

7774 pH/ORP Electrode Insertion/ Removal Assemblies

Specification

Overview

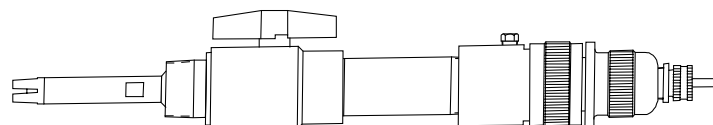
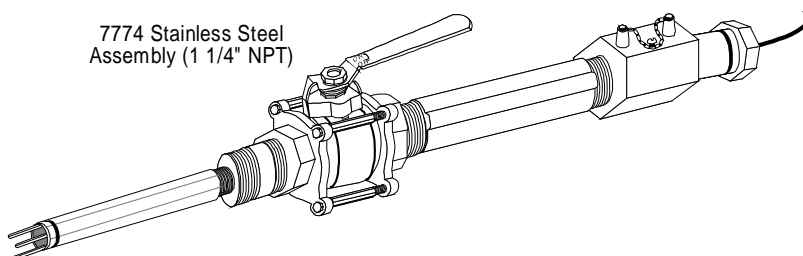
The 7774 Insertion/Removal Assemblies, which accommodate Durafet® II and Meredian® series combination (single-probe) pH or ORP electrodes, are designed for use in processes under pressure because the electrode can be inserted or removed without interrupting the process. Insertion can be into a pipeline, tank wall, or other vessel—in any position—for applications such as boiler water analysis, demineralization, reverse osmosis, pharmaceutical and chemical production, waste treatment, and pulp and paper production.

Description

The 7774 assembly includes a valve assembly and a Durafet II or Meredian electrode mounted on a support tube. With the valve assembly connected to the process, the electrode is inserted into the assembly for a positive seal. When the valve is opened, the electrode is inserted into the process medium and locked in position. To remove the electrode, this sequence is reversed.

The electrode assembly can be safely inserted or withdrawn at process pressures up to 50 psig. Plastic and 316 stainless steel wetted materials are available for applications requiring chemical resistance or for high-temperature operation. A purge port on the plastic assembly permits automatic or manual inline cleaning or flushing.

7774 Stainless Steel Assembly (1 1/4" NPT)



7774 Plastic Assembly (1 1/2" NPT)

Features

- New Durafet II nonglass pH electrode options
- Electrode can be easily inserted or withdrawn under pressure without interrupting the process
- Usable to 100 psig
- Rugged, corrosion-resistant insertion mountings of CPVC plastic or 316 stainless steel
- Nonfouling probe tips for slurries (such as pulp stocks up to 14% solids)
- Most electrodes can be mounted in horizontal or inverted position
- Local preamplifier module permits signal transmission over long distances with unshielded leadwire
- Assemblies have reliable restraining mechanisms for safe removal under pressure

- Suitable for use in Class I, Division 2, Group A, B, C, and D locations FM approved intrinsically safe options for Division 1 areas with 7079 Transmitter
- Plastic valve assembly extension permits immersion of electrode as far as 12" into process

Electrodes

Durafet II combination electrodes feature state-of-the-art pH measurement technology, using an ISFET (Ion Sensitive Field Effect Transistor) sensing element. This virtually unbreakable, truly solid state electrode provides especially fast response. Durafet II sensors produce a direct low impedance pH signal for outstanding reliability even at low temperatures and with no sodium error or ORP interference. The combination Durafet II pH Electrode incorporates

a replaceable reference junction frit and gel, ensuring long life even in the most highly fouling applications. In addition, Durafet II electrodes can be interfaced with virtually any existing pH instrumentation.

Meredian pH Electrodes offer a selection of low- or high-temperature glass that provides low sodium error as well as optimum durability at operating temperatures. Long-term accuracy and performance are ensured. Meredian electrodes include a permanent reference junction and gel fill for maintenance-free operation.

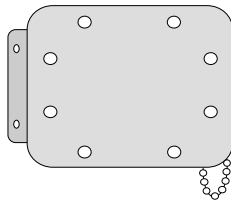


Figure 1 - 31028698, 31316529 or 31026395 Preamp Module for Meredian electrodes with tinned leadwire termination. Supplied w stainless steel assemblies except those using Durafet electrodes

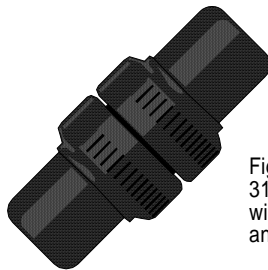


Figure 2 - 31079288 Preamp Module for Durafet Electrodes and 31075704 or 31075705 Preamp Module for Meredian II Electrodes with quick disconnect plug only. Supplied on all plastic assemblies and stainless steel assemblies using Durafet electrodes.

Preamplifier

The preamplifier conditions the Meredian electrode signal locally to a low impedance signal that can then be sent over ordinary unshielded wire to the Honeywell analyzer or transmitter. The preamplifier system has high immunity to RF noise. The unique geometry of the electrode design provides the means to obtain accurate, continuous measurements in the presence of streaming potentials or high solution currents in electrolytic processes.

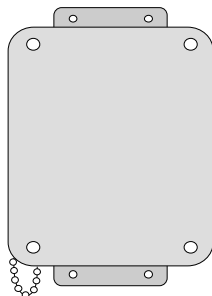


Figure 3 - Adaptor Module 31079290 and 31084755 for Durafet interface to other-than-Honeywell pH instruments

The 7774 Assembly can include a preamplifier module in a NEMA 4X enclosure for mounting within 10' of Meredian electrodes. See Figure 1.

Another preamplifier option is an environmentally sealed (encapsulated) high-impedance amplifier to which the Durafet II or Meredian combination electrode is directly connected. These preamplifiers shown in Figure 2, feature Honeywell's quick-disconnect plug, allowing easy installation of the electrode using no tools. A second quick-disconnect plug permits removal of the preamplifier for troubleshooting or routine maintenance.

Durafet II Adaptor Module

To use a Durafet II electrode with other than Honeywell instruments, an adaptor module (Figure 3) is available. It provides a temperature compensated pH signal to the conventional electrode input of measuring instruments other than Honeywell. Temperature compensation must be fixed at 25°C on the instrument. Also available is the new battery-powered interface module. P/N 075773.

Automatic Temperature Compensation

The Durafet II and Meredian pH (not ORP) electrodes include an integral automatic temperature compensator unless noted otherwise.

Specifications

316 SS Assembly	
Pressure and Temperature	Determined by electrode used: 31117489 pH 30 psig @ 100°C, 100 psig @ 60°C 31020749 Gold ORP 30 psig @ 100°C, 100 psig @ 60°C 31020751 Pt ORP 50 psig @ 130°C, 100 psig @ 60°C 31050383 pH 50 psig @ 100°C, 75 psig @ 50°C 31050381 pH 50 psig @ 80°C, 75 psig @ 50°C 31055546 pH 50 psig @ 80°C, 75 psig @ 50°C 51204976-003 pH 50 psig @ 110°C, 100 psig @ 60°C 51204976-004 pH 50 psig @ 110°C, 100 psig @ 60°C 51204976-005 pH 50 psig @ 110°C, 100 psig @ 60°C
Pressure Limit for Insertion or Removal	345 kPa (50 psig)
Flow Velocity	Maximum 5 ft./sec (1.5 m/sec)
Mounting	1 ¼" NPT male process connection
Insertion Depth	6" nominal (not adjustable)
Overall Length	From process connection: 533 mm (21")
Allowance Required for Electrode Removal	Measured from process connection: Approximately 965 mm (38")
Electrical Classification	With preamplifier: Suitable for use in Class I, Division 2, Group A, B, C, and D locations. When used with Intrinsic Safety barriers and a 7079 Transmitter, most stainless steel options are FM-approved for use in Class I, Division 1, Group A, B, C, and D locations.
Wetted Materials	Mounting: 316 SS ball valve and extension tube, Viton Teflon seals Glass pH: Ryton, glass, EPM, ceramic ORP: Ryton, platinum or gold, epoxy, EPM, ceramic Durafet II pH: Ryton, silicon, EPM
Weight	5.0 kg (11 lb) including electrode and removal device.
Plastic Assembly	
Pressure and Temperature Limits	345 kPa (50 psig) at 88°C (190°F); 690 kPa (100 psig) at 50°C (120°F) maximum pressure for insertion/removal: 345 kPa (50 psig)
Flow Velocity	5 ft./sec (1.5 m/sec)
Mounting	1 1/2" NPT male process connection
Purge Port Connection	1/4" NPT female (plug supplied)
Insertion Depth	The CPVC plastic removal device is supplied with a 15 3/8" pipe nipple for nominal 6" insertion depth. An accessory nipple option (21 3/8") provides 12" nominal insertion depth; the user may make up a similar schedule 80, CPVC nipple with 1/2" NPT male at both ends for intermediate insertion depths.
Overall Length	Measured from the process connection: Approximately 508 mm (20")
Allowance Required for Electrode Removal	Measured from the process connection: Approximately 1423 mm (38")

Electrical Connection	With preamplifier: Suitable for use in Class I, Division 2, Group A, B, C, and D locations. Preamp module has a NEMA 4X enclosure. Most options are FM-approved Intrinsically Safe for Class I, Division 1, Group A, B, C, and D locations when used with the 7079 Transmitter and barriers.
Wetted Materials	Mounting: CPVC ball valve and extension tube, Viton, Teflon and EPDM seals Glass pH: Ryton, glass, EPM, ceramic ORP: Ryton, platinum or gold, epoxy, EPM, ceramic Durafet II pH: Ryton, silicon
Weight	1.6 kg (3.5 lb) including electrode and removal device.
Preamplifier Module (31075704, 31075705, and 31079288)	
Housing Material	Glass-filled polypropylene
Connections	Two 3/4" NPT female
Dimensions	Approximately 232 mm H x 111 mm dia. (9 1/8" x 4 3/8")
Weight	Approximately 0.9 kg (2 lbs)
Adaptor Module (31079290, 31084755 and 31075773)	
Housing	31079290 and 31084755: Molded fiberglass with stainless steel hardware. 241 x 184 x 102 mm (9 1/2" x 7 1/4" x 4"). NEMA 4X, IP65. 31075773: Molded fiberglass. 140 x 80 x 89.6 mm (5.514" x 3.150" x 3.527"). NEMA 4
Connections	31079290 and 31084755: Two 3/4" conduit holes 31075773: Two 1/2" conduit holes
Power	31079290: 108-132 V, 50-60 Hz, 15 VA 31084755: 208-264 V, 50-60 Hz, 15 VA 31075773: 3 V lithium battery pack
Weight	31079290 and 31084755: 2.3 kg (5 lbs) 31075773: 0.45 kg (1 lb)

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