TECHNICAL DATA
ELECTRO CHEMISTRY
DIFFERENTIAL PH AND ORP

pHD sc Digital Diferrential PH and ORP Sensors

HACH LANGE

UNITED FOR WATER QUALITY

Ordering Information

pHD sc Digital Differential pH/ORP Sensors

All digital sensors include built-in digital electronics and integral 10 m cable terminated with connector for the sc100 digital controller. Body styles:

- Convertible – 1-inch NPT threads at both ends, designed for tee-mounting or other flow through mountings, and pipe mounting for immersion
- Insertion – no threads on the electrode end, designed for use with insertion valve assembly
- Sanitary – 2-inch flange for a tri-clover style fitting
- Immersion – used with chain mounting or pipe mounting

pH Sensors

Product Number	Body Material	Body Style	Electrode Material	Max Temp
DPD1P1.99	PEEK[1]	Convertible	Glass, General Purpose	70ºC (158ºF)
DPD1P3.99	PEEK[1]	Convertible	Glass, HF-resistant	70ºC (158ºF)
DPD2P1.99	PEEK[1]	Insertion	Glass, General Purpose	70ºC (158ºF)
DPD3P1.99	PEEK[1]	Sanitary	Glass, General Purpose	70ºC (158ºF)
DPD1R1.99	Ryton[2]	Convertible	Glass, General Purpose	70ºC (158ºF)
DPD1R3.99	Ryton[2]	Convertible	Glass, HF-resistant	70ºC (158ºF)

[1]Polyetheretherketone [2]Polyphenelene Sulfide

ORP Sensors

Product Number	Body Material	Body Style	Electrode Material	Max Temp
DRD1P5.99	PEEK[1]	Convertible	Platinum	70ºC (158ºF)
DRD1P6.99	PEEK[1]	Convertible	Gold	70ºC (158ºF)
DRD2P5.99	PEEK[1]	Insertion	Platinum	70ºC (158ºF)
DRD1R5.99	Ryton[2]	Convertible	Platinum	70ºC (158ºF)
DRD1R6.99	Ryton[2]	Convertible	Gold	70ºC (158ºF)

[1]Polyetheretherketone [2]Polyphenelene Sulfide

Digital Gateway

6120500.99	ADpHD Digital Gateway, convert pHD analog sensors to digital output for connecting to sc100 digital controller

pHD Analog Sensors

All analog sensors include built-in preamplifier and integral 4.5 m cable terminated with stripped and tinned wires.

Definitions of body styles:

- Convertible – 1-inch NPT threads at both ends, designed for tee-mounting or other flow through mountings, and pipe mounting for immersion
- Insertion – has no threads on the electrode end, designed for use with insertion valve assembly
- Sanitary – has a 2-inch flange for a Tri-Clover style fitting

pH Sensors

Product Number	Body Material	Body Style	Electrode Material	Max Temp
PD1P1.99	PEEK[1]	Convertible	Glass, General Purpose	95ºC (203ºF)
PD1P3.99	PEEK[1]	Convertible	Glass, HF-resistant	95ºC (203ºF)
PD2P1.99	PEEK[1]	Insertion	Glass, General Purpose	95ºC (203ºF)
PD3P1.99	PEEK[1]	Sanitary	Glass, General Purpose	95ºC (203ºF)
PD1R1.99	Ryton[2]	Convertible	Glass, General Purpose	95ºC (203ºF)
PD1R3.99	Ryton[2]	Convertible	Glass, HF-resistant	95ºC (203ºF)

[1]Polyetheretherketone [2]Polyphenelene Sulfide

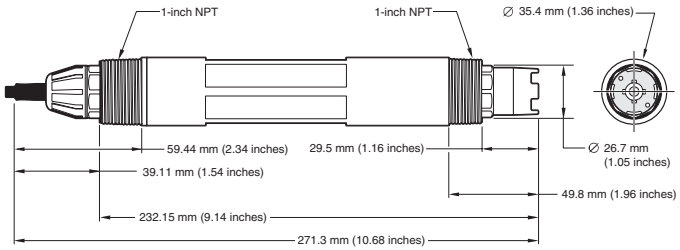
ORP Sensors

Product Number	Body Material	Body Style	Electrode Material	Max Temp
RD1P5.99	PEEK[1]	Convertible	Platinum	95ºC (203ºF)
RD1P6.99	PEEK[1]	Convertible	Gold	95ºC (203ºF)
RD2P5.99	PEEK[1]	Insertion	Platinum	95ºC (203ºF)
RD1R5.99	Ryton[2]	Convertible	Platinum	95ºC (203ºF)
RD1R6.99	Ryton[2]	Convertible	Gold	95ºC (203ºF)

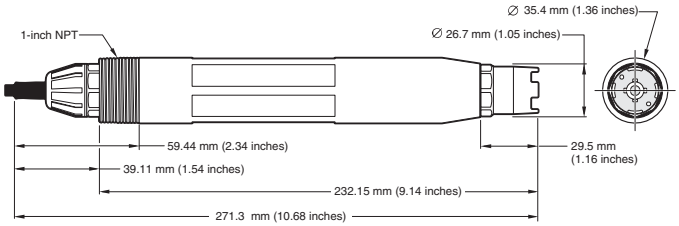
[1]Polyetheretherketone [2]Polyphenelene Sulfide

Dimensions

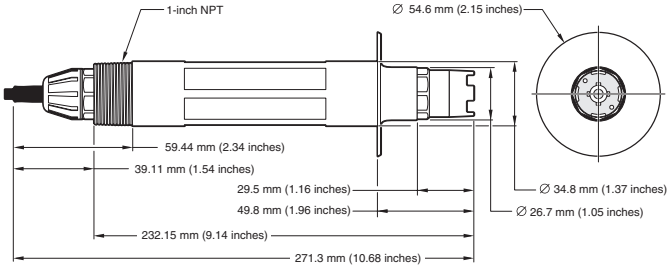
Convertible Style



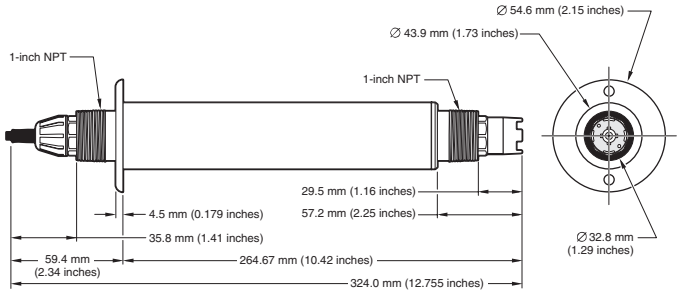
Insertion Style



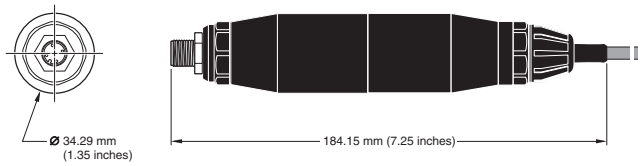
Sanitary Style



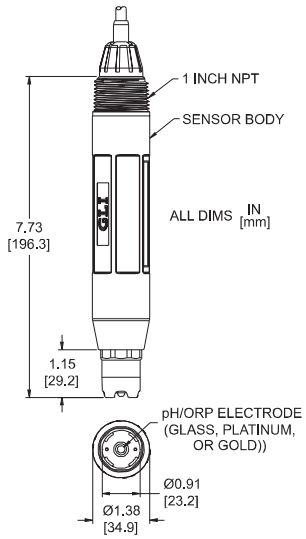
Immersion Style



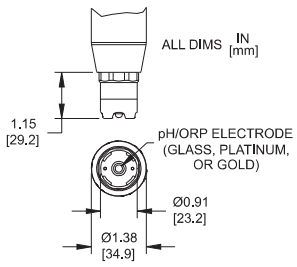
Digital Gateway



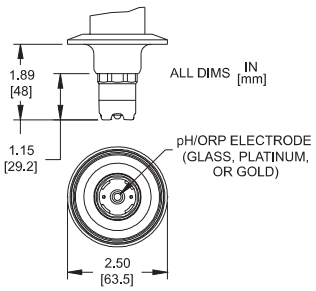
Analog Convertible Style



Analog Insertion Style



Analog Sanitary Style



Specifications

pH Sensors

Most pH applications fall in the 2.5 to12.5 pH range. A Hach Lange pHD sc Differential pH sensor with the wide-range glass process electrode performs exceptionally well in this range. Some industrial applications require accurate measurement and control below 2 or above 12 pH. In these special cases, please contact Hach Technical Support for further details.

Measuring Range
-2 to 14 pH

Sensitivity
± 0.01 pH

Stability
0.03 pH per 24 hours, non-cumulative

Operating Temperature
Digital Sensor: -5 to 70ºC
Analog Sensor with Digital Gateway: -5 to 105ºC
Immersion Sensor: 0 to 50ºC

Flow Rate
3 m per second, maximum

Sensor Pressure/Temperature Limits
Digital: 6.9 bar at 70ºC
Analog: 6.9 bar at 105ºC

Built-in Temperature Element
NTC 300 ohm thermistor for automatic temperature compensation and analyzer temperature readout

Transmission Distance
100 m, maximum
1000 m, maximum when used with a termination box

Sensor Cable (integral)
4 conductor cable with one shield and polyurethane jacket; rated to 105ºC; 10 m standard length

Wetted Materials
PEEK® or Ryton® (PVDF), salt bridge of matching material with Kynar® junction, glass process electrode, titanium ground electrode, and Viton® O-ring seals

(pH sensor with optional HF-resistant glass process electrode has 316 stainless steel ground electrode, and perfluoroelastomer wetted O-rings; consult factory for other available wetted O-ring materials)

ORP (Redox) Sensors

For best ORP measuring results in solutions containing zinc, cyanide, cadmium or nickel, Hach recommends using the pHD sc ORP sensor equipped with an optional gold electrode.

Measuring Range
-1500 to +1500 mV

Sensitivity
± 0.5 mV

Stability
2 mV per 24 hours, non-cumulative

Operating Temperature
Digital Sensor: -5 to 70ºC
Analog Sensor with Digital Gateway: -5 to 105ºC
Immersion Sensor: 0 to 50ºC

Flow Rate
3 m (10 ft.) per second, maximum

Sensor Pressure/Temperature Limits
Digital: 6.9 bar at 70ºC
Analog: 6.9 bar at 105ºC

Built-in Temperature Element
NTC 300 ohm thermistor for analyzer temperature readout only—no automatic temperature compensation necessary for ORP measurement

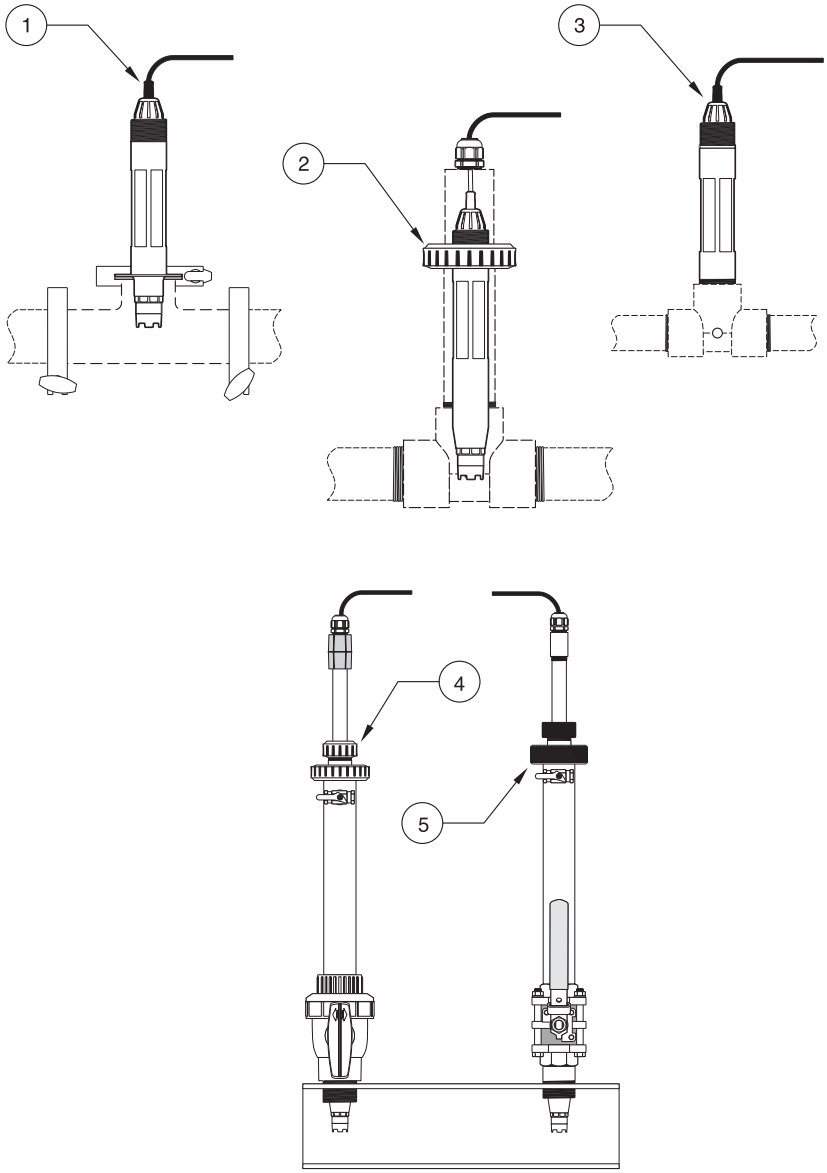
Transmission Distance
100 m, maximum
1000 m, maximum when used with a termination box

Sensor Cable (integral)
4 conductor cable with one shield and polyurethane jacket; rated to 105ºC; 10 m standard length

Wetted Materials
PEEK® or Ryton® (PVDF), salt bridge of matching material with Kynar® junction, glass and platinum (or plastic and gold) process electrode, titanium ground electrode, and Viton® O-ring seals

*Specifications subject to change without notice.

Mounting Hardware



Sanitary Mount (1)

MH018S8SZ 316 SS
Includes 2-inch sanitary tee and heavy-duty clamp. Special cap and EPDM compound gasket are supplied with sensor but can be separately ordered.

Union Mount (2)

61313-00 CPVC
61314-00 316 SS
Includes standard 1-1/2 inch tee, special union pipe with adapter, sealing hub, and lock ring in respective material, and Viton® O-ring.

Flow-through Mount (3)

MH334N4NZ CPVC
MH314N4MZ 316 SS
Includes a standard 1-inch tee in respective material.

Insertion Mount (4) + (5)

Digital		Analog	
61367-00	CPVC	**MH736M4MZ**	CPVC
61368-00	316 SS	**MH716M4MZ**	316 SS

Includes a 1-1/2 inch ball valve in respective material, 1-1/2 inch NPT close nipple, sensor adapter with two Viton® O-rings and wiper, extension pipe, pipe adapter, back tube, and lock ring.

Immersion Mount

See seperate Technical Datasheet for Immersion Mounting Hardware.

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HACH LANGE
GMBH & CO. KG
Willstätterstraße 11
D-40549 Düsseldorf
Tel. +49 (0) 2 11 52 88-0
Fax +49 (0) 2 11 52 88-143
info@hach-lange.de
www.hach-lange.com

HACH LANGE
GES. MBH
Industriestraße 12
A-3200 Obergrafendorf
Tel. +43 (0) 27 47 74 12
Fax +43 (0) 27 47 42 18
info@hach-lange.at
www.hach-lange.com

HACH LANGE AG
Juchstrasse 1
CH-8604 Hegnau
Tél. +41 (0) 19 45 66 10
Fax +41 (0) 19 45 66 76
info@hach-lange.ch
www.hach-lange.com