

SALUS® Wireless Radiator Valve Model ARV10RFM-3

INTRODUCTION

The ARV10RFM-3 is a battery-powered, mini-size thermostatic radiator valve (TRV) controller using the ZigBee wireless protocol. Simply replace the existing, passive head on the standard 30mm radiator valve with the AVA10M30RF (referred to from now on as the TRV). This allows you to convert systems with one or two thermostat zones into individually controlled zones. Pair up to 6 TRVs with the AWRT10RF wireless thermostats. The SG888ZB Gateway creates the Zigbee network. An optional AX10RF Receiver controller may be used to control the boiler.



SYSTEM OVERVIEW

- The Universal Gateway SG888ZB creates the Zigbee network.
- The thermostat(s) and TRV(s) join the Zigbee network to control the radiator(s)
- Up to 6 TRVs may be paired with a single thermostat.
- If you are using an optional AX10RF Wireless Receiver to control the boiler:
 - If any thermostat calls for heat or, if the TRV is manually opened, the AX10RF will energize the boiler
 - As each zone is satisfied, the associated TRV(s) will close.
 - The AX10RF will energize the boiler until all zones are satisfied, and then turn-off.

See AX10RF and AWRT10RF manuals for more additional information.

CHECK COMPATIBILITY WITH THE RADIATOR VALVE

The SALUS TRV is compatible with most common thermostatic radiator valves. Confirm dimensions

- Thread diameter is 30mm (1.18in)
- Valve pin length when open is between 13-16mm (0.51-0.62in)

If the dimensions do not match, it is recommended you change the radiator valve

If there are no threads near the valve pin (below), use the RA Adapter included with the TRV

- Slip the Adapter over the stem until it clicks in place
- Make certain the adapter is fully seated
- Tighten the collar screw



Joining the TRV

The TRV will remain in the Joining mode for 10 minutes after the first-time power has been applied (out of the box) or it has been factory reset.

Prior to inserting the batteries in the TRV, prepare the AWRT and the App for joining.

1. From the App

- 1.1. Click Devices on the top menu bar
- 1.2. Click Add Devices in the drop-down menu
- 1.3. Click Scan Devices on the new page that opens

2. With the AWRT

- 2.1. Insert the Batteries, the AWRT will go through its boot process
- 2.2. When the display shows **PAIR? RLY_CTRL**, press the ^ arrow once to display **PAIR? RTR_VLV**
- 2.3. Press SELECT button the display will show **JOINING---** with a timer counting down from **10:00**

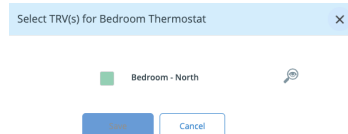
3. With the TRV

- 3.1. Remove TRV from the box
- 3.2. Remove side battery door
- 3.3. Insert batteries, ensuring proper polarity
- 3.4. Replace cover
- 3.5. The LED will flash **Orange**, two times, slowly
- 3.6. It will go through a sequence of rapid **Red** and **Green** flashes indicating the firmware versions (i.e. 14.4/6.3)
- 3.7. The LED will then flash **Green** (0.5s on/0.5s off) to indicate it is in the **Joining** mode
- 3.8. Once the TRV Joins the network and Pairs with the AWRT, it will begin the Adaptation process by retracting the valve stem pin
- 3.9. Press any button to initiate the Adaptation process
- 3.10. The TRV will remain in the Joining mode for 10 minutes



4. From the App

- 4.1. Wait for devices to be found, click on the devices to:
- 4.2. Give the devices a meaningful name
- 4.3. From the dashboard, select the Thermostat you want to Pair the TRV with, by clicking on the tile
- 4.4. Click on the Thermostat name
- 4.5. To edit, click the on **All TRVs on This Thermostat**
- 4.6. Select the TRV - click box to turn Green, click Save



- 4.7. The TRV has now Joined the network and Paired with the Thermostat and the LED will turn OFF

Note: If the TRV does not complete the Pairing process and no button is pressed

- After 10 minutes the TRV will automatically retract the pin (LED rapidly flashing **Red**) so the TRV may be mounted on the valve. During this time, the TRV cannot Join/Pair
- After 20 minutes, the TRV will initiate the Adaptation process. During this time, the TRV cannot Join
- Press the RADIO button for 10+ seconds to initiate the **Joining** mode

INSTALLATION

1. Remove the existing head.
2. Confirm the TRV pin is retracted (see 3.7 above)
3. Thread the TRV onto the radiator valve.
4. Tighten the mounting ring finger-tight to the valve

NOTE: Do not use tools or over tighten

5. Press any button to initiate the Adaptation process which takes approximately 4 minutes as the TRV calibrates itself to the valve
 - 5.1. The TRV will go through a sequence of
 - 5.1.1. Closing the valve (LED flashes **Green**)
 - 5.1.2. Opening the valve (LED flashes **Orange**)
 - 5.1.3. Closing the valve (no LED however if you listen closely, you will hear the valve motor running)
 - 5.2. The TRV will position the valve based on the command from the AWRT
 - 5.2.1. If the TRV has not Paired with the AWRT it will move to its Fail-Safe position of 25% open



NOTE: Once the TRV has completed the Adaptation process do not rotate the TRV counterclockwise as it may loosen the mounting ring

ADDITIONAL FUNCTIONS

Auto Lock function

Once paired, the thermostat controls the TRV and after 5 minutes the TRV buttons are locked.

- To unlock – Press RADIO + CLOSE button for 3 seconds, LED flashes **Green** once
- To lock – Press RADIO + CLOSE button for 3 seconds, LED flashes **Red** once
- TRV will Auto Lock after 5 minutes if no buttons are pressed.



Check Valve Status

To check if the valve is open or closed press the OPEN or CLOSE button momentarily.

When controlled by the thermostat:

- A rapid single **Red** flash indicates the valve is closed
- A rapid single **Green** flash indicates the valve is open

When in Manual mode:

- Two rapid **Red** flashes indicates the valve is closed
- Two rapid **Green** flashes indicates the valve is open

Manually open or close the valve

To manually open or close the valve.

1. Unlock the TRV - Press RADIO + CLOSE button for 3 seconds
2. Open - Press the OPEN button for 3+ seconds, LED flashes **Green**
3. Close - Press the CLOSE button for 3+ seconds, LED flashes **Red**

The valve will remain in the commanded position until:

- Manually changed by pressing OPEN or CLOSE button for 3+ seconds
- Returned to Automatic mode by briefly pressing the RADIO button
- Room temperature falls below the Frost Protection set point of 41°F (5°C)

Frost Protection

When the TRV has been manually closed, Frost Protection is automatically enabled. If the room temperature falls below 41°F (5°C), the TRV will control to the Frost Protection set point. When controlled by the thermostat, the TRV responds to the thermostat's Frost Protection set point.

Lime Scale Protection

The TRV has a lime-scale protection feature where if the valve has not moved for 14-days, the TRV will automatically stroke the valve open and closed. This function will attempt to prevent the valve from sticking due to scale buildup on the valve assembly.

Factory Reset to default settings

The TRV can be reset to default settings and network, pairing, and valve calibration information cleared if the device is not operating as expected.

1. Unlock the TRV - Press RADIO + CLOSE button for 3 seconds
2. To factory reset, press OPEN, CLOSE and RADIO buttons for 3+ seconds: LED flashes **Orange** once
3. Remove the side battery door
4. Remove at least 1 battery for approximately 5 seconds
5. Replace battery(s)
6. Replace side battery door

The TRV will go through the initialization process described above then the LED will flash **Green** (0.5s on/0.5s off) to indicate it is in the Joining mode.

Auto Adaptation

The TRV will reinitiate the initialization and Adaptation process where it calibrates itself to the valve, each time the batteries are replaced. Configuration, network, and pairing settings will be retained – unless it has been Factory Reset.

Manual Adaptation

If you suspect that the TRV is not calibrated properly to the valve, you can remove and replace the batteries, or force the TRV to initiate the Adaptation process

1. Unlock the TRV - Press RADIO + CLOSE button for 3 seconds
2. Hold the Radio + OPEN buttons for 3+ Seconds: LED flashes **Red** and the TRV will open the valve
3. Ensure the TRV mounting ring is finger-tight on the valve
4. Press any button to start the Adaptation process

Fail-Safe mode

The TRV will open to 25% as a Fail-Safe mode to provide some level of heat, if hot water/steam is available if:

- The TRV loses or fails to Join the network or Pair with the thermostat
- TRV receives no command from thermostat for 1+ hours
- Low battery
- Temperature sensor malfunction

When in the Fail-Safe mode the TRV can be manually opened or closed

Quick Functions

To do this...	Press the...
Unlock the buttons	Press RADIO + CLOSE buttons together for 3 seconds, LED flashes Green once
Lock the buttons	Press RADIO + CLOSE buttons together for 3 seconds, LED flashes Red once
Manually open the valve	Unlock, press OPEN button for 3 seconds, LED flashes Green once
Manually close the valve	Unlock, press CLOSE button for 3 seconds, LED flashes Red once
Return TRV to automatic mode	Short press RADIO button, LED flashes Red once
Redo Adaptation to valve	Unlock, press RADIO + OPEN buttons together for 3 seconds. LED flashes Red as actuator opens.
Restore factory default settings	Unlock, press OPEN + RADIO + CLOSE buttons together for 3 seconds LED flashes Orange once, then remove and replace batteries
Join Network & Pair with thermostat	Unlock, press RADIO button for 10 seconds until LED begins to continuously blink Green
Leave the network (if already Joined)	Unlock, press RADIO button for 10 seconds. LED flashes Orange once, blinks Green

Various LED States

When...	The LEDs...
Batteries inserted or after reset	Flash rapidly Red then Green to indicate the software version
Unit adapting (calibrating) to the valve	Steady Red as TRV opens valve Flash Green as TRV closes the valve Flash Orange as TRV reopens the valve No LED as the TRV steps the valve closed
Unit has joined the network but has not paired to thermostat	Flash Orange (0.5s on/0.5s off)
Unit paired to thermostat and in auto mode	No LED
Leaving network	Orange for one second, then flash Green (0.5s on/0.5s off)
Identifying the network	Flashes Green for up to 10 minutes
When OPEN or CLOSE button is pressed momentarily	Flashes Green once after short press on open or close button in Auto mode
	Flashes Red once after short press on open or close button in Auto mode
	Flashes Green twice after short press on open or close button when in Manual Open
	Flashes Red twice after short press on open or close button when in Manual Close
Low battery	Flashes Red three times quickly every 10 seconds As the battery continues to drain the frequency will be decreased Before the batteries drain completely, the TRV will move to the Fail-Safe position (25% open)
Error installing	Green and Red flash alternately

SALUS North America, Inc.

For Technical Support:
support@salusinc.com
1-885-557-2587

Please visit www.salusinc.com for the most up to date documentation

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