Manual
MS-00809-0100-4082, Rev AC
December 2025

Rosemount™ 802

Wireless Multi Discrete I/O Transmitter



ROSEMOUNT™

EMERSON™

Safety messages

⚠ WARNING

Failure to follow safe installation and servicing guidelines could result in death or serious injury.

Ensure only qualified personnel perform installation or service.

Ground the electronics enclosure in accordance with local and national installation codes.

⚠ WARNING

Explosions

Installation of device in an explosive environment must be in accordance with appropriate local, national, and international standards, codes, and practices.

Verify that the operating environment of the device is consistent with the appropriate hazardous locations certifications.

Before connecting a field communicator in an explosive atmosphere, ensure that the instruments are installed in accordance with intrinsically safe or non-incendive field wiring practices.

⚠ WARNING

Electrostatic hazard

Do not open when energized.

Avertissement - Risque d'explosion. Ne pas ourvrir lorsque sous tension.

The surface resistivity of the antenna is greater than one gigaohm. To avoid electrostatic charge build-up, it must not be rubbed or cleaned with solvents or a dry cloth.

⚠ WARNING

Conduit/cable entries

The conduit/cable entries in the transmitter housing use a ½–14 NPT thread form.

When installing in a hazardous location, use only appropriately listed or Ex-certified plugs, glands, or adapters in cable/conduit entries.

Ensure external conduit/cable fittings are Type 4X rated or better (C22.2 No 94.2/UL 50E requirement).

⚠ WARNING

Physical access

Unauthorized personnel may potentially cause significant damage to and/or misconfiguration of end users' equipment. This could be intentional or unintentional and needs to be protected against.

Physical security is an important part of any security program and fundamental in protecting your system. Restrict physical access by unauthorized personnel to protect end users' assets. This is true for all systems used within the facility.

NOTICE

Shipping considerations for wireless products (lithium batteries: Black Power Module, model number 701PBKKF):

Emerson shipped the transmitter to you without the Black Power Module installed. Remove the Black Power Module prior to shipping the transmitter. Each Black Power Module contains two *C* size primary lithium batteries. Primary lithium batteries are regulated in transportation by the U.S. Department of Transportation and are also covered by the International Air Transport Association (IATA), International Civil Aviation Organization (ICAO), and European Ground Transportation of Dangerous Goods (ADR).

It is the shipper's responsibility to ensure compliance with these or any other local requirements. Before shipping, consult current regulations and requirements.

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1 Introduction

1.1 Models covered

This manual covers the following Rosemount 802 Transmitter:

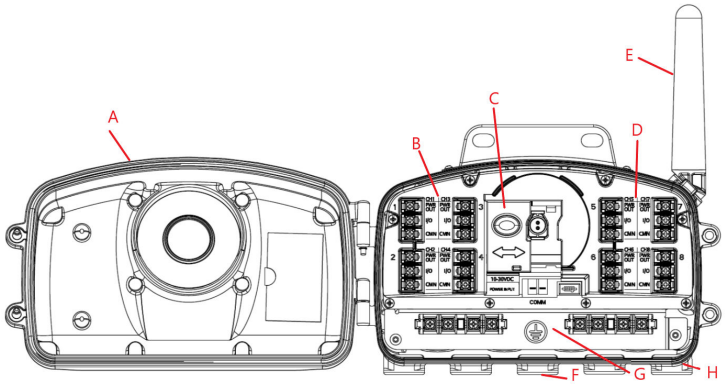
- 802DX42 Wireless Multi Discrete I/O Transmitter
  - Eight discrete input or output channels
  - Each channel configurable to discrete input or discrete output

1.2 Transmitter overview

Features of the Rosemount 802 include:

- *Wireless*HART® technology is secure and cost-effective and delivers >99 percent data reliability.
- Versatile power options with Emerson 701P SmartPower™ Module or 10-30 Vdc external power. SmartPower Module provides up to seven-year maintenance-free operation and field replacement without transmitter removal.
- The device can be used for simple control when using outputs or to monitor the state of a simple switch for application flexibility.
- The 802 reports discrete state using HART discrete variables.
  - The 802 can report either counts or discrete state using HART Analog variables with software revision 2 or higher.
  - Software revision 1 will always report counts using the HART Analog variables.
- Adaptable device takes input from a variety of non-powered switch types, such as pressure, flow, and level switches.
- Field-hardened enclosure allows for installation close to any process, even in harsh environments and hazardous areas.
- Easy, intuitive installation enables a quick method to automate without the cost or wiring.

1.2.1 Rosemount 802 Transmitter



A. Cover
B. Discrete terminals 1-4
C. Power input slider
D. Discrete terminals 5-8
E. Antenna
F. Conduit plugs (Quantity: 5)
G. Ground plate
H. External ground lug

1.3 Electrical

Caring for the power module

The Rosemount 802 can be powered with a power module. The power module contains two C-size lithium/thionyl chloride batteries. Each battery contains approximately 2.5 g of lithium, for a total of 5 g in each pack. Under normal conditions, the battery materials are self-contained and are not reactive as long as the batteries and the power module are maintained.

NOTICE

Take care to prevent thermal, electrical, or mechanical damage. Protect contacts to prevent premature discharge.

NOTICE

The power module may be damaged if dropped from heights in excess of 20 ft. (6.1 m).

Use caution when handling the power module.

1.4 Environmental

Verify the transmitter's operating atmosphere is consistent with the appropriate hazardous locations certifications.

Temperature effects

The Rosemount 802 operates within specifications for ambient temperatures of -40 °F to +185 °F (-40 °C to +85 °C).

NOTICE

If the ambient temperature is outside the specification limits, consider moving the transmitter to a location within the specified limits.

1.5 Product recycling/disposal

Consider recycling equipment and packaging.

Dispose of the product and packaging in accordance with local and national legislation/ regulations.

1.6 Related product training

To ensure that your training efforts continually evolve with technology, Emerson offers a broad portfolio of different solutions and delivery methods that can be easily adapted to help meet your business needs. Our scalable, customizable training packages let you match the right training solutions to your operational needs and budget.

To learn more, visit Emerson Training.

For the best user experience, log into MyEmerson.com.

2 Configuration

2.1 Configuration overview

This section contains information on commissioning and tasks that must be performed on the bench prior to installation, as well as tasks performed after installation.

This section also provides instructions on configuring using any communication device, including:

- Field Communicator, such as AMS Trex
- HART® host, such as AMS Device Manager
- AMS Device Configurator

2.2 System readiness

If using HART®-based control or asset management systems, confirm the HART capability of such systems prior to commissioning and installation. Not all systems are capable of communicating with HART Revision 7 devices.

2.3 Confirm correct device driver

Verify the latest device driver (DD/FDI/DTM™) is loaded on the systems to ensure proper communication.

Procedure

Go to Software & Drivers on Emerson.com or FieldCommGroup.org.

- If using Emerson.com:
  a. Click **Device Driver Hub**.
  b. Search by product name and/or brand.
  c. Use the device revision numbers to find the correct DD.
  d. Click **Download**.

Table 2-1: Rosemount 802 Device Revisions and Files

Release date	Device identification				Device driver identification	Review instructions	Review functionality
	NAMUR software revision(1)	NAMUR hardware revision(1)	HART® software revision(2)	HART universal revision	Device revision(3)	Manual document number	Change description
March 2023	1.0.xx	1.0.xx	01	7	01	MS-00809-0100-4082	Initial release
April 2025	2.0.xx	1.0.xx	02	7	02	MS-00809-0100-4082	Standard HART analog values added

(1) The NAMUR revision is located on the transmitter's hardware tag. Differences in level 3 changes, signified by xx, represent minor changes as defined per NE53. Compatibility and functionality are preserved, and the products can be used interchangeably.

(2) Read the HART software revision with a HART-capable configuration tool. The value shown is the minimum revision that could correspond to NAMUR revisions.

(3) Device driver file names use device and DD revision. For example, a device revision 1 with a DD revision 2 would have "01_02" in the name. The HART protocol is designed to enable legacy device driver revisions to continue to communicate with new HART devices. To access new functionality, download the new device driver. Emerson recommends downloading new device driver flows to ensure full functionality.

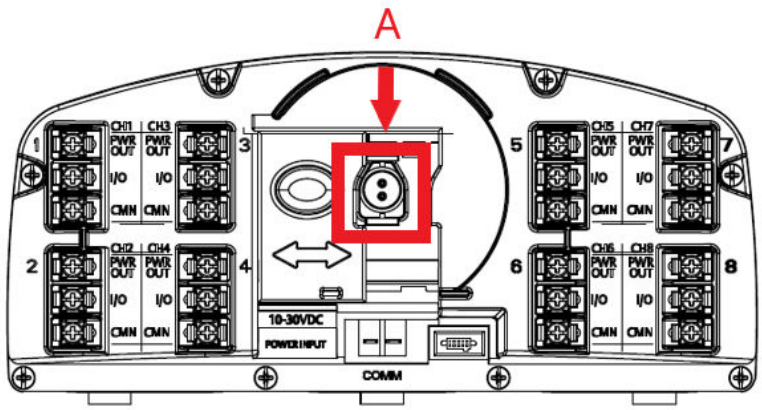
2.4 Configure the transmitter

The Rosemount 802 can be configured either before or after installation, using either a Rosemount 701P SmartPower™ Module or an external 10 - 30 Vdc power supply.

Procedure

1. To ensure all transmitter components are in working order prior to installation, configure the transmitter on the bench using the applicable communication device and power supply.
2. Power the transmitter in one of two ways:
   - Ensure the slider is in the power module position. See Figure 2-1.

Figure 2-1: Power Module Configuration

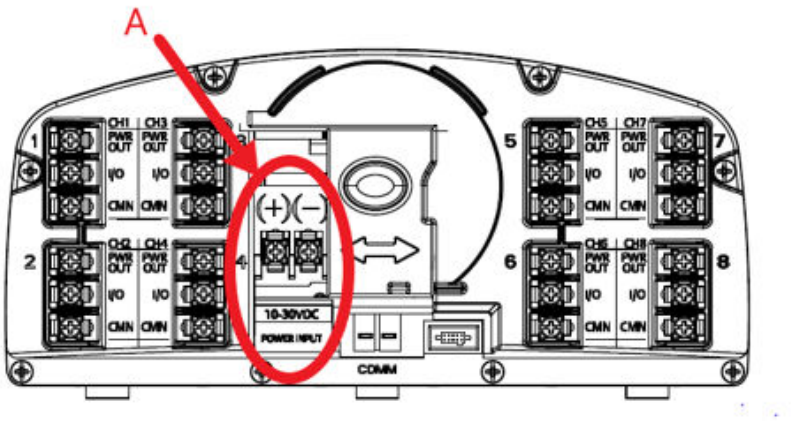


A. Plastic plug - To be removed prior to power module installation

Install the 701P SmartPower Module into the transmitter to power the device.

- Move the mechanical slider to expose the external DC power supply terminals as shown in Figure 2-2 and power the transmitter with a 10-30 Vdc power source.

Figure 2-2: External Power Supply Configuration



A. Power supply connections

Input voltage	10 - 30 Vdc
Maximum input current	805 mA

Power supply must be isolated from AC mains and provide transient free DC input power to the transmitter

Postrequisites

Note
Refer to the Rosemount 802 Wireless Multi Discrete I/O Transmitter Quick Start Guide for Intrinsically Safe (IS) approval for IIC gas groups when using external DC line power.

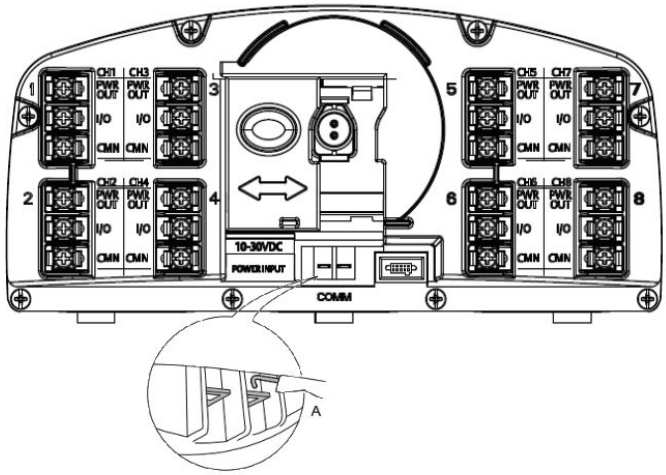
2.4.1 Configure with a Field Communicator

For more detailed information about AMS Trex, refer to AMS Trex Device Communicator.

Procedure

Load the latest Device Drivers (DDs) onto the Field Communicator to ensure full functionality.

Figure 2-3: Connection Diagram



A. Communication terminals

Note
The Emerson 475 Field Communicator will not work as a communication device for the Rosemount 802 Transmitter.

Related information

System readiness

2.4.2 Configuring with AMS Device Manager

For more detailed information, see AMS Device Manager.

It is critical that the latest Device Drivers (DDs) is loaded onto AMS Device Manager to ensure full functionality.

Related information

System readiness

2.4.3 Configuring with AMS Device Configurator for field devices

For more detailed information about AMS Device Configurator, see AMS Device Configurator for Emerson Field Devices.

2.5 Device network configuration

2.5.1 Configure transmitter to *Wireless*HART® gateway

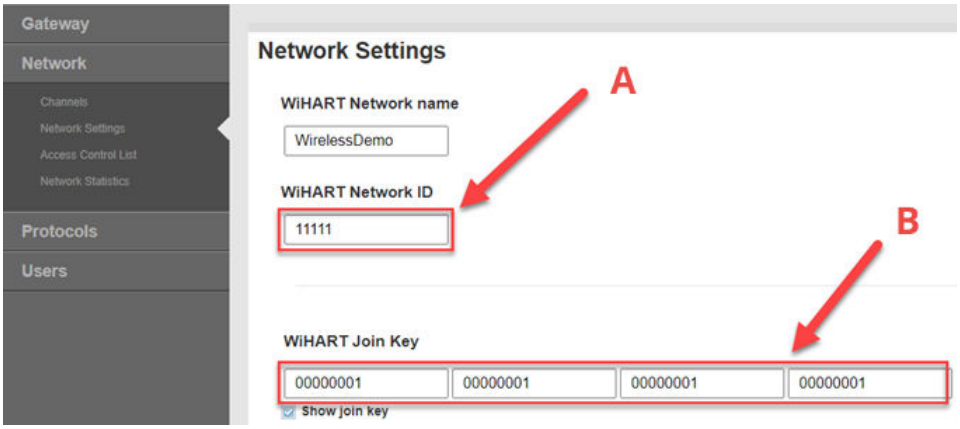
If the Rosemount 802 was ordered with a factory-configured network ID and join key, it should join the network without user input.

If uncertain whether the device was ordered with the factory-configured option, manually enter the **WirelessHART Network ID** and **WirelessHART Join Key** to match the gateway.

Procedure

1. To obtain the **WirelessHART Network ID** and **WirelessHART Join Key**, go to **Network** → **Network Settings** in the gateway user interface.

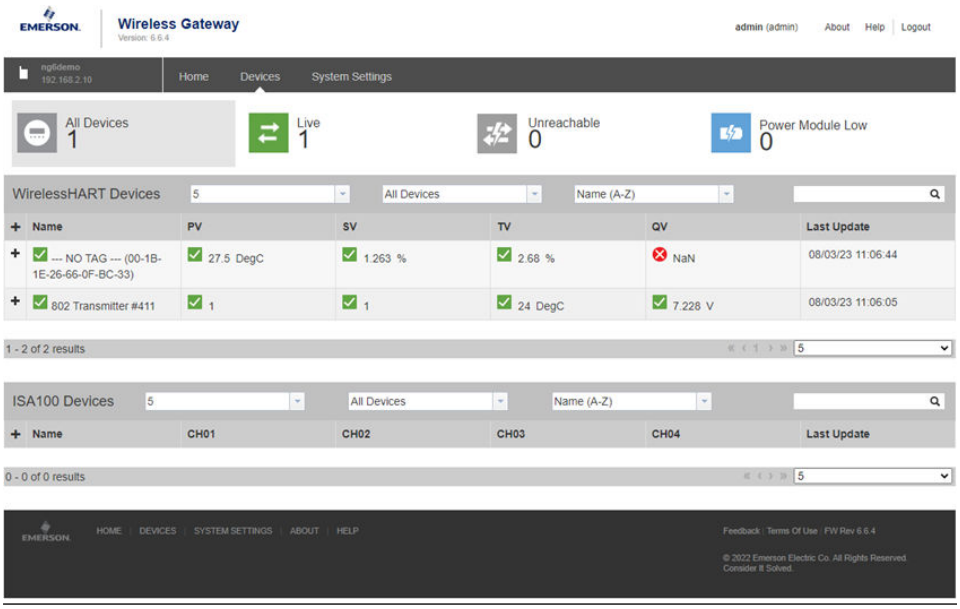
Figure 2-4: *Network Settings* Page in Gateway User Interface



A. ***WirelessHART Network ID***
B. ***WirelessHART Join Key***

2. Use a communication device or HART modem to configure the transmitter by entering the **WirelessHART Network ID** and **WirelessHART Join Key** as shown in Figure 2-5. To navigate to the ***Devices*** page, ***Home*** → **2: Configure** → **1: Guided Setup** → **4: Join to Network**.

Figure 2-5: Gateway *Devices* page



2.5.2 Configure Update Rate

The update rate controls the frequency a new measurement is taken and transmitted over the wireless network.

The default setting for update rate is one minute. This update rate can be changed at commissioning or at any time using a communication device, such as AMS Device Configurator. The update rate is user-selectable. It can be configured between 1 second and 120 minutes.

Procedure

1. From the ***Home*** screen, navigate to **2: Configure** → **1: Guided Setup** → **5: Configure Update Rate**.
2. Follow the on-screen instructions to complete the configuration.
   - If using an Emerson gateway, select `Yes` to enable optimizations. `Yes` is the default configuration.
   - If using a third-party *Wireless*HART® gateway, select `No` to disable optimizations and consult the manufacturer's gateway manual.

2.5.3 Verify configuration parameters

Emerson recommends verifying the following configuration parameters prior to installing the transmitter into the process.

- **Tag**

- **Long Tag**

Procedure

From the ***Home*** screen, select **1: Overview → 13: Device Information**.

2.5.4 Configure parameters

To configure the **Tag**, **Long Tag**, and **Product Descriptor**:

Procedure

From the ***Home*** screen, select **2: Configure → 2: Manual Setup → 6: Device Information**.

2.6 Discrete channel configuration

Each unique application of the Rosemount 802 may require different steps to commission and configure the transmitter. This section provides an overview of the procedures to perform common configuration tasks on the transmitter.

2.6.1 Configure dynamic variables

The default dynamic variables are noted in Table 2-2.

Dynamic variables are configurable to Channel 1 to Channel 8 values, electronics temperature, and battery/external power voltage. The Channel 1 to Channel 8 values can be configured to either report a count value or a state value. See Manual setup for details.

Table 2-2: Default Dynamic Variables

Primary variable (PV)	Secondary variable (SV)	Tertiary variable (TV)	Quaternary variable (QV)
Channel 1 (CH1) Count	*Channel 2 (CH2) Count*	*Electronics Temperature*	*Battery or External Power Voltage*

Procedure

1. From the ***Home*** screen, select **2: Configure → 2: Manual Setup → 3: HART → 1: Variable Mapping**.
2. Follow the on-screen instructions to complete the configuration.

2.6.2 Configure channel inputs/outputs (I/O)

The Rosemount 802 has eight channels that can each be configured for discrete input or output.

Emerson sets all eight channels to input as default from the factory.

Procedure

1. From the ***Home*** screen, select **2: Configure → 2: Manual Setup → 2: Discrete Channels → X: Setup Channel X**(1).
2. Select **1: Channel Direction**.
3. Follow the on-screen instructions to complete the configuration.

(1) This menu option is user-selectable. X represents Channels 1-8.

2.6.3 Configure Channel Logic Option (invert channel)

The device can invert any discrete channel, so as to give the opposite effect. For inputs, this is useful (for instance, if a normally open switch is used to replace a normally closed switch). This is also useful for outputs (for instance, if a true state should cause a device to turn off).

Table 2-3: Channel Direction Definition

Invert Option	Physical State	Interpreted State
Direct/Default	Shorted	Shorted
Direct/Default	Open	Open
Inverted	Shorted	Open
Inverted	Open	Shorted

Procedure

1. From the ***Home*** screen, select **2: Configure → 2: Manual Setup → 2: Discrete Channels → X: Setup Channel X**(2).
2. Select **2: Channel Logic Option**.
3. Follow the on-screen instructions to complete the configuration.

2.6.4 Configure Reported Value

The transmitter reports the discrete state of switches wired to the channel input. There are various pairs of discrete states that respond to an open or closed input switch. This pair of discrete states is called the **Reported Value**. Under **Reported Value**, there is a drop-down menu of options. The **Reported Value** can be set independently for all eight channels.

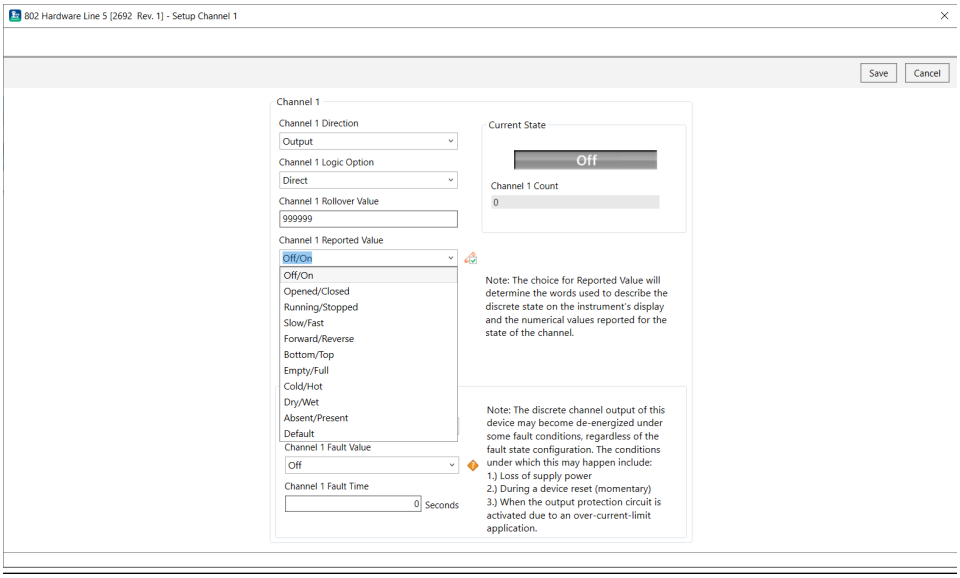
Procedure

1. From the ***Home*** screen, select **2: Configure → 2: Manual Setup → 2: Discrete Channels → X: Setup Channel X**(3).

(2) This menu option is user-selectable. X represents Channels 1-8.
(3) This menu option is user-selectable. X represents Channels 1-8.

2. Select **6: Channel Reported Value**.

Figure 2-6: Setting the Reported Value



`Reported Value` — Table 2-4 gives the `Reported Value` choices and the names for each possible state. It also gives the `Discrete Value` for each possible state.

`Value Name` — The `Value Name` is seen in host applications and configuration tools.

`Discrete Value` — The gateway reports the `Discrete Value` to a control host that requires the true discrete state value, rather than the floating point decimal of the analog value.

Table 2-4: State Table for `Reported Value`

Reported Value	Value Name		Analog Value		Discrete Value	
	Open switch	Closed switch	Open switch	Closed switch	Open switch	Closed switch
Default	False	True	240.00	242.00	240	242
Off/On	Off	On	0.000	1.000	0	1
Opened/ Closed	Opened	Closed	46.000	6.000	46	6
Running/ Stopped	Stopped	Running	25.000	26.000	25	26
Slow/Fast	Slow	Fast	8.000	7.000	8	7
Forward/ Reverse	Forward	Reverse	9.000	10.000	9	10
Bottom/Top	Bottom	Top	12.000	11.000	12	11
Empty/Full	Empty	Full	14.000	13.000	14	13
Cold/Hot	Cold	Hot	16.000	15.000	16	15

Table 2-4: State Table for `Reported Value` *(continued)*

Reported Value	Value Name		Analog Value		Discrete Value	
	Open switch	Closed switch	Open switch	Closed switch	Open switch	Closed switch
Dry/Wet	Dry	Wet	32.000	33.000	32	33
Absent/ Present	Absent	Present	45.000	44.000	45	44

Note
When the transmitter is configured to use the ***Invert*** option, the **Open switch** and **Closed switch** columns are reversed.

Note
Analog values in Table 2-4 only apply to channels that have configured the state to be reported in the analog reporting configuration. See Manual setup for details.

2.6.5 Analog reporting

The Rosemount 802 can report HART® Analog and HART Discrete variables.

For each I/O channel supported by the 802, the analog value can be configured to either report the discrete state or discrete channel counts. The analog values are detailed in Table 2-4.

Since the state values are represented numerically, it may seem like a count value.

NOTICE

After configurations are changed, manually verify the values reported are either:

An incrementing count value
A discrete state value

Note
The **Analog** reporting for all eight channels can be configured independently.

Manual setup

Procedure

1. From the ***Home*** screen, select **2: Configure → 2: Manual Setup → 2: Discrete Channels → X: Setup Channel X**(4).
2. Select **8: Analog Report Option**.
3. Follow the on-screen instructions to complete the configuration.

   Note
   All eight analog report options can be quickly configured to the same option using Guided setup.

(4) This menu option is user-selectable. X represents Channels `1-8`.

Guided setup

Procedure

1. From the ***Home*** screen, select **2: Configure → 1: Guided Setup → 3: Configure Analog Reporting**.
2. Follow the on-screen instructions to complete the configuration.

Note
Even if the discrete state is reported as an analog value, the DD still uses a label of "counts" even though it is reporting the channel state.

2.6.6 Configure latching feature

The Rosemount 802 has a **Latch** mode which, when enabled, allows detection of momentary state changes to be held for a configurable latch period. Dependent on the input signal, the **Latch** mode can be configured to detect either rising or falling state changes. The latch period (hold time) can be configured anywhere between 0 seconds and 10 minutes in one-second increments.

NOTICE

When **Latch** mode is enabled, the discrete variable reported to the system will represent the latched value, which may not be the actual value being measured by the transmitter.

NOTICE

Ensure that the state latch time value is long enough for the value to be reported throughout the entire system to guarantee the state transition is not missed. After configuring the discrete latching function, check for proper operation at the system level to ensure the desired state transitions are captured as desired.

Note
Latch mode is only applicable to input signals.

Setting the hold time to less than the wireless update rate will cause unexpected results.

The transmitter's default **Latch** mode is disabled.

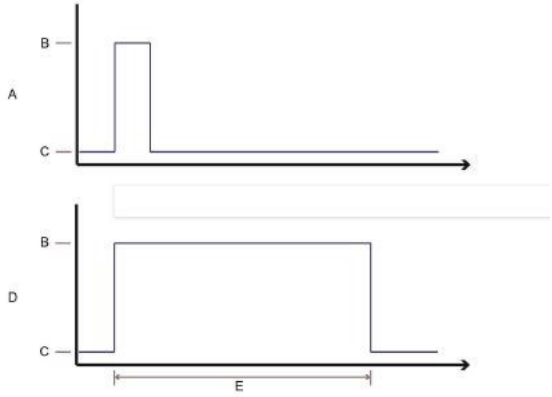
Procedure

1. From the ***Home*** screen, select **2: Configure → 2: Manual Setup → 2: Discrete Channels → X: Setup Channel X**[5].
2. Select **3: Latch Mode → 4: Latch Duration**.
3. Follow the on-screen instructions to complete the configuration.

When the transmitter recognizes the input signal transitioned, the reported state reports the latched value. When the reported state is no longer latched, the transmitter is prepared for the next event. Figure 2-7 is an example of a latched rising configuration. Figure 2-8 is an example of a latched falling configuration.

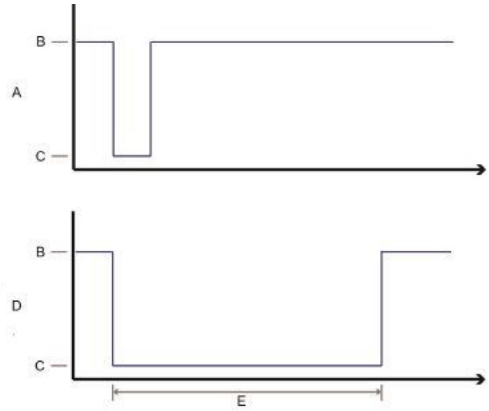
(5) This menu option is user-selectable. X represents Channels 1-8.

Figure 2-7: Latched Rising



A. Input signal
B. True
C. False
D. Reported state
E. Hold time

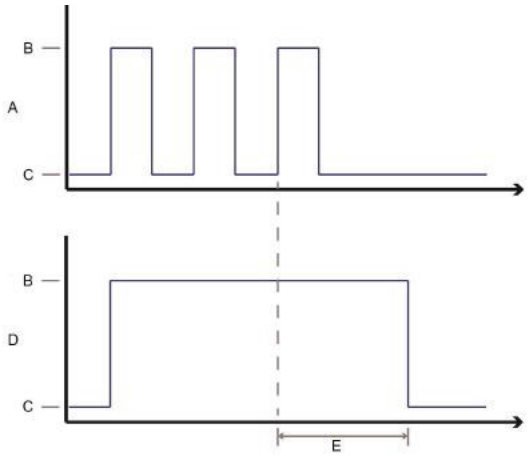
Figure 2-8: Latched Falling



A. Input signal
B. True
C. False
D. Reported state
E. Hold time

Note
The latch only applies to transitions into the active state. If the input signal goes inactive and active again before the initial latch hold timer expires, the latch hold timer restarts from the beginning of the most recent event.

Figure 2-9: Hold Time Configuration



A. Input signal
B. True
C. False
D. Reported state
E. Hold time

2.6.7 Configure discrete filter

The Rosemount 802 provides a noise filter feature to help prevent electrical transients from being incorrectly interpreted as discrete input state changes. The filtering is enabled by default, but it can be disabled on specific discrete channels if to enable the transmitter to detect faster state transitions on the discrete inputs.

Procedure

1. From the ***Home*** screen, select **2: Configure → 2: Manual Setup → 2: Discrete Channels → X: Setup Channel X**[6].
2. Select **7: Channel Filter Mode**.
3. Follow the on-screen instructions to complete the configuration.

2.6.8 Configure advanced broadcasting

Emerson ships the Rosemount 802 from the factory with the most optimal configuration to broadcast all dynamic information from the transmitter to a *Wireless*HART® gateway. Emerson recommends using the default wireless burst configuration for most applications. In certain cases, it may be advisable to customize the broadcasted information that the transmitter publishes. With advanced broadcast settings, the user can manually select which information is bursted to the gateway, how often they are bursted, and if certain changes in information should trigger the device to burst the information more frequently.

(6) This menu option is user-selectable. X represents Channels 1-8.

NOTICE

If applications request information that is not provided in the advanced broadcasting configuration, it can degrade the transmitter's performance.

When using advanced broadcasting, consider all potential consumers of device information.

Procedure

1. From the ***Home*** screen, select **2: Configure → 2: Manual Setup → 1: Wireless → 3: Broadcast Info**.
2. Follow the on-screen instructions to complete the configuration.

2.6.9 Configure event notification

Event notification is a feature that allows field devices to notify event managers when certain conditions change in the field device.

Only enable this feature when a HART®-compliant event manager application is present in the *Wireless*HART® system infrastructure. Use of the event notification feature is not widely supported. Emerson recommends leaving this feature disabled for most installations.

Procedure

1. From the ***Home*** screen, select **2: Configure → 2: Manual Setup → 1: Wireless → 3: Broadcast Info**.
2. Follow the on-screen instructions to complete the configuration.

2.6.10 Configure Supply Voltage

The Rosemount 802 monitors the voltage provided by the power module or external DC power supply.

The normal range of supply voltage to support proper operation of the transmitter when using:

Power module	6-7.5 volts
External DC power	10-28 volts

When the transmitter detects the voltage is below the normal range, it activates a `Supply Voltage Warning` diagnostic. If the voltage drops below 5.2 volts, the transmitter also activates a `Supply Voltage Failure` diagnostic.

Procedure

From the ***Home*** screen, select **3: Service Tools → 2: Variables → 2: All Variables → 27: Supply Voltage**.

2.6.11 Configure Electronics Temperature

The Rosemount 802 monitors the ambient temperature of the electronics board installed within the metal enclosure. This temperature can be monitored to ensure that the device is operating within normal ambient temperature limits.

The engineering units of the electronics temperature reading can be configured to be in either Fahrenheit or Celsius.

Procedure

From the ***Home*** screen, select **3: Service Tools → 2: Variables → 2: All Variables → 25: Electronics Temperature**.

2.6.12 Configure discrete counts/rollover

In order to capture discrete state changes that occur multiple times in one *Wireless*HART® update cycle, the Rosemount 802 will accumulate the number of times that the discrete state has transitioned. The count of transitions only includes the transition from open to closed (but not from closed to back open). This effectively provides a discrete pulse counter variable for each of the discrete channels.

Note
The discrete count value is only accessible when the analog reporting option is set to report counts. The analog reporting option is applicable to software revision 2 and higher. Software revision 1 will always report counts. Refer to Configure Reported Value for details.

By default, the transmitter count value will roll over back to 0 counts when the count reaches 1 million (meaning that if the Channel Rollover Value = `999,999`, at the next count the value will be `0` again). The Channel Rollover Value can be configured to any value between 1 and 999,999 counts.

Procedure

1. From the ***Home*** screen, select **2: Configure → 2: Manual Setup → 2: Discrete Channels → X: Setup Channel X**[7].
2. Select 5: Channel Rollover Value.

2.6.13 Configure user alerts

The Rosemount 802 can be configured to issue a diagnostic indication whenever one of its HART® device variables exceeds a certain threshold.

The transmitter already independently issues alerts for low voltage and excess ambient temperature conditions, so these additional user alerts may not be necessary for most applications. User alerts are disabled by default, but they can be enabled if necessary for specific applications.

Procedure

1. From the ***Home*** screen, select **3: Service Tools → 1: Alerts**.
2. Follow the on-screen instructions to complete the configuration.

2.6.14 Configure Data log

The Rosemount 802 keeps a record of abnormal events in an internal log. The log can be read from the device to help aid in failure analysis and maintenance of the transmitter.

The transmitter will only keep a limited number of events in memory and will overwrite the oldest element in the log once it becomes full.

Procedure

1. From the ***Home*** screen, select **2: Configure → 2: Manual Setup → 3: Hart → 3: Data Collection → 2: Configure Data History**.

(7) This menu option is user-selectable. X represents Channels `1-8`.

2. Follow the on-screen instructions to complete the configuration.

2.6.15 Configure Over the Air Programming (OTAP) Upgrade lockout

The Rosemount 802 allows firmware used by the internal *Wireless*HART® radio module to be updated over the air.

NOTICE

Before downloading and installing a new version of radio firmware in a transmitter, set the OTAP lockout to **Disabled**.

Procedure

From the ***Home*** screen, select **2: Configure** → **2: Manual Setup** → **4: Security** → **Radio Upgrade - Over the Air Upgrade**.

2.6.16 Reset battery life

The Rosemount 802 firmware includes an algorithm that attempts to predict remaining days of operation on the power module before battery replacement is required.

NOTICE

The algorithm is not always able to accurately predict the runtime remaining life to the day.

NOTICE

Emerson recommends using the supply voltage to determine when to replace the power module.

If the transmitter is used with applications which leverage the `Battery Life` indicator, always reset the `Battery Life` model whenever a fresh new power module is plugged in.

NOTICE

The following situations lower the accuracy of the battery life prediction algorithm:

Resetting the battery life when a partially depleted (such as one used from another device)
Failing to reset the battery life after installing a new power module

Procedure

From the ***Home*** screen, select **3: Service Tools** → **5: Maintenance** → **1: Routine Maintenance** → **2: Install New Power Module**.

2.6.17 Configure local override

When a transmitter channel is configured to be a discrete output, the output will normally be driven by a discrete HART® application that sends discrete setpoints to the transmitter. The local override feature allows an operator to override what the discrete input/output (I/O) application is controlling and allows the discrete output channel to be manually commanded to go open or short. When local override is activated, the system can still send discrete setpoints to the transmitter, but the transmitter will ignore them until the local override feature is deactivated.

Procedure

1. From the ***Home*** screen, select **3: Service Tools → 5: Maintenance → 2: Manual Override**.
2. Select X: Channel X Output[8].
3. Follow the on-screen instructions to complete the configuration.

2.6.18 Simulate variable

When a transmitter channel is configured to be a discrete input, the transmitter electronics normally detects the input value based on the state of the discrete sensor that is wired to the transmitter terminal block. The variable simulation feature allows the operator to simulate different states being detected by the transmitter without having to manually manipulate the connected process.

When simulation is enabled, the transmitter reports the configured simulation state regardless of what the actual state of the sensor is. This allows the possibility to validate any system side logic by verifying the expected behaviors occur in the system in response to varying simulated process conditions. Disabling variable simulation allows the device to go back to normal operation.

Procedure

1. From the ***Home*** screen, select **3: Service Tools → 6: Simulate**.
2. Select X: Channel X Output[9].
3. Follow the on-screen instructions to complete the configuration.

2.7 Fault State configuration

2.7.1 Fault State overview

The Fault State feature only works for channels configured to output. This feature is beneficial in the event that the setpoint status is bad or when the transmitter does not receive a setpoint communication within Fault State timeout.

The transmitter has three user-selectable options for Fault State configuration.

- **Disabled** (default setting)
- Fail to Value
- Hold Last Value

(8) This menu option is user-selectable. X represents Channels 1-8.
(9) This menu option is user-selectable. X represents Channels 1-8.

Fault State setting	Setpoint Status = BAD	Transmitter does not receive a setpoint communication within Fault State timeout	Battery Fail, CPU Fail, or Electronics Fault
Disabled (default)	Setpoint Status ignored. No timeout. Transmitter will drive output to Setpoint State regardless of status and regardless of how old the communicated setpoint is.		Transmitter always fails to open circuit for most hard faults and power failures.
Fail to Value	Transmitter will drive output to user-configured Fault State.		
Hold Last Value	Transmitter will drive output to the most recently communicated Setpoint State that was accompanied with a Setpoint Status of GOOD.		

2.7.2 Navigate Fault State

Procedure

1. From the ***Home*** screen, select **2: Configure → 2: Manual Setup → 2: Discrete Channels**.
2. Select X: Channel X Output[10].
3. Select **9: Channel Fault Option**.
4. Select **10: Channel Fault Value** if applicable.
5. Follow the on-screen instructions to complete the configuration.
6. Select **11: Channel Fault Time** if applicable.
7. Follow the on-screen instructions to complete the configuration.

(10) This menu option is user-selectable. X represents Channels 1-8.

3 Hardware installation

3.1 Hardware installation overview

The information in this section covers installation considerations for the Rosemount 802 with *Wireless*HART® protocol.

Emerson ships a Quick Start Guide, which contains recommended installation instructions, with every transmitter.

Related information

Mount transmitter

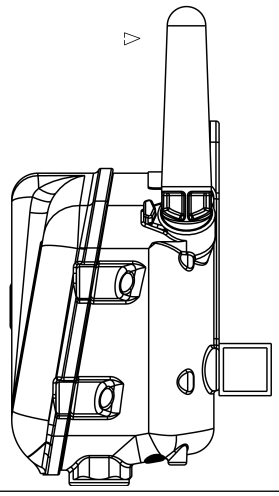
3.2 Considerations

3.2.1 Installation considerations

Antenna position

To allow for clear communication to other devices, vertically position the antenna approximately 3 ft. (1 m) away from any large structure, building, or conductive surface.

Figure 3-1: Antenna Position



Plug conduits

Procedure

1. Remove temporary orange plugs from the conduit entries.
2. Using approved thread sealant, place the included conduit plugs in the conduit entries.

3.2.2 Environmental considerations

Mount the transmitter in an environment with minimal ambient temperature change.

The transmitter electronics operating temperature limits are -40 °F to +185 °F (-40 °C to +85 °C). Refer to the *Specifications* section in the Rosemount 802 Multi Discrete I/O Transmitter Product Data Sheet for product specifications.

Mount the transmitter in a location:

1. Not susceptible to vibration and mechanical shock
2. Avoiding external contact with corrosive materials

3.3 Installation procedures

3.3.1 Mount transmitter

Emerson designed the Rosemount 802 Transmitter to be installed only in the remote mount configuration, where the sensor is mounted separately from the housing and then connected to the transmitter via conduit.

For dimensional drawings, refer to the *Dimensional drawings* section of the Rosemount 802 Wireless Multi Discrete I/O Transmitter Product Data Sheet.

Procedure

1. Install the transmitter according to standard installation practices.

NOTICE

Use thread sealant on all connections.

2. To reduce sensor wiring length, mount the transmitter centrally to all of the measurements.

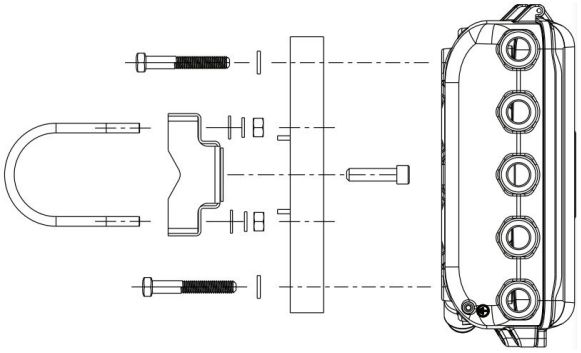
NOTICE

When installing the transmitter, make sure the conduit entries are facing downward.

NOTICE

If using the mounting bracket (option code B6), mount the transmitter to a pipe (maximum 2 in. [51 mm]).

Figure 3-2: Transmitter Mounting Bracket (Bottom View)



Postrequisites

For additional remote mounting information, see www.Emerson.com.

4 Electrical installation

4.1 Electrical installation overview

This section covers electrical installation considerations for the transmitter.

Emerson ships a *Quick Start Guide* with every transmitter to describe wiring procedures and basic configuration for initial installation.

4.2 Terminal wiring for input and output circuits

The transmitter has three screw terminals for each channel.

These terminals are labeled as follows:

`PWR OUT`	Constant power out, for external power only
`I/O`	Switched input or output channel
`CMN`	Common

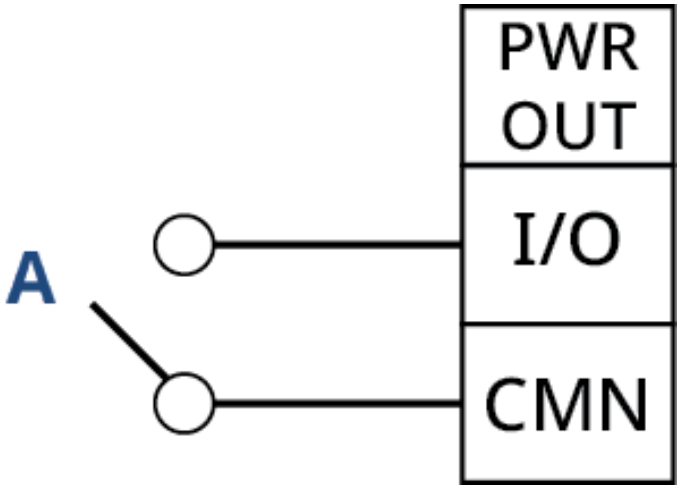
Note
All eight channels have a third `PWR OUT` terminal that outputs continuous voltage, which can be up to 2 Vdc less than the supplied external power to the transmitter. (For example, 28 Vdc into the transmitter, `PWR OUT` terminal outputs 26 Vdc.)

4.2.1 Discrete inputs

The transmitter has eight channels, each of which can be configured for a discrete input or output.

The transmitter will accept input from simple switches. Inputs must be dry contact only.

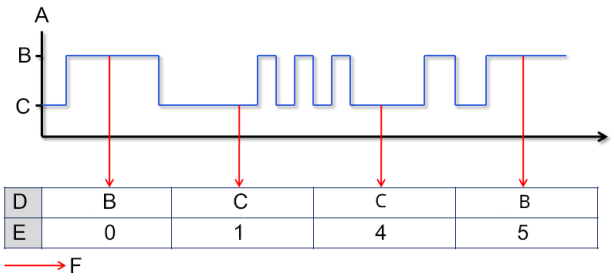
Figure 4-1: Discrete Input Circuit



A. Dry contact only

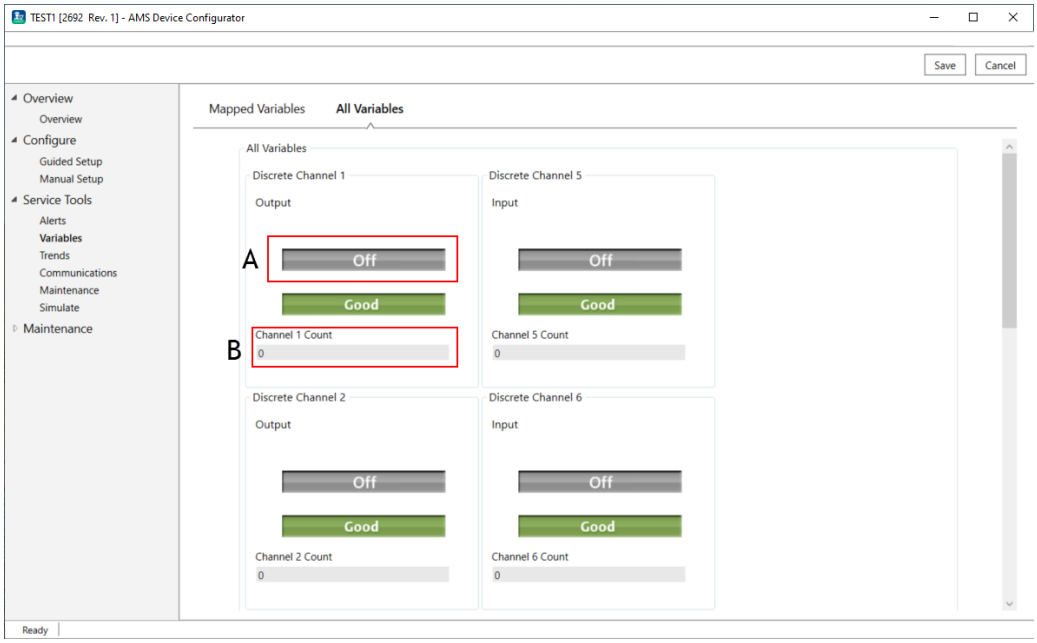
The transmitter is capable of detecting momentary discrete inputs of 10 milliseconds or more in duration, regardless of the wireless update rate. At each wireless update, the transmitter reports current discrete input state along with an accumulating count of close-open cycles for each input channel.

Figure 4-2: Momentary Inputs and Accumulating Count



A. Input switch state
B. Closed
C. Open
D. State
E. Count
F. Wireless updates

Figure 4-3: Reporting of Current Discrete State and Count in AMS Device Manager



A. Current state
B. Count

4.2.2 Discrete outputs

Output circuits

The transmitter has eight channels, each of which can be configured for discrete input or output.

Outputs are a simple switch closure to activate an output circuit. The transmitter output does not provide any voltage or current; the output circuit must have power of its own. The transmitter output has a maximum switch capacity per channel of 28 Vdc and 100 milliamps. A typical power supply for powering an output circuit can be 28 volts or lower.

NOTICE

If the output circuit is wired backwards, it will remain active (switch closed) regardless of the state of the output channel.

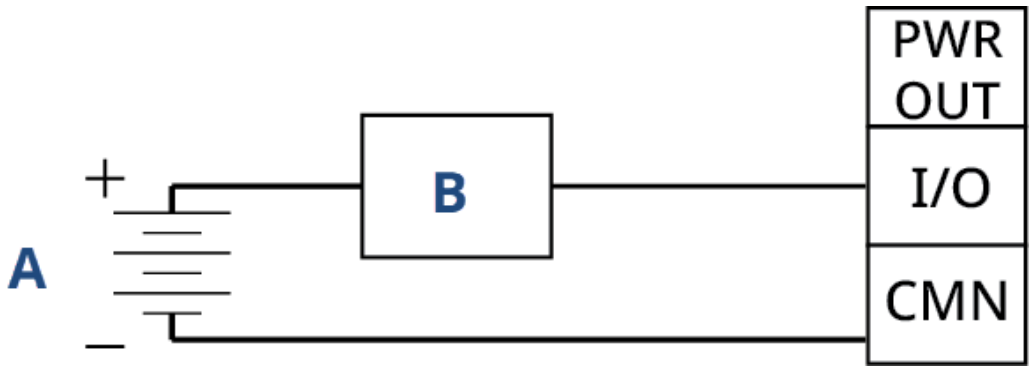
It is very important the polarity of the output circuit is as shown in the wiring diagrams, with the positive (+) side of the circuit wired to the input/output (I/O) terminal and the negative (–) side of the circuit wired to the common (CMN) terminal.

Discrete output switch functionality

The host control system drives the discrete output of the Rosemount 802 Transmitter through the wireless gateway and out to the transmitter.

The time required for wireless communication from the gateway to the transmitter is dependent on many factors, including the size and topology of the network and the total amount of downstream traffic on the wireless network. For a network that is constructed to Emerson's best practices, typical delays in communication of a discrete output from the gateway to the transmitter are 15 seconds or less. Remember that this delay is only part of the latency that will be observed in a control loop.

Figure 4-4: Discrete Output Circuit



A. External power supply
B. Load

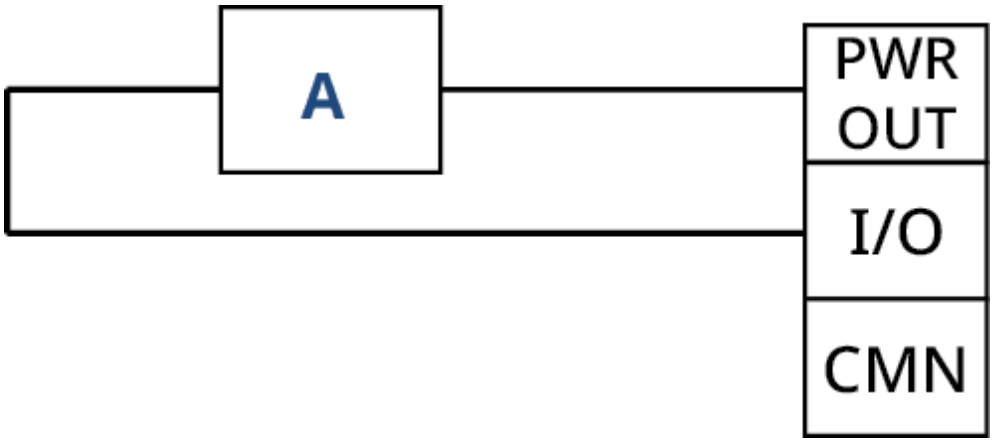
4.2.3 Alternative discrete output functionality

All eight channels have a third `PWR OUT` terminal that outputs continuous voltage, which can be up to 2 Vdc less than the supplied external power to the transmitter. (For example, if the external DC power supplies 28 Vdc to the transmitter, the `PWR OUT` terminal will output 26 Vdc.)

Note
This feature only applies when the transmitter is powered via an external DC power supply. It does not work when the transmitter is powered by the Black Power Module.

Figure 4-5 shows the alternative wiring configuration.

Figure 4-5: Alternative Discrete Output Wiring Circuit



A. Load

4.2.4 Special considerations for multi-output circuits

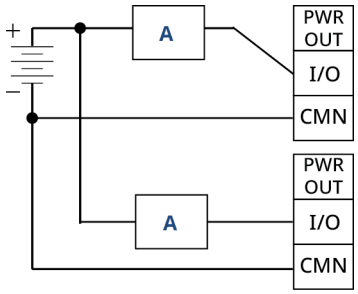
NOTICE

If more than one channel is connected to output circuits, it is very important that the `CMN` terminal of each circuit be at the same voltage.

Employing a common ground for all output circuits is one way to ensure that all circuits have `CMN` terminals at the same voltage.

If two output circuits are connected to a single transmitter with a single power supply, both input/output (`I/O`) and common (`CMN`) terminals must be connected to each output circuit. The negative power supply wires must be at the same voltage and connected to both `CMN` terminals.

Figure 4-6: Multiple Output Circuits with One Power Supply



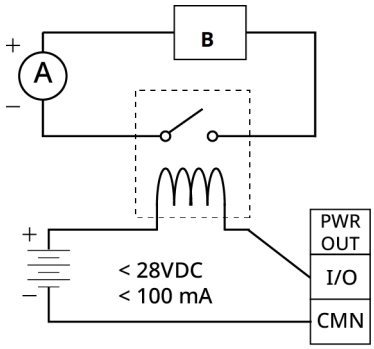
A. Load

4.2.5 Switching greater currents or voltages

Note
Maximum switching capacity is 28 Vdc and 100 mA per channel. If there is a need to switch to a greater voltage or current, then use an interposing relay circuit.

Figure 4-7 shows an example of a circuit to switch higher currents or voltages.

Figure 4-7: Wiring an Interposing Relay to Switch Greater Currents or Voltages



A. Power supply
B. Load

4.3 Grounding the transmitter

The Rosemount 802 operates best with the housing grounded.

Floating systems, however, can cause extra noise that may affect the accuracy of the transmitter. If the signal appears noisy or erratic, grounding at a single point may solve the problem. Ground the transmitter through the process connection using the internal or external grounding terminal.

NOTICE

Unintended ground currents

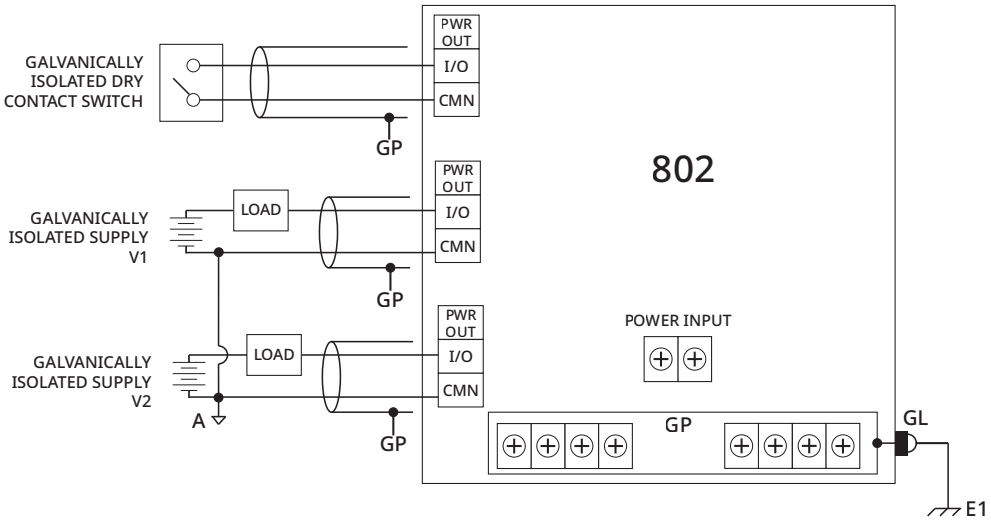
To avoid unintended ground currents in the system which could cause loss of operation or damage to the system, ensure that all power supplies and dry contact switches are galvanically isolated.

Verify all cables entering the transmitter tie the shield at the transmitter's earth ground plate.

Never connect cable shields to earth on both ends of the cable.

If two or more output circuits are connected to a single transmitter with a single power supply, both input/output (I/O) and common (CMN) terminals must be connected to each output circuit. Make sure the negative power supply wires are at the same voltage and connected to both CMN terminals.

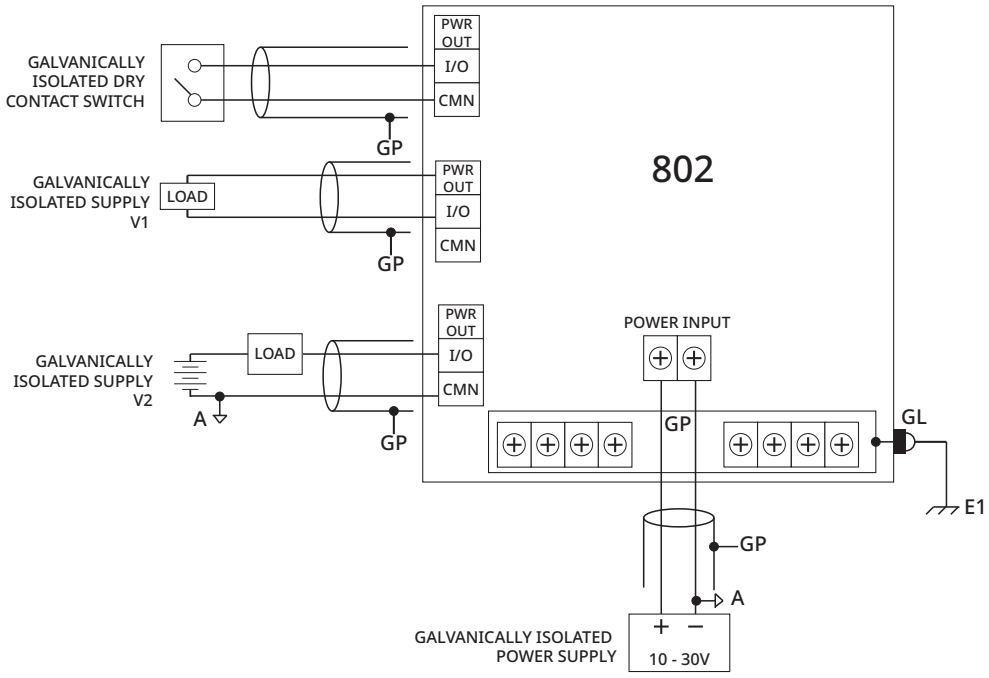
Figure 4-8: Power Module



A	Common ground
GP	Internal ground plate
GL	External ground lug
E1	Earth ground

When powering the transmitter with an external 10-30 Vdc power supply, follow the best wiring practices shown in Figure 4-9.

Figure 4-9: Externally Powered Transmitter



A	Common ground
GP	Internal ground plate
GL	External ground lug
E1	Earth ground

5 Troubleshooting

5.1 Overview

This section provides summarized troubleshooting suggestions for the most common operating problems.

5.2 Wireless device operation

5.2.1 Device variables not reporting properly

Recommended actions

1. Verify the configuration is set to the desired setting, either `Input` or `Output` depending on the application.
   a) From the ***Home*** screen, navigate to **2: Configure → 2: Manual Setup → 2: Discrete Channels**.
   b) Select **X: Setup Channel X** where "X" represents Channels `1-8`.
   c) Select **1: Channel Direction**.
2. Ensure the **Analog Reported Value** is configured to the desired setting, reporting either state or counts depending on the application.
   a) From the ***Home*** screen, navigate to **2: Configure → 2: Manual Setup → 2: Discrete Channels**.
   b) Select **X: Setup Channel X** where "X" represents Channels `1-8`.
   c) Select **8: Analog Report Option**.
   Set the **Analog Reported Value** to:
   - **Discrete State** to see the currently active state
   - **Counts** to see the number of state transitions

   NOTICE

   The Rosemount 802 can report HART Analog and HART Discrete variables. After changing configurations, manually verify the values reported are either an incrementing count value or a discrete state value.

   The 802 can report the incrementing count value or the discrete state with HART Discrete and HART Analog variables using software revision 2 or higher. Device revision 1 is always set to incrementing counts.
3. Confirm terminal wiring is correct.
   a) Refer to Rosemount 802 Wireless Mutli Discrete I/O Transmitter Quick Start Guide for wiring procedures and basic configuration for installation.

5.2.2 Discrete values not reporting properly

Note
Outputs can be written from the control application to control the Rosemount 802 outputs.

Inputs can be monitored by the control/monitoring aplication to monitor the state of inputs connected to the transmitter.

Recommended actions

1. If the transmiter is not responding to changing discrete states of external devices connected to it, verify the **Channel Direction** is set to Input.
   a) From the ***Home*** screen, navigate to **2: Configure → 2: Manual Setup → 2: Discrete Channels**.

   NOTICE

   If the transmitter is not allowing for control of external discrete devices connected to it, proceed to Step 2.

   b) Select **X: Setup Channel X** where "X" represents Channels `1-8`.
   c) Select **1: Channel Direction**.
   d) Ensure that the **Channel Direction** is set to `Input` for the transmitter to monitor its inputs.
2. If the transmitter does not allow for external discrete devices connected to it, verify the **Channel Direction** is set to Output.
   a) From the ***Home*** screen, navigate to **2: Configure → 2: Manual Setup → 2: Discrete Channels**.
   b) Select **X: Setup Channel X** where "X" represents Channels `1-8`.
   c) Select **1: Channel Direction**.
   d) Ensure **Channel Direction** is set to `Output`.
3.

5.2.3 Discrete state showing the opposite of the expected actual state

Note
When the transmitter is configured to the **Channel Logic Option** (invert channel) and set to Direct:

1. The open switch on the transmitter will be reported as `Off`.
2. A closed switch will be reported as `On`.

When the **Channel Logic Option** is set to Invert:

1. The open switch on the transmitter will be reported as `On`.
2. A closed switch will be reported as `Off`.

Recommended actions

Verify that the **Channel Logic** option is configured to be consistent with the type of discrete hardware that is being connected to the the Rosemount 802 Transmitter. To verify the **Channel Logic** option configuration:

a) From the ***Home*** screen, navigate to **2: Configure** → **2: Manual Setup** → **2: Discrete Channels**.

b) Select **X: Setup Channel X** where "X" represents Channels `1-8`.

c) Select **2: Channel Logic Option**.

d) Follow the on-screen instructions to verify the configuration.

Related information

Configure Channel Logic Option (invert channel)

5.2.4 Counter not counting

Recommended actions

1. Verify the frequency of the discrete signal being monitored by the 802 is within the 802 specifications.
   a) Refer to the Rosemount 802 Wireless Multi Discrete I/O Transmitter Product Data Sheet for details.
2. If the frequency is outside of the specifications (faster than 10 milliseconds of momentary input), the discrete filter setting should be set to `Disabled`. Use the following procedure to verify the Channel Filter Mode configuration.
   a) From the ***Home*** screen, navigate to **2: Configure** → **2: Manual Setup** → **2: Discrete Channels**.
   b) Select **X: Setup Channel X** where "X" represents Channels `1-8`.
   c) Select **7: Channel Filter Mode**.
   d) Follow the on-screen instructions to verify the configuration.

5.3 Wireless network troubleshooting

5.3.1 Device not joining the network

Recommended actions

1. Verify the network ID and join key.
2. Wait 30 minutes.
3. Inspect the power module.
4. Verify the device is within range of at least one other device.
5. Verify the network is in active network advertising.
6. Power cycle the device to re-attempt joining the network.
7. Verify the device is configured to join. Set the **Join Mode** to `Join Now`:
   a) From the ***Home*** screen, navigate to **3: Service Tools** → **4: Communications** → **2: Join Mode**.

8. Refer to Emerson Wireless 1410S Gateway and 781S Smart Antenna Reference Manual *Troubleshooting* section for additional information.

5.3.2 Limited bandwidth error

Recommended actions

1. Reduce the update rate on the transmitter. To verify the update rate:
   a) From the ***Home*** screen, navigate to **1: Overview → 11: Update Rate**.
   b) Follow the on-screen instructions to verify the configuration.
2. Add more wireless points.

Note
Adding more wireless points increases communication paths.

3. Verify the device has been online for at least one hour.
4. Verify the device is not routing through a **limited** routing node.
5. Create a new network with an additional Smart Wireless Gateway.

5.3.3 Short battery life

Recommended actions

1. Ensure the device is not configured for high-power operating modes.
   a) From the ***Home*** screen, navigate to **3: Service Tools → 1: Alerts**.
   b) Review ***Active Alerts*** menu to verify `High-Power Mode Warning` is not present.
2. Ensure update rate is not set to a faster rate than is necessary.
   a) From the ***Home*** screen, navigate to **1: Overview → 11: Update Rate**.
   b) Follow the on-screen instructions to verify the configuration.

Note
Faster update rates consume battery life more rapidly.

3. Verify the device is not installed in extreme temperatures.
4. Verify the device is not a network pinch point.
5. Look for excessive network rejoins due to poor connectivity.

A Reference data

A.1 Access ordering information, specifications, and drawings

Procedure

1. Go to Rosemount 802 Multi Discrete I/O Transmitter.
2. Click **DOCUMENTS & DRAWINGS**.
3. For installation drawings, click **DRAWINGS & SCHEMATICS**.
4. For ordering information, specifications, and dimensional drawings, see the Rosemount 802 Wireless Multi Discrete I/O Transmitter Product Data Sheet.

A.2 View product certifications

Procedure

To view current product certifications, see the Rosemount 802 Wireless Multi Discrete I/O Transmitter Quick Start Guide.

B Device driver (DD) menu trees

Figure B-1: *Overview* and *Service Tools*

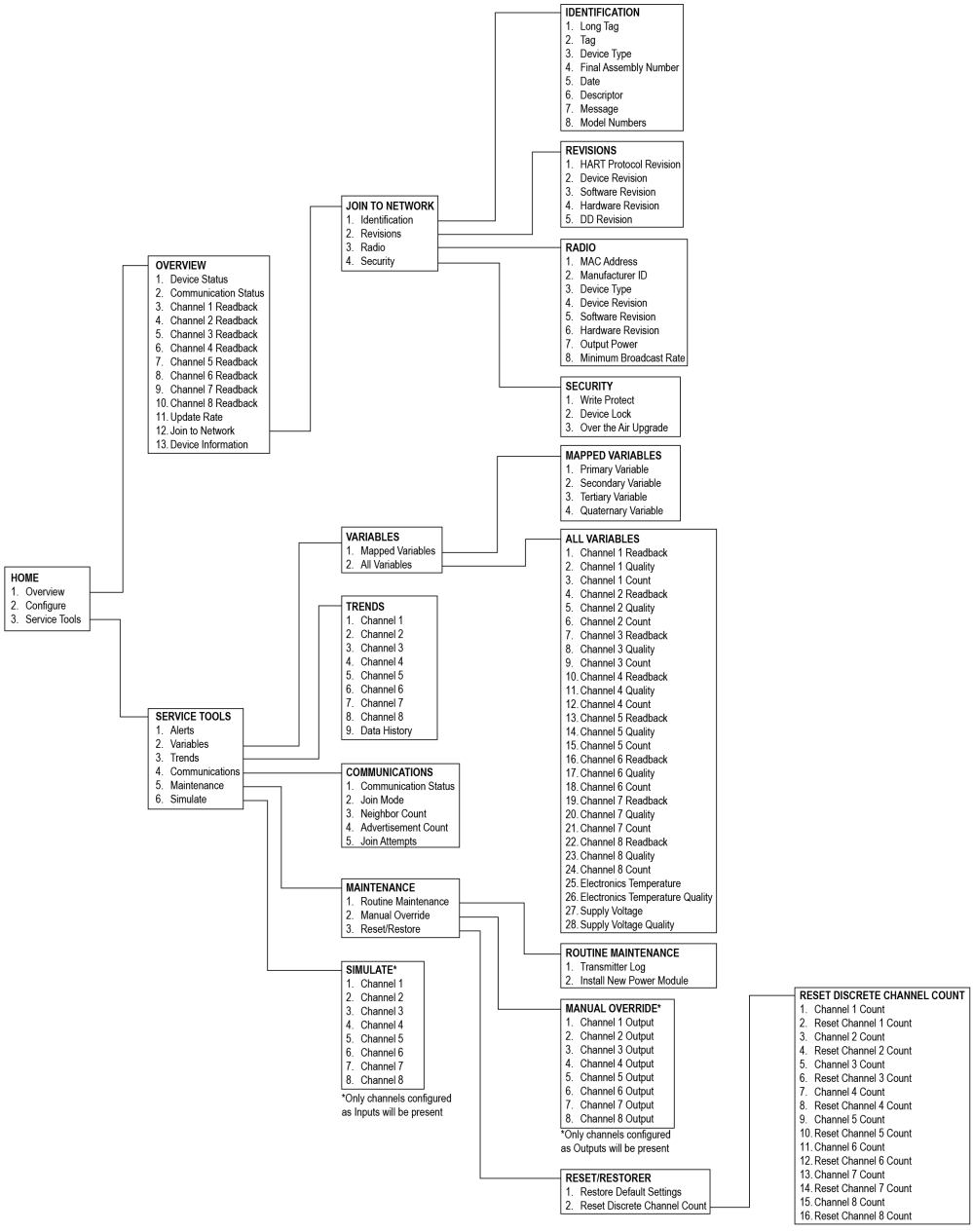
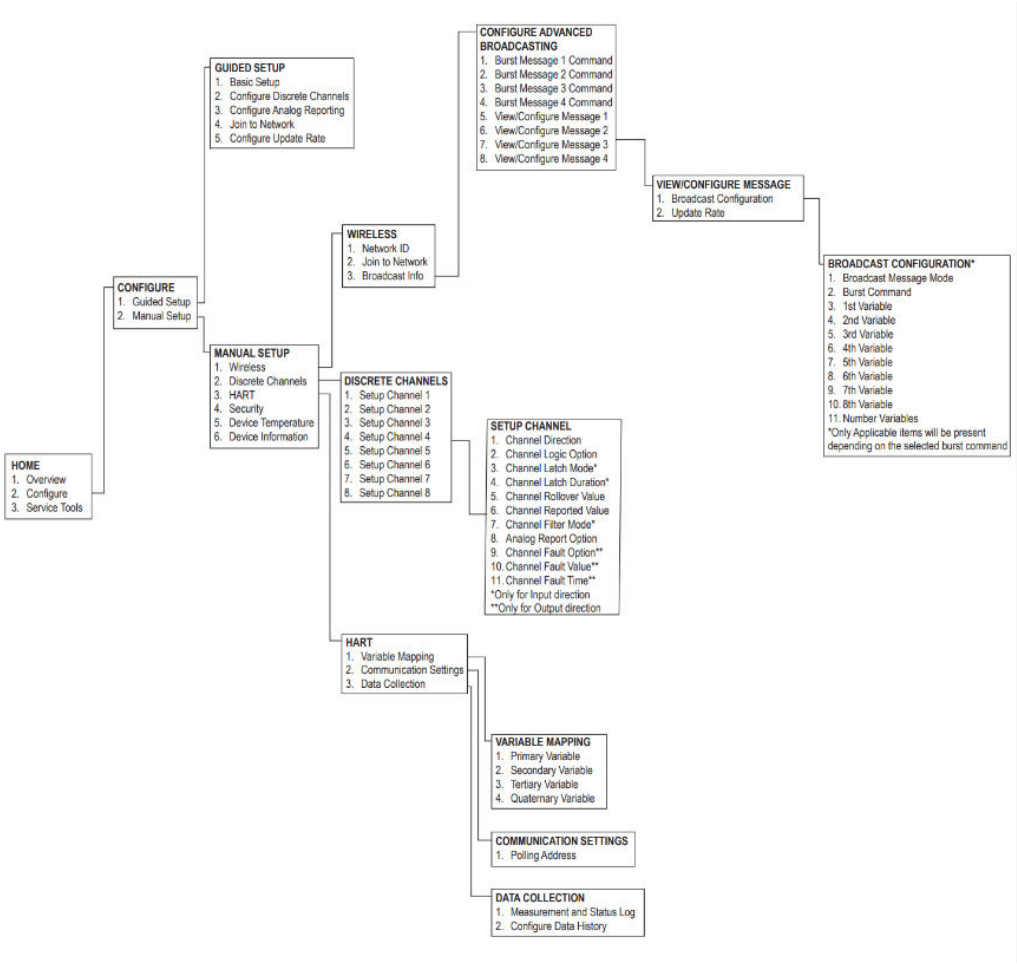


Figure B-2: *Configure*



C Device integration

C.1 Variables

This section outlines the variables reported by the transmitter (such as `Command 9`).

These variables can be used for control and monitoring applications.

Table C-1: Analog Device Variables

Index	Analog device variable	Description	Default mapping (user configurable)
0	*Supply Voltage*	Measured supply voltage used to determine the health of the power module.	Quaternary variable (QV)
1	*Electronics Temperature*	Current temperature at the electronics	Tertiary variable (TV)
2	*Channel 1 Counts*	Channel counts variables represent either: The number of low to high transitions that have occurred on each of the 8 input/output (I/O) channels (1 through 8) respectively. OR The current discrete state. Configuration of the Analog Report Option determines which value is reported. See Configure Reported Value.	Primary variable (PV)
3	*Channel 2 Counts*		Secondary variable (SV)
4	*Channel 3 Counts*		
5	*Channel 4 Counts*		
6	*Channel 5 Counts*		
7	*Channel 6 Counts*		
8	*Channel 7 Counts*		
9	*Channel 8 Counts*		
10	*Combined Channel States*	Represents all 8 process sensors measured or controlled by this device.	

Table C-2: Discrete Device Variables

Index	Discrete device variable	Description
0	*Channel 1 Discrete State/Setpoint*	Discrete channel state/setpoint for inputs and outputs
1	*Channel 2 Discrete State/Setpoint*	
2	*Channel 3 Discrete State/Setpoint*	
3	*Channel 4 Discrete State/Setpoint*	
4	*Channel 5 Discrete State/Setpoint*	
5	*Channel 6 Discrete State/Setpoint*	
6	*Channel 7 Discrete State/Setpoint*	
7	*Channel 8 Discrete State/Setpoint*	
8	*Channel 1 Discrete Channel Readback*	Discrete channel readback value for inputs and outputs
9	*Channel 2 Discrete Channel Readback*	
10	*Channel 3 Discrete Channel Readback*	

Table C-2: Discrete Device Variables *(continued)*

Index	Discrete device variable	Description
11	*Channel 4 Discrete Channel Readback*	
12	*Channel 5 Discrete Channel Readback*	
13	*Channel 6 Discrete Channel Readback*	
14	*Channel 7 Discrete Channel Readback*	
15	*Channel 8 Discrete Channel Readback*	
16	*Combined Discrete State/Setpoints*	This discrete variable represents all 8 process sensors measured or controlled by this device.
17	*Combined Discrete Channel Readback*	This discrete variable represents all 8 process sensors measured or controlled by this device plus the 8 discrete holding registers.

C.2 Alerts

This section outlines the important variables and alerts in the HART® **command 48: Additional Status** field for the transmitter.

External applications can use the information in this section for alert monitoring. A complete list of `Additional Status` bits is available in the wireless gateway.

To view active alerts, go to **Service Tools** → **Alerts** → **Active Alerts**.

Table C-3: `Failure` Alerts (F)

Message	Discrete device variable	Description
`Configuration Error`	Byte 2 :: Bit 6	The device has detected a configuration error. Check to ensure the device is configured correctly.
`Output Failure`	Byte 3 :: Bit 7	The discrete output has not reached its intended output state. Check the discrete circuit wiring, connections, switches, and indicators. Check that the load being driven by the discrete output is within the product specifications. Reset output protection by deactivating the output for five seconds.
`Supply Voltage Failure`	Byte 6 :: Bit 2	The supply voltage is too low and will affect device operation. Replace the power module or check the power supply to the device.
`Electronics Failure`	Byte 8 :: Bit 6	A failure has been detected in the device memory and/or electronics. The device may need to be reset or replaced.
`Radio Communication Failure`	Byte 12 :: Bit 4	The wireless radio has detected a failure or stopped communicating. The device may need to be reset or replaced.

Table C-4: `Maintenance` Alerts (M)

Message	Device variable	Description
`NV Correctable Warning`	Byte 0 :: Bit 4	The device configuration stored in memory is corrupt. Rewrite the device configuration and reset the device to attempt recovery. Otherwise, the device may need to be replaced.
`NV Non-Correctable Warning`	Byte 0 :: Bit 5	The device configuration stored in memory is corrupt. The device may need to be replaced.
`Configuration Warning`	Byte 2 :: Bit 1	The device has detected a configuration error. Check to ensure the device is configured correctly.
`Power Supply Conditions Out of Range`	Byte 8 :: Bit 4	The supply voltage is too low. Replace the power module or check the power supply to the device.
`Environmental Conditions Out of Range`	Byte 8 :: Bit 5	The ambient temperature measured by the device is outside of normal operating limits. Verify ambient temperature is within the transmitter's operating range. Mount the transmitter away from process and environmental conditions.
`Capacity Denied`	Byte 12 :: Bit 0	The device does not have the wireless bandwidth it needs to publish all information to the gateway. Obtaining the bandwidth may take some time depending on the configured update rates and other devices in the same network. Wait several minutes to see how the error resolves itself. There may be too many devices attached to the *Wireless*HART® network or the update rates may be too fast. Try using a different network or slowing down the update rate on one or more devices.

Table C-5: `Advisory` Alerts (A)

Message	Discrete device variable	Description
`Database Storage Warning`	Byte 0 :: Bit 2	The device has failed to write to the database memory. Any data written during this time may have been lost. If logging dynamic data is not needed, then this advisory can be safely ignored.
`Fault State Active`	Byte 3 :: Bit 6	One or more discrete outputs is being driven to the configured fault state due to either bad setpoint status from the controlling application or failure to receive an updated setpoint value within the configured timeout value.
`User Process Alerts (1-8)`	Byte 5 :: Bit 0-7	One of the process variables has fallen outside of the configurable warning levels. Verify that the process variable is within user specified limits. Reconfirm the user-defined alarm limit. If not needed, disable this alert.
`Device Variable Simulation Active`	Byte 8 :: Bit 0	One or more variables are being simulated in this device. Verify that simulation is no longer required and disable Simulation mode.
`Event Notification Overflow`	Byte 9 :: Bit 2	Too many event notifications have occurred without being acknowledged by the event manager. Check the event manager to make sure events are being acknowledged. If there is not an event manager in the system, disable event notification in this device.

C.3 Modbus® and OPC mapping

The following tables show parameters that can be used for Modbus and OPC mapping.

The Emerson Wireless Gateway uses these parameters; they are located on the gateway's web interface. Some parameters are analog values, and some are discrete. The ***Description*** column of the table indicates whether a parameter is analog or discrete. The setpoint parameters are used to drive the output channel and for readback of the output channel's state.

Table C-6: Common Modbus and OPC Mapping Parameters

Parameter name	Description	Read/Write	Type
CHANNEL_X_COUNTS	Analog value for Channel X state or counts. Depending on the analog report option that had been configured, it can be either count or state.	Read	32-bit float
CHANNEL_X_COUNTS_ STATUS	Used to determine the quality of the Channel *X* state count value	Read	8-bit unsigned integer
CHANNEL_X_STATE_D	Discrete value for Channel *X* state	Read	16-bit integer
CHANNEL_X_STATE_D_ STATUS	Discrete value for Channel *X* setpoint	Read	8-bit unsigned integer
CHANNEL_X_SETPOINT _D	Discrete value for Channel *X* setpoint	Read/Write	16-bit integer
CHANNEL_X_SETPOINT _D_STATUS	Used to determine the quality of the Channel *X* setpoint D value	Read/Write	8-bit unsigned integer
SUPPLY_VOLTAGE	Analog value for power module voltage	Read	32-bit float
SUPPLY_VOLTAGE_ STATUS	Used to determine the quality of the voltage measurement	Read	8-bit unsigned integer
ELECTRONICS_ TEMPERATURE	Analog value for device temperature	Read	32-bit float
ELECTRONICS_ TEMPERATURE_ STATUS	Used to determine the quality of the temperature measurement	Read	8-bit unsigned integer
READ_PACKED_D	Packed discrete value for all 8 channels	Read/Write	16-bit integer
READ_PACKED_D_ STATUS	Used to determine the quality of the read packed discrete value	Read	8-bit unsigned integer
WRITE_PACKED_D	Packed discrete value for all 8 channels	Read/Write	16-bit integer
WRITE_PACKED_D_ STATUS	Used to determine the quality of the write packed discrete value	Read/Write	8-bit unsigned integer

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Table C-7: Additional Modbus and OPC Mapping Parameters

Parameter name	Description	Read/Write	Type
BANDWIDTH_ ALLOCATION_ PENDING	This bit is set if the network resources for any of the device burst messages cannot be allocated.	Read	Boolean
BATTERY_OR_POWER_ SUPPLY_NEEDS_ MAINTENANCE	A status bit indicating battery of the power supply needs maintenance (requiring a battery change).	Read	Boolean

Table C-7: Additional Modbus and OPC Mapping Parameters *(continued)*

Parameter name	Description	Read/Write	Type
BURST_178_EXPECTED_UPDATE_RATE	Command 178 is being burst and this is the configured update rate. The units are milliseconds.	Read	32-bit unsigned integers
CAPACITY_DENIED	This is a standard status bit that is set if the network resources cannot be allocated for one of the device burst messages.	Read	Boolean
CHANGE_COUNTER	The configuration change counter for the device. It is a 16 bit number that wraps to 0 when it reaches its maximum.	Read	16-bit unsigned integer
COLD_START	A standard status bit that is set if the device is power cycled or master reset.	Read	Boolean
CONFIGURATION_CHANGED	A standard status bit that is set if the device configuration is altered.	Read	Boolean
CONFIGURATION_ERROR	A device specific status bit that is set when the device detects an inconsistent configuration.	Read	Boolean
CONFIGURATION_ITEMS_UPDATED	A device specific status bit that is set when one or more settings were configured to default automatically.	Read	Boolean
CRITICAL_DATA_ERROR	A device specific status bit that is set when a configuration item is invalid.	Read	Boolean
CRITICAL_POWER_FAILURE	A standard status bit that is set when the device's power is at a critical level. For battery operated devices, this means the battery is about to fail.	Read	Boolean
DATABASE_STORAGE_WARNING	A device specific status bit that is set when the device detects an internal database issue.	Read	Boolean
DEVICE_CONFIGURATION_LOCKED	A standard status bit that is set when configuration has been locked from changes	Read	Boolean
DEVICE_ID	A unique identifier for this device type. Taken in combination with DEVICE_TYPE defines a unique device address.	Read	32-bit unsigned integer
DEVICE_MALFUNCTION	A standard status bit indicating a significant issue within the device and its operation.	Read	Boolean
DEVICE_REVISION	A standard parameter indicating the device revision of this device.	Read	8-bit unsigned integer
DEVICE_VARIABLE_ALERT	A device specific status indicating that a device variable is in an alert state.	Read	Boolean
DEVICE_VARIABLE_SIMULATION_ACTIVE	A standard status bit that is set when one or more device variables are being simulated.	Read	Boolean
DISCRETE_CHANNEL_X_STATE	Discrete value for Channel *X* state, output in Boolean.	Read	Boolean
DISCRETE_VARIABLE_SIMULATION_ACTIVE	A standard status bit that is set when one or more discrete variables are being simulated.	Read	Boolean
ELECTRONICS_TEMPERATURE_HAS_EXCEEDED_LIMITS	The electronics/device temperature variable has gone outside of operating limits.	Read	Boolean

Table C-7: Additional Modbus and OPC Mapping Parameters *(continued)*

Parameter name	Description	Read/Write	Type
ELECTRONICS_ TEMPERATURE_UNITS	A standard status bit indicating temperature units.	Read	8-bit unsigned integer
ELECTRONIC_DEFECT	A standard status bit indicating a device electronics failure of some type.	Read	Boolean
ENVIRONMENTAL_ CONDITIONS_OUT_OF _ RANGE	A standard status bit indicating the device is outside its normal environmental operating conditions, which may affect accuracy and/or proper operation.	Read	Boolean
EVENT_NOTIFICATION _OVERFLOW	A standard status bit that is set when the event manager is not acknowledging the events fast enough.	Read	Boolean
EXTENDED_STATUS	A standard status byte indicating things such as maintenance required, device variable alert, and critical power failure.	Read	8-bit unsigned integer
FAULT_STATE_ACTIVE	A standard status bit that is set when the discrete fault state has been activated.	Read	Boolean
HARDWARE_REVISION	A standard status bit indicating hardware revision.	Read	8-bit unsigned integer
HIGH_POWER_ACTIVE	A device specific status indicating the device is in a high power mode. This usually indicates someone is connected to the wired maintenance port with a handheld configuration device.	Read	Boolean
LOGIC_ERROR	A device specific status bit that is set when local logic is not configured correctly.	Read	Boolean
MAINTENANCE_ REQUIRED	A standard status bit indicating something in the device needs maintenance (such as a battery change).	Read	Boolean
MORE_STATUS_ AVAILABLE	A standard status bit indicating more information may be available if command 48 is read.	Read	Boolean
NONCRITICAL_USER_ DATA_WARNING	A device specific status bit that is set when a non-critical configuration item is invalid.	Read	Boolean
NONPRIMARY_VALUE_ OUT_OF_LIMITS	A standard status bit indicating a non-primary variable is out of its operating limits.	Read	Boolean
NONVOLATILE_ MEMORY_DEFECT	A standard status bit indicating a non-volatile memory issue within the device.	Read	Boolean
NV_CORRECTABLE_ ERROR	A device specific status bit that is set when NV memory has been corrupted.	Read	Boolean
NV_CORRECTABLE_ WARNING	A device specific status bit that is set when NV memory has been corrupted.	Read	Boolean
NV_WRITE_ERROR	A device specific status bit that is set when a configuration item wasn't able to be saved.	Read	Boolean
OUTPUT_READBACK_ ERROR	A device specific status bit that is set when a configuration item wasn't able to be saved.	Read	Boolean
POWER_SUPPLY_ CONDITIONS_OUT_OF _ RANGE	A standard status bit that is set when the power supply or power module voltage is too low.	Read	Boolean

Table C-7: Additional Modbus and OPC Mapping Parameters *(continued)*

Parameter name	Description	Read/Write	Type
PUBLISH_FAILURE	A device specific status bit that is set when information cannot be sent to the *Wireless*HART® gateway.	Read	Boolean
RADIO_ COMMUNICATION_ FAILURE	A device specific status bit that is set when the *Wireless*HART radio is not communicating.	Read	Boolean
RADIO_FAILURE	A device specific status bit indicating that the device cannot communicate with the radio.	Read	Boolean
RADIO_MALFUNCTION	A device specific status bit that is set when the *Wireless*HART radio is malfunctioning.	Read	Boolean
READ_PACKED_D_ STATUS	The variable status of PACKED_D: Status is broken down into Quality, Limit Status, and Family Status. See the figure for details on the value.	Read	8-bit unsigned integer
ROM_ERROR	A device specific status bit indicating the device ROM failed.	Read	Boolean
SERVICE_DENIED	A standard status bit indicating that the device could not get all the network resources it requires.	Read	Boolean
SOFTWARE_REVISION	A standard parameter indicating the revision of the device software.	Read	8-bit unsigned integer
SUPPLY_VOLTAGE	Supply/battery voltage	Read	32-bit float
SUPPLY_VOLTAGE_ CLASS	Defines the type of process connection supported by the device variable and the unit code expansion to use: 0 means the variable is not classified.	Read	8-bit unsigned integer
SUPPLY_VOLTAGE_ STATUS	Status is broken down into Quality, Limit Status, and Family Status. See the figure for details on the value.	Read	8-bit unsigned integer
UNIVERSAL_REVISION	A standard parameter indicating the major protocol revision supported by the device. All wireless devices should be 7 or higher.	Read	8-bit unsigned integer
VOLATILE_MEMORY_ DEFECT	A standard status bit indicating a non-volatile memory issue within the device.	Read	Boolean

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