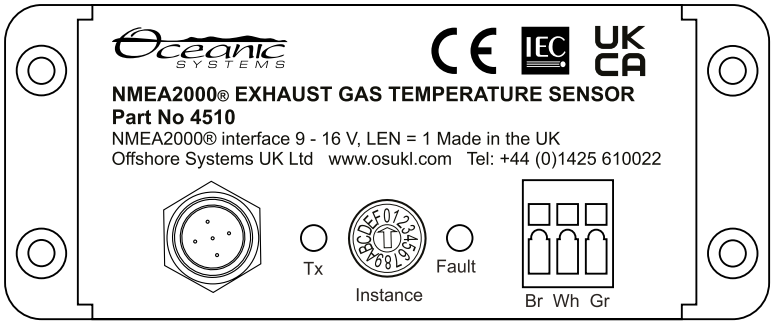
# NMEA2000® WET EXHAUST GAS TEMPERATURE SENSOR
# Part Numbers: 4510
# USER MANUAL




**Revision 4**

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# 1 INTRODUCTION

The Oceanic Systems NMEA2000® 4510 Wet Exhaust Gas Temperature Sensor, along with the 4511 Exhaust Gas Temperature Probe, is designed to measure the exhaust gas temperature of a marine engine or generator and report it's value on the NMEA2000® network.

This module is designed to operate in a protected marine environment such as an engine room. It is very important that it is installed and set up correctly according to this manual. Please read and follow the installation and setup instructions carefully to achieve the best results.

This module forms an important part of our NMEA2000® Integrated Alarm, Control and Display System.

## 1.1 PRODUCT FEATURES

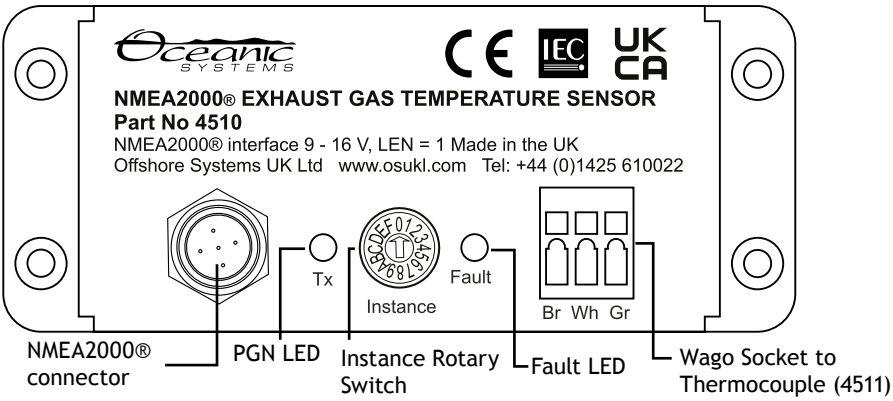
The 4510 NMEA2000® Wet Exhaust Gas Temperature Sensor has the following features:

- Switch selectable NMEA2000® Device Instance
- Blue LED confirming NMEA2000® transmission
- Red warning LED if probe element or the cable is damaged
- Power drawn only from NMEA2000® interface
- Panel mounting

# 2 INSTALLATION

## 2.1 UNPACKING THE BOX

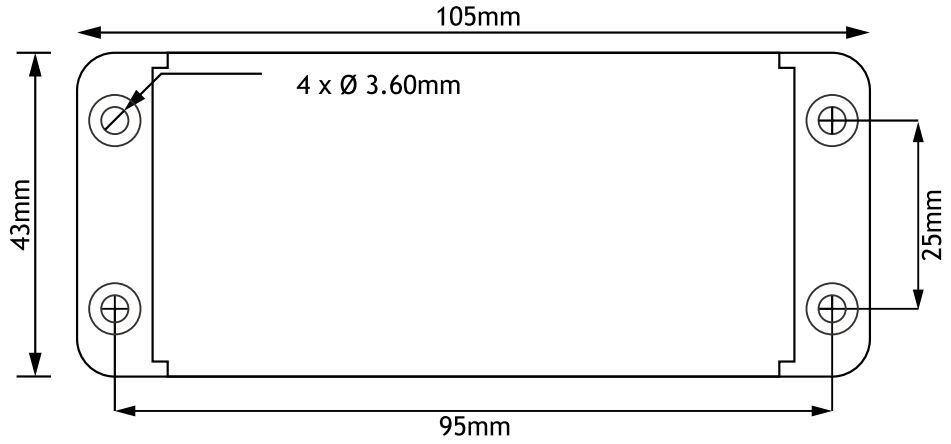
You will find the following items in the shipping box:
1 x 4510 NMEA2000® Wet Exhaust Gas Temperature Sensor
1 x 4510 User Manual (this document)
2 x DIN rail Adaptors
4 x Screws



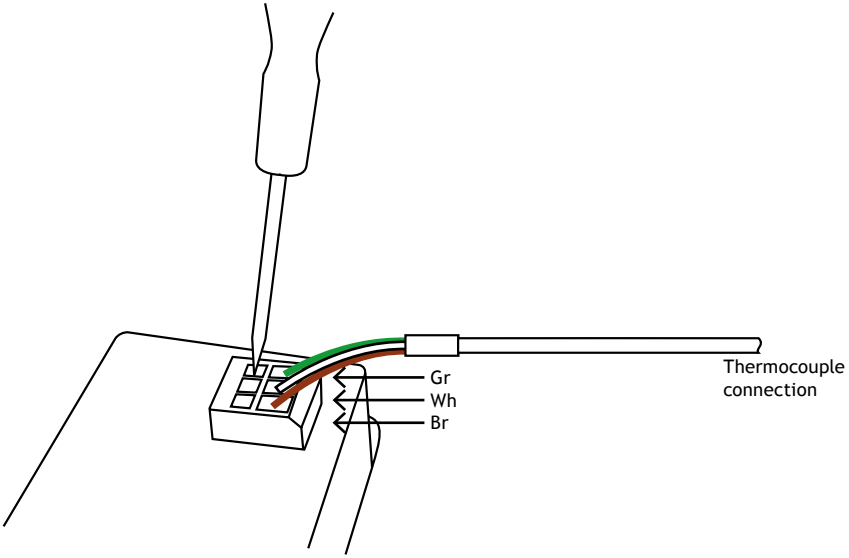

## 2.2 MOUNTING THE WET EXHAUST GAS TEMPERATURE SENSOR

This unit must be mounted in an area protected from water and physical damage and within 3 metres if connecting to a 4511 Exhaust Gas Temperature Probe. It should be securely attached to a flat panel using 4 suitable mounting screws. Alternatively, it can be DIN rail mounted using the DIN rail adaptors supplied in the kit.

The unit dimensions and the mounting hole locations are shown in the following drawing:



Once mounted securely connect the Thermocouple Cable to the WAGO socket. The wires from the Thermocouple Cable are connected to the WAGO cage clamp terminal block by placing a small screw driver in the slot above the terminal turning it to open the cage clamp. Insert the wire into the terminal block and withdraw the screwdriver to allow the cage clamp to make a good connection onto the bared wire end.




Check that the cage clamp is making contact with the bared wire end and is not seated onto the wire insulation.

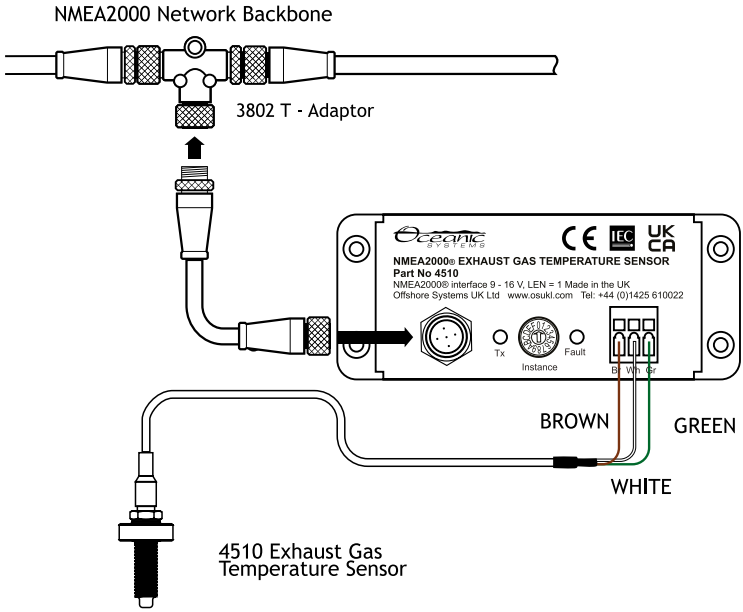
The coloured wires should be connected as follows:

- ✓ Brown Wire to Br terminal
- ✓ White wire to Wh terminal
- ✓ Green wire to Gr terminal.

If the wires are incorrectly placed no damage will occur, but the unit will not measure the temperature correctly and the Red Fault LED will illuminate. If this happens check and correct the connections.

## 2.3 CONNECTING THE NMEA2000® CABLE

The unit is connected to the NMEA2000® network by the 5 way micro C socket on the front. Carefully attach the network drop cable to this plug and hand tighten until it it is fully seated. Take care to match the orientation of the keyway inside the socket to the recess inside the drop cable plug. The other end of the drop cable should be connected to a suitable Tee connector on the NMEA2000® network backbone cable.



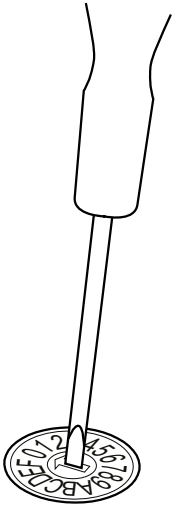

## 2.4 FINAL CHECKS BEFORE STARTING ENGINE

- ✓ Ensure that all wiring is secured safely to good marine practice.
- ✓ Ensure all connections are fully made and secure
- ✓ Ensure any sea cocks closed during installation are returned to there normal state.

# 3 CONFIGURATION

Each 4510 Wet Exhaust Gas Temperature Sensor connected to the NMEA2000® network needs to have a unique Device Instance Address. The Device Instance and Temperature Instance of each unit is set by turning the small rotary switch with a small screw driver.

Valid Device Instances and Temperature range from “0” through to “F”.




We STRONGLY recommend that the following Device Instances are used:

| | |
|---|---|
| Port or single Main Engine | Device Instance 0 |
| Starboard Main Engine (if fitted) | Device Instance 1 |
| Mid Main Engine | Device Instance 2 |
| Port Generator | Device Instance 3 |
| Starboard Generator | Device Instance 4 |

By using these instances the Oceanic Systems 4515 Exhaust Gas Overtemperature Alarm Panel will show the correct warnings.

# 4 TECHNICAL DATA

## NMEA2000® Parameter Group Numbers (PGNs)

| Type | PGN No | PGN Name |
|---|---|---|
| Periodic Data PGNs | PGN130316 | Temperature Extended Range |
| Protocol | PGN126464 | Tx/Rx PGN List |
| | PGN126996 | Product Information |
| | PGN059392 | ISO Acknowledge |
| | PGN059904 | ISO Request |
| | PGN060928 | ISO Address Claim |
| | PGN126208 | Command/Request Group |
| | PGN130312 | Temperature |

## Design Standards

| Parameter | Comment |
|---|---|
| NMEA2000® | Network Standard |
| Maritime Nav and RadioComm Equipment | Designed to IEC60945 |
| CE and FCC | Electromagnetic Compatibility |

## Electrical and Mechanical

| Parameter | Value | Comment |
|---|---|---|
| Operating Voltage | 9 to 16 Volts | DC Voltage |
| Power Consumption | 45mA | Average Operating |
| Load Equivalence Number | 1 | LEN |
| Reverse Battery Protection | Yes | Indefinately |
| Load Dump Protection | Yes | SAE J1113 |
| Size | mm | 105 x 43 mm |
| Weight | g | 100g |

## Environmental

| Parameter | Value |
|---|---|
| IEC 60954 Classification | Protected |
| Degree of Protection | IP30 |
| Operating Temperature | -25˚C to 50˚C |
| Storage Temperature | -40˚C to 70˚C |
| Relative Humidity | 93%RH @40˚ per IEC60945-8.2 |
| Vibration | 2-13.2Hz @ ±1mm, 13.2-100Hz @ 7m/s2 per IEC 60945-8.7 |
| Electromagnetic Emission | Conducted and Radiated Emission per IEC 60945-9 |
| Electromagnetic Immunity | Conducted, Radiated, Supply, and ESD per IEC 60945-10 |
| Safety Precautions | Dangerous Voltage, Electromagnetic Radio Frequency per IEC 60945-12 |

# 5 TROUBLESHOOTING

If the data from the unit is not as expected check the following:

- If the Red LED is on this means that the probe or probe cable may be damaged. Check that it is still securely mounted in the cage clamp connections and the run of cable is secure and undamaged.

- If the red LED is NOT on is the blue LED flashing two times per second to indicate power is on the unit and a message is being transmitted. If this is flashing OK then check that the device instance switch is set to the value required by the display unit.

- If the blue LED is not flashing then check that the network has power and this unit is correctly connected to the network

- If the blue LED is flashing irregularily then check that the network is correctly wired and at least one other NMEA2000® device is attached.

# 6 WARRANTY

Oceanic Systems warrants this product to be free from defects in materials and workmanship for one year from the date of original purchase. If within the applicable period any such products shall be proved to Oceanic Systems satisfaction to fail to meet the above-limited warranty, such products shall be repaired or replaced at Oceanic Systems option. Purchaser's exclusive remedy and Oceanic Systems sole obligation hereunder, provided product is returned pursuant to the return requirements below, shall be limited to the repair or replacement, at Oceanic Systems option, of any product not meeting the above limited warranty and which is returned to Oceanic Systems; or if Oceanic Systems is unable to deliver a replacement that is free from defects in materials or workmanship, Purchaser's payment for such product will be refunded. Oceanic Systems assumes no liability whatsoever for expenses of removing any defective product or part, or for installing the repaired product or part or a replacement therefore or for any loss or damage to equipment in connection with which Oceanic Systems products or parts shall be used. The foregoing warranties shall not apply with respect to products subjected to negligence, misuse, misapplication, accident, damage by circumstances beyond Oceanic Systems control, to improper installation, operation, maintenance, or storage, or to other than normal use or service.

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## WARRANTY RETURN PROCEDURE

To apply for warranty claims, contact Oceanic Systems or one of its dealers to describe the problem and determine the appropriate course of action. If a return is necessary, place the product in its original packaging together with proof of purchase and send to an Authorized Oceanic Systems Service Location. You are responsible for all shipping and insurance charges. Oceanic Systems will return the replaced or repaired product with all shipping and handling prepaid except for requests requiring expedited shipping (i.e. overnight shipments). Failure to follow this warranty return procedure could result in the product's warranty becoming null and void.

Oceanic Systems reserves the right to modify or replace, at its sole discretion, without prior notification, the warranty listed above.

# 7 TECHNICAL SUPPORT

If you require technical support for any Oceanic Systems products you can reach us using any of the following:-

**tel:** +44 (0)1634 290772

**email:** sales@energy-solutions.co.uk

**web:** osukl.com or energy-solutions.co.uk

osukl.com

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