



AMI MARINE (UK) LTD
BRIDGE NAVIGATIONAL WATCH ALARM SYSTEM
(BNWAS)

Operation Manual

KW810

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Document Revision	Date	Modification Number (where applicable) Brief Record of Change and Reason for Change
Iss01 Rev01	14.07.11	First Issue
Iss01 Rev02	10.08.11	Added Duty Officer Switch
Iss01 Rev03	21.10.11	Added SW1,2 & 3 functions
Iss01 Rev04	24.11.11	Removal of redundant wording
Iss01 Rev05	20.03.14	Change of address

NOTE:

All alterations must be verified by re-authorisation and approval of the complete document.

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IMPORTANT WARNINGS



**DANGER: HIGH VOLTAGE!
RISK OF ELECTRICAL SHOCK!**

This unit has a high voltage source inside.
Disconnect from the power before removing protective covers.
DO NOT remove the covers while the unit is switched on.
12 Volt DC electrical power on external units.

NOTICE

Compass safe distance is 1 meter.

NOTICE

No user serviceable parts inside, servicing only by properly qualified and certified technical staff.

NOTICE

This manual is for informational use only, and may be changed without notice. This manual should not be construed as a commitment of AMI Marine (UK) Ltd. Under no circumstances does AMI Marine (UK) Ltd assume any responsibility or liability for any errors or inaccuracies that may appear in this document. The equipment should only be used for the purposes intended by the manufacturer; any deviation from this will void the warranty of the product.

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Indications and Operation:

Monitor and Alert Panel (MAP):

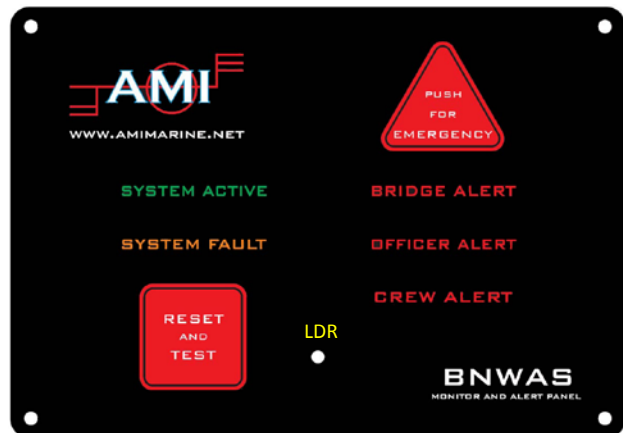
Controls:

RESET AND TEST Touch Pad.

PUSH FOR EMERGENCY Touch Pad.

Visual and Audible Indications:

- SYSTEM ACTIVE = Timer is activated.
- SYSTEM FAULT = Fault detected.
- BRIDGE ALERT = 1st Stage Alarm.
- OFFICER ALERT = 2nd Stage Alarm.
- CREW ALERT = 3rd Stage Alarm.
- Audible alarm for all 3 stages of alarm.
- Audible alarm for system fault = a 1 second beep every 3 seconds.
- Both 'RESET and TEST' and 'PUSH for EMERGENCY' pads are illuminated when power applied.
- Night Illumination level controlled by the light sensor LDR.



BRIDGE ALERT, OFFICER ALERT and CREW ALERT:

These are cancelled and reset by the PIR detecting movement in the bridge area, or by pressing the RESET AND TEST pad on the Monitor and Alert Panel (MAP) or the WATCH ALERT RESET pad on the Remote Acknowledge Panel (RAP).

Pressing the RESET AND TEST pad on the MAP or the RESET pads on the RAPs will initiate a quick beep on all bridge units to acknowledge the action. May also briefly illuminate.

SYSTEM FAULT:

The alert can be muted by pressing the RESET AND TEST pad on the MAP. The SYSTEM FAULT will continue to be illuminated until the fault is cleared.

EMERGENCY CALL:

Press and hold the PUSH FOR EMERGENCY pad for a minimum of 1.5 seconds. This will initiate the alarm sequence at the OFFICER ALERT stage but disables the PIR, and then proceeding as per the normal time line sequence.

Note! That only by pressing the RESET AND TEST pad on the MAP or the WATCH ALERT RESET pad on the RAP will cancel the emergency call as the PIR will have been disabled.

BRIDGE ALERT TEST:

Press the RESET AND TEST pad for a minimum of 1.5 seconds. The BRIDGE ALERT is initiated for as long as the touch pad is held pressed. SYSTEM ACTIVE & SYSTEM FAULT indications are also lit. The OFFICER ALERT and CREW ALERT are temporarily disabled to prevent any alarm off the bridge.

Note! The sensitivity of the RESET AND TEST pad is not as sensitive as the RAP units. This is to reduce the chance of an accidental reset of an emergency call.

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Remote Alert Panel (RAP):

Controls:

WATCH ALERT RESET Touch Pad.

Visual and Audible Indications:

- WATCH ALERT RESET pad is dimly illuminated when power applied.
- Visual indication for all 3 stages.
- Audible alarm for all 3 stages of alarm.
- Night Illumination level controlled by light sensor LDR on the MAP.



BRIDGE ALERT, OFFICER ALERT and CREW ALERT:

These can also be acknowledged and reset by pressing the WATCH ALERT RESET pad on the RAP.

During the dormant period pressing the WATCH ALERT RESET pad on the RAP will briefly illuminate WATCH ALERT RESET pad to acknowledge the action.

Duty Officer Selector (DOS):

Controls:

DUTY OFFICER SELECTOR Touch Pad.

Visual Indications:

- On power up will rotate touch pads to test the illumination then defaulting to the Captain.
- Selected Officer will be illuminated.

DUTY OFFICER:

The duty officer will receive an alert at the 2nd stage and all the non-selected officers will then receive the alert at the 3rd stage.



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Watch Alert Panel (WAP) 2nd & 3rd Stage Alarms:

Controls:

None

Visual and Audible Indications Only:

- SYSTEM ACTIVE = Timer is activated.
- WATCH ALERT = 2nd or 3rd Stage Watch Alarm.
- Audible alarm for 2nd or 3rd Stage Watch Alarm.



WATCH ALERT:

This can only be acknowledged and reset by attending the bridge and pressing the RESET AND TEST pad on the Monitor and Alert Panel (MAP) or the WATCH ALERT RESET pad on the RAP.

PIR Motion Detector:

Visual Indications only if SW-2 is set to ON:

The dual colour LED is used to signal various alarm and trouble messages.

None: No detection

Flashing green: PIR walk-test detection.

Steady red (5 s): Motion detection

Flashing red and green (alternately): Initial warm-up routine (stops 30 seconds after power up).

Note! *If the LED maintains alternate red and green flashing beyond the warm-up period, a malfunction has been diagnosed. Replace the unit without delay.*

Max. Coverage: 12 m (40 ft.) diagonal size / 90°

Mass Immunity: Immune to objects weighing up to 36 kg (80 lb.)



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Operation MEU:

Once the MEU has been configured the cover and padlock in place the Captain is to switch the system into the required MODE and remove both the padlock and MODE selection keys and keep them in a secure place to prevent any unauthorised changes or tampering.

Key Switch Position:

- OFF - SYSTEM ACTIVE is off but the EMERGENCY CALL facility still functions.
- AUTO - BNWAS in standby the SYSTEM ACTIVE will lazy flash, 6 seconds on and 2 seconds off.
- AUTO - BNWAS is active then SYSTEM ACTIVE will be permanently lit.
- MAN - In manual the SYSTEM ACTIVE will be permanently lit.

Note! SYSTEM ACTIVE indications are found on the MAP and WAP units.



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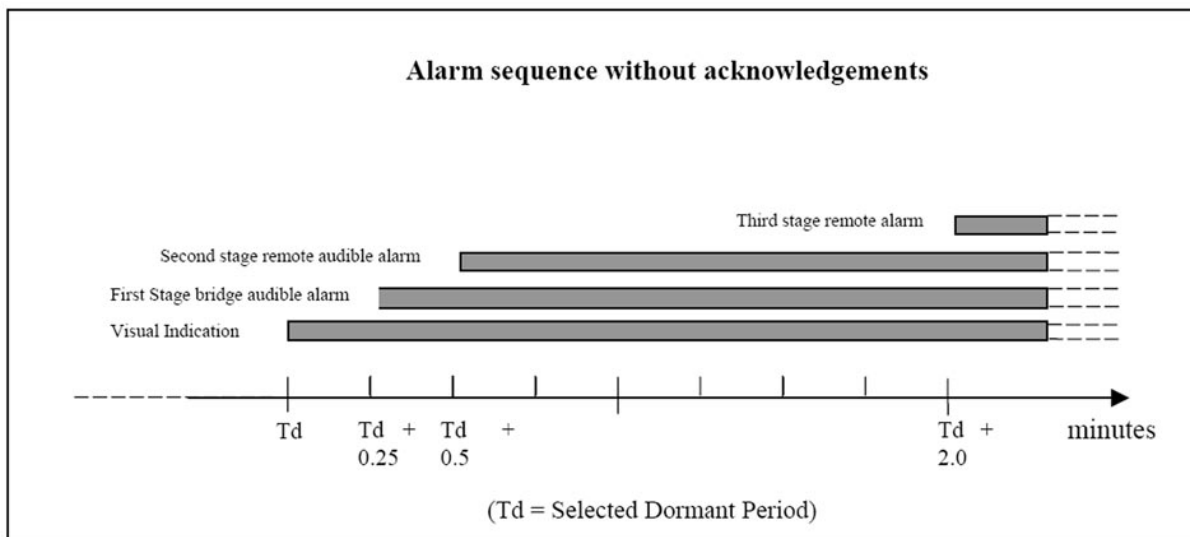
ALERT sequence without Acknowledgements:

Once operational, the Bridge Navigational Watch Alarm System (BNWAS) will remain dormant for a period of between 3 and 12 min (Td).

At the end of this dormant period (Td), the BNWAS will initiate a visual indication only on the bridge i.e. the RESET AND TEST pad and the BRIDGE ALERT indication will flash on and off for 15 seconds. If within this 15 second period (Td +15sec) the BNWAS is not acknowledged, the system will additionally sound the 1st stage audible alarm on the bridge only for a further 15 seconds.

If the 1st stage alarm is not acknowledged (Td +30sec), the BNWAS will advance to the 2nd stage remote alarm condition where the OFFICER ALERT/WATCH ALERT which is an audible and visual alarm in the designated Officer's and/or Master's location.

If the 2nd stage alarm is not acknowledged (Td +120/210sec), the BNWAS will advance further and go into the 3rd stage remote alarm condition where the CREW ALERT/WATCH ALERT which is an audible and visual alarm at locations where authorised crew members can be alerted to take corrective actions.



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Unacknowledged Alarm Transfer sequence:

BNWAS detects an UNACKNOWLEDGED alarm, and ENABLEs the TRANSFER.

e.g. the ARPA gives a collision alarm and it is not investigated and acknowledged within 30 seconds.

This is passed to the BNWAS for transfer to the Captain.

Other critical navigational equipment that may be considered for Unacknowledged Alarm transfer is the Autopilot, Echo Sounder, GPS and Gyro etc.

When an unacknowledged alarm arrives and is transferred, the EMERGENCY Call is immediately initiated and the system goes straight into the alarm sequence at the 2nd stage or the OFFICER ALERT (Td +30sec).

Pressing a BNWAS RESET touch pad on the MAP or RAP clears the emergency request mutes the audible alarm & disables further transfers.

This disabling is necessary to prevent triggering the emergency call whilst the bridge is manned.

The BRIDGE ALERT on the MAP and RAP will continue to give the visible alert until all alarms are acknowledged at their source equipment.

If a new unacknowledged alarm arrives whilst transfer is disabled the new alarm will not trigger a new BNWAS audible alert as a member of the ships staff is/are in attendance on the bridge.

In the event of the NMEA data flow stopping by the source equipment being switched off a timeout of 32 seconds is used to clear that particular alarm status.

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Fault Conditions:

PIR Fault:

Under normal operational conditions the PIR will keep the system in a non-alarm condition. Should any of the PIR fail or there is a break in the cable, after a 20 minute timeout period will cause the system to give a SYSTEM FAULT.

Loss of SOG from the GPS:

If the SOG is enabled to activate the system when in AUTO mode then after a 25 second time out after the loss of the \$GPVTG data it will cause the system to give a SYSTEM FAULT.

RESET Touch Pads:

If any of the RESET touch pads are constantly closed or shorted then after a 20 minute timeout period will cause the system to give a SYSTEM FAULT.

Low Battery and Loss of AC:

The BNWAS is powered by the ships main power supply.

The system is battery backed and in the event of a power loss will indicate a SYSTEM FAULT and will also maintain the EMERGENCY CALL facility for a minimum of 6 hours.

Wire Security Loop:

If the Wire Security Loop is cut to remove the padlock the BNWAS will initiate a SYSTEM FAULT and also tag the Tamper field in the NMEA sentence for VDR recording.

Unacknowledged Alarm Transfer Unit (A.T.I.) not detected:

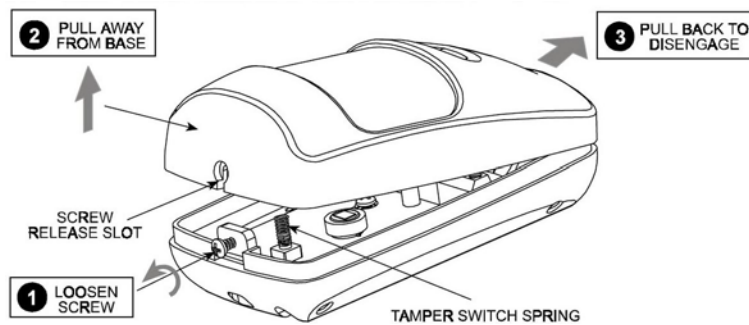
If the ATI is not detected the BNWAS will initiate a SYSTEM FAULT.

For further details of any system faults please contact technical@amimarine.net

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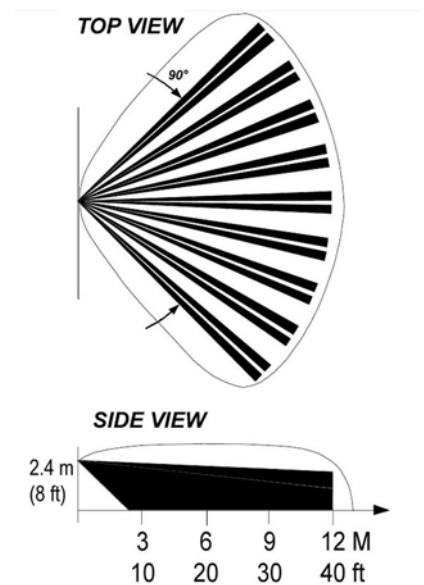
PIR Detection Walk Test:

Remove the front cover as shown below.



Cover Removal

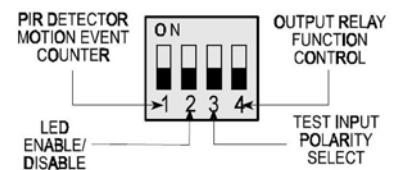
Rotate the MW RANGE control fully counter-clockwise to MIN. Verify that DIP switch SW-2 is set to ON (the LED is enabled). Install the front cover in place. Walk across the detector's field of view in different directions, at various distances from the detector, and verify proper detection throughout the detector's coverage area (the red light glows for 1.3 to 5 seconds). When done, remove the cover and set DIP switch SW-2 to OFF to prevent any possible pollution of the officer's night vision. Remount the cover and fasten it to the base using the small screw at the bottom.



Mode Selector

The DIP switch mode selector is mounted on the unit's PCB.

SW-1	OFF	One motion event trips the PIR
	ON	Two motion events trip the PIR
SW-2	OFF	The LED is disabled. <i>Recommended for night vision.</i>
	ON	The LED is enabled permanently.
SW-3	OFF	Not used and to be left in the OFF position.
	ON	Not used and to be left in the OFF position.
SW-4	OFF	Output relay opens upon motion event.
	ON	Output relay opens upon motion event and also when a PIR fault is detected.



Recommended positions

SW-1	ON	Two motion events trip the PIR.
SW-2	OFF	The LEDs are disabled. <i>Recommended for night vision.</i>
SW-3	OFF	Not used and to be left in the OFF position.
SW-4	ON	Output relay opens upon motion event and also when a PIR fault is detected.

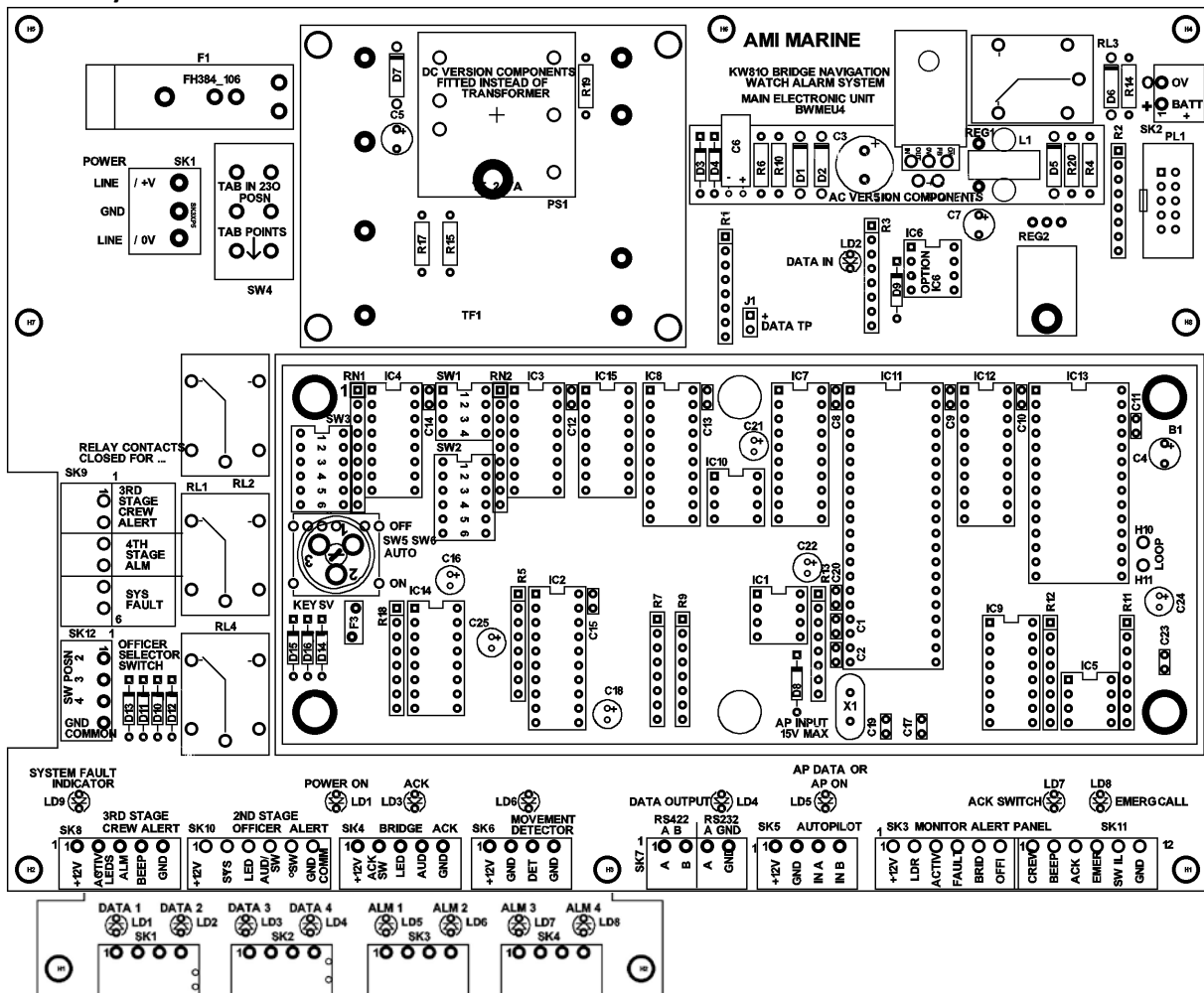
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Visual Indications on MEU and ATI PCBs:

- LD1 - AC Power ON.
- LD2 - GPS & Navigation Equipment Unacknowledged Alarms NMEA input from the A.T.I.
- LD3 - Remote Acknowledged.
- LD4 - BNWAS Status and Alarm NMEA output.
- LD5 - Autopilot NMEA (including Unacknowledged Alarm) / AP engaged input.
- LD6 - PIR Activity.
- LD7 - Emergency Call.
- LD8 - Main Acknowledged.
- LD9 - System Fault.

On the A.T.I. (Alarm Transfer Interface) DATA 1, 2, 3 & 4 LD1 to 4 and ALM 1, 2, 3 & 4 LD5 to 8.

Board Layout: MAIN board with the A.T.I. beneath.



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Controls on the MEU PCB:

SW5 - OFF/MANUAL ON/AUTO ON Key Switch.

- OFF disables the BNWAS but still allows the Emergency Call function.
- MANUAL ON selects permanent active, not waiting for autopilot engagement or GPS to indicate ship is under way.
- AUTO ON the system will only be active if autopilot is engaged or GPS gives speed which indicates the vessel is underway.

DIL Switch To Select functions: (These switches are under the black plastic cover)

SW1-1 - 0 = Very low level illumination for night vision preference.

SW1-1 - 1 = Low level illumination for night vision.

SW1-2, 3, 4 - sets the Dormant Period before stage 1 alert, in minutes. (Ref 4.1.2.1)

X000	X001	X010	X011	X100	X101	X110	X111
3 Min	4 Min	5 Min	6 Min	7 Min	8 Min	10 Min	12 Min

SW2-1 - 0 = Normal. The delay from 2nd to 3rd Stage alert as set by **SW2-2, 3, 4**

SW2-1 - 1 = Removes the delay from 2nd to 3rd Stage so both stages will sound together.

SW2-2, 3 & 4 - sets the delay in seconds from 2nd to 3rd Stage alert. (Ref 4.1.2.5 & 7)

SW2-5 - Not used. Future Options

SW2-6 - 0 = Test & Demo mode with 15 secs dormant period 1 = Normal operation.

X000XX	X001XX	X010XX	X011XX	X100XX	X101XX	X110XX	X111XX
90 Sec	100 Sec	110 Sec	120 Sec	130 Sec	140 Sec	160 Sec	180 Sec

SW3

- | | |
|---|---|
| <ol style="list-style-type: none"> 1. 0 = No AP or Dry Contact for AP engaged. 2. 0 = Disable SOG to activate BNWAS. 3. 0 = Ignore PIR input 4. 0 = Normal Beep (<i>Morse B</i>) 5. 0 = Full BNWAS function when power fails. 6. 0 = 4 way Officer Alert interface installed. | <ol style="list-style-type: none"> 1 = Only use if Autopilot NMEA data available. 1 = Use SOG to activate BNWAS in AUTO. 1 = Use PIR detector to reset timer. 1 = Alternate Beep characteristic (<i>Morse Z</i>). 1 = Emergency Call only when power fails. 1 = All Officers Alerted on 2nd stage alert. |
|---|---|