Navigator 550

Low level dissolved oxygen wet-section

Measurement made easy

Navigator 550
low level dissolved
oxygen wet-section

Introduction

This publication provides commissioning instructions for the Navigator 550 low level dissolved oxygen wet-section. The wet-section is used in conjunction with the Navigator 540 transmitter.

For more information

Further publications are available for free download from:

www.abb.com/measurement

or by scanning this code:

	Search for or click on
Data Sheet Navigator 500 dissolved oxygen analyzer	DS/ADS550-EN
Operating Instruction Navigator 500 low level dissolved oxygen analyzer	OI/ADS550-EN
Commissioning Instruction Navigator 540 transmitter	CI/AWT540-EN

Health & Safety

Safety precautions

Be sure to read, understand and follow the instructions contained within this manual before and during use of the equipment. Failure to do so could result in bodily harm or damage to the equipment.

Warning. Installation, operation, maintenance and servicing must be performed:

- by suitably trained personnel only
- in accordance with the information provided in this manual
- in accordance with relevant local regulations

Potential safety hazards

The Navigator 550 Dissolved Oxygen wet-section operates from 24V DC supplied from the transmitter.

There are no hazardous voltages present.

There are no chemical or burn hazards and Protective Personal Equipment (PPE) is not required.

Safety standards

This product has been designed to satisfy the requirement of IEC61010-1:2010 3rd edition.

Safety conventions

Warning. In this manual, a warning is used to indicate a condition which, if not met, could cause serious personal injury and / or death. Do not proceed beyond a warning until all conditions have been met.

Caution. A caution is used to indicate a condition which, if not met, could cause minor or moderate personal injury and / or damage to the equipment. Do not proceed beyond a caution until all conditions have been met.

Note. A note is used to indicate important information or instructions that should be considered before operating the equipment.

Symbols – CEI / IEC 61010-1:2001-2

Symbols that appear on this product are shown below

Product recycling and disposal (Europe only)

⎓	Direct current supply only.
	Electrical equipment marked with this symbol may not be disposed of in European public disposal systems after 12 August 2005. In conformity with European local and national regulations (EU Directive 2002/96/EC), European electrical equipment users must now return old or end-of-life equipment to the manufacturer for disposal at no charge to the user. ABB is committed to ensuring that the risk of any environmental damage or pollution caused by any of its products is minimized as far as possible.

Restriction of Hazardous Substances (RoHS)

	The European Union RoHS Directive and subsequent regulations introduced in member states and other countries limits the use of six hazardous substances used in the manufacturing of electrical and electronic equipment. Currently, monitoring and control instruments do not fall within the scope of the RoHS Directive, however ABB has taken the decision to adopt the recommendations in the Directive as the target for all future product design and component purchasing.

Specification

Mechanical data

Protection

IP54

Dimensions

Height – 480 mm (18.90 in.)

Width – 290 mm (11.41 in.) – door shut

Depth – 185 mm (7.28 in.) door closed – minimum
(excluding fixing brackets)

Weight – 4.5 kg (10 lb)

Electrical

Power supply (supplied by transmitter)

24 V DC max.

Power consumption

8 W max.

1 Sample requirements

1. Ensure the sampling point is as close as possible to the wet-section and provides a thoroughly-mixed representative sample.
2. Sample must contain <10 ppm suspended solids with a particle size no greater than 60 µm. (If particle sizes exceed 60 µm, use a 60 µm filter.)
3. Sample temperature must be within the range 5 to 55 °C (41 to 131 °F).

> **Note.** If the measured sample temperature exceeds 55 °C (131 °F), the calibration valve opens automatically to protect the dissolved oxygen sensor from thermal overload. The valve closes after 30 minutes, but if the sample temperature still exceeds 55 °C (131 °F) the valve re-opens.

4. Sample flow rates must be within the range 100 to 300 ml/min. (6.10 to 18.30 cu in./min.) – recommended 150 ml/min (9.15 cu in./min.).
5. Sample pressure must not exceed 2 bar gauge (29 psi).

2 Locating the wet-section

Referring to Fig. 1:

1. Locate the wet-section / transmitter indoors in a clean, dry, well-ventilated, easily-accessible area.
2. Do not locate in rooms containing corrosive gases or vapors – for example, with chlorination equipment or chlorine gas cylinders.
3. Select a location not subject to strong electrical and magnetic fields. If this is not possible (for example, where mobile communications equipment is present), use screened cables within flexible, earthed, metal conduit.

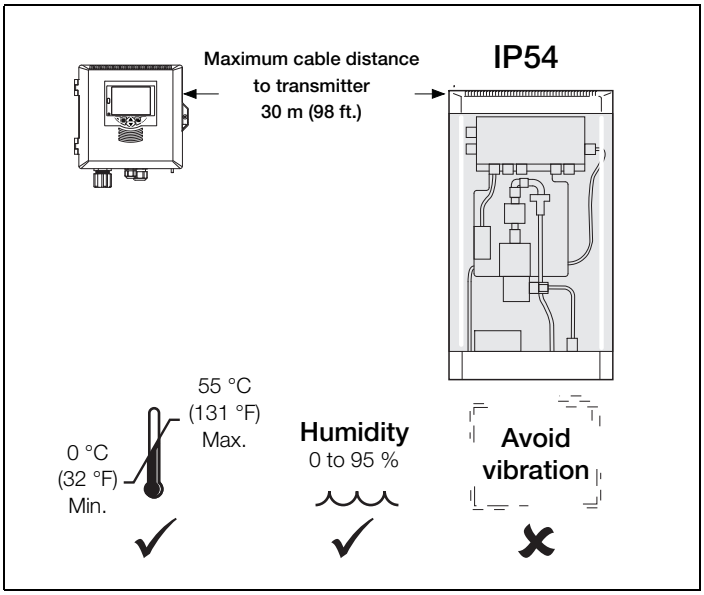


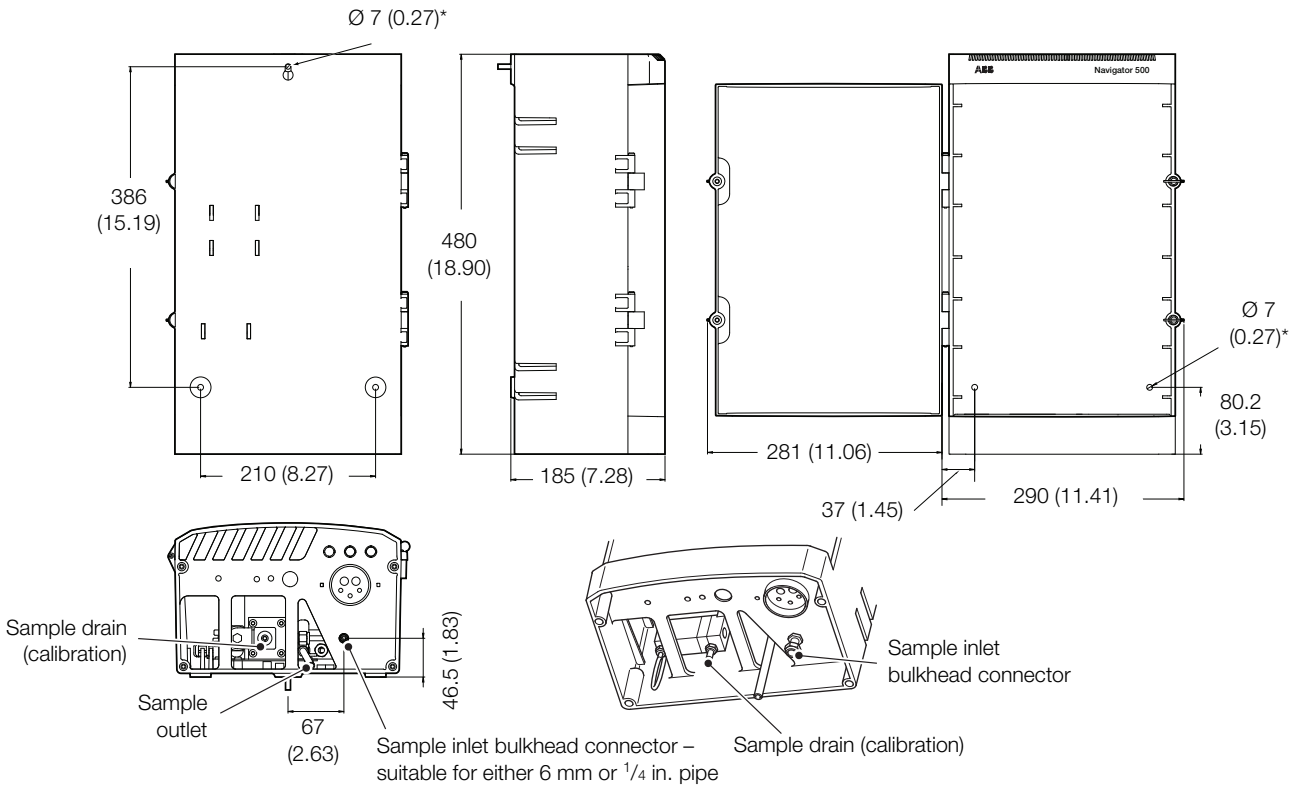
Fig. 1 Locating the wet-section

3 Mounting the wet-section

Refer to Fig. 2 for wet-section dimensions. The wet-section weighs 4.5 kg (10 lb).

Note. Clearance – the enclosure doors can open 180°. If mounting in a confined area, allow sufficient clearance for door opening.

Dimensions in mm (in.)



*For M6 or 1/4 in. fastener.

Fig. 2 Low level dissolved oxygen wet-section dimensions

Referring to Fig. 3:

1. Mark the wall using the dimensions shown.
2. Drill and plug 3 holes (A) and (B) in the wall suitable for M6 or 1/4 in. fixings.
3. Screw in top fixing (A), leaving a gap of 20 mm (0.78 in.) between the fixing head and the wall.

   Note. Fixing (A) cannot be adjusted once the wet-section is placed over it.

4. Hang the wet-section onto fixing (A), ensuring it is retained firmly against the wall.
5. Secure the wet-section to the wall using 2 fixings (B).

Dimensions in mm (in.)

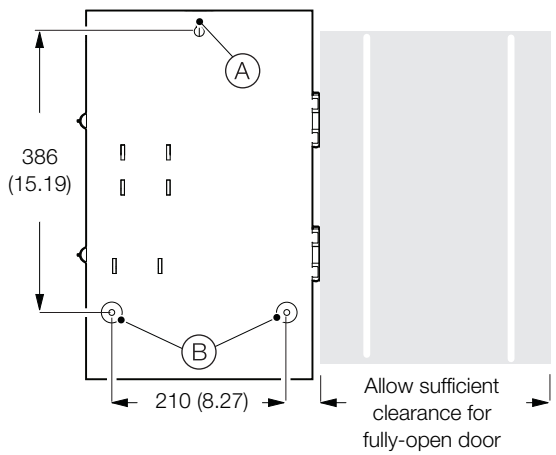


Fig. 3 Mounting the wet-section

4 Connecting the sample lines

Note.

- Sample inlet tubing, sample outlet tubing and drain tubing is customer-supplied.
- Stainless steel is highly recommended for sample inlet lines as it prevents ingress of oxygen via the sample tubing. Nylon tubing has a low oxygen permeability and can be used as an alternative to stainless steel, but stainless steel is the preferred option.
- All sample drains must be kept as short as possible and be vertical to enable the sample to drain freely during a calibration routine.
- Ensure the drain tubing outlet is open to atmosphere.

Referring to Fig. 4:

1. Connect the sample outlet tubing (A) using flexible PVC tubing 10 mm (3/8 in.) ID fitted to barbed connector (B) at the base of sample outlet (C).
2. Connect the drain tubing (D) using flexible PVC tubing 10 mm (3/8 in.) ID fitted to the barbed connector at the base of drain valve (E).
3. Connect sample inlet tubing (F) (typically stainless steel), 6 mm or 1/4 in. OD (depending on customer requirement) to the bulkhead connector (G). Alternatively, nylon tubing 6 mm or 1/4 in. OD could be fitted with suitable inner support fitting.

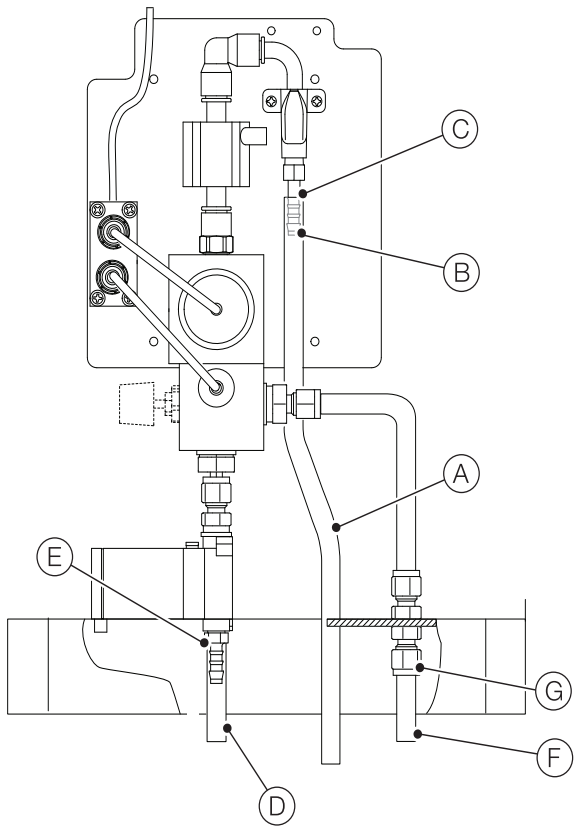


Fig. 4 Connecting the sample lines

5 Fitting the dissolved oxygen sensor

Caution. Only install the oxygen sensor immediately before use.

- The sensor has a limited shelf life, do not store longer than 6 months.
- Store the sensor in a cool environment.

Referring to Fig. 5:

1. Remove the top from the dissolved oxygen sensor container.
2. Unscrew the protective cap from the rear of the dissolved oxygen sensor (take care not to damage the delicate membrane on the oxygen sensor face).
3. Fit O-ring (A) (3/4 in. ID) onto the connector body (B).
4. Fit sensor (C) onto connector body (B) ensuring the pins and sockets are engaged correctly and tighten connector nut (D) onto the sensor (C).
5. Slide thrust washer (E) over connector body (B).
6. Fit O-ring (G) (7/8 in. ID) onto the sensor (at the flowcell end), then insert the complete assembly into flowcell (F).
7. Secure the sensor assembly by screwing clamping screw (H) into the flowcell firmly – use finger-pressure only.
   Do not overtighten.
8. Ensure the mating surfaces of the (red) sensor connector (I) and connector block connection (J) are clean and completely dry, then connect the sensor connector (I) to the connector block connector (J) firmly and tighten **1 turn** clockwise.

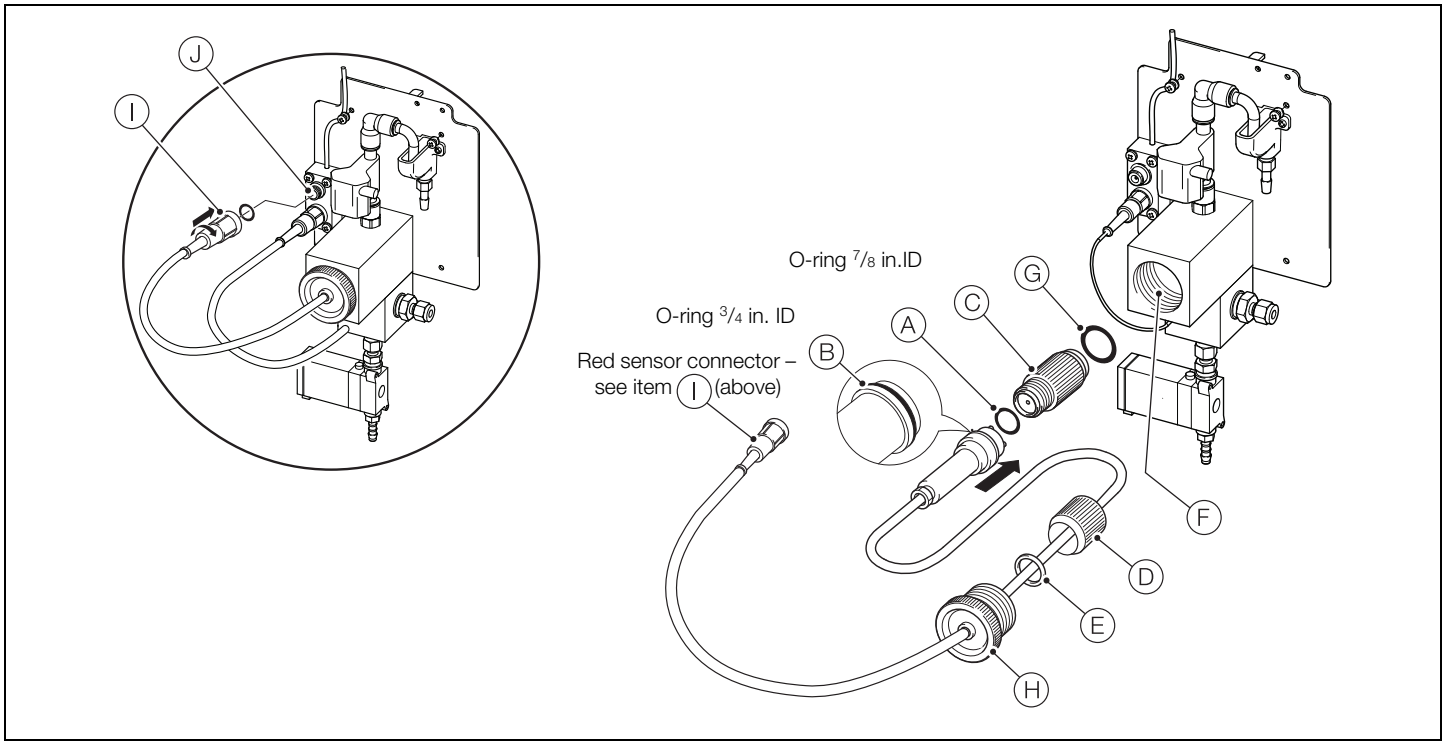


Fig. 5 Fitting the dissolved oxygen sensor

6 Calibrating the analyzer

Caution. Do not attempt to calibrate the analyzer until the wet-section and transmitter are fully installed and ready for operation.

Perform a calibration via the *Calibration Level* or *Advanced Level* transmitter menus – refer to CI/AWT540-EN.

ABB Limited
Measurement & Analytics
Oldends Lane, Stonehouse
Gloucestershire,
GL10 3TA
UK
Tel: +44 (0)1453 826661
Fax: +44 (0)1453 829671
Email: instrumentation@gb.abb.com

ABB Inc.
Measurement & Analytics
125 E County Line Road
Warminster, PA 18974
USA
Tel: +1 215 674 6000
Fax: +1 215 674 7183

abb.com/measurement

We reserve the right to make technical changes or modify the contents of this document without prior notice. With regard to purchase orders, the agreed particulars shall prevail. ABB does not accept any responsibility whatsoever for potential errors or possible lack of information in this document.
We reserve all rights in this document and in the subject matter and illustrations contained therein. Any reproduction, disclosure to third parties or utilization of its contents – in whole or in parts – is forbidden without prior written consent of ABB.
© ABB 2018

3KXA494550R4401

CI/ADS550-EN Rev. D 05.2018