Elektrobock RJ402

Elektrobock RJ402 Differential Temperature Switch User Manual

Model: RJ402

1. INTRODUCTION

The Elektrobock RJ402 is a differential temperature switch designed to control a circulation pump based on temperature differences between two points. It activates the pump when a set temperature difference is detected and deactivates it when the difference falls below a specified hysteresis value. This device is ideal for optimizing energy usage in various heating and cooling systems.

Image 1: The Elektrobock RJ402 differential temperature switch unit with two included temperature sensors. The unit features control dials for differential temperature and hysteresis, along with indicator lights for power and relay status.

2. PRODUCT OVERVIEW

The RJ402 unit features intuitive controls and indicators for easy setup and monitoring:

- **Function Switch:** Selects between ON, OFF, and AUTO modes.
- **Differential Temperature Dial (Diff T °C):** Sets the temperature difference required to activate the relay.
- **Hysteresis Dial (Hys °C):** Sets the temperature reduction value for relay deactivation.
- **PWR Indicator:** Green LED indicates power supply.
- **RE 1 Indicator:** Red LED indicates relay status (active/inactive).
- **Sensor Inputs:** Connections for two NTC 10k temperature sensors.
- **Relay Output:** Potential-free contacts for controlling external devices.

Temperatur-Differenzschalter

ON - Relais ist ständig eingeschaltet

OFF - Relais ist ständig abgeschaltet

AUTO - Relais schaltet bei der eingestellten Temperaturdifferenz
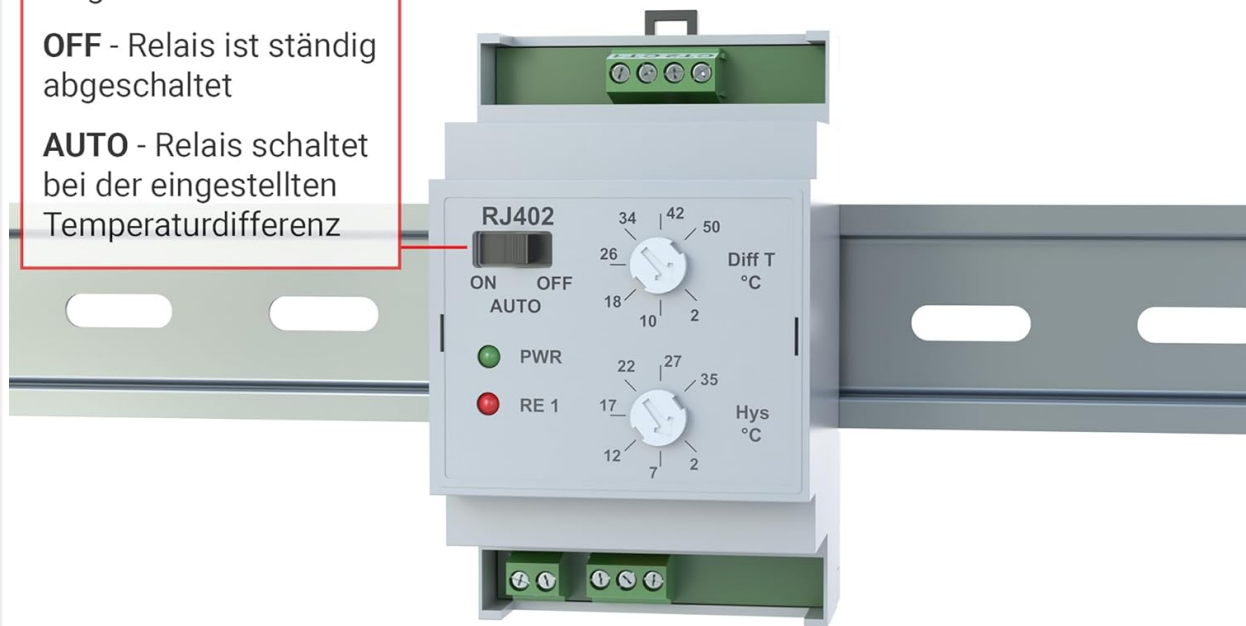
Dient zur Schaltung z. B. einer Kreislaufpumpe bei eingegebener Differenz der Temperaturen und zum anschließenden Stoppen der Pumpe bei der Senkung der Temperaturdifferenz um die vorgegebene Hysterese.

Image 2: An illustration of the Elektrobock RJ402 mounted on a DIN rail, highlighting its operational modes: ON (relay always on), OFF (relay always off), and AUTO (relay activates based on set temperature difference). The text explains its function in controlling circulation pumps based on temperature differentials and hysteresis.

3. INSTALLATION AND WIRING

The RJ402 is designed for DIN rail mounting. Proper installation and wiring are crucial for safe and effective operation. All electrical work should be performed by a qualified electrician.

3.1 Wiring Diagram

Refer to the detailed wiring diagram below for connecting the power supply, temperature sensors, and the controlled device (e.g., a pump).
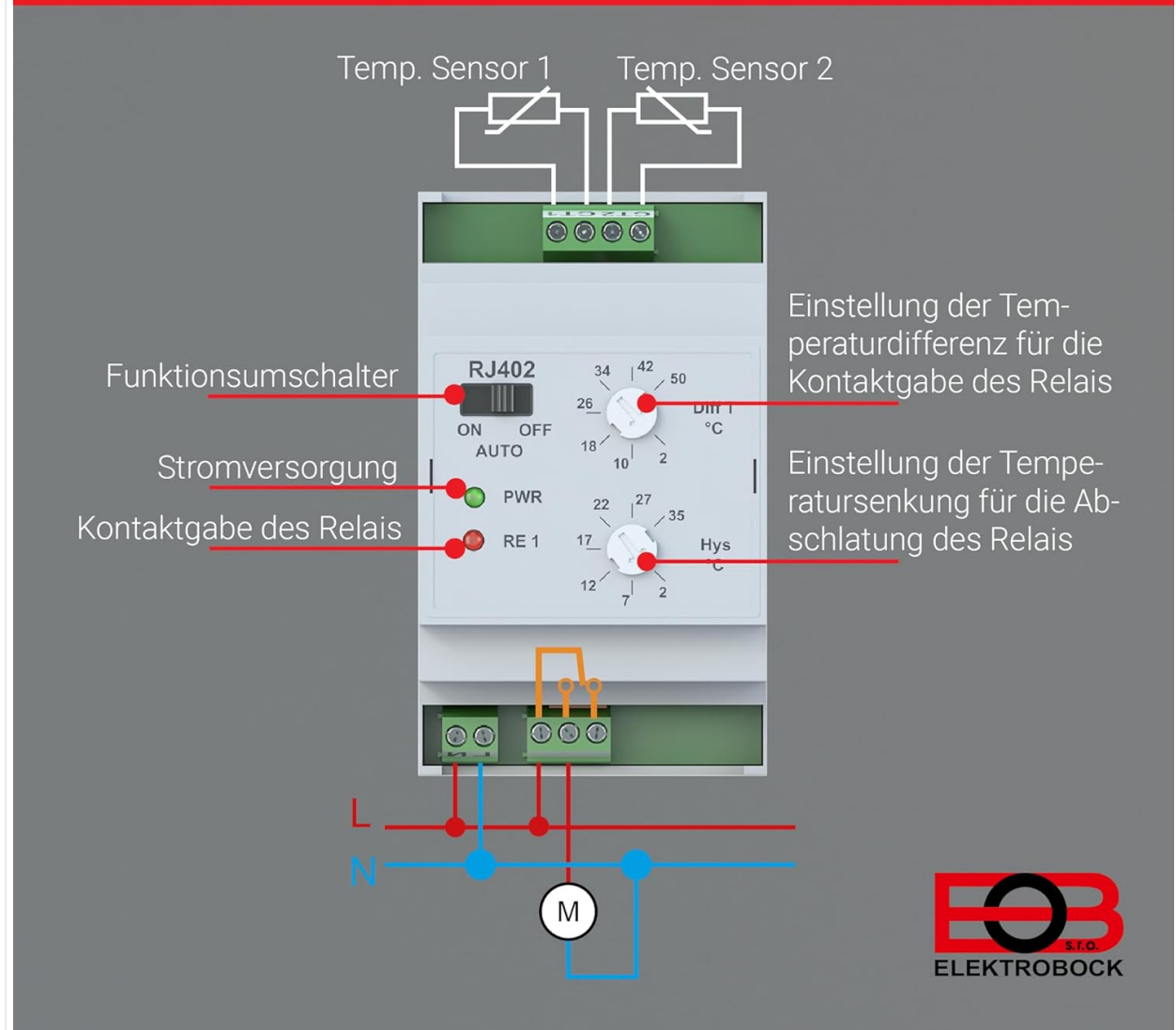
Image 3: Detailed technical diagram showing the wiring connections for the Elektrobock RJ402. It labels the terminals for Temperature Sensor 1, Temperature Sensor 2, Function Switch, Power Supply, and Relay Contact. It also indicates the adjustment dials for differential temperature (relay activation) and hysteresis (relay deactivation), along with Live (L), Neutral (N), and Load (M) connections.

3.2 Connection Steps

1. **Power Supply:** Connect the 230 V AC power supply to the designated L (Live) and N (Neutral) terminals.
2. **Temperature Sensors:** Connect Temperature Sensor 1 and Temperature Sensor 2 to their respective terminals. Ensure correct polarity if specified by the sensor type.
3. **Relay Output:** Connect the device to be controlled (e.g., a circulation pump) to the potential-free relay contacts. The relay acts as a switch, so connect the load's power line through these contacts.
4. **Mounting:** Securely mount the RJ402 unit onto a standard DIN rail.

4. OPERATION

The RJ402 offers three operational modes controlled by the function switch:

- **ON:** The relay is constantly switched on, regardless of temperature differences.

- **OFF:** The relay is constantly switched off, regardless of temperature differences.
- **AUTO:** The relay operates based on the set differential temperature and hysteresis values. This is the primary operational mode for automatic control.

4.1 Setting Differential Temperature (Diff T °C)

Use the upper dial to set the desired temperature difference between Sensor 1 and Sensor 2 that will activate the relay. The adjustable range is typically +20 °C to +80 °C.

4.2 Setting Hysteresis (Hys °C)

Use the lower dial to set the hysteresis value. This value determines how much the temperature difference must decrease below the activation point before the relay deactivates. The adjustable range is typically +2 °C to +35 °C. Hysteresis prevents rapid cycling (on/off) of the controlled device.
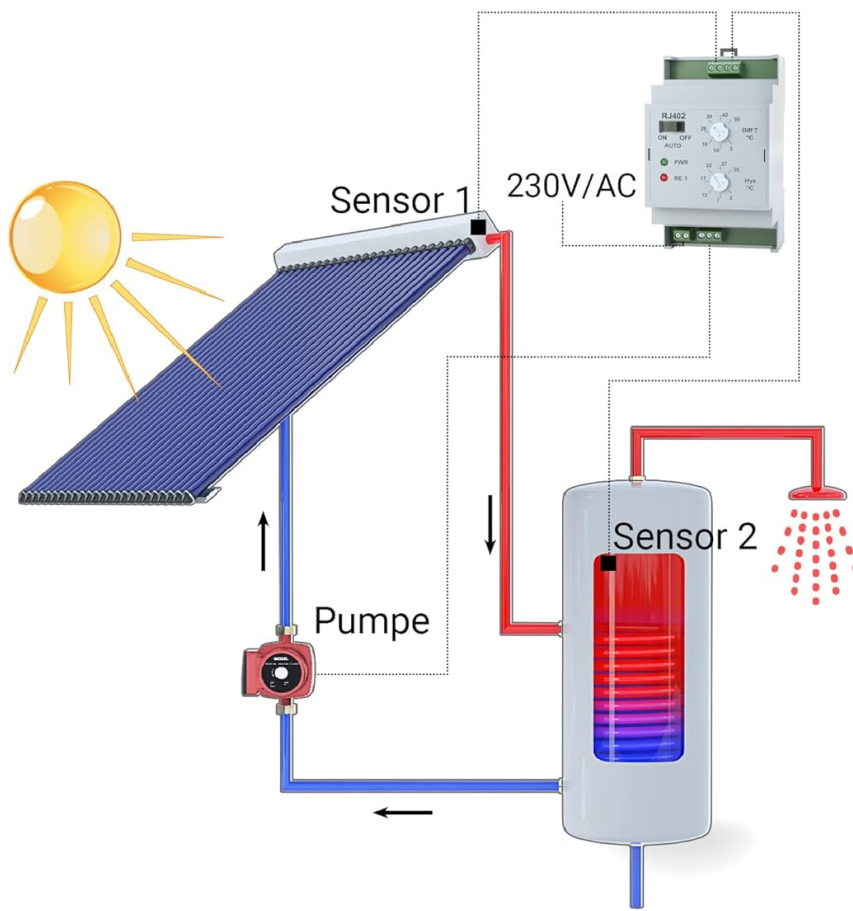
5. APPLICATION EXAMPLES

The Elektrobock RJ402 is versatile and can be used in various temperature-controlled systems.

5.1 Automatic Pump Activation in a Solar Heating System

In a solar heating system, the RJ402 can control a pump to transfer heat from solar collectors to a water storage tank.

Image 4: Diagram illustrating Application Example 1: Automatic pump activation in a solar heating system. Sensor 1 is placed at the solar collector, and Sensor 2 is at the water tank. The RJ402 controls the pump to transfer heat when the temperature difference is met.

5.2 Automatic Hot Water Tank Charging

The RJ402 can manage the charging of a hot water tank from a heat source (e.g., boiler or wood stove) by activating a circulation pump.

Anwendungsbeispiel 2
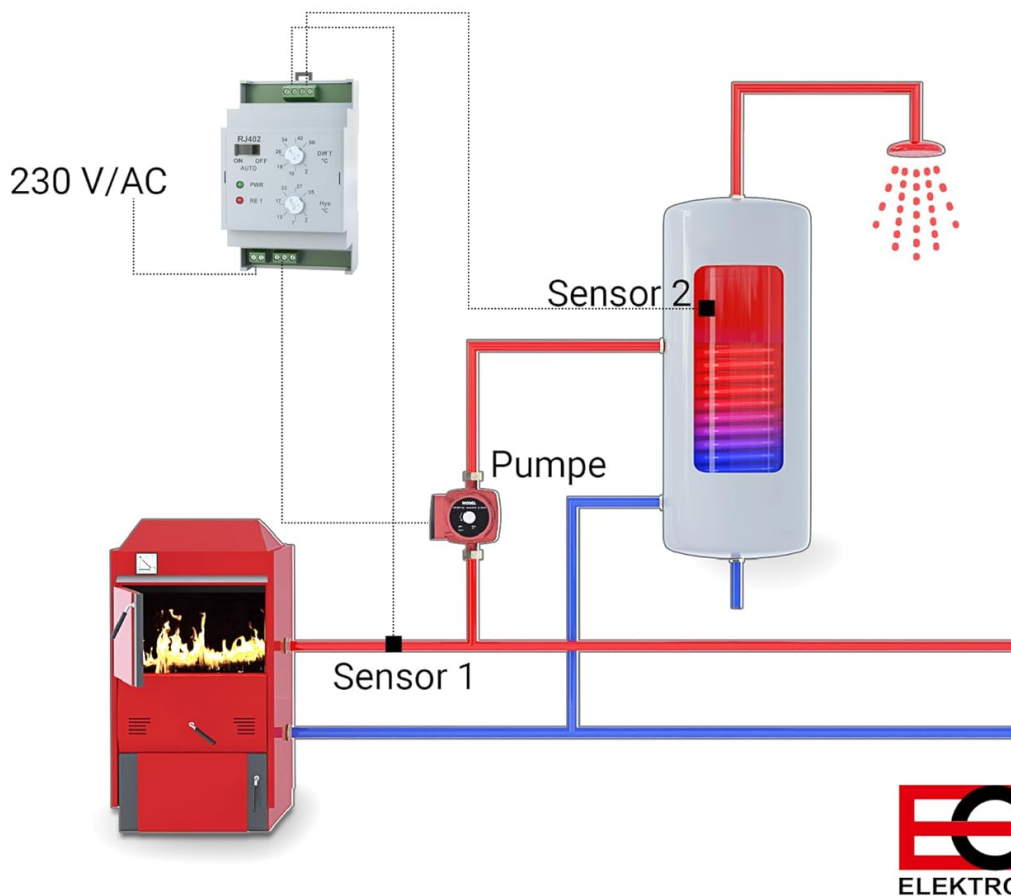
Automatische Auffüllung des Warmwasserspeichers

Image 5: Diagram illustrating Application Example 2: Automatic hot water tank charging. Sensor 1 is placed at the heat source (e.g., boiler), and Sensor 2 is at the hot water tank. The RJ402 controls the pump to charge the tank when the temperature difference is met.

Gut für Umwelt und Geldbeutel

Unsere Lösungen helfen, den Energieverbrauch zu senken. Schon eine kleine Veränderung bei der Heizungssteuerung kann einen großen Unterschied machen.

Image 6: An image of a house with solar panels, illustrating the environmental and economic benefits of using solutions like the RJ402 in solar heating systems.

6. TECHNICAL SPECIFICATIONS

Parameter	Value
Operating Voltage	230 V AC / 50 Hz
Power Consumption	< 0.5 Watt
Operating Temperature	0 °C to +50 °C
Control Range (Differential Temperature)	+20 °C to +80 °C
Hysteresis Range	+2 °C to +35 °C
Output	Relay, max. 5 A / 250 V AC
Protection Class	IP20
Contact Type	Changeover contact
Temperature Sensors	2 x NTC 10k (1.5 m length, max. 6.5 mm diameter)
Dimensions (L x W x H)	8.7 x 5.2 x 6 cm (approx. 90 x 53 x 58 mm)
Weight	222 grams (approx. 137 g for unit only)
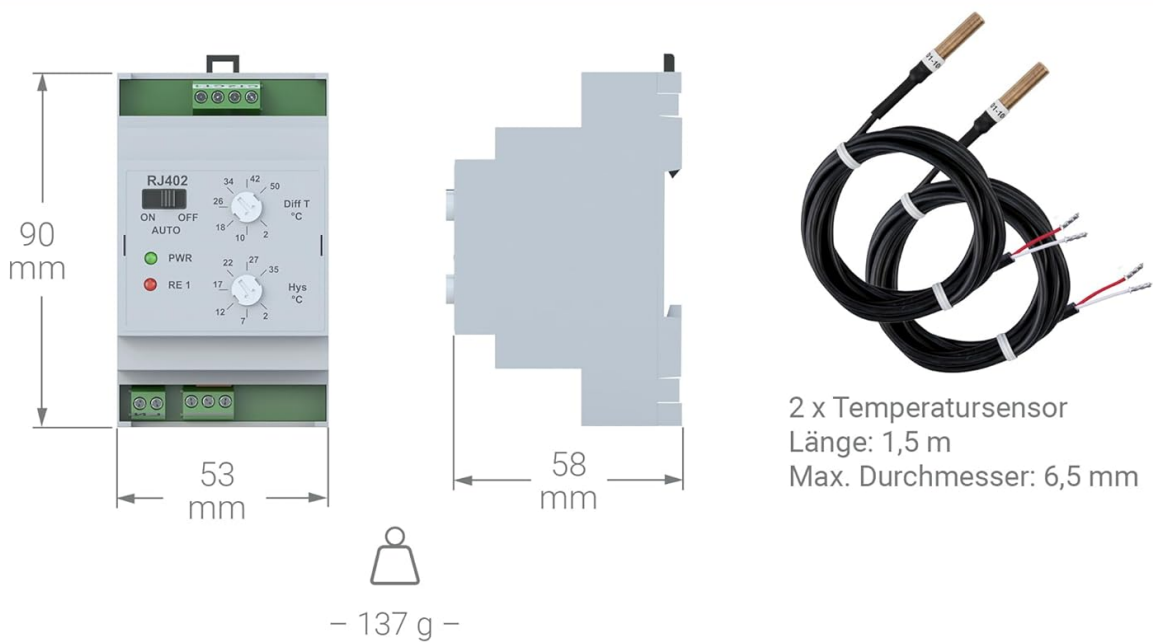
Image 7: An image detailing the technical specifications and dimensions of the Elektrobock RJ402. It shows the physical dimensions (90x53x58 mm) and weight (137g), along with specifications for the two 1.5m temperature sensors. Electrical parameters include 230V/50Hz operating voltage, <0.5W power consumption, 0-50°C operating temperature, 2-50°C control range, 2-35°C hysteresis, 5A/AC relay output, IP20 protection, and changeover contact type.

7. SAFETY INFORMATION

Always observe the following safety precautions:

- Disconnect power before installation, wiring, or maintenance.
- Ensure all wiring complies with local electrical codes and regulations.
- Do not expose the device to moisture or extreme temperatures outside its operating range.
- The device is designed for indoor use only (IP20 protection).
- Do not attempt to open or repair the device yourself. Refer to qualified personnel.

8. MAINTENANCE AND TROUBLESHOOTING

8.1 Maintenance

The Elektrobock RJ402 is designed for maintenance-free operation. Periodically check connections for tightness and ensure the unit is free from dust and debris. Clean the exterior with a dry, soft cloth if necessary.

8.2 Troubleshooting

- **Device not powering on:** Check the 230 V AC power supply connection. Ensure the power source is active.
- **Relay not activating/deactivating:**
  - Verify the function switch is set to AUTO.
  - Check sensor connections and ensure they are correctly placed to measure the desired temperatures.
  - Confirm that the differential temperature and hysteresis settings are appropriate for your application.
  - Ensure the temperature difference between sensors meets the set activation criteria.
- **Inaccurate temperature readings:** Check sensor placement and ensure they are not damaged or exposed to external interference.

If issues persist, consult a qualified technician or contact Elektrobock customer support.

9. WARRANTY AND SUPPORT

For warranty information, technical support, or service inquiries, please refer to the documentation provided with your purchase or visit the official Elektrobock website. Keep your proof of purchase for warranty claims.
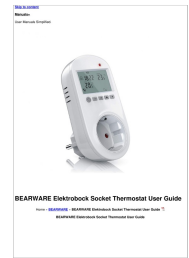
Related Documents - RJ402

[TS10 Thermo-Switch Socket User Manual and Specifications](#)
Comprehensive user manual for the ELEKTROBOCK CZ TS10 Thermo-Switch Socket, detailing its features, programming, installation, and specifications for automatic regulation of electrical heating systems.

[Termostat Pokojowy ELEKTROBOCK PT23: Instrukcja Obsługi i Montażu](#)
Szczegółowy przewodnik po termostacie pokojowym ELEKTROBOCK PT23. Dowiedz się o funkcjach, instalacji, programowaniu tygodniowym, trybach pracy i specyfikacjach technicznych.

	[FRT7B2 Vezeték nélküli termosztát és vevő készlet Használati Útmutató](#) Részletes használati útmutató és műszaki adatok az ELEKTROBOCK CZ FRT7B2 vezeték nélküli termosztát és vevő készlethez, telepítést, működést és funkciókat ismertetve.
	[BEARWARE Programmable Socket Thermostat User Guide](#) User manual for the BEARWARE Elektrobock Socket Thermostat, a programmable device designed for precise room temperature control. Features include 7-day programming, anti-frost protection, multiple heating modes (Comfort, ECO, Holiday), and an easy-to-read LCD display.
	[ELEKTROBOCK CZ CS3C-1B Timer Switch - Installation and Technical Guide](#) Comprehensive guide for the ELEKTROBOCK CZ CS3C-1B timer switch. Learn about its features, installation, wiring, timing adjustments, and technical specifications for controlling ventilators based on lighting.