Rosemount™ 3800

Autoclavable and Steam Sterilizable pH Sensors

- Drift free reference - designed with silver-silver chloride reference electrode with gelled electrolyte and proprietary liquid junction.

- Sterilizations up to 140 °C - Improved GPHT glass technology increases high temperature stability.

- Fast, accurate and improved stability reliable measurements after sterilization cycles.

- Robust design - withstands multiple steam sterilization cycles.

- Individual quality certification with a list of materials for each sensor.

ROSEMOUNT™

EMERSON™

Overview

Features and Applications

Designed for accuracy and stability in a heat intensive application. These pH sensors are optimized for autoclaving and steam sterilization. Building on PERpH-X® and AccuGlass® technology, the Rosemount 3800 sensors exhibit unparalleled stability after exposure to high temperature sterilization.

Rosemount 3800 sensors are available in three different insertion lengths, 120 mm, 225 mm and 325 mm.

The Rosemount 3800 sensor has no integral temperature sensor and is supplied with a coaxial S8 Pg 13.5 connector.

The **PUR**-SENSE reference electrode uses a silver chloride sensor in combination with a new gelled potassium chloride electrolyte to provide a stable reference potential through the single proprietary ceramic reference junction.

Rosemount 3800 test data indicates the sensor drift is well within 0.1pH (0.02-0.07 pH). The proven stability of the Rosemount 3800 sensors translates into less maintenance and more reliable measurements even after multi autoclaving cycles. These sensors are at least two times more stable than any other pH sensor in this challenging application.
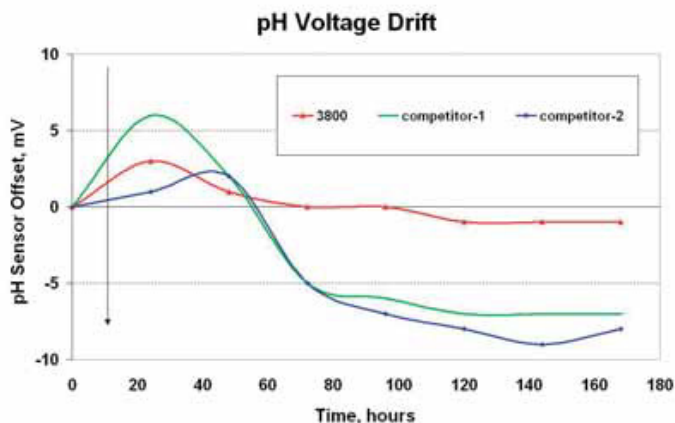
Figure 1 on page 3 shows the stability test results. The tests were conducted in an autoclave at 125 °C for 45 minutes followed by a simulated cell-culture process for eight consecutive days. All pH sensors were calibrated in buffer solution prior to drift measurements. Testing media for this test was cell-culture or simulated perfusion culture process.

Contents

Specifications

Figure 1. Drift performance graph

Vertical axis on the chart above is in Sensor Offset, mV. The vertical arrow on the chart, indicates time when autoclaving was carried out. All pH-sensors were calibrated in buffer solution at time zero.

Table 1. Rosemount 3800 sensor specifications

Range
0 to 14 pH
Sensor type
PUR-SENSE 3800, GPHT glass with hemi bulb
Wetted materials
Glass, ceramic and EPDM O-ring USP VI
Temperature range
up to 221 °F (steam up to 284 °F) [up to 105 °C (steam up to 140 °C)]
Pressure range
max 6 bar at 105 °C [max 72 psig (600kPa) at 221 °F]
Reference junction
Single ceramic junction
Dimensions
12 mm OD, shaft length -01= 120 mm, -02 = 225 mm , -03 = 325 mm
Electrolyte
Gelled polymer
Cable connector
Coaxial S8

Table 1. Rosemount 3800 sensor specifications

Process connector
Pg 13.5 connector
Remarks
Quality certification includes list of wetted materials and calibration records

Product Certifications

Please see online certificates for further details.

IECEx

Ex ia IIC T4 Ga (-20 °C ≤ Ta ≤ + 60 °C)

Per standards IEC60079-0: 2011, IEC 60079-11: 2011

ATEX

– ⟨Ex⟩ II 1 G Ex ia IIC T4 Ga (-20 °C ≤ Ta ≤ +60 °C)

Per standards EN 60079-0: 2012 + A11:2013, EN 60079-11:2012

FM

Intrinsically Safe for use in Class I, II, and III, Division 1, Groups A, B, C, D, E, F, and G; Temperature Class T6 Ta = -20 °C to +60 °C

Intrinsically Safe for use in Class I, Zone 0, AEx ia IIC T6 Ta = -20 °C to +60 °C

Nonincendive for use in Class I, Division 2, Groups A, B, C, and D; Temperature Class T6 Ta = -20 °C to +60 °C

Suitable for use in Class II and III, Division 2, Groups E, F, and G; Temperature Class T6 Ta = -20 °C to +60 °C Hazardous (Classified) Locations

IS/I,II,III/1/ABCDEFG/T6 Ta = 60 °C - 1400332; Entity; I/0/AEx ia IIC/T6 Ta = 60 °C - 1400332; Entity; NI/I/2/ABCD/T6 Ta = 60 °C; S/II,III/2/EFG/T6 Ta = 60 °C

Per standards 3600:1998, 3610:2010, 3611:2004, 3810:2005

CSA

Intrinsically Safe and Non-Incendive:

Class I, Division 1, Groups ABCD; Class II, Division 1, Groups EFG; Class III; Class I, Division 2, Groups ABCD; Ex ia IIC; T6; Ambient temperature rating -20 °C to +60 °C: (Simple Apparatus)

Per standards C22.2 No. 142 – M1987, C22.2 No 157 – M1992, CAN/CSA E60079-0:07, CAN/CSA E60079-11:02, UL 50:11th Ed., UL 508:17th Ed., UL 913: 7th Ed., UL 60079-0: 2005, UL 60079-11: 2002

Ordering Information

Rosemount 3800 sensor provides a stable signal and retain their calibration value for repeated sterilization cycles. They can be used in the biotechnology, pharmaceutical, chemical and food processing fields. These sensors are available in three insertion lengths for various insertion depths. Rosemount 3800 is offered with an S8 Pg 13.5.
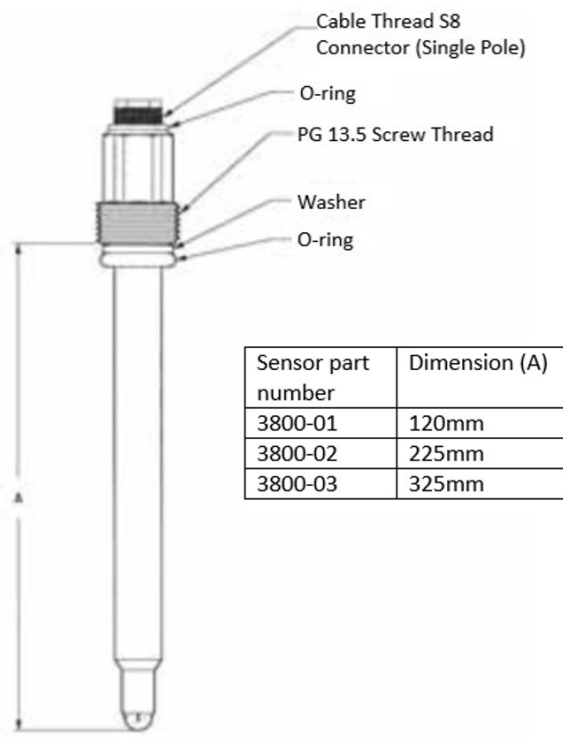
These sensors can be used with the various types of the insertion mounting assemblies or Tri-clamp adapter to prevent sensor breakage.

Table 2. Rosemount 3800 Sensor ordering information

Model	Sensor Type
3800	Steam Sterilizable pH Sensor
Sensor Length	
01	120 mm insertion
02	225 mm insertion
03	325 mm insertion
Typical Model Number: 3800-01	

Dimensional and Installation Drawings

Figure 2. Rosemount 3800 Sensor Dimensional Drawing

Sensor part number	Dimension (A)
3800-01	120mm
3800-02	225mm
3800-03	325mm

The Rosemount insertion mounting assemblies are the best selections for all biopharmaceutical and standard industrial applications. Insertion mounting assembly is very easy to use and maintain. The Tri-clamp adapter makes sensor mounting ideal for any sanitary application used in biopharmaceutical and food & beverage industries. Both insertion mounting assembly and Tri-Clamp adapter designed to prevent sensor breakage to maintain process integrity.

Figure 3. Insertion mounting assembly with G 1¼ in. X Pg 13.5. A pH sensor shown in the tip of the insertion mounting assembly

PART NUMBER
9160478

Figure 4. NPT x Pg 13.5 insertion adapter kit. Available in ¾ in. and 1 in. thread size with EPDM O-Ring (PN 24166-00). A pH sensor shown in the tip of the insertion mounting assembly

PART NUMBER	THREAD SIZE
S10085	3/4"
9999SQ10057	1"

Accessories

Table 3. Rosemount 3800 Sensor accessories information

Part number	Description
9200338	S8 cable, free rotating connector, single pole 5m long
9200339	S8 cable, free rotating connector, single pole 10m long
9160478	G 1 ¼ in. x Pg 13.5 insertion adapter
9999SQ10057	1 in. NPT x Pg 13.5 insertion adapter
24166-00	EDPM O-Ring

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