



# ThermaReach-VFR User Guide



# Technical Specifications

The **ThermaReach-VFR** is a versatile control unit housed securely within an **IP67 enclosure**, offering LoRaWAN® compatible switching of **dry (volt-free) supplies**. Commonly, this device is used to control heating valves for PAYG, boiler signals, and similar HVAC or building management applications requiring isolated switching.

This device operates in **LoRaWAN® compatible Class C**, features **FUOTA** (Firmware Upgrades Over the Air), and includes built-in overheating protection. To conform to safety requirements, the device is wired using **0.75mm² 3-core flex cable** for power and a **two-core YY control cable** for the output, and the entire circuit must be safeguarded by a **5A fuse**.

The **ThermaReach-VFR** should be installed in a suitable position adjacent to, or above, the HIU, pump, actuator or associated building services equipment it is operating. For optimum LoRaWAN® compatible signal performance, a **minimum separation of 30cm** from the HIU and other electrical or metal equipment is recommended.

Where possible, install the ThermaReach in a **clear, unobstructed** location and avoid positioning it directly behind or within metal enclosures, as this may reduce wireless signal strength and communication reliability.



# Technical Data

| Feature               | Specification                                                 |
|-----------------------|---------------------------------------------------------------|
| Device Type           | LoRaWAN® compatible Dry Switch                                |
| LoRaWAN® Device Class | Class C End-device                                            |
| Frequency Range       | 868 MHz (UK/EU Standard)                                      |
| Power Supply (IN)     | 100-240VAC 50/60Hz / 24-30VDC                                 |
| Switching Capacity    | Volt-Free Contact (0V to 240VAC / 0V to 30VDC)                |
| Internal Relay Rating | 16(8)A AC / 10A DC                                            |
| Maximum System Load   | 5A (Limited by mandatory 5A protective fuse)                  |
| Cabling (Input)       | 0.75mm <sup>2</sup> 3-Core Flex (Power Supply)                |
| Cabling (Output)      | 0.75mm <sup>2</sup> 2-Core YY Control Cable (Switched Output) |
| Protection Rating     | IP67                                                          |
| Dimensions            | 118mm × 82mm × 66mm                                           |
| Compliance            | CE (LVD, RED, EMC), RoHS, WEEE                                |

# Safety Instructions & Legal Notices

## **Critical Safety Requirement:**

This device **MUST** be protected with a 5A Fused Connection Unit (FCU)

## **Volt-Free Notice:**

Output terminals are electrically isolated; no voltage is provided by the device to the output terminals.

## **Professional Installation:**

This device must be installed by a qualified professional in accordance with **BS 7671**.

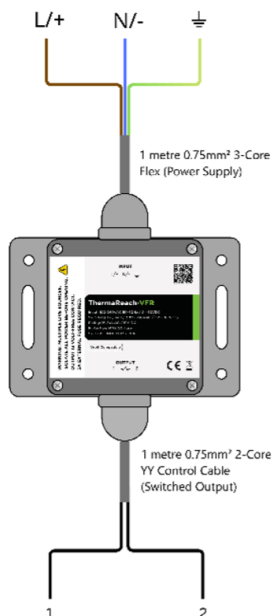
## **Isolation:**

Isolate all power sources before opening the enclosure or handling wiring.

# Installation & Wiring

## Wiring Configuration

The ThermaReach-VFR uses 0.75mm<sup>2</sup> 3-core flex cable for Power INPUT and YY control cable for the switched output.



## Input (Power Supply)

Connect your supply cable to the terminals marked INPUT at the top of your device:

- L / + : Live (AC) or Positive (DC).
- N / - : Neutral (AC) or Negative (DC).
- $\perp$  : Earth.
- Supply Range: 100-240VAC 50/60Hz or 24-30VDC.

## Output (Switching)

Use the 2-core YY control cable for the switched output. Connect to terminals 1 and 2. As a volt-free contact, it can switch logic signals (0V), low voltage (24V), or mains voltage (240V).

## Enclosure Sealing

To maintain the IP67 protection rating of the housing, you must ensure the IP68 glands are tightened securely around the cable jackets. This ensures the watertight integrity of the enclosure for industrial or outdoor applications.

# Commissioning & LoRaWAN<sup>®</sup> Behaviour

## Network Provisioning

Open your LoRaWAN<sup>®</sup> Network provider access panel and add the device using the supplied **Serial Number**, **DevEUI**, **AppEUI (JoinEUI)**, and **AppKey**. These details are provided on your delivery note from Sycous Limited.

## Start-up Behaviour

Once powered, the device will attempt to Join the LoRaWAN network for up to 10 minutes.

- **Deep Retry Mode:** After 20 failed join attempts, the device enters a 'deep retry' mode to comply with LoRaWAN duty-cycle regulations.
- **Intervals:** In this mode, the interval between join attempts may increase significantly (e.g., to ~3 hours and 15 minutes) to avoid flooding the radio spectrum.
- **FUOTA:** This device features Firmware Upgrades Over the Air (FUOTA) for future-proofing and security.

## Regulatory Compliance & Disposal

### Compliance

- **CE:** Low Voltage Directive (2014/35/EU); Radio Equipment Directive (2014/53/EU); EMC Directive (2014/30/EU).

### Disposal (WEEE)

The symbol below indicates that this product must not be disposed of with household waste. It must be disposed of at an authorized collection point for the recycling of waste electrical and electronic equipment (WEEE).

## Manufacturer

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# Want to know more?

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