

# Wireless Transmitter for pH and ORP

- High accuracy and reliability for monitoring applications
- Self-organizing network for high data reliability and network stability
- Industry Leading wireless Security
- Compatible with smart Wireless gateway and Emerson Process Management Wireless HART™ networks
- Easy to read two-line display with easy to use menus
- Wireless HART® 7 Digital Communications
- SMART Sensor Enabled
- Continuous diagnostics monitor sensor performance and health



## Features and Applications

The 6081-P transmitter is ideal for monitoring applications, especially in hard-to-reach or cost prohibitive locations. 6081-P measures pH and ORP and is compatible with most Rosemount Analytical pH and ORP sensors. The transmitter has a rugged, cast aluminum weatherproof and corrosion resistant enclosure (NEMA 4X, IP66). The transmitter includes a two-line 16-character display with simple and intuitive menu screens. Plain language prompts in six (6) local languages guide the user through the programming and calibration procedures. The 6081 is compatible with non-preamp pH and ORP sensors and SMART pH sensors from Rosemount Analytical. Installation and start-up of the 6081-P wireless transmitter is simple. Just power the 6081-P and assign it to a wireless network with a Smart Wireless Gateway. The unit will auto-locate the most efficient path to the host and will begin transmitting measurement data via 2.4 GHz wireless communications. The Self-Organizing Network ensures exceptional data reliability and network stability. All of Emerson Process Management's wireless devices employ Encryption, Authentication, Verification, Anti-Jamming and

Key Management to ensure data transmission and security. Rosemount Analytical devices include intelligent power management to reduce power consumption and extend power module life while delivering highly reliable measurements with rich HART data and diagnostic information. HART digital communication allows access to AMS (Asset Management Solutions) for live process variables, useful diagnostics and troubleshooting information.

## Specifications - General

**Enclosure:** Cast aluminum. NEMA 4X, IP66

**Dimensions:** 6.55" x 5.40" x 5.15"  
(166mm x 137mm x 131mm)

**Conduit Openings:** 3/4" FNPT

**Ambient Temperature:** -4 to 149 °F (-20 to 65 °C)

**Storage Temperature:** -22 to 158 °F (-30 to 70 °C)

**Relative Humidity:** 0 to 95% (non-condensing)

**Weight/Shipping Weight:** 7 lbs/8 lbs (3.2/3.6 kg)

**Digital Communications:** HART 7 Wireless HART

## Wireless Specifications

**Output:** Wireless HART V7

**Transmit Rate:** User selectable, 1/sec. to 1/60 min (via Smart wireless Gateway or AMST™)

**Measurement update rate:** 1/sec. to 1/60 min

**Antenna:** PBT/PC integrated omni-directional antenna

**Radio Frequency:** 2.4 GHz DSSS

**Radio output power:** +8 dBm (6.3mW) conducted RF output power

**Transmission distance - line of sight:** about 600 ft (ideal RF conditions and power module condition)

**Power:** Lithium thionyl chloride long life power module

**Power Module Life (estimated):** Four years at once per minute update rate, 25 °C ambient, non pre-amp sensors, diagnostics off, and minimum display usage.

## Functional Specifications

**pH Range:** 0 to 14

**ORP Range:** -1400 to +1400mV

Compatible with Rosemount Analytical SMART pH sensors

**SMART pH Sensors:** Avoid buffer calibrations in the field. Use Rosemount Analytical SMART pH sensors to automatically calibrate the measurement loop when connected to 6081. Choose from a complete range of SMART pH sensors suited to most applications.

**Recommended Sensors for pH:** All conventional pH sensors without a “+ preamps” and SMART pH sensors from Rosemount Analytical are compatible. All SMART sensors contain a microchip which stores complete diagnostics, including slope, offset, glass impedance, reference impedance, and software version.

**Recommended sensors for ORP:** All conventional ORP sensors.

**Calibrations/standardization:** The following calibration methods are supported:

- Two point calibration with Low and High buffer (pH only)
- Two point calibration with Automatic Buffer recognition (pH only)
- Single point standardization
- Single point Temperature Adjustment
- Automatic calibration upon live connection to RAI SMART pH sensors and upload of stored cal data to transmitter

### Hazardous Location Approvals

#### Intrinsic Safety:



Class I, Division 1, Groups A, B, C and D  
Class II, Division 1, Groups E, F and G;  
Class III T4 Tamb: -20 to +65 °C  
Type 4x, IP66



CE 1180 II1G  
Baseefa 10 ATEX 0149X  
Ex ia IIC T4 Ga (-20 °C ≤ Ta ≤ +65 °C)

#### Non-Incendive:



Class I, Division 2, Groups A, B, and D  
Dust Ignition Proof  
Class II, Division 2, Groups F and G  
T4 Tamb: -20 to +65 °C

**Automatic Temperature Compensation:** External 3-wire Pt100 RTD or Pt1000 RTD located in the sensor, compensates the pH reading for temperature fluctuations. Compensation covers the range -10 to 150 °C (14 to 302 °F). Manual temperature compensation is also selectable.

**Accuracy:** ±1 mV @ 25 °C ±0.01 pH

**Repeatability:** ±1 mV @ 25 °C ±0.01 pH

**Information and Status:** Information screens display faults and warnings, radio transmission status, network ID number, Power Module voltage, transmitter model, and software version.

**Diagnostics:** The internal diagnostics can detect:

- RTD Failure
- Glass Low Failure
- Glass High Failure
- Broken Glass Fault
- Reference High Failure
- CPU Error
- High Temperature Warning
- Low Temperature Warning
- Glass Impedance High Warning
- Glass Impedance Low Warning
- Reference Impedance High Warning
- EEPROM Warning
- Sense Line Open Warning
- Factory Cal Warning
- Keyboard Warning

Once a fault or warning is detected, the display will show a message describing the problem.

**Smart Temperature Range:** -10 to 150 °C (PT100 and PT1000)

**Display:** 2-line, 16 character display supports display of pH and mV units. Display shows temperature.

#### Approvals:

RFI/EMI: EN-61326

R & TTE Directive:

EN301 489-1 V1.2 2002

EN 301 489-17: V1.4.1 2002

EN 60950-1: 2001

EN 300 328 V 1.6.1 (2004-11)

EN 60079-0:2009, EN 60079-11:2007 per CE certificate



### Intrinsically Safe



Class I, Division 1, Groups A-D; T4  
Ta = -20 °C to 65 °C in accordance with Control Drawing No.1400322  
IP66

Class I, Zone 0, AEx ia IIC T4  
Ta = -20 °C to 65 °C; in accordance with Control Drawing No. 1400322  
IP66



Class I, Division 2, Groups A-D, T4  
Ta = -20 °C to 65 °C;

## Ordering Information

The 6081-P measures pH and ORP and is compatible with most Rosemount Analytical pH and ORP sensors. The transmitter has a rugged, cast aluminum enclosure (NEMA 4X). The device transmits live process variables and useful diagnostics via HART 7 digital communications to a 1420 Wireless Gateway. The Emerson Process Management complete wireless solution implements a Self-Organizing Network for high data transmission reliability and state-of-the-industry wireless security using robust 2.4 GHz DSSS radio transmissions. The 6081 is compatible with non-preamp pH and ORP sensors and SMART pH sensors from Rosemount Analytical

Model	Description
6081	Wireless Transmitter (must be operated with 1420 Gateway with Burst Rate, Operating Frequency and Protocol Ordering option "A3")
<b>Measurement</b>	<b>Required Option</b>
P	pH/ORP
<b>Agency Approval</b>	<b>Required Option</b>
60	None Required
67	FM Approved, Intrinsically Safe, and Non-Incendive
69	CSA Approved, Intrinsically Safe, and Non-Incendive
73	ATEX Approved, Intrinsically Safe
<b>Spectrum Approval</b>	<b>Required Option</b>
101	United States, Canada and Modular Approved Countries <sup>1</sup>
102	EU <sup>2</sup>
103	Mexico
104	Singapore
105	China
106	Australia
107	India
108	Brazil
109	France
110	Argentina
111	Ecuador
112	Japan
113	Malaysia
114	Peru
116	Russia
117	Saudi Arabia
118	South Africa
119	South Korea
120	Turkey
121	Venezuela
122	United Arab Emirates
123	Oman
124	Taiwan
<b>Accessories</b>	
23820-00	Pipe/Wall Mounting Bracket kit for the 6081, carbon steel, painted
PN 701PBKKF	Power Module

Note: One power module included in price of the 6081, but not installed.

1. Modular Approval Countries for code -101: Aruba, Bahamas, Barbados, Belize, Bolivia, Bosnia & Herzegovina, Chile, Columbia, Costa Rica, Dominican Republic, El Salvador, Guatemala, Honduras, Jamaica, Kyrgyzstan, Montenegro, Morocco, Netherlands Antilles, Nicaragua, Panama, Puerto Rico, Trinidad & Tobago.
2. Modular Approval Countries for code -102: Austria, Belgium, Bulgaria, Cyprus, Czech Republic, Denmark, Estonia, Finland, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Liechtenstein, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden. Switzerland, and United Kingdom.

# Emerson's Smart Wireless Solutions

## Self-Organizing, Adaptive Mesh Routing

- No wireless expertise required, devices automatically find the best communication paths
- Network continuously monitors paths for degradation and repairs itself
- Adaptive behavior provides reliable, hands-off operation and simplifies network deployments, expansion and reconfiguration
- Supports both star and mesh topologies

## Industry Standard Radio with Channel Sequencing

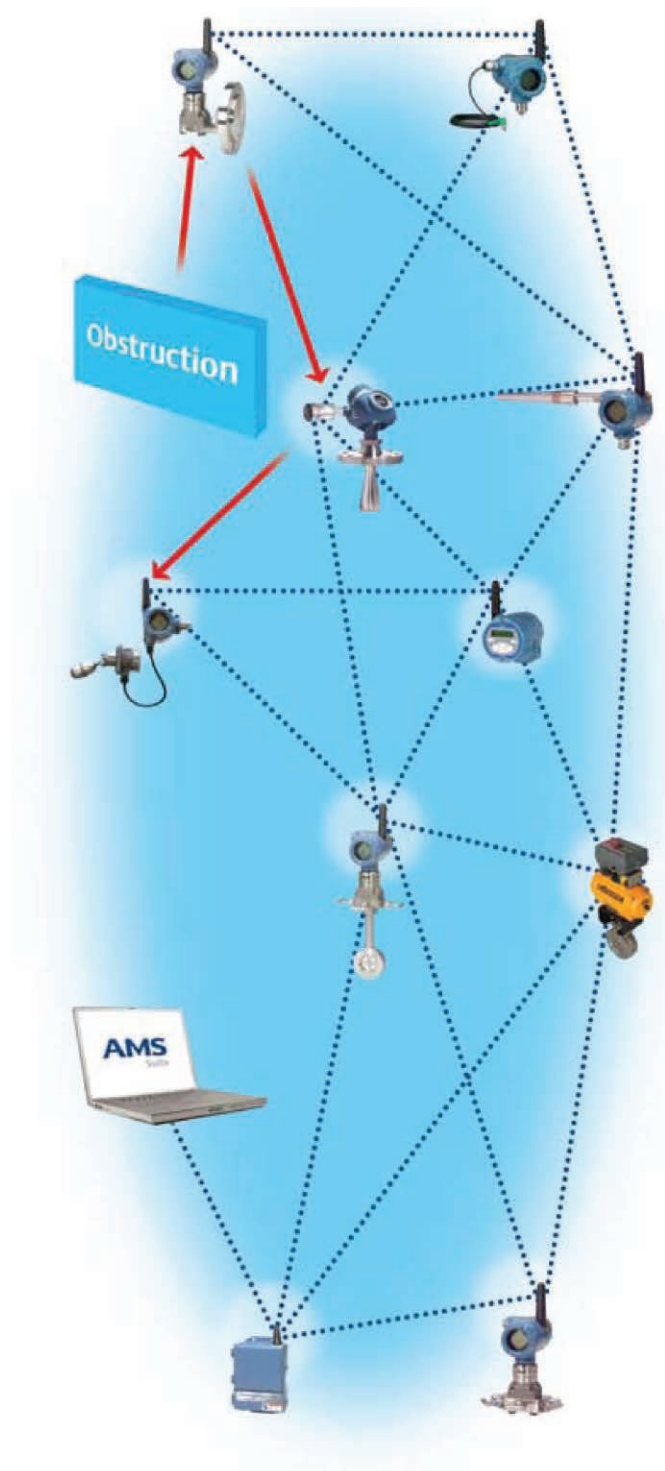
- Standard IEEE 802.15.4 radios
- 2.4 GHz ISM band sliced into 16 radio-channels
- Continually steps through channels to avoid interference and increase reliability
- Direct Sequence Spread Spectrum (DSSS) technology delivers high reliability in challenging radio environment

## Self-Healing Network

- If an obstruction is introduced into the mesh network, devices will automatically find the best alternate communication path. This alternate path will be created and the information will continue to flow.

## Seamless Integration to Existing Hosts

- Transparent and seamless integration
- Same control system applications
- Gateways connect using industry protocols



## 6081P – Rosemount Analytical pH Sensor compatibility

Compatible with standard pH/ORP non-preamp sensors


**PERpH-X**

3300HT  
3300HTVP  
3400HT  
3400HTVP  
3500  
3500VP



**TUpH**

396  
396P  
396PVP  
396R  
396RVP  
396VP  
397  
398  
398R  
398RVP  
398VP




**General Purpose**

381  
381+  
3900  
3900VP




**Triple Junction**

385  
385+  
389  
389VP




**PUR-SENSE™**

3800  
3800VP



**Special Purpose**

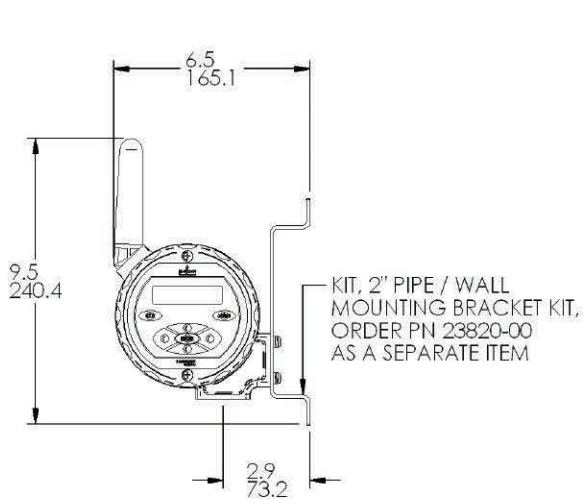
3200HP  
328A  
370  
371  
372  
TF396



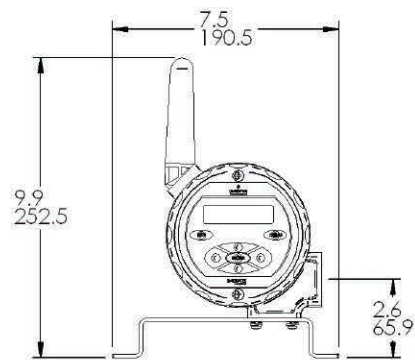
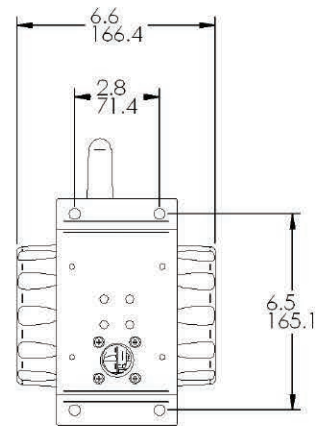
### Compatible with all SMART preamp pH sensors

SMART pH/ORP sensors	SMART pH/ORP sensors with VP8 connection
3500	3500VP, 3300HTVP, 3400HTVP
396P	396VP, 396PVP, 396RVP
399	399VP
389	389VP
385+	398RVP

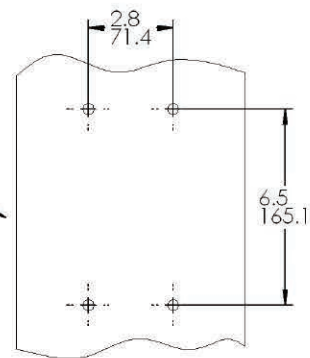
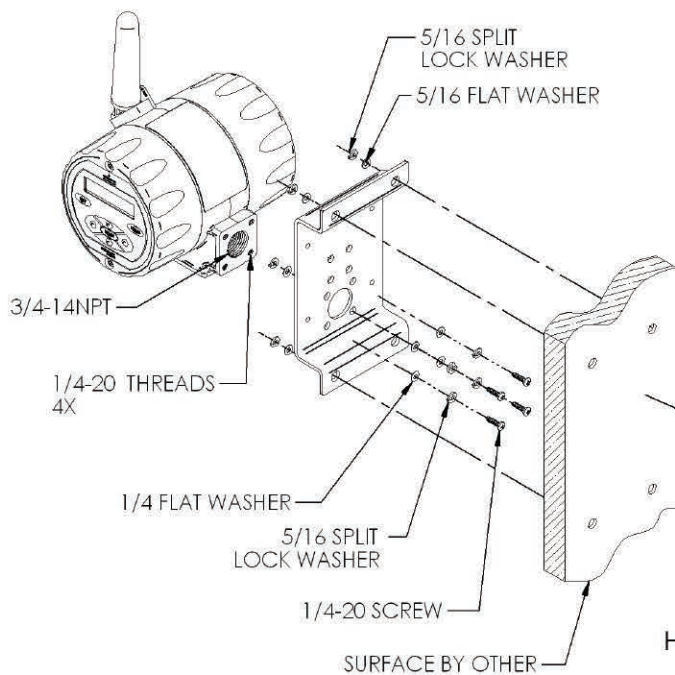
Rosemount Analytical’s SMART sensors extend the capabilities of traditional pH sensors. SMART sensor technology allows automatic calibration of sensors. Calibration data is automatically transferred to the 6081 upon live connection of the sensor. Advanced diagnostics are displayed to indicate sensor health and predict sensor life.



VERTICAL WALL MOUNTING



HORIZONTAL WALL MOUNTING

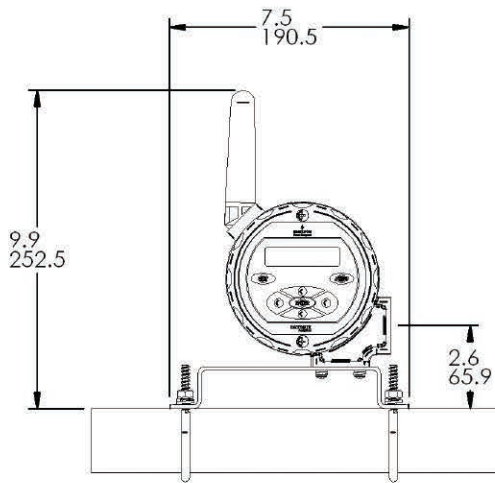


HOLES PATTERN FOR WALL MOUNTING

Wall Mounting Installation for 6081. Use Pipe/Wall Mounting Bracket Kit, PN 23820-00

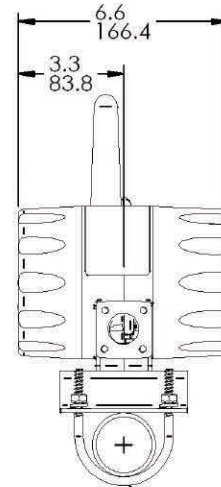
Note: PN 23820-00 mounting bracket kit includes mounting hardware for pipe mounting only.

Wall mounting hardware to be provided by customer. Only use suitable fasteners and hardware to securely fasten the bracket and transmitter to the wall surface.

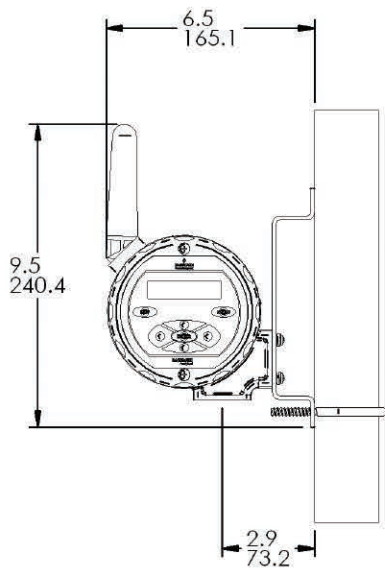


HORIZONTAL PIPE MOUNTING

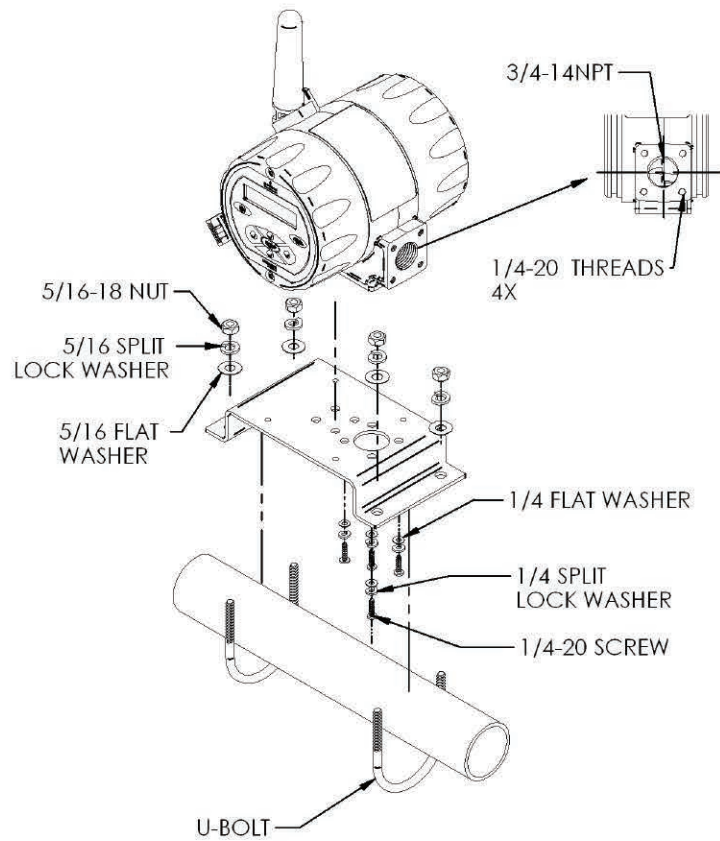
2" PIPE SUPPLIED BY CUSTOMER







KIT, 2" PIPE / WALL MOUNTING BRACKET KIT, ORDER PN 23820-00 AS A SEPARATE ITEM



VERTICAL PIPE MOUNTING



Pipe Mounting Installation Model 6081. Use Pipe/Wall Mounting Bracket Kit, PN 23820-00

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-  [AnalyticExpert.com](http://AnalyticExpert.com)
-  [twitter.com/RAIhome](https://twitter.com/RAIhome)
-  [youtube.com/user/RosemountAnalytical](https://youtube.com/user/RosemountAnalytical)



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