Rosemount 702 Discrete Input Transmitter

- *An installation-ready solution that provides dual discrete inputs*
- *Single or dual switch input with logic for limit contact and opposing contact applications*
- *Flexibility to meet your most demanding applications*
- *Wireless output with >99% data reliability delivers rich HART data, protected by industry leading security*

Contents

SELF-ORGANIZING NETWORKS

Self-forming, intelligent devices that provide exceptional data reliability and network stability. The Rosemount 702 works the same as wired devices, allowing you to leverage existing practices, training and maintenance procedures, but without the added wiring costs.

LAYERED SECURITY KEEPS YOUR NETWORK SAFE

Emerson Process Management's layered approach to wireless network security ensures that your network stays protected. The network devices implement Encryption, Authentication, Verification, Anti-Jamming and Key Management methods to ensure that data transmissions are received only by the Wireless Gateway.

SMARTPOWER™

Rosemount devices incorporate SmartPower™. SmartPower™ refers to the benefits that users enjoy due to the engineering efforts made to reduce power consumption. Emerson has power-optimized our instrumentation, both hardware and software, to extend power module life while still delivering highly reliable measurements with rich HART data and diagnostic information.

INTEGRAL LCD DISPLAY

Local indication of discrete input state and diagnostics provides real time and accurate verification of process conditions.

RELIABLE TRANSMITTER PERFORMANCE

The 702 ensures top transmitter performance in harsh and/or noisy EMI/RFI environments.

DIGITAL FIELD DEVICES THAT POWER PLANTWEB

The Rosemount 702 powers *PlantWeb*® by communicating important discrete input state to ensure process health and enable economical single or dual switch architecture.

MOUNTING FLEXIBILITY

PlantWeb head mount transmitters to be direct mounted via a switch or remote mounted, allowing the flexibility needed to reach any measurement point. The *PlantWeb* head also offers an LCD for local display that is easily visible, even in remote installations.

SMART WIRELESS SOLUTIONS

1420 Wireless Gateway

The 1420 enables the most robust security available, easy host integration with no additional software and continuously is optimizing network performance to maximize data reliability and power module life of the wireless devices.

Rosemount 3051S Wireless Series

The scalable 3051S enables fully integrated pressure, flow and level self organizing network solutions to optimize plant performance and reduce risk.

Rosemount 648 Wireless Temperature Transmitter

The Rosemount 648 integrates temperature measurement into a self organizing network, providing best in class security, reliability, SmartPower, and network scalability, optimizing plant performance while minimizing maintenance.

Wireless Overview

Devices

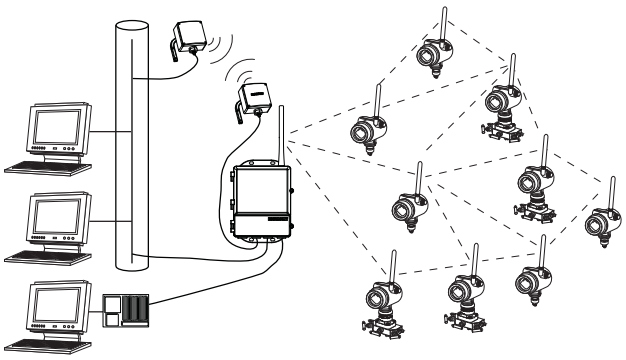
The Rosemount 702 is a Smart Wireless discrete input device. Along with the other devices in the Self-Organizing Network, it is easy to install, and provides reliable measurement and diagnostics data to the Information System via the 1420 Wireless Gateway.

Gateway

The 1420 Wireless Gateway enables the most robust security available, easy host integration with no additional software and continuously is optimizing network performance to maximize data reliability and power module life of the wireless devices.

Seamless Integration

Smart Wireless devices from Emerson Process Management provide measurement data and diagnostics data back to any type of information system including Serial Modbus, Modbus TCP, OPC, legacy systems and data historians.



Specifications

Functional Specifications

Input

Single or dual SPST dry contacts, single SPDT dry contacts. To maintain I.S. ratings, contacts must be limited to simple switches only.

Output

Wireless enabled *HART*.

Local Display

The optional integral LCD dan display discrete state and diagnostic information. Display updates at transmit rate up to once per minute.

Humidity Limits

0–100% relative humidity

Transmit Rate

User selectable, 15 sec. to 60 min.

Physical Specifications

Electrical Connections

Wireless Power Module

Replaceable, Intrinsically Safe Lithium-Thionyl Chloride power module with PBT enclosure. Eight year life at one minute transmit rate; ten year life at 10 minute transmit rate.(1)

Switch Terminals

Screw terminals permanently fixed to terminal block

HART Communicator Connections

Communication Terminals

Clips permanently fixed to terminal block

Materials of Construction

Enclosure

Housing - Low-copper aluminum

Paint - Polyurethane

Cover O-ring - Buna-N

Terminal Block and Power Module Pack

PBT

Antenna

PBT/PC integrated omnidirectional antenna

Weight

702 without LCD - 4.6 lbs. (2 kg)

702 with M5 LCD - 4.7 lbs (2.1 kg)

Enclosure Ratings (702)

Housing option code D is NEMA 4X, and IP66.

Mounting

Transmitters may be attached directly to switch, brackets also permit remote mounting. See “Dimensional Drawings” on page 6.

(1) Reference conditions are 70° F (21° C), and routing data for three additional network devices.
NOTE: Continuous exposure to ambient temperature limits (-40 °F or 185 °F) (-40 °C or 85 °C) may reduce specified power module life by less than 20 percent.

Performance Specifications

ElectroMagnetic Compatibility (EMC)

All Models:

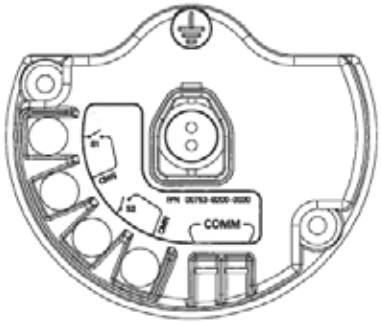
Meets all relevant requirements of EN 61326.

Vibration Effect

Output unaffected when tested per the requirements of IEC60770-1 field or pipeline with high vibration level (10-60 Hz 0.21mm displacement peak amplitude / 60-2000 Hz 3g).

Housing Style codes 1J, 1K, 1L, 2J
Output unaffected when tested per the requirements of IEC60770-1 field with general application or pipeline with low vibration level (10-60 Hz 0.15mm displacement peak amplitude / 60-500 Hz 2g).

Switch Connections



702 Sensor Connections Diagram

Temperature Limits

Description	Operating Limit	Storage Limit
Without LCD Display	–40 to 185 °F –40 to 85 °C	–40 to 185 °F –40 to 85 °C
With LCD Display	–4 to 175 °F –20 to 80 °C	–40 to 185 °F –40 to 85 °C

Output Specifications

Dual Input Dual Output

PV will output Discrete input 1. SV will output Discrete input 2. Open switch is FALSE output. Closed switch is TRUE output.

Dual Input Single Output

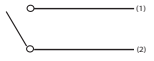
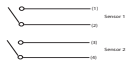
Limit contact logic.

Discrete Input 1	Discrete Input 2	Logic State
FALSE	FALSE	TRAVEL
FALSE	TRUE	FALSE
TRUE	FALSE	TRUE
TRUE	TRUE	FAULT

Opposing Contact Logic

Discrete Input 1	Discrete Input 2	Logic State
FALSE	FALSE	FAULT
FALSE	TRUE	FALSE
TRUE	FALSE	TRUE
TRUE	TRUE	FAULT

Switch Connections Diagram

Single SPST	Dual SPST	Logic State
		

Product Certifications

ROSEMOUNT 702

Approved Manufacturing Locations

Rosemount Inc. – Chanhassen, Minnesota, USA
Emerson Process Management GmbH & Co. - Karlstein, Germany
Emerson Process Management Asia Pacific Private Limited - Singapore

European Directive Information

The EC declaration of conformity for all applicable European directives for this product can be found at www.rosemount.com. A hard copy may be obtained by contacting an Emerson Process Management representative.

ATEX Directive (94/9/EC)

Emerson Process Management complies with the ATEX Directive.

Electro Magnetic Compatibility (EMC) (2004/108/EC)

EN 61326-1 1997, Amendments A1, A2, and A3

Radio and Telecommunications Terminal Equipment Directive (R&TTE) (1999/5/EC)

Emerson Process Management complies with the R&TTE Directive.

Telecommunication Compliance

All wireless devices require certification to ensure that they adhere to regulations regarding the use of the RF spectrum. Nearly every country requires this type of product certification. Emerson is working with governmental agencies around the world to supply fully compliant products and remove the risk of violating country directives or laws governing wireless device usage. To see which countries our devices have received certification for use in, see www.rosemount.com/smartwireless.

FCC and IC

This device complies with Part 15 of the FCC Rules. Operation is subject to the following conditions: This device may not cause harmful interference. This device must accept any interference received, including interference that may cause undesired operation.

This device must be installed to ensure a minimum antenna separation distance of 20 cm from all persons.

Ordinary Location Certification for FM

As standard, the transmitter has been examined and tested to determine that the design meets basic electrical, mechanical, and fire protection requirements by FM, a nationally recognized testing laboratory (NRTL) as accredited by the Federal Occupational Safety and Health Administration (OSHA).

Hazardous Locations Certificates

North American Certifications

Factory Mutual (FM) Approvals

I5 FM Intrinsic Safety and Non-incendive
Intrinsically Safe for Class I/II/III, Division 1, Groups A, B, C, D, E, F, and G.
Zone Marking: Class I, Zone 0, AEx ia IIC
Temperature Codes T4 (T_{amb} = -50 to 70° C)
Non-incendive for Class I, Division 2, Groups A, B, C, and D.
Intrinsically Safe and non-incendive when installed in accordance with Rosemount drawing 00702-1000.
For use with Rosemount SmartPower options 753-9220-XXXX only.
Enclosure Type 4X / IP66

CSA - Canadian Standards Association

I6 CSA Intrinsic Safety
Intrinsically Safe for Class I, Division 1, Groups A, B, C, and D.
Temp Code T3C
Enclosure Type 4X / IP66
For use with Rosemount SmartPower options 753-9220-XXXX only.
Intrinsically Safe when installed per Rosemount drawing 00702-1020

European Certifications

I1 ATEX Intrinsic Safety
Certificate No.: BASEEFA07ATEX0239 Ⓔx II 1G
Ex ia IIC T4 (T_a = -60 °C to 70 °C)
IP66
For use with Rosemount SmartPower options 753-9220-XXXX only.

CE 1180

TABLE 1. Switch Terminal Parameters

Sensor
U_o = 6.6 V
I_o = 3.6 mA
P_o = 23.3 mW
C_o = 11 uF
L_o = 500 mH

IECEx Certifcations

I7 IECEx Intrinsic Safety
Certificate No.: IECExBAS07.0082
Ex ia IIC T4 (T_{amb} = -60 °C to 70 °C)
IP66
For use with Rosemount SmartPower™ options
753-9220-XXXX only.

TABLE 2. Switch Terminal Parameters

Sensor
U_o = 6.6 V
I_o = 3.6 mA
P_o = 23.3 mW
C_o = 11 uF
L_o = 500 mH

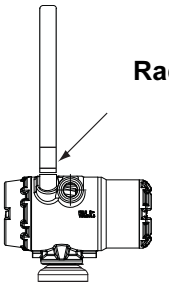
CE ⓘ

TABLE 3.

Country	Restriction
Bulgaria	General authorization required for outdoor use and public service
France	Outdoor use limited to 10mW e.i.r.p.
Italy	If used outside of own premises, general authorization is required.
Norway	May be restricted in the geographical area within a radius of 20 km from the center of Ny-Alesund.
Romania	Use on a secondary basis. Individual license required.

Radio Power Label - see Figure 1 - indicates output power configuration of the radio. Devices with this label are configured for output power less than 10 mW e.i.r.p. At time of purchase the customer must specify ultimate country of installation and operation.

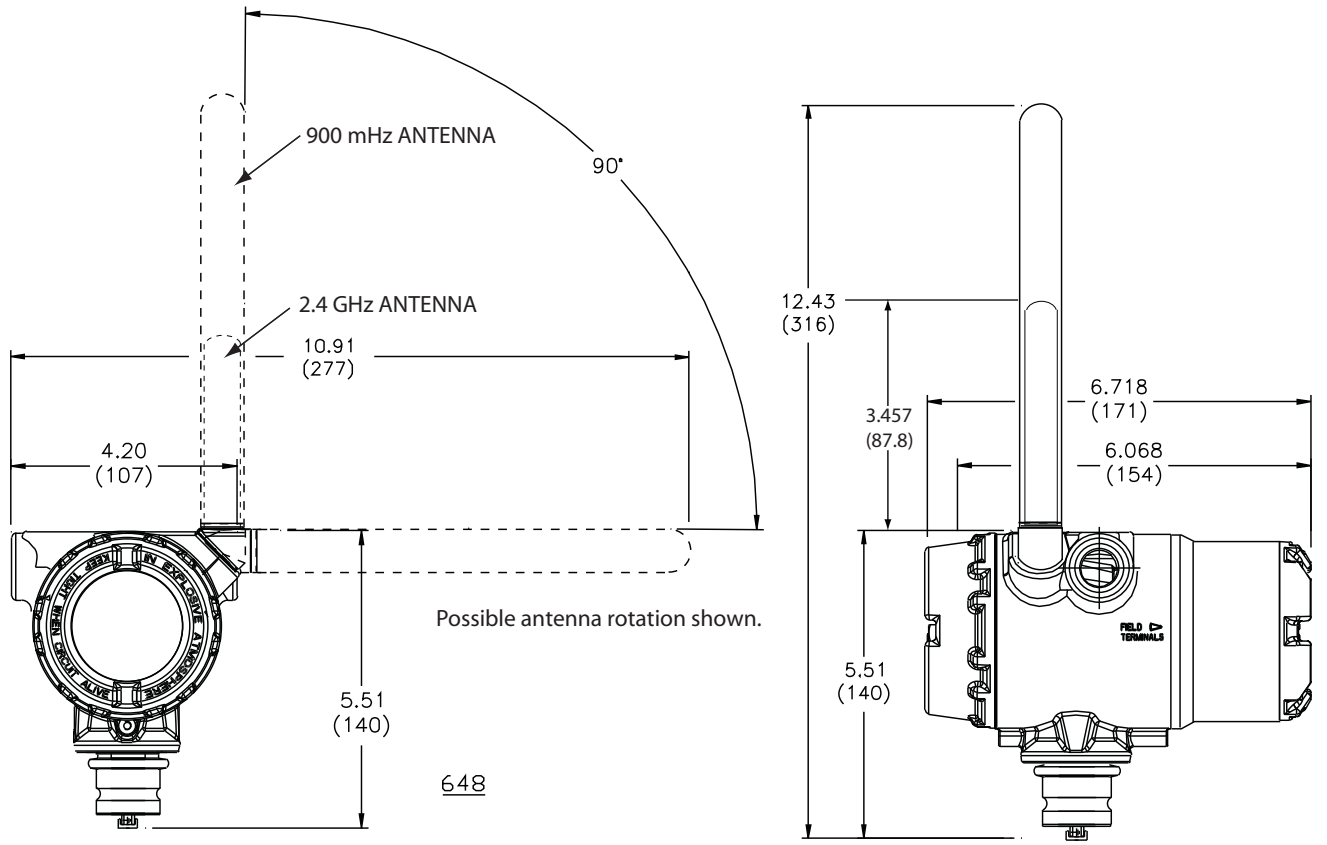
FIGURE 1.



Radio Power Label

Dimensional Drawings

702 Direct Mount



Dimensions are in inches (millimeters)

Ordering Information

Model	Product Description	
702	DiscreteTransmitter	
Code	**Transmitter Type**	
D	Wireless Field Mount	
Code	**Output**	
X	Wireless	
Code	**Measurement**	
22	Dual Input	
Code	**Housing**	**Metal**
D	Dual Compartment Housing - Aluminum	AL
Code	**Conduit Threads**	
1	1/2 - 14 NPT	
Code	**Certifications**	
I5	FM Intrinsically Safe, Non-incendive	
I6	CSA Intrinsically Safe	
I1	ATEX Intrinsically Safe	
I7	IECEx Intrinsically Safe	
NA	No Approval	
Code	**Wireless Options**	
Wireless Transmitter Rate		
WA	User Configurable Transmit Rate	
Operating Frequency and Protocol		
1	2.4 GHz DSSS, HART	
2	900MHz FHSS, HART	
Antenna		
WK	Integral, Omnidirectional Antenna Long-life	
SmartPower™		
1	Long-life Power Module Adapter, Intrinsically Safe	
	Note: Long-life Power Module must be shipped separately, order Part #00753-9220-0001	
Meter		
M5	LCD Meter	
Mounting Bracket		
B4	Universal L mounting bracket for 2-inch pipe mounting - SST bracket and bolts	
Configuration		
C1	Factory Configure Date, Descriptor, Message Fields, and Wireless Parameters	
Cable Gland		
G2	Cable gland (7.5 mm - 11.9 mm)	
G4	Thin Wire Cable Gland (3 mm - 8 mm)	
Typical Model Number: 702 D X 22 D 1 NA WA1 WK1 M5		

Rosemount 702

Product Data Sheet
00813-0100-4702, Rev BA
Catalog 2008 - 2009

The Emerson logo is a trade mark and service mark of Emerson Electric Co.
Rosemount and the Rosemount logotype are registered trademarks of Rosemount Inc.
PlantWeb is a registered trademark of one of the Emerson Process Management group of companies.
All other marks are the property of their respective owners.

Standard Terms and Conditions of Sale can be found at www.rosemount.com\terms_of_sale

Emerson Process Management

Rosemount Inc.
8200 Market Boulevard
Chanhassen, MN 55317 USA
T (U.S.) 1-800-999-9307
T (International) (952) 906-8888
F (952) 949-7001

www.rosemount.com

Emerson Process Management
Heath Place
Bognor Regis
West Sussex PO22 9SH
England
T 44 (1243) 863 121
F 44 (1243) 867 554

Emerson Process Management Asia Pacific Private Limited
1 Pandan Crescent
Singapore 128461
T (65) 6777 8211
F (65) 6777 0947
Enquiries@AP.EmersonProcess.com

© 2008 Rosemount Inc. All rights reserved.

EMERSON™
Process Management