

7773 Multipurpose pH/ORP Electrode Mountings

Specification

Overview

The 7773 Mounting is available with the widest available electrode, preamplifier, automatic temperature compensator, and mounting assembly options. Capabilities now include state-of-the-art ISFET technology with Honeywell Durafet II® electrode options. These truly solid state sensors feature exceptionally fast response and a low impedance signal right from the sensing element that is virtually unbreakable. An improved packaging design allows the Durafet II electrode to be used in a wide variety of process applications. Preamplifier options allow interface with Honeywell or other pH instrumentation.

Description

Overall 7773 Mounting capabilities encompass the industrial measurements of pH, ORP, specific ion, and temperature in a flow or submersion configuration. Wetted material choices include 316 stainless steel, glass-fiber reinforced polypropylene or Ryton® (Phillips Petroleum tradename for polyphenylene sulfide), for use in corrosive solutions at pressures up to 1034 kPa (150 psig) and temperatures up to 130°C (266°F). The 7773 is available in seven configurations; change between flow- and submersion-type mounting requires substitution of only one part.

When supplied with a preamplifier, the mounting can be used with any Honeywell analyzer/controller, or transmitter.

Features

- New Durafet II Ion Sensitive Field Effect Transistor (ISFET) Electrode options
- Universal mounting—most parts interchangeable between flow and submersion configurations.

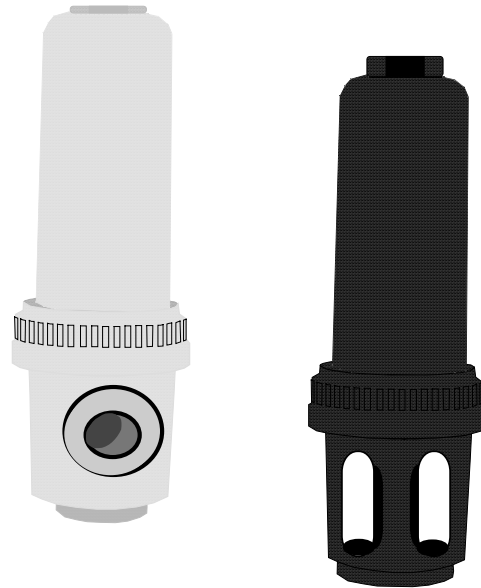
- Widest range of electrode options
- Combined pH, ORP and temperature measurement options in one mounting with single 9782 Analyzer
- Ultrasonic electrode cleaning options
- Corrosion-resistant polymer and 316 stainless steel housing with integral preamplifier
- FM approved for Class I, Div 1, Group A, B, C, D locations with 7079 Transmitter and barriers; suitable for Division 2 locations with 9782 analyzers
- NEMA 4X, IP65 watertight and corrosion-resistant flow, and NEMA 6, IP68 submersible ratings

Preamplifier

Housed within the 7773 Mounting, the preamplifier accepts input from electrodes and temperature compensator through a sealed connector and terminals. Preamplifier circuitry is hermetically sealed against moisture and electrically shielded by its

metal enclosure. A unique guarded circuit protects the high impedance glass electrode input, providing a thousand-fold decrease in sensitivity to electrical leakage under the potentially dirty, humid conditions of actual usage. The amplified signal can be sent over ordinary unshielded wire in excess of 305 m (1000 ft.) to the Honeywell measuring instrument.

The Durafet II electrode preamplifier option provides quick disconnect at input and output when used with Honeywell instrumentation. Durafet II electrode interface with other instrumentation is enabled by a separate wall-mounted, 120/240 Vac or battery-powered adaptor module located within 15.2 m (50 ft.) of the electrode mounting. Adapted instrumentation must have its temperature compensation fixed or manually adjusted to 25°C.



Preamplifier systems have high immunity to ground loop noise and spurious RF signals. Grounded and ungrounded solutions can be measured. Lightning protection is included in all preamplifiers. This is important when the mounting will be in a location subject to frequent lightning activity. It provides substantial protection by dissipating moderately destructive surge currents through the electrodes but cannot prevent failure caused by very near strikes.

Electrode Cleaning

Unattended automatic fluid cleaning and calibration of electrodes used with Honeywell 9782 Analyzers can be provided.

A continuously operating ultrasonic cleaner is optional with the 7773 Mounting to reduce maintenance caused by fouling or coating of the electrodes and particulate matter. It is less effective with oily or other resilient coatings that tend to absorb ultrasonic energy.

The ultrasonic cleaner consists of a transducer that fits within the 7773 between the electrodes with an integral 9 m (30 ft.) cable that runs directly to the 120/240 Vac-powered, NEMA 4, wall-mounted generator. It may be specified in Table 1 as part of a new mounting or ordered as a retrofit kit with 316 stainless steel (Kit 31002466) wetted parts. Ultrasonic cleaning is not recommended for use with Durafet II II or antimony electrodes.

Wetted Materials

Polypropylene offers the advantage of a light weight, tough plastic with good chemical resistance at low cost. Polypropylene may be weakened by some organic solvents and chlorine but is recommended for all general-purpose applications.

Ryton (polyphenylene) provides excellent chemical resistance and higher temperature and pressure ratings than polypropylene at moderate cost. Ryton is somewhat brittle and does not tolerate rough handling.

316 Stainless steel offers ruggedness, and the highest pressure ratings.

pH, ORP Electrodes and Temperature Compensators

Durafet II II combination and measuring electrodes use the new ISFET (Ion Sensitive Field Effect Transistor) sensing element with especially fast response. Durafet II II sensors produce a low impedance pH signal for outstanding reliability even at low temperatures and they experience no sodium error or ORP interference. The combination Durafet II II electrode incorporates a reference electrode with replaceable KCl gel fill for long life.

All Durafet II II electrodes include an integral automatic temperature compensator for conventional Nernst electrode compensation. Because compensation is performed in the preamplifier, no separate compensator is used and no temperature display can be provided at the measuring instrument.

Conventional pH measuring electrodes used with the 7773 mountings are useable over a wide pH range. These sensitive, rugged electrodes have quick disconnect cable connections. Glass membrane formulations are available for a variety of temperature ranges. For acidic processes containing fluorides that attack glass, the antimony pH electrode is recommended. The 7773 mounting and 9782S monitor are compatible with most 1/2" dia. ion-selective electrodes.

Reference electrodes are filled with a KCl slurry or a long-lasting viscous KCl gel. The gel is recommended for general-purpose use, especially for applications involving severe contamination, temperature or pressure cycling, continuous high temperatures, and dry periods. The Ryton electrode is virtually unbreakable and has an easily replaced porous-plug junction of ceramic. The glass body reference electrode has the porous plug sealed into the tube and the cap and internal element are removable for maintenance.

Meredian® Combination Electrodes comprise a rugged, virtually unbreakable, chemically-resistant Ryton body with a sealed, non-refillable long-lasting gel-type KCl diffusion reference electrode and a central element with a pH glass membrane designed for durability. The unique geometry of the annular ceramic reference junction permits making accurate, continuous pH measurements in the presence of high solution currents.

Automatic temperature compensators correct for the measuring electrode temperature coefficient. With microprocessor-based instruments they can also correct for the change in ionization of pure water samples, providing solution temperature compensation to 25°C. Temperature compensation is not used in ORP systems.

Specifications

7773 Mounting Specifications							
Application	Flow service in moderately pressurized lines or atmospheric discharge*		Flow service in High-pressure lines**		Submersion service in open tanks or process vessels. Submersion depth: up to 61 m (200 ft.) with preamplifier; up to 3m (10 ft.) without preamplifier		
Materials: Cover, Connecting Ring, Flow Chamber and Guard	Polypropylene Table II = 1	Ryton Table II = 7	316 SS Table II = 3	316 SS, with Polypropylene Cover** Table II = 5	Polypropylene Table II = 2	316 SS Table II = 4	Ryton Table II = 6
Maximum Pressure and Temperature of Assembly only	689 kPa (100 psig), 60°C (140°F); 345 kPa (50 psig) 80°C (176°F)	515 kPa (75 psig), 80°C (176°F); 345 kPa (50 psig), 100°C (212°F)	1034 kPa (150 psig), 80°C (176°F); 552 kPa (80 psig), 130°C (266°F)		689 kPa (100 psig), 60°C (140°F); 345 kPa (50 psig), 100°C (212°F)	689 kPa (100 psig), 80°C (176°F); 552 kPa (80 psig), 110°C (230°F)***	
Sample flow rate	56.8 L/min. (15 gpm) max. Lower flow rates for viscous solutions, abrasives and high-purity water.				—		
Installation	Mounting Kit supplied for wall or other flat-surface mounting. Sample connections 3/4" NPT, female inlet and outlet.				3/4" pipe support in tank (pipe not supplied). Use plastic pipe with plastic housing.		
Weight	1.4 kg (3 lb.)	1.87 kg (4 lb.)	2.7 kg (6 lb.)	2.3 kg (5 lb.)	1.4 kg (3 lb.)	2.7 kg (6 lb.)	1.87 kg (4 lb.)
<p>* Satisfactory for high-purity water down to approximately 5 µmhos/cm at less than 0.3 liter per minute flow.</p> <p>** Conforms to A.P.I. and ASME codes for 150-psig operation. Recommended for use in high-purity water where ultimate stability is required.</p> <p>*** If mounting is used above 110°C (230°F), electrodes and temperature compensator must be glass-bodied and preamp cannot be located in mounting. specify 20 for Table I and order an appropriate preamp module as a separate item.</p>							
Relative Humidity Limit	Usable at 100% R.H.						
Electrode Support	Ryton						
O-Rings	Viton A is standard. Available in ethylene-propylene rubber (E.P.M.) Table IV = 301.						
O-Ring Washers	Polypropylene (not in contact with sample).						
Compression Nut	Delrin (not in contact with sample).						
Dimensions	Approximately 102 mm OD x 279 mm long (4" x 11").						
Electrical Connections and Immersion Support Pipe	3/4" NPT female.						
Adaptor Module Specifications—31079290 and 31084775							
Housing	NEMA 4X, IP65, molded fiberglass with stainless steel hardware, 241 mm x 184 mm x 102 mm (9 1/2" x 7 1/4" x 4")						
Power	120 V (31079290) or 240 V (31084775), 50/60 Hz, 15 VA						
Connections	Two 3/4" conduit holes						
Weight	2.3 kg (5 lbs)						
31075773 Specifications							
Housing	Molded fiberglass, 140 mm x 80 mm x 3.527 mm (5.514" x 3.150" x 3.527"), NEMA 4X						
Power	3 V lithium battery pack						
Connections	Two 1/2" conduit holes						
Weight	0.45 kg (1 lb.)						
Electrode Specifications							
Part Number	Electrode Type	CONSTRUCTION			Temp. Range	Pressure Limit	Electrode Termination
		Internal fill	Sensing tip	Body			
51204976-002	Durafet II pH Measuring Only (0-14 pH)	None	FET	Ryton	-10 to 110°C (14 to 230°F)	100 psig @ 110°C; 150 psig @ 80°C	Quick disconnect cable to electrode and preamplifier
31117389	Glass pH Measuring (0-11 pH)—Low Temperature service	KCl & Buffer	glass	glass	-5 to 40°C (23 to 104°F)	100 psig @ 110°C; 150 psig @ 80°C	Screw cap
31117390	Glass pH Measuring—General Purpose	KCl & Buffer	glass	glass	10 to 80°C (50 to 176°F)	100 psig @ 110°C; 150 psig @ 80°C	Screw cap
31117391	Glass pH Measuring—High Temperature	KCl & Buffer	glass	glass	40 to 110°C (104 to 230°F)	100 psig @ 110°C; 150 psig @ 80°C	Screw cap

31117399	Antimony pH Measuring (2-11 pH range) recommended where fluorides are present below 5 pH	None	antimony	Ryton	5 to 75°C (41 to 167°F)	150 psig @ 75°C	Screw cap
31117418	ORP Measuring—Chrome treatment	None	platinum	Ryton	-5 to 110°C (23 to 230°F)	150 psig @ 110°C	6" wire; spade lug
31117419	ORP Measuring—Chrome or Cyanide treatment	None	gold	Ryton	-5 to 110°C (23 to 230°F)	150 psig @ 110°C	6" wire; spade lug
31117481	Reference—General Purpose, long life	KCl gel	repl. ceramic	Ryton	-5 to 110°C (23 to 230°F)	50 psig @ 110°C; 150 psig @ 60°C	6" wire; spade lug
31117392	Reference—General Purpose	KCl slurry	repl. ceramic	Ryton	-5 to 110°C (23 to 230°F)	50 psig @ 110°C; 150 psig @ 60°C	6" wire; spade lug
31035832	Reference (double-junction)—Sulfide-containing processes	NH ₄ NO ₃ gel	ceramic	Ryton	-5 to 110°C (23 to 230°F)	50 psig @ 110°C; 150 psig @ 60°C	6" wire; spade lug
31117484	Reference—General Purpose	KCl gel	ceramic	glass	-5 to 130°C (23 to 266°F)	100 psig @ 110°C; 150 psig @ 60°C	2' wire; spade lug
51204976-001	Durafet II pH Combination; Meas. Ref. & temp. compensator (0-14 pH)	KCl gel	FET	Ryton	-10 to 110°C (14 to 230°F)	100 psig @ 110°C; 150 psig @ 80°C	Quick disconnect cable to electrode and preamplifier
31117486	Glass pH Combination; Meas. & Ref.—General Purpose	KCl gel	meas.: glass Ref.: ceramic	Ryton	10 to 100°C (50 to 212°F)	30 psig @ 100°C; 100 psig @ 60°C	Screw cap
31020751	ORP Combination: Meas. & Ref.—for Chrome treatment	KCl gel	meas.: glass Ref.: ceramic	Ryton	-5 to 130°C (23 to 266°F)	30 psig @ 100°C; 100 psig @ 60°C	12' cable; tinned
31020749	ORP Combination; Meas. & Ref.—for Chrome or Cyanide treatment	KCl gel	meas.: gold Ref.: ceramic	Ryton	-5 to 100°C (23 to 212°F)	30 psig @ 100°C; 100 psig @ 60°C	12' cable; tinned
31152137	Auto. Temperature Compensator—Use with Honeywell analog-based inst., 721 ohms at 25°C	None	None	Ryton	-5 to 110°C (23 to 230°F)	150 psig @ 110°C	6" 2-wire; spade lugs
31152139	Auto. Temperature Compensator—Use with Honeywell analog-based inst., 721 ohms at 25°C	None	None	glass	-5 to 110°C (23 to 230°F)	150 psig @ 110°C	6" 2-wire; spade lugs
31022289	Auto. Temperature Compensator—Use with Honeywell microprocessor-based inst., 8550 ohms at 25°C	None	None	Ryton	-5 to 110°C (23 to 230°F)	150 psig @ 110°C	6" 2-wire; spade lugs
31022291	Auto. Temperature Compensator—Use with Honeywell microprocessor-based inst., 8550 ohms at 25°C	None	None	glass	-5 to 110°C (23 to 230°F)	150 psig @ 110°C	6" 2-wire; spade lugs

Industrial Automation and Control

Honeywell Inc.

In the U.S.A.: Honeywell Industrial Automation and Control, 16404 North Black Canyon HWY., Phoenix, AZ 85023, (800) 343-0228

In Europe: Honeywell S.A., 80084 Amiens Cedex 2, (33) 22.54.56.56

Honeywell Control System Ltd., Honeywell House, Bracknell, UK-RG 12 1 EB, (44) 1344 826000

In Japan: Yamatake-Honeywell Co. Ltd., Nagai Int'l Bldg., 2 - 12 - 19 Shibuya-Ku, Tokyo 150 Japan, 81-3-3486-2051

In Asia: Honeywell Asia Pacific Inc., Room 3213-3225, Sun Hung kai Centre, No. 30 Harbor Road, Wanchai, Hong Kong, (852) 829-8298

In the Mediterranean: Africa and Middle East Region, Honeywell SpA, Via Vittor Pisani 13, 20124 Milano, Italy (39-2) 67731

Honeywell Pacific Division: Honeywell Pty Ltd., 5 Thomas Holt Drive, North Ryde Sydney, NSW Australia 2113, (61-2) 353 7000

In Canada: The Honeywell Centre, 155 Gordon Baker Road, Ontario M2H 3N7, 1-800-461-0013

In Latin America: Honeywell Inc., 14505 Commerce Way, Suite 500, Miami Lakes, Florida 33016-1556, (305) 364-2300