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SmartCET® Model CET5500M Corrosion Monitoring Transmitter

Specification and Model Selection Guide

Continuing the technology leadership shown in the successful SmartCET® Series transmitter line; the SmartCET CET5500M corrosion transmitter includes the same state-of-the-art algorithms and data analysis techniques previously found in the first generation product plus the enhancements introduced with the OneWireless SmartCET corrosion transmitter.

Like all SmartCET corrosion transmitters, the CET5500M model provides four outputs, which include general corrosion rate, an indicator for localized corrosion (Pitting Factor), a measured Stern-Geary constant (B value), and a Corrosion Mechanism Indicator (a capacitance-based value to help diagnose the condition of the probe electrode health).

Multiple measurements from one device provides a deep, more complete view of the corrosion phenomenon occurring in the process and is also a lower cost solution in comparison to other implementations that would require multiple intrusions or products to provide the same level of corrosion information.

From these multiple measurements, SmartCET can differentiate if the corrosion is in uniform mode or if localized (most likely pitting) corrosion is occurring, indicated by the Pitting Factor output. Another key output is the B value, which is a real-time measurement of the prevailing value of the Stern Geary constant. The general corrosion rate is calculated using a default B value and the measured B value can be used as an adjustment to improve the accuracy of the calculated corrosion rate. In addition to enhancing the corrosion rate accuracy, the B value measurement provides insight into changes in the corrosion mechanism, which occur as a consequence of variability in the process environment.

Timely delivered corrosion information helps to make more accurate decisions about proper corrosion mitigation actions. The SmartCET CET5500M includes the same industry leading 30-second update rate previously introduced in the XYR6000 OneWireless SmartCET corrosion transmitter. Real-time corrosion data allows correlation of corrosion events to actual process changes. It also enables the use of SmartCET corrosion data as a real-time input to closed-loop inhibitor control systems or other optimization applications.

Features

- *Online, real-time corrosion monitoring*
- *Fastest electrochemical corrosion characterization in the industry (30 seconds)*
- *Multivariable output with general corrosion rate, localized corrosion indicator (Pitting Factor), dynamic B value, and an additional capacitance variable for probe electrode health diagnostics*
- *Custom configuration*
- *Standard 4-20mA output with HART digital protocol with a variety of interfacing options*
- *Local display of corrosion measurements*
- *Type 4X / IP66/67 transmitter housing*

Specification

Operating Conditions

Parameter	Reference Condition (at zero static)		Rated Condition		Operative Limits		Transportation and Storage	
	°C	°F	°C	°F	°C	°F	°C	°F
Ambient Temperature	25 ±1	77 ±2	-30* to 85	-22 to 185	-30 to 85	-22 to 185	-30 to 85	-22 to 185
Humidity	10 to 55		0 to 100		0 to 100		0 to 100	
Ambient Temperature LCD Display Visible Range	25 ±1	77 ±2	-20 to 70°C -4 to 158°F					
Vibration	Maximum of 4g over 15 to 200Hz.							
Shock	Maximum of 40g.							
Rated Supply Voltage Range	12.4 to 30 VDC (@ 250 ohms total loop resistance)							

Performance Under Rated Conditions*

Parameter	Description
Rated Range	
General Corrosion	0 to 200 mils/year (0 to 5 millimeters/year) **
Local Corrosion (Pitting Factor)	0.001 to 1.000
B – Value	0 to 200 mV
Corrosion Monitoring Index	0 to +2000
B Value (default)	25.6 mV
Accuracy (General Corrosion)	±0.10% of span from 0 – 200 mpy; (min span 20 mpy for rated accuracy)
Lightning Surge Arrester	Included
CE Conformity	These transmitters are in conformity with the protection requirements of European Council Directives: 89/336/EEC, the EMC Directive and EN 61326-1997+A1+A2, Electrical Equipment for Measurement, Control and Laboratory Use – EMC Requirements.

Hazardous Location Certifications	CSA cus	Intrinsically Safe	Class I, Div. 1, Gp A,B,C,D; Class II, Div 1, Gp E,F,G; Class III, Div 1; T4, Ta £ 85ºC; Type 4X Class I, Ex/AEx ia IIC; T4, Ta £ 85ºC, Zone 0; IP66
		Non-incendive	CL I, Div 2, Groups A, B, C, D; CL II, Div 2, Groups F & G ; Class III, T4 Ta = 85ºC
		Non-Sparking	Class I Zone 2: Ex nA IIC, T4 Ta = 85ºC Class I Zone 2: AEx nA IIC, T4 Ta = 85ºC

* Performance specifications are based on reference conditions of 25ºC (77ºF), zero (0) static pressure, and 10 to 55% RH.

** Upper corrosion rate performance is dependent upon electrode style.

Physical Specifications

Parameter	Description
Mounting Bracket Options	Carbon steel (zinc-plated) or stainless steel angle bracket, or carbon steel flat bracket available.
Terminal Assembly Wiring Gauge Range	16 to 28 AWG
Electronic Housing	Epoxy-polyester hybrid paint. Low copper-aluminum. Meets TYPE 4X* (hose down and corrosion resistant), IP 66/67 (hose down and submersible to 1m)
Electrical Connection	2 x 1/2" NPT (default)
Wiring Terminal (See Error! Reference source not found.**)**	Accept up to 1.5 mm – 16 AWG
Mounting	Can be mounted in virtually any position using the standard mounting bracket. Bracket is designed to mount on 2-inch (50 mm) vertical or horizontal pipe. See Figure 2, Figure 3, Figure 4 and Figure 5.
Probe Mounting	Probe mounts direct into the process, probe connects to transmitter via probe cable.
Dimensions	See Figure 2, Figure 3, Figure 4 and Figure 5.
Net Weight	Approximately 4 pounds (1.8 Kg)

* Standard probe cable is not **TYPE 4X** rated.

Process Conditions

Parameter	Description
Process Temperature (Max.) **316 Stainless Steel Remote Mount Probe** **Glass Epoxy Probe**	500°F (260°C) peak, 400°F average; custom probes with higher ratings available 150°F (65°C)
Process Pressure (Max.)	3600 psi (245 bar) 316 stainless steel, retrievable probe double sealed 1500 psi (102 bar) 316 stainless steel, retractable probe double sealed 100 psi (7 bar) glass epoxy probe
O-Ring (set of 3)	Viton o-ring for probes with finger electrodes (Viton® is registered trademarks of DuPont Dow elastomers)

Figure 1 - SmartCET termination panel and interior wiring ingress channels

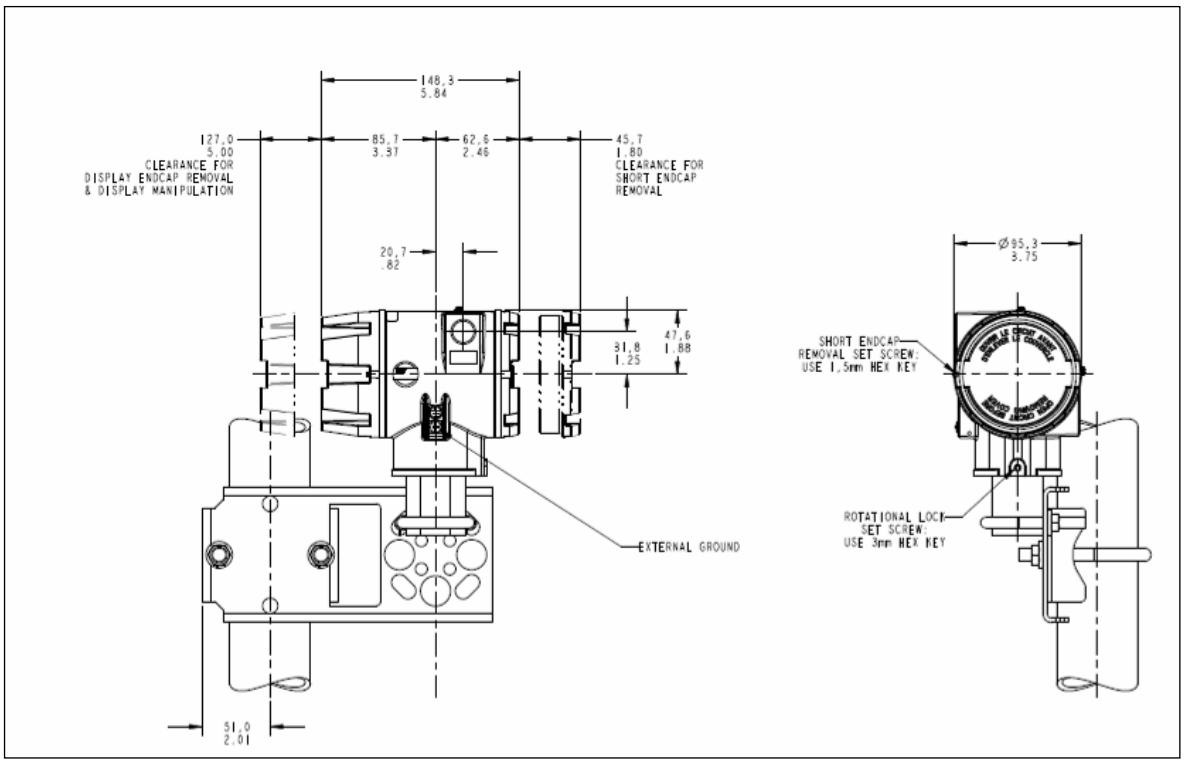

Figure 2 — SmartCET vertical pipe mount using flat bracket

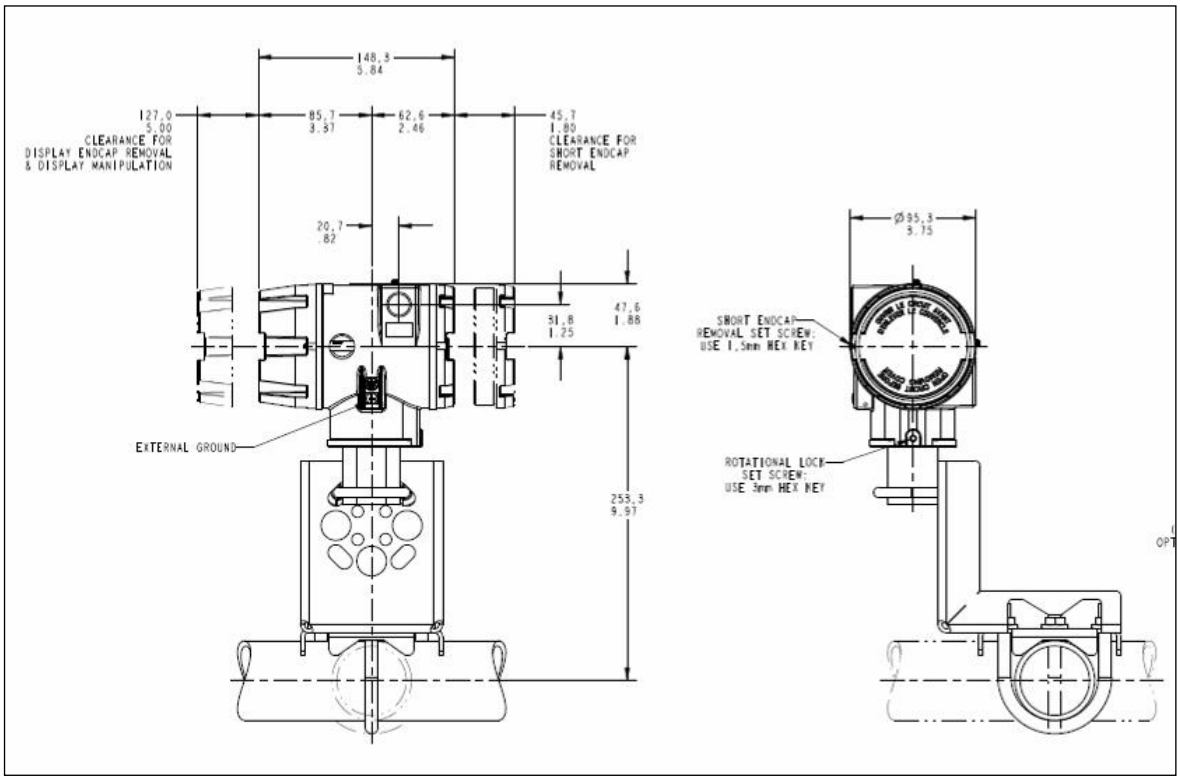

Figure 3— SmartCET horizontal pipe mount using angle bracket.

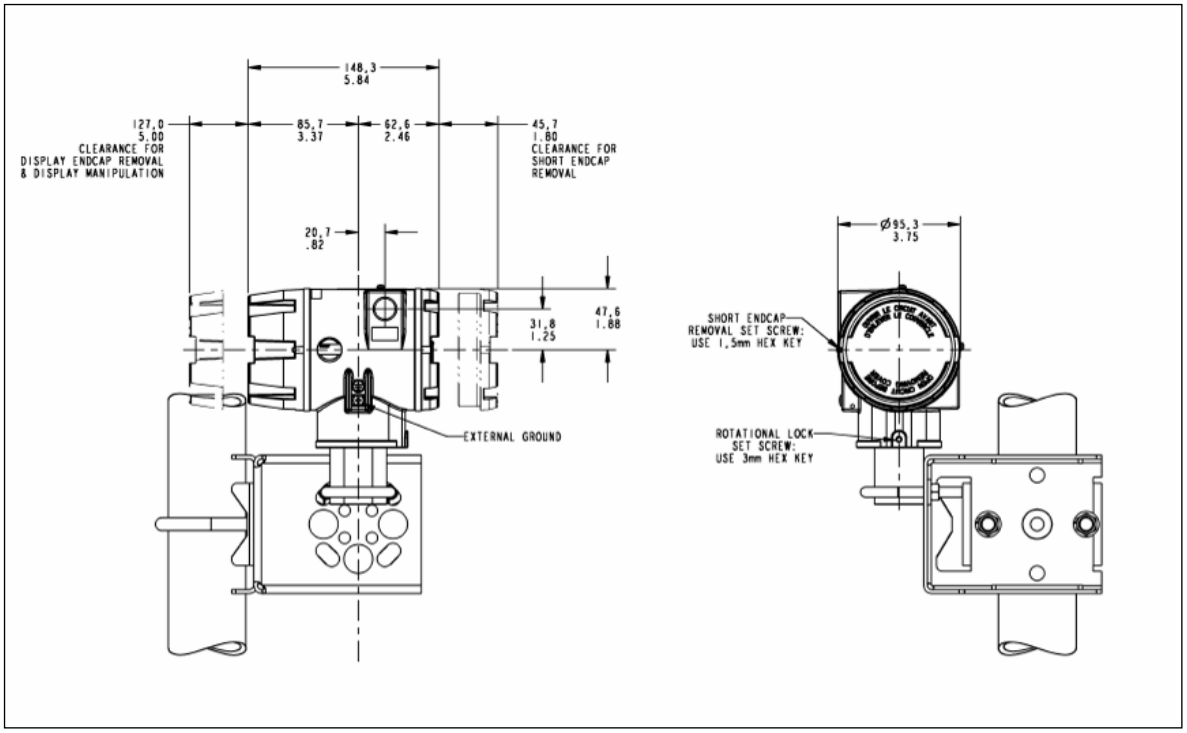

Figure 4—SmartCET vertical pipe mount using angle bracket.

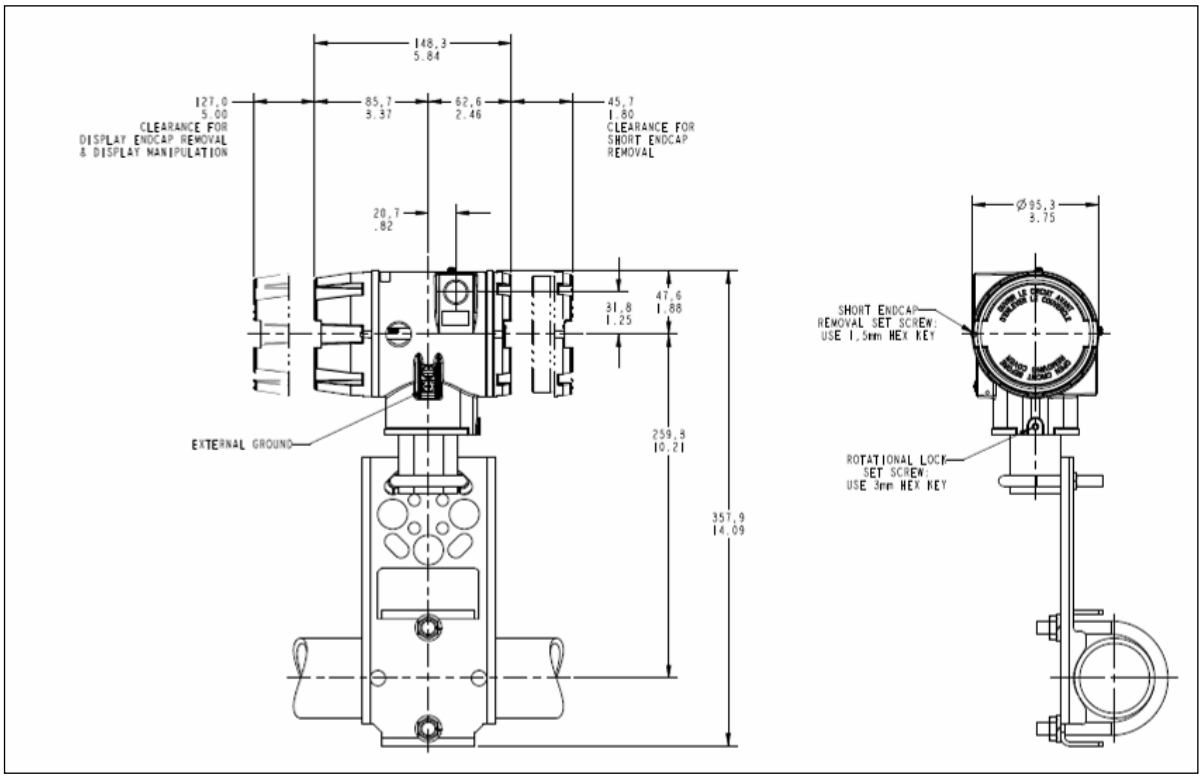

Figure 5—SmartCET horizontal pipe mount using flat bracket.

Options	Ordering Information	
Mounting Bracket The angle mounting bracket is available in either zinc-plated carbon steel or stainless steel and is suitable for horizontal or vertical mounting on a two inch (50 millimeter) pipe, as well as wall mounting. An optional flat mounting bracket is also available in carbon steel for two-inch (50 millimeter) pipe mounting. **Tagging (Option TG)** A stainless steel wired-on tag with the ability to accommodate data of up to 4 lines of 28 characters is available. The number of characters for tagging includes spaces. **Transmitter Configuration** The factory can configure specific electrode parameters into the transmitter from data communicated at time of order entry. If this option is not selected, all configurable parameters are accessible via a HART handheld configuration device or other tool capable of using a HART DD file for configuration.	Contact your nearest Honeywell sales office, or **In the U.S.:** Honeywell Process Solutions 2500 W. Union Hills Drive. Phoenix, AZ 85027 1-800-288-7491 **In Canada:** The Honeywell Centre 155 Gordon Baker Rd. North York, Ontario M2H 3N7 1-800-461-0013 **In Latin America**: Honeywell Inc. 480 Sawgrass Corporate Parkway, Suite 200 Sunrise, FL 33325 (954) 845-2600 **In Europe and Africa**: Honeywell S. A. Avenue du Bourget 1 1140 Brussels, Belgium	**In Eastern Europe:** Honeywell Praha, s.r.o. Budejovicka 1 140 21 Prague 4, Czech Republic **In the Middle East**: Honeywell Middle East Ltd. Khalifa Street, Sheikh Faisal Building Abu Dhabi, U. A. E. **In Asia:** Honeywell Asia Pacific Inc. Honeywell Building, 17 Changi Business Park Central 1 Singapore 486073 Republic of Singapore **In the Pacific:** Honeywell Pty Ltd. 5 Thomas Holt Drive North Ryde NSW Australia 2113 (61 2) 9353 7000 **In Japan:** Honeywell K.K. 14-6 Shibaura 1-chrome Minato-ku, Tokyo, Japan 105-0023

Alternatively visit Honeywell on the World Wide Web at: **http://www.honeywellprocess.com/corrosion,** or contact us directly at **SmartCET@honeywell.com**

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SmartCET CET5500M Corrosion Monitoring

Model Selection Guide

Model Selection Guide
34-SC-16-10 Issue 4

Honeywell Proprietary

Instructions

- The Key number and Table I selections are pre-defined.
- Make selections from table II, using dedicated descriptors.
- A (•) denotes unrestricted availability. A letter denotes restricted availability.
- Restrictions are listed in Restrictions Table.

Key Number	I	II	III
CET5500M	- 4H	- _ _ _ _ _ _	- X X X X

KEY NUMBER	Selection	Availability
SmartCET Multivariable Ouput (default)	CET5500M	default

TABLE I - Communications Output		
4-20mA with HART digital protocol (default)	4H	default

Note:
For electrodes and probes see Model Selection Guides 34-XY-16-51 and 34-XY-16-52

TABLE II - Options	Selection	Availability
Transmitter Housing & Electronics Options		
Transmitter Configuration and ID in Memory	TC	•
Stainless Steel Customer Wired-On Tag	TG	•
(4 lines, 28 characters per line, customer supplied information with Purchase Order)		b
Stainless Steel Customer Wired-On Tag - blank (default)	TB	•
End Cap Warning Label in Spanish	SP	•
Transmitter Mounting Bracket Options		
Mounting Bracket - 304 SS	SB	•
Mounting Bracket - Carbon Steel	MB	• b
Documentation and Certificate Options		
User's Manual Paper Copy	UM	•
Certificate of Conformance (F3391)	F3	•
Certificate of Origin (F0195)	F5	•

TABLE II - Options Continued

Approvals				Availability
Approval Body	**Approval Type**	**Location or Classification**	**Selection**	
None	None	No hazardous location approvals	9X	•
FM	Nonincendive	CL I, Div 2, Groups A, B, C, D; CL II, Div 2, Groups F & G ; Class III, T4 Ta = 85°C	1T	
	Non-Sparking	Class I Zone 2: AEx nA IIC, T4 Ta = 85°C		
	Intrinsically Safe	Class I, Div 1, Groups A, B, C, D; Class II Div 1, Groups E, F, G; Class III, Div 1, T4 Ta = 85°C Class I Zone 0: AEx ia IIC, T4 Ta = 85°C		
CSA cus	Nonincendive	CL I, Div 2, Groups A, B, C, D; CL II, Div 2, Groups F & G ; Class III, T4 Ta = 85°C	2T	•
	Non-Sparking	Class I Zone 2: Ex nA IIC, T4 Ta = 85°C Class I Zone 2: AEx nA IIC, T4 Ta = 85°C		
	Intrinsically Safe	Class I, Div 1, Groups A, B, C, D; Class II Div 1, Groups E, F, G; Class III, Div 1, T4 Ta = 85°C Class I Zone 0: Ex ia IIC, T4 Ta = 85°C Class I Zone 0: AEx ia IIC, T4 Ta = 85°C		
ATEX	Intrinsically Safe	Ⓔ II 1 GD Ex ia IIC, T4 Ta = 85°C	3T*	
	Non-Sparking	Ⓔ II 3 GD Ex nA IIC, T4 Ta = 85°C		
	Non-Sparking	Ⓔ II 3 GD Ex nA IIC, T4 Ta = 85°C	3Y	
IECEx* (Australia & New Zealand)	Intrinsically Safe	Ex ia IIC, T4 Ta = 85°C	CT*	
	Non-Sparking	Ex nA IIC, T4 Ta = 85°C		

b

***Apparatus marked with multiple types of protection**

The user must determine the type of protection required for installation of the equipment. Once a type of protection has been checked on the nameplate, the equipment shall not then be reinstalled using any of the other certification types.

WARNING – Division 2 / Zone 2 apparatus may only be connected to processes classified as non-hazardous or Division 2 / Zone 2. Connection to hazardous (flammable or ignition capable) Division 1 / Zone 0, or 1 process is not permitted.

TABLE III

Factory Identification		XXXX	•

RESTRICTIONS

Restriction	Available Only With		Not Available With	
Code	**Table**	**Selection**	**Table**	**Selection**
b	II	Select one option from the items shown within the brackets		

CET5500M SmartCET Corrosion Transmitter Supplemental Accessories & Kits

Description	Part Number**
Remote Probe Cable – 6 Ft	50022365-011
Remote Probe Cable – 12 Ft	50022365-012
Conduit Plug - M20, IP66-68, 4X, 6P –40 – 85°C ATEX EEx de IIC	50027942-503
Conduit Plug - 1/2 NPT, IP66-68, 4/4X ,6/6P –40 – 85°C, ATEX EEx d IIC, CSAcus	50021832-502
Cable Gland - M20, IP68 –40 – 100°C	50027942-507
Cable Gland - 1/2 NPT, IP68 –40 – 100°C	50027942-505

** Consult Honeywell order entry systems for current numbers and pricing.

Honeywell Predict® Corrosion Suite

Honeywell Predict Corrosion Suite provides next generation corrosion management solution or oil and gas and refining industries seeking to move from reacting to corrosion damage to a more proactive and effective approach, Honeywell Predict® Corrosion Suite provides the next generation of corrosion management solutions. Unlike conventional corrosion management methods, we employ unique prediction models that encapsulate deep expertise and extensive process data to correlate corrosion rates to specific process units, damage mechanisms, and operating conditions. Using Honeywell's tools, global major companies have achieved significant operational and business benefits.

The Honeywell Predict Corrosion Suite is a unique solution for today's industrial facilities, driving a paradigm shift in tackling difficult corrosion problems, and enabling efficient and safe operations. These software tools help users move away from a reactive response to corrosion based on qualitative, manual inspections, to a proactive, reliability-centric predictive approach based on quantitative information from soft sensors, sound process deviation management, and "what-if" scenario analysis tools.

Why Honeywell?

Your operation can benefit from partnering with a proven leader in corrosion asset integrity and preventive/predictive corrosion management. Honeywell has extensive intellectual property in the corrosion field, including unique corrosion prediction and material selection models, and patented corrosion monitoring technology. Our deep expertise includes an in-house team of experts with decades of experience in developing corrosion solutions. Honeywell's IP-based models are licensed and used by many global oil & gas majors, and our company has a recognized track record of world-class execution of projects.

Honeywell has also established a unique corrosion knowledge community through our Center of Excellence (COE). We assist customers with expert local and remote support. Our state-of-the-art corrosion and materials research and engineering laboratory provides a host of standard and tailored services. Utilized in Joint Industry Programs and customized testing, this facility can simulate any service environment.

For More Information

Learn more about Honeywell's Corrosion Solutions, visit www.honeywellprocess.com/Corrosion or contact your Honeywell Account Manager, Distributor or System Integrator.

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Honeywell Process Solutions

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