COAlert
NMEA 2000 Carbon Monoxide Alarm

Installation and instruction Manual

1. Introduction

Congratulations on the purchase of your COAlert Alarm system. This product is designed to provide an integrated Carbon Monoxide Alarm system, consisting of a single or multiple sensors, all linked together via NMEA 2000.

The COAlert system consists of:

- A COAlert NMEA 2000 Interface (black enclosure)
- A COAlert Sensor (white enclosure)

(i) **Please note that the COAlert Sensor is a UL2075 certified device manufactured by Honeywell. It has its own instruction sheet (included) which has very important information about the operation and maintenance of the sensor and this should be read in conjunction with this Product Guide.**

2. Before you start

To install and test your COAlert Alarm system you will need:

- M3 or M4 screws or other fixings appropriate to the mounting location
- A spare NMEA 2000 network connection (T-Piece) to allow the COAlert to connect to the NMEA 2000 network*
- A can of CO Gas to test the sensor
- An NMEA 2000 compatible MFD that will respond to the NMEA 2000 Alerts that COAlert transmits

* NOTE – if you require any additional NMEA 2000 networking components or cables please click on the link below..

https://digitalyacht.co.uk/product-category/nmea-2000/nmea-2000-cables/

3. Installation

Before starting installation select a suitable location for the COAlert sensor and COAlert NMEA 2000 Interface. The sensor unit should be installed below deck, in the main habitable area of the boat. It should be mounted on a vertical bulkhead, in a dry location, at least 1.5m above the cabin floor but less than 15cm from the ceiling.

The cable between the COAlert Sensor and the NMEA 2000 interface can be extended up to 20m, allowing the Sensor to be some distance from the NMEA 2000 network. When locating the units you should consider:

- Routing of the integral NMEA2000 cable from the COAlert NMEA 2000 Interface to the NMEA 2000 network.
- Routing of 12/24v power to the COAlert Sensor and routing of the Sensor cable to the NMEA 2000 interface.
- Provision of sufficient space around the units for comfortable cable routing.
- Maintaining the compass safe distance of 0.5m

3.1 Mounting the NMEA 2000 Interface

The COAlert NMEA has two slotted 4mm Diameter fixing holes. Use suitable fixings (not supplied) to fix the converter to a flat surface – using the dimensions and details shown in the top drawing. Note that the unit may be installed in any orientation.
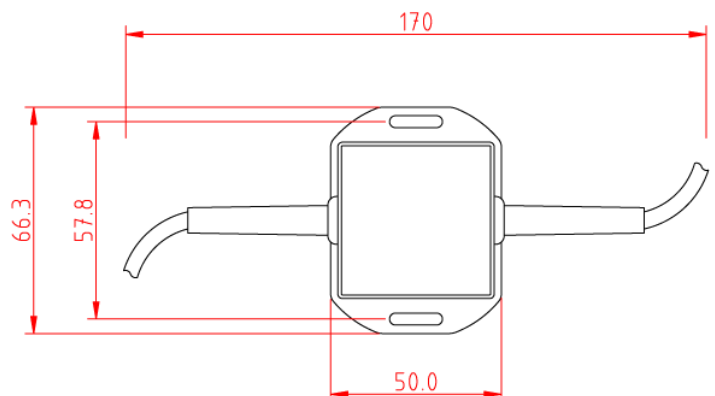
3.2 Mounting the CO Sensor

The COAlert Sensor has two "keyhole" shaped holes moulded into the rear enclosure which can be used to mount the Sensor on a vertical bulkhead. It is easier to mount the unit with the enclosure opened. To do this gently insert a flat blade screw driver in to the small slot on the bottom edge of the enclosure below the word "DO" of the "DO NOT PAINT" text.

Use two suitably sized pan head screws (not supplied) and set them 85mm vertically apart as shown in the dimensions drawing. The screw thread should be no more than 3mm in diameter and the screw head should be as large as possible but no more than 8mm in diameter.
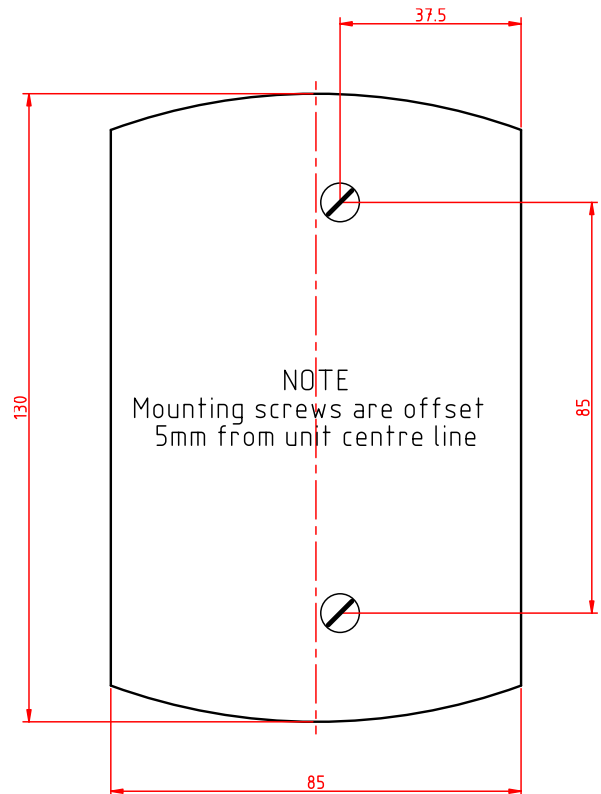
The heads of the screws should be screwed in until they are about 4-5mm off the bulkhead. Now insert the lower screw head into the lower keyhole opening. Move the sensor up and twist slightly, until you can insert the upper screw head into the upper keyhole. Now twist the sensor until it is vertical and gently tighten the screws until the sensor is firmly held in position. **DO NOT** over tighten the screws.

3.3 Connecting to NMEA2000 Network

- The COAlert, has an integral NMEA2000 cable terminated with a male connector, to connect to a standard NMEA2000 network via a spare "T-Piece". If you are creating a new NMEA2000 network, you may wish to consider Digital Yacht's NMEA2000 Starter Kit, that provides all of the cables, connectors and terminators required for a basic NMEA2000 network.

- If you are connecting COAlert to a non-standard NMEA2000 network, then a suitable adaptor cable will need to be sourced from the relevant manufacturer;

    o SeaTalkNG (Raymarine P/No A06045)

    o Simnet (Simrad P/No 24006199)

3.4 COAlert Wiring Diagram

The COAlert Sensor requires a separate 12v or 24v supply so that it can continue to work as a CO Sensor even if the NMEA 2000 network is powered off. Power is connected to the 1m integral 2 core Power cable on the Red and Black wires. The Red wire is the positive (+) connection. The Black wire is the negative (-) connection.

Connect the stripped wires to the nearest source of primary DC power. Ensure that the supply is connected via an inline 3A fuse (not supplied) or suitable circuit breaker. Add the fuse in the positive power connection to the unit if necessary.

The COAlert NMEA Interface has a 1m integral 4 core Sensor Cable that must be connected to the COAlert Sensor as shown below. Open the enclosure to access these screw terminals, as detailed in Section 3.2.

NOTE – the Black wire of the 4 Core cable must be connected to the Black wire of the 2 Core Power cable, which involves having two crimps connected to the Negative (–) terminal of the sensor.
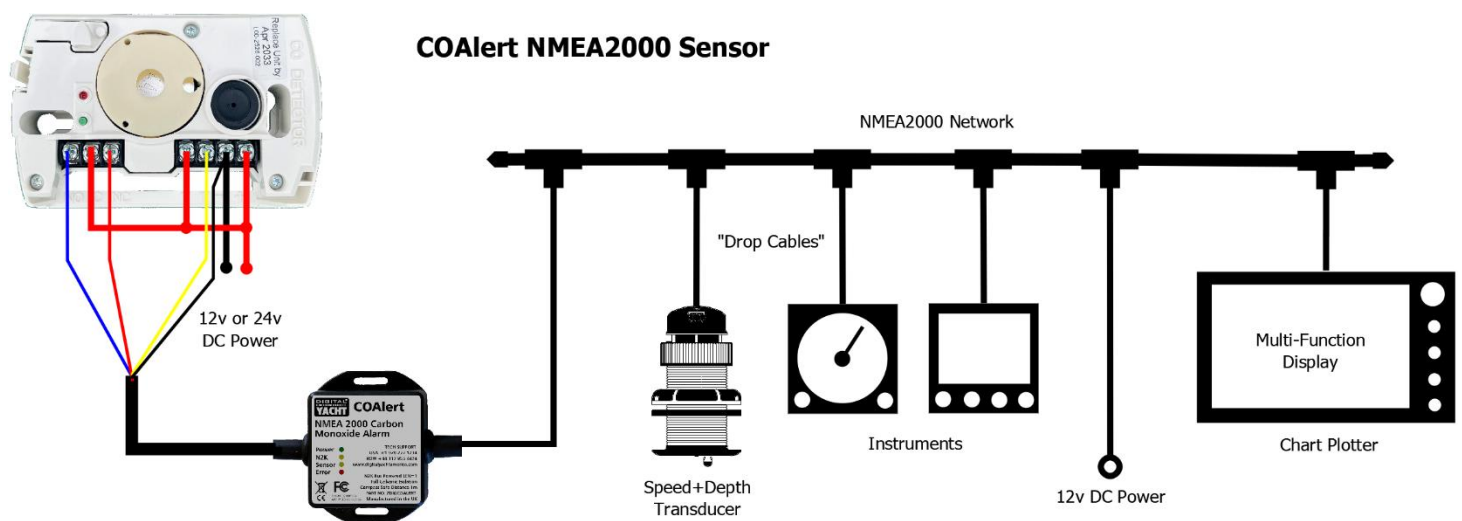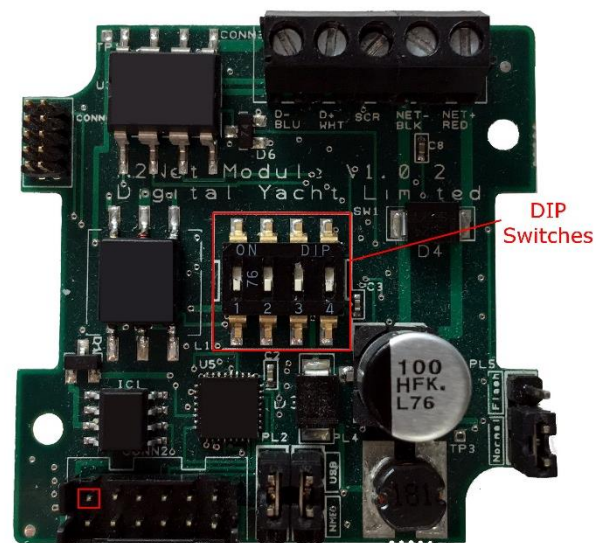

3.5 Setting the COAlert's Device Instance

By default, COAlert will have a Device Instance of 0, which is fine when just one COAlert is on the NMEA 2000 network, but if you wish to use multiple COAlerts, then each COAlert will need to have a different Device Instance

The COAlert's Device Instance is set by the DIP switches inside the NMEA 2000 Interface. Open the COAlert's NMEA 2000 Interface, by unscrewing the two cross head screws in the base of the unit, and then set the DIP switches to create a four bit binary number as follows…

0 = 0000	4 = 0100	8 = 1000	12 = 1100
1 = 0001	5 = 0101	9 = 1001	13 = 1101
2 = 0010	6 = 0110	10 = 1010	14 = 1110
3 = 0011	7 = 0111	11 = 1011	15 = 1111

Once you have set the DIP switches, power cycle the COAlert unit for the new Device Instance to be applied.

4.0 Operation

Once the COAlert has been configured and installed, it will automatically operate with no additional interaction. At power up, all of the LEDs will flash briefly on the COAlert NMEA 2000 Interface. Once the COAlert has initialised and claimed an NMEA 2000 address, the N2K LED will continuously flash/flicker depending on the amount of data being received.

The COAlert NMEA 2000 Interface will continuously monitor the COAlert Sensor to ensure that the 12v or 24v supply voltage is present, that the COAlert Sensor has not been tampered with, developed a fault or reached the its "End Of Life" (EOL) and most importantly that the CO Sensor has not detected a CO threshold that triggers an alarm condition.

4.1   LED and Alarm Behaviour

COAlert NMEA 2000 Interface has four LEDs, which behave as follows;

State	POWER LED (Green)	N2K LED (Yellow)	SENSOR LED (Yellow)	ERROR LED (Red)
OFF	OFF	OFF	OFF	OFF
All OK	ON	Flashing	OFF	OFF
No N2K Data	ON	OFF	OFF	OFF
CO Sensor Active	ON	Flashing	ON	OFF
CO Sensor Trouble	ON	Flashing	Flash	Flash
CO Sensor Voltage out of range	ON	Flashing	OFF	Flash
COAlert Interface Error	ON	Flashing	OFF	ON

The COAlert Sensor has two LEDs and an internal Buzzer/Sounder, which behave as follows:

State	GREEN LED	RED LED	SOUNDER
Normal (standby)	Blink 1 per minute	OFF	OFF
CO Alarm	OFF	Temp 4 Pattern	Temp 4 Pattern
CO Alarm Test	OFF	Temp 4 Pattern	Temp 4 Pattern
ReaTest	Blink 1 per second	OFF	Temp 4 Pattern
End Of Life (EOL)	OFF	OFF	OFF
CO Trouble	OFF	Blink 1 per minute	OFF
Power Loss/Cell Fault	OFF	OFF	OFF
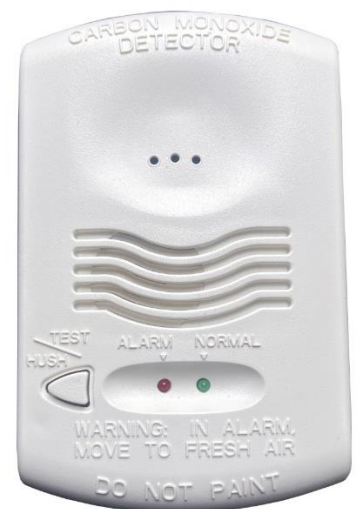
4.1 NMEA 2000 Behaviour

With the exception of the mandatory Heart Beat PGN and other general NMEA 2000 bus management PGNs, COAlert only transmits Alert PGNs when a CO Alarm condition occurs or a fault is detected in the COAlert sensor. There are four fault conditions…

- High CO Level Detected
- Sensor Supply Voltage High
- Sensor Supply Voltage Low
- Sensor Connection Fault

The Alert PGN Text generated will include the COAlert's Device Instance, so that it is clear which sensor has the alarm condition and also the condition that has occurred i.e. "**COAlert Sensor 2 - High CO Level Detected"** or "**COAlert Sensor 4 – Sensor Supply Voltage Failure".**

If the installer has programmed the first field of the COAlert's Configuration Information PGN, then this text will appear in the Alert Text i.e. if the Configuration Information Field 1 = **COAlert in Master Cabin**, then the alert text will appear as **"COAlert in Master Cabin – Sensor Connection Fault"**

Currently only the latest Garmin MFDs support the NMEA 2000 Alerts or Digital Yacht's own NAVAlert product.

4.2 Further Information

For COAlert technical support please email support@digitalyacht.co.uk