

SAILMON

INSTALLATION MANUAL

2023 – VERSION 3.5.2

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DISCLAIMER

The owner of Sailmon products is responsible for installing and using the instruments in a way that will not cause any accidents, personal injury or property damage. It is the user's obligation and responsibility to comply with the standards of safe boat handling.

Sailmon B.V. disclaims all liabilities for any use of this product in a way that may cause accidents, damage or that may violate the law.

Sailmon are an aid to navigation but do not replace conventional navigation. It is the owner's responsibility to practice safe boating practices and navigation. All precautions should be taken to ensure the yacht is not placed in any danger.

Calibrating the Sailmon system is an electronic aid and is designed to assist in navigation and reading measurement values. Incorrect calibration can lead to false and inaccurate readings placing the yacht into possible danger.

COPYRIGHT

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LIABILITY AND SAFETY WARNING

It is the user's responsibility to ensure that under all circumstances the equipment is used for the purposes for which it has been designed.

ELECTRICAL HAZARD:

Using the equipment enlarges the possibility of electrocution. Contact with high voltages may result in injury and/or loss of life.

CALIBRATION:

Accurate and correct calibration is of paramount importance for a safe use of the equipment. The yacht may be placed in danger when incorrect calibration of the equipment has occurred.

OPERATIONAL:

Sailmon systems are designed for assistance during navigation proceedings. It is not designed to replace conventional navigation procedures. Precautions should be taken to avoid placing the yacht/boat into danger

Sailmon systems are capable of running on power sources up to 30VDC. A higher or different power supply can and will lead to permanent damage to the system and equipment.

NMEA 2000 equipment is designed for use with a power supply source of 12VDC. The application of any other power supply may result in permanent damage to the NMEA 2000 equipment.

CAUTION: DISPLAY INSTALLATION

Displays installed into locations manufactured from conductive materials (e.g. Steel, Carbon Fibre etc.) should be insulated from the structure to prevent damage to the casings as a result of the effects of electrolysis.

IMPORTANT: CUTTING OFF A SNET CONNECTOR FROM A DISPLAY WILL VOID ALL WARRANTY TO THAT DISPLAY.

CAUTION: PROCESSOR INSTALLATION

All Sailmon processors should be installed below decks in a dry location protected from water and moisture.

POWER OFF DISCLAIMER

When in standby mode, the E4 still consumes a little power. If you leave it for too long without shore power, it could drain the battery.

CAUTION: CLEANING

When cleaning this product:

- Use a clean soft dry cloth to wipe the screens and ideally use isopropyl alcohol (IPA) for removing oil-based pollution.
- Do NOT wipe the display screen with a dirty or rough cloth, as this could scratch the screen coating.
- Do NOT use abrasive, acid or ammonia-based products.
- Do NOT use a jet wash.

ABOUT THIS MANUAL

As Sailmon is continuously improving their products, we retain the right to make changes to our products at any time which may not be reflected in this version of the manual.

This manual is exclusively for the installation of Sailmon products. We will not be responsible for any faulty installation. In this manual we assume that the Installer has basic knowledge of DC electrical systems, wiring and common installation practices.

If in doubt always ask **SAILMON** or your dealer for assistance.

INTRODUCTION

SYSTEM INTRODUCTION

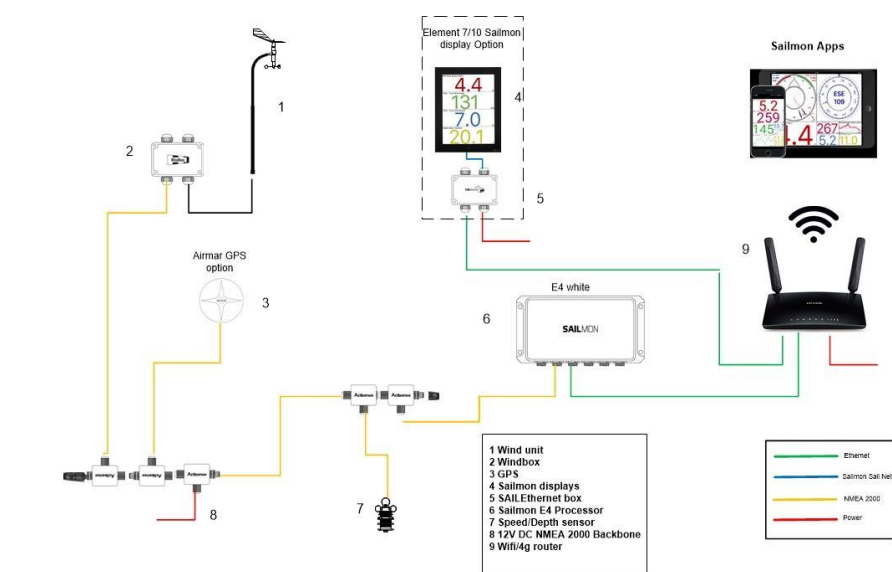
Sailmon system provides a whole new look to yachting electronics for a wide range of vessels, from top end racing yachts to weekend cruisers. Sailmon products are developed to bring, combine and view all data on board, anywhere, anytime.

The heart of the Sailmon network is the E4 processor. This small but powerful central processor unit provides all the navigation information that is needed. With more than six data compatibilities, it is the smartest and most advanced CPU on the market. Powered with either 12 or 24VDC it is possible to install the E4 nearly anywhere on board. With the use of WiFi, data is accessible everywhere.

The sunlight viewable displays enable all data to be selected and displayed at all locations. Using the standard 100BASE-TX fast Ethernet communication network, all displays can be connected to one E4 processor. Sailmon displays use our proprietary S-NET cable and connector system, which contain power and data wiring, made from waterproof components to survive the harsh conditions found at sea. Power and ethernet is combined in our dedicated SAIL Ethernet.

To complete your system, sensors from any manufacturer can be added using our interfacing boxes, including load cell, wind instruments, through hull transducers and linear inputs. You can also use existing sensors when you upgrade to the E4.

SAILMON SYSTEM EXAMPLE



SAILMON

1. PRODUCT OVERVIEW

The Sailmon model E4 processor will provide your vessel with the possibility to view all your data everywhere on board. Combining sailing data with advanced racing technology, the processor enables you to configure, calibrate and view your boat data everywhere. This way, when installed in either an existing system or working on its own, the processor will connect to different data protocols and stream all data to our wired display or any smart device using our USB wifi dongle or on board access point.

Due to its number of data ports, the E4 can be connected to almost any network or can be set up as a standalone CPU to run your Sailmon equipment.

The Sailmon E4 processor will work as a high end calibration system for different vessels. The E4 provides the following capabilities:

1.1 FUNCTIONALITY

- To receive raw data from a wide range of sensors such as wind, boat speed, compass and mast rotation, GPS, linear sensors, loadcells.
- Provide very sophisticated multidimensional calibration of data.
- Produce calibrated and derived data such as: True Wind Speed & Angle, calibrated Apparent Wind Speed & Angle, calibrated Boat Speed, derived tidal information and drift.
- To (re)publish sensor-calibrated and derived data on the various networks
- To calculate values based on the data and your polars such as Target Speed or performance ratio.
- To receive and re publish data from other applications. For example, to publish Bearing & Distance To Waypoint (BTP & DTP) from NMEA,NMEA2000, UDP or Modbus TCP/IP interfaces.

1.2 INSTRUMENT INTEGRATION

The E4 system can use a wide range of sensors based on NMEA, Modbus TCP/IP, NMEA over UDP, NMEA2000, B&G, Nexus protocols. Sailmon can provide support for various other sensors via optional Sailmon boxes such as WindBox, LoadcellBox, Buttonbox and LinearBox. The Sailmon E4 system is very flexible:

- It supports various interfaces for existing hardware on board such as B&G, Raymarine and other sensors or hardware.
- It can even support and bridge different legacy networks simultaneously and upgrade their capabilities.

- It allows the re use of old system displays from many manufactures, so no need to replace them. For example, Garmin GNX, B&G Fastnet or Sailmon Element Model X and VII can be connected to the system.

1.3 SOFTWARE

Many other applications interface with E4 via Ethernet. Expedition, Adrena and Deckman all can be combined into the Sailmon system. Besides this, Sailmon offers E4 users the following software functionality:

- NavDesk on PC (Windows) or Tablet (IOS, Android) for system control.
- Screen view to enable a tablet or PC to act as Sailmon Display.
- Crew View on mobile / tablet (IOS, Android) to act as a preset display.

1.4 CONNECTIVITY

Supported protocols:

- NMEA 2000
- NMEA 0183 at 4800 and 38400 b/s.
- Seatalk
- B&G Fastnet
- Ethernet
- NMEA over UDP
- Modbus TCP/IP Client and Server
- Modbus TCP/IP data out

The Sailmon instruments communicate using standard 100Mbps ethernet allowing for fast and flexible integration. Each device is a DHCP client which allows our system to be integrated in the yachts network. All system control is done using our Navdesk application.

1.5 TECHNICAL SPECIFICATIONS E4

Power supply 12-30VDC

Power consumption 3W

Weight 1.5 kg

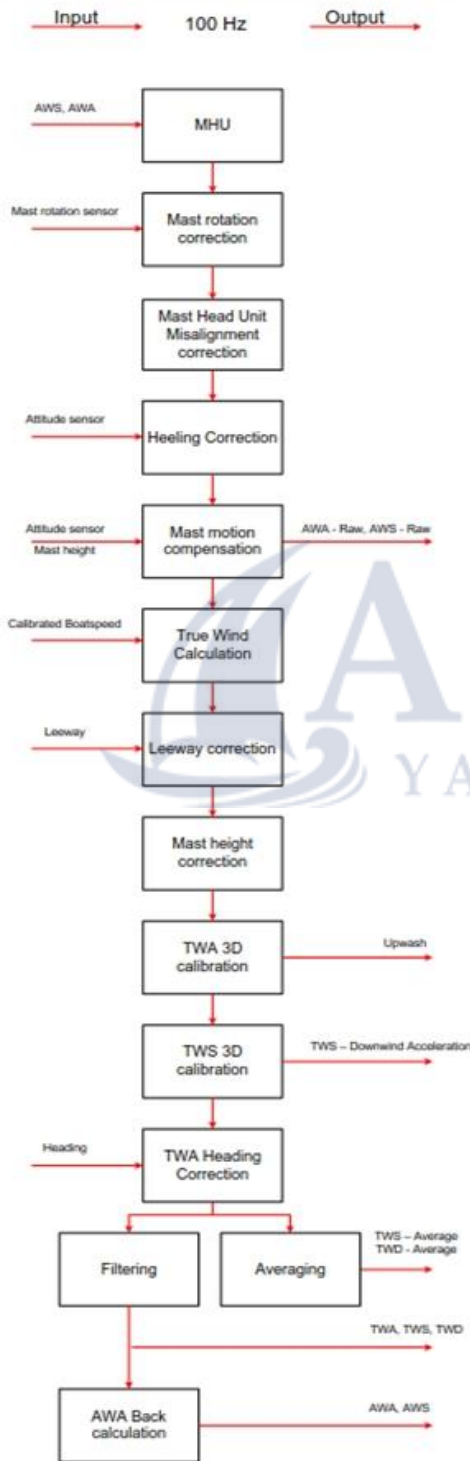
Processor: A9 dual core processor.



1.6 SYSTEM ARCHITECTURE

The system architecture varies in practice on each boat. It is very important to have a clear overview of the architecture in which the E4 system is placed. Multiple examples can be found on the website.

WIND CALCULATION FLOW CHART



The data from the mast head unit are corrected for mast rotation and mast head misalignment. Misalignment usually occurs when the MHU is not mounted 100% straight to the bow. If a heeling sensor is connected, AWA will be corrected for the skewed flow due to an inclined MHU. In case a Sailmon inertial sensor is connected, the apparent wind will be corrected for mast head movement.

The direct values for AWA - Raw and AWS - Raw are generated now.

In the next step, true wind is calculated from the boatspeed value. The module takes the calibrated boatspeed and apparent wind and calculated the respective vectors for true wind data.

Since most polars are referenced to true wind including leeway, leeway is added in the next stage.

Most polars are referenced to a wind speed in 10m altitude. If a mast height is given, the system will correct the true wind speed for mast height.

Now, TWA is calibrated for upwash, this module gives the upwash value as an output.

In the next stage, TWS is corrected for downwind acceleration. This module outputs the TWS - Downwind acceleration value.

If TWA heading correction is enables, the next stage will use the heading sensor to calculate a very stable while still highly dynamic TWA.

The true wind values are now filtered and averaged, and are used for back calculating apparent wind.

2. INSTALLATION

2.1 NMEA2000

The system consists of a linear backbone from which drop cables connect the components to the E4 processor.

Setup a NMEA2000 backbone using Micro-C connectors, 2 terminator plugs and required number of T-pieces to connect NMEA2000 equipment.

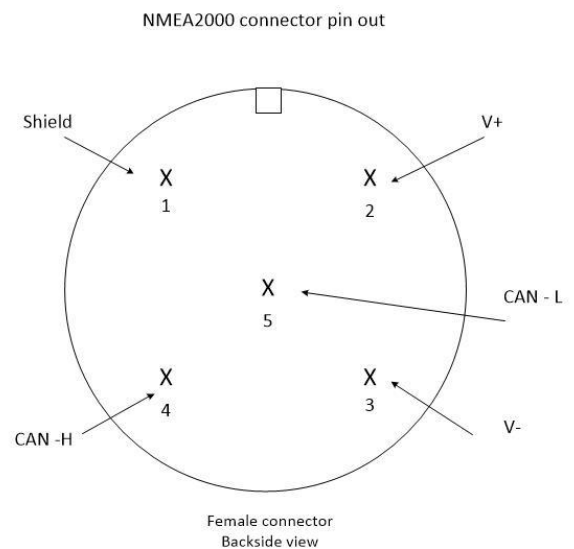
WIRING

- The E4 does not power the NMEA 2000 backbone, it needs a separate fused 12V power connection.
- A drop cable, the cable that connects NMEA 2000 devices to the backbone, cannot be longer than 6 m (19.5ft).
- A maximum of 50 devices can be connected on a NMEA 2000 backbone and it cannot be longer than 100m. If the network is larger, use a network bridge.
- The maximum current is 5A on the NMEA 2000 backbone.
- Do not make sharp bends in the cabling.
- Do not route cabling in area's with high voltage cabling.

If the NMEA2000 backbone malfunctions multiple methods of troubleshooting are available. See par 5.2.1

Connect a NMEA 2000 drop cable with a standard female NMEA 2000 connector to the E4. The port is a NMEA 2000 node and does not power the bus.

IMPORTANT: never connect the NMEA 2000 backbone power cable to a 24V.



Pin	Sailmon Color	NMEA Color	Function
1	N/C	Shield	Shield
2	White	Red	12V
3	Blue	Black	0V
4	Black	White	CAN-H
5	Green	Blue	CAN-L

2.2 E4 INSTALLATION

Warning: Before starting the installation, make sure all electrical power is switched off, the power supply is suited for the desired installation and the right cabling is being used.

Note: Make sure the NavDesk app has been installed and registered online if there is no internet connection on the boat.

Make sure the E4 is mounted in a dry and well ventilated area., the E4 is not designed to be watertight and should therefore not be in contact with water. Securely mount the E4 in the desired location and mount with four screws.

The E4 has no orientation components so it is possible to mount the processor in any angle. However, it is recommended to place the E4 with its connection ports downwards.

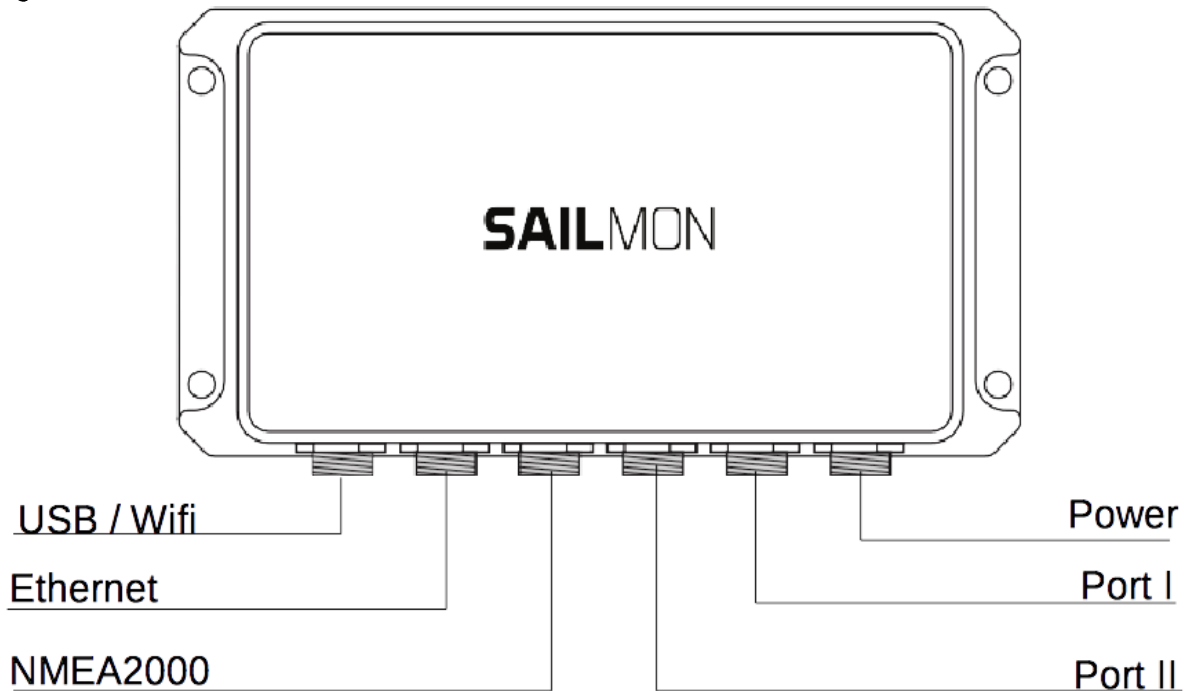
Connect data connections using [figure 1.2](#). Be sure to observe connector keyway alignment. A bad connection will lead to data loss and the system under performing.

Ensure cables are suitably supported and are located where they will not become damaged in any way. Consider cable protection in exposed cable runs.



2.2.1 E4 PORT CONNECTIONS

Figure 2.1



USB / Wifi	For connecting USB WIFI Adaptor, to connect smart devices
Ethernet	Links laptop with Sailmon software or ship's network via a wired connection
NMEA 2000	Connection for N2K backbone network
Port II	Connection between Sailmon and NMEA 0183 or Fastnet network
Port I	Connection for NMEA0183,Seatalk 1 or Nexus FDX
Power	12 / 24 VDC input

2.2.2 LED STATUS

The 4 LED's indicate sensors connection and correct operation. When connecting NMEA 2000 it can take slightly longer for the blue LED to show up due to NMEA 2000 protocol .

2.2.3 SENSOR CONNECTING

Port 1 & 2 are set in a NMEA0183 mode when the E4 is delivered. Each model E4 port must be set during commissioning using the NavDesk tool. Connect a PC to the E4 for setting the correct port option before connecting the cable to the port.

PORT I/O AND II/O

Both ports can be used for connecting several different protocols, only one protocol can be used at a time per port. You can set up which protocol to use with the Navdesk tool.

NMEA 0183

The NMEA 0183 protocol can be used in both regular (4800bps) and high speed (38400bps).

If you require more than one NMEA 0183 input you will need a NMEA multiplexer. Please contact Sailmon support if you need any assistance.

WIRING:

PORT I/O CONNECTION TO:

- NMEA 0183 / NMEA 0183 HS in/out
- Seataalk
- NEXUS FDX

PIN #	Supplied cable Colour	NMEA 0183 NMEA 0183 HS	SeaTalk RX only	Nexus FDX
1	Red	<i>NMEA in +</i>		<i>RxD / D9 pin 2</i>
2	Blue	<i>NMEA out +</i>		<i>TxD / D9 pin 3</i>
3	Green	<i>NMEA out-</i>		
4	Yellow		<i>12V (red)</i>	
5	White		<i>Data (Yellow)</i>	
6	Black	<i>NMEA in -</i>	<i>GND (Black)</i>	<i>GND /D9 pin 5</i>

NOTE: NO POWER OUTPUT SUPPLIED IN CONNECTOR.

PORT II/O CONNECTION TO:

- NMEA 0183 / NMEA 0183 HS in
- B&G Fastnet

Sailmon Model E4 Port2 Fastnet cable

Pin	Color	B&G Fastnet function
1		NC
2		NC
3		bridge to 4
4		bridge to 3
5	Red	Fastnet + (red)
6	White	Fastnet (white)
7	Green	Fastnet (green)
8	Black	Fastnet - (black)

Sailmon E4 Port 2 to NMEA0183 & old style Buttonbox

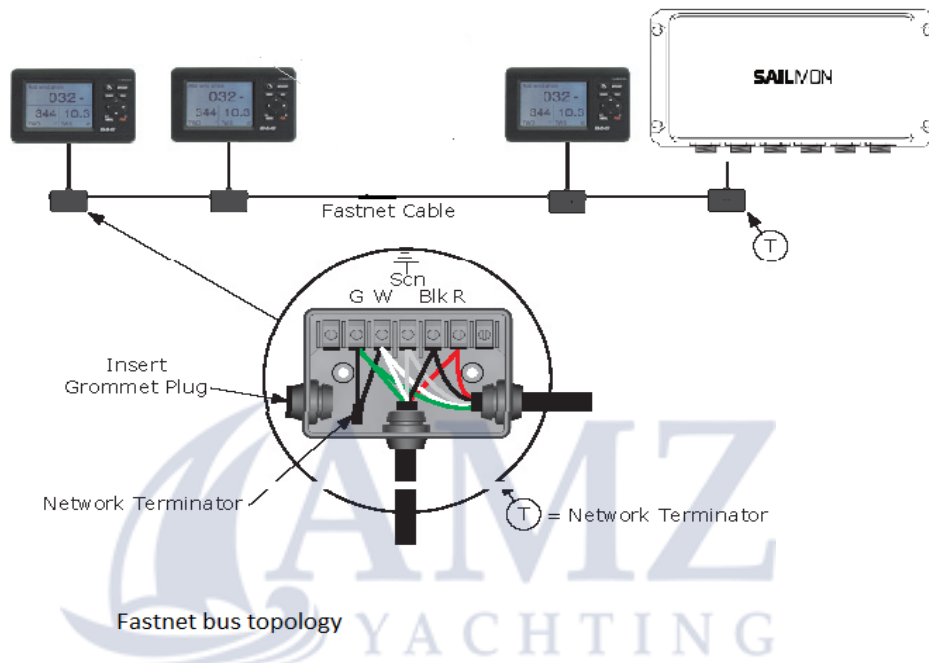
Pin	Colour	NMEA0183 function	Old Buttonbox function
1	Red	NMEA in +	12-30V DC in
2	Blue		Switch 1&2 Ground
3	Green		Switch 2
4	Yellow		Switch 3
5	White		Switch 4
6	Brown		Switch 1
7	Orange		Switch 3&4 Ground
8	Black	NMEA in -	0V

NOTE: NO POWER OUTPUT SUPPLIED IN CONNECTOR.

2.2.4 PROTOCOLS

FASTNET:

Connect Fastnet sensors and networks through port II on your E4 using the 8 pin NMEA Fastnet cable, partnumber SME4P2Fastnet_Cable. E4 data will be mapped to the custom channels on the B&G display. The Fastnet bus must be installed and configured using the correct B&G Fastnetbus topology with resistors at each end of the bus. Note that Fastnet bus needs to be powered externally.



SEATALK:

Seatalk 1 can be connected through port I on the E4 using the 6 pin NMEA/Seatalk cable partnumber SME4P1NMEA0183. Seatalk NG can be connected with the use of a Seatalk NG to NMEA 2000 cable partnumber RAYM-A06045.

NEXUS:

Use a Garmin GND10 unit to connect Nexus equipment the GND10 will then connect direct to the NMEA2000 bus and in turn to the E4.

GARMIN:

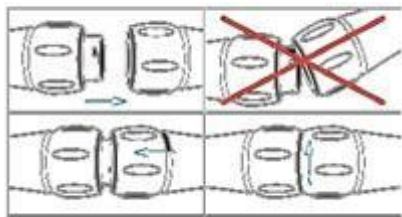
Garmin display and equipment will connect directly to the NEMA2000 bus, E4 data will be available in the custom channels list as defined in Navdesk.

2.3 SAILMON COMPONENTS

2.3.1 SNET CONNECTOR

To connect displays to the Sailmon network or to each other, a Snet connector is used. These connectors are suitable for use outside due to the IP classification. This classification is only effective when connectors are interconnected. Loose connectors can easily be damaged by moisture. Use the sealing cap when the connector is exposed and not connected.

Snet cables can be purchased in two types:



- Ready - to - go: Customers have to know the exact length of the desired cable since there will be a connector on both sides. Pulling the cable through the vessel will be harder due to the large diameter
- Self build: On one side of the Snet cable, a female connector is already attached. The male connector is provided to be mounted by the customer. Please note that for this, a special crimp tool is needed, which can be purchased from Sailmon.

IMPORTANT: Connectors should never be forced together due to the keyway in the male connector. Gently push the connectors into each other and turn. When turned correctly, a small 'click' should be heard. The connectors are now locked.

Make sure you put the waterproof dust-cap on the last instrument to prevent infiltration.

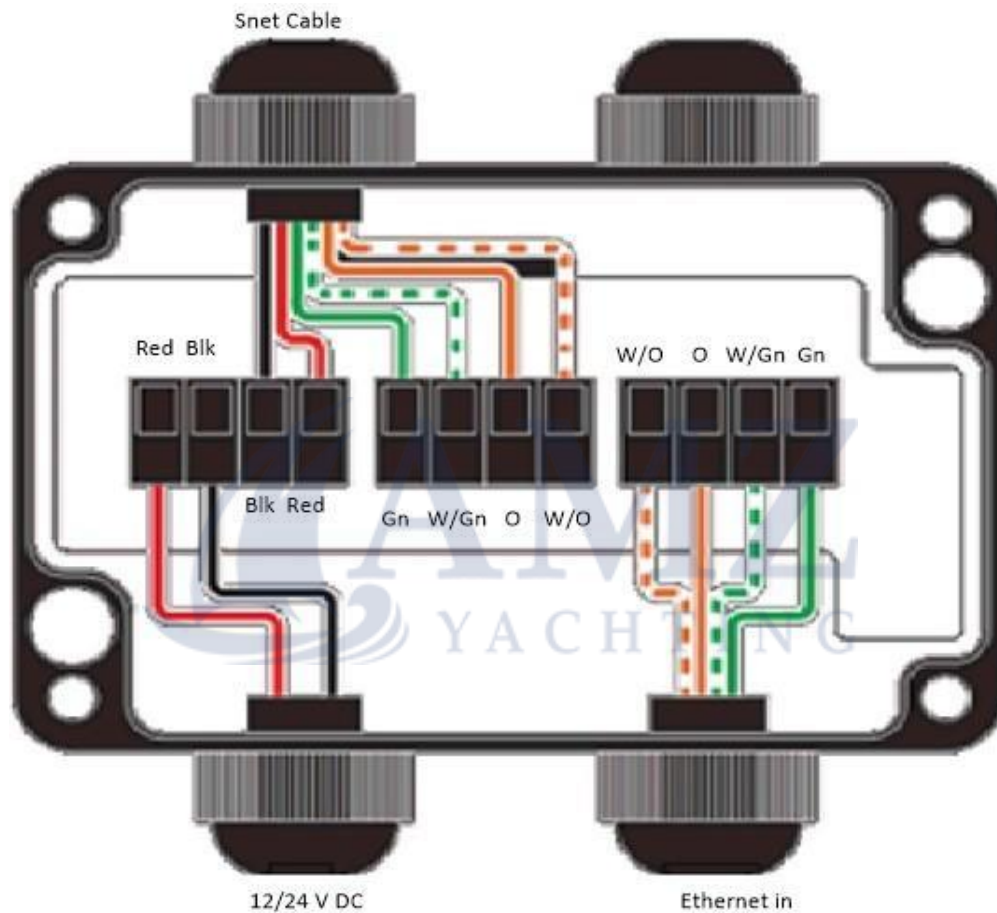
Do Not cut off the connector at the end of a daisychain. This will void warranty of the display and will likely cause damage to the electronics in the display.

2.3.2 SAILETHERNET

This box is connected to the ethernet port of the E4 and the ship's power supply.

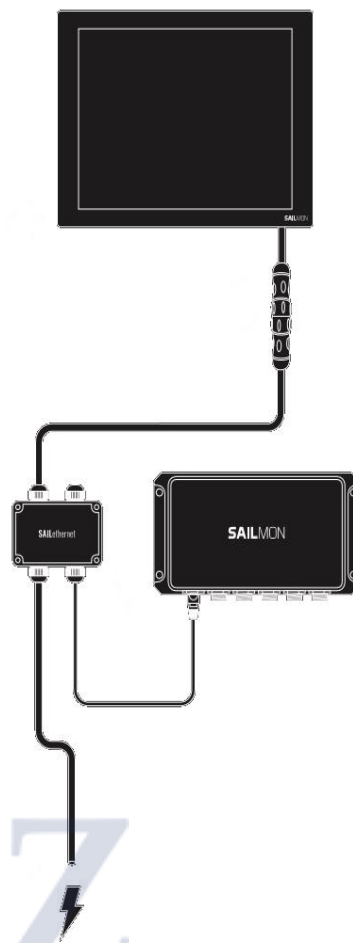
The SAILethernet powers and establishes a connection between your display and model E4 over ethernet. This connection can be achieved by adding both devices to an existing network or connecting them directly together.

The SAILethernet converts a regular power cable and a regular cat-5 cable into our proprietary 6 core S-NET cable, which runs from the instruments to the SAILethernet.



Mounting

- Find a suitable location to mount the box
- Mount the box with the power and ethernet wires facing downwards.
- Pull the SNET cable from the Instrument mounting location to the SAILethernet mounting location. Leave the female connector at the Instrument end.
- Pull a power cable from the power supply location to the SAILethernet location.
- Pull a network Cable from the E4 (or network switch) to the SAILethernet location.
- The SNET cable is supplied with the outside stripped 70mm. This is the ideal length to mount it in the SAILethernet, do not shorten this.
- Unscrew the cable grommets and feed the appropriate cable through the cable grommet.
- Strip wires and crimp ferrules.
- Insert the wires in the appropriate terminals. When inserting the wires press the white push button to enable insertion.
- Fasten the cable grommets with the outside jacket 5mm inside the box (see [figure 2](#))
- Repeat for each group of instruments.



2.3.3 RECOMMENDED FUSE RATING

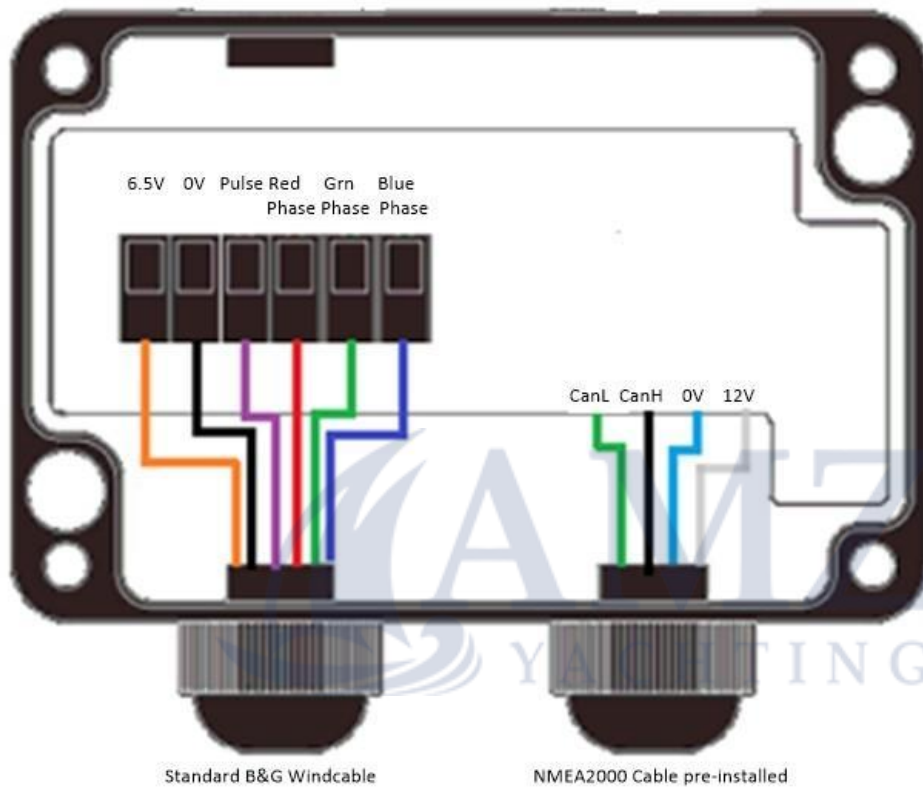
Number of Sailmon displays	Supply Battery voltage	Fuse size
1 / 2	12V	6A
3 / 4	12V	12A
5 / 6	12V	16A
1 / 2	24V	6A
3 / 4	24V	10A
5 / 6	24V	12A

2.3.4 WINDBOX

The Sailmon WindBox offers an interface for the B&G 213MHU wind sensor to the NMEA 2000 backbone and in turn connection to the E4 processor.

The NMEA 2000 interface cable is preinstalled. For overvoltage and electrostatic discharge protection the WindBox is galvanic isolated.

INSTALLATION



Choose a dry and protected place for the Wind Box. The Wind Box is designed to be installed inside the boat.

IMPORTANT: Do not install your Sailmon windbox at the masthead. This will make lightning protection impossible and the NMEA 2000 specifications for the maximum drop cable length are likely to be exceeded.

Feed the wind sensor cable into the left cable gland of the Wind Box and connect the wires according to the color layout on the diagram.

OPERATION

In case of sensor failure or incorrect connection, the blue status LED will blink 5 Times / second.

- The Wind Box is designed to be integrated into a Sailmon system. It does not provide direct offset features since Sailmon uses advanced calibration which is done in other parts of the system. Contact Sailmon support if you plan to use the Wind Box for other instrument systems.
- Since the Wind Box delivers wind data with a high update rate of 100Hz, this may be too much for some instruments. Special software is available in this case, to solve this problem contact the Sailmon support team.

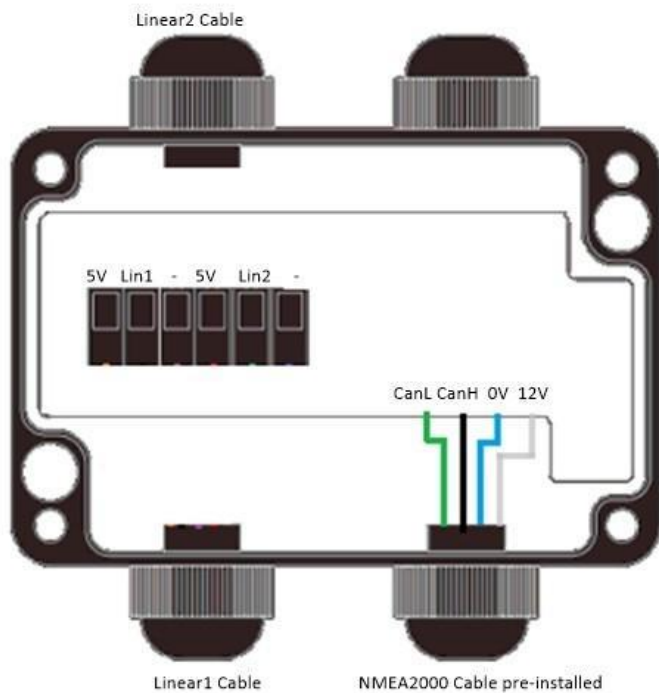
TECHNICAL SPECIFICATION WINDBOX

- Update rate: 25Hz for Sailmon.
- 5 m NMEA 2000 drop cable (pre-installed) (SeaTalk NG is available on request)
- Power Supply: 9-16V over NMEA 2000
- Dimensions (H x W x D): 98mm x 82mm x 33mm
- Weight: 160g (Cable: 240g) • Protection: IP65
- Ambient Temperature Range: -10°C to 50°C, 14°F to 122°F
- Power Consumption: 10mA at 12V
- Galvanic Isolation of MHU
- NMEA 2000 PGNs Supplied: 130306 (0x1FD02) with 10Hz, Sailmon proprietary 64231 (0xFAE7) for 100Hz MHU angle and speed

2.3.5 LINEARBOX

The Sailmon LinearBox is an interface for 3rd party linear sensors to be connected to the E4 processor by means of the NMEA 2000 backbone. Up to 16 LinearBoxes can be connected to a single E4 Processor. The linear box provides overvoltage and electrostatic protection by means of galvanic isolation.

The E4 will measure linear inputs with an update rate of 4Hz allowing monitoring and logging of all channels.



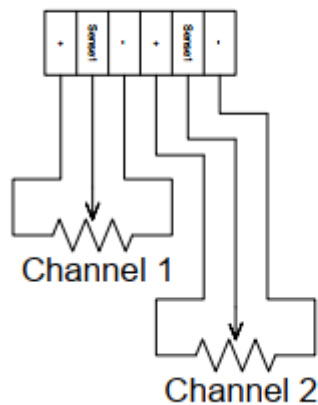
INSTALLATION

The box is designed to be installed inside the boat. The preferred installation location is as close to the sensor as possible. This will keep the analog wires between the sensor and the LinearBox short. After choosing a suitable installation location, feed the sensor cable into the left cable gland of the LinearBox and connect the wires according to the diagram.

RESISTIVE SENSORS

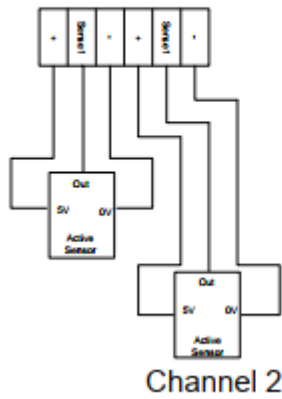
Resistive sensors can be standard positioning sensors, rudder angle sensors, rotation sensors etc.

Follow the Scheme below to connect standard resistive sensors to the Linear Box.



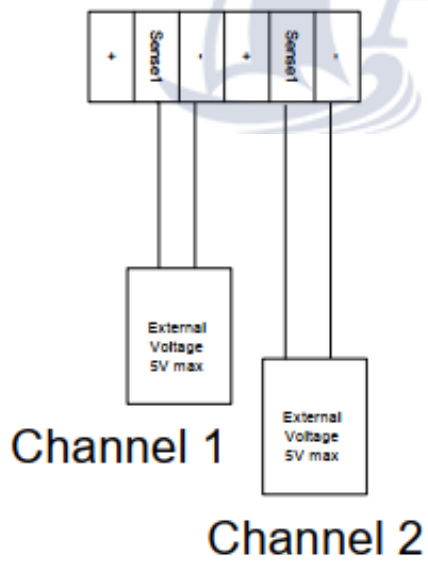
ACTIVE SENSORS

Some sensors do have internal electronics which converts measurements to an analog voltage. As long the output of such a sensor is 0-5V, these sensors can be connected to the Linear Box.



SENSORS FROM EXTERNAL SOURCE

It is possible to measure a 0-5V signal from any external source. Extreme care must be taken in this case to not exceed the maximum input voltage of 5V for the inputs.



TECHNICAL SPECIFICATIONS OF THE LINEARBOX

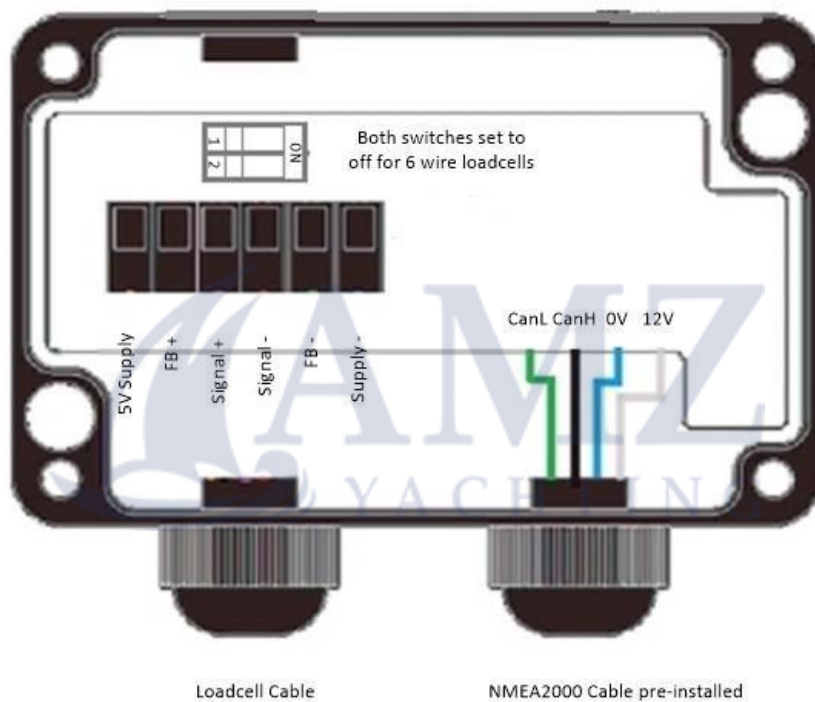
- Update rate: 4Hz
- 5m NMEA 2000 drop cable (pre-installed)
- Accuracy: 2% over Temperature
- Maximum input Voltage: 5000mV
- Minimum input Voltage: 0mV
- Measurement resolution: 10 bit, 1024 steps
- 5V Supply capability: 50mA for both channels (minimum sensor resistance 200 Ohms on each channel)
- Dimensions (H x W x D): 98mm x 82mm x 33mm
- Weight: 160g (Cable: 240g)
- Protection: IP65
- Ambient Temperature Range: 0°C to 50°C, 32°F to 122°F
- Power Supply: NMEA 2000 compatible, 9-16V
- Galvanic Isolation of Linear Inputs to NMEA 2000, no isolation between channels
- NMEA 2000 PGNs Supplied: 64233 (0x0FAE9) Sailmon proprietary



2.3.6 LOADCELL BOX

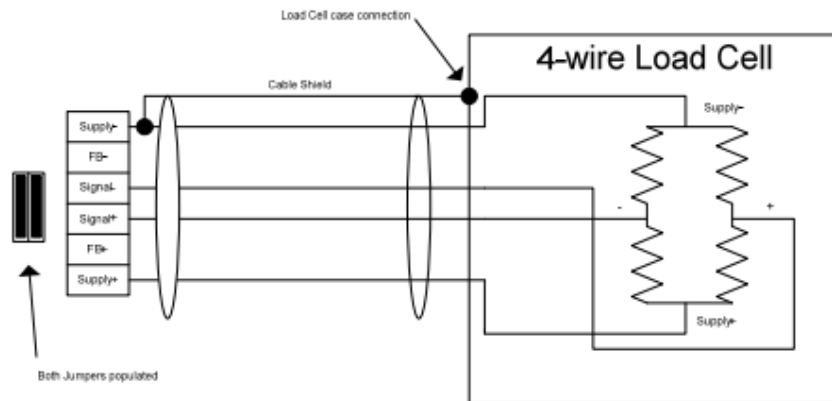
The Sailmon Loadcell Box offers connection of load cells to the Sailmon system. It can be used to interface all common 4-wire or 6-wire load cells. Calibration is done with Navdesk. For overvoltage and electrostatic discharge protection the Load Cell Box is galvanically isolated. The input can read 0-39mV input.

It will measure tension or compression with an update rate of 4Hz, allowing monitoring and logging of all loads. With the Sailmon System, the actual force can be displayed in Tonnes, N (Newton), kg, Klb, or % of pin rated load. The Loadcell box can supply 5V to loadcells, loadcells that need 12V power need to be powered from a separate 12V powersupply.



4-WIRE LOADCELLS

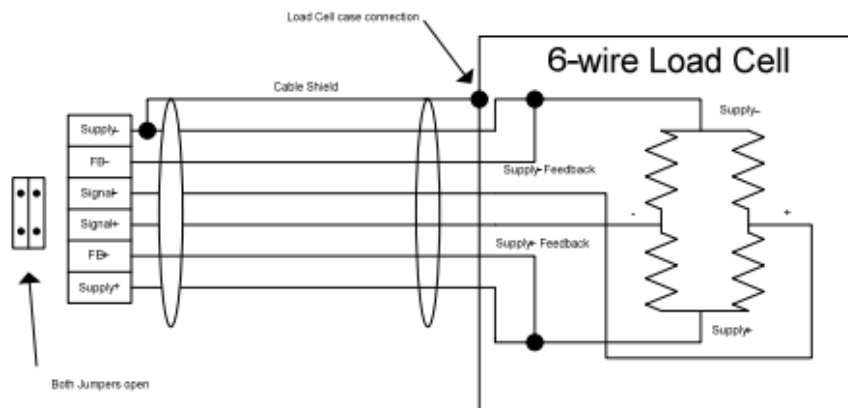
Most load cells have a 4 wire connection, where 2 wires are used for the supply of the internal strain gauges, while the other 2 wires provide the measurement signal. The proper connection for 4 wire load cells is as follows:



For 4 wire load cells, both jumpers on the back side of the connector terminal must be populated like described in the picture above.

6-WIRE LOADCELLS

High accuracy load cells have a 6 wire connection, where 2 wires are used for the supply of the internal strain gauges, 2 wires for Supply Feedback and the remaining 2 wires provide the measurement signal. The proper connection for 6 wire load cells is as follows:



For 6 wire loadcells, both jumpers on the back of the connector terminal need to be open.

TECHNICAL SPECIFICATION OF LOADCELL BOX

- Update rate: 4Hz
- 5m NMEA 2000 drop cable (pre-installed)
- Accuracy: 1% over Temperature
- Maximum input Voltage: 39mV
- Minimum input Voltage: 0mV
- Dimensions: 98mm x 82mm x 33mm
- Weight: 160g (Cable: 240g)
- Protection: IP65
- Ambient Temperature Range: 0°C to 50°C, 32°F to 122°F
- Power Supply: NMEA 2000 compatible, 9-16V
- Isolation: Galvanic Isolation of Load Cell
- NMEA 2000: PGNs Supplied: 64221 (0x0FADD) Sailmon proprietary

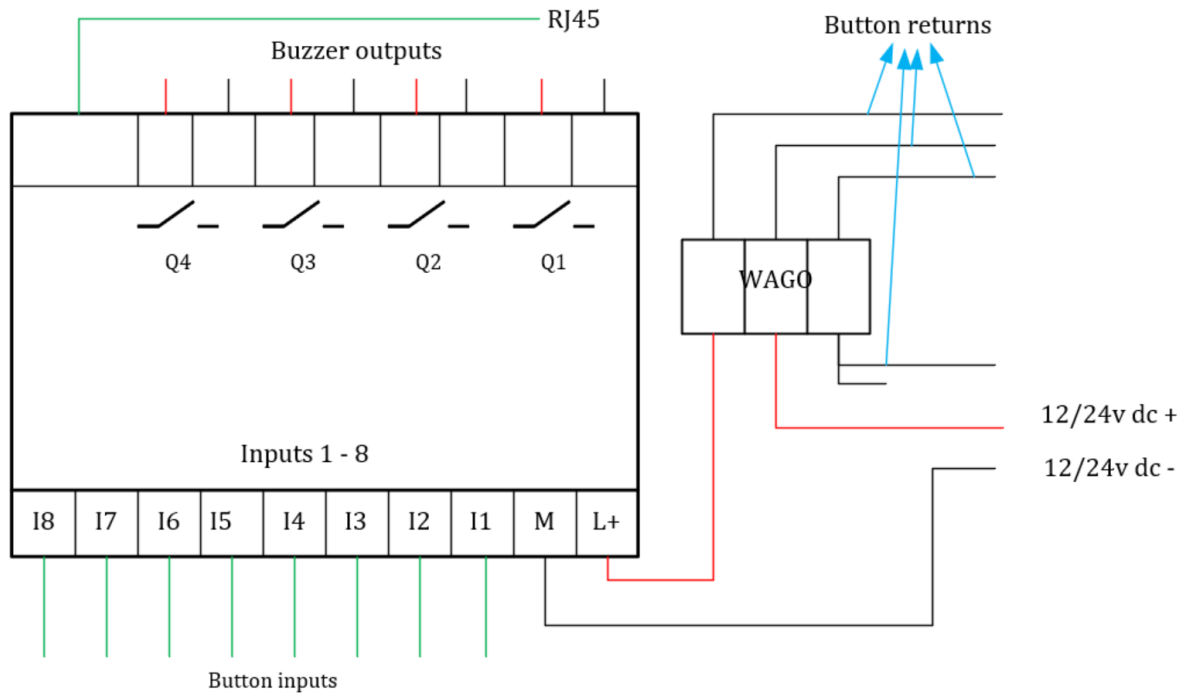
2.3.7 BUTTONBOX



Sailmon have moved to a PLC based system. This has the advantage of 8 buttons instead of 4 button connection. The system is also expandable to 16 or more channels. With Navdesk 3.5.2 it is also possible to use Piezo buzzers for audible alarms for wind and depth which can be acknowledged using a button. The Buttonbox connection is Ethernet based and needs to be in the same network range as the rest of the Sailmon system. Button boxes come pre-configured with an IP address according to customer wishes. The IP address will be printed on the label on the lid.

Connect buttons such that one wire connects to one of the Wago terminals and the other side to I1 through I8. Power connects 12-24VDC + to the Wago terminal, 0V to M on the PLC.

If Piezo buzzers are to be connected connect them to Q1-Q4 with Red lead to power.



ETHERNET CONNECTION:

Connect the button box to the same network as the Sailmon E4 using a Standard RJ45 connector.



SETUP OF BUTTON ACTIONS:

Once the system is hooked up and switched on, press all buttons once so they are recognized by the system. In the Action setting select what the action should be. If you want to select an action for only one or more displays put in the number of the display's in the position tab. The number of the display corresponds with the position it has in the Setup>Commissioning>Display Definition page.

E4 SILVER

As the E4 Silver has no Modbus input a file needs to be added on the E4 processor. This can be done using the FileZilla software by connecting to the E4 and sending a file named input.json to the E4. Please contact Sailmon if you need assistance! If a Buttonbox is already in an order to ship we will pre-configure everything before shipping.

The file needs to be in this format regarding the Button interface, where the IP address confirms to the address of the buttonbox:

```
},
  "Modbus-TCP1": {
    "Enabled": true,
    "Address": "192.168.xx.xx",
    "Port": 502,
    "Registers": [
      {
        "Address": 0,
        "Bits": [
          "Button-1",
          "button-2",
          "button-3",
          "button-4",
          "button-5",
          "button-6"
        ],
        "RegisterType": 4
      }
    ]
  }
}
```

E4 BLACK

As the E4 Black has up to 10 free configurable Modbus inputs one needs to designate one of the Modbus inputs as follows:

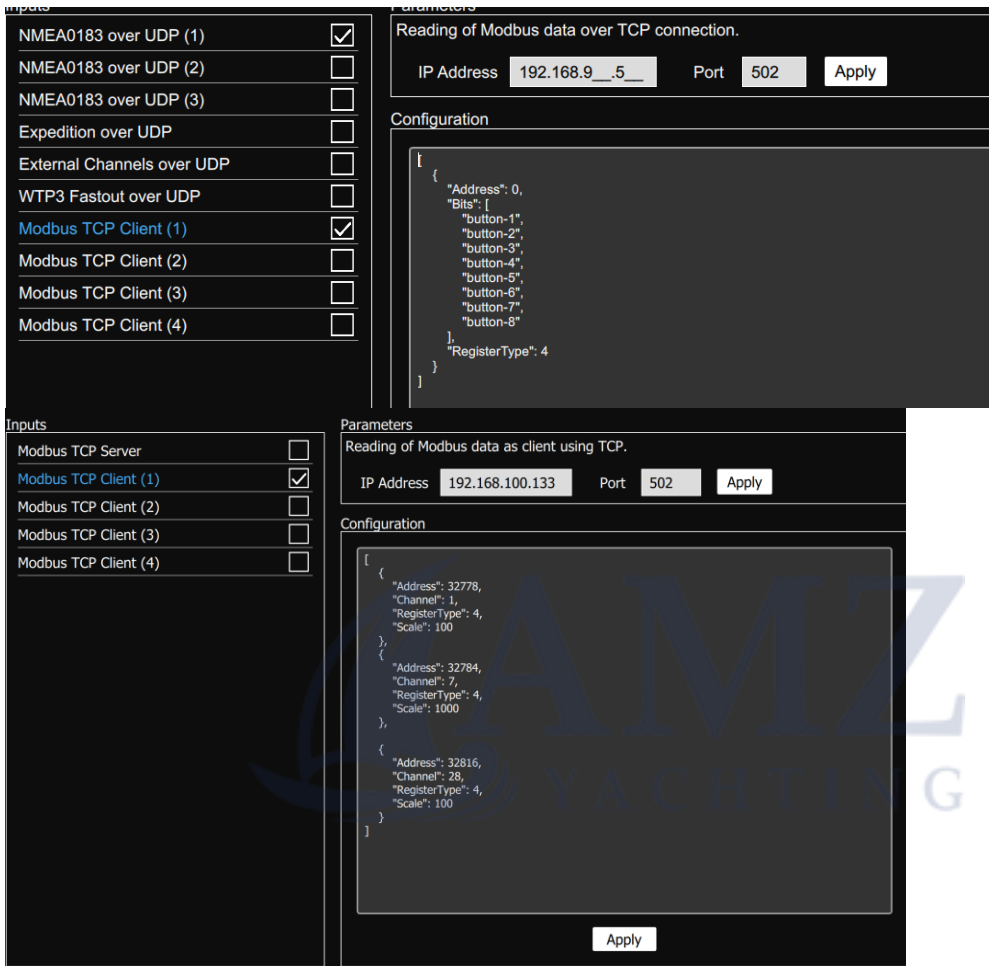
IP address of the Buttonbox, Port: 502.

In the Configuration section put in the following Json file:

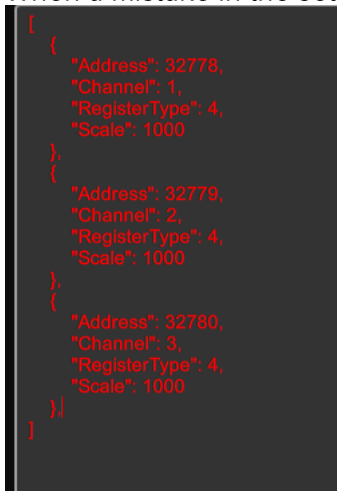
```
[
  {
    "Address": 0,
    "Bits": [
      "button-1",
      "button-2",
      "button-3",
      "button-4",
      "button-5",
      "button-6",
      "button-7",
      "button-8"
    ],
    "RegisterType": 4
  }
]
```

DATA FROM PLC SYSTEMS

The Sailmon E4 **Black** processor is able to receive data from PLC systems. What is needed for this is the list of addresses and names of the corresponding variables with scaling factors and possible offsets. Together with the IP address of the PLC and portnumber (usually 502). This list is entered as a Json file in Navdesk for the correct Modbus connection.



When a mistake in the setup of the Json file occurs the text will show in Red:



Please contact Sailmon for more information on how to setup Modbus TCP/IP and the file format needed.