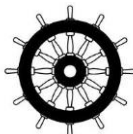


Manual

MS421B



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Safety Instructions

Important

Before starting with installation of the BNWAS, please read the important information below.

Qualification

The installation of the product detailed in this manual, can only be installed by a certified installation company, otherwise the warranty becomes void.

Caution:

Before starting with installing the BNWAS check if all ordered parts are present.

Disclaimer:

Marble Automation will not be responsible for any damage or loss of profit resulting from the use of this equipment.

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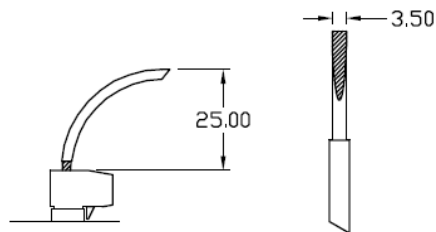
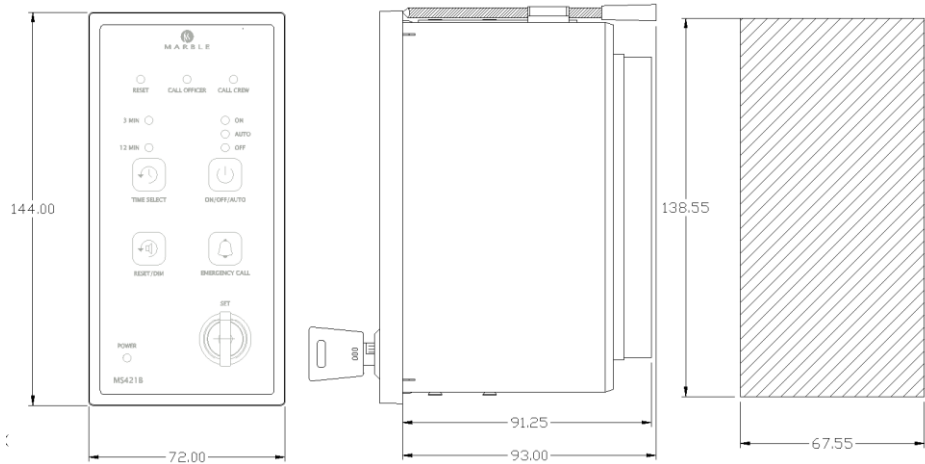
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1. Installation Manual MS421B

Mechanical Installation

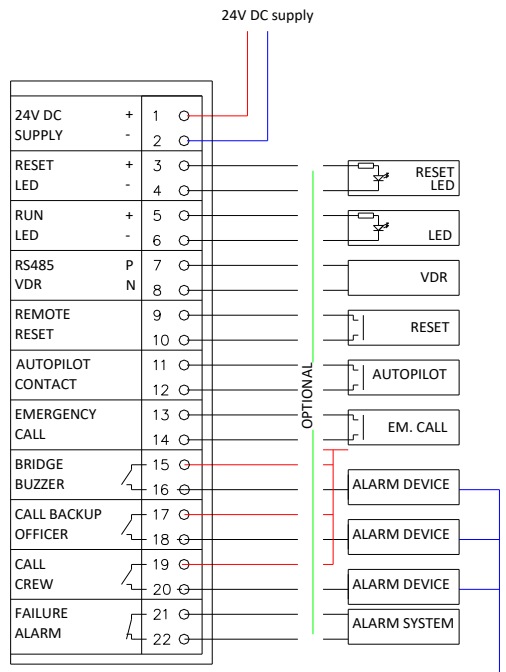
The MS421B BNWAS unit is specially designed for mounting in a switchboard or desk. The units can be mounted in the panel or desk with two mounting clips which are included. Beneath are the dimensions needed to mount the different units of the MS421B BNWAS.



Technical specifications

Description	Specification
Power supply	18-28 V DC
Max. current	180mA
Relay contacts	4
Transistor outputs	2
Relay switching current	30 Volt DC – 10A
	250 Volt AC – 10A
	30 Volt DC – 300 Watt
	250 Volt AC – 2500 Watt
Transistor current	24 Volt DC – 50mA
	24 Volt DC – 12 Watt

Electrical Installation



Data communication

The MS421B is equipped with a RS-485 interface. This interface sends NEMA 0183 messages intended for the VDR.

Messages are sent when the MS421B is 'on event' and every 10 seconds.

Description	Specification
Protocol	NMEA-0183 (IEC 61162-1)
Communication Interface	RS-485
Baudrate	4800
Databits	8
Parity	None
Stopbits	1
Signal	On event and every 10 seconds.

NMEA message: \$BNALR,,000,A,A,C1=MAN;03;C3=0<CR><LF>

Description	Specification
000	Alarm address (always 000)
A/V	A: Running time exceeded V: Running time not exceeded
A/V	A: Running time acknowledge V: Running time not acknowledge
C1	MAN: manual AUT: autopilot managed OFF: BNWAS switched off
C2	03: Running time 03 minutes selected 12: Running time 12 minutes selected
C3	0: Running time not exceeded 1: Running time exceeded 1 st stage 2: 2 nd stage (call officer) 3: 3 rd stage (call crew)

Configuring the MS421B

Configuration of the MS421B can be done with the pushbuttons at the front panel.

Configuration roadmap		
Step 1		
Place the key in vertical position.		
Step 2		
Adjust the running time with the button 'Time Select' and select 3 or 12 minutes.		
Step 3		
Select function.		
On	:	MS421B is activated manually
Auto	:	MS421B is linked at autopilot, activates when autopilot is turned on.
Off	:	MS421B is deactivated manually

Delay time setting of the 'Call Crew' function

This delay time can be configured with the 16-position switch (0-F) at the PCB behind the removable front panel. The time is configurable from 90 – 180 seconds, each step is 6 seconds. The default setting is 90 seconds (0).

Position	Seconds	Position	Seconds
0	90	8	138
1	96	9	144
2	102	A	150
3	108	B	156
4	114	C	162
5	120	D	168
6	126	E	174
7	132	F	180

2. User manual MS421B

Introduction

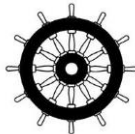
The Marble Automation MS421B is the main unit of the Bridge Navigational Watch Alarm System (BNWAS). The system is intended as security system for the officer in charge on the bridge and can be applied on all seagoing vessels. The main unit can be activated automatically or manual and has adjustable running times of 3 and 12 minutes.

The MS421B main unit is equipped with an serial communication interface providing status data to the Voyage Data Recorder (VDR).

The MS421B front LED's and backlight are dimmable.

The MS421B is type approved according to the current legislation for Bridge Nautical Watch Alarm Systems, as laid down by the IMO in resolution 128(75),

Solas 74 Convention as amended, Regulations V/18, V/19, IMO in resolution 128(75), MSC.1/Circ.1474, IMO Res. A.694(17), IMO Res. MSC.128(75), IMO Res. MSC.191(79), IMO Res. MSC.302(87), IEC 61162-1 : 2016, IEC 62288 Ed.2.0 (2014), IEC 60945 (2002) incl. /Corr.1 (2008), IEC 62616 (2010). Incl. Corr.1 (2012)



Operation

Restarting the timer of the MS421B

After activation of the MS421B a timer is started of 3 or 12 minutes, depending on the selected choice.

After passing the selected time, the LED 'Reset' will flash and the internal buzzer will give a short pre-alarm of halve second. After 15 seconds, the internal buzzer will pulsate continuously. At the same, time the relay contact of the bridge siren will be activated.

The officer in charge has 15 seconds to restart the running time of the MS421B with the button 'Reset Dim'. When the MS421B is not restarted by the officer in charge, the back-up officer will be alerted. The LED 'Call Officer' will flash. If the back-up officer not responds in the preset time of 90-180 seconds, the entire crew will be alerted by activating the general alarm. The LED 'Call Crew' will flash.

When the emergency call function or call officer stage is active the MS421B can only be reset by the reset button at the front panel.

Dim function: Push and hold the 'reset' button more than four seconds to dim the front panel LED's and the backlight.

Function of the “Emergency Call” button

Using the “Emergency Call” button, the MS421B will switch to “Call Officer” stage, without activating a pre-alarm of the internal buzzer. If the back-up officer not responds in the preset time of 90-180 seconds, the entire crew will be alerted by activating the general alarm. The LED ‘Call Crew’ will flash.

Deactivating internal buzzer

The internal buzzer of the MS421B can be deactivated by removing the jumper which is placed at the PCB. By removing the jumper, the contact will be interrupted if an alarm is coming in.

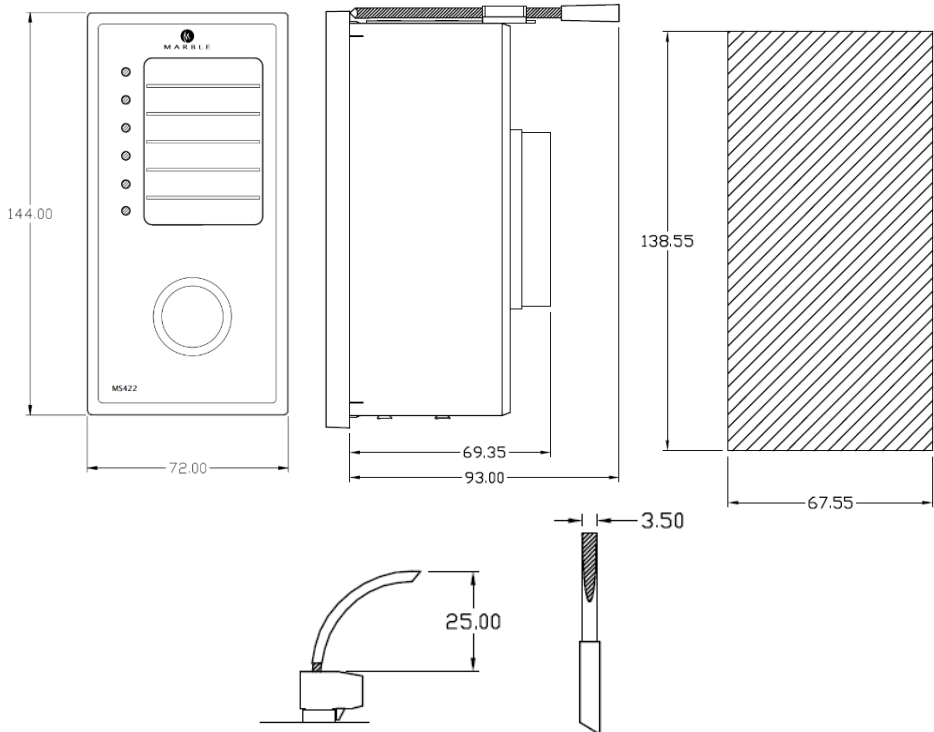


Maintenance

The MS421B unit is maintenance free. It is permitted to clean the front of the MS421B unit with a damp cloth.

3. Installation manual MS422

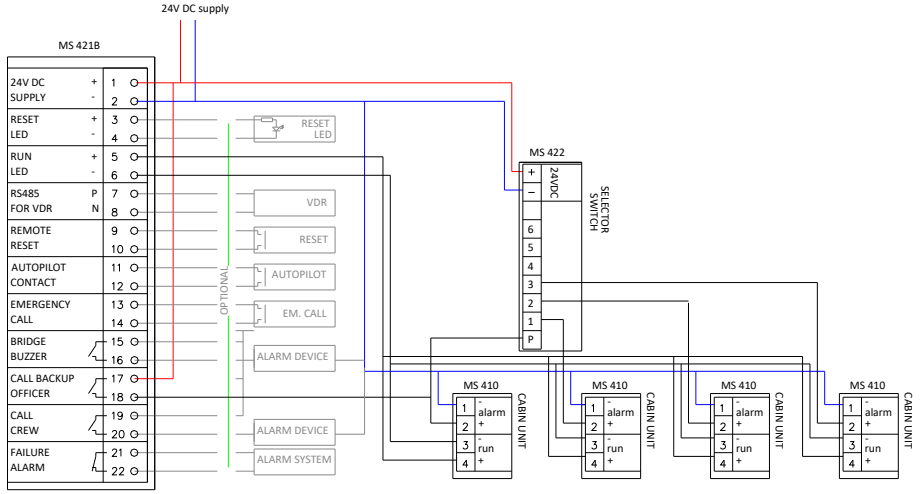
Dimensions



Technical specifications

Description	Specification
Power supply	18-28 V DC
Current LED's	10mA @ 24 V DC
Max. switch positions	6

Electrical installation



Consider using the MS430 Series connection board as described in chapter 5.9.

Configuring the MS422

It is also possible to configure less than six officers when this is desired. For this option, the following steps have to be performed.

Configuration roadmap
Step 1
Select the first position of the rotary switch
Step 2
Remove the black cap on top of the rotary using a small screw driver.
Step 3
Unscrew the nut, that the rotary switch comes off
Step 4
Unscrew the nut that is mounted on the front panel
Step 5
Remove the front panel and the mounting ring
Step 6
Remove the selection ring (default setting position 6) and place in desired position
Step 7
Repeat the steps in reverse order. Now configuration is done

For detailed instruction (with photo's) please visit our website www.marbleautomation.com
(See product info MS422 after login).

Note

An AutoCad template of the insert text of the MS422 is available at our website:
www.marbleautomation.com (first register and login on the website).

4. User manual MS422

Introduction

The MS422 is an optional unit for the MS421B BNWAS and this unit is used to select the back-up officer which is alarmed during emergency situations.

The six yellow LED's indicate which back-up officer is selected and ordered to the bridge when the MS421B reaches the 'Call Officer' stage.

Maintenance

The MS422 unit is maintenance free. It is permitted to clean the front of the MS422 unit with a damp cloth.

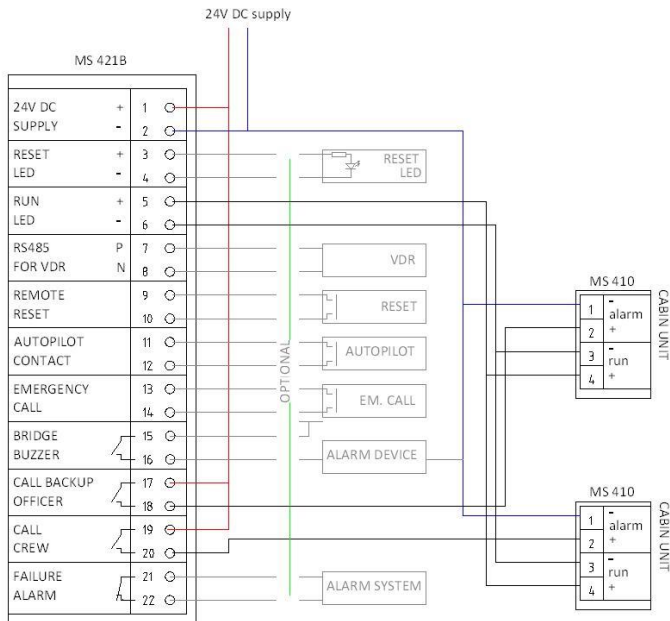
5. Installation manual MS410

The MS410 is available in a built-in version and a wall mount version.

Dimensions

Dimensions in mm	MS410	MS410 Wall mount
Height	96.6	105
Width	72.8	80
Panel cut-out	91.55 x 67.55	N.A.
Depth	Total 93	28

Electrical installation



Consider using the MS430 Series connection board as described in chapter 5.9.

Description	Specification
Power supply	18-28 V DC
Current run LED's	10mA by 24 V DC
Current Alarm LED and buzzer	30 mA by 24 V DC

6. User manual MS410

Operation

The MS410 unit is an extension of the MS421B BNWAS. The MS410 is intended as a substation for in the officers cabin or galley. The front panel has a green (left) and a red (right) LED. The green Led indicates that the timer (3/12 minutes) is running. The Red LED indicates - together with the internal buzzer - that the MS421B reached the stage 'Call Officer'.

Maintenance

The MS410 unit is maintenance free. It is permitted to clean the front of the MS410 unit with a damp cloth.



Do not use aggressive cleaning agents!

7. Installation manual MS411



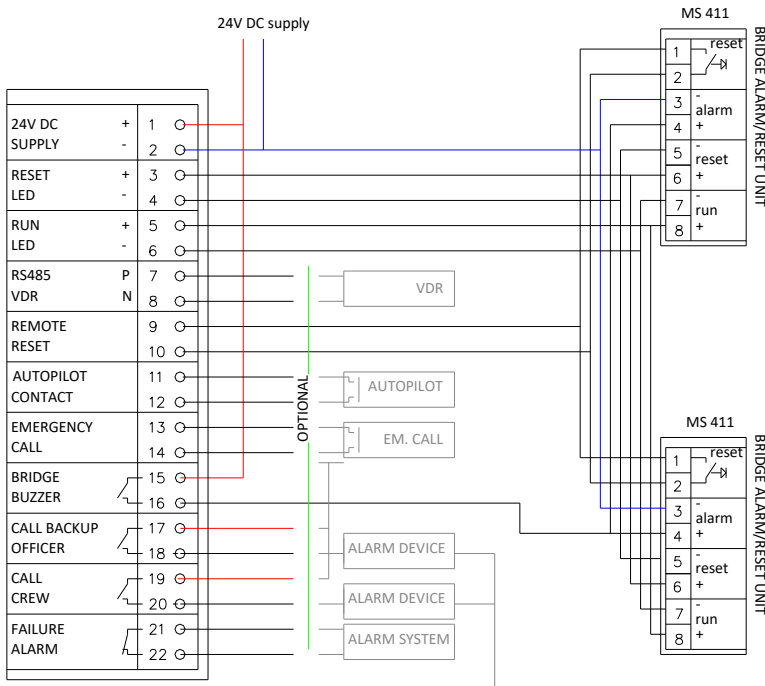
Description	Specification
Power supply	18-28 V DC
Current run LED's	10mA @ 24 V DC
Current Alarm LED and buzzer	30 mA @ 24 V DC

The MS411 is available in a built-in version and a wall mount version.

Dimensions

In mm	MS411	MS411 Wallmount	
Height	96.6	105	
Width	72.8	80	
Panel cut-out	91.55 x 67.55	N.A.	
Depth	Total 93	28	

Electrical installation



Consider using the MS430 Series connection board as described in chapter 5.9.

8. User manual MS411

Operation

The MS411 reset unit is an remote reset extension for the MS421B BNWAS. This unit is only allowed to be placed on the bridge (by regulations). The green LED indicates that the timer (3/12 minutes) is running. The red LED is flashing simultaneously with the reset LED of the MS421B main unit, announcing that the timer will exceed soon. The internal buzzer sounds simultaneously with the internal buzzer of the MS421B main unit. It indicates the back-up officer will be ordered to the bridge within 15 seconds.

When the reset button is pushed, the timer (3/12 minutes) of the MS421B will restart. It will also reset an 'Officer/Call Crew' alarm stage.

Maintenance

The MS411 unit is maintenance free. It is permitted to clean the front of the MS411 unit with a damp cloth.



Do not use aggressive cleaning agents!

9. Attachments

Marble Automation delivers also the following sub products for the BNWAS.

MS415 Outdoor wing reset unit

The MS415 is a watertight remote reset unit to be mounted on the bridge wings. The buzzer indicate that the 3/12 minute watch alarm timer has exceeded. By pressing the reset button on the MS415 unit the watch alarm timer will reset and recover bridge alarm/call officer/call crew stages. The pushbutton will also be illuminated when the alarm is activated.



MS450 Bezel for MS410 / 411

A bezel for the DIN housing with dimension 72x96 (WxH)



MS451 Bezel for MS421B / 422

A bezel for the DIN housing with dimension 72x144 (WxH)



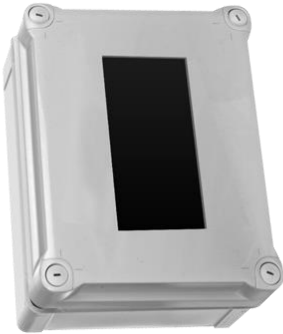
MS455 Wall mount box for MS410 / 411

A wall mount box for the DIN housing with dimension 72x96 (WxH)



MS456 Wall mount box for MS421B / 422

A wall mount box for the DIN housing with dimension 72x144 (WxH)



MS Horn



For drawings see our website www.marbleautomation.com (after login).

MS Horn beacon



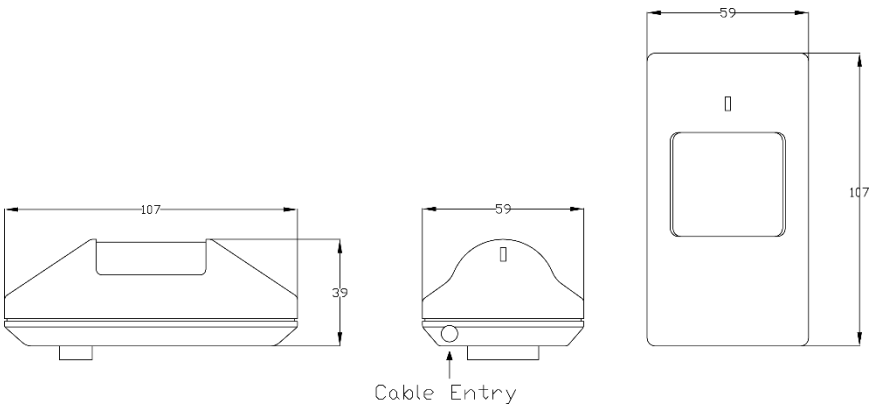
For drawings see our website www.marbleautomation.com (after login).

Description	Specification
Power supply	17 – 60 V DC
Current sounder	4 – 45 mA
Current beacon	5 mA
Peak sound level	94 – 106 dBA at 1m*
Number of tones	32
Frequency range	400 – 2850 Hz*
Operating temperature	-25°C to +70 °C
Casing	High impact polycarbonate
IP rating	IP21
	IP65 (with deep base)
Synchronisation	Automatic

MS PIR



Description	Specification
Infrared sensor	Dual element
Power supply	24 V DC
Detection range	12 m
Current drain	<18 mA @24 VDC
Mounting height	1.7 – 2.5 m
RFI immunity	Av. 20 V/m (10 – 1,000 MHz)
Temperature	-10°C – 50 °C
Humidity	95% RH max.
Dimensions	59L – 39.5W – 107H mm



MS430 Connection Board Series

The MS430 is made for the BNWAS system and is easy to use. The connections are easily made by a connector. No connection mistakes can be made.

For drawings see our website www.marbleautomation.com (after login).

Advantages:

- Easy to install the BNWAS system
- No mistake in connections

MS431 Main Connection Board



The MS431 board is the base unit for connection of the MS421B BNWAS.

Features:

- Dimensions: 145x105x30m (WxHxD)
- Power supply 24Vdc

MS432 Extension Connection Board



The MS432 extension is for the connection of five buzzer units and two reset units.

MS433 Selector Switch Connection Board



The MS433 is for connection to the selector switch.

