

# Rosemount® 3051S Pressure Transmitters with Cold Temperature Start-Up Option

## 1 Introduction

Rosemount 3051S Transmitters are rated for use and operation from -40 to +185 °F (-40 to + 85 °C). Emerson offers a “Cold Temperature Start-Up” option (order code A1003) in which the transmitter is guaranteed to power-up and function in temperatures as low as -58 °F (-50 °C).

Specifying the A1003 option does not impact any of the published performance or functional specifications for the Rosemount 3051S when the transmitter is operating within its normal ambient temperature range of -40 to + 185 °F (-40 to + 85 °C), even if the transmitter had previously been exposed to temperatures as low as -58 °F (-50 °C).

The A1003 option is only a verification that the Rosemount 3051S will start up and function at -58 °F (-50 °C), and the option code does not guarantee adherence to published specifications while operating the transmitter in temperatures below -40 °F (-40 °C). Considerations for operating a Rosemount 3051S in temperatures below -40 °F (-40 °C) are detailed below.

## 2 Factors that may impact the operating temperature of a pressure transmitter

The operating temperature of the pressure transmitter in many applications is elevated compared to the surrounding ambient temperature due to heat transfer from the process medium. Thus, the operational temperature of the transmitter is actually a combination of the ambient and process temperatures. This temperature can be impacted by how far the transmitter is mounted from the process, the use of insulation, heat tracing, or other installation practices.

The Rosemount 3051S continuously measures its internal temperature. This is available as a secondary variable that can be displayed locally on the transmitter or accessed digitally using a Field Communicator, AMS® Device Manager, or other asset management software packages.

## 3 Considerations for operating at temperatures below -40 °F (-40 °C)

As stated earlier, the A1003 option is a verification that the Rosemount 3051S will start up and function at -58 °F (-50 °C). Additional precautions and considerations should be made if it is expected that the transmitter may be continuously operating at temperatures below the normal operation limit of -40 °F (-40 °C). These considerations include, but are not limited to:

- **Measurement Performance:** The accuracy and responsiveness of the pressure transmitter may be reduced when operating at temperatures below -40 °F (-40 °C).
- **Maximum Working Pressure:** The maximum working pressure of the transmitter is reduced when operating below -40 °F (-40 °C). As the operating temperature of the transmitter is a combination of process and ambient temperatures, the temperature at the transmitter is normally elevated compared to the surrounding ambient temperature except when the process is shut down and during start up. At these times it is common for the process to be at reduced pressures, but the application requirements should be verified before continuously operating the transmitter at temperatures below -40 °F (-40 °C).
- **Local Display:** The readability of the local display installed on the transmitter may be compromised at temperatures below -4 °F (-20 °C). In extremely cold temperatures, the values on the display may not fully develop and could include faded or missing segments. The display will not be damaged if exposed to temperatures down to -58 °F (-50 °C) and normal readability and functionality will resume when temperatures return to nominal operating temperatures.
- **Power to Device:** The Rosemount 3051S requires a minimum of 10.5 V DC at the terminals of the device in order to power up and operate. Ensure the power supply used for the application can still supply the required 10.5 V DC even in cold temperatures.

## 4 Exclusions with the A1003 Cold Temperature Option

The following features, certifications, and options are not available on a Rosemount 3051S ordered with A1003 Cold Temperature Start-Up Verification.

---

### Note

Most hazardous location approvals are available with the A1003 Cold Temperature Option including CSA and FM explosion-proof and intrinsically safe.

---

### 4.1 Option P0: DP Transmitter with Increased Maximum Working Pressure up to 6092 psig (420 bar)

Because the maximum working pressure of the transmitter is reduced when continuously operated in temperatures below -40 °F (-40 °C), the P0 option is not available on a device specified with A1003.

## 4.2 Option QT: Safety Certified to IEC 61508 with certificate of FMEDA Data

The Failure Mode Effect and Diagnostic Analysis (FMEDA) performed by Exida was conducted over the nominal published temperature range of -40 to + 185 °F (-40 to + 85 °C). As such the FMEDA analysis is not applicable for temperatures below -40 °F (-40 °C).

## 4.3 Wireless




Wireless transmitters can function in cold ambient conditions, but additional considerations are required that are documented in “Smart Wireless Cold Temperature Operation and Specification” (document number 00809-0100-4422).

---

## Global Headquarters

### Emerson Process Management




6021 Innovation Blvd  
Shakopee, MN 55379, USA

-  +1 800 999 9307 or +1 952 906 8888
-  +1 952 949 7001
-  RFQ.RMD-RCC@EmersonProcess.com

## North America Regional Office

### Emerson Process Management




8200 Market Blvd.  
Chanhassen, MN 55317, USA

-  +1 800 999 9307 or +1 952 906 8888
-  +1 952 949 7001
-  RMT-NA.RCCRFQ@Emerson.com

## Latin America Regional Office

### Emerson Process Management




1300 Concord Terrace, Suite 400  
Sunrise, Florida, 33323, USA

-  +1 954 846 5030
-  +1 954 846 5121
-  RFQ.RMD-RCC@EmersonProcess.com

## Europe Regional Office

### Emerson Process Management Europe GmbH




Neuhofstrasse 19a P.O. Box 1046  
CH 6340 Baar  
Switzerland

-  +41 (0) 41 768 6111
-  +41 (0) 41 768 6300
-  RFQ.RMD-RCC@EmersonProcess.com

## Asia Pacific Regional Office

### Emerson Process Management Asia Pacific Pte Ltd




1 Pandan Crescent  
Singapore 128461

-  +65 6777 8211
-  +65 6777 0947
-  Enquiries@AP.EmersonProcess.com

## Middle East and Africa Regional Office

### Emerson Process Management

Emerson FZE P.O. Box 17033,  
Jebel Ali Free Zone - South 2  
Dubai, United Arab Emirates

-  +971 4 8118100
-  +971 4 8865465
-  RFQ.RMTMEA@Emerson.com

Standard Terms and Conditions of Sale can be found at:  
[www.rosemount.com/terms\\_of\\_sale](http://www.rosemount.com/terms_of_sale).  
The Emerson logo is a trademark and service mark of Emerson Electric Co.  
AMS is a registered trademark of Emerson Electric Co.  
Rosemount and Rosemount logotype are registered trademarks of Rosemount Inc.  
All other marks are the property of their respective owners.  
© 2015 Rosemount Inc. All rights reserved.