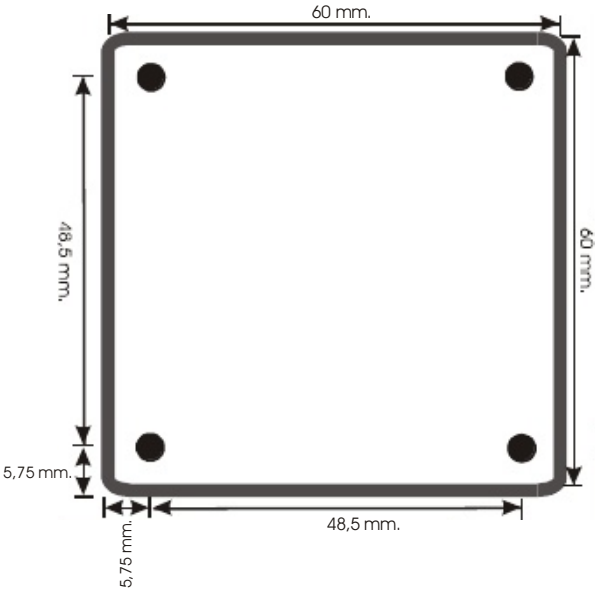
Jumper A on 801 is for the small buzzer in the unit.
The buzzer makes a low volume beep when the visual alarm is flashing.
Remove the jumper and the buzzer will be deactivated.

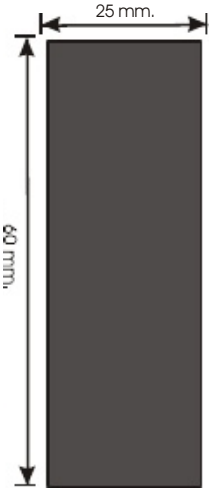




**811 Foundation small for wall mounting (optional):**
Front: 60 mm x 60 mm
Depth: 25 mm
Weight: 0,10 kg

**Mounting tip:**
To ensure the mounting holes to be correct, turn the 801 unit upside down and align it. Then you can mark the 4 holes for drilling.



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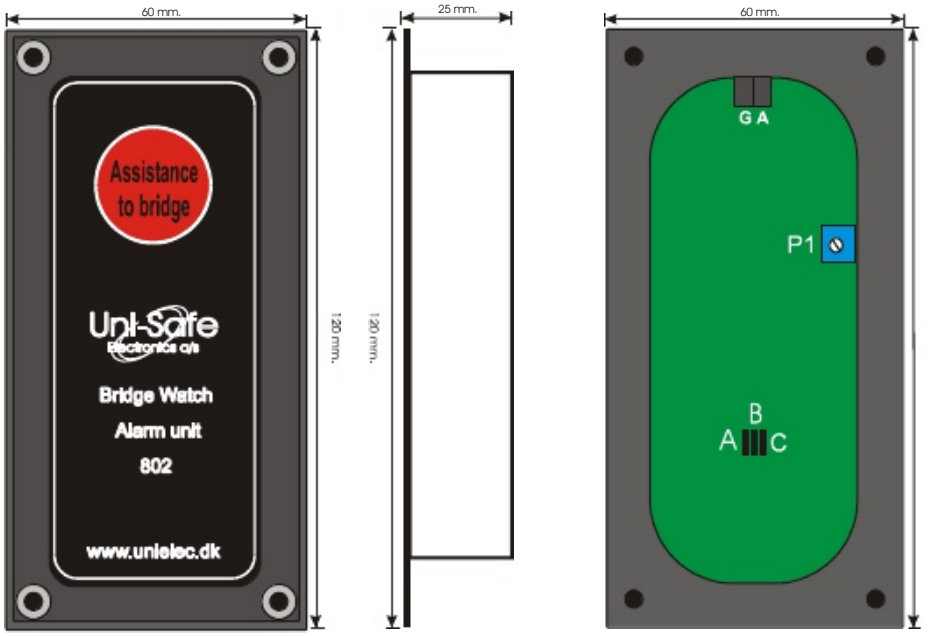
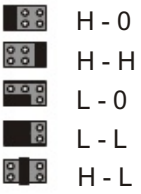
**802 Alarm unit for panel/flush mounting (standard):**
Front: 120 mm x 60 mm
Cut out: 42 x 108 mm.
Depth: 25 mm
Weight: 0,10 kg

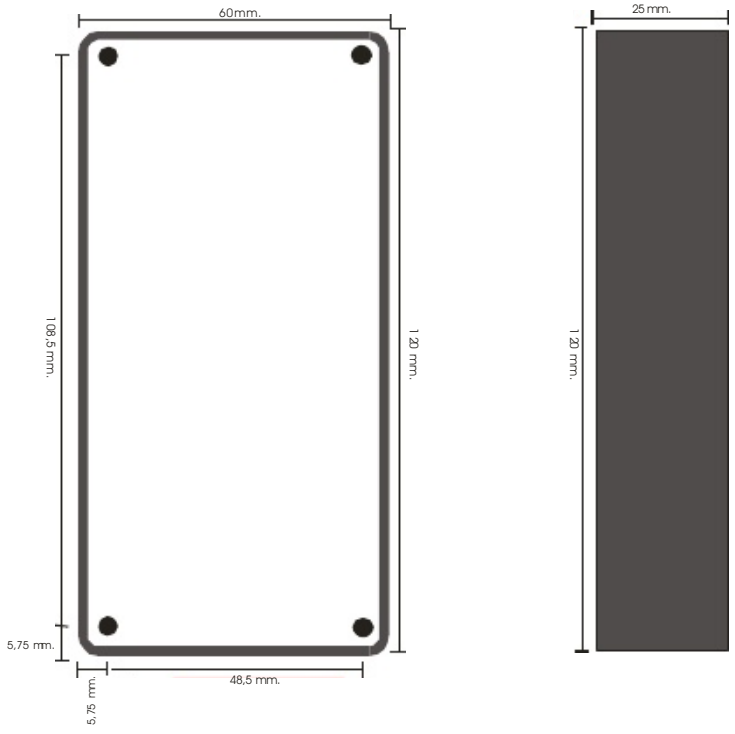



P1 is for maximum volume adjustment.
Volume can be adjusted to a lower value in smaller cabins.




H= high tone
L=low tone
0= no tone

**812 Foundation large for wall mounting (optional):**
Front: 120 mm x 60 mm
Depth: 25 mm
Weight: 0,15 kg




**Mounting tip:**
To ensure the mounting holes to be correct, turn the 802 unit upside down and align it. Then you can mark the 4 holes for drilling.

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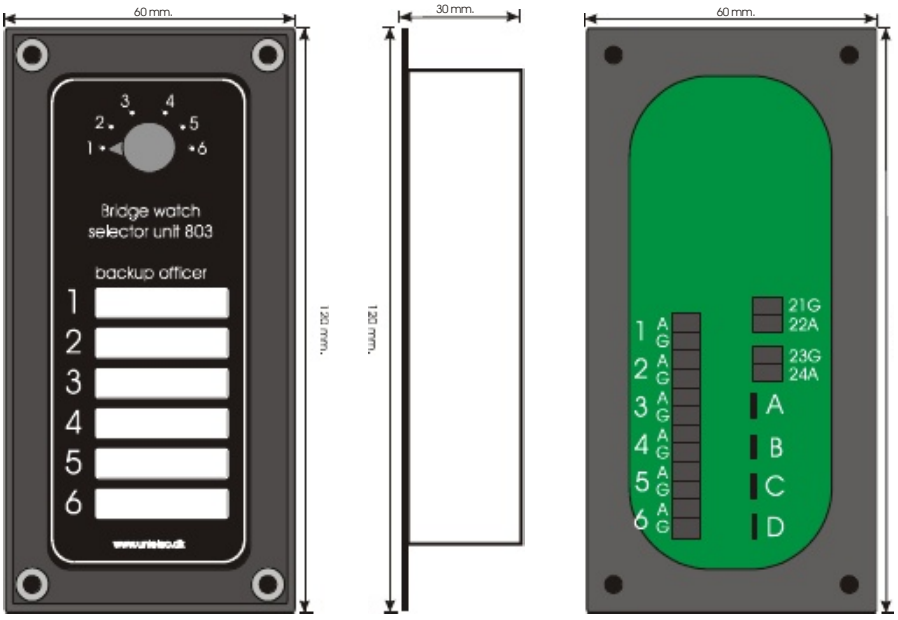
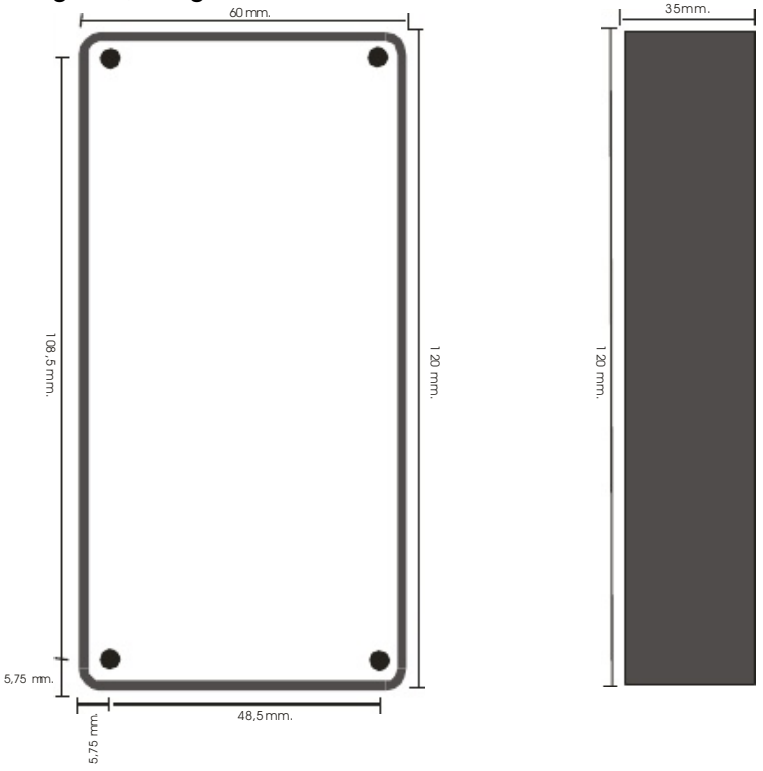
**803 Selector unit (backup officer) for panel/flush mounting (standard):**
Front: 120 mm x 60 mm
Cut out: 42 x 108 mm.
Depth: 30 mm
Weight: 0,15 kg




**813 Foundation large for wall mounting (optional):**
Front: 120 mm x 60 mm
Depth: 35 mm
Weight: 0,15 kg




**Mounting tip:**
To ensure the mounting holes to be correct, turn an 802 unit upside down and align it. Then you can mark the 4 holes for drilling small holes for the

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**821 Reset unit with audio alarm for bridge wing IP65 (wall mounting):**
Front: 120 mm x 80 mm
Depth: 60 mm
Weight: 0,5 kg


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**831 Reset unit for bridge wing IP65 (wall mounting):**
Front: 80 mm x 80 mm
Depth: 60 mm
Weight: 0,35 kg

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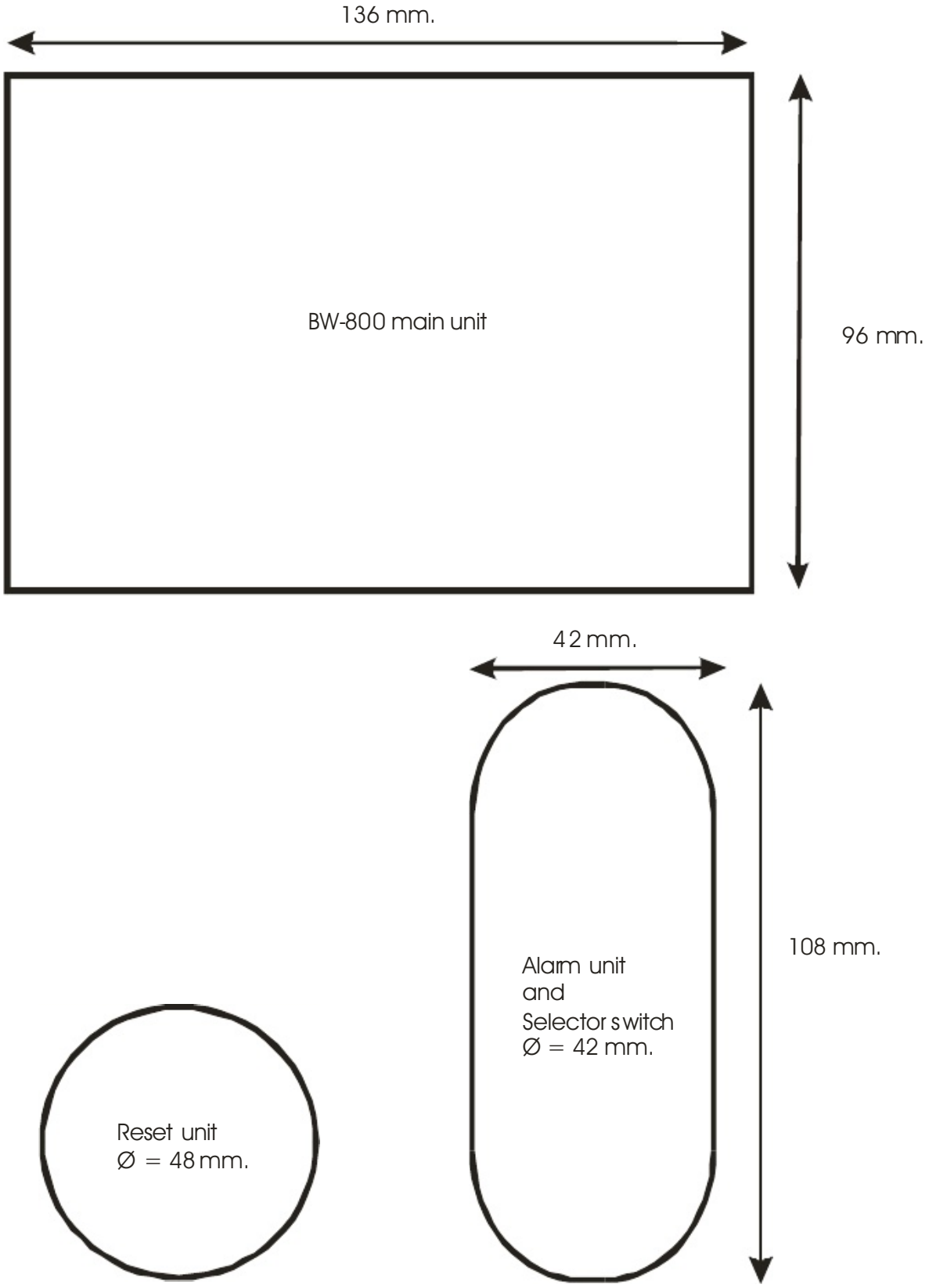
## 14) Cutout drawings:



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## 15) Specifications

**Power consumption:**
Without activated alarms: 150 mA.
Alarms (802 alarm unit): 200 mA. per unit.
Maximum 4Ah fuses

**Mains supply:**
24Vdc. Mains supply must be secured against overcurrent with an external fuse.

**Timer interval:**
3-12 min.

**Battery backup:**
24Vdc. Battery backup supply must be secured against overcurrent with an external fuse. Battery backup must be able to supply BW-800 for a period of 6 hours (min. 3 Ah battery backup)

**Cable connections:**
Input:
Mains power supply 24 Vdc
Battery backup power supply 24 Vdc
Reset pulse from radar
Autopilot positive pulse
Autopilot negative pulse
Output:
12 Vdc to motion sensor
Indication to black box (when active)
Alarm for malfunction/power failure

**Cable requirements:**
Marine type approved cable min. 0,5 mm² and maximum 1 mm².
Terminals are made for maximum 1 mm² cables.
Normally a cable with 6 x 0,5 mm² wires (3 pairs) is used.

Cable requirements per unit:
801: 5 wires
802: 2 wires
803: 4 wires
805: 3 wires
821: 6 wires
831: 5 wires

**Display:**
2 LED displays (2 digits)
Relay contacts:
Max. 10 A / 24 Vdc.
Relay contacts must be secured against overcurrent with external fuses

**Protection:**
IP 22 (indoor units) and IP65 (outdoor units: 821 and 831)

**Temperature range:**
-15 – +55 C cencius.

# DET NORSKE VERITAS

## TYPE APPROVAL CERTIFICATE

CERTIFICATE NO. **A-12238**

This is to certify that the
**Bridge Navigational Watch Alarm System (BNWAS)**

with type designation(s)
**BW-800**

Manufactured by
**UNI-SAFE Electronics AS**
**KØBENHAVN, Denmark**

is found to comply with
IMO Res. MSC.128(75) Performance Standards for a Bridge Navigational Watch Alarm System (BNWAS)
IMO Resolution MSC 191(79)
IMO Res. A.694(17) General requirements for shipborne radio equipment forming part of the global maritime distress and safety system (GMDSS) and for electronic navigational aids
IMO Resolution A. 830 (19), Code on Alarms and Indicators, 1995
Det Norske Veritas' Rules for Classification of Ships

Application
**See page 2.**

**Høvik, 2011-03-04**
for **Det Norske Veritas AS**

**Frode Brattum**
**Head of Section**

DNV local office:
**Copenhagen**

This Certificate is valid until
**2014-12-31**

**Roger Lauritsen**
**Surveyor**

## Product description

See Appendix.
*For latest revision of the Appendix, see* ***http://exchange.dnv.com/tari***

## Application/Limitation

- Installation to be performed according to the manufactures Product Manual.
- BW-800 may fulfil the additional DNV requirements for BNWAS uses onboard ships with NAUT notifcations, depending of system configuration and installation.

## Type Approval documentation

See Appendix.

## Tests carried out

- Performance testing, IEC 62616 (2010)
- Environmental testing, IEC 60945 (2002)
- Serial interface testing, IEC 61162 (2010)
- Presentation of Navigation information, IEC 62288 (2008)

## Marking of product

The Manufacturer and Type Designation to be applied to the equipment in a clearly visible location and in addition the equipment shall be marked with serial number, safe distance to magnetic compass, power consumption and/or supply voltage

## Certificate Retention Survey

A retention survey is to be performed at least once every second year, and again upon renewal of this certificate.
The scope of the retention/renewal survey is to verify that the production quality conditions stipulated for the type approval are complied with and that no alterations are made to the product design or its components and/or materials without appraisal by the Society

# APPENDIX REV. NO. 1 (Page 1 of 1)

## Product description

BW-800 consisting of the following component:

| Hardware modules: | Designation | SW ver. |
|---|---|---|
| • Bridge Watch main unit | 800 | 1.x |
| • Bridge Watch Reset unit | 801 | |
| • Bridge Watch Alarm unit | 802 | |
| • Bridge Watch Backup Officer selector unit | 803 | |
| • Dual Motion Sensor | 805 | |

## Type Approval documentation

| Doc. ID. | Title |
|---|---|
| DANAK-1910566 | Test Report, Delta |
| 16. Feb. 2010 | BW-800 Performance Test report |
| 2010 version 1A | Instruction and installation manual for BNWAS BW-800 |
| E10089.00 | Test Report, Nemko. |

Place and date
Høvik, 2011-03-04

Roger Lauritsen

END OF CERTIFICATE