EZClean

Compressed air supply unit

Measurement made easy

EZClean
Compressed air supply unit

Introduction

The EZClean compressed air supply unit is a rugged, reliable cubicle that delivers compressed air to an ABB compressed air adapter nozzle fitted to the probe.

The air supply (interval/type/duration/frequency/ on-off sequencing) can be configured at the AWT420 transmitter to enable automatic/scheduled cleaning of the probe.

For more information

Publications for the associated AWT420 transmitter and ADS420 optical dissolved oxygen probe are available for free download from:
www.abb.com/measurement
or by scanning these codes:

AWT420 transmitter

ADS420 probe

	Search for or click on
Commissioning instruction AWT420 Universal 4-wire, dual-input transmitter	CI/AWT420
Operating instruction AWT420 Universal 4-wire, dual-input transmitter	OI/AWT420
Operating instruction ADS420 Optical dissolved oxygen probe	OI/ADS420

Contents

1 Health and Safety

Document symbols

Symbols that appear in this document are explained below:

⚠ WARNING

WARNING indicates a hazardous situation which, if not avoided, could result in death or serious injury.

⚠ CAUTION

CAUTION indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.

NOTICE

NOTICE is used to address practices not related to physical injury.

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

Electrical – high voltage

The EZClean air compressor unit requires a 230 or 115 V AC mains supply to operate. A mains isolation switch must be fitted in the supply to the unit.

Compressed air supply

The EZClean system generates compressed air up to a pressure of 3.5 bar(g)/(50.7 psi(g)) maximum:

- do not use compressed air for any other purpose than that for which it is provided
- never direct a stream of compressed air towards your body or the body of any other person
- when handling/connecting compressed air lines:
  - the correct safety procedures must be observed
  - suitable PPE must be worn (goggles/gloves/overalls)

Weight

The EZClean air compressor unit weighs approximately 10.3 kg (22.6 lb). The unit must be lifted only using appropriate lifting equipment/personnel and in accordance with relevant health and safety procedures and requirements.

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 appear on this product are shown below:

Functional earth (ground) terminal.

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 identifies a risk of chemical harm and indicates that only individuals qualified and trained to work with chemicals should handle chemicals or perform maintenance on chemical delivery systems associated with the equipment.

This symbol indicates the need for protective eye wear.

This symbol indicates the need for protective hand wear.

Recycle separately from general waste under the WEEE directive.

...1 Health and 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.

Restriction of Hazardous Substances (RoHS)

ABB, Process Automation, Measurement & Analytics, UK, fully supports the objectives of the RoHS II directive. All in-scope products placed on the market by PAMA UK on and following the 22nd of July 2017, will be compliant to the RoHS directive, 2011/65/EU.

2 System overview

EZClean components are shown in Figure 1 shows the EZClean compo:

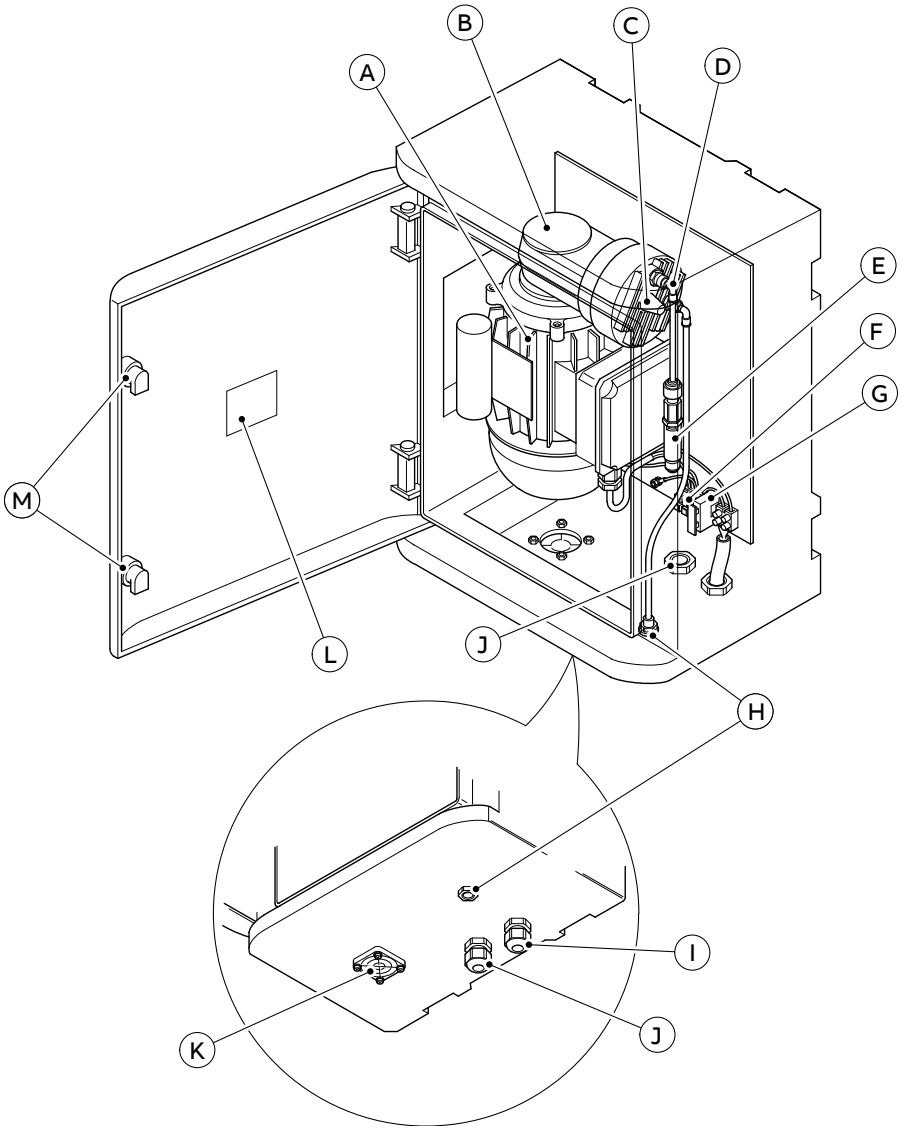


Figure 1 EZClean components

Table 1 EZClean component descriptions

Item	Description	Item	Description
(A)	Compressor motor	(H)	Air out – bulkhead push-fit coupling (to 6 mm nylon tubing)
(B)	Compressor head	(I)	M20 cable gland (to transmitter)
(C)	Air muffler/filter	(J)	M20 cable gland (mains supply voltage)
(D)	Air out – to sensor	(K)	Air intake (including dust filter)
(E)	Pressure relief valve	(L)	Instrument label
(F)	Mains supply voltage connector	(M)	Door locks
(G)	Fuse (2 A antisurge)		

3 Installation

⚠ WARNING

Unit weight 10.3 kg (22.6 lb). Mount in accordance with relevant safety requirements using suitable equipment and personnel.

Wall-mounting

This procedure is for wall-mounting using the four plastic wall-mounting lugs and M6 screws/washers (supplied). The lugs can be attached to the unit in the vertical or horizontal plane. When choosing the mounting location, leave sufficient space in front of the unit to open the door fully (280 mm [11.0 in]).

Referring to Figure 2:

1 Fit the four mounting lugs (A) to the compressor unit (B) in the required plane and secure using the M6 screws/washers (C).

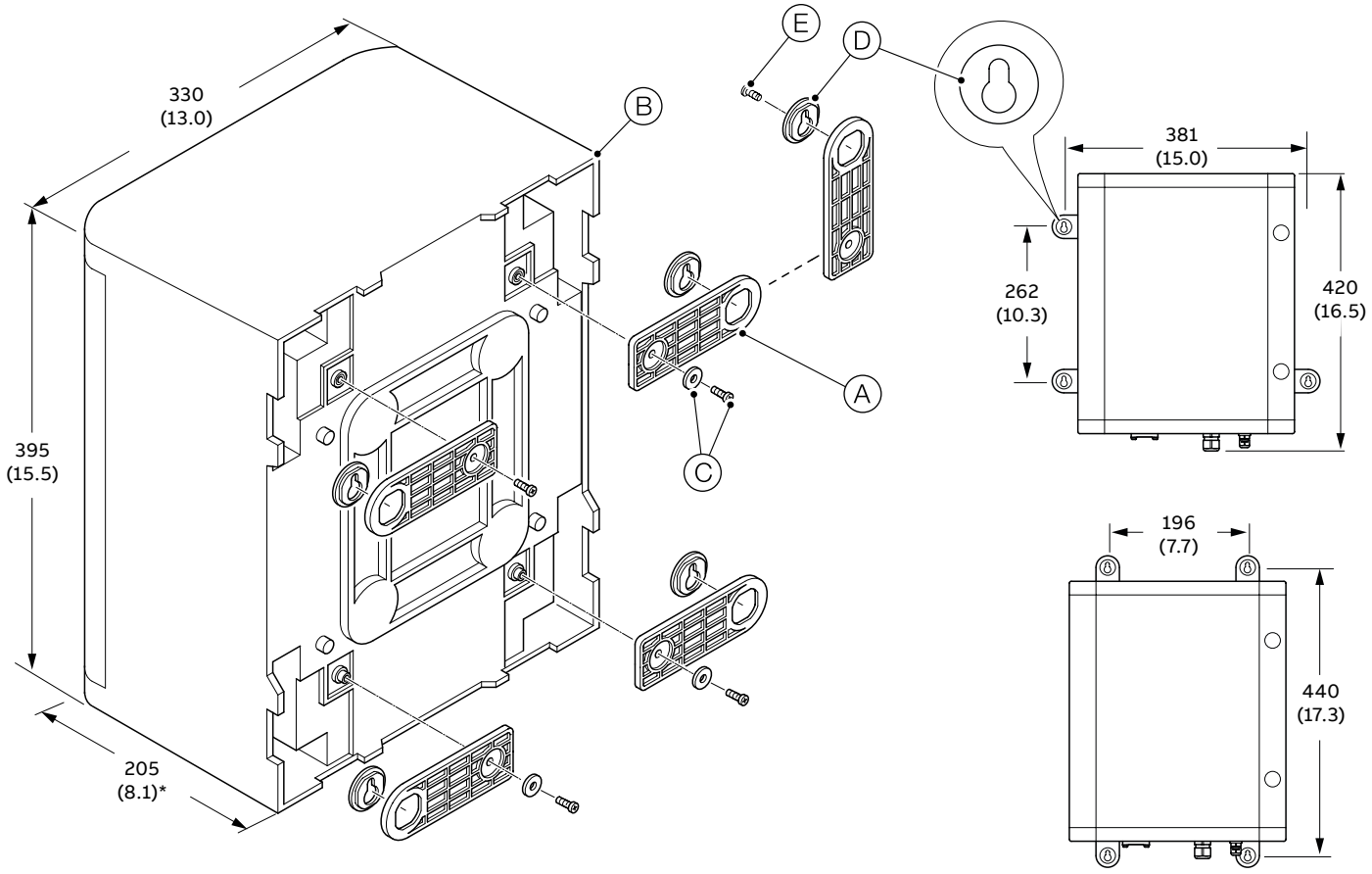
2 Mark appropriate mounting lug screw hole locations on the wall and drill suitably sized holes to accommodate the mounting location disks (D) and fixings (E) (not supplied).

NOTICE

Ensure the keyhole slots in location disks (D) are aligned correctly.

3 Mount the compressor unit to the wall.

Dimensions in mm (in)



*Add 280 (11.0) when door open

Figure 2 Wall-mounting

Handrail/wall-mounting

This procedure is for handrail/wall-mounting using the optional compressor unit handrail-mounting kit. When choosing the mounting location, leave sufficient space in front of the enclosure to open the door fully (>485 mm [>19.1 in]) .

NOTICE

Optional compressor mounting extension plates (Ⓓ in Figure 3 [2 supplied with handrail mounting kit]) can be attached to handrail mounting plates if required.

Referring to Figure 3:

1 Fit the four handrail mounting plates Ⓐ to the compressor unit Ⓑ in the required plane and secure each plate with one M6 screw Ⓒ (supplied).

If optional extension mounting plates Ⓓ are required, attach to the handrail mounting plate(s) in the required plane using two M6 bolts/washers/nuts (supplied) per plate.

2 Position the compressor unit Ⓑ on the handrail and secure using the U-bolts Ⓔ and M8 nuts/washers Ⓕ (supplied).

Dimensions in mm (in)

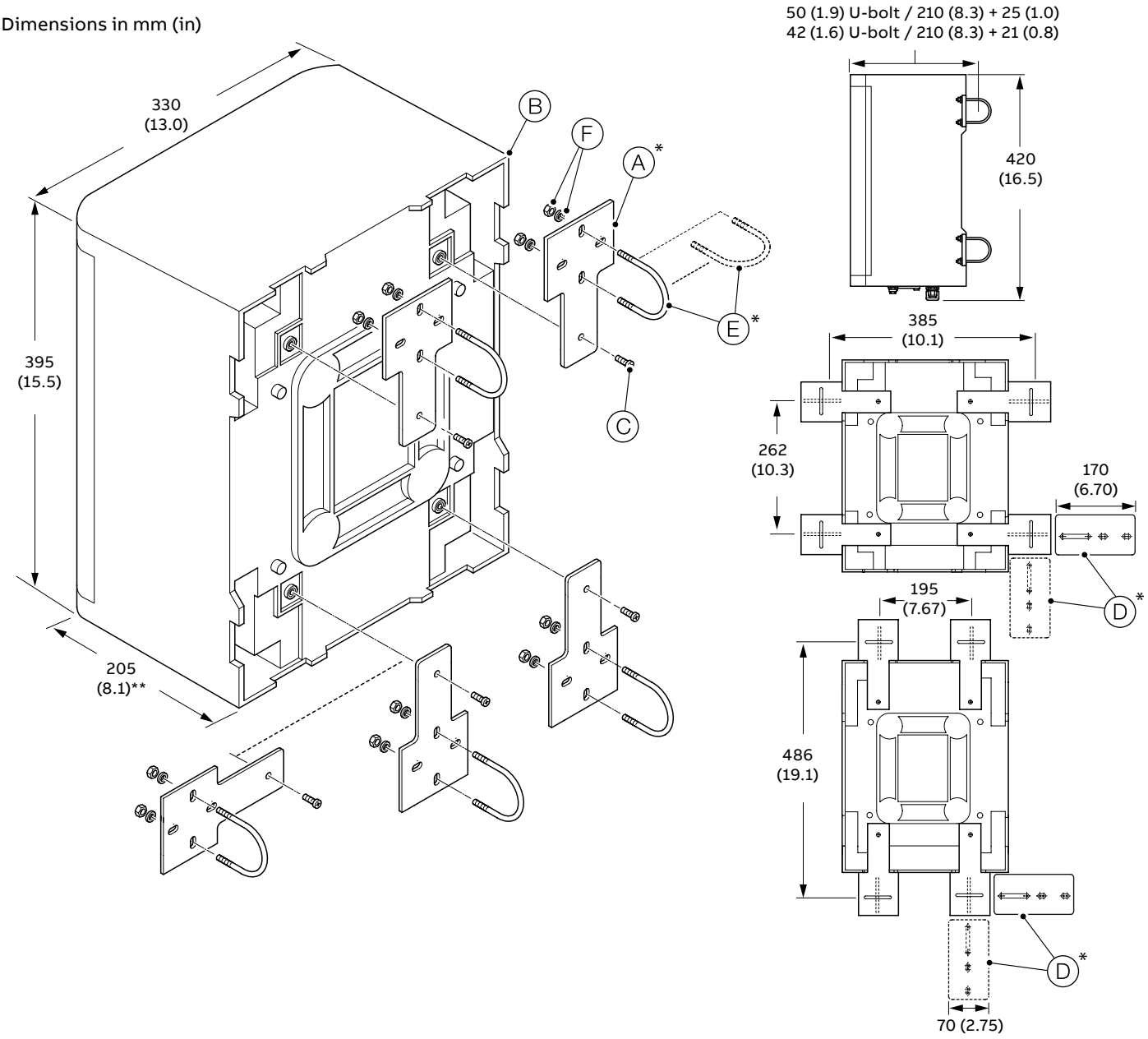


Figure 3 Handrail-mounting

*Mounting plates Ⓐ, U-bolts Ⓔ and extension plates Ⓓ can be fitted horizontally or vertically in each corner of the enclosure. Arrangements above shown for example only.
**485 (19.1) with door open

...3 Installation

Pole-mounting

This procedure is for pole-mounting using the optional pole-mounting kit.
When choosing the mounting location, leave sufficient space in front of the unit to open the door fully (280 mm [11.0 in]).

Referring to Figure 4:

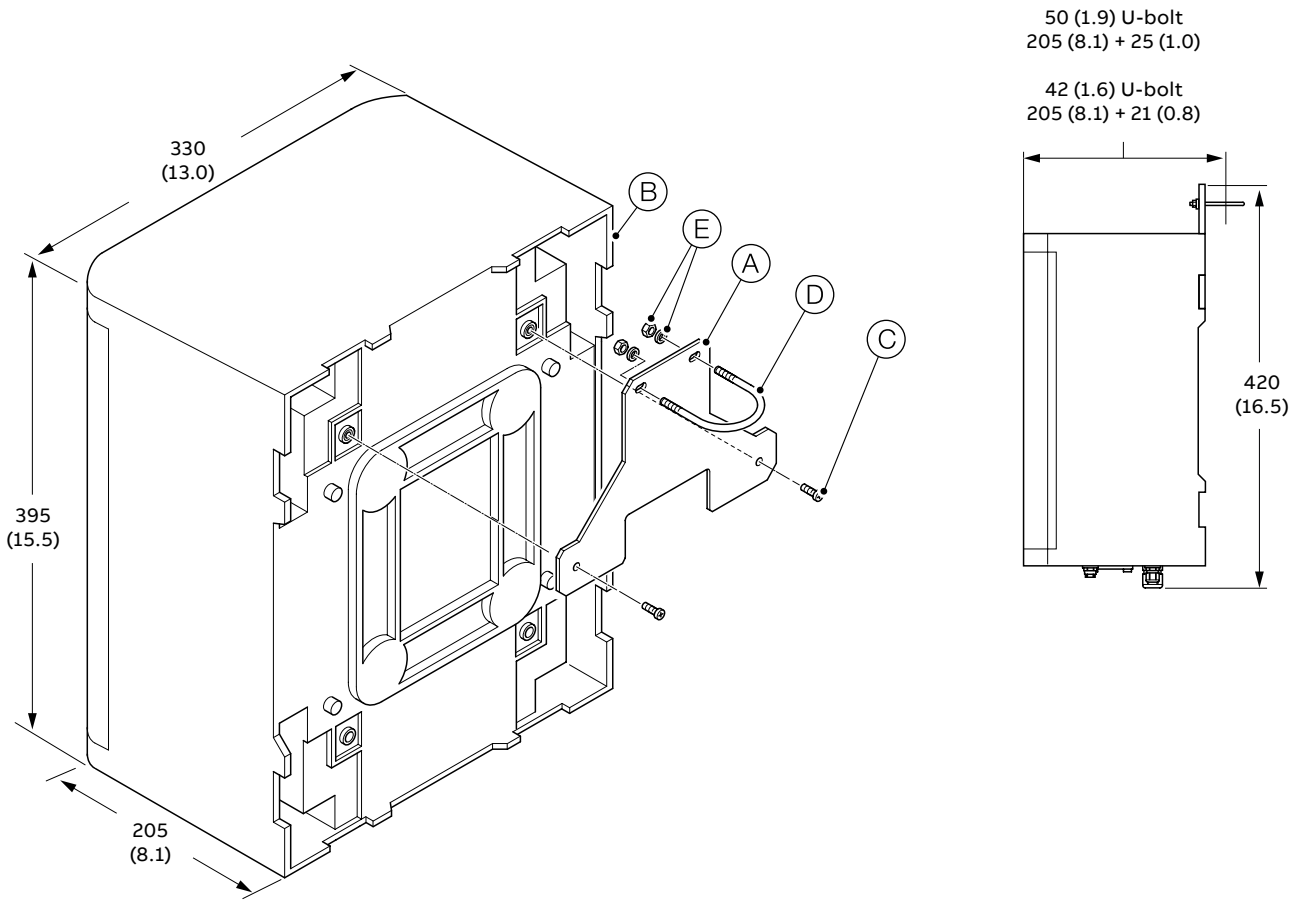
1 Fit the pole mounting plate (A) to the compressor unit (B) and secure using the M6 screws (C) (supplied).

2 Position the compressor unit (B) on the pole and secure using the U-bolt (D) and M8 nuts/washers (E) (supplied).

NOTICE

It is not usually necessary to fit a second pole mounting plate (and U-bolt) to the bottom of the enclosure but, if necessary, an additional kit is required.

Dimensions in mm (in)



*Add 280 (11.0) when door open

Figure 4 Pole-mounting

4 Connections

Pneumatic connections

⚠ WARNING

The EZClean system develops compressed air up to a pressure of 3.5 bar(g)/(50.7 psi(g)) maximum (when outlet blocked [zero flow]).

- do not use compressed air for any other purpose than that for which it is provided
- never direct a stream of compressed air towards your body or the body of any other person
- when handling/connecting compressed air lines:
  - the correct safety procedures must be observed
  - suitable PPE must be worn (goggles/gloves/ overalls)

Connect the tubing to compressed air unit

Referring to Figure 5:

1 Connect one end of the 6 mm OD nylon tubing (A) to bulkhead push-fit connector (B).

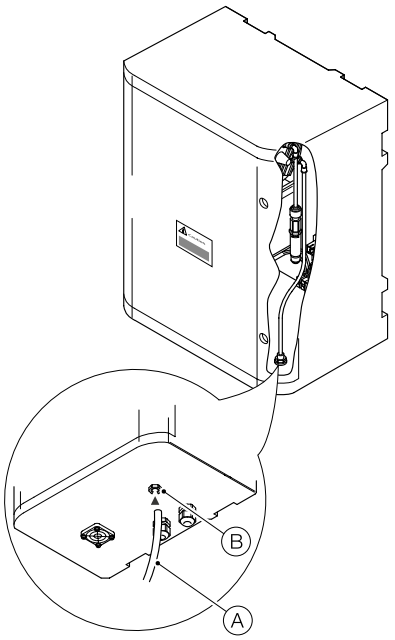


Figure 5 Connecting 6 mm OD nylon tubing to the compressed air unit

2 Proceed to:
- "Connect the tubing to the ABB compressed air adapter" to connect 6 mm OD nylon tubing to ABB compressed air adapter

Connect the tubing to the ABB compressed air adapter

Referring to Figure 6:

1 Refer to the sensor accessories instructions for details on fitting the compressed air to the probe.

2 Connect the free end of 6 mm OD nylon tubing (A) to G⅜ connector (B) on the compressed air adapter (C):

⚠ WARNING

Typical pressure and flow rate 1.38 bar(g) (20 psi(g))/ @ 14.16 L/min (0.5 scfm), set to perform every 4 hours.

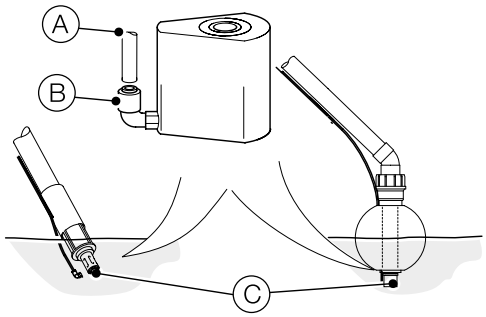


Figure 6 Connecting 6 mm OD nylon tubing to the ABB compressed air adapter

3 Proceed to "Electrical connections" on page 10 to make electrical connections.

...4 Connections

Electrical connections

Relay connections (compressor unit to AWT420 transmitter)

⚠ WARNING

- Isolate the compressed air unit and AWT420 transmitter from the mains power supply before making electrical connections.
- Ensure all cable runs are safe and do not present a trip hazard when routing/securing.

Referring to Figure 1:

1 Release the two door locks (Q) and open the compressed air unit door.

Referring to Figure 8:

2 Loosen the M20 cable gland entry on the base of the compressed air unit and pass one end of the connection cable through. Pass the other end of the cable through the required cable gland entry on the transmitter refer to the transmitter operating instruction (OI/AWT420) for gland entry options.

3 Make connections between the compressed air unit and transmitter.

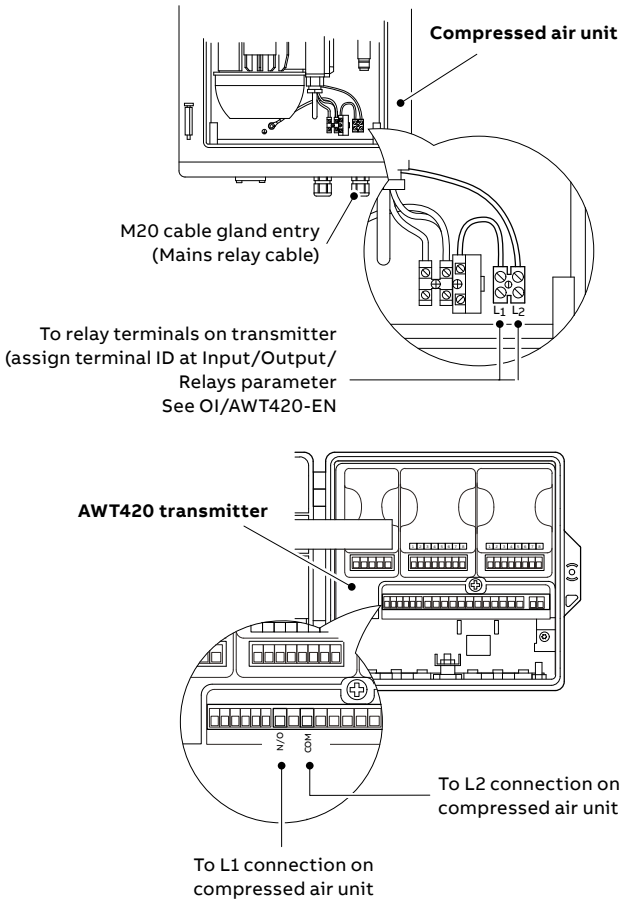


Figure 7 Relay connections – compressed air unit to AWT420 transmitter

4 Tighten the cable glands on the compressed air unit and transmitter.

5 Proceed to "Mains voltage supply" to make the mains voltage supply connection to the compressed air unit.

Mains voltage supply (230 or 115 V AC)

⚠ WARNING

- Isolate the compressed air unit and AWT420 transmitter from the mains power supply before making electrical connections.
- Ensure the voltage supply matches the supply voltage specified on the instrument label (P) fitted within the enclosure before making connections – see Figure 1 on page 5.
- Ensure all cable runs are safe and do not present a trip hazard when routing/securing.

Referring to Figure 8:

1 Loosen the M20 cable gland entry on the base of the compressed air unit and pass the free end of the 3-core mains supply cable through.

2 Make mains power supply connections to the compressed air unit neutral/earth/live terminals.

3 Tighten the M20 mains supply voltage cable gland.

4 Close and lock the compressed air unit door – refer to Figure 1 on page 5.

5 Proceed to "Configuration" on page 11 to configure the cleaning schedule.

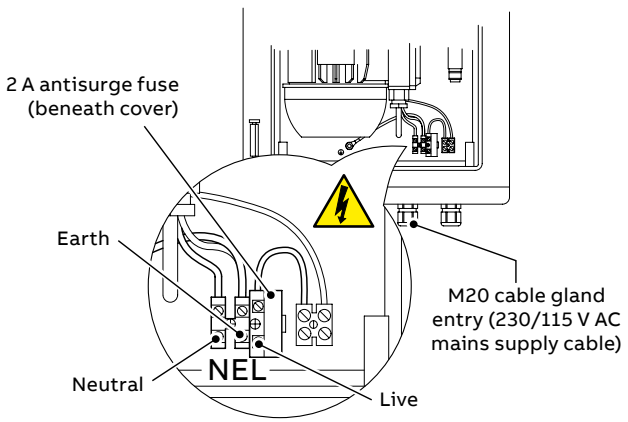


Figure 8 Mains supply voltage 230 or 115 V AC connections

5 Configuration

NOTICE

- Schedule automatic cleans for configured probe(s) only.
- Clean parameters are enabled only when the Clean Interval is set (is not Off) – see "Configuration" on page 11.
- Full software details are detailed in the transmitter Operating instruction (OI/AWT420).

1 Ensure the probe to be cleaned is connected to the transmitter.

2 Ensure pneumatic connections are made between the EZClean compressed air unit and an ABB compressed air adapter to be fitted on the sensor.

3 Ensure electrical connections are made between the EZClean compressed air unit and the AWT420 transmitter – see "Electrical connections" on page 10.

4 At the AWT420 transmitter, press the key to display the Operator Page menu, then select Enter Configuration to display the Access Level page.

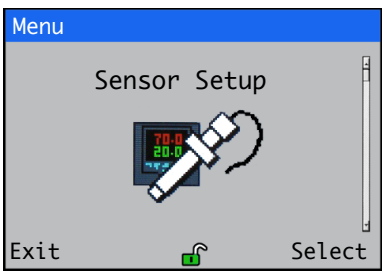
Use the key to select the Advanced menu item and press the key (below the Select prompt) to access Advanced level menus.

Use the / keys to scroll to the Input/Output menu and press the key to enter the level. Scroll to the Relay menu using the / keys.

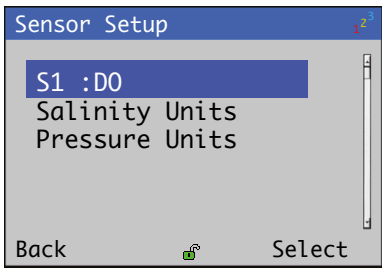
Configure Relay parameters for the associated probe as follows:

- Set: Type to Output
- Set: Source to Sx Clean (where x corresponds to the
- sensor position [1 to 2] at the EZLink connector)

5 Exit the Input/Output menu and use the / keys to scroll to the Sensor Setup menu:

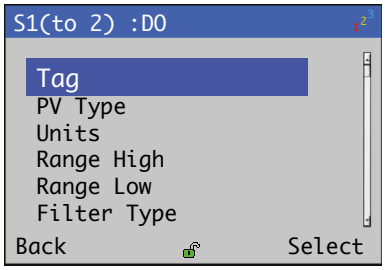


Press the key – the Sensor Setup page is displayed:

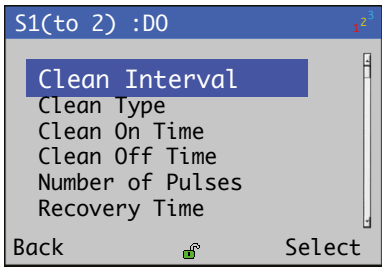


If more than 1 sensor is connected, select the required sensor S1(to 2) :DO (to be cleaned) and press the key (below the Select prompt).

The sensor S1(to 2) :DO menu page is displayed – see "Sensor Setup" on page 12:



Scroll to the Clean Interval menu and set the required interval between cleans.



Set the required clean parameters (Clean Type / Clean On Time / Clean Off Time* / Number of Pulses* / Recovery Time / Clean Duration / Clean Output) for the connected probe.

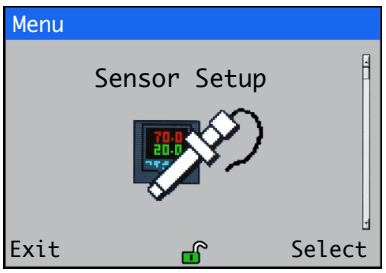
*Enabled only if Clean Type is set to Pulsed.

When all required clean parameters are set, press the key repeatedly to exit the Sensor Setup level and return to the Operator Page.

The configured clean commences at the interval set after this configuration is saved and repeats until re-configured or stopped.

...5 Configuration

Sensor Setup



Used to set the tag, measurement units, operational range and clean functions and to compensate for salinity and barometric pressure.

Menu	Comment	Default
S1 (to 4) :DO	Select the ID of the optical dissolved oxygen probe to be cleaned and scroll to the Clean Interval menu to configure the cleaning routine.	
Tag PV Type Units Range High Range Low Filter Type	These parameters are not used to configure cleaning – refer to the probe operating instruction (OI/ADS420) for parameter descriptions.	
Clean Interval	Set the interval between cleans: Off / 15 min / 30 min / 45 mins / 1 to 24 h	Off
Clean Type *	Set the clean type: Continuous / Pulsed	Continuous
Clean On Time *	Set the duration of the clean: 1 to 60 s	30 s
Clean Off Time * / **	Set the duration between cleans: 1 to 60 s	30 s
Number of Pulses * / **	Set the number of cleaning pulses: 1 to 10 Pulses	2 Pulses
Recovery Time *	Set the time delay between the completion of cleaning and the display of a new reading on the operator page: 1 to 10 min	1 min
Clean Duration *	Displays the total duration of the clean: Clean Type set to Continuous = Clean on Time + Recovery Time Clean Type set to Pulsed = (Clean on Time + Clean Off Time) x Number of Pulses + Recovery Time	
Clean Output *	Displays the output signal the clean is assigned to. This can be set to relay 1 to 6 or digital output 1 to 6 – refer to AWT420 transmitter operating instruction (OI/AWT420).	No Assignment
Salinity Correction Barometric Pressure Restore Defaults	These parameters are not used to configure cleaning – refer to the probe operating instruction (OI/ADS420) for parameter descriptions.	
Salinity Units		
Pressure Units		

* Displayed only if Clean Interval is NOT set to Off

** Displayed only if Clean Type is set to Pulsed

6 Maintenance

Annual maintenance

1. Ensure compressed air supply unit mountings are secure.
2. Ensure push-fit couplings and 6 mm tubing are in serviceable condition – see "Pneumatic connections" on page 9 .
3. Ensure the air intake is clean – see "System overview" on page 5, item Ⓚ.
4. Ensure the air muffler/filter is clean and free of clogged pores – see "System overview" on page 5, item Ⓒ.
   To clean this, remove from the compressor head and blow oil-free compressed air through it from the reverse side.
   If the unit operates in a dusty environment, additional periodic cleaning may be required. Use only a clean, dry cloth.

7 Specifications

Compressed air unit

Dimensions*

Height: 395 mm (15.5 in)
Width: 330 mm (13.0 in)
Depth: 205 mm (8.1 in)

Enclosure material

Polypropylene

Pump unit

Power

90 W

Pressure relief valve

Set to vent to atmosphere if pressure exceeds 1.38 bar(g)/(20 psi(g))

Pneumatic pressure/flow rate

Maximum pressure:

- outlet closed: 3.5 bar(g)/(50.7 psi(g))
- outlet open: 2.0 bar(g)/(30 psi(g))

Typical operating pressure and flow rate 1.38 bar(g)/(20 psi(g))/@ 14.16 L/min (0.5 scfm), set to perform every 4 hours

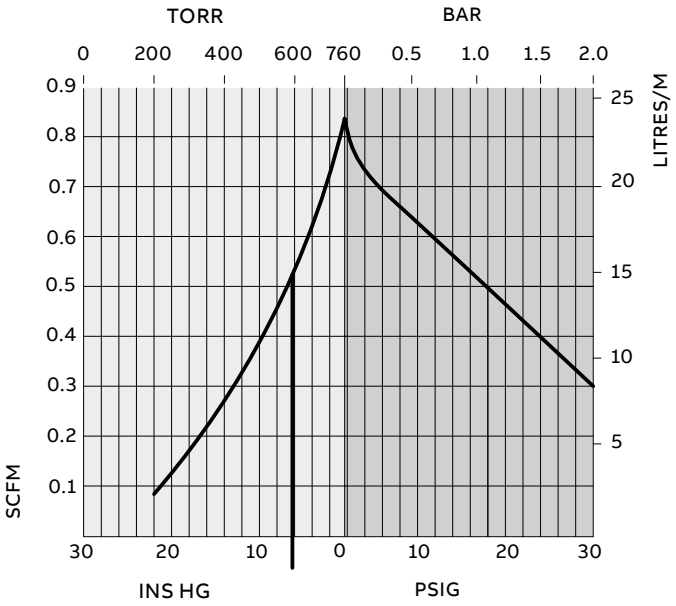


Figure 9 Pump unit – pneumatic pressure/flow rate

Environmental ratings

Storage temperature

-20 to 50 °C (-4 to 122 °F)

Operating temperature

-20 to 50 °C (-4 to 122 °F)

Power requirements

Mains power supply

230 or 115 V AC, 90 W

Internal fuse

2 A, antisurge

Cable entries

Mains voltage supply cable

M20 cable gland

Relay cable

M20 cable gland

Pneumatic entry

Bulkhead push-fit connector for 6 mm nylon tubing

Compliance

CE
UKCA

*Excluding mounting brackets, see "Installation" on page 6 for bracket dimensions

8 Spares and accessories

Spares

EZClean compressor maintenance kit

Part number	Description
3KXA494400L0040	Maintenance kit, comprising: – 15 m (45 ft) × 6 mm OD nylon tubing – G⅜ push-fit connector – replacement air muffler/filter – fuse

Air cleaning tubing kit

Part number	Description
3KXA494400L0041	Tubing and connector comprising: – 15 m (45 ft) × 6 mm OD nylon tubing – G⅜ push-fit connector

EZClean compressor pneumatic fittings kit

Part number	Description
3KXA494400L0042	Compressor pneumatic fittings kit

Accessories

EZClean compressor pole-mounting kit

Part number	Description
3KXA494400L0017	Compressor pole-mounting kit, includes compressor pole mounting plate, U-bolts, nuts and washers

EZClean compressor handrail-mounting kit

Part number	Description
3KXA494400L0018	Compressor handrail-mounting kit, includes 4 × handrail/wall mounting plates, 2 × extension plates, U-bolts, nuts and washers

EZClean compressor unit – 230 and 115 V AC

Part number	Description
3KXA494400L0043	EZClean compressor unit, 230 V AC
3KXA494400L0044	EZClean compressor unit, 115 V AC

ABB Measurement & Analytics

For your local ABB contact, visit:
www.abb.com/contacts

For more product information:
www.abb.com/measurements

3KXA494406R4201

OI/EZCLEAN–EN Rev. B 10.2022