AWT420

Universal 4-wire, dual-input transmitter

AWT420
Universal 4-wire,
dual-input transmitter

Measurement made easy

Introduction

The AWT420 is a universal 4-wire, dual-input transmitter suitable for the measurement and control of a wide range of parameters including pH, ORP, conductivity, turbidity/suspended solids and dissolved oxygen.

The AWT420 supports both traditional analog and advanced digital EZLink sensors.

This Commissioning Instruction provides the installation procedures for the AWT420 transmitter for use in non-hazardous areas.

For information on the AWT420 transmitter for use in hazardous areas, refer to INF/ANAINST/012-EN.

For information on the sensors, including installation, commissioning, operation and maintenance procedures, refer to the specific sensor manual.

For more information

Further publications for the AWT420 transmitter are available for free download from:
www.abb.com/measurement
or by scanning this code:

Links and reference numbers for the transmitter publications are also shown below:

	Search for/click on:
AWT420 transmitter – Data Sheet	DS/AWT420-EN
AWT420 transmitter – Operating Instruction	OI/AWT420-EN
AWT420 transmitter – Hazardous area information	INF/ANAINST/012-EN
AWT420 transmitter – HART Communications Supplement	COM/AWT420/HART-EN
AWT420 transmitter – HART FDS Communications Supplement	COM/AWT420/HART/FDS-EN
AWT420 transmitter – PROFIBUS Communications Supplement	COM/AWT420/PROFIBUS-EN
AWT420 transmitter – MODBUS Communications Supplement	COM/AWT420/MODBUS-EN
AWT420 transmitter – Ethernet Communications Supplement	COM/AWT420/ETHERNET-EN

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1 Health & Safety

Document symbols

Symbols that appear in this document are explained below:

⚠ DANGER

The signal word '**DANGER**' indicates an imminent danger. Failure to observe this information will result in death or severe injury.

⚠ WARNING

The signal word '**WARNING**' indicates an imminent danger. Failure to observe this information may result in death or severe injury.

⚠ CAUTION

The signal word '**CAUTION**' indicates an imminent danger. Failure to observe this information may result in minor or moderate injury.

NOTICE

The signal word '**NOTICE**' indicates potential material damage.

Note
'Note' indicates useful or important information about the product.

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

Bodily injury

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

AWT420 transmitter – electrical

⚠ WARNING

Bodily injury

To ensure safe use when operating this equipment, the following points must be observed:

- Up to 240 V AC may be present. Be sure to isolate the supply before removing the terminal cover.

Safety advice concerning the use of the equipment described in this manual or any relevant Material Safety Data Sheets (where applicable) can be obtained from the Company, together with servicing and spares information.

Safety standards

This product has been designed to satisfy the requirements of IEC61010-1:2010 3rd edition 'Safety Requirements for Electrical Equipment for Measurement, Control and Laboratory Use' and complies with US NEC 500, NIST and OSHA.

Product symbols

Symbols that may appear on this product are shown below:


Protective earth (ground) terminal.


Functional earth (ground) terminal.

Alternating current supply only.

Direct current supply only.


This symbol, when noted on a product, indicates a potential hazard which could cause serious personal injury and/or death. The user should reference this instruction manual for operation and/or safety information.


This symbol, when noted on a product enclosure or barrier, indicates that a risk of electrical shock and/or electrocution exists and indicates that only individuals qualified to work with hazardous voltages should open the enclosure or remove the barrier.


The equipment is protected through double insulation.


Recycle separately from general waste under the WEEE directive.

...1 Health & Safety

Product recycling and disposal (Europe only)

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. The European Waste Electrical and Electronic Equipment (WEEE) Directive that initially came into force on August 13 2005 aims to reduce the waste arising from electrical and electronic equipment; and improve the environmental performance of all those involved in the life cycle of electrical and electronic equipment. In conformity with European local and national regulations, electrical equipment marked with the above symbol may not be disposed of in European public disposal systems after 12 August 2005.

NOTICE

For return for recycling, please contact the equipment manufacturer or supplier for instructions on how to return end-of-life equipment for proper disposal.

End-of-life battery disposal

The transmitter contains a small lithium battery (located on the processor/display board) that must be removed and disposed of responsibly in accordance with local environmental regulations.

Information on ROHS Directive 2011/65/EU (RoHS II)

ABB, Industrial Automation, Measurement & Analytics, UK, fully supports the objectives of the ROHS II directive. All in-scope products placed on the market by IAMA UK on and following the 22nd of July 2017 and without any specific exemption, will be compliant to the ROHS II directive, 2011/65/EU.

Cleaning

The complete transmitter can be hosed down if it has been installed to IP66/NEMA 4X standards, i.e. cable glands are correctly fitted and all unused cable entry holes are blanked off – see page 10 and page 9.

Warm water and a mild detergent can be used.

2 Cybersecurity

This product and the EZLink Connect™ app is designed to be connected to and to communicate information and data via a digital communication interface.

It is your sole responsibility to provide and continuously ensure a secure connection between the product and your network or any other network (as the case may be). You shall establish and maintain any appropriate measures (such as but not limited to the application of authentication measures etc.) to protect the product, the EZLink Connect app, the network, its system and the interface against any kind of security breaches, unauthorized access, interference, intrusion, leakage and/or theft of data or information.

ABB Ltd and its affiliates are not liable for damages and/or losses related to such security breaches, any unauthorized access, interference, intrusion, leakage and/or theft of data or information.

Although ABB provides functionality testing on the products and updates that we release, you should institute your own testing program for any product updates or other major system updates (to include but not limited to code changes, configuration file changes, third-party software updates or patches, hardware change out, etc.) to ensure that the security measures that you have implemented have not been compromised and system functionality in your environment is as expected.

Communication protocol-specific security

The HART protocol is an unsecured protocol, as such the intended application should be assessed to ensure that these protocols are suitable before implementation.

The Modbus protocol is an unsecured protocol, as such the intended application should be assessed to ensure that these protocols are suitable before implementation.

The PROFIBUS PA protocol is an unsecured protocol, as such the intended application should be assessed to ensure that these protocols are suitable before implementation.

The PROFIBUS DP protocol is an unsecured protocol, as such the intended application should be assessed to ensure that these protocols are suitable before implementation.

3 Mechanical installation

Transmitter installation

Optional accessories

Optional installation accessories:

- Cable gland kit
- Weathershield
- Panel-mount kit
- Pipe-mount kit

Location

For general location requirements refer to Figure 1. Select a location away from strong electrical and magnetic fields. If this is not possible, particularly in applications where mobile communications equipment is expected to be used, screened cables within flexible, earthed metal conduit must be used.

Install in a clean, dry, well ventilated and vibration-free location providing easy access. Avoid rooms containing corrosive gases or vapors, for example, chlorination equipment or chlorine gas cylinders.

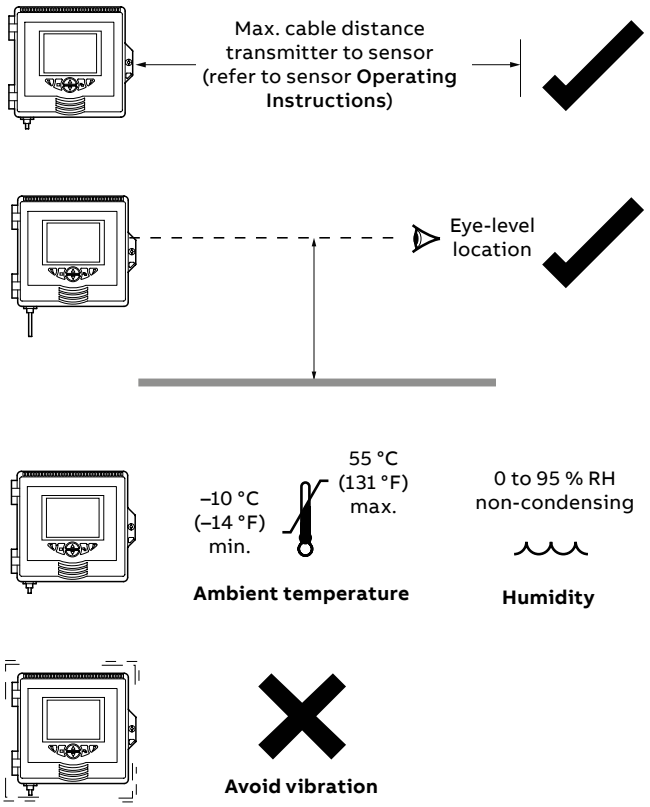


Figure 1 Transmitter location

Sensor installation

Refer to the associated sensor **Operating Instructions** for installation procedures.

Transmitter dimensions

Dimensions in mm (in)

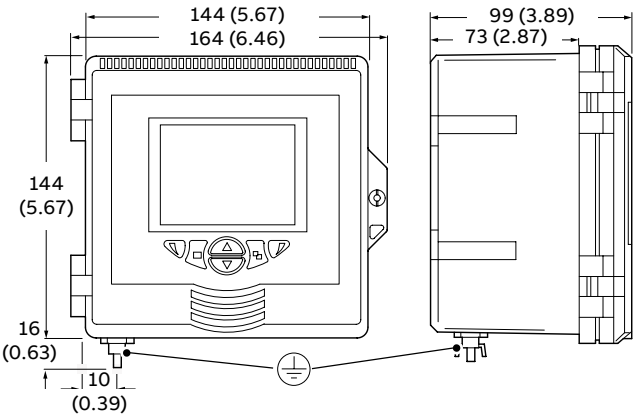


Figure 2 Transmitter dimensions

Optional weathershield dimensions

Dimensions in mm (in)

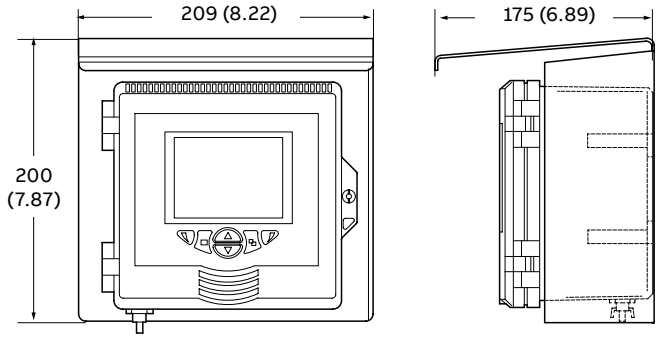


Figure 3 Optional weathershield dimensions

Sensor modules

Sensor modules are fitted to the transmitter baseboard when the transmitter is configured after being ordered.

Communication module

If an optional communication module is ordered, it is fitted to the transmitter baseboard when the transmitter is configured after being ordered.

…3 Mechanical installation

…Transmitter installation

Wall-mounting
Dimensions in mm (in)

NOTICE

If the optional weathershield Ⓓ is used, position it between the transmitter and wall and pass 2 screws Ⓒ (not supplied) through fixing holes (both sides) in weathershield.

Referring to Figure 4:

1. Position the left- and right-hand mounting brackets Ⓐ into the recesses on the rear of the transmitter as shown and secure with the bracket securing screws. Ensure the plastic washers remain in the positions fitted.
2. Mark fixing centers Ⓑ and drill suitable holes in the wall.
3. Secure the transmitter to the wall using 2 screws Ⓒ in each mounting bracket.

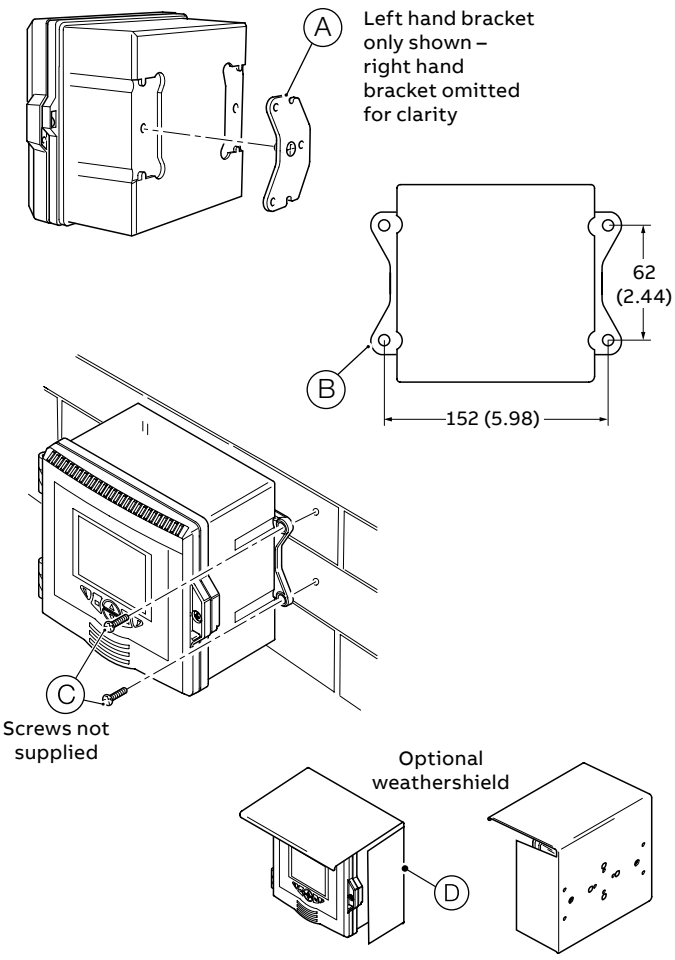


Figure 4 Wall-mounting the transmitter

Panel-mounting (optional)

Dimensions in mm (in)

Referring to Figure 5:

1 Cut the correct sized hole in panel (A).

2 Insert the transmitter into the panel cut-out (B).

3 Screw one panel clamp anchor screw (C) into the left-hand bracket (D) until 10 to 15 mm (0.39 to 0.59 in) of the thread protrudes from the other side of the bracket and position one clamp (E) over the end of the thread.

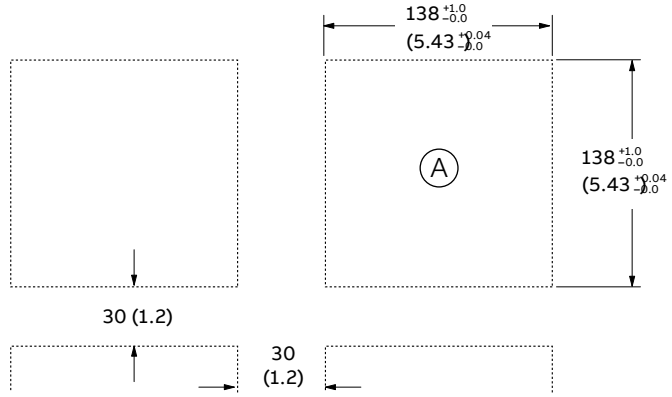
NOTICE

The correct torque is critical to ensure proper compression of the panel seal and achieve the IP66/NEMA 4X hosedown rating.

4 Holding assembly (F) together, position bracket (D) into the left-hand recess on the rear of the transmitter and secure with bracket securing screw (G). Ensure that the plastic washer remains in the position fitted.

5 Repeat steps 3 and 4 for the right-hand panel clamp assembly.

6 Torque each panel clamp anchor screw to 0.5 to 0.6 Nm (4.42 to 5.31 lbf·in).



Panel cut-out dimensions (glands not fitted)

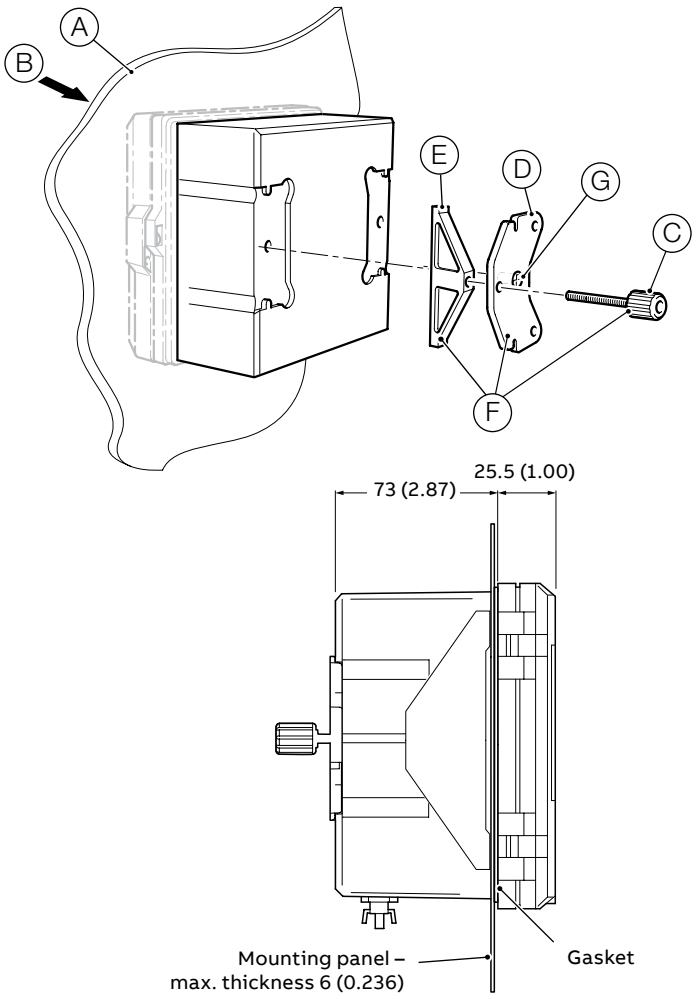


Figure 5 Panel-mounting the transmitter

...3 Mechanical installation

...Transmitter installation

Pipe-mounting (optional)
Dimensions in mm (in)

NOTICE

If the optional weathershield (F) is used, locate it against the transmitter back panel and attach the pipe-mount kit to the weathershield rear face and transmitter.

Referring to Figure 6, secure the transmitter to a pipe as follows:

1. Fit two M6 x 50 mm hexagon-head screws (A) through one clamp plate as shown.
2. Using the appropriate holes to suit vertical or horizontal pipe, secure the clamp plate to the pipe-mounting bracket (B) using two M6 x 8 mm hexagon-head screws and spring lock washers (C).
3. Position the pipe-mounting bracket into the recesses on the rear of the transmitter as shown and secure with the two bracket securing screws (D). Ensure the plastic washers remain in the positions fitted.
4. Secure the transmitter to the pipe using the remaining clamp plate, spring lock washers and nuts (E).

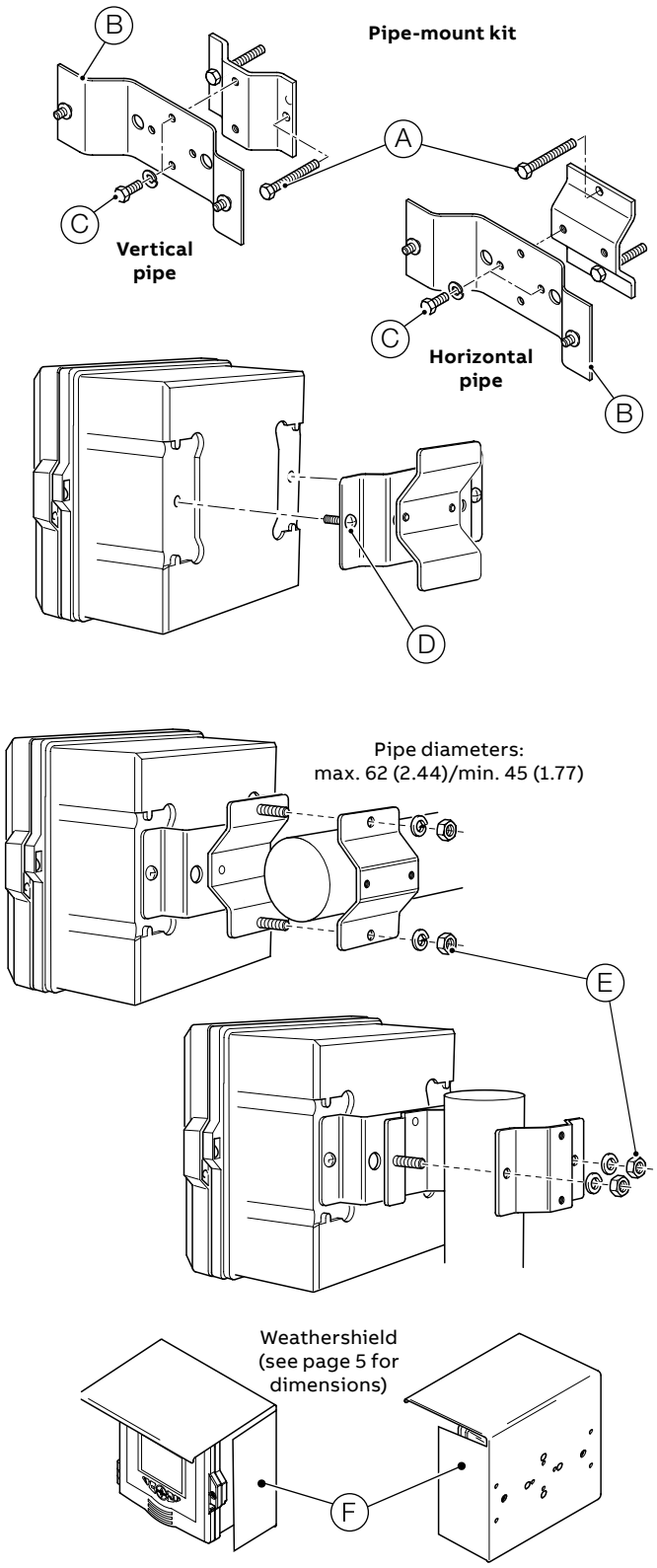


Figure 6 Pipe-mounting the transmitter

4 Electrical installation

⚠ DANGER

Bodily injury

- **Before making any connections**, the external protective earth stud must be connected to the local earth bonding point using suitably sized ground cable – see page 15.
- The transmitter is not fitted with a switch – an isolation device such as a switch or circuit breaker conforming to local safety standards must be fitted to the final installation. It must be fitted in close proximity to the transmitter, within easy reach of the operator and marked clearly as the isolation device for the transmitter.
- Remove all power from supply, relay, any powered control circuits and high common mode voltages before accessing or making any connections. For the mains power, use 3-core cable rated 3A and for the relay connections use cable rated 5A. Use cable rated 105 °C (221 °F) minimum that conforms to either IEC 60227 or IEC 60245, or to the National Electrical Code (NEC) for the US or the Electrical Code for Canada. The terminals accept cables AWG 24 to 16 (0.2 to 1.5 mm^2).
- All connections to secondary circuits must have insulation to required local safety standards. After installation, there must be no access to live parts, for example, terminals. Use screened cable for signal inputs and relay connections. Route signal leads and power cables separately, preferably in an earthed (grounded) flexible metal conduit.

USA and Canada only

- Supplied cable glands are an optional extra and provided for the connection of MODBUS, Profibus and Ethernet communication wiring ONLY. A special cable gland is supplied with the Ethernet communications option and should be used only for the Ethernet cable.
- The use of cable glands, cable/flexible cord for connection of the mains power source to the mains input and relay contact output terminals is not permitted in the USA or Canada.
- For connection to mains (the mains input and relay contact outputs), use only suitably rated field wiring insulated copper conductors rated min. 300 V, 16 AWG, 105 °C (221 °F). Route wires through suitably rated flexible conduits and fittings.

⚠ WARNING

Bodily injury

- If the transmitter is used in a manner not specified by the Company, the protection provided by the equipment may be impaired.
- Ensure the correct fuses are fitted – see Figure 8, page 10 for fuse details.
- Replacement of the internal battery must be carried out by an approved technician only.
- The transmitter conforms to Installation Category II of IEC 61010.
- All equipment connected to the transmitter's terminals must comply with local safety standards (IEC 60950, EN61010-1).
- The DC power supply and the optional Ethernet and bus interface connectors must be connected to Safety Extra Low Voltage (SELV) circuits.

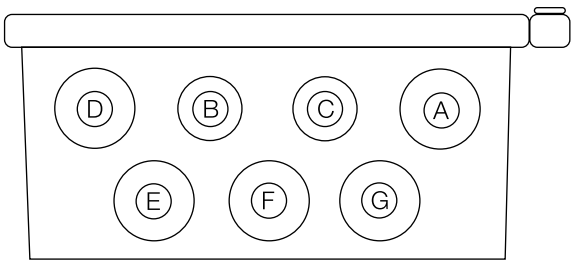
Earth bonding

⚠ WARNING

Before making any electrical connections:

- The external protective earth stud (see Figure 10 on page 14) must be connected to the local earth bonding point using suitably sized ground cable. To connect to the protective earth stud, use a closed M4 cable lug.
- **Never** connect the protective earth with an end sleeve or an open cable lug.

Cable entries



(A) M20 – mains power
(B) M16 – sensor 1
(C) M16 – sensor 2
(D) M20 – communications
(E) M20 – digital I/O
(F) M20 – analog outputs
(G) M20 – relay contacts

Figure 7 Cable entries

...4 Electrical installation

Terminal connections

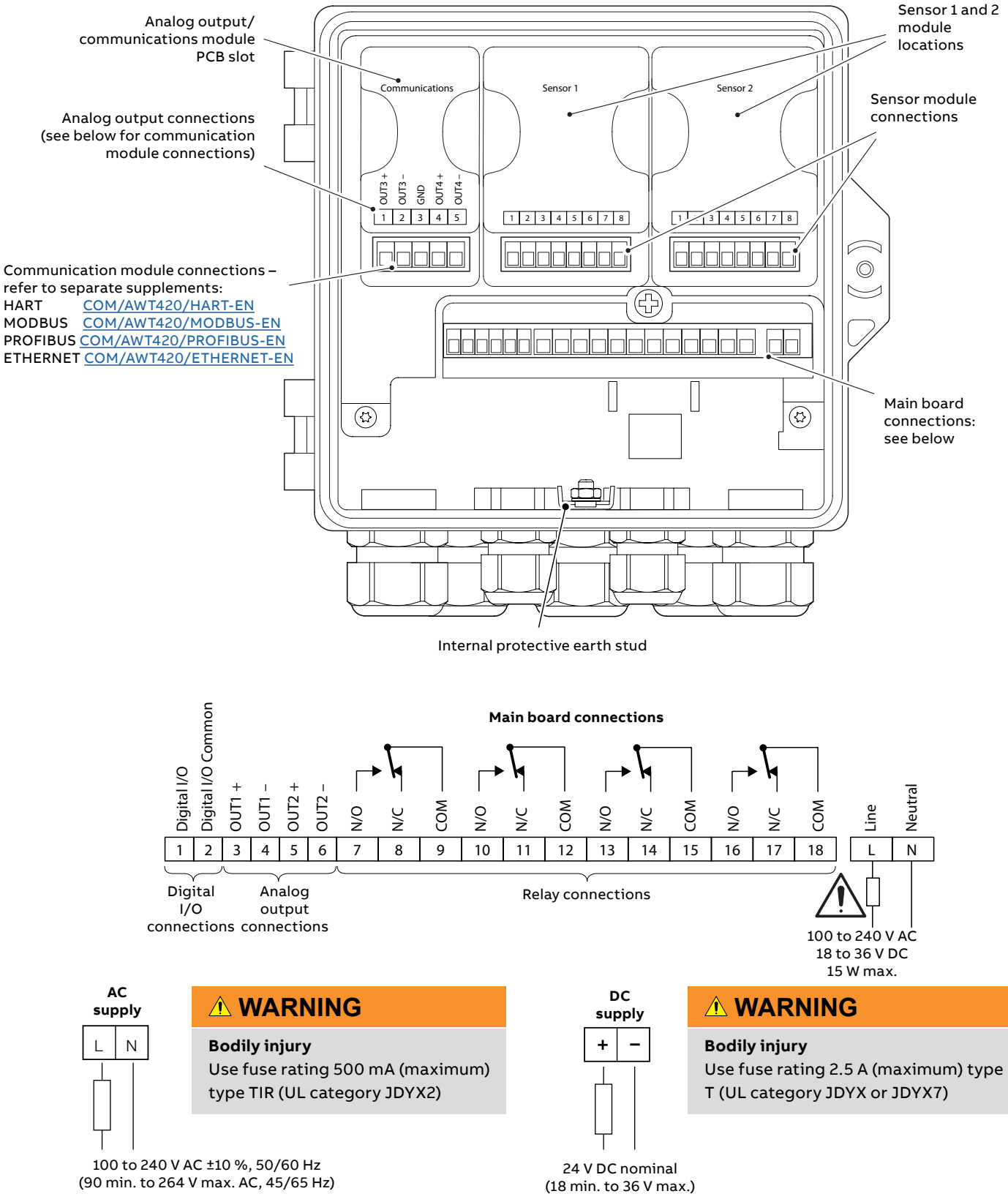


Figure 8 Electrical connections overview

Digital I/O, relays and analog output connections

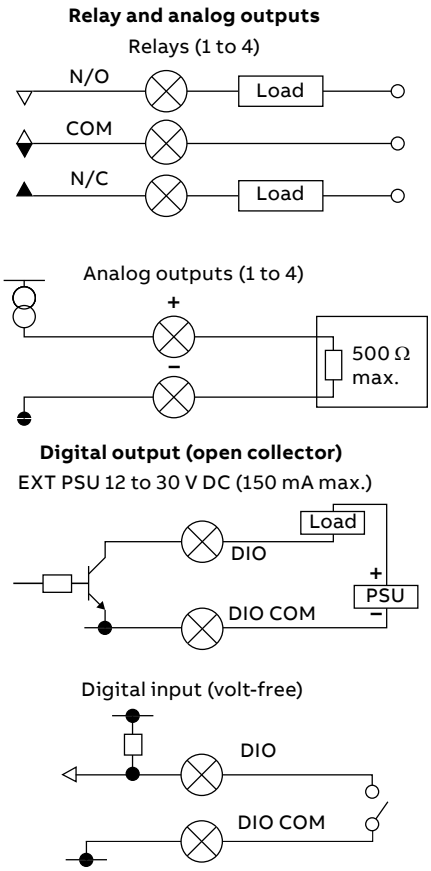


Figure 9 Digital I/O, relays and analog output connections

pH and conductivity connections

pH/ORP/pIon sensor module connections

NOTICE

ORP (Redox) and Antimony pH sensors do not feature temperature compensation therefore do not have temperature sensors or related wiring.

...4 Electrical installation

...pH and conductivity connections

Standard sensors without diagnostic functions

NOTICE

Ensure sensor diagnostics are **Off** when using standard sensors without diagnostic functions.

Sensor type	RTD wiring	1	2	3	4	5	6	7	8
2867	2-lead	Clear	–	–	Black	Red	White	–	–
TB5	2-lead	Blue	–	–	Black	Red	White	–	–
AP1xx	2-lead	Clear	–	–	Black	Red Red	White	–	–
	3-lead	Clear	–	–	Black	White	Red	–	Red
AP3xx	2-lead*	Blue	–	–	Black	Red	White	–	–
	3-lead	Blue	–	–	Black	Red	White	–	Grey
APS1xx APS5xx APS7xx	2-lead*	Blue	–	–	Black	Red	White	Yellow	–
	3-lead	Blue	–	–	Black	Red	White	Yellow	Grey

* Cut and remove grey wire

Standard sensors with diagnostic functions

NOTICE

Ensure sensor diagnostics are **On** when using standard sensors with diagnostic functions.

Sensor type	RTD wiring	1	2	3	4	5	6	7	8
TBX5	2-lead	Blue	Yellow	Black	Green	Red	White	Dark green	–
AP2xx	2-lead*	Clear	Red	Blue	Green/Yellow	Red	White	–	–
	3-lead	Clear	Red	Blue	Green/Yellow	Red	White	–	Grey

* Cut and remove grey wire

Conductivity sensor module connections

2-electrode sensors

Sensor type	RTD wiring	DRIVE + 1	2	3	DRIVE – 4	RTD 1 5	RTD 2 6	SHIELD 7	RTD 3 8
2025, 2045 2077, 2078 2085, 2089	2-lead	Red	–	–	Black	Green/Yellow Blue	Brown	–	–
	3-lead	Red	–	–	Black	Brown	Green/Yellow	–	Blue
2085*	2-lead	Red	–	–	Blue	Yellow	Dark green	–	–
TB2	2-lead	Green	–	–	Black	Blue	Yellow	Dark green	–
AC2xx	2-lead	Green	–	–	Black	Blue/Red	Yellow	Dark green	–
	3-lead	Green	–	–	Black	Yellow	Red	Dark green	Blue

*2085 cable **attached** cells

4-electrode sensors

Sensor type	RTD wiring	DRIVE + 1	SENSE + 2	SENSE – 3	DRIVE – 4	RTD 1 5	RTD 2 6	SHIELD 7	RTD 3 8
TB4	2-lead	Green	Red	White	Black	Blue	Yellow	Dark green	–

Turbidity sensor module connections

Table 1 Terminals, colors, and functions

Sensor type	RTD wiring	1 White	2 Yellow	3 Red	4 Green	5 Black	6 Blue	7 Braid	8 –
4690	N/A	Initiate cleaner pulse	+12 V emitter switched power	+12 V cleaner/ receiver power	Turbidity input signal	Wiper acknowledge signal	0 V common	RFI ground	Not used

Power supply connection – plastic enclosure

⚠ WARNING

Bodily injury – USA and Canada only

- The use of cable glands, cable/flexible cord for connection of the mains power source to the mains input and relay contact output terminals is not permitted.

NOTICE

For metal enclosure power connections refer to Information sheet INF/ANAINST/012-EN.

NOTICE

Electrical installation – ABB recommendations:

- Ferrules are fitted to all cables.
- Use M4 ring terminals (crimped) on the earth conductor prior to fitting to the earth stud on the gland plate.
- Only 1 cable per cable gland.

Connecting the transmitter power supply

Referring to Figure 10, page 14:

1. Using a suitable screwdriver, release door retaining screw (A) and open the transmitter door.
2. Release terminal cover retaining screw (B) and remove terminal cover plate (C).
3. Slide retaining clip (D) off blanking plug (E) and remove the blanking plug if fitted.
4. Fit cable gland (F) and secure using nut (G).
5. Remove gland cover (H) and route mains power supply cable (I) through it.
6. Route the cable through cable gland (F) and into the enclosure case.

NOTICE

Use a single-holed bush for the mains power cable.

7. Make connections to the power supply connection terminals (J). Connect earth wire (K) to earth stud (L).
8. Tighten gland cover (H).
9. Refit terminal cover (C) and secure it with retaining screw (B).
10. Close the transmitter door and secure with door retaining screw (A).

…4 Electrical installation

…Power supply connection – plastic enclosure

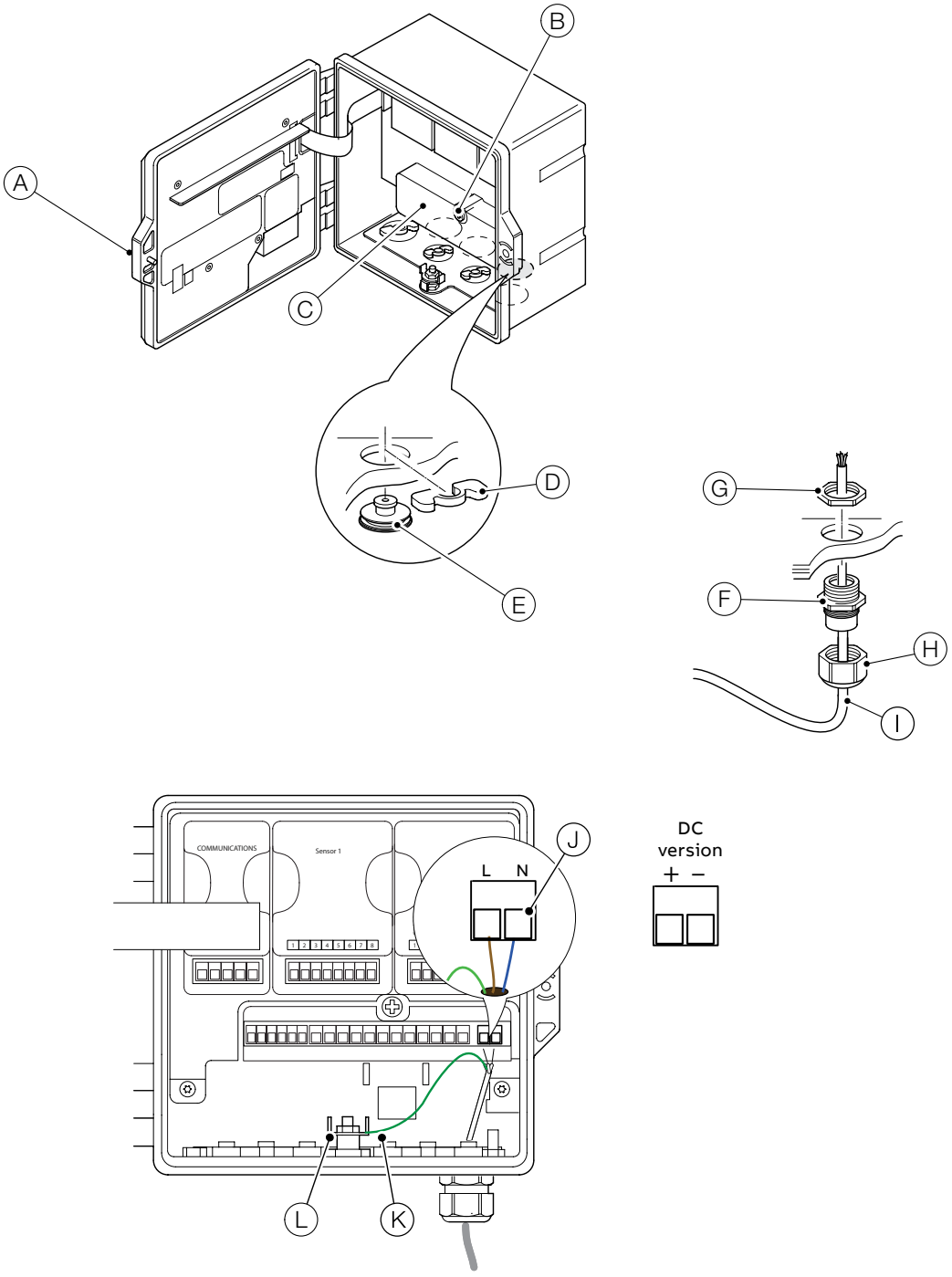


Figure 10 Connecting the transmitter power supply – plastic enclosure

Fitting the EZLink modules

⚠ WARNING

Bodily injury

- Up to 240 V AC may be present. Isolate the power supply before removing the opening the transmitter door.

Referring to Figure 11:

1 Remove connector block cradle (A) from EZLink module(s) and retain for connection.

2 Unlock and open transmitter door (B).

3 Fit EZLink modules as follows:

   a if one EZLink module is used, push-fit it into location (C) (sensor 1).
   Note. When fitting the cable assembly, the EZLink connector for sensor 1 passes through cable entry (D).

   b if two EZLink modules are used, push-fit sensor 1 module into location (C) and sensor 2 module into location (E).
   Note. When fitting the cable assemblies, the EZLink connector for sensor 1 passes through cable entry (D) and the EZLink connector for sensor 2 passes through cable entry (F).

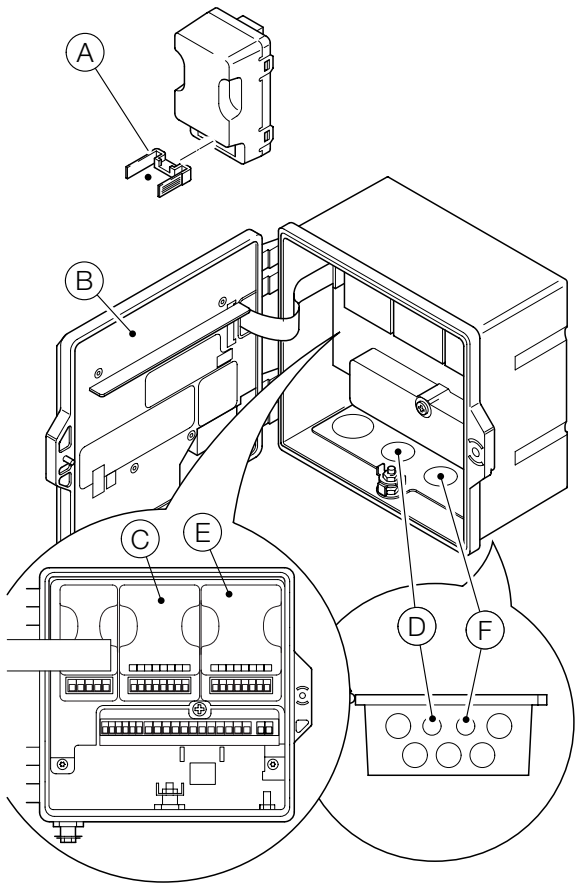


Figure 11 EZLink module positions and EZLink cable entries

Referring to Figure 12:

4 Pass EZLink connector cable (G) through the correct cable entry – see step 3.

5 Pass thread alignment washer (H) over EZLink connector cable (G), ensuring alignment tab (I) is orientated correctly.

6 Pass thread back nut (J) over EZLink correctly connector cable (G).

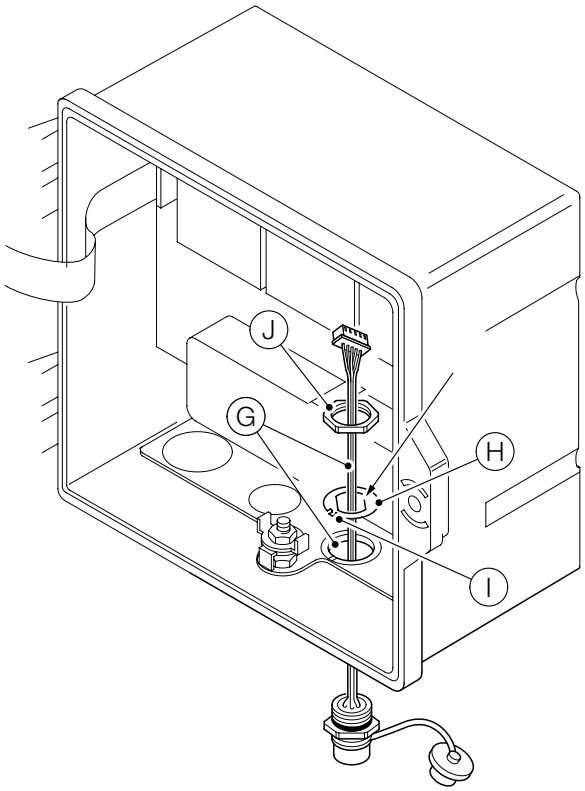


Figure 12 Preparing EZLink connector cable fixings

…4 Electrical installation

…Fitting the EZLink modules

Referring to Figure 13:

7 Fit alignment tab (I) into gland plate slot (K) (on plastic case variant) or in the casting slot (on metal case variant).

8 Insert EZLink connector body (L) fully into cable entry and align the connector body using the flats on the alignment washer (see Figure 12).

9 Screw back nut (J) onto connector body and tighten using a spanner.

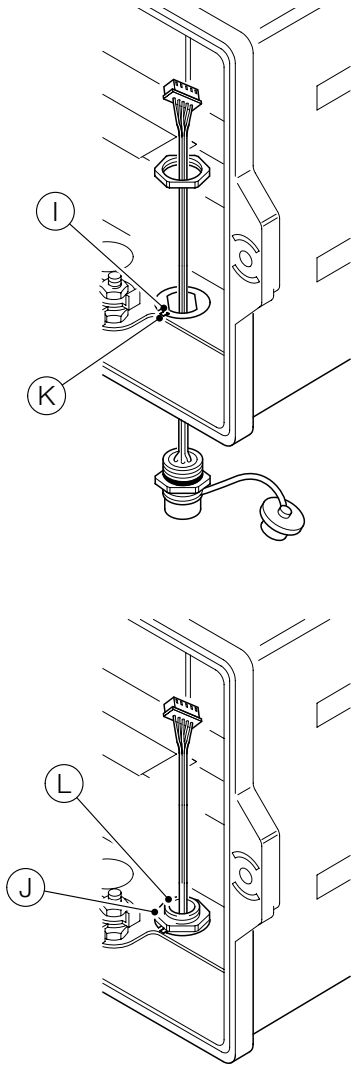


Figure 13 Securing the EZLink connector cable assembly

Referring to Figure 14:

10 Place EZLink cable plug (M) into EZLink connector block cradle (A).

11 Plug connector block cradle (A) into EZLink module (N).

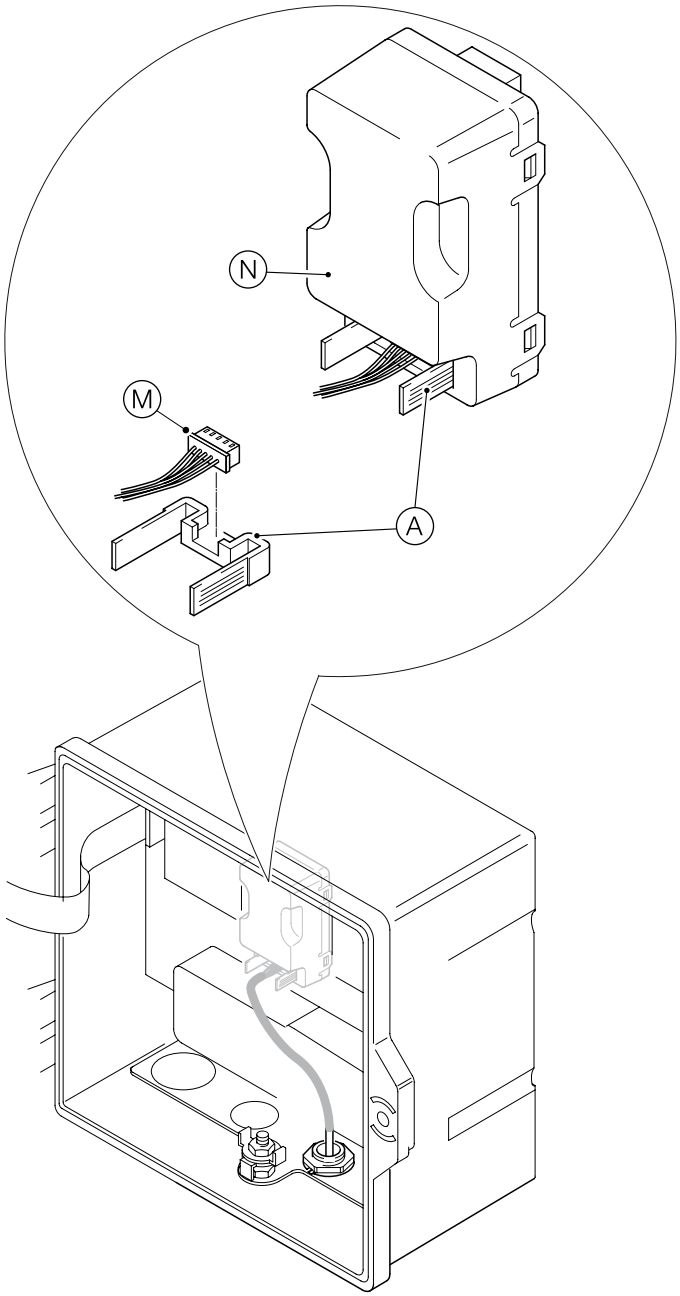


Figure 14 Connecting the EZLink cable assembly

12 If a second EZLink module is required, repeat all steps.

13 Close and lock transmitter door (B).

Connecting EZLink sensors

NOTICE

Maximum length of cable from transmitter to sensor(s) – refer to sensor Operating instruction.

Referring to Figure 15:

1 Align the pins in sensor cable connector Ⓐ with the holes in EZLink connector Ⓑ and push the connectors together.

2 Turn nut Ⓒ clockwise to secure the connectors together.

The transmitter detects the type of sensor connected automatically.

NOTICE

When installing sensor extension cables, ensure the male end (end with label) of the cable is installed towards the transmitter.

Long cables

If cables are longer than 30 m (94 ft), or they are outside, the following cables must be screened or contained in conductive conduit:

- digital I/O
- analog outputs
- communication

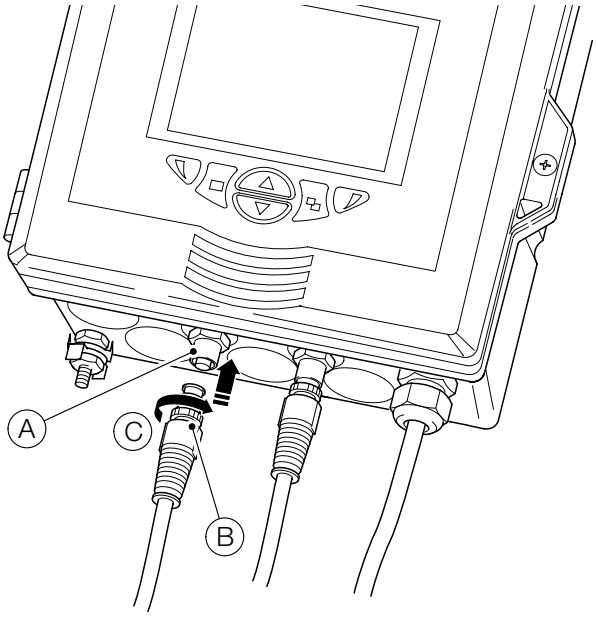
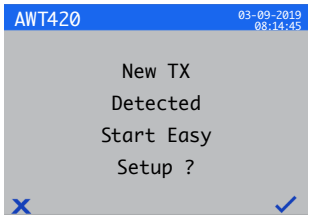


Figure 15 Connecting the sensor EZLink connector(s)

5 Easy Setup

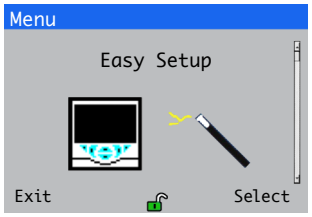
When the transmitter is started up for the first time, or when **Restore defaults** is selected from the **Configuration/Device Setup/Initial Setup** menu, the 'Easy Setup' prompt is displayed:



Press the key (✓) to start **Easy Setup** or press the key (✗) to cancel and exit to the main **Operator** page.

Press the key (**Edit**) to change the default value/setting to the required value/selection. Press the key (**Next**) to accept the default or revised value/selection and advance to the next parameter.

Transmitter parameters that can be configured in this way are: **Language, Instrument Tag, Diagnostics View, Signals View, Chart View, Alarm View, Analog OP View, Calibration Log, Alarm Log, Audit Log, Diagnostics Log, Date Format** and **Date & Time**. On completion of **Easy Setup**, the display returns to the **Easy Setup** start screen:



Press the key (**Select**) to revise/amend the settings just made or press the key (**Exit**) to cancel and exit to the main Operator page.

All transmitter parameters can be revised/changed at any time by selecting **Enter Configuration** from any **Operator** or **View** page menu, followed by **Advanced** from the **Access Level** menu.

NOTICE

- If **Easy Setup** does not detect a key press within 5 minutes, the display changes automatically to the main **Operator** page.

6 Data logging

SD™ card

An SD card is kept in the transmitter. Data is archived to the removable media automatically at set intervals. Archiving continues until the removable media is full, archiving then stops. To ensure all required data is archived successfully, swap the SD card periodically for an empty one.

NOTICE

- Logging of data is possible only when an SD card is fitted and online – in this state, Data and Events are lost.
- ABB's DataManager Pro software can be used to store and view data archived from the transmitter.
- A 2 GB SD card has sufficient external storage capacity for >5 years data.

NOTICE

- To avoid potential damage or corruption to data recorded on removable media, take care when handling and storing.
- Do not expose to static electricity, electrical noise or magnetic fields.
- When handling an SD card, take care not to touch any exposed metal contacts.
- Back-up critical data stored on removable media regularly.

SD card insertion and removal

Referring to Figure 16:

1 Using a suitable screwdriver, release door retaining screw (A).

2 Open the transmitter door and remove media cover (B).

3 Insert removable media (C) by pushing up into slot, then releasing to spring-lock in place. If required, press button (D) to place the media online. LED (E) is lit when the removable media is online.

4 To remove the media, if LED (E) is lit, press button (D) to take the media offline and ensure LED (E) is not lit.

5 Push removable media (C) up to release spring-lock, then pull down and out of the socket.

(The media can then be inserted into an appropriate card reader on a PC and the data downloaded.)

6 Refit media cover (B).

7 Close the transmitter door and secure with door retaining screw (A).

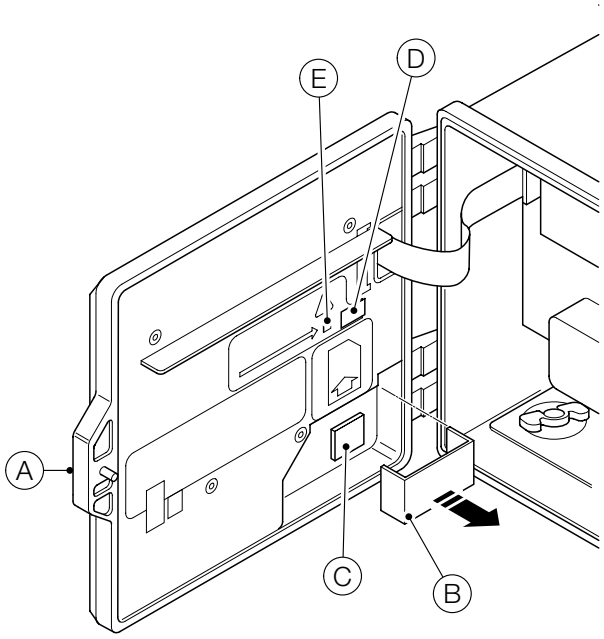


Figure 16 SD card insertion and removal

7 Password security and Access Level

Setting passwords

Passwords are entered at the **Enter Password** screen accessed via the **Access Level** see Figure 17.

Passwords can be set to enable secure access at 2 levels: **Calibrate** and **Advanced**. The **Service** level is password protected at the factory and reserved for factory use only. Passwords can contain up to 6 characters and are set, changed or restored to their default settings at the **Device Setup/ Security Setup** parameter.

NOTICE

When the transmitter is powered-up for the first time, the **Calibrate** and **Advanced** levels can be accessed without password protection. Protected access to these levels can be allocated as required.

Access Level

The **Access Level** is entered via the **Operator** menu/**Enter Configuration** menu option.

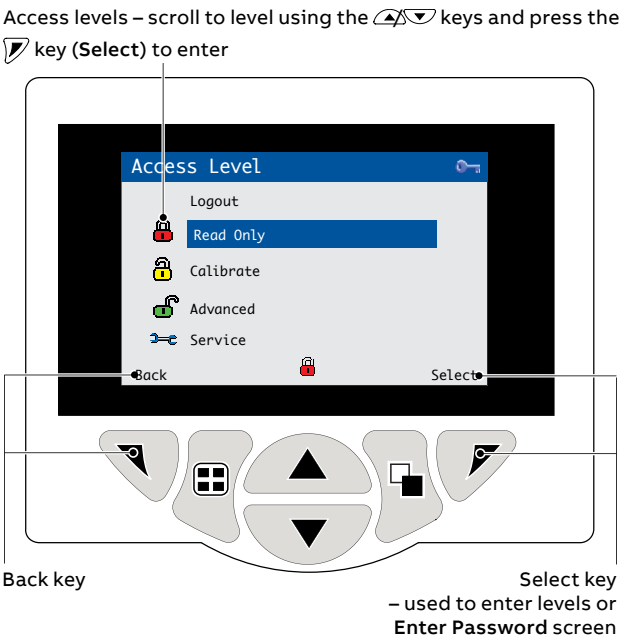


Figure 17 Access level screen

Level	Access
Logout	Displayed only after **Calibrate** or **Advanced** levels are accessed. Logs the user out of the current level. If passwords are set, a password must be entered to access these levels again after selecting Logout.
Read Only	View all parameters in read-only mode.
Calibrate	Enables access and adjustment of **Calibrate** parameters. **Calibration** is sensor-specific – refer to the sensor Operating instruction for calibration details.
Advanced	Enables configuration access to all parameters.
Service	Reserved for authorized service technicians only.

Table 2 Access level menu details

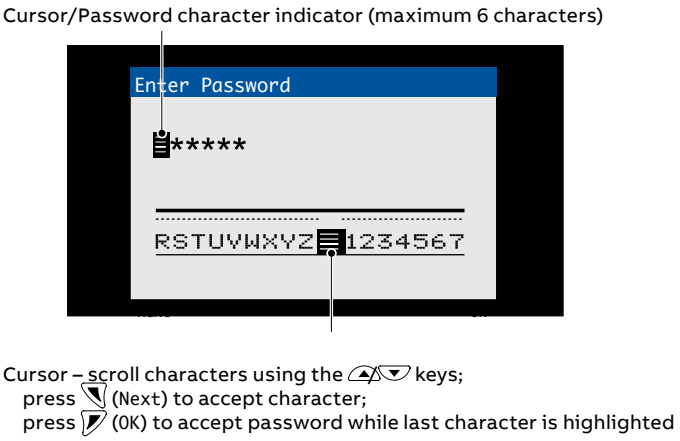


Figure 18 Enter password screen

8 Bluetooth capability and the EZLink Connect app

The AWT420 supports Bluetooth® Low Energy (BLE) version 4.2 as standard.

You can connect to AWT420 transmitters that are in range (one device at a time, a limit of the Bluetooth technology using the EZLink Connect™ app).

Download the EZLink Connect app only from the Google Play™ store or the Apple® App Store®.

Download EZLink Connect for Android™

For the Android version of EZLink Connect, download from:

Download EZLink Connect for iOS®

For the iOS version of EZLink Connect, download from:

EZLink Connect lets you read live values and diagnostics from a paired AWT420 transmitter, and view the calibration log, the diagnostics log, and the audit log.

In the app, you can also see the related documentation for the AWT420 transmitter, and other CWA products from ABB.

Pair your mobile device to a transmitter

To pair the EZLink Connect app with an AWT420 transmitter, use a pairing PIN that is available from:
Communication > **Bluetooth** > **Pairing PIN menu**.

Bluetooth menus

Table 3 Bluetooth menu descriptions

Menu	Description
Device Enable	Enables or disables power to the Bluetooth module. When disabled, the module no longer advertises and is not connectable.
Device Name	Read only device name. This device name forms part of the advertising data used by the module, allowing the user to differentiate between other Bluetooth devices in range when scanning for devices to connect to. This Bluetooth device name is generated automatically from the instrument tag. Therefore, whenever the transmitter's instrument tag is changed, the Bluetooth device name changes to reflect it.
Pairing PIN	The fixed 6-digit PIN is used when pairing the transmitter and mobile device. When paired, the PIN is no longer required when reconnecting, because the pairing information is stored in the module.
Generate New PIN	Lets you generate a new pairing PIN. The transmitter randomly generates the new PIN.

Operating system requirements

ABB recommends Android 7.0 or later, or iOS 9.0 or later to install the EZLink Connect app.

For the cybersecurity requirements, refer to page 4.

9 Sensor setup menus

2-electrode conductivity

Menu	Comment	Default
Tag	Enter an alphanumeric sensor tag (16 characters maximum) to identify the sensor on the **Operator Pages.**	TAG1
Measurement Type	Select measurement type: • Conductivity/Concentration/Resistivity **Note**. If a change is made the I/O sources are reset.	Conductivity
Note. The following menus are displayed only if measurement type = **Conductivity**		
Conductivity Unit	Select the conductivity units: • mS/cm/µS/cm	µS/cm
Cell Constant	Enter the cell constant of the measuring cell used – see the relevant conductivity cell manual.	1.00
Range High	Set the span value used in **Chart** and **Bargraph** views.	Cell constant dependent – see table below
Range Low	Set the zero value used in **Chart** and **Bargraph** views.	0
Note. The following menus are displayed only if measurement type = **Concentration**		
Cell Constant	Enter the cell constant of the measuring cell used – see the relevant conductivity cell manual.	N/A
Concentration Unit	Select the concentration units: • None(Blank)/ppm/mg/l/ppb/µg/l/%/Custom	N/A
Custom Units	**Note**. Displayed only if concentration units = **Custom** Enter an alphanumeric string (6 characters maximum) for the custom (user defined) concentration units.	N/A
Conc. Curve Table	Set the user defined concentration curve using the 6-point linearizer table (concentration against conductivity).	N/A
Range High	View the span value used in **Chart** and **Bargraph** views.	N/A
Range Low	View the zero value used in **Chart** and **Bargraph** views.	N/A
Filter Type	Select the signal filtering type: • None/Low/Medium/High	None
Temp. Comp. Type	Set the type of temperature compensation: • Manual/Automatic/None	Automatic
Manual Temperature	**Note.** Displayed only if temperature compensation type = **Manual** Enter the temperature of the sample within the range –10.0 to 120.0 °C.	25.0 °C
TC Curve	**Note.** Not displayed only if temperature compensation type = **None** Set the temperature compensation characteristic required: • TC Coeff./Standard KCl/UPW (Low TC)/UPW (High TC)/Pure H20 (Neutral)/ Pure H2O (Acid)/Pure H2O (Base)/NaOH/HCl/NaCl/NH3/User Defined	TC Coeff
User Def. TC Curve	**Note.** Displayed only if temperature compensation curve = **User Defined** Set the user defined temperature compensation curve using the six point linearizer table (% against °C).	N/A
TC Coefficient	**Note.** Displayed only if temperature compensation curve = **User Defined** Enter the temperature coefficient (α x 100) of the solution (0.01 to 5.00 %/°C). If unknown, the temperature coefficient (α) of the solution must be calculated – see page 72.	2.00 %/°C
Sensor Diagnostics		
Polarisation	Detect excessive polarisation condition: • Enabled/Disabled	Disabled
Out Of Solution	Detect **Out Of Solution** condition: • Enabled/Disabled	Disabled
Reset To Defaults	Select to reset all **Sensor Setup** parameters to their default values.	

Conductivity cell constant	Conductivity measuring range
0.01	0 to 200 µS/cm
0.05	0 to 1000 µS/cm 0 to 1 mS/cm
0.10	0 to 2,000 µS/cm 0 to 2 mS/cm
1.00	0 to 20,000 µS/cm 0 to 20 mS/cm

…9 Sensor setup menus

2-electrode conductivity – dual input calculated values setup

Menu	Comment	Default
Calculation Type	Calculations are performed using the inputs from both sensors. Select the required calculation from the following options: No Calculation/Inferred pH (NaOH)/Inferred pH (NaOH+NaCl)/Inferred pH (NH3)/ Inferred pH (NH3+NaCl)/Difference/Ratio/% Passage/% Rejection **Inferred pH (NaOH)** Calculates a pH value in the range 7.00 to 11.00 pH based on the type of chemical dosing and the conductivity readings. **Note:** The temperature compensation characteristic **TC Curve** for signal B should be set to **NaOH**. **Inferred pH (NaOH+NaCl)** Calculates a pH value in the range 7.00 to 11.00 pH based on the type of chemical dosing and the conductivity readings. **Note:** The temperature compensation characteristic **TC Curve** for signal A should be set to **NaCl**. **Note:** The temperature compensation characteristic **TC Curve** for signal B should be set to **NaOH**. **Inferred pH (NH3)** Calculates a pH value in the range 7.00 to 10.00 pH based on the type of chemical dosing and the conductivity readings. **Note:** The temperature compensation characteristic **TC Curve** for signal B should be set to **NH3**. **Inferred pH (NH3+NaCl)** Calculates a pH value in the range 7.00 to 10.00 pH based on the type of chemical dosing and the conductivity readings. **Note:** The temperature compensation characteristic **TC Curve** for signal A should be set to **NaCl**. **Note:** The temperature compensation characteristic **TC Curve** for signal B should be set to **NH3**. **Difference** Calculates the difference between the two conductivity inputs: Difference = B — A **Ratio** Calculates the ratio of the two conductivity inputs: $\text{Ratio} = \frac{B}{A}$ **% Passage** Calculates the amount of conductivity as a percentage that passes through the cation exchange unit: $\%\text{Passage} = \frac{A}{B} \times 100$ **% Rejection** Calculates the amount of conductivity as a percentage that is absorbed in the cation exchange unit: $\%\text{Rejection} = \left(1 - \frac{A}{B}\right) \times 100$	No Calculation
Note. The following menus are displayed only if Calculation Type = Inferred pH.		
Before Cation Limit	Set the required before-cation conductivity limit, between: • 0.000 and 100.0 µS/cm Inferred pH (NaOH) • 0.000 and 100.0 µS/cm Inferred pH (NaOH+NaCl) • 0.000 and 25.00 µS/cm Inferred pH (NH3) • 0.000 and 25.00 µS/cm Inferred pH (NH3+NaCl)	N/A
After Cation Limit	Set the required after-cation conductivity limit, between: • 1.000 and 100.0 µS/cm Inferred pH (NaOH) • 1.000 and 250.0 µS/cm Inferred pH (NaOH+NaCl) • 0.060 and 10.00 µS/cm Inferred pH (NH3) • 0.060 and 25.00 µS/cm Inferred pH (NH3+NaCl)	N/A
pH Range	View the measuring range for the selected Inferred pH calculation • 7.00 to 11.00 pH Inferred pH (NaOH) • 7.00 to 11.00 pH Inferred pH (NaOH+NaCl) • 7.00 to 10.00 pH Inferred pH (NH3) • 7.00 to 10.00 pH Inferred pH (NH3+NaCl)	N/A
Signal Arrangement	Set the signal arrangement: • A = S1, B = S2/A = S2, B = S1 **Note:** For inferred pH: • A = Conductivity measurement **A**fter cation column. • B = Conductivity measurement **B**efore cation column.	N/A

4-electrode conductivity

Menu	Comment	Default
Tag	Enter an alphanumeric sensor tag (16 characters maximum) to identify the sensor on the **Operator Pages**.	TAG1
Measurement Type	Select measurement type: • Conductivity/Concentration **Note**. If a change is made the I/O sources are reset.	Conductivity
Note. The following menus are displayed only if **Measurement Type** = **Conductivity**		
Conductivity Unit	Select the conductivity units: • mS/cm/µS/cm	mS/cm
Sensor Group	Enter the sensor group for the measuring cell used – • Group A/Group B see the relevant conductivity cell manual.	Group A
Range High	Set the span value used in **Chart** and **Bargraph** views.	Sensor Group dependent – see table below
Range Low	Set the zero value used in **Chart** and **Bargraph** views.	0
Note. The following menus are displayed only if **Measurement Type** = **Concentration**		
Sensor Group	Enter the sensor group for the measuring cell used – • Group A/Group Bw see the relevant conductivity cell manual.	N/A
Conc. Solution	Note. Displayed only if **Sensor Group** = **Group A** Select the Concentration Solution • NaOH/HCl/H2SO4/H3PO4/NaCl/KOH/Custom	N/A
Concentration Unit	**Note**. Displayed only if **Conc. Solution** = **Custom** Select the Concentration Units • None(Blank)/ppm/mg/l/ppb/µg/l/%/Custom	N/A
Custom Units	**Note**. Displayed only if **Concentration Units** = **Custom** Enter an alphanumeric string (6 characters maximum) for the custom (user defined) concentration units.	N/A
Conc. Curve Table	Set the user defined concentration curve using the 6-point linearizer table (concentration against conductivity).	N/A
Range High	View the span value used in **Chart** and **Bargraph** views.	N/A
Range Low	View the zero value used in **Chart** and **Bargraph** views.	N/A
Filter Type	Select the signal filtering type: • None/Low/Medium/High	None
Temp. Comp. Type	Set the type of temperature compensation: • Manual/Automatic/None	Automatic
Manual Temperature	**Note**. Displayed only if **Temp. Comp. Type** = **Manual** Enter the temperature of the sample within the range –10.0 to 120.0 °C.	25.0 °C
TC Curve	**Note**. Not displayed only if **Temp. Comp. Type** = **None** Set the type of automatic temperature compensation required: • TC Coeff./Standard KCl/NaOH/NaCl/HCl/H2SO4/H3PO4/KOH/User Defined	TC Coeff
User Def. TC Curve	**Note**. Displayed only if **TC Curve** = **User Defined.** Set the user defined temperature compensation curve using the six point linearizer table (% against °C).	N/A
TC Coefficient	**Note**. Displayed only if **TC Curve** = **User Defined.** Enter the temperature coefficient (α x 100) of the solution (0.01 to 5.00 %/°C). If unknown, the temperature coefficient (α) of the solution must be calculated.	2.00 %/°C
Sensor Diagnostics		
Dirty Sensor	Detect dirty sensor condition: • Enabled/Disabled	Disabled
Out Of Solution	Detect Out Of Solution condition: Enabled/Disabled	Disabled
Reset To Defaults	Select to reset all **Sensor Setup** parameters to their default values	

Sensor group	Conductivity measuring range
A	0 to 2000 mS/cm
B	0 to 2000 µS/cm

...9 Sensor setup menus

pH/Redox/ORP

Menu	Comment	Default
Tag	Enter an alphanumeric sensor tag (16 characters maximum) to identify the sensor on the **Operator Pages.**	TAG1
Measurement Type	Select measurement type: • pH/Redox/ORP **Note**. If a change is made the I/O sources are reset.	pH
Range High	Set the span value used in **Chart** and **Bargraph** views.	14.00
Range Low	Set the zero value used in **Chart** and **Bargraph** views.	0.00
Filter Type	Select the signal filtering type: • None/Low/Medium/High	None
Note. The following menus are displayed only if **Measurement Type** = **pH.**		
Temp. Compensation	Set the type of temperature compensation: • Manual/Automatic/Auto solution	Automatic
Solution Coeff.	**Note**. Displayed only if **Temp. Compensation** type = **Auto solution.** Set the solution coefficient (pH or mV change per 10 deg C) of the solution being monitored.	N/A
Manual Temperature	**Note.** Displayed only if **Temp. Compensation** type = **Manual.** Enter the temperature of the sample within the range –10.0 to 120.0 °C.	N/A
Note. The following menus are displayed only if **Measurement Type** = **Redox/ORP.**		
Temperature Sensor	Set the type of temperature measurement: • Manual/Automatic **Note.** If **Temperature Sensor** type = **Manual**, the temperature value is not displayed in the associated **Operator page** or **Signals View**.	N/A
Low Slope Limit	A pH probe degrades over time. As this happens the slope calculated by a calibration procedure gradually decreases. Set the slope value below which a calibration fails. The low slope warning diagnostic is activated if the calibration calculates a slope less than 20 % above this value.	40%
Sensor Diagnostics		
Broken Glass	**Note:** Displayed only if **Measurement Type** = **pH.** Detect broken glass condition: • Enabled/Disabled	Disabled
Out Of Solution	Detect Out Of Solution condition: • Enabled/Disabled	Disabled
Ref. Poisoning	**Note:** Displayed only if a digital (EZLink) sensor is connected. Detect a contaminated reference electrode: • Enabled/Disabled	Disabled
Ref. Failure	**Note:** Displayed only if a digital (EZLink) sensor is connected. Detect a failed reference electrode: • Enabled/Disabled	Disabled
Ref. Blocked	Detect a blocked reference electrode: • Enabled/Disabled	Disabled
Ref. Alarm Limit	**Note:** Displayed only if **Ref. Blocked** sensor diagnostic is **Enabled.** A blocked reference electrode is detected when the impedance of the reference electrode exceeds a given limit. Set the impedance value above which the reference blocked diagnostic is activated.	N/A
Reset To Defaults	Select to reset all **Sensor Setup** parameters to their default values.	

RDO

Menu	Comment	Default
Tag	Enter an alphanumeric sensor tag (16 characters maximum) to identify the sensor on the **Operator Pages**.	TAG1
Measurement Type	Select the required probe type: • Dissolved Oxygen/% Saturation **Note**. If a change is made the I/O sources are reset.	Dissolved Oxygen
Units	Select the measurement units: • mg/l/ppm	ppm
PV Resolution	Select the PV Resolution: • Normal/High	Normal
Range High	Set the span value in **Chart** and **Bargraph** views.	50 ppm (200%)
Range Low	Set the zero value in **Chart** and **Bargraph** views.	0
Filter Type	Select the signal filtering type: • None/Low/Medium/High	None
Salinity Unit	Select the required salinity units: • PSU (Practical Salinity Units) or ppt (parts-per-thousand).	PSU
Salinity Correction	Required when monitoring water containing high quantities of dissolved salts: • enter the required value between 0 and 42 Practical Salinity Units (PSU). • leave at the default value of 0 PSU if salinity correction is not required.	0 PSU
Pressure Unit	Select the required barometric pressure units: • mBar/mmHg	mBar
Barometric Pressure	Barometric pressure compensation. Set the local barometric pressure to 506 to 1114 mbar (380 to 835 mm/Hg). If the barometric pressure is unknown, leave at the default sea-level value of 1013 mbar (760 mm/Hg).	1013 mbar
Reset To Defaults	Select to reset all **Sensor Setup** parameters to their default values.	N/A

...9 Sensor setup menus

Turbidity

Menu	Comment	Default
Tag	Enter an alphanumeric sensor tag (16 characters maximum) to identify the sensor on the **Operator Pages.**	TAG1
Senor Type	Select the sensor type: • 7998 011/7998 012/7998 016	N/A
Turbidity Units	Select the turbidity units: • NTU/FNU	NTU
Range High	Set the span value used in **Chart** and **Bargraph** views.	40.00 NTU (sensor types: 7998 011, 7998 016) 400.0 NTU (sensor type: 7998 012)
Range Low	Fixed at 0.0 NTU.	0.0
Filter Type	Select the signal filtering type: • None/Low/Medium/High	None
Bubble Rejection	Select the bubble rejection filtering type: • None/Low/Medium/High	None
Note. The following menus are displayed only if the sensor has a wiper fitted. Validity sensor type: 7998 011 or 7998 012		
Wiper Clean Freq.	Set the interval between cleans: • Off/15 mins/30 mins/45 mins/1 to 24 Hours	Off
Next Clean	**Note**. Displayed only if a wiper clean frequency has been configured Set the time for the next wiper clean to occur.	N/A
Reset Wiper Lifetime	Use to restart the wiper lifetime counter after wiper replacement.	N/A
Reset To Defaults	Select to reset all **Sensor Setup** parameters to their default values.	

Turbidity/suspended solids

Menu	Comment	Default
Tag	Enter an alphanumeric sensor tag (16 characters maximum) to identify the sensor on the **Operator Pages.**	TAG1
Measurement Type	Select measurement type: • Turbidity/Suspended solids **Note**. If a change is made the I/O sources are reset.	Turbidity
Turbidity Units	Select the turbidity units • NTU/FNU	NTU
TSS Units	Select the total suspended solids units • mg/l/ppm for readings above 1000 mg/l (ppm) the units change automatically to g/l (ppt).	mg/l
Range High	Set the span value used in **Chart** and **Bargraph** views.	4000 NTU
Range Low	Set the zero value used in **Chart** and **Bargraph** views.	0
Filter Type	Select the signal filtering type: • None/Low/Medium/High	None
Note. The following menus are displayed only if the sensor has a wiper fitted.		
Wiper Clean Freq.	Set the interval between cleans: • Off/15 mins/30 mins/45 mins/1 to 24 Hours	Off
Next Clean	**Note**. Displayed only if a wiper clean frequency has been configured Set the time for the next wiper clean to occur.	N/A
Reset Wiper Lifetime	Use to restart the wiper lifetime counter after wiper replacement.	N/A
Reset To Defaults	Select to reset all **Sensor Setup** parameters to their default values.	

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Notes

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