

# 700 ULTRA series

## 12 mm pH/Redox (ORP) sensors



700 ULTRA panel mount system

**Measurement made easy**

### Introduction

This publication details part numbers and installation procedures for sensor flow cell mounting accessories and the reservoir for use with the 700 ULTRA series sensors.

### Tools/equipment required

- Adjustable spanner
- 3.5M KCL solution (part number: AWR119E003EN)

### For more information

Publications for the associated sensors and transmitters are available for free download from: [www.abb.com/measurement](http://www.abb.com/measurement)

or by scanning this code:



**Search for or click on:**

Operating instruction 700 ULTRA series pH/Redox (ORP) sensors	<a href="#">OI/700-EN</a>
Operating instruction AWT440 multi-input transmitter	<a href="#">OI/AWT440-EN</a>
Operating instruction AWT420 universal 4-wire single- and dual-input transmitter	<a href="#">OI/AWT420-EN</a>
Data sheet AWT440 multi-input transmitter	<a href="#">DS/AWT440-EN</a>
Data sheet AWT420 universal 4-wire single- and dual-input transmitter	<a href="#">DS/AWT420-EN</a>

## 1 Safety

### Potential safety hazards

The sensor operates with a maximum of 3.3 V DC. There are no hazardous voltages present in the sensor.

#### WARNING

Before installing or removing a sensor from the process, reduce process pressure to zero. During sensor removal ensure the sensor is cool enough to handle.

#### WARNING

##### Potential high pressure/high temperature

- These procedures must be carried out by suitably trained personnel and in accordance with any local regulations and practices.

## 2 Specification

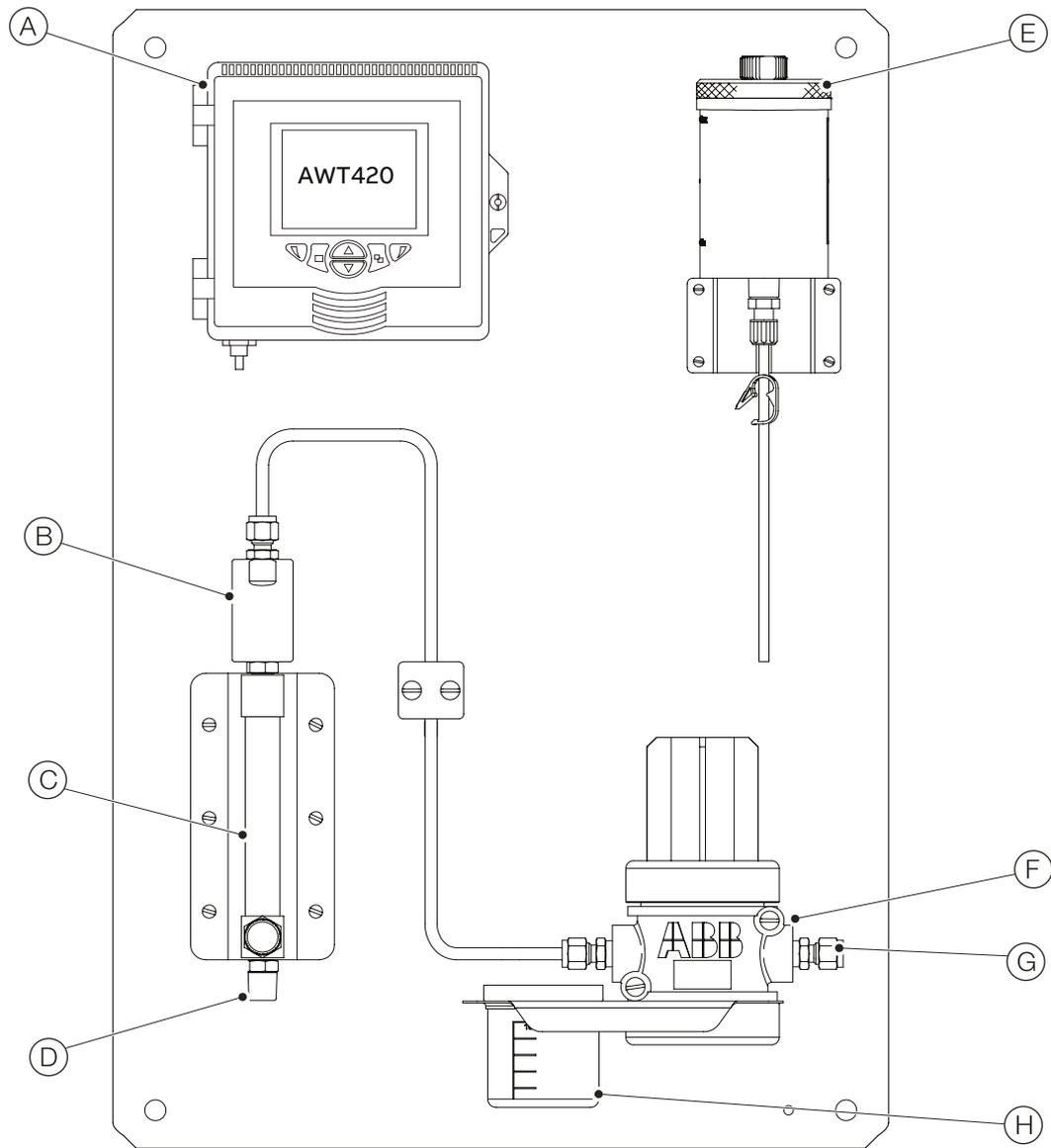
- Stainless steel flow cell
  - 316 stainless steel
  - 30% GF polypropylene
  - nitrile
- Tubing
  - 316 stainless steel
- VA meter
  - Purgemaster flowmeter 22 to 220 ml/min (0.01 to 0.06 gal/min (US), vertical, ¼ in NPT, front panel mounting  
order code: A6.2.3.1.C.N2.1.I.N.A.O.D.A.S
  - refer to Data Sheet [DS/A61/A62-EN](#)
  - Tube length: 3 in
  - Tube dia. ¼ in
- Flow switch
  - Acrylic flow switch, vertical mounting, fixed, ¼ in
  - Body: acrylic
  - ¼ in FNPT
  - SPST NO
  - SS316 with Epoxy Piston
  - Fluid: clean water
  - Operating pressure 14.7 psig (1.01 bar)
  - Operating temperature: 25 °C (77 °F)
  - Standard cable length: 0.457 m (18 in)
  - Set point: 20 ml/min (0.01 gal/min [US]) water decreasing
- Panel
  - 316 stainless steel

## 3 Spares and accessories

Description	Part number	Qty
700ULTRA panel	3KXA163700L0002	1
NPT stainless steel flow chamber assembly + PG13.5 adapter	3KXA163000L0013	1
VA Flow meter	3KXA163700L0003	1
Flow switch	3KXA163700L0004	1
Flow cell PG13.5 adapter kit	3KXA163000L0117	1
Replacement reservoir	3KXA163700L0111	1
Replacement reservoir lid	3KXA163700L0112	1
Reservoir mounting bracket assembly	3KXA163700L0115	1
Reservoir tubing with connectors	3KXA163700L0113	1
Calibration kit	3KXA163000L0120	1
Pack of flow cell o-rings (2 off)	3KXA163000L0113	1
Flow cell plastic locking ring	3KXA163000L0116	1
This publication - 700 ULTRA Series 12 mm pH/Redox (ORP) sensors	IN/ANAINST/041-EN	1

**Table 1 Spares and accessories for 700 ULTRA series sensors**

## 4 Overview



- Ⓐ AWT40 transmitter
- Ⓑ Flow switch
- Ⓒ Flow sensor
- Ⓓ ¼ in NPT inlet
- Ⓔ Reservoir
- Ⓕ Flow cell
- Ⓖ ¼ in NPT outlet
- Ⓗ Calibration beaker

**Figure 1** 700 ULTRA panel main components

# 5 Dimensions

Dimensions in mm (in).

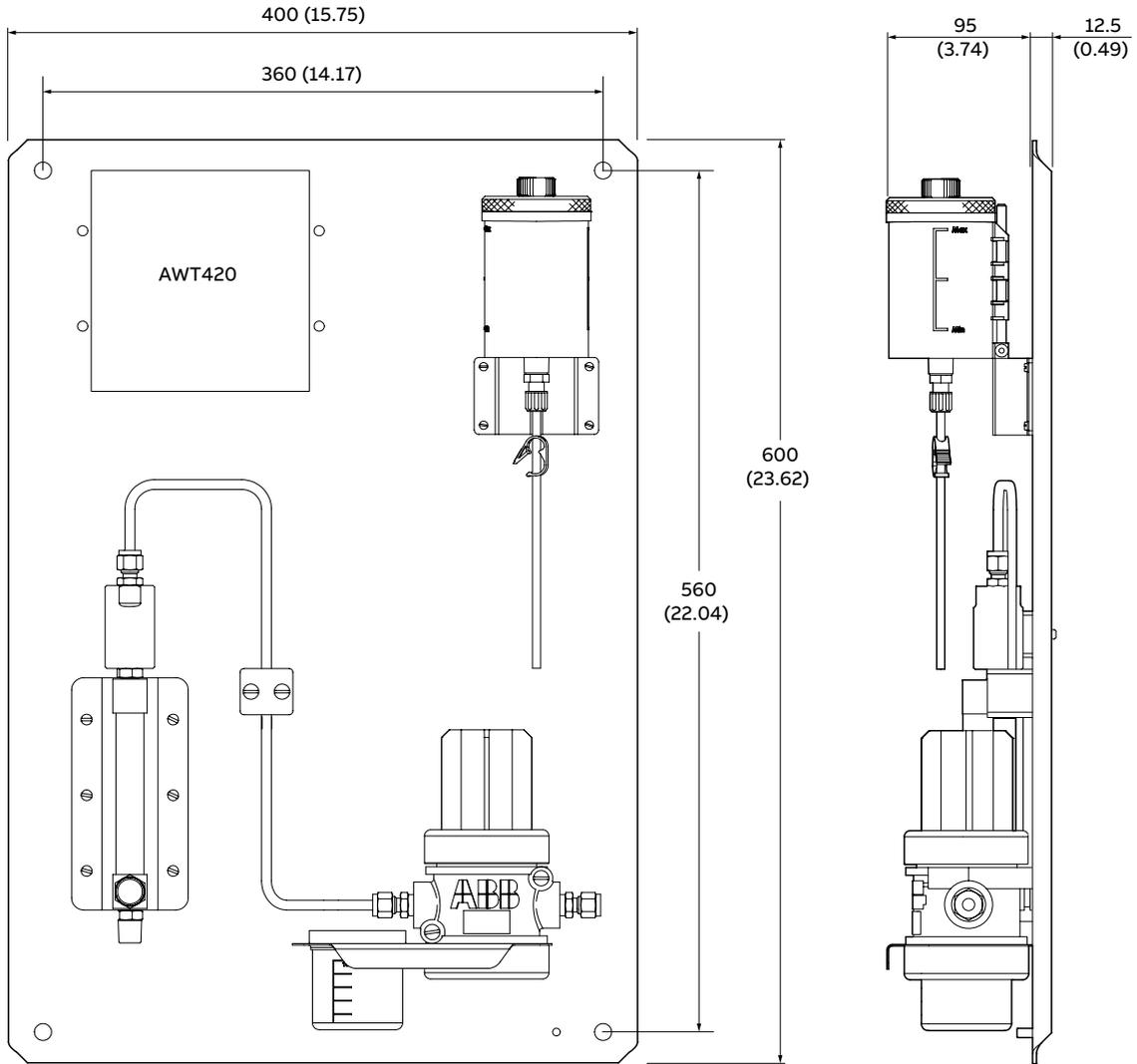


Figure 2 700 ULTRA panel dimensions

## 6 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  $\mu\text{m}$  (if particle sizes exceed 60  $\mu\text{m}$ , use a 60  $\mu\text{m}$  filter).
- 3 Sample flow rates must be within range – see Section 2, page 2.
- 4 Sample pressure must not exceed atmospheric pressure.

## 7 Locating the wet-section

Referring to Figure 3:

- 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.

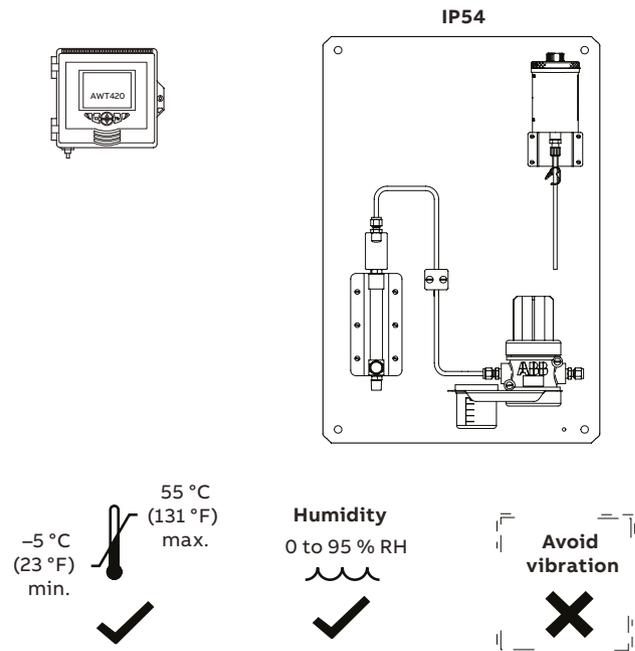


Figure 3 Locating the panel and transmitter

## 8 Mounting the panel

**Note:** Mount the panel vertically and level.

- 1 Mark the four holes in each corner of the panel on the wall using the mounting hole dimensions in Figure 2, page 4.
- 2 Fix the panel to the surface securely through the 4 panel mounting holes.

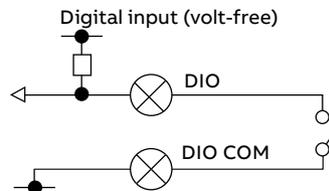
## 9 Process connections

Referring to Figure 1, page 3:

- 1 Connect ¼ in. OD tubing to sample inlet (D) and outlet (G).
- 2 Ensure that the bulkhead connector is water-tight. If an leak path is present tighten using an adjustable spanner.

## 10 Flowswitch connections

The flow switch can be wired into an AWT420 transmitter digital input. Figure 4 shows how the flow switch should be connected.



**Figure 4** Flowswitch connections

### Configuring the input

- 1 At the AWT420 transmitter, enter navigate to:  
Advanced -> Input/Output -> Digital I/O.
- 2 Select the digital IO port the flow switch is connected to.
- 3 Set the type to Volt Free.

**Note.** The flowswitch input will trigger a diagnostic No Flow. This class of diagnostics may be linked to an alarm if required. Refer to Operating instruction [OI/AWT420-EN](#) for more information.

## 11 Maintenance

### Flow chamber

#### **⚠ WARNING**

Ensure that the sensor connections are kept dry at all times, and correct PPE is equipped.

Referring to Figure 5:

- 1 Remove sensor (A) from flow chamber (B).
- 2 Disconnect process connections both sides (C) and (D) of flow chamber (B).

Referring to Figure 4:

- 3 Unscrew both flow cell locking rings (A).
- 4 Clean the flowcell (B) using a soft cloth.
- 5 Before re-assembling, ensure O-rings (C) are located correctly on base plate (D).
- 6 Tighten flow cell locking rings (A) until hand-tight.
- 7 Refer to Section 6 to refit the sensor and bring the process back to operational state.

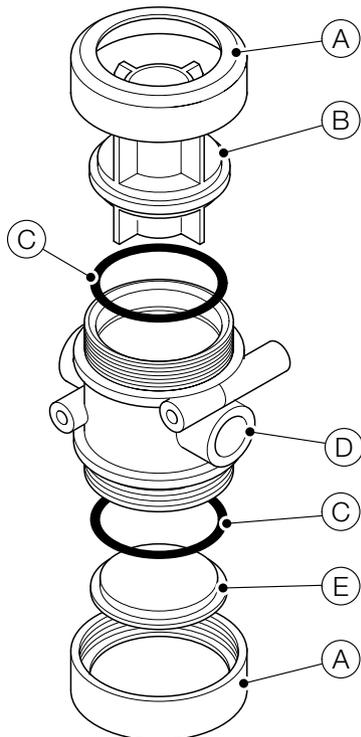


Figure 5 Cleaning the flow chamber

### Reservoir

When cleaning the reservoir, ensure that all connectors are wiped with a soft cloth to minimize and build up of deposits

Ensure the electrolyte level in the reservoir is maintained, and that the interconnecting tubing is free of blockages and no crystals have formed that may impede flow.

### Flow switch/Flow sensor

The flow switch and flow sensor both work on the principle of variable area flow sensing. For this reason the sample must be free from particulate matter that may block up the sensors.

If particulate matter is present then it may be necessary to clean the sensors on a regular basis to ensure no blockages. Alternatively a filter may be fitted prior to the panel to ensure no particulate matter is present in the system.

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