# MACCS
## Alarm and monitoring system



## PRESENTATION

▶ **MACCS** is a safety device used for monitoring digital inputs and analog inputs, as well as the controlling of various equipment.

▶ Its modular design allows a maximum of 64 inputs /outputs. Its user interface consists of a 7" color touch screen, enables a clear and precise display of all alarms and controls.

▶ The MACCS product range has been designed and approved to provide the following features:

- ▶ Bilge alarm monitoring
- ▶ Technical alarm monitoring
- ▶ Tanks level measurement
- ▶ Analog sensor measurement
- ▶ Control of different pieces of equipment: lighting, pumps, valves, fans, etc.

▶ MACCS is fully configurable from the user-friendly touch screen setup menu.

## FUNCTIONAL CHARACTERISTICS

### Display

▶ The display is provided by a flush a 7" color touchscreen (MACCS_HMI) which can be supplemented by 2 other screens if necessary (for the 24VDC version only).

### Equipment

▶ **MACCS** is a modular system with up to 64 inputs/outputs, composed of a CPU module (**MACCS_CPU**) with 8 digital inputs and up to 7 expansion modules (up to 2 if the power supply is 12VDC). Allowing the capacity of each product to be extended according to the needs of the ship, through additional digital/analog inputs and digital outputs.

### MACCS_8AI

▶ 8 analog inputs :
- Input 0/10VDC or 4/20mA (2 or 3 wires).
- Time delay from 0 to 180s 1 second increments.
- 4 x alarm thresholds per channel.
- Calibration with 21 values.

### MACCS_CPU

- ▶ Centralized processor insuring the processing of inputs and outputs.
- ▶ Management of 2 power supplies (main / emergency) with configurable alarm tresholds.
- ▶ 24VDC output to feed MACCS_HMI.
- ▶ 2 x RS485 ports to communicate with external equipment (NMEA or MODBUS RTU, other protocols on request)
- ▶ 8 monitored digital inputs and 1 configurable digital input (special functions including acknowledgement).
- ▶ 5 integrated outputs (1 x 24VDC + 4 x digital).

### MACCS_8DO

▶ 8 digital outputs :
- Breaking capacity1A@24VDC.
- Contacts N.O. and N.C provided.
- Time delay form 0 to 180s in 1 second increments.
- Operation in mode Maintained or Impulse.
- Emergency manual activation by micro switches.

### MACCS_HMI

- ▶ High resolution 7" or 10" color touch screen.
- ▶ Luminous indicators and integrated quick function buttons.
- ▶ Light dimmer
- ▶ Multilanguage display (French, English, Spanish).
- ▶ Protected menu of 1st level settings: channel assignment, input / output types, time delay.

### MACCS_8DI

▶ 8 digital inputs :
- Monitored or not.
- Configurable N.O./N.C.
- Time delay from 0 to 180s in 1 second increments.
- Individual inhibition per channel.

## APPROVALS
▶ Bureau Veritas
▶ MMF

**MARINELEC** TECHNOLOGIES

# _ MECHANICAL CHARACTERISTICS _

**Dimensions (LxIxH) and weights**

| | | |
|---|---|---|
| ▶ MACCS_HMI: | 176 x 135 x 29 + 5 mm | 1.0 Kg |
| ▶ MACCS_CPU: | 168 x 133 x 40 mm | 0.5 Kg |
| ▶ MACCS_8XX: | 51.5 x 133 x 33 mm | 0.2 Kg |

**Mounting**

| | |
|---|---|
| ▶ MACCS_HMI: | Built-in mounting in console / cabinet |
| ▶ MACCS_CPU: | Symmetrical DIN rail mounting |
| ▶ MACCS_8XX: | Symmetrical DIN rail mounting |

## _ ELECTRICAL CHARACTERISTICS _

### Main power supply
▶ 9 - 32 VDC

### Emergency power supply
▶ 9 - 32 VDC

### Power supply switchover
▶ Automatic with alarms

### Power supply protection
▶ By diode and fuse

### Max. consumption @ 12VDC
| | |
|---|---|
| ▶ MACCS_HMI : | 0.5A |
| ▶ MACCS_CPU : | 0.25A |
| ▶ MACCS_8DI : | 0.22A |
| ▶ MACCS_8AI : | 0.5A |
| ▶ MACCS_8DO : | 0.22A |

### Max. consumption @ 24VDC
| | |
|---|---|
| ▶ MACCS_HMI : | 0.3A |
| ▶ MACCS_CPU : | 0.2 A |
| ▶ MACCS_8DI : | 0.11A |
| ▶ MACCS_8AI : | 0.3A |
| ▶ MACCS_8DO : | 0.1A |

### Connections
▶ Coded pluggable terminal blocks
▶ Max.section cable 1,5mm² (power supplies) 1mm² (inputs-outputs)

### Output capacity
▶ Power supply output (CPU) : 3A
▶ 24VDC  outputs (CPU and HMI) : 0.5A
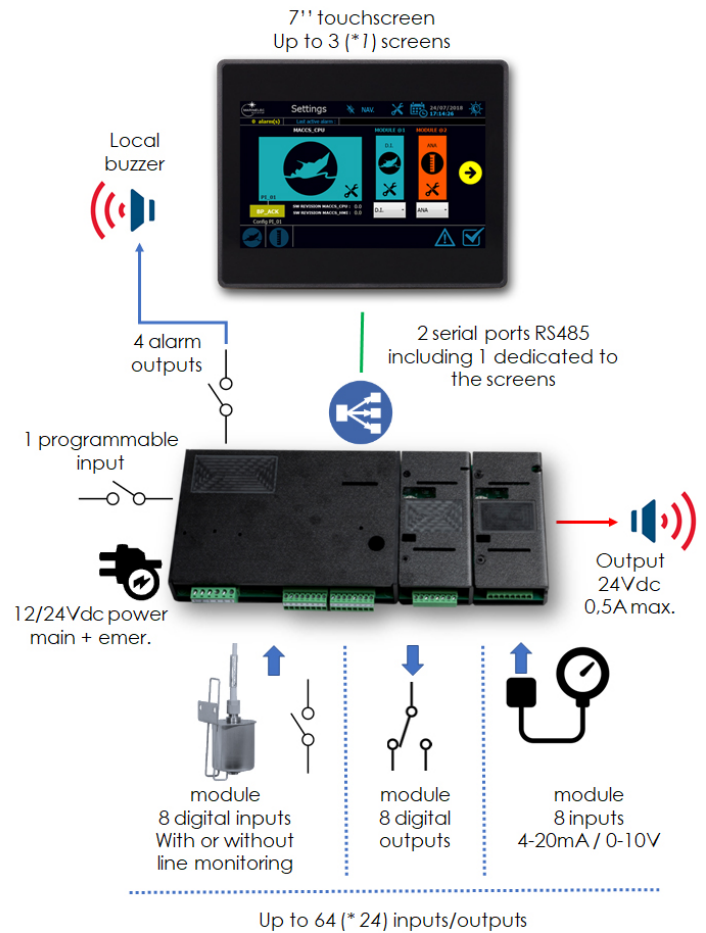▶ Digital outputs (CPU and _8DO) : 1A @24VDC

## REFERENCES & OPTIONS

| | |
|---|---|
| ▶ MACCS_HMI | 7"color touch screen interface |
| ▶ MACCS_HMI_10P | 10"color touch screen interface |
| ▶ MACCS_CPU | Processor module |
| ▶ MACCS_8DI | 8 digital inputs expansion module. |
| ▶ MACCS_8AI | 8 analog inputs expansion module |
| ▶ MACCS_8DO | 8 digital outputs expansion module. |

Optional references are available to enable a quick and complete installation:
(audible and luminous devices, bilge sensors, fire detectors (not approved), level…)
**Please contact us**

## CONNECTION OVERVIEW



7'' touchscreen
Up to 3 (*1) screens

Local buzzer

4 alarm outputs

1 programmable input

2 serial ports RS485 including 1 dedicated to the screens

12/24Vdc power main + emer.

Output 24Vdc 0,5A max.

module 8 digital inputs With or without line monitoring

module 8 digital outputs

module 8 inputs 4-20mA / 0-10V

Up to 64 (* 24) inputs/outputs

(*) dimensioning with 12Vdc power supply

## ENVIRONMENTAL CONDITIONS

**Temperature limits**
▶ +5°C to 55°C (functioning)
▶ 0°C to 70°C (storage)

**Humidity**
▶ 95% Humidity max.

**Ingress protection rating**

| | | | |
|---|---|---|---|
| ▶ MACCS_HMI: | IP66 | MACCS_8XX : | IP20 |
| ▶ MACCS_CPU: | IP20 | | |

**MARINELEC**
TECHNOLOGIES

*sail safely*

Tel. + 33 (0)2 98 52 16 44 - Fax : + 33 (0)2 98 64 74 05 - marinelec@marinelec.com - **www.marinelec.com**