AcuTEMS™ RM Series

Room Mount Temperature Sensor Installation Guide

CE

1.800.561.8187

www.itm.com

ACCUENERGY

information@itm.com

Please read this manual carefully before installation, operation, and maintenance of the AcuTEMS RM Room Mount Temperature Sensor.

The information contained in this document is believed to be accurate at the time of publication, however, Accuenergy assumes no responsibility for any errors which may appear here and reserves the right to make changes without prior notice as part of continuing improvements. Please ask the local representative for the latest product specifications before ordering.

The following symbols in this manual appear throughout this documentation, in addition to electrical warning of danger or safety risk during the installation and operation of the sensors.

	**Electrical Shock Hazard:** Contains information about procedures which must be followed to prevent the risk of electric shock and danger that can result in personal injury or death.
	**Safety Warning:** Contains information about circumstances which, if not considered, may result in personal injury or death.
NOTE	An advance notice to provide additional information before an action is taken by the user.
ALERT	Indicating the operation may lead to device malfunction or potential data loss.

Installation and maintenance of the AcuTEMS RM Temperature Sensor shall only be performed by qualified, competent professionals who have received training and have experience with high voltage and current devices.

Accuenergy shall not be responsible or liable for any damage caused by improper sensor installation and/or operation.

Table of Contents

Introduction

Overview

The AcuTEMS RM wall-mount design is for indoor applications and features a four-way aspiration enclosure engineered to minimize self-heating and measure temperature accurately without disturbance. The temperature sensor can be ordered with a resistive output with multiple RTD or thermistor options, or can be configured as a transmitter with a 4-20mA and 0-10VDC output. An optional LCD is available when ordered with a transmitter to provide temperature readings locally with measurement unit indications.

ALERT: AcuTEMS RM cannot be mounted in a pool room or used for any application where corrosive chemicals are present.

ALERT: The AcuTEMS RM must be powered OFF during installation and wiring. Failure to do so may result in damage to the sensor.

Dimensions

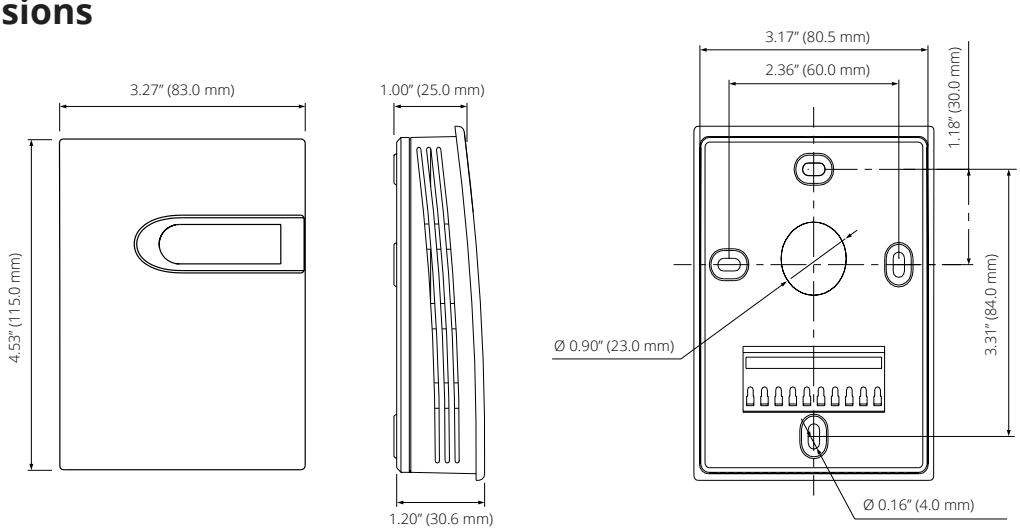


Figure 1 AcuTEMS RM Front, Side, and Rear View

Installation

Step 1: Choose the Optimal Mounting Location

The AcuTEMS RM sensor should be on an interior wall or ceiling to North American single gang junction box, typically 1.2-1.8m (4-6ft) above the floor. The exact height requirements will be dictated by local code and regulations.

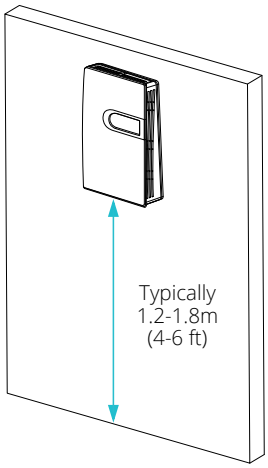


Figure 2 AcuTEMS RM Typical Mounting Location

NOTE: The sensor should be installed on the interior building walls. Do not install on external walls, as outside temperatures may cause temperature output fluctuations.

1. Mount the sensor in an area where air circulation is mixed and not blocked. Ensure there are no obstructions near the mounting location, such as curtains, furniture, doors, or other objects.
2. AcuTEMS RM should be mounted away from any heat sources such as hot water pipes, direct sunlight, space heaters, and electric equipment that generates heat.
3. AcuTEMS RM should be mounted away from any cold sources such as dehumidifiers and fans.
4. AcuTEMS RM should be mounted away from supply heating/cooling registers, air vents, windows, and poorly insulated walls. Infiltration of cold air will affect the temperature reading.

Step 2: Separate Front Cover

To connect the electrical wiring, the terminal needs to be accessed by opening the front cover.

1. Locate the locking hook positioned at the top of the enclosure.
2. Insert a small flathead screwdriver, slightly press down on the locking hook.
3. Gently pull open the front cover as illustrated in the following figure.

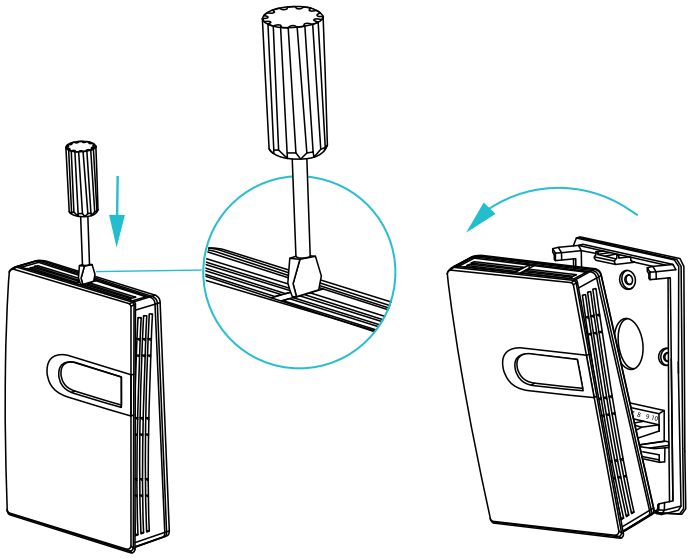


Figure 3 AcuTEMS RM Removing Front Cover

The electrical terminals will be revealed. Connect the wiring according to the instructions in the next step.

Step 3: Electrical Wiring

ALERT: When using 24VAC power supply with the AcuTEMS RM, it is strongly recommended to power the unit with an independent, dedicated, UL Listed Class 2 transformer.

ALERT: When using RTD or thermistor for temperature output, it is recommended to separate signal wiring and 24/120/230 VAC line voltages. Failure to do so will result in unstable reading.

ALERT: If sharing a 24VAC transformer with other equipment such as controllers, or transmitters, an improper polarity will cause damage to the sensor.

ALERT: Do not mix half and full-wave rectified devices when powering with AC power supply. The AcuTEMS RM is half-wave rectified.

ALERT: If using shielded cable, ground the shield only at the controller's end. Grounding both ends can cause a ground loop.

NOTE: Both 4-20 mA and 0-10VDC output options require 3-wire connection for both AC and DC power supply. There is no 2-wire loop power option.

NOTE: Accuenergy recommends 16 to 24 AWG twisted pair wires or shielded cable for signal connections. This applies to both power supply and analog output wiring.

Failure to follow these instructions may damage the product and void the warranty.

The AcuTEMS RM temperature output signal is available in 0-10VDC, 4-20mA, RTD, or thermistor resistive output. Different models have different electrical terminals. Ensure to wire the specific model according to the wiring diagram inside the front cover and the figures below.

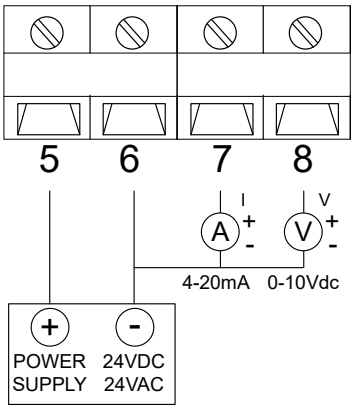


Figure 4 AcuTEMS RM Transmitter Diagram Connections

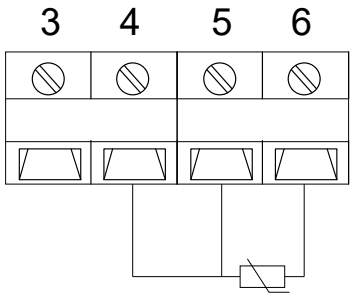
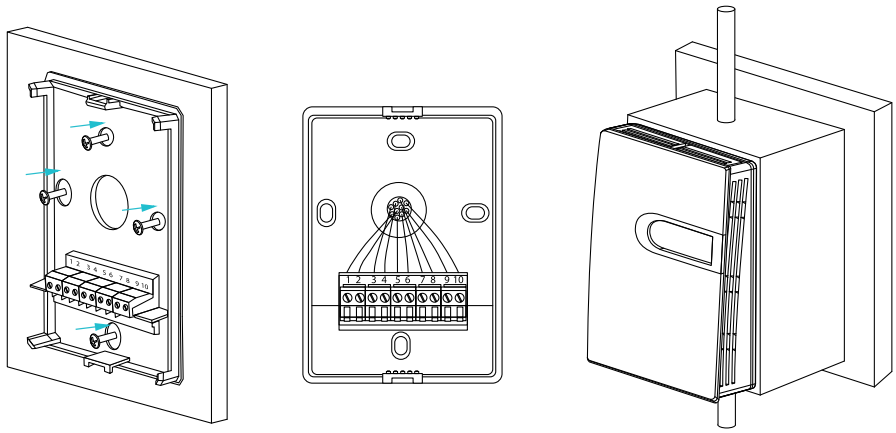


Figure 5 AcuTEMS Resistive Output Diagram Connections

Step 4: Mount Room Sensor

1. Feed the cable through the open passage located in the center of the backplate, then mount the sensor to the wall by attaching the backplate to a standard 2″ x 4″ junction box.
2. Alternatively, the sensor can be installed directly to the interior wall by securing the provided screws through the four fastening holes.



Wall Mount Installation

Junction Box Installation

Figure 6 AcuTEMS RM Mounting Backplate and Wire Access

3. Review the wiring installation, and make sure all terminals are connected properly.
4. To finish the installation, position the front cover directly over the backplate and apply gentle pressure until it clicks back into place.

Technical Specifications

Electrical	
Transmitter Power	16~28 VAC or 16~35 VDC
Transmitter Output	4~20mA (3 Wires) or 0~10VDC (3 Wires)
Output Load	≤500Ω (Current), ≥2KΩ (Voltage)
Temperature Performance	
Temperature Sensor Type	RTD or Thermistor, See Ordering Information
Temperature Transmitter Sensor Type	Digital
Transmitter Accuracy (If Applicable)	<±0.5°C @ 0~85°C (<±0.9°F @ 32~185°F)
Thermistor Accuracy (If Applicable)	10K Ω, Type III - ±0.3°C @ 25°C (0.54°F @ 77°F) 10K Ω, Type II - ±0.2°C @ 25°C (0.36°F @ 77°F) 20K Ω - ±0.2°C @ 25°C (0.36°F @ 77°F)
RTD Accuracy (If Applicable)	1K Ω Platinum - ±0.2°C @ 25°C (0.36°F @ 77°F) 100 Ω Platinum - ±0.2°C @ 25°C (0.36°F @ 77°F) 1KΩ Nickel - ±0.5°C @ 25°C (0.9°F @ 77°F)
Temperature Transmitter Measurement Range	0~50°C (32~122°F)
Response Time	<10s
Environmental	
Sensor Operating Temperature Range	0~70°C (32~158°F) @ 0~95%RH (Non-Condensing)
Transmitter Operating Temperature Range	0~70°C (32~158°F) @ 0~95%RH (Non-Condensing)
Storage Temperature	-30~70°C (-22~158°F)
Mechanical	
Mounting	Single Gang Junction Box or Surface Mount
Wiring Connection	Screw Terminal Blocks
Weight	165g (0.36lbs)
Display (Optional)	3-Digit LCD with Unit Indication
Display Resolution	0.1°C (0.1°F)
Certifications/Warranty	
Enclosure Material	Fire Retardant Polycarbonate (UL94V-0)
Protection	IP30
Agency Approvals	CE
Warranty	5 Years

ACCUENERGY

MAKE ENERGY USAGE SMARTER

ISO 9001, 14001
& 45001 Certified

Revision Date: November 2025 Version: 1.0.1

Specs Subject To Change Without Notice.

1.800.561.8187 www.itm.com information@itm.com