

Technical specifications

Egon+ board

| Environmental | |
|-----------------------------------|---|
| Operating temperature | -40°C to 85°C |
| Storage temperature | -40°C to 125°C |
| Mechanical shock | SAE J2030 (RDEC2002), Section 6.16 |
| Bombardment test | 24 hour of dust, sand and gravel |
| Salt fog | 96 hour period of salt fog per ASTM B117-94 |
| Protection class | IP 66 |
| Vibration | SAE J1455 (R2006), Section 4.10.4.2 |
| Chemical resistance | Break fluid, AT fluid, antifreeze fluid, windshield wash fluid, PS fluid and oil. |
| Abnormal conditions | |
| Revers polarity protection | - 24 V DC, SAE J1455 (RJUN2006) - duration of 5 minutes |
| Short circuit protection | |
| Short to ground | 5 minutes, ER455 (R2008) Section 5.10.4 |
| Short to 16 V DC | 5 minutes, ER455 (R2008) Section 5.10.4 |
| Power up operation | Ramp battery voltage from 0 to min. operating voltage at 1 V/ms, EP455 (R2008) Section 5.10.7 |

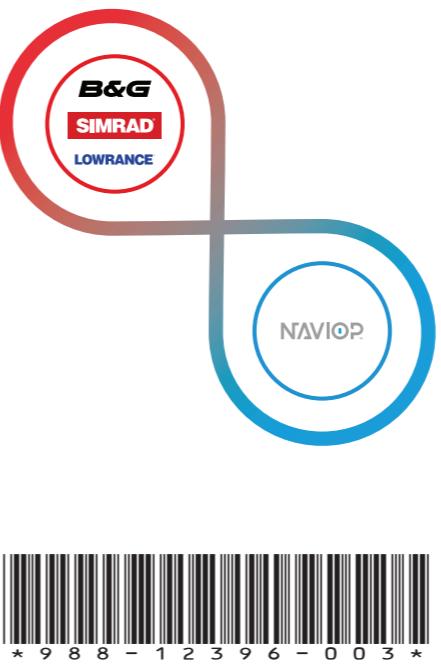
| Electrical | |
|--|--|
| Power supply voltage | 12 V DC (8-16 V DC) |
| Dielectric voltage withstanding | 80 V DC |
| Current consumption | 1.5 mA battery quiescent current |
| Total current limit | 200 A |
| Total current limit per connector | 100 A |
| Overload | 135% |
| Temperature rise | 60°C |
| Insulation resistance | 10 MΩ |
| Max load | |
| Fuse channels | 30 A at 12 V DC |
| Relay and fuse channels (at 12 V DC) | 20 A (resistive load)/16 A (inductive, motor, pump load) |
| Maximum board load | 200 A |
| Power connector | 2x M8 input studs, each rated at 100 A maximum |
| Power wire size | Calculated based on total board consumption |
| Output wire size | 1.31 mm ² - 5.26 mm ² (#10-16 AWG) |
| Fuses | Mini blade fuse |
| Relays | 280 footprint, 4 pin relay |

⚠ Warning: IGNITION PROTECTED ONLY WHEN EQUIPPED WITH IGNITION PROTECTED FUSES AND COVER CLOSED.
ANY REPLACEMENT FUSES MUST BE IGNITION PROTECTED. COVER MUST BE CLOSED IN EVERY OPERATIONAL CONDITION!

OP-Box Loop M/M+

| Interface | |
|-------------------------------------|--|
| Ethernet port | 2 (port 0 - 10/100, port 1 - 10/100) |
| USB port | 1 (Host v. 2.0, max. 100 mA) |
| Serial port | 2 (RS-232, RS-485, RS-422, software configurable, optical isolation) |
| CAN bus port | 2 (optical isolation – 1kV) |
| SD Card | - |
| Expansion | - |
| LED indicators | 5 (Power, Ethernet status) |
| Ratings | |
| Power supply | 9 to 32 V DC |
| Current consumption | 0.15A max. at 24 V DC |
| LEN | 0 |
| Input protection | Electronic |
| Battery | Yes |
| Environment conditions | |
| Operating temperature | -15°C to +55°C |
| Storage temperature | -20°C to +70°C |
| Operating / Storage humidity | 5 - 85% RH, non-condensing |
| Protection class | IPx7 |

Loop M INSTALLATION GUIDE



Compliance statements

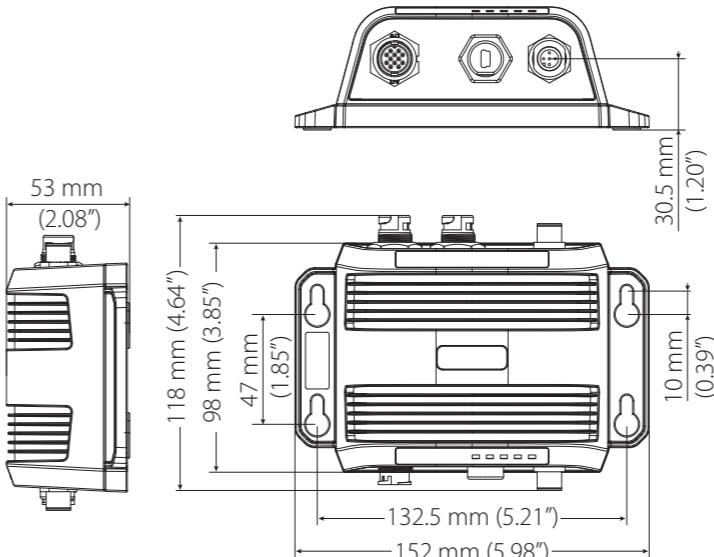
This product complies with:

- CE under EMC Directive 2014/30/EU
- the requirements of level 2 devices of the Radio communications (Electromagnetic Compatibility) standard 2017

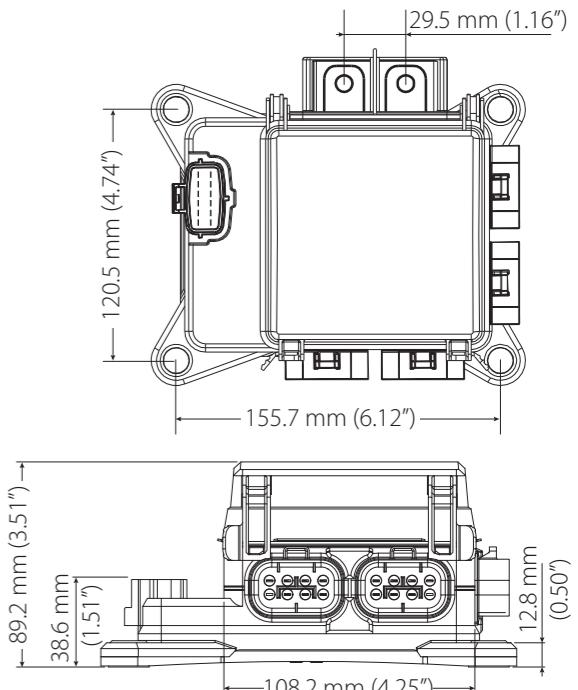
⚠ Warning: The user is cautioned that any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Dimensional drawings

OP-Box Loop M/M+



Egon+ board



For product manuals, technical specifications, certificates and declarations refer to the product website:

www.lowrance.com

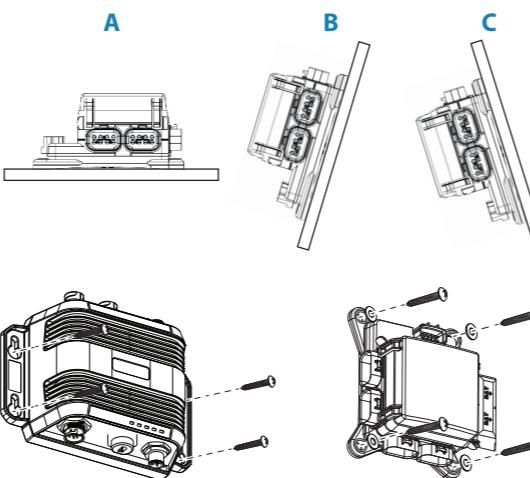
www.simrad-yachting.com

www.bandg.com

Mounting guidelines

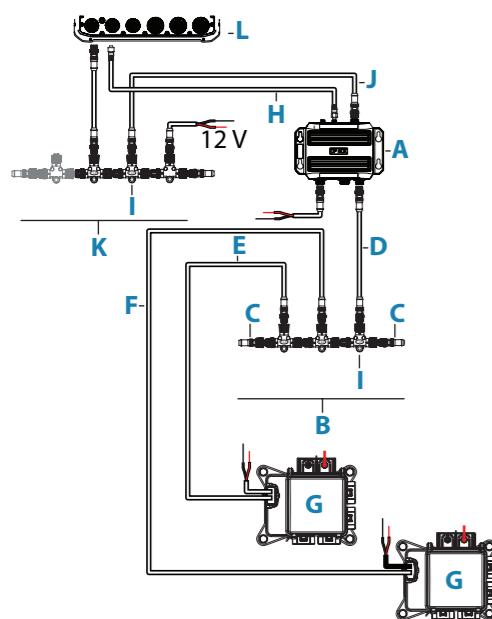
Egon+ board and OP-Box Loop M/M+

The recommended mounting orientation for the Egon+ board and the OP-Box Loop M/M+ is horizontal (A). If horizontal mounting is not possible, it is recommended that devices are mounted at an angle of 0-90° from horizontal (B). It is NOT recommended to mount the devices at an angle greater than 90° from horizontal (C) due to drainage issues.



The OP-Box Loop M/M+ shall be mounted with 4 screws (not included in the kit). The Egon+ board shall be mounted with 4 screws and 4 washers or brass grommets (not included in the kit).

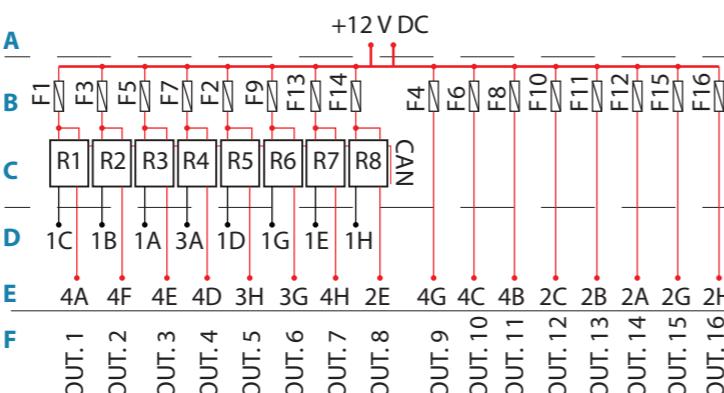
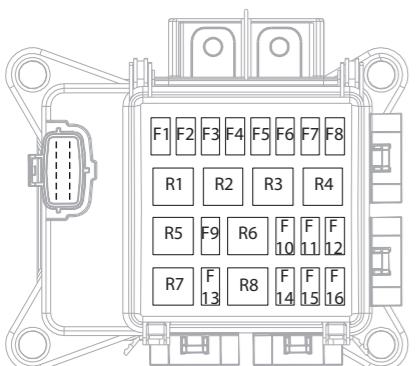
System overview



- A. OP-Box Loop M/M+
- B. Naviop CAN network backbone
- C. Terminators
- D. Naviop CAN drop-cable
- E. Egon+ drop-cable CAN ID:1
- F. Egon+ drop-cable CAN ID:2 (only available for Loop M+)
- G. Egon+ boards (maximum 2 Egon+ boards can be installed)
- H. Ethernet network (to MFD or Ethernet expansion device)
- I. T-connectors
- J. NMEA 2000 drop-cable
- K. NMEA 2000 backbone
- L. MFD

System IDs

| System | Egon+ boards | Controlable outputs | Monitored power outputs | Drop-cable ID |
|---------|--------------|---------------------|-------------------------|----------------------|
| Loop M | 1 | 8 | 8 | CAN ID:1 |
| Loop M+ | 2 | 16 | 16 | CAN ID:1 CAN ID:2 |



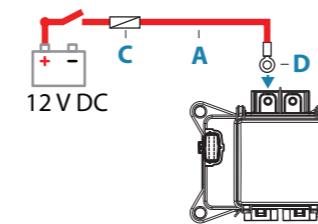
- A. Main power input
- B. Fuses
- C. Relays
- D. Override pins for relay outputs
- E. Output pins for relays and fuses
- F. Output number

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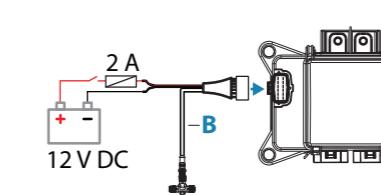
Wiring

Power wiring

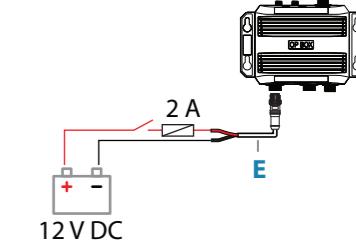
Egon+ power input



Egon+ electronic power supply



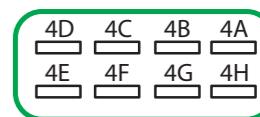
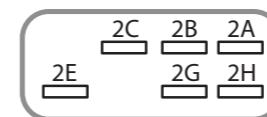
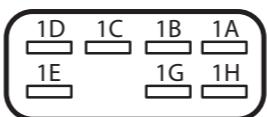
OP-Box Loop M/M+ power supply



- A. Power input cable (the cable must be able to carry the maximum current of all loads)
- B. Egon+ drop-cable

- C. Overcurrent protection (fuse or circuit breaker)
- D. M8 ring terminal (not included in the box)
- E. OP-Box Loop M/M+ power supply cable

Output connectors



| Output 1 (black) | Output 2 (gray) | Output 3 (blue) | Output 4 (green) |
|--------------------------|---------------------------------|--------------------------------|---------------------------------|
| 1A - bypass for relay R3 | 2A - output fuse F12 | 3A - bypass for relay R4 | 4A - output relay R1 (fuse F1) |
| 1B - bypass for relay R2 | 2B - output fuse F11 | - | 4B - output fuse F8 |
| 1C - bypass for relay R1 | 2C - output fuse F10 | - | 4C - output fuse F6 |
| 1D - bypass for relay R5 | - | - | 4D - output relay R4 (fuse F7) |
| 1E - bypass for relay R7 | 2E - output relay R8 (fuse F14) | - | 4E - output relay R3 (fuse F5) |
| - | - | - | 4F - output relay R2 (fuse F3) |
| 1G - bypass for relay R6 | 2G - output fuse F15 | 3G - Output relay R6 (fuse F9) | 4G - output fuse F4 |
| 1H - bypass for relay R8 | 2H - output fuse F16 | 3H - Output relay R5 (fuse F2) | 4H - output relay R7 (fuse F13) |

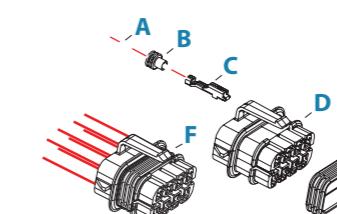
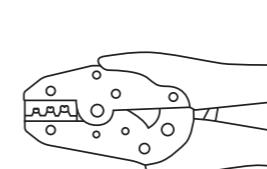
Bypassing a relay

The bypass is an override and it cannot be used as a parallel control. By connecting the bypass pin of a relay to DC negative the relay is closed and the output activated. The main important appliances (bilge pumps, navigation lights, blower, horn etc) must be equipped with a bypass for the safety of the boat.

Output connector wiring

The electrical wiring, connections and installation shall be in accordance with the requirements of ISO10133, ABYC E-11, AC and DC electrical system on boats. The wire size should be calculated based on the channels total load and the cable length. For bypass wires a #16 AWG cable is sufficient.

A proper crimping tool for barrel open terminals should be used to crimp the cables to the wire terminals. Always use a fuse that is appropriate for the connected load. The fuses supplied may have to be replaced to match the outputs connected load.



- A. Wire
- B. Wire seal
- C. Wire terminal (female)
- D. Connector body
- E. Connector seal
- F. Assembled connector

System configuration

Before the Loop system can be operated from the MFD, it has to be configured. The web based Loop SetApp is used to generate the configuration files and can be downloaded from one of the 3 brand websites: www.lowrance.com, www.bandg.com, www.simrad-yachting.com

Warning: The Loop system must only be configured by a competent installer. If your Loop system has not been pre-configured for you, please contact your dealer for advice on how to have the Loop system configured by a competent installer.