

## Instruction Sheet

PN 51A-6081C/rev.A

June 2009

# Model 6081-C

## Wireless Contacting Conductivity Transmitter



# **ESSENTIAL INSTRUCTIONS**

## **READ THIS PAGE BEFORE PROCEEDING!**

Rosemount Analytical designs, manufactures, and tests its products to meet many national and international standards. Because these instruments are sophisticated technical products, you must properly install, use, and maintain them to ensure they continue to operate within their normal specifications. The following instructions must be adhered to and integrated into your safety program when installing, using, and maintaining Rosemount Analytical products. Failure to follow the proper instructions may cause any one of the following situations to occur: Loss of life; personal injury; property damage; damage to this instrument; and warranty invalidation.

- Save this Instruction Manual for future reference.
- Read all instructions prior to installing, operating, and servicing the product. If this Instruction Manual is not the correct manual, telephone 1-800-654-7768 and the requested manual will be provided.
- If you do not understand any of the instructions, contact your Rosemount representative for clarification.
- Follow all warnings, cautions, and instructions marked on and supplied with the product.
- Inform and educate your personnel in the proper installation, operation, and maintenance of the product.
- Install your equipment as specified in the Installation Instructions of the appropriate Instruction Manual and per applicable local and national codes. Connect all products to the proper electrical and pressure sources.
- To ensure proper performance, use qualified personnel to install, operate, update, program, and maintain the product.
- When replacement parts are required, use replacement parts specified by Rosemount. Unauthorized parts and procedures can affect the product's performance and place the safe operation of your process at risk. Look alike substitutions may result in fire, electrical hazards, or improper operation.
- Periodically clean the transmitter window and housing as needed with a cloth dampened with water. Do not use abrasive cleaning solutions. The O-rings and sealing surfaces must be kept clean or moisture may enter the electronic enclosure.

### ***NOTICE***

The Rosemount Model 6081 and all other wireless devices should be installed only after the 1420 Wireless Gateway has been installed and is functioning properly. Wireless devices should also be powered up in order of proximity from the 1420 Wireless Gateway, beginning with the closest. This will result in a simpler and faster network installation.

### ***NOTICE***

#### **Shipping considerations for wireless products (Power Modules):**

The unit was shipped to you without the power module installed. Please remove the power modules from the unit prior to return or further shipment.

Primary lithium power modules are regulated in transportation by the U. S. Department of Transportation, and are also covered by IATA (International Air Transport Association), ICAO (International Civil Aviation Organization), and ARD (European Ground Transportation of Dangerous Goods). It is the responsibility of the shipper to ensure compliance with these or any other local requirements. Please consult current regulations and requirements before shipping.

The power module with the wireless unit contains two "C" size primary lithium/thionyl chloride power sources. Each power module contains approximately 5 grams in each pack. Under normal conditions, the power module materials are self-contained and are not reactive as long as the power modules and the pack integrity are maintained. Care should be taken to prevent thermal, electrical or mechanical damage. Contacts should be protected to prevent premature discharge.

Power module hazards remain when cells are discharged.

Power modules should be stored in a clean and dry area. For maximum power module life, storage temperature should not exceed 30° C.

# QUICK START GUIDE

## FOR MODEL 6081 WIRELESS Contacting Conductivity TRANSMITTER

1. Refer to Section 2.0 Installation for installation instructions.
2. Wire the sensor to the transmitter. Refer to the sensor instruction sheet for details.
3. Once the connections are secure and verified, install the Power Module to power to the transmitter.
4. When the transmitter is powered up for the first time, Quick Start screens appear. Using Quick Start is easy.
  - a. A blinking field shows the position of the cursor.
  - b. Use the ◀ or ▶ key to move the cursor left or right. Use the ▲ or ▼ key to move the cursor up or down or to increase or decrease the value of a digit. Use the ▲ or ▼ key to move the decimal point.
  - c. Press ENTER to store a setting. Press EXIT to leave without storing changes. Pressing EXIT also returns the display to the previous screen.
5. Choose a local language.
6. Choose measurement: Sensor type: 2-Electrode, 4-Electrode.
7. Select measurement: conductivity, resistivity, TDS, salinity or one of the % concentration choices.
8. Enter cell constant: for the sensor. Refer to the tag attached to the sensor.
9. Select wireless update rate. Select ENTER to choose the default update rate of 60 seconds or enter a value from 1 second to 3,600 seconds (60minutes).
10. Choose temperature units: °C or °F
11. Choose Yes to Setup the Wireless Network or No if the Network ID and the Join Key have already been entered.
12. Enter the 5-digit Wireless **Network ID**. This ID number must match the Network ID of the Model 1420 Wireless Gateway.
13. Enter the 8-digit Network **Join Key** number **1 of 4** to match the Model 1420 Wireless Gateway. See the Note below for clarification.
14. Enter the **2nd, 3rd, and 4th set** of Network Join Key numbers , to match the Model 1420 Wireless Gateway.
15. The transmitter will exit Quick Start and display the live measurement screen.
16. To change the Network ID or Join Key, HART address, or measurement-related settings from the default values, and to set security codes, press MENU. Select Program and follow the prompts. Refer to the appropriate menu tree.
17. To return the transmitter to default settings, choose **Reset Analyzer** in the Program menu.

### Note regarding Wireless Device Configuration

In order to communicate with the 1420 Wireless Gateway, and ultimately the Information System, the transmitter must be configured to communicate with the wireless network. This step is the wireless equivalent of connecting wires from a transmitter to the information system.

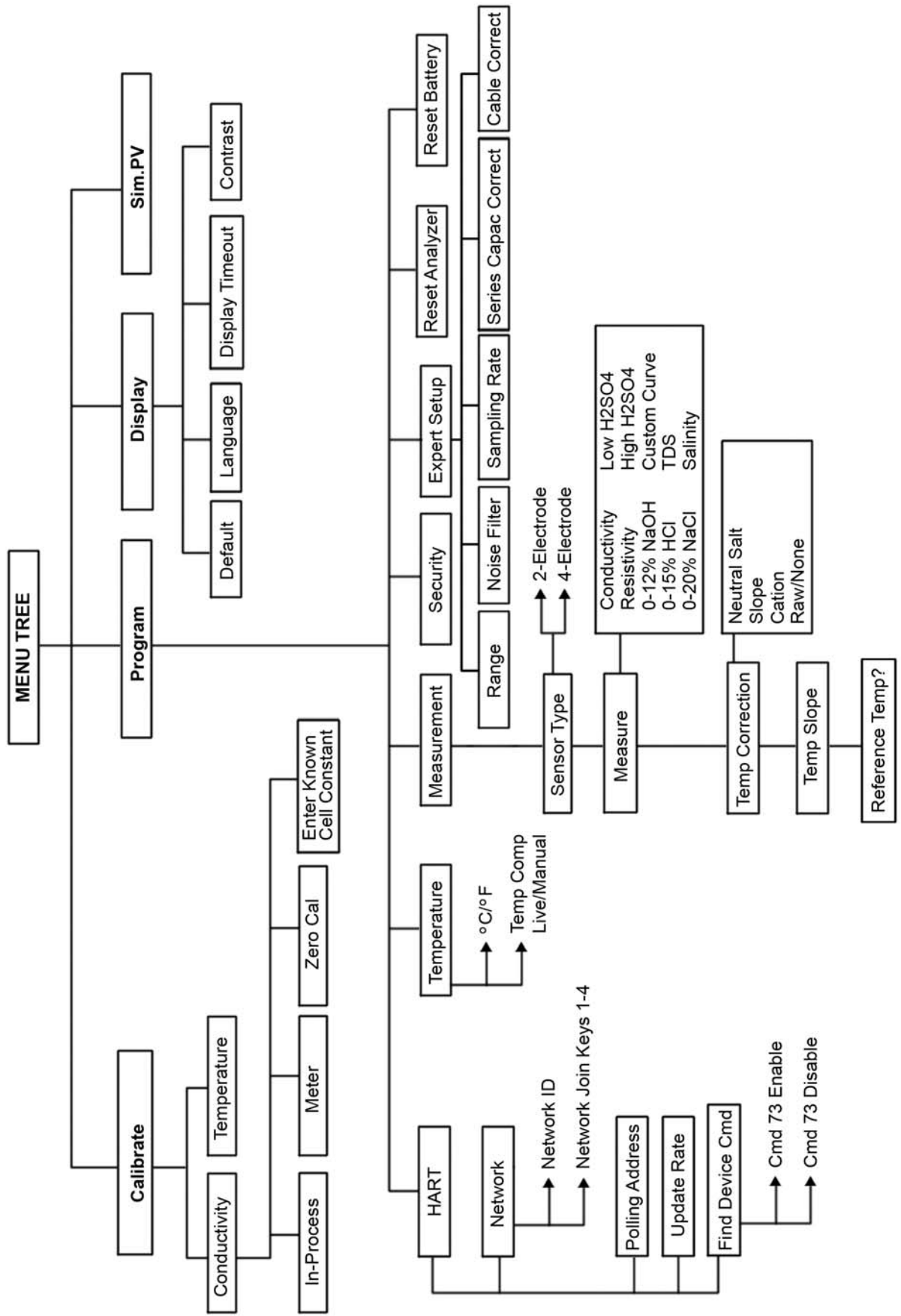
Using a Field Communicator or AMS, or the local keypad on the device, enter the Network ID and Join Key so that they match the Network ID and Join Key of the gateway and other devices in the network. The Network Join Key consists of four (4) blocks, each with an eight digit code. The code of each block must match its corresponding block in the 1420 in order for the 6081 to join the network.

If the Network ID and Join Key are not identical, the transmitter will not communicate with the network. The Network ID and Join Key may be obtained from the 1420 Wireless Gateway on the Setup>Network>Settings page on the web server.

The final device network configuration piece is the Update Rate. This is 60 seconds by default. This may be changed at commissioning, or at any time via AMS or the 1420 Wireless Gateway's web server. The Update Rate should be between 1 second and 3,600 seconds.

When device configuration is completed, remove the power module and replace the rear cover of the transmitter until the time of actual live installation in the process. Properly tighten the screws and install plugs or cable gland fittings in the conduit openings to prevent the entry of moisture during storage.

MENU TREE FOR MODEL 6081 pH Wireless TRANSMITTER



## SPECIFICATIONS - GENERAL

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

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

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

**Ambient Temperature:** 32 to 149°F (0 to 65°C)

**Storage Temperature:** -4 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 WirelessHART™

## WIRELESS - SPECIFICATIONS

**Output:** WirelessHART V7

**Transmit Rate:** User selectable, 1/sec. to 1/60 min  
(via 1420 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

**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 at 25°C ambient.

## FUNCTIONAL SPECIFICATIONS

**Information and Status:** Information screens display cell constant, zero offset in air, zero offset in water, RTD offset, faults and warnings, ambient temperature, radio transmission status, network ID number, Power Module voltage and estimated life, transmitter model, and software version.

The conductivity concentration algorithms for these solutions are fully temperature compensated. Three temperature compensation options are available: manual slope (X%/°C), high purity water (dilute sodium chloride), and cation conductivity (dilute hydrochloric acid). Temperature compensation can be disabled, allowing the analyzer to display raw conductivity. For more information concerning the use and operation of the contacting conductivity sensors, refer to the product data sheets.

Note: Selected 4-electrode, high range contacting conductivity sensors are compatible with Model 6081-C.

**Display:** 2-line, 16 character display supports display of  $\mu\text{S/cm}$ ,  $\text{mS/cm}$ ,  $\text{M}\Omega\text{-cm}$ , % concentration, and ppm units. Display shows temperature.

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

- CPU Error
- RTD Error
- Temperature High Warning
- Temperature Low Warning
- Sense Line Open Warning
- Negative Reading Warning
- Out of Range Warning
- % of Range Warning
- Need Factory Cal Warning
- Need Curve Setup Warning
- Battery V Low Warning
- EE Chksum Error
- EE Write Error
- Keyboard Stuck Warning

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

**Sensor Temperature Range:** -10 to 200°C PT1000)

**Approvals:** RFI/EMI:

EN-61326

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)



**Measurements:** conductivity in the range 0 to 600,000  $\mu\text{S/cm}$  (600mS/cm). Measurement choices are conductivity, resistivity, total dissolved solids, salinity, and % concentration. The % concentration selection includes the choice of five common solutions (0-12% NaOH, 0-15% HCl, 0-20% NaCl, and 0-25% or 96-99.7%  $\text{H}_2\text{SO}_4$ ).

**Input filter:** time constant 1 - 999 sec, default 2 sec.

**Salinity:** uses Practical Salinity Scale

**Total Dissolved Solids:** Calculated by multiplying conductivity at 25°C by 0.65

## CONTACTING CONDUCTIVITY

### TEMPERATURE SPECIFICATIONS - TWO ELECTRODE SENSORS

Temperature range	0-200°C
Temperature Accuracy, Pt-1000, 0-50 °C	± 0.1°C
Temperature Accuracy, Pt-1000, Temp. > 50 °C	± 0.5°C

### RECOMMENDED SENSORS FOR CONDUCTIVITY:

All Rosemount Analytical ENDURANCE Model 400 series conductivity sensors (Pt 1000 RTD) and PUR-Sense Model 410VP sensor.



## PERFORMANCE SPECIFICATIONS

TWO-ELECTRODE Contacting Conductivity Linearity		
Cell Constant	Loop Range μS/cm	Loop Linearity (@ 25°C ambient)
0.01	0.01 to 0.03	1.5% of reading +/- 0.0005μS/cm
0.01	0.03 to 6.0	1.5% of reading.
0.01	6.0 to 50	3% of reading
0.1	0.5 to 50	1.5% of reading
0.1	50 to 600	3% of reading
1.0	50 to 6000	0.5% of reading
1.0	6000 to 20,000	3% of reading (with capacitance correction OFF: default)
1.0	6000 to 50,000	3% of reading (with capacitance correction ON)

FOUR-ELECTRODE Contacting Conductivity Linearity	
Loop Range μS/cm	Loop Linearity (@ 25°C ambient)
0.03 μS/cm to 600 mS/cm	+/- 4% of reading +/- 1μS/cm

# SENSOR WIRING

## GENERAL INFORMATION

Model 6081-C is compatible with Rosemount Analytical 2-electrode and 4-electrode contacting conductivity sensors from Emerson Process Management.

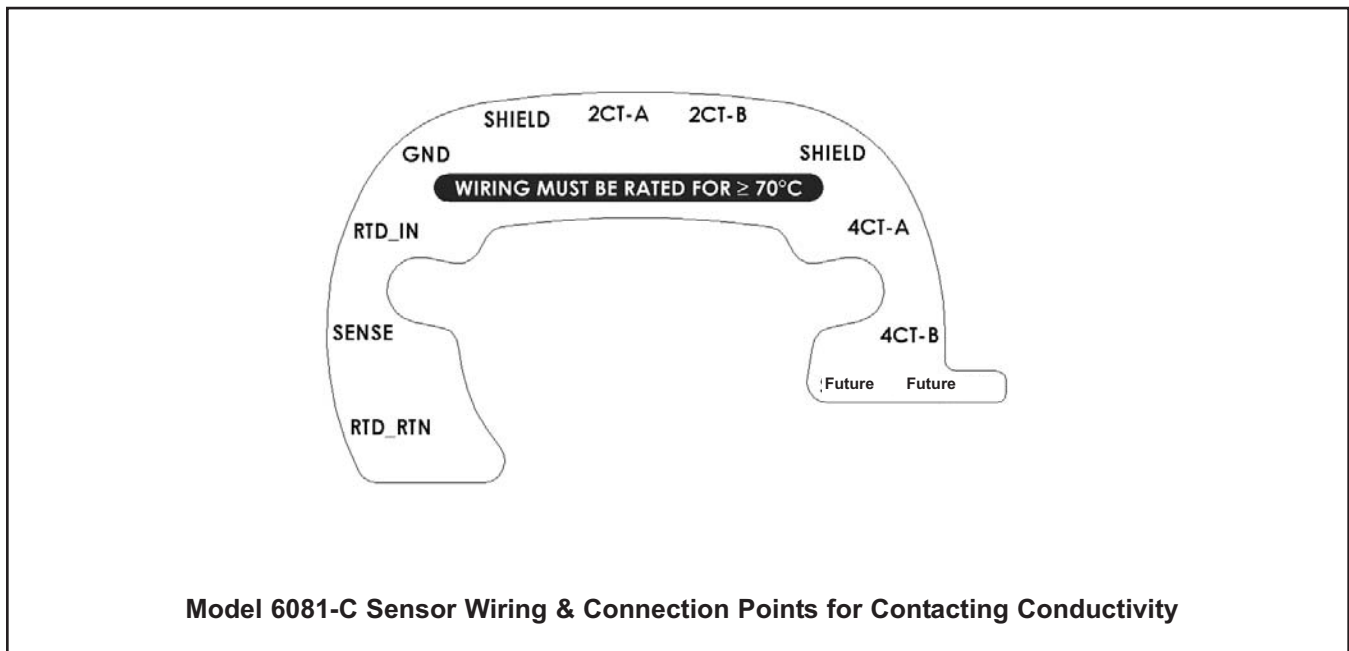
## SENSOR WIRING

To assist in sensor wiring, please refer to the one of the following resources:

1. Sensor Instruction Sheet – provided with each shipped sensor. Detailed wiring drawings show terminal block connections for each sensor lead.
2. Online wiring program available at <http://www.emersonprocess.com/rainhome/liquid/products/wiring/Xmt> displays wiring schematics for all compatible sensors.

Note: all sensor wiring must be rated for  $\geq 70$  °C.

The following drawing identifies each terminal block lead position for contacting conductivity sensors.



## EC Declaration of Conformity

6081

We,

**Emerson Process Management  
Heath Place - Bognor Regis  
West Sussex PO22 9SH  
England**

Declare under our sole responsibility that the product,

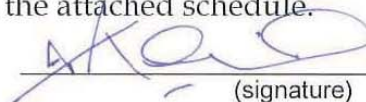
**6081**

manufactured by,

**Emerson Process Management  
Rosemount Analytical  
2400 Barranca Parkway  
Irvine, California 92606  
USA**

to which this declaration relates, is in conformity with the provisions of the European community Directives, including the latest amendments, as shown in the attached schedule.

Assumption of conformity is based on the application of the harmonized standards and, when applicable or required, a European Community notified body certification, as shown in the attached schedule.



(signature)

December 1, 2008

(date of issue)

Andy Kemish

(name printed)

Vice President Analytical Division  
Europe,

(function name printed)





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**R&TTE Directive (1999/5/EC)**

**6081**

EN 301 489-1 V1.2 2002, EN 301 489-17: V1.4.1 2002  
EN 60950-1: 2001  
EN 300 328 V 1.6.1 (2004-11)

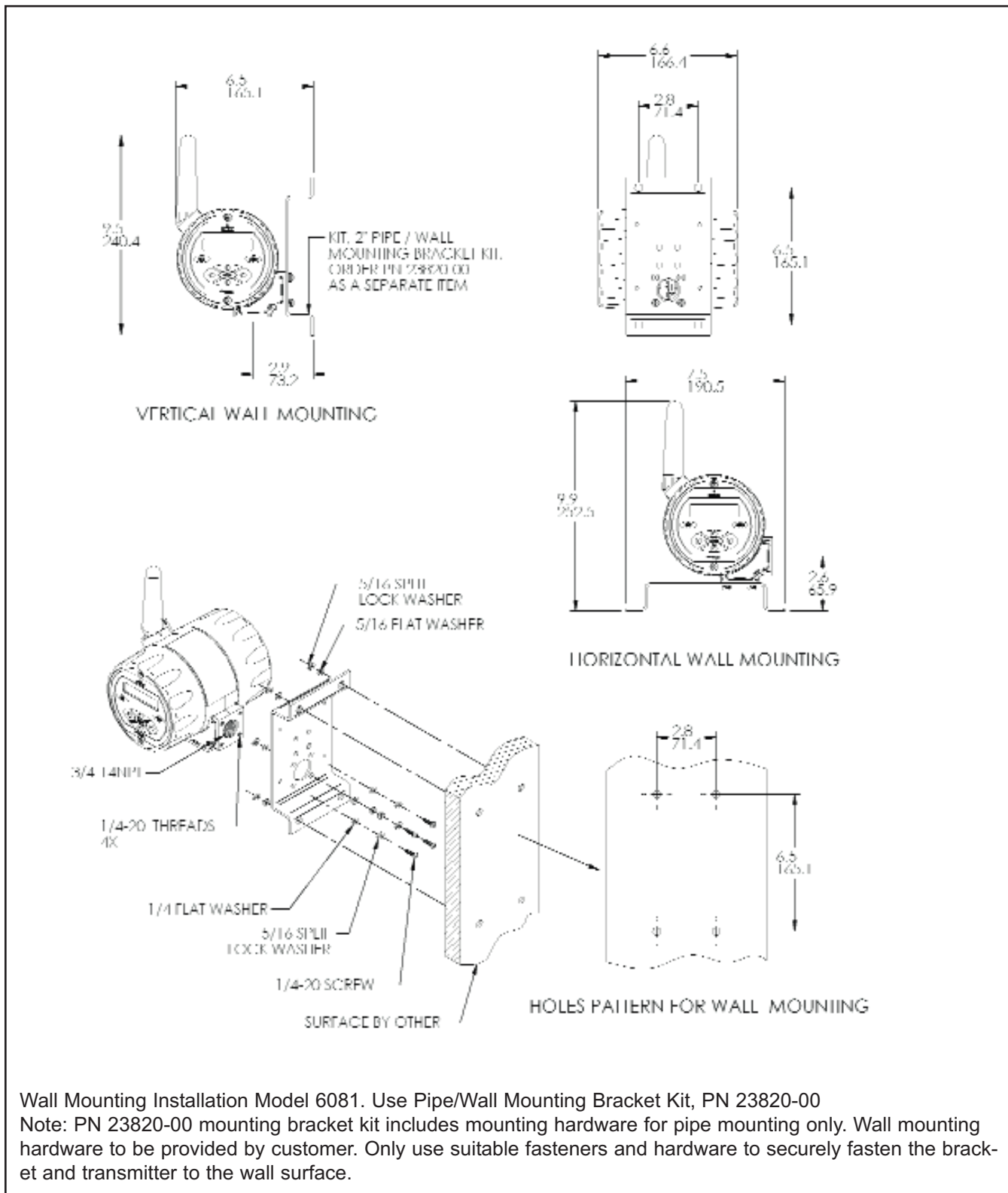
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**EMC Directive (2004/108/EC)**

**6081**

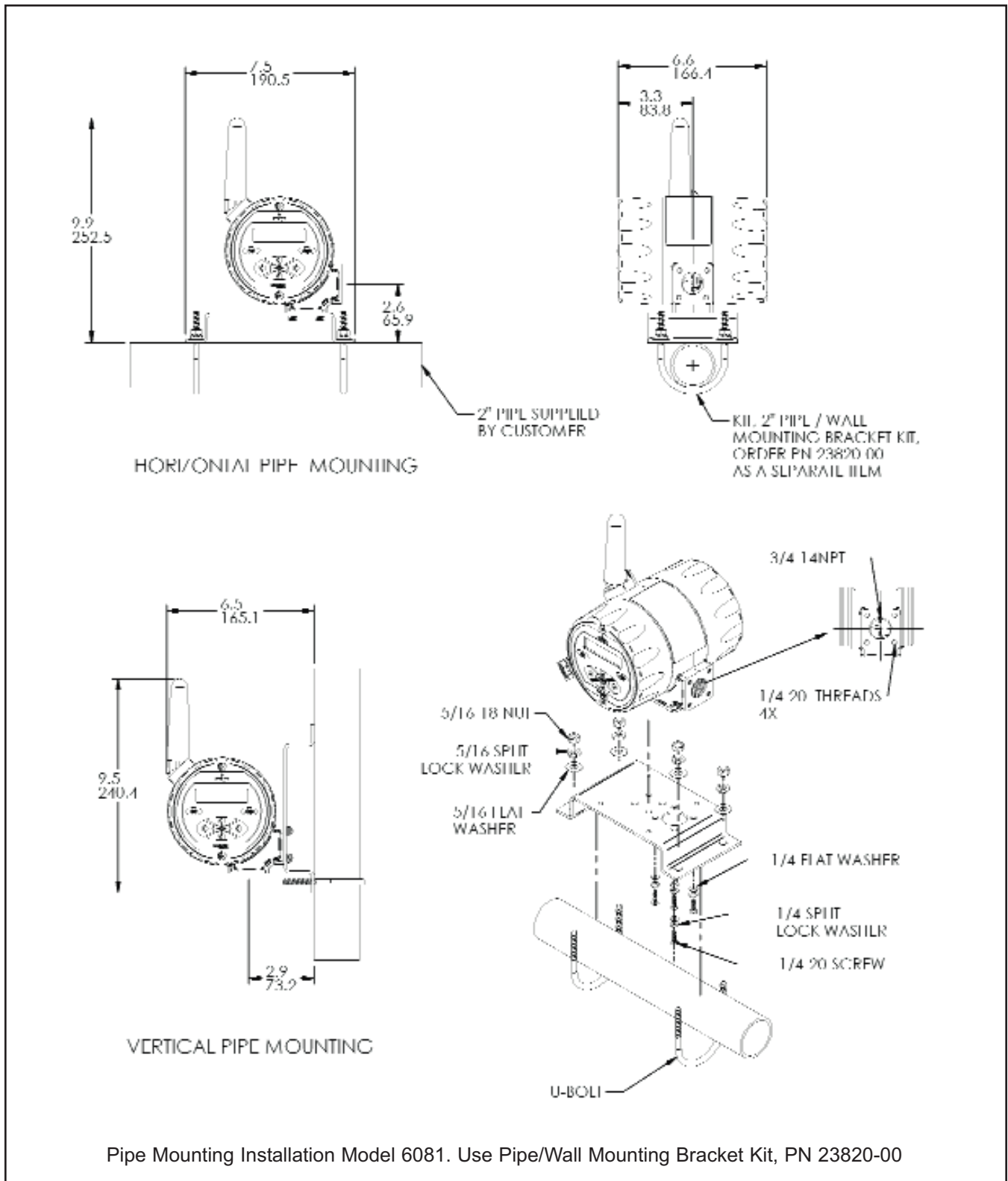
EN 61326-1:2006

## Mounting on a Flat Surface.



## Pipe Mounting.

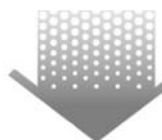
The pipe mounting kit (PN 23820-00/01) accommodates 1-1/2 to 2 in. pipe.



## POWER MODULE REPLACEMENT

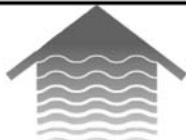
Expected power module (part number 00753-9220-0001) life is two years at reference conditions. This section describes the procedure for replacement of power module (part number 00753-9220-0001). The new power module should be stored in a safe place with a controlled environment until the Model 6081 is ready for live operation. For replacement of the power module, follow these steps:

1. Unscrew the two long machine screws to remove the rear cover of the Model 6081. Separate the rear cover from the central housing by manually prying the sections apart. Do not use screwdrivers or tools to separate these housing parts. The parts are sealed with an o-ring.
2. Before installation, note the safety warning, disposal instructions and part information on the connection-side label of the power module.
3. With the Model 6081 front display section facing away from you, align the power module pack with the curved surface of the pack facing towards you and the small protruding connector facing away from you. Make sure to align the power module and its keyed connector with the connection receptacle in the middle of the instrument's terminal block area.
4. With gentle pressure, insert the keyed connector on the power module into the receptacle (labeled Power Module Connection on the drawing). The power module seats in the connection receptacle with an o-ring.
5. Confirm that the power module is fully inserted in the receptacle and properly aligned with the surrounding terminal block.
6. Replace the rear cover of the Model 6081 with the two screws to secure it to the central housing. Tighten screws and verify operation. Correct installation of the rear cover will ensure that the power module is properly secured to power the transmitter.
7. **DO NOT RETURN SHIP THE USED POWER MODULE** to Rosemount Analytical. Dispose of spent power modules as a hazardous material in accordance with government regulations.



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