

# Durafet<sup>®</sup> II and Meredian<sup>®</sup> II Combination pH/ORP Electrodes for Honeywell 7777 Mountings

## Specification

### Overview

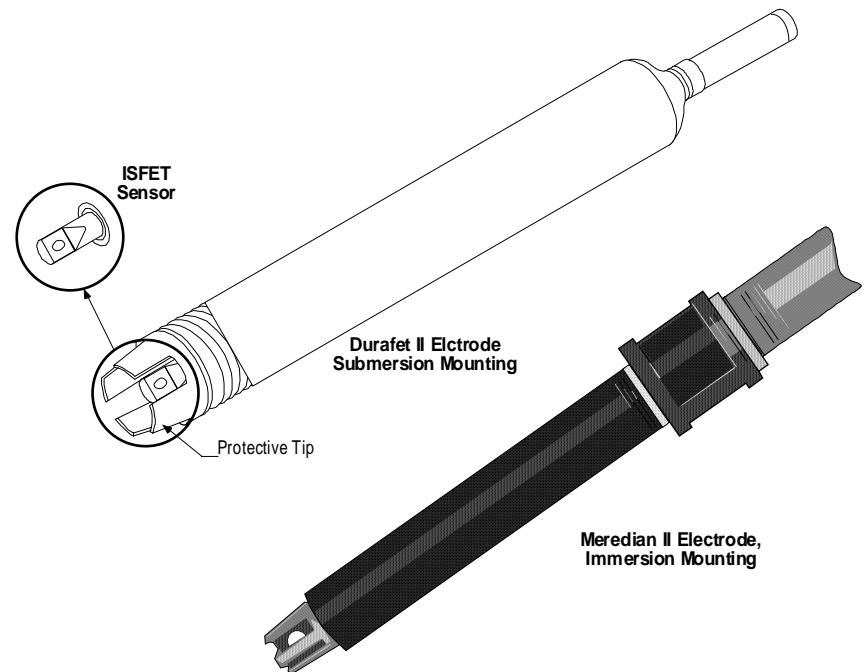
Honeywell's 7777 Series of electrode mountings enables an user to interface pH electrodes to a process by either submersing the electrode or mounting it into a 3/4" threaded connection.

Honeywell introduces Durafet II pH electrodes, the first industrial ISFET-based pH sensors. They join Honeywell's industry-proven glass pH electrodes in the 7777-Series mounting to provide accurate and dependable pH measurement.

### Description

The Durafet II and Meredian II pH electrodes offer a reliable combination of measuring and reference electrodes together with an integral automatic temperature compensator in a 1-piece corrosion-resistant molded Ryton body. Quick disconnect plugs enable easier installation and maintenance than with any other electrode available. The compact Durafet II and Meredian II electrodes with 3/4" NPT male connections are easily adapted for in-line or submersion mounting without O-rings or special seals.

The large surface area of the reference junction resists fouling and maintains reliable low-impedance contact with the process solution. The reference junction's symmetrical annular shape surrounding the measuring element minimizes the effects of electrical current passing through the process solution. This offers a significant improvement when



compared with unsymmetrical electrode designs that develop large offset potentials and prohibit pH measurements in applications such as electroplating tanks or electrolytic cells.

**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. Durafet II electrodes are available with a quick disconnect cable or an integral

electrode lead. The combination Durafet II pH electrode incorporates a replaceable reference junction frit and gel, assuring long life even in the most highly fouling applications. In addition, Durafet II electrodes can be interfaced with virtually any existing pH instrumentation, thus allowing wide freedom of use.

**Meridian II** 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 assured. Meridian II electrodes include a permanent reference junction and gel fill for maintenance-free operation.

The internal automatic temperature compensator is compatible with both analog and microprocessor-based Honeywell instruments, when used with the appropriate preamplifier.

#### Immersion Mounting



### Features

#### Durafet II Electrode

- Uses ISFET (Ion Sensitive Field Effect Transistor) technology for exceptionally fast response.
- Virtually unbreakable, truly solid state.
- Integral or quick disconnect cable options
- New “no epoxy” packaging design
- Reference junction frit and gel are replaceable.
- Low impedance pH signal.
- One electrode for entire pH and temperature ranges.
- Retrofittable to existing pH instrumentation.

#### Meridian II Electrode

- Integral leadwire with quick disconnect at preamp
- Choice of glass formulations for uncompromised performance.
- ORP (Redox) electrodes with platinum or gold sensors.

#### 7777 Mounting

- FM-approved intrinsically safe for Class I, Division 1, Group A, B, C, D areas with 7079 transmitters and barriers.

- Rugged combination electrodes with fast-responding integral automatic temperature compensator.
- Molded, chemically-resistant Ryton body.
- Suitable for in-line and submersion applications; may be mounted in any position.
- Large reference electrode volume uses a true gel fill that maintains high viscosity with temperature.
- Rugged molded NEMA 6 submersible polypropylene preamp module housing.

### Preamplifier Module

The submersible NEMA 6 and IP68 Preamplifier Module can be mounted directly on a submersion electrode (Figures 1 & 2) or can be located a short distance away from the electrode (Figure3). The preamplifier operates as a signal conditioner, permitting the high impedance, low level electrode output to be transmitted long distance with ordinary unshielded wire.

The Honeywell preamplifier design assures long-term reliability under industrial conditions. Guarded, encapsulated circuitry maintains the high impedance signal integrity, even in dirty and humid conditions. The inner metallic preamplifier case completely shields the signal from electrical noise and additional circuitry protects the unit against nearby lightning strikes.

Durafet II and Meredian II electrodes and preamplifiers are compatible with all current Honeywell pH analyzers, transmitters, and controllers.

### Durafet II Adapter Module

To use a Durafet II electrode with other instruments, an adaptor module (Figure 4) 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 31075773.

In-Line Mounting

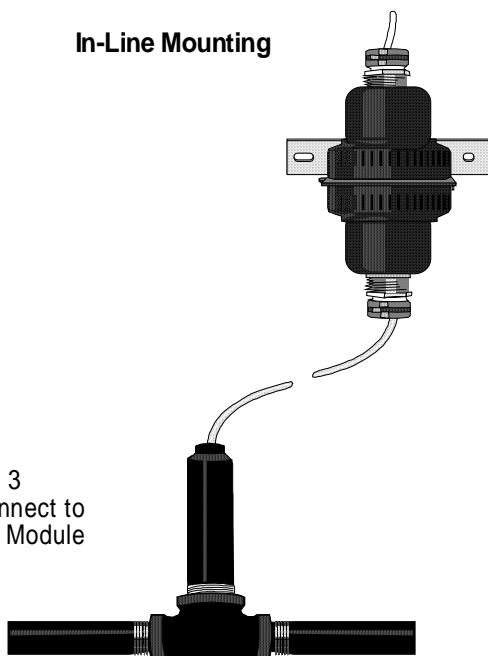


Figure 3  
Quick Disconnect to  
Preamplifier Module

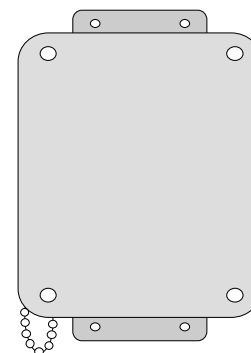


Figure 4  
Adaptor Module  
31079290 and 31084755

### Specifications

Electrode	
Pressure and Temperature Rating	For Durafet II pH Electrodes 51205554-001(In-line) and 51205554-004, -005, -006, -007 (Submersion) and Meredian II pH Electrodes 31074387, 31074386, 31074383, 31074396, 31074397, 31074398, 31074399, and 31074382: 345 kPa (50 psig) @ 100°C, 690 kPa (100 psig) @ 50°C For ORP Meredian II electrodes 31074388 gold: 345 kPa (50 psig) @ 100°C, (690 kPa 100 psig) @ 50°C 31074389 platinum: 345 kPa (50 psig) @ 110°C, 690 kPa (100 psig) @ 50°C
Operating Range	0-14 pH
Mounting	In-Line: 3/4" NPT male process connection, fits into standard 3/4" sch. 40 metal pipe tee or special dimension plastic tee (see Accessories in Module Selection Guide) Immersion: 3/4" NPT male to support pipe or preamp module

Wetted Materials	Glass pH: Ryton, glass, EPM, ceramic ORP: Ryton, platinum or gold, epoxy, EPM, ceramic Durafet II pH: Ryton, silicon, EPM
Dimensions	165 mm long x 25 mm dia. (6 1/2" x 1")
Weight	Approximately 0.23 kg (0.5 lb)
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 03184755: 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)

Distributor :

## 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