

Merlin RS Series



Temperature & Humidity Room Sensor – TH3S1

Temperature and Humidity Alarm >30°C (95°C)/ >80%RH



INSTALLATION & OPERATION

Please read these instructions carefully before use and retain for future reference.

These instructions can also be downloaded in electronic form on the product website.

snsnorthern.com

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IMPORTANT INFORMATION

Take extra care where this symbol is used to understand the nature of any potential hazards and how to avoid them.

-  Before any installation, use or maintenance, read this manual carefully.
-  This product is for Dry Environment Use only.
-  Avoid prolonged use in dusty environments.
-  The information contained within this manual should be referred to for typical installation and operation only.
-  For site specific requirements that may deviate from the information in this manual – contact your supplier.
-  If the equipment is used in a manner not specified by the manufacturer, the safety and protection provided by the equipment may be impaired.
-  Installation must be in accordance with recognised standards in the country concerned.
-  The PCB contains circuitry that can be damaged by static discharge.
-  When metal conduit is used provision shall be provided by the installer for bonding in accordance with the NFPA70.
-  Cables must be protected against mechanical damage.
-  This product is not designed to detect smoke, fire or other gases and should NOT be used as such.
-  This device requires a continual supply of electrical power – it will not work without power.
-  A switch or circuit breaker must be fitted, it must be accessible and marked as the disconnecting device.
-  This product should not be used to substitute appropriate ventilation and exhaust systems.
-  This product may not safeguard individuals with specific medical conditions. If in doubt, consult a doctor / physician.
-  Your product should reach you in perfect condition, if you suspect it is damaged, contact your supplier.

Manufacturer's Warranty

The manufacturer warrants to the original consumer purchaser, that this product will be free of defects in material and workmanship for a period of 3 Years from the date of purchase.

The manufacturer's liability hereunder is limited to replacement of the product with repaired product at the discretion of the manufacturer. This warranty is void if the product has been damaged by accident, unreasonable use, neglect, tampering or other causes not arising from defects in material or workmanship. This warranty extends to the original consumer purchaser of the product only. Any implied warranties arising out of this sale, including but not limited to the implied warranties of description, merchantability and intended operational purpose, are limited in duration to the above warranty period. In no event shall the manufacturer be liable for loss of use of this product or for any indirect, special, incidental, or consequential damages, or costs, or expenses incurred by the consumer or any other user of this product, whether due to a breach of contract, negligence, strict liability in tort or otherwise. The manufacturer shall have no liability for any personal injury, property damage or any special, incidental, contingent, or consequential damage of any kind resulting from gas leakage, fire, or explosion. This warranty does not affect your statutory rights. During the above warranty period, your product will be replaced with a comparable product if the defective product is returned together with proof of purchase date. The replacement product will be in warranty for the remainder of the original warranty period or for six months – whichever is the greatest.

Disposing of Electrical & Electronic Equipment (WEEE)

When this product has reached the end of its life it must be treated as Waste Electrical & Electronics Equipment (WEEE). Any WEEE marked products must not be mixed with general household waste, but kept separate for the treatment, recovery and recycling of the materials used. Please contact your supplier or local authority for details of recycling schemes in your area.

INSTALLATION

General Information

 **Failure to observe the following may cause injury to persons and/or property.**

The RS detector series is to be installed in non-classified, non-hazardous, permanent locations and is intended to continuously monitor the ambient air temperature (°C) and relative humidity (rH%) providing an analogue representation of the levels.

Designed for all areas being directly connected to low or mains voltage supply, e.g., residential, public, commercial, and light industrial environments, which support the following outputs:

- **Analog:** 2x 0-10V signals for Temperature (°C) and Humidity (% Relative).
- **Relay:** VFC (Humidity): 1x SPST 70mA Max.

Coverage

There are no official figures of area coverage for a detector; however, 50-100m² per detector (538-1076ft²) is a reasonable general guide therefore multiple detectors may be required to adequately monitor and protect property and/or persons.

Positioning

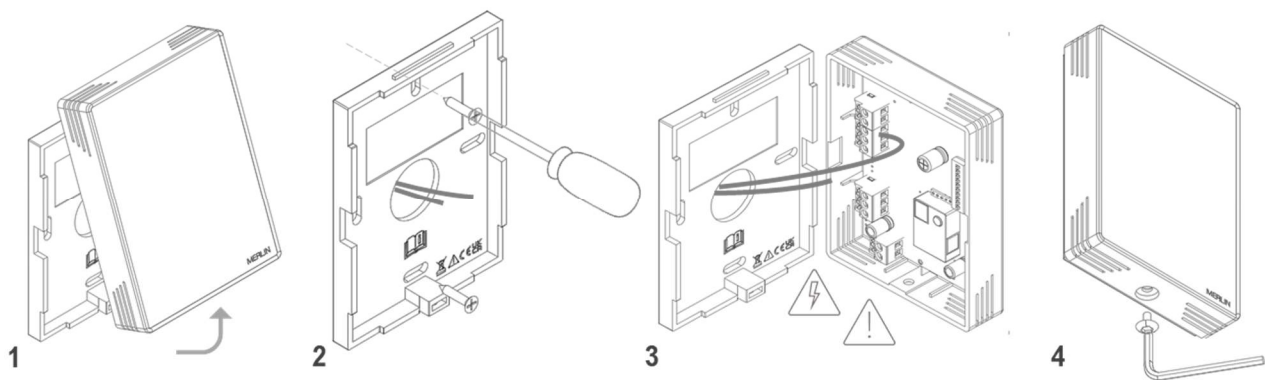
⚠ Position at a location with minimum noise, vibration, and environmental variation.

Recommended heights may vary based on air flow and temperature conditions in addition to the proposed application and location.

Generally, the installation height would be **breathing zone – 3-5ft from ground level**. Observe the following also.

- The possible damage caused by natural events e.g., rain, flooding, falling debris.
- Ease of access to the RS monitor.
- Any regulation/standard/code that locations are bound by.

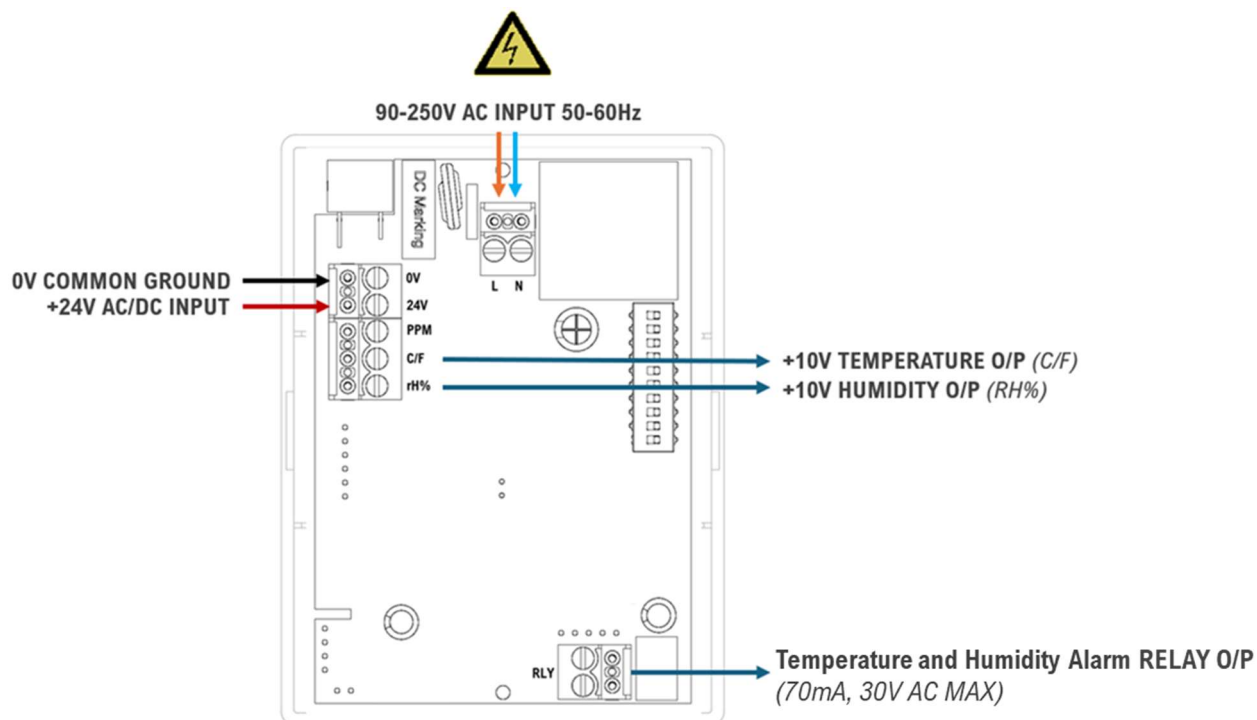
Mounting Instructions



1. **Remove the front cover** by removing the screw underneath the housing using an M3 socket wrench.
2. **Mark mounting holes** ensuring surface is flat to avoid distortion. Using the backplate, mark points and drill 0.2" (5mm) hole, insert plugs and use screws provided.
3. **Cable entry** is provided via rear 12.5mm (1/2") cut-out. Execute the mounting and connections.
NOTE: Terminals are pluggable type for ease.
4. **Secure the front cover** by aligning the top and then securing the M2 screw in place.

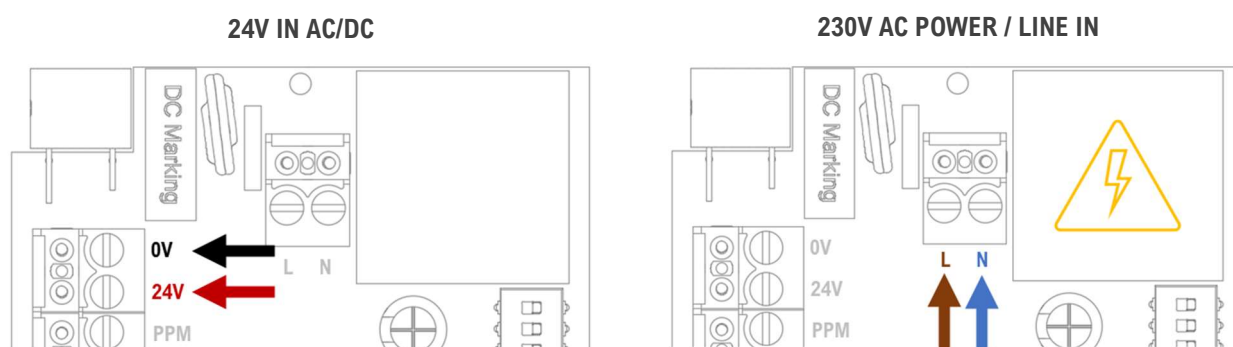
PCB Overview

- ⚠ All Class 2 wiring is to be installed within flexible tubing to maintain segregation between circuits.
- ⚠ Wiring of different circuits shall be separated by means of routing, clamping or barrier.
- ⚠ Strip cables as short as possible ensuring bare wires, e.g., wire shields, do not contact with the circuit board.



Power Wiring

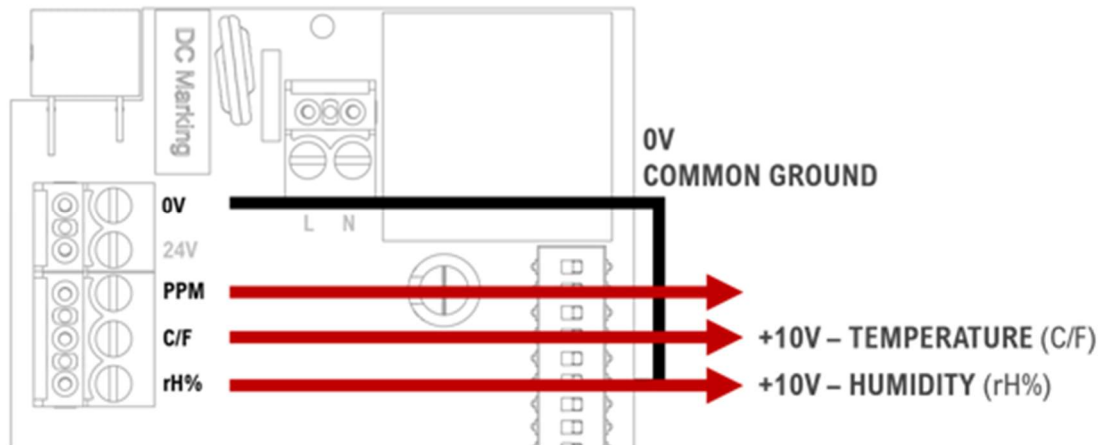
Consider voltage drops due to cable resistance and strip the cables as short as possible ensuring bare wires, e.g., wire shields, do not contact with the circuit board (risk of short-circuit).



+10V Output Wiring

A linear +10V output is normally used to regulate external fan speed controllers (supplied separately).

The RS features a configurable 0/2-10V linear output Temperature (C/F°) and Humidity (RH%). During normal operation, the output of the device is proportional to the values.



In normal operation, output levels are proportional to the gas level as shown below.

O/P	Temperature	0-10V O/P	Humidity	0-10V O/P
0%	0°C	0V	0%RH	0V
10%	5	0V	10	0V
20%	10	0V	20	0V
30%	15	0V	30	0V
40%	20	0V	40	0V
50%	25	0V	50	0V
60%	30	10V	60	0V
70%	35	10V	70	0V
80%	40	10V	80	10V
90%	45	10V	90	10V
100%	50°C	10V	100 %RH	10V

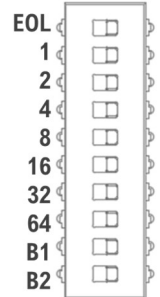
VFC Relay Wiring

This is a dry contact/volt free connection to a BMS (building management system) or central control panel to send an alarm signal upon when the relative Humidity level is >80%. This terminal can be used in conjunction with other external relays that affect other devices, and controls such as purge fans, audible alarms, strobe/beacons etc.

As a factory set condition, the relay is Normally Closed when the device is energised and in normal operation (fail safe), ensuring relays are triggered upon a power failure.

Analog Configuration Switches

LABEL	ACTION	OPTION	DEFAULT
EOL	NOT USED		
1			
2			
4			
8	(Humidity Alarm) VFC Relay Position	ON: NO (Normally Open) OFF: NC (Normally Closed)	ON (NO)
16			
32			
64	(T) +10V Output Linear Scale	ON: 2-10V OFF: 0-10V	OFF 0-10V
B1	Temperature Value	OFF: °C ON: °F	OFF °C
B2	NOT USED		



** TH = Temperature and Humidity

OPERATION

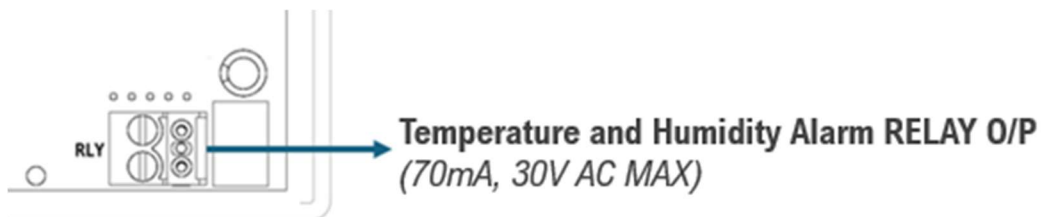
Temperature and Humidity Warning Levels

Alarm indicator

- **RED** = >30°C (95°F) Level Warning (HIGH)
- **RED** = >80 %RH Level Warning (HIGH)



Temperature and Humidity Alarm activated at >30°C (95°F)/ > 80%RH: Audible alarm and RLY output.



TECHNICAL SPECIFICATION

Mechanical	Mounting	Wall Mounted
	Entry	1" / 25.4mm DIA Rear Entry
	Size (W x H x D)	86 x 114 x 35mm (Low Profile RS - 86 x 114 x 25mm)
	Weight (Max)	0.164Kg max
	Enclosure	ABS UL Flame retardant – IP40
Electrical	24V AC/DC Power Rating	12-24VDC (11-32 VDC) / 24VAC, (20-27 VAC) 50-60Hz
	230VAC Power Rating	Nominal 230VAC, (90-250V AC), 50-60Hz
	Internal Fuse	Resettable PPTC 240VAC, 400mA
	Communication	127 units max
	Power Consumption Max	2.5W Max
Environmental	Operating Temperature	-10 to 50°C
	Storage	10-60°C / 0 to 95% RH
	Humidity	0 to 95% RH (continuous) non-condensing.
	Atmospheric Pressure	80 to 110Pa
	Altitude	<2000m
I/Os	Installation Cat (230V Voltage)	II (Class 2) Pollution Degree 2
	Analog Outputs	2x Linear 0-10V/2-10V Temperature & Humidity.
Cable Spec	Relay Outputs	1x SPST 70mA, 30V
	Power	1.0 – 2.5mm ² max
	Analog Output	1.0 – 2.5mm ² max
	Digital Output	1.0 – 2.5 mm ² twisted pair + ground, shielded cable with 120Ω characteristic impedance.
	Relays	1.0 – 2.5mm ² max
User Interface	Language	English
	Display	2.8" TFT
	Alarm Indication	Red: Danger (Alarm)
Conformance	Safety	BS 61010-1 (CE / UKCA)
	Electromagnetic Compatibility	BS 50270 (CE / UKCA)
	Other (Applied or Considered)	IGEM/UP/11 BS 50543
Sensing		
Temperature (°C)		Humidity (%RH)
Fully Calibrated		Fully Calibrated
Normal Indication Range: 0-50°C		Indication Range: 0-100% RH
Response: t63% @ 25°C ~20s Typical		Quick Response: t63% @ 25°C ~8s
Excellent long term stability		Excellent long term stability
Strong anti-interference		Strong anti-interference
Warm Up Time: ~1 minute		Warm Up Time: ~1 minute
Accuracy: ±1° @ 10-45°C		Accuracy: ±2% @ 15-30°C (20-90%RH)
Resolution: 0.1°		Resolution: 0.1%

Maintenance

 **Exposure to high concentrations of solvent and chemical vapours may damage the sensing element, for use in normal environments.**

Regular maintenance and calibration of the sensors by trained technicians is recommended. Inspections and services must be documented and executed at regular intervals.

The frequency must be determined and observed by the person responsible. The recommended inspection interval is 6 to 12 months. The date for the next maintenance must be affixed to the equipment sensor.

Interval	Function
During Commissioning	Clean any debris from the external sensing vents. Using a calibrated portable reference compare the RS sensor ensuring the ambient temperature and humidity levels are within specified accuracy levels. To check the Humidity alarm function, elevate the humidity level >80% RH and check the audible alarm and relay operate correctly.

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Please pass this manual to the system owner / user.

Date of Installation:	
Installation Location:	
Organisation:	
Stamp/Signature of the installer:	

We recommend all S&S equipment be commissioned by competent/trained engineers to ensure correct installation and operation. We strongly recommend the response and alarm signals are tested and validated once installed. This will ensure the equipment performs as intended and is free from any unforeseen damage caused by transit/installation.

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