Configuring the RFT9739 Field-Mount Transmitter for Commercial Trade

Introduction

These instructions explain how to configure a Version 3 field-mount RFT9739 transmitter for use in custody transfer and other commercial trade applications.

For commercial trade applications, the transmitter has security switches and an optional lockout clamp.

- Security switches enable the user to write-protect all configuration and calibration parameters and/or disable flowmeter zeroing and resetting of totalizers.
- The lockout clamp prevents access to the transmitter's wiring terminals and electronics module.

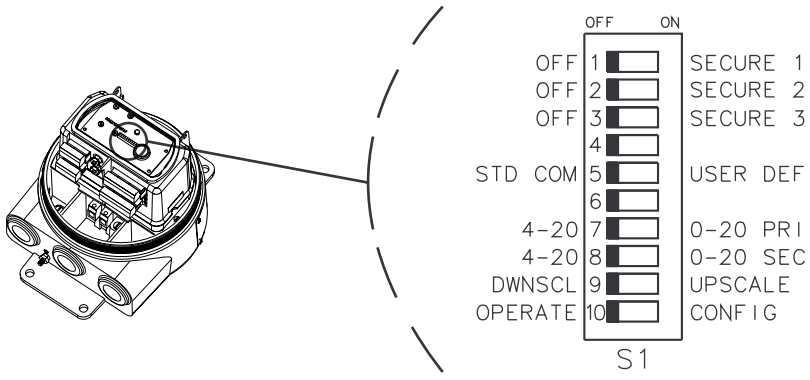
Before securing the transmitter configuration or installing the lockout clamp, make sure the transmitter has been properly installed and the flowmeter has been zeroed, according to the appropriate sections in the instruction manual that is shipped with the transmitter.

Securing the transmitter configuration

A Version 3 field-mount RFT9739 has three security switches.

- To access switches, unscrew the cover from the base of the transmitter, then unlatch the hinged cover of the electronics module.
- **Figure 1** illustrates the switches, which are labeled SECURE 1, SECURE 2, and SECURE 3.

Figure 1. Switches



Switches 1 through 10 at left are shown in the OFF position.

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Security modes

Switches 1, 2, and 3 enable the user to disable flowmeter zeroing, disable resetting of totalizers, and write-protect all configuration and calibration parameters.

Switch settings enable any of eight possible security modes. Different modes determine which functions are disabled and whether configuration and calibration parameters are write-protected. The following functions can be disabled:

- Flowmeter zeroing using digital communications
- Flowmeter zeroing using the zero button and, if the transmitter has a display, the Scroll and Reset knobs
- Totalizer reset, with flow, using digital communications
- Totalizer reset, with flow, using the Scroll and Reset knobs, if the transmitter has a display
- Totalizer control, with zero flow, using digital communications
- Totalizer control, with zero flow, using the Scroll and Reset knobs, if the transmitter has a display

Table 1 lists the parameters that are write-protected and functions that are disabled for each security mode. Security modes 1 through 7 are entered immediately when switches 1 through 3 are set.

For information about security mode 8, see page 3.

Table 1. Security modes

Switch settings	Mode 1	Mode 2	Mode 3	Mode 4	Mode 5	Mode 6	Mode 7	Mode 8[1]
Switch 1	OFF	OFF	OFF	OFF	ON	ON	ON	ON
Switch 2	OFF	OFF	ON	ON	OFF	OFF	ON	ON
Switch 3	OFF	ON	OFF	ON	OFF	ON	OFF	ON

Function/ parameter	Performed with	Mode 1	Mode 2	Mode 3	Mode 4	Mode 5	Mode 6	Mode 7	Mode 8
Flowmeter zeroing	Zero button or Reset knob		Disabled	Disabled	Disabled	Disabled	Disabled	Disabled	Disabled
	HART or Modbus			Disabled	Disabled	Disabled			Disabled
Totalizer control, no flow	Scroll and Reset knobs		Disabled		Disabled	Disabled		Disabled	
	HART or Modbus			Disabled		Disabled	Disabled		
Totalizer control, with flow	Scroll and Reset knobs		Disabled	Disabled	Disabled	Disabled	Disabled	Disabled	Disabled
	HART or Modbus			Disabled	Disabled	Disabled	Disabled	Disabled	Disabled
Configuration and calibration parameters				Write-protected	Write-protected	Write-protected	Write-protected	Write-protected	Write-protected

[1] *Changing the settings of switches 1, 2, and 3 does not immediately implement security mode 8. For more information about security mode 8, see page 3.*

Security mode 8

When transmitter security is set for mode 8, the transmitter meets security requirements for custody transfer described in National Institute of Standards and Technology (NIST) Handbook 44.

Once the transmitter is configured for security mode 8, the security mode cannot be changed unless a master reset is performed. A master reset causes all configuration parameters to return to their default values, and ***requires complete characterization and reconfiguration of the transmitter.***

If the user attempts to enter a new security mode or change the transmitter configuration after entering security mode 8:

- Internal totalizers stop counting
- The frequency/pulse output goes to 0 Hz
- mA outputs go to 4 mA
- The optional display reads, "SECURITY BREACH; SENSOR OK"
- Custody transfer event registers record each change made to defined configuration and calibration parameters. (For a list of these parameters, see the instruction manual that is shipped with the transmitter.)

The security breach continues, and totalizers and outputs remain inactive, until the transmitter is reconfigured for security mode 8, or until a master reset has been performed. Custody transfer event registers are not affected by a master reset. For information about event registers, or to perform a master reset, see the instruction manual that is shipped with the transmitter.

Milliamp output trim, milliamp output test, and frequency/pulse output test procedures cannot be performed after security mode 8 is entered. ***Before entering security mode 8,*** perform milliamp trim and/or test procedures, if necessary, as described in any of the following manuals or in AMS on-line help:

- *Using the HART Communicator with Micro Motion Transmitters*
- *Using ProLink Software with Micro Motion Transmitters*
- *Using Modbus Protocol with Micro Motion Transmitters*

To enter security mode 8:

1. Note the position of switch 5.
2. Set switch 10 to the ON position. The diagnostic LED on the transmitter electronics module flashes on 3 times and pauses, which indicates the transmitter is in the configuration mode.
3. Set switches 1, 2, and 3 to the ON position.
4. Set switches 4, 5, and 6 to the OFF position.
5. Locate the ZERO button on the transmitter electronics module.
6. Press and hold the ZERO button for five seconds. The diagnostic LED will remain on for two to three seconds to indicate security mode 8 has been entered.
7. Reset switch 5 to the desired position (as noted in Step 1).
8. Reset switch 10 to the OFF (OPERATE) position. The diagnostic LED flashes on once per second (25% on, 75% off), which indicates the transmitter is in the normal operating mode.
9. Leave switches 1, 2, and 3 in the ON position to remain in security mode 8.

To verify the transmitter is in security mode 8:

- If the transmitter has a display, use the Scroll knob to scroll through process variable screens to event register screens. If event register screens appear, the transmitter is in security mode 8.
- If the transmitter does not have a display:
  1. Configure the transmitter.
  2. Wait until the diagnostic LED blinks ON once per second.
  3. Move switch 1, 2, or 3 to the OFF position.
  4. If the diagnostic LED blinks ON 4 times per second, the transmitter is in security mode 8.

To make changes to configuration or calibration parameters once security mode 8 is entered:

1. Set switches 1, 2, and 3 to the OFF position.
2. Make changes through digital communication or, if the transmitter has a display, with the Scroll and Reset knobs. Custody transfer event registers record changes made to defined configuration and calibration parameters. For more information about digital communications, see the following instruction manuals or AMS on-line help:
   - *Using the HART Communicator with Micro Motion Transmitters*
   - *Using ProLink Software with Micro Motion Transmitters*
   - *Using Modbus Protocol with Micro Motion Transmitters*
3. Reset switches 1, 2, and 3 to the ON position.

To reenter security mode 8:

If security mode 8 has been established previously, and the security mode has been temporarily changed, it is not necessary to use the ZERO button to reenter security mode 8. In such a case, resetting switches 1, 2, and 3 to the ON position will reenter security mode 8 immediately.

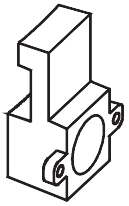
If a master reset has been performed, it is necessary to use the ZERO button method to reenter security mode 8. See the procedure at the top of this page.

Lockout clamp installation procedure

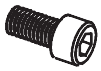
The lockout clamp kit includes a clamp, a mounting screw, and a cap, as shown in **Figure 2**.

- For custody transfer applications in the United States and Europe, the clamp, mounting screw, and cap are required (see **Figure 2**).
- To avoid losing individual parts, install the mounting screw and lockout clamp, then make sure a weights and measures inspector immediately installs the cap and performs the inspection. Once installed, the cap can only be removed by the inspector.

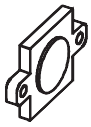
Figure 2. Parts in lockout kit



Clamp



Mounting screw

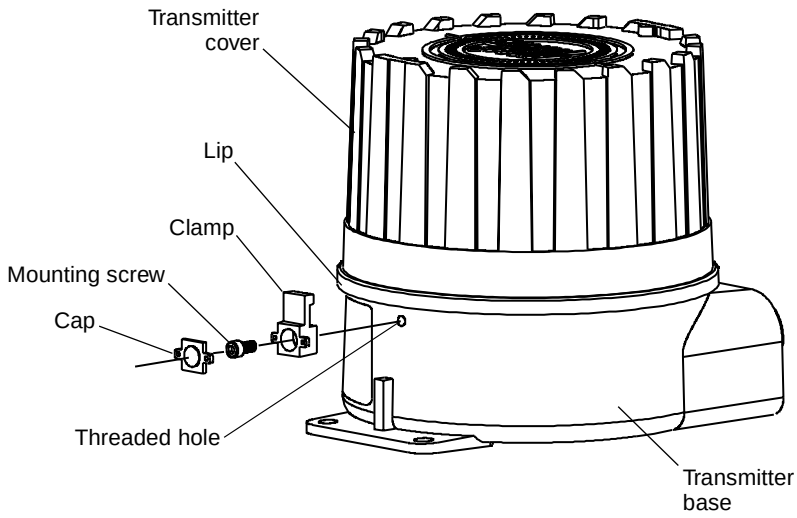


Cap

To install the lockout clamp, refer to **Figure 3**, page 6, and follow these steps:

1. Make sure the transmitter cover is securely screwed onto the transmitter base.
2. Insert the mounting screw through the largest hole in the clamp, so the screw head fits into the recess in the clamp.
3. On the transmitter, find the threaded hole for the mounting screw. The hole is located in the transmitter base, on the side opposite from the conduit openings.
4. Position the clamp so the groove in the clamp fits over the lip on the cover of the transmitter and the mounting screw aligns with the base.
5. Using a 5/32-inch Allen wrench (4 mm hexagonal key wrench), screw the mounting screw into the threaded hole in the transmitter base. The mounting screw is a 5 mm screw.
6. The weights and measures inspector must put the cap in place over the screw head, so the holes in the cap align with the two small holes in the clamp. To complete the installation, the inspector runs a wire seal through the aligned holes in the clamp and cap, then secures the seal.

Figure 3. Installation diagram for lockout clamp



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