GUARDIAN

SOLO

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User Manual – ECR Version

MARINE SAFETY SYSTEMS

C-VIGIL Ltd : marine, Digital House, Foxwood Road, Chesterfield, Derbyshire S41 9RF, UK.

Switchboard: +44 (0)8432 898 464
Dir Tel: +44 (0)1246 269 469 -:- Dir Fax: +44 (0)1246 351 288
E: info@bridge-watch.co.uk -:- W: www.bridge-watch.co.uk

Company Registration No: 04407624 -:- VAT No: 804 6004 68 -:- ISO 9001 No: GB2001654

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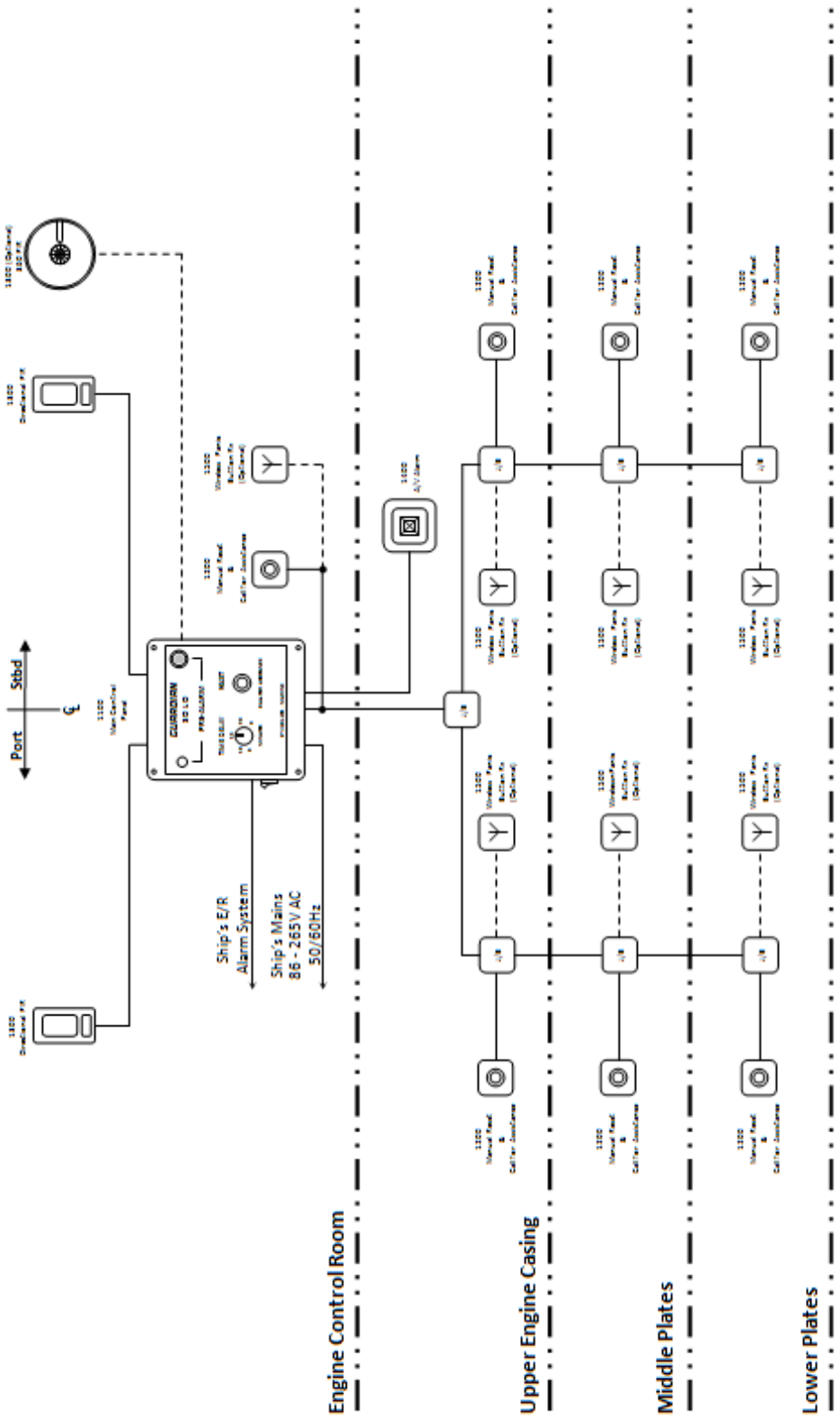
Specifications

STANDARD SUPPLY	
CONTROL PANEL	
SIZE	241MM X 161MM X 73MM
POWER I/P	SHIPS AC : 86 - 265V AC 50/60HZ
POWER O/P	12V DC
I/O	N/O CONTACTS
DORMANT TIME PERIOD	0 / 10 / 15 / 20 MINUTES
MANUAL RESET / CALL PANEL	
SIZE	120MM X 90MM X 50MM
POWER	12V DC
WARNING DEVICES	
MAIN ALARM	86MM X 86MM X 83MM
	12V DC
MOTION DETECTORS	
DIRECTIONAL PIR	80MM X 48MM X 38MM
	12V DC
OPTIONAL SUPPLY	
MOTION DETECTORS	
360^{O} PIR	135MM DIA X 25MM
	12V DC
WIRELESSS RESET / PANIC BUTTON	
TRANSMITTER	65MM X 35MM X 15MM
	3V DC BATTERY
RECEIVER	135MM X 95MM X 45MM
	12V DC

Typical Overview



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1. General Description

1.1 Introduction

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The ECR version is intended to supplement existing "dead-man" alarm system required for UMS operations.

It is often the case that the duty engineer will find themselves alone in the engine room for protracted periods i.e. during standby when the ship is under pilotage transiting confined waters or undertaking general nightly duties.

Whilst the "dead-man" alarm is available, experience shows that it is rarely used due to the perceived inconvenience of having to press a reset at pre-determined intervals.

GUARDIAN : SOLO protects the engineers whilst in the ECR by detecting their movement using PIR motion sensors. Should an engineer remain motionless, through incapacity or otherwise, beyond the set time period a pre-alarm is activated. Failure to respond to this warning result in the main alarm being activated, plus the engineer's call system alerts off duty engineers to a possible problem in the ECR.

When outside the ECR the engineers have access to manual reset buttons and/or optional wireless reset / panic fey fob transmitters situated around the engine room.

The manual reset buttons and wireless reset / panic buttons are also programmed to be used as "Call for Assistance". One long press activates the main alarm and the engineer's call system.

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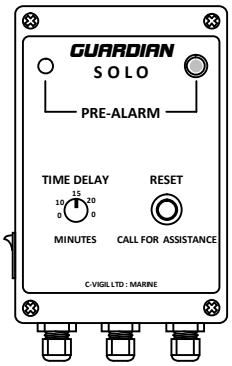
2. System Components

2.1 Main Control Unit



MCU – fitted within the ECR in a position allowing easy access to duty engineers. The MCU contains: -

Pre-Alarm – flashing yellow LED & pulsing 80dB sounder

Time Period Selector – rotary selector switch

Reset / Call for Assistance – short press (<3 secs) resets dormant period timer. Long press (>3 secs) Call for Assistance

2.2 Manual Reset Panel

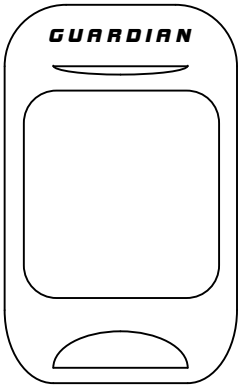
The manual reset panels would be installed at various convenient positions around the normal working areas of the E/R.

Reset / Call for Assistance:

Short press (< 3 secs) resets dormant period timer.

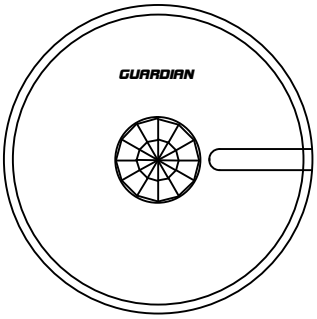
Long press (> 3 secs) activates “Call for Assistance”

2.3 Directional PIRs



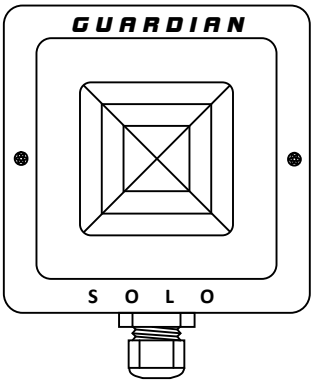
Directional PIRs to be installed in the ECR to cover the normal operational areas of the duty engineers.

2.4 360^{O} PIR (Optional)



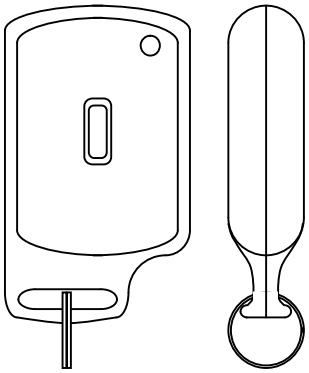
360^{O} PIR to be installed to cover areas that might be masked off from the directional PIRs. Or selected in place of the directional PIRs in smaller ECRs.

2.5 Main Alarm



Main A/V alarm to be installed in the main E/R.

2.6 Wireless Reset / Panic Button (Optional)



Wireless key fob transmitter - Tx.

Short press (< 3 secs) resets dormant period timer.

Long press (> 3 secs) activates “Call for Assistance”

Wireless key fob receiver - Rx.

To be installed at various convenient positions around the normal working areas of the E/R.

Reset / Call for Assistance:

Short press (< 3 secs) resets dormant period timer.

Long press (> 3 secs) activates “Call for Assistance”

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3. System Functions

3.1 Dormant Time Period

The dormant time period is set through the main control panel selector switch (see Fig 1).

The pre-set ranges are: -

0 - 10 mins

0 - 15 mins

0 - 20 mins

If no reset signal is registered, either automatic or manual, at the end of the dormant time period the staged alarms are activated.

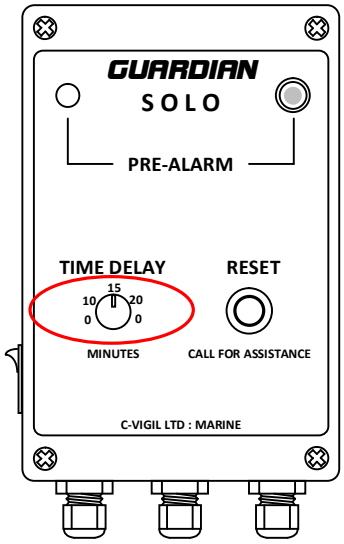

Figure 1 MCU Dormant Time Period Selector

3.2 Staged Alarms

The stage alarms are activated at the end of the dormant time period (see Fig 2)

3.2.1 Pre Alarm

Audible / Visual alarm at the local MCU panel (within the ECR)

3.2.2 Main Alarm

Audible / Visual alarm - located in the main engine room

3.2.3 Remote Alarm System

NO or NC contact to ships alarm system

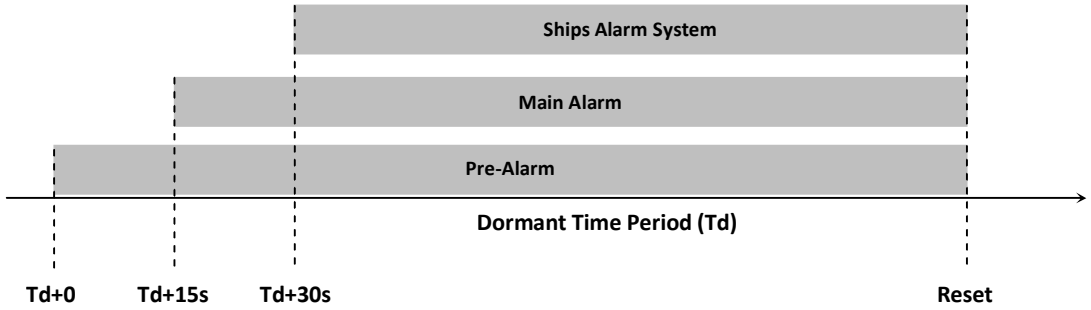

Figure 2 Timing Diagram

3.3 Reset Methods

3.3.1 Automatic

The dormant period timer is reset every time the PIR motion detectors register movement of the duty engineer(s).

3.3.2 Manual

At any time the dormant period timer can be reset by pressing any of the manual reset buttons, on the MCU or in the E/R, or by the optional wireless reset / panic button key fob transmitter.

3.4 Warning Devices

3.4.1 Pre-Alarm

At the end of the dormant time period a pre-alarm is activated to alert the duty engineer that no movement has been detected. If this alert remains unacknowledged for longer than 15 seconds the main alarm is then activated.

3.4.2 Main Alarm

At the end of the pre-alarm period the main E/R alarm is activated.

3.4.3 Remote Alarm System

15 seconds after the main alarm is activated a signal is sent to the ships alarm system. This is in the form of a NO or NC closed contact. The ships alarm system may be the existing “dead-man” alarm, the ships main alarm plant or an engineers call system.

3.5 Call for Assistance

Any of the manual reset buttons or the optional wireless reset / panic buttons can also be used to initiate the “Call for Assistance” function. Press the button for longer than 3 seconds to activate. On the manual reset panel the blue LED starts to flash, confirming the action.

3.6 Function Testing

To ensure continued satisfactory operation the system should be tested periodically.
Whilst pressing the MCU reset button turn the power switch on. The system will test all the staged alarms in turn, this takes approx 30 secs. The system resets when the final stage has been tested. To cancel the test before completion – turn the MCU power off.

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4. Operation

4.1 Power On

Ensure the system is plugged / wired into a mains supply (86 – 265V AC).
Switch the system on using the illuminated on/off switch on the side of the MCU (see Fig 3).
The switch should be lit – red.
After approx. 5 secs the system powers up and the pre-alarm is activated for 0.5 seconds.

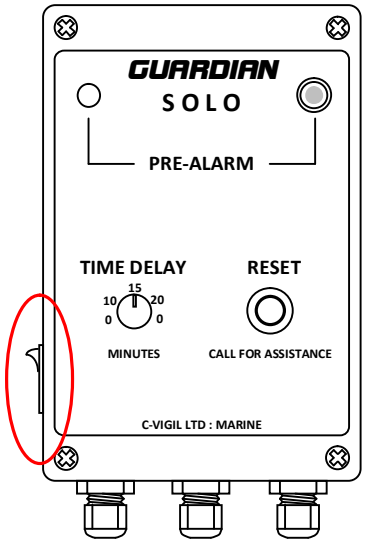

Figure 3 MCU Illuminated On/Off Switch

4.2 Dormant Time Period Selection

For optimum protection the timer should be set as low as practicable i.e. on duty in the ECR set the timer to 10 mins, required in the main E/R increase timer to 20 mins, etc.

The dormant period is selected at the MCU (see Fig 4).

The timer starts when a time period is selected.

Changing time periods resets the timer to the beginning.

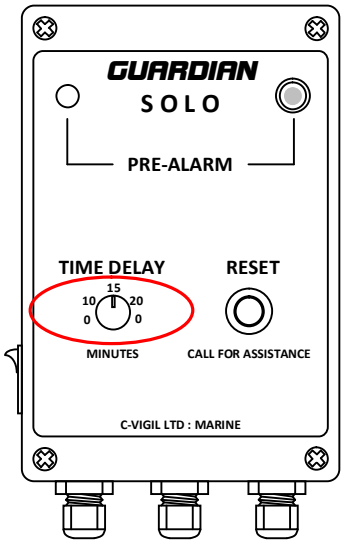

Figure 4 MCU Dormant Time Period Selector

4.3 Reset

Every time movement is detected, by the PIRs, the dormant period timer is reset, provided the duty engineer keeps moving everything remains normal. Should the duty engineer become incapacitated then the staged alarms will be activated at the end of the selected dormant time period.

If the duty engineer is out of the ECR the timer can still be reset by using the manual reset buttons or by using the optional wireless reset / panic button key fob transmitters.

The E/R manual reset buttons will start flashing at the end of the dormant time period, if this goes unnoticed then the main alarm is activated for 15 secs. The duty engineer should then reset the system before the ships alarm is activated.

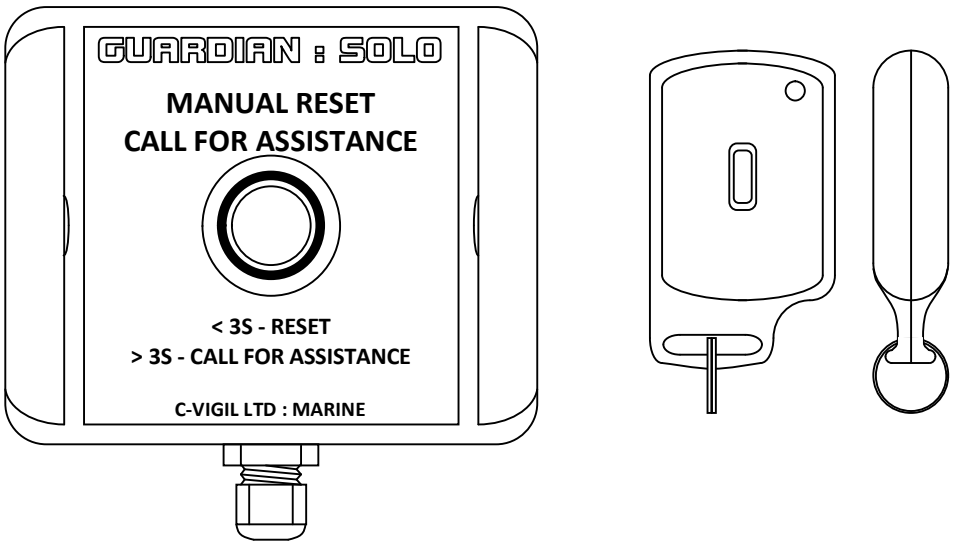

Figure 5 Manual Reset

4.4 Call for Assistance

To call for assistance the duty engineers has only to press and hold (>3s) any of the manual reset buttons (see Fig 6) or by using the wireless reset panic button key fob transmitters.

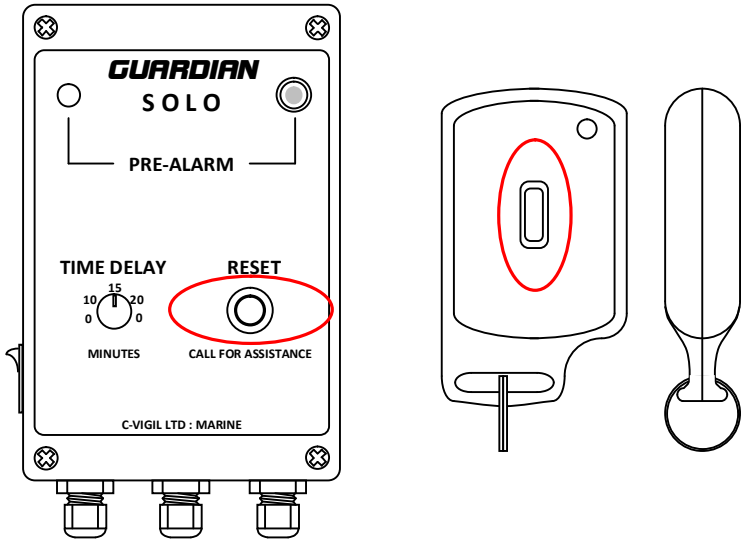

Figure 6 Call for Assistance

4.5 Alarm Acknowledgement

The pre-alarm and the stage alarms can be reset by movement detection or by manual operation of any of the reset buttons (see Fig 7) or by using the wireless reset panic button key fob transmitters.

The dormant timer will be reset and continue to operate till turned off

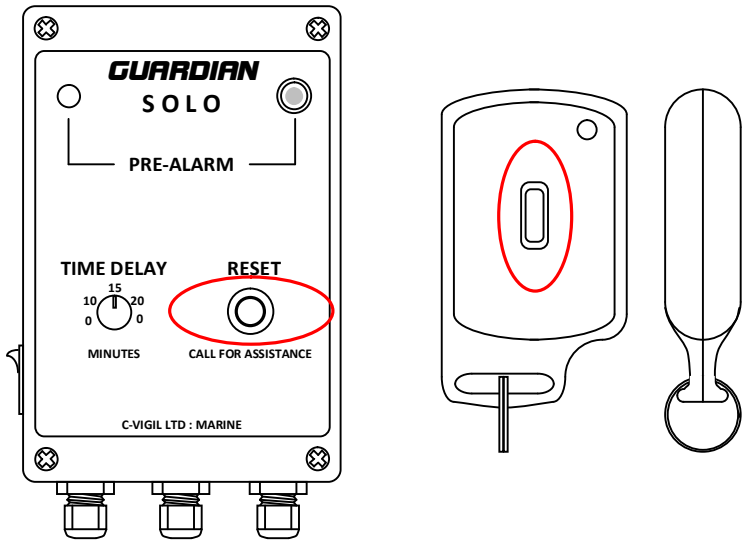

Figure 7 Alarm Reset / Acknowledge

4.6 Stand-by

Set the dormant time period selector switch to 0 (see Fig 8).

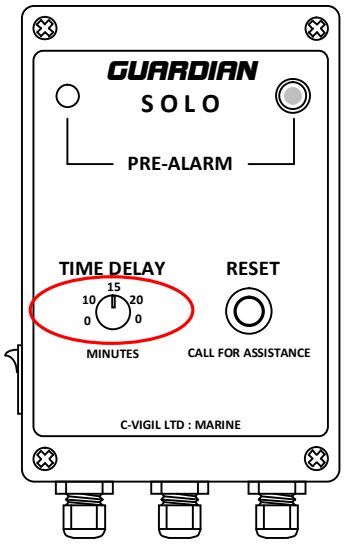

Figure 8 MCU Stand-by Selector

4.7 Power Off

Turn the MCU on/off switch to off (see Fig 9).
The illuminated on/off switch will now be dark.

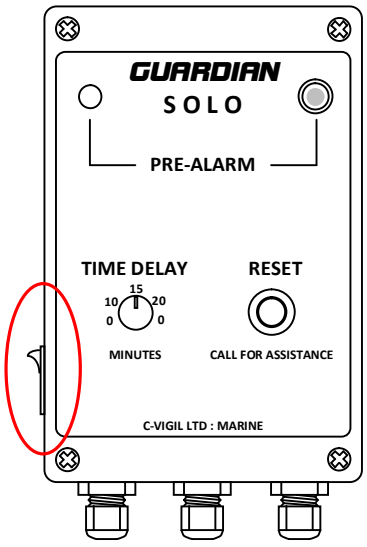

Figure 9 MCU On/Off Illuminated Switch

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5. Periodic Testing

The system runs a brief self test on the pre-alarm every time the MCU is switched on, this proves the MCU has powered up correctly and the program has started normally.

To test all the staged alarms and monitor correct time intervals, etc it is advisable to carry out periodic function testing.

Switch the MCU on whilst pressing the reset button (see Fig 10)

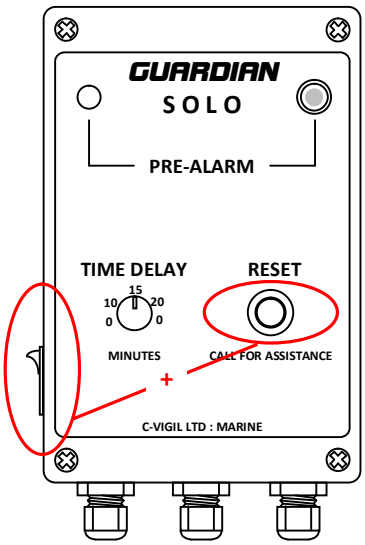

Figure 10 MCU Start Function Test

C-VIGIL Ltd : marine (Bridge-Watch)
Digital House, Peak Business Park,
Foxwood Rd, Chesterfield,
Derbyshire, S41 9RF, UK.
+44 (0)8432 898 464 (Switchboard)
+44 (0)1246 269 469 (Direct Tel)
+44 (0)1246 351 288 (Direct Fax)

support@bridge-watch.co.uk
www.bridge-watch.co.uk