



# Natural Gas Solutions

## GasGate™ Remote Disconnect (RD) Installation Guide

## Identification

GasGate RD Endpoint Installation Guide  
30 January 2013 TDC-1345-000  
GasGate RD  
GasGate RD™ part number: GRD-5013-XXX

## Copyright

© 2013 Itron, Inc. All rights reserved.

## Confidentiality Notice

The information contained herein is proprietary and confidential and is provided subject to the condition that (i) it is held in confidence except to the extent required otherwise by law and (ii) it is used only for the purposes described herein. Any third party given access to this information is similarly bound in writing.

## Trademark Notice

Itron is a registered trademark of Itron, Inc.

All other product names and logos in this documentation are used for identification purposes only and may be trademarks or registered trademarks of their respective companies.

## Compliance Statement

This device complies with Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. Operation is subject to the following two conditions:

- This device may not cause harmful interference.
- This device must accept any interference that may cause undesirable operation.

This device must be permanently mounted such that it retains a distance of 20 centimeters (7.9 inches) from all persons in order to comply with FCC RF exposure levels.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation.

If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio or TV technician for help.

### Compliance Statement

This equipment complies with policies RSS-210 and RSS-GEN of the Industry Canada rules. Operation is subject to the following two conditions:

- (1) this device may not cause interference, and
- (2) this device must accept any interference, including interference that may cause undesired operation of the device.

### Déclaration de conformité

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes:

- (1) l'appareil ne doit pas produire de brouillage, et
- (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

## Modifications and Repairs

To ensure system performance, this device and antenna shall not be changed or modified without the expressed approval of Itron. Any unauthorized modification will void the user's authority to operate the equipment.

## Transportation Classification

The Federal Aviation Administration prohibits operating transmitters and receivers on all commercial aircraft. When powered, the Gas Gate RD is considered an operating transmitter and receiver and cannot be shipped by air. All product returns must be shipped by ground transportation.

## Safety Statements



**Warning** Substitution of components may impair intrinsic safety.



**Warning** Enclosure contains aluminum. Care must be taken to avoid ignition hazard due to impact.



**Warning**

- Telemetry Equipment for use in CI I, Div. 1, Gp. D Hazardous Location, for Hazardous Locations
- Temperature Code: T4
- Ambient Temperature:  $-40^{\circ}\text{C} \leq T_a \leq +70^{\circ}\text{C}$ .



**Warning** Potential Electrostatic Charging Hazard. Clean only with a damp cloth.



**Warning** Follow these procedures to avoid injury to yourself or others:

- The lithium battery may cause a fire or chemical burn if it is not disposed of properly.
- Do not recharge, disassemble, heat above 100° Celsius (212° Fahrenheit), crush, expose to water, or incinerate the lithium battery. Fire, explosion, and severe burn hazard.
- The battery used in this device may present a risk of fire or chemical burn if mistreated.
- Keep the lithium battery away from children.
- Batteries must not be replaced or modified in any way.

#### Product Notifications



**Warning** These instructions are suggested when Itron-approved utility or installer company-established valve installation procedures and practices are not available.

Itron does not endorse or warrant the completeness or accuracy of any third party valve installation procedures or practices, unless otherwise provided in writing by Itron. Follow your company's standard operating procedures regarding the use of personal protection equipment (PPE). Adhere to guidelines issued by your company in addition to those given in this document when installing or repairing valves.

This product, as of the date of manufacture, is designed and tested to conform to all governmental and industry safety standards as they may apply to the manufacturer. The purchaser/user of this product must comply with all fire control, building codes, and other safety regulations governing the application, installation, operation, and general use of this valve to avoid leaking gas hazards resulting from improper installation, startup, or use of this product.

To ensure safe and efficient operation of this product, Itron strongly recommends installation by a qualified professional.

#### Suggestions

If you have comments or suggestions on how we may improve this documentation, send them to [TechnicalCommunicationsManager@itron.com](mailto:TechnicalCommunicationsManager@itron.com)

If you have questions or comments about the software or hardware product, contact Itron Technical Support:

#### Contact

- Internet: [www.itron.com](http://www.itron.com)
- E-mail: [support@itron.com](mailto:support@itron.com)
- Phone: 1 877 487 6602



# Contents

---

<b>Before You Begin .....</b>	<b>vi</b>
Document Purpose.....	vi
Document Conventions.....	vi
<b>Chapter 1 About the Itron GasGate RD.....</b>	<b>1</b>
GasGate RD System Security.....	1
Transmission Modes .....	1
Operational States.....	2
Specifications .....	3
Related Documents.....	3
<b>Chapter 2 Installing the Itron GasGate RD .....</b>	<b>4</b>
Initial Calibration and Alignment.....	4
GasGate RD Installation, Commissioning, and Decommissioning .....	5
GasGate RD Accessories .....	5
To connect the GasGate RD.....	7

## Before You Begin

---

### Document Purpose

This installation guide provides instructions for installing, commissioning, connecting, decommissioning, and disconnecting the Itron GasGate RD remote-controlled valve.

### Document Conventions

The following documentation conventions are used in this installation guide.



**Caution** A Caution warns the installer that failure to follow the information in the note could result in loss of data. Be sure to carefully read a Caution note and follow the advice or instructions.



**Warning** A Warning alerts the installer about potential physical harm to the installer or hardware. It is critical that you pay strict attention to Warning notes, read the information carefully, and follow the advice or instructions.



**Tip** A Tip provides the installer with extra hints or tips to make a task easier to perform or a concept easier to understand.



**Note** A Note supplies generic information to the installer. The installer can ignore the information and continue the task without suffering any adverse consequences.

# About the Itron GasGate RD™

---

The Itron wireless GasGate Remote Disconnect (RD) valve is an integrated, remotely-controlled, gas shut-off that completely stops the flow of natural gas into a residential or commercial structure. The GasGate operates as a standalone gas control device that co-exists with gas meters to monitor and remotely-control natural gas supply.

The GasGate is controlled using secure commands that place the valve into a closed or open position. Operational commands are sent through a ChoiceConnect Fixed Network or using a ChoiceConnect mobile or handheld programming device.

The GasGate is made up of two separate chambers, the gas chamber and the electronic chamber. *The gas chamber employs a mechanism that can shut off the flow of gas with a remote command. A special hardware tool—the GasGate valve tool—is required to re-engage the gas flow mechanism. The mechanism will not re-engage without a certified technician sending a wireless command to enable re-engagement and using the valve tool to physically open the valve. In the event that someone jams the mechanism open, the system reports the valve tamper. The electronics chamber houses the monitoring and wireless radio circuitry. The chamber is protected by a tamper plug over one of the four fasteners. In the event the electronics chamber is compromised, the GasGate generates at least one tamper flag.*

The GasGate can be installed in any horizontal or vertical orientation that locates the mounting seal in an upright position and that facilitates gas flow in the proper direction. Locating the mounting seal in an upright installation orientation ensures optimum battery life and helps keep debris from accumulating on the seal surface (for installation information, see [Installing the Itron GasGate RD](#) on page 4).

## GasGate RD System Security

GasGate RD remote-controlled valves feature ChoiceConnect system security to ensure operational commands are sent over a secure network. Commands that control the valve state are authenticated and secured using the Itron Security Manager. GasGate RD security keys are injected into the device at the time they are manufactured. The GasGate RD valves ship from the factory in a decommissioned state.

## Transmission Modes

The GasGate can be set to transmit in fixed network, or mobile/handheld mode.

- **Fixed Network Mode.** The Fixed Network bubble up (BuP) message is a proprietary ChoiceConnect network BUP message. The GasGate RD system supports two BUP message types and two-way commands.
  - Normal BUP.
  - Alarm BUP. If a critical alarm is detected, the GasGate RD device enters an alarm state and transmits the alarm details. An alarm state causes the following events:

- While the alarm window is active, any scheduled normal mobile or fixed network BUP messages are not transmitted.
- If an acknowledgment is received, the GasGate RD returns to its normal BUP transmission schedule. The normal mobile and fixed network BUP messages will contain the appropriate tamper flags set in the message.
- If an acknowledgment is not received by the GasGate RD, the device returns to its normal BUP transmission schedule. The GasGate RD transmits normal mobile BUP messages with the appropriate alarm tamper flags set. When a fixed network BUP event is triggered, the GasGate RD enters the alarm state and repeats the alarm BUP message transmission until an acknowledgment is received by the network.
- Alarm BUP messages contain the following information
  - Alarm ID defining the cause of the alarm
  - Endpoint ID
  - Utility ID
  - Current extended tamper field values
- Two-Way Commands. Fixed network command messages manage and control the status of the GasGate RD valve.
- **Mobile/Handheld Mode.** Mobile/handheld functionality is dependent on whether the request or read is routed to the meter reading application server or the FDM application server
  - Read Mobile BUP Message. The mobile BUP message is a proprietary ChoiceConnect BUP message. The GasGate RD system supports one mobile message type.
  - Normal BUP
  - Two-Way Commands. The mobile/handheld command messages manage and control the state of the GasGate RD valve.
  - Two-Way Reads. The mobile/handheld provides the tool to read logs and report the status of the GasGate RD valve.

## Operational States

The GasGate RD normal operational states include:

- **Closed.** The GasGate remote-controlled valve receives a command to close from a handheld, mobile, or fixed network reading device. When the GasGate valve is closed, the flow of gas stops.
- **Open.** The GasGate valve receives a command to open from a handheld, mobile, or Fixed Network reading device. Opening the GasGate valve requires an onsite visit to physically open the valve. First, the technician uses the handheld device to issue the connection (open) command. After the connection command is received, the onsite technician uses the GasGate valve tool to open the GasGate valve. After gas flow begins, the technician ensures the system is working correctly and gas is flowing in the system.



## Specifications

The functional and operational specifications for the Itron GasGate RD are listed below.

<b>Functional Specifications</b>	<b>Description</b>
<b>Power source</b>	Two "A" cell lithium batteries
<b>Tamper detection</b>	Tilt tamper and cut cable tamper
<b>FCC compliance</b>	Part 15 certified
<b>Industry Canada compliance</b>	RSS-210 certified
<b>Intrinsically safe per</b>	UL Class I, Division 1, Groups C and D
<b>Product identification</b>	Numeric and bar-coded type and serial number
<b>Construction materials</b>	Gray polycarbonate housing and back plate with encapsulated electronics
<b>Operational Specifications</b>	<b>Description</b>
<b>Operating temperatures</b>	-40° to 158° F (-40° to +70° C)
<b>Operating humidity</b>	5 to 95 percent relative humidity
<b>Program frequency</b>	908 MHz
<b>Transmit frequency</b>	Spread spectrum 908 to 924 MHz ISM band
<b>Data integrity</b>	Verified in every data message

## Related Documents

<b>Document Title</b>	<b>Document Part Number</b>
<i>GasGate RD Specification Sheet</i>	Publication
<i>Field Deployment Manager Endpoint Tools Mobile Application Guide</i>	TDC-0934-XXX
<i>Field Deployment Manager Field Representative's Guide</i>	TDC-0936-XXX
<i>100 Series and CENTRON Meter Tamper Reference Guide</i>	TDC-1028-XXX
<i>100 Series Technology Guide</i>	TDC-0825-XXX

**Note** The last three digits of the user and installation guides represent the document's revision level. The revision level is subject to change without notice.

# Installing the Itron GasGate RD

---

This section describes GasGate RD installation. GasGate installation requires initial calibration and alignment using an Itron handheld device loaded with Field Deployment Manager Endpoint Tools.

## Initial Calibration and Alignment

When the GasGate RD remote-controlled valve is deployed, the device requires initial calibration and alignment. FDM Endpoint Tools support secure meter installation commissioning and verification. FDM Endpoint Tools receive secure, signed commands and a list of GasGate RD reading keys for each specific GasGate RD device, if available.

GasGate RD supports FDM Endpoint Tools operation with:

- **Pre-fetch Capabilities.** FDM Endpoint Tools obtains secure GasGate RD commands during in office work order synchronization.
- **In field Commands.** FDM Endpoint Tools requests and receives commands in the field when there is network availability and when the network has access to the head end equipment.

The GasGate RD supports a decommissioned state. The GasGate RD placed into a decommissioned state prior to shipment. The GasGate RD will also be placed into the decommissioned state when the device is removed from service and transported to another location.

The following commands or capabilities are supported by FDM Endpoint Tools during the GasGate RD commissioning and decommissioning process. All commands associated with this task are secured and signed by the Itron Security Manager (ISM) (for more information, see [GasGate RD System Security](#) on page 1).

- Transmit a secure commissioning/decommissioning command and receive an outcome response.
- Commissioning used to align and calibrate the GasGate RD.
- Decommissioning to put the GasGate RD into a state so it can be removed or relocated.
- Send a secure valve setting command to the GasGate RD.

The Gas Gate RD supports commands to place the valve in an open or closed state. The valve state is determined from the work order associated with the task.

When the Gas Gate RD is shipped to the customer, ChoiceConnect command related security keys are already injected into the device. All required secure commands are obtained from the ISM before verifying the installation. Commands include

- Commissioning
- Valve control
- Secure reading key commands

## Installing, Connecting, Commissioning, Disconnecting, and Decommissioning the GasGate RD

This section provides the instructions to install, connect, commission, disconnect, and decommission the GasGate RD.



**Warning** These instructions are suggested when Itron-approved utility or installer company-established valve installation procedures and practices are not available.

Itron does not endorse or warrant the completeness or accuracy of any third party valve installation procedures or practices, unless otherwise provided in writing by Itron. Follow your company's standard operating procedures regarding the use of personal protection equipment (PPE). Adhere to guidelines issued by your company in addition to those given in this document when installing or repairing valves.

This product, as of the date of manufacture, is designed and tested to conform to all governmental and industry safety standards as they may apply to the manufacturer. The purchaser/user of this product must comply with all fire control, building codes, and other safety regulations governing the application, installation, operation, and general use of this valve to avoid leaking gas hazards resulting from improper installation, startup, or use of this product.


To ensure safe and efficient operation of this product, Itron strongly recommends installation by a qualified professional.



Itron GasGate RD

GasGate installation

### GasGate RD Accessories

Description	Part Number
GasGate RD valve tool	

### **To install the GasGate RD in the pipeline**

---

**Caution** Remove all shipping plugs from the inlet and outlet of the GasGate prior to installation. Keep the piping interior, valve inlet, and valve outlet free of dirt, chemical sealant (pipe dope), Teflon tape, or other debris. Materials in the piping, or the valve inlet or outlet may interfere with the valve operation.

Apply pipe joint sealant on the male (exterior) pipe threads. Do not apply pipe joint material on the female (interior) pipe threads of the valve. Joint materials could lodge in the valve and interfere with the valve operation.

Gas must flow through the valve body in the same direction as the arrow on the valve. Gas flowing in the wrong direction may cause an over-pressure condition and damage the GasGate.

**Note** Install the GasGate in an orientation that positions the antenna as far from walls, meters, or piping as possible to ensure:

- a clear RF signal reaches the antenna.
  - gas is flowing in the proper direction (the direction indicated by the arrow on the GasGate).
  - the valve bolt is accessible with the GasGate valve tool.
- 

1. Verify the gas flow is in the direction noted by the arrow on the GasGate valve.



2. Thread the GasGate onto the inlet pipe (or riser).
3. Tighten the connection with a pipe wrench.
4. Apply pipe sealant on the outlet pipe. Tighten the outlet pipe connection.

### **To commission the GasGate RD**

1. Using FDM Endpoint Tools, select operation 4, **Commission**. Click **Next**.
  2. Enter the GasGate ID.
- 

**Note** The ISM security keys are injected during the commissioning process to enable GasGate enhanced security.

---

### **To connect the GasGate RD**

1. Using the handheld computer loaded with FDM Endpoint Tools, select Number 2 **Connect Service**.
2. Click **Next**. Enter the GasGate ID.
3. Click **Next**.

---

**Note** A Warning appears to remind the service technician to light pilots after the valve is opened.

**Caution** You must wait until the handheld confirms the valve is ready to be opened. If you attempt to open the valve before the handheld confirms a valve ready state, the valve will return a failed status and initiate a tamper event.

---

4. Using the GasGate valve tool, turn the valve bolt to lock the valve into the open position.

---

**Important** Turn the valve tool until you hear a *click* indicating the valve locked into place.

In the event the valve operation is not confirmed, an error message (*Result of operation is inconclusive: the endpoint was not found*) appears.

---

### **To disconnect the GasGate RD**

1. In FDM Endpoint Tools, select number 3 **Disconnect Service**.
2. Enter the GasGate ID. Select **Next**.

---

**Note** A warning appears: *You are turning off the gas supply*.

---

3. Click **Next** to proceed.

A confirmation screen appears indicating the valve is closed. If the valve does not confirm a status of closed, an error screen will appear. Repeat the process. If the valve does not confirm a closed status after the second try, call Itron Technical Support for help.

### **To decommission the GasGate RD**

---

**Warning** Prior to decommissioning, verify the gas supply is turned off.

---

1. In FDM Endpoint Tools, select number 5 **Decommission**. Click **Next**.
2. Enter the GasGate ID. Click **Next**.

A screen appears confirming the GasGate is decommissioned.