Installation Manual
MS31

MARBLE
Full Control!

Safety Instructions

Important

Before starting with installation of the MS31, please read the important information beneath.

Qualification

The installation of the product detailed in this manual must be done by a certified installation company. If not, the warranty becomes void.

Caution:

Before starting with installing the MS31, check if all parts are present.

The package includes:

- MS31
- Manual MS31
- Mounting Clips (2x)

Disclaimer:

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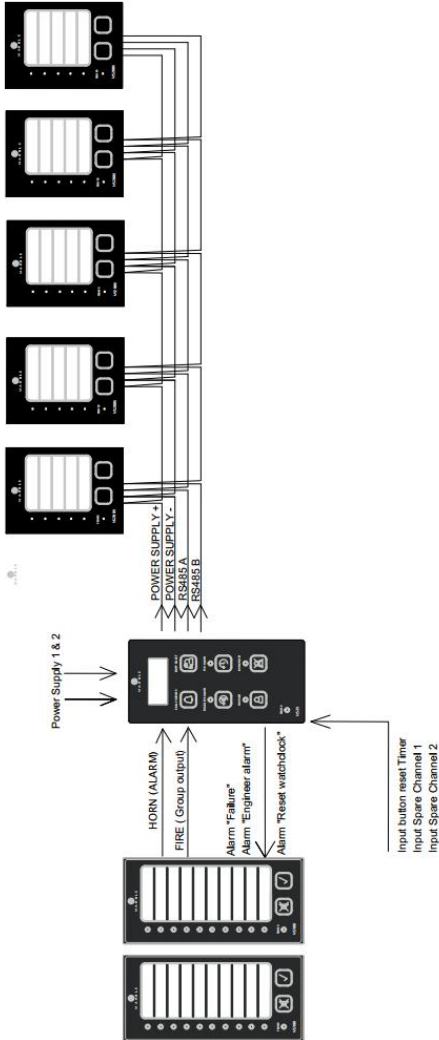
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1. Hardware

Overview of a typical system

Connections

The MS31 has the following connections available:

Name	Function	Signal
Power Supply 1	24V DC nominal supply from source 1	
Power Supply 2	24V DC nominal supply from source 2	
Input Horn Alarm System	Triggers the alarm LED and the 3/5 min timer	Digital NO
Input Fire	Triggers the Fire LEDs	Digital NO
Input "Spare 1"	Spare input for the third red LED on the extensions	Digital NO
Input "Reset Timer"	External button(s) to reset the 27 min. timer.	Digital NO
Common inputs	Common 24V positive for the inputs	Output
Alarm Reset Timer	To Main Alarm System input	Output NC
Engineer Alarm	To Main Alarm System input	Output NC
Failure	To Main Alarm System input	Output NC
Power supply extensions	24V power supply for Line 1	Output
Modbus Master	Modbus master A and B Line 1	RS485
Power supply extensions	24V power supply for Line 2	Output
Modbus Master	Modbus master A and B Line 2	RS485
VDR	Connection for VDR: NMEA 0183 string	RS485

Power supply

Connect the power supplies to different power sources to ensure redundancy.

Alarm system output connections

The "alarm" input connected to the horn output of the main alarm system. If necessary use a relay for galvanic separation.

The fire input can be connected to the main alarm system or the fire alarm system.

The "Spare" input is free to be connected as necessary. This input will be shown on the third LED at the extensions.

Alarm system input connections

These three alarms will have to be connected to three free channel inputs of the main alarm system.

Extension lines

The extensions are connected in parallel to the extension line connectors. It is possible to start two lines from the main unit. The extensions can be random connected.

Communication cables

We recommend to use Unitronic DeviceNet cable with 1x2xAWG22 and 1x2xAWBG22 conductors. The red/black pair is used for power supply, the white/blue pair for RS485 communication.

When there is noise on the communication line or long cables are used, it is recommended to use 120 Ohm resistors, normally placed at the end of the line, connected parallel to A and B. In addition to that, a 120 Ohm resistor can also be placed at the start of the line.
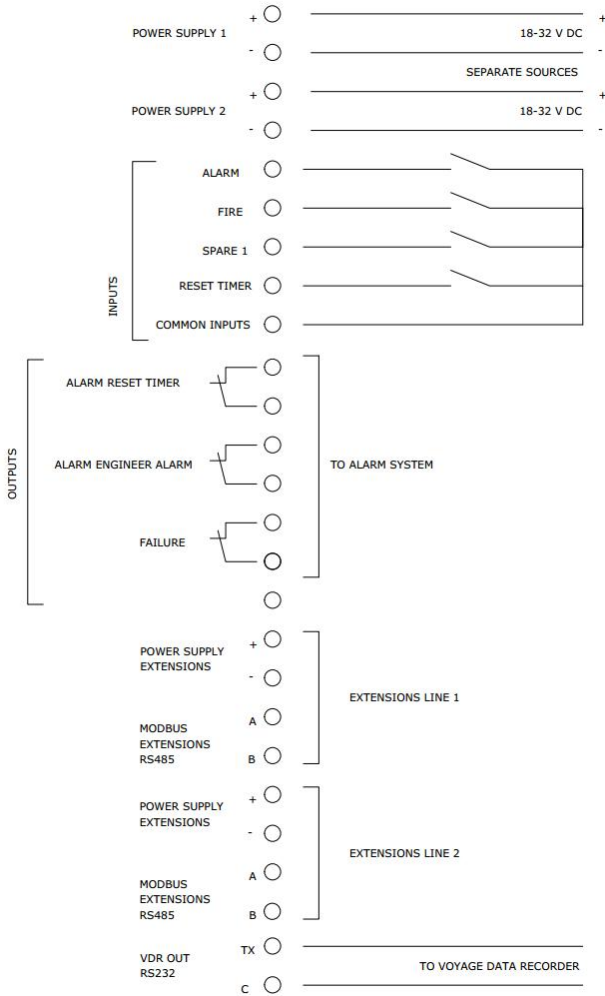
Do not mount communication cables next to cables that are connected to frequency drives.

VDR output

The VDR output sends a message string in NMEA format every second. The string contains the following information:

String part	Function	Content
$MSUMS,	Identifier	
1,	Manned Mode	1=on 0=off
#,	Unmanned Mode, indicates the engineer on duty	1-7=on 0=off
1,	Alarm	1=on 0=off
1,	Fire Alarm	1=on 0=off
1,	Spare	1=on 0=off
1,	Engineer alarm	1=on 0=off
1,	Reset Timer	1=on 0=off
1,	Power supply Failure	1=on 0=off
1,	Missing Slave(s)	1=on 0=off
CR	Carriage return	
LF	Line feed	

Backside connections

POWER SUPPLY 1 — + — 18-32 V DC +
POWER SUPPLY 1 — -

SEPARATE SOURCES

POWER SUPPLY 2 — + — 18-32 V DC +
POWER SUPPLY 2 — -

INPUTS
- ALARM
- FIRE
- SPARE 1
- RESET TIMER
- COMMON INPUTS

OUTPUTS
- ALARM RESET TIMER
- ALARM ENGINEER ALARM — TO ALARM SYSTEM
- FAILURE

POWER SUPPLY EXTENSIONS — +
POWER SUPPLY EXTENSIONS — -

MODBUS EXTENSIONS RS485 — A
MODBUS EXTENSIONS RS485 — B

EXTENSIONS LINE 1

POWER SUPPLY EXTENSIONS — +
POWER SUPPLY EXTENSIONS — -

MODBUS EXTENSIONS RS485 — A
MODBUS EXTENSIONS RS485 — B

EXTENSIONS LINE 2

VDR OUT RS232 — TX — TO VOYAGE DATA RECORDER
VDR OUT RS232 — C

2. Configuration of the system on the MS31 unit

Commissioning

When commissioning, the system needs to know which extensions are used.

There are always an Entrance Engine Room, a Mess and one Engineer Cabin extension present.

If more units are used these will have to be configured on the UMS main unit.

The slave numbers and the functions are shown in the table below:

Slave ID 16h	Slave ID	Function	Configuration
1	1	Entrance ER 1	Always present
2	2	Entrance ER 2	Presence to be configured
3	3		
4	4	Mess 1	Always present
5	5	Mess 2	Presence to be configured
6	6	Bridge 1	Presence to be configured
7	7	Bridge 2	Presence to be configured
8	8	Cabin 1	Always present
9	9	Cabin 2	Presence to be configured
A	10	Cabin 3	Presence to be configured
B	11	Cabin 4	Presence to be configured
C	12	Cabin 5	Presence to be configured
D	13	Cabin 6	Presence to be configured
E	14		
F	15		

As indicated, slave numbers 1, 4 and 8 are always activated and cannot be deactivated.

Activation and deactivation of extensions
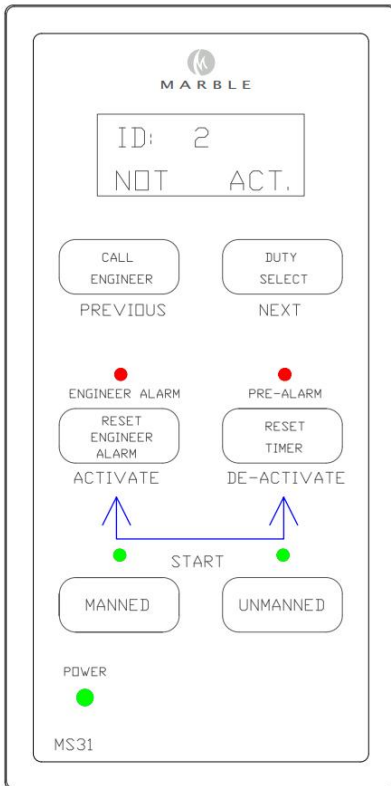
This is the procedure for the activation or de-activation of a unit:

1. Press the "RESET ENGINEERS ALARM" and "RESET TIMER" buttons at the same time and hold these for at least two seconds.
2. The functions of the front buttons are now changed according the above drawing.
3. The top line of the display shows the Slave ID which is chosen. The second line show if the extensions is not active ("NOT ACT") or active ("ACT").
4. The next or previous ID number are selected with NEXT and PREVIOUS buttons.
5. With the ACTIVATE and DEACTIVATE buttons , the selected slave is activated or deactivated.
6. The system will automatically go back to the normal working mode when for a certain period the buttons are not used.

3. Optional configurations

Common

The MS31 unit has some options regarding the working of the software. Some surveyor have specific demands for the working. At the inside of the box there are four DIP switches. Turning a switch on activates the next options:

Switch 1: 3/5 minutes timer

The installer can adapt the alarm reaction time. Normally it is 3 minutes, however on bigger ships, with a long distance between the accommodation and the engine room, it is allowed to set the reaction time to 5 minutes.

Switch 2: "Bureau Veritas" option

When this option is chosen, it is not possible to use the Manned/Unmanned buttons on the MS31 main unit. Only the Manned/Unmanned buttons on the extension at the entrance of the engine room are available for this.

Switch 3: Bridge acknowledge option

When this option is chosen the Unmanned Mode is requested at the engine room or the entrance of the engine room by pressing the Unmanned button. On the bridge extension an "LED" Acknowledge" will blink. Then the request for Unmanned Mode is acknowledged on the bridge by pressing the "ACK" button.

This option requires a different text label at the bridge extension.

Switch 5: Global Accept

Normally when the system is in Unmanned mode, each cabin or mess extension will have to cancel his own buzzer. When switch 4 is set, pressing the cancel horn of the Officer on duty extension, will silence the other buzzers also.

4. Technical specifications

Description	Specification
Supply voltage	24 V DC Nominal
Power consumption	2,7 Watt
EMC Compatibility	According DNVGL-CG-0339
Environmental	According DNVGL-CG-0339

5. Maintenance

The MS31 unit is maintenance free. It is permitted to clean the front of the MS31 unit with a damp cloth.

6. Troubleshooting

Symptom	Possible cause	Test and remedies
Green LED is not flashing	Power supply is not connected	Check if power supply is connected
Green light gives a steady light	Error in processor	Turn of the power supply for a few seconds and connect again
Green LED is not flashing (2)	Processor is broken	Contact Marble Automation for possible solution
Display indicates slave # failure.	One of the extensions is not responding	Contact the installer to check the installation