Smart Heat – Technical Documentation

Introduction

This document is primarily intended to facilitate the use of the ***Smart Heat*** product and application.
It contains a description of the built-in components, their operation, and detailed instructions on how the application works and the features it provides.

List of Smart Heat System Components:

1. **6 A Circuit Breaker, Type B**
   – Provides protection for the electrical circuit against overload and short circuit.
2. **12 V DC Relay (coil)**
   – An additional relay used for switching between power sources.
3. **12 V DC Relay Module (coil)**
   – The main relay module used to control the power supply to the load.
4. **230 V AC → 5 V DC Converter**
   – Powers the microcontroller (WeMos D1 R1).
5. **External 5 V DC Power Source**
   – Backup power source for the WeMos D1 R1.
6. **230 V AC → 12 V DC Transformer**
   – Supplies power to the relay components.
7. **WeMos D1 R1 (ESP8266 D1 Mini clone)**
   – A microcontroller used for relay control and sensor data reading.
8. **DHT22 Sensor**
   – Temperature and humidity sensor.
9. **230 V AC Signalization**
   – Visual or audible indication of relay or load status.

Power Supply and Component Connection Description of the Smart Heat System

The 230 V AC power is connected to the input (supply) side of the circuit breaker. From the output (load) side, it is routed to terminal blocks, from where it is distributed to other system components.

From the terminal blocks, the power goes to a transformer where it is converted from 230 V AC to 12 V DC. The converted voltage is used to power:

- Relay module (12 V DC) – directly powering the coil,
- Additional relay (12 V DC) – also for powering its coil.

Additionally, the terminal blocks supply power to a 230 V AC to 5 V DC converter, which powers the WeMos D1 R1 microcontroller. The 5 V DC output from the converter is connected to the NO (Normally Open) contact of the additional relay,

while the NC (Normally Closed) contact receives power from an external 5 V DC source. The common COM contact forwards the selected power supply to the WeMos D1 R1.

Furthermore, 230 V AC is directly routed from the terminal blocks to the COM contact of the main relay module. From the NO contact, power flows to the signalization unit and the load, while the NC contact is connected to the signalization unit for status verification purposes.

The 3.3 V DC control voltage coming from the WeMos D1 R1 is routed through terminal blocks and used for:

- Powering the control side of the relay module (3.3 V DC),
- Powering the DHT22 sensor (3.3 V DC).

In addition to the power supply, the WeMos D1 R1 sends two digital signals:

- D1 – for controlling the relay module,
- D2 – for communication with the DHT22 sensor.