

# Power Relay Module (PRM3)

[Visit the online store page](#)

Model: PRM3

## **Polyphase equipment control danger warning**

When controlling single-phase or three-phase loads that have more than one currently-carrying conductors (e.g., hot lines, not neutral or ground), be sure to control the relay inputs for the polyphase load simultaneously using mask controls, or there is risk of having the load operate without all phases which may cause damage to the equipment.

Read the [PRM3 Owner's Manual](#) for safety and full control information.

For control: requires eGauge Core or Pro, or a third party controller that supports Modbus RTU or SCPI.

By default, the PRM3 is configured with a 10-second minimum open/close duration to minimize unintentional wear on the relays or rapid load switching. For example, by default when a relay input is opened, it will remain in the open state for at least 10 seconds before a command to close it will be acknowledged. This minimum delay may be reconfigured between 0 seconds and 4 minutes and 15 seconds using Modbus or SCPI commands.

The eGauge Power Relay Module is a versatile device intended to control up to three 240V AC/15 A resistive loads or motors up to 15 FLA (80 LRA). The relays can be opened and closed individually or synchronously, enabling the switching of up to three single-phase loads, one split-phase and one single-phase load, or one three-phase load.

Intended applications include Remote control of air conditioners, heaters, refrigerators, office-automation, and similar equipment.



"Front" of PRM3 with relay contacts



"Back" of PRM3 with USB and RS485 for power and communication

# Specifications

## Full specs (data-sheet PDF)

- Contacts rated for up to 240 V AC/15 A resistive (50-60 Hz)
- Relay state persists across power-outages
- Normally open contacts
- Can be switched independently or in arbitrary groups
- Configurable minimum open/close duration to minimize relay wear
- DIN-rail enclosure
- USB interface
  - Easy to use SCPI command set (text commands)
  - USB powered
- RS-485 Interface
  - Single 5 V DC/500 mA power supply
  - Modbus protocol
  - SunSpec compatible
- Low average power consumption
  - <500 mW typical with all relays on
  - <100 mW with relays off
- Wide operating range: -30. . . 70 ° C, up to 4000 m altitude
- Certifications
  - UL Listed: IEC/UL 61010-1 Ed. 3.0 B:2010, File Number E524350

- FCC
  - FCC's Title 47 CFR Part 15 Subpart B Class B
  - ICES-003 Information Technology Equipment Class
- 2-year Limited Warranty

## Hardware included

- 1x eGauge PRM3 power relay module
- 6' USB Type-A to USB Type-B cable for meter or SCPI control and power
- 3x 2-pin terminal blocks for relays
- 1x 4-pin terminal block for RS-485 connection for Modbus and power

## Assembly/installation information

The Power Relay Module is usually installed near the load (or loads) that it controls. It is permanently connected equipment.

The Power Relay Module is a listed device and must be installed inside a suitable enclosure. The enclosure must be rated according to the environment it is used in. For example, outdoor installations require an outdoor-rated enclosure such as IPX4/NEMA4.

1. Connect the source and load hot wires to each applicable relay port (neutral, if applicable, is always left connected directly to the load).
  1. A three-phase load will [use all 3 relay inputs](#).
  2. A single-phase load (2 hots) will [use 2 relay inputs](#).
  3. A split-phase (hot and neutral) will [use one relay input](#).
2. Connect the USB port and/or RS-485 communication port to the controller or building automation system.
  1. If using the eGauge meter to control the relay, connect the relay's USB port to an eGauge meter USB port.
  2. If using SCPI control with a third party controller, connect the relay's USB port to the a controller USB port.
  3. If using Modbus control with a third party controller, wire the D+, D-, and Ground pins of the relay's 4-pin plug to the controller's RS485 line. Power is provided via the +5V and Ground pins on the 4-pin plug, or by connecting the relay USB port to another host.
3. When controlling polyphase loads with multiple relay inputs, open and close the relays simultaneously (such as with masks) to avoid damage to the equipment.

# Software Configuration

Be sure to use **mask commands** for controlling polyphase loads that use multiple PRM3 contacts!

The eGauge PRM3 may be controlled through several different options:

- [eGauge Meter Interactive Dashboard control](#)
- [eGauge Meter Lua Scripting](#)
- [eGauge Meter JSON WebAPI control](#)
- [Modbus RTU \(RS-485 Serial\)](#)
- [SCPI \(USB via a CDC ACM virtual serial port\)](#)

## Documents

- [Data Sheet](#)

## Related Information

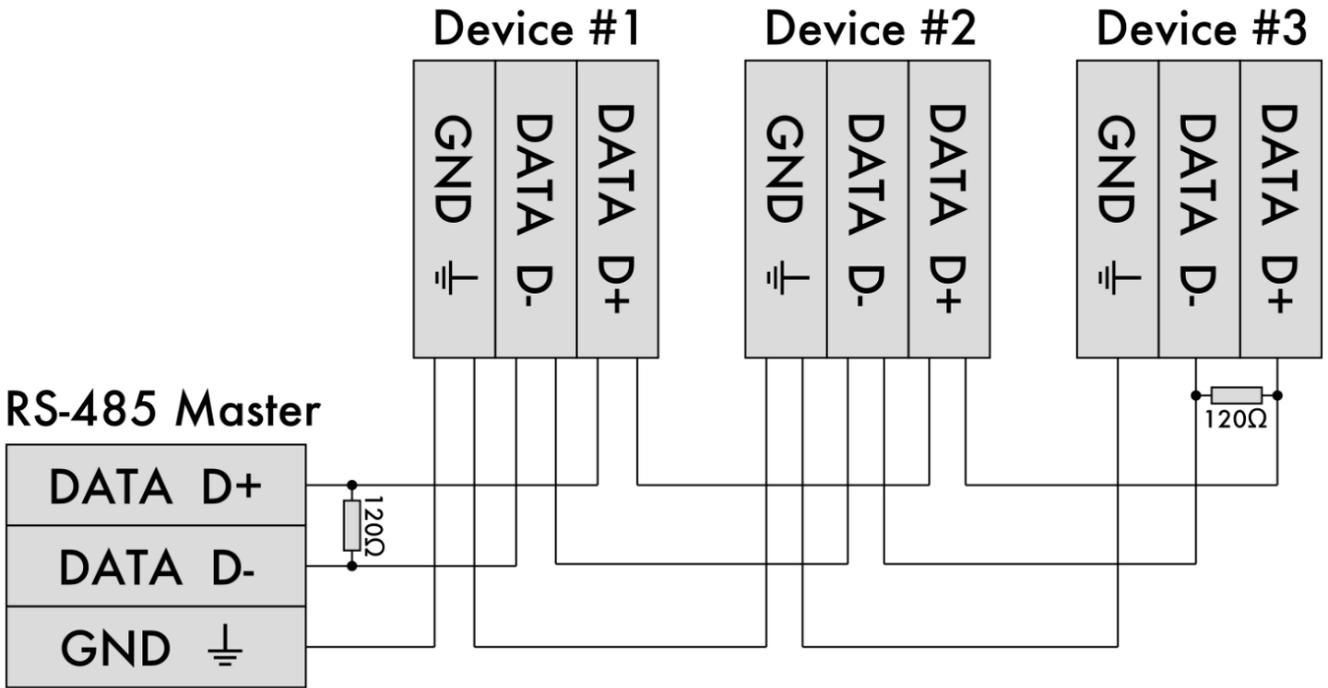
- [eGauge meter Lua Scripting](#)
- [Mobile-friendly dashboard](#)

## Diagrams

PRM3 overview



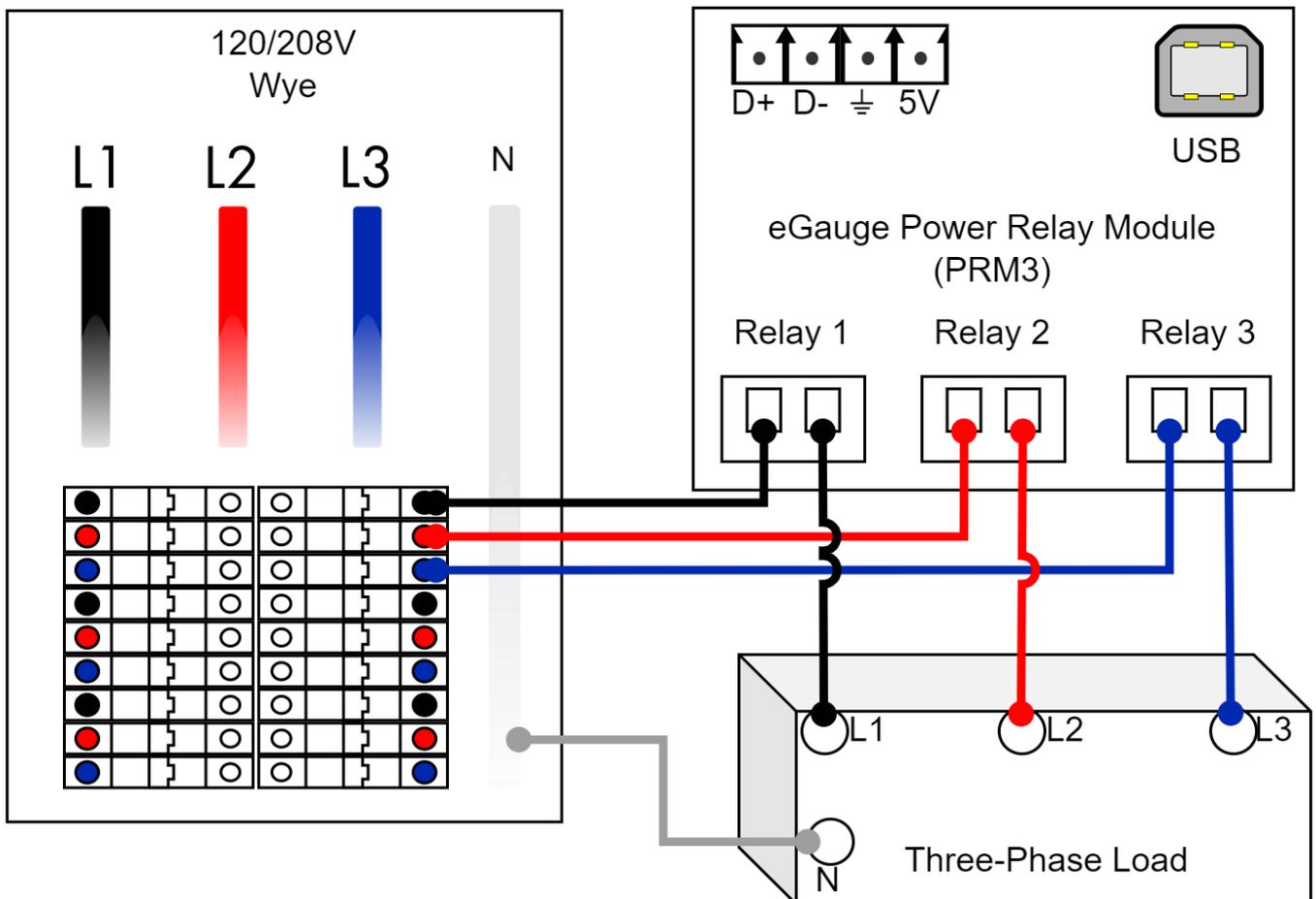
## Typical RS-485 Wiring Example



## 3-phase load wiring

Neutral may or may not be used depending on the load.

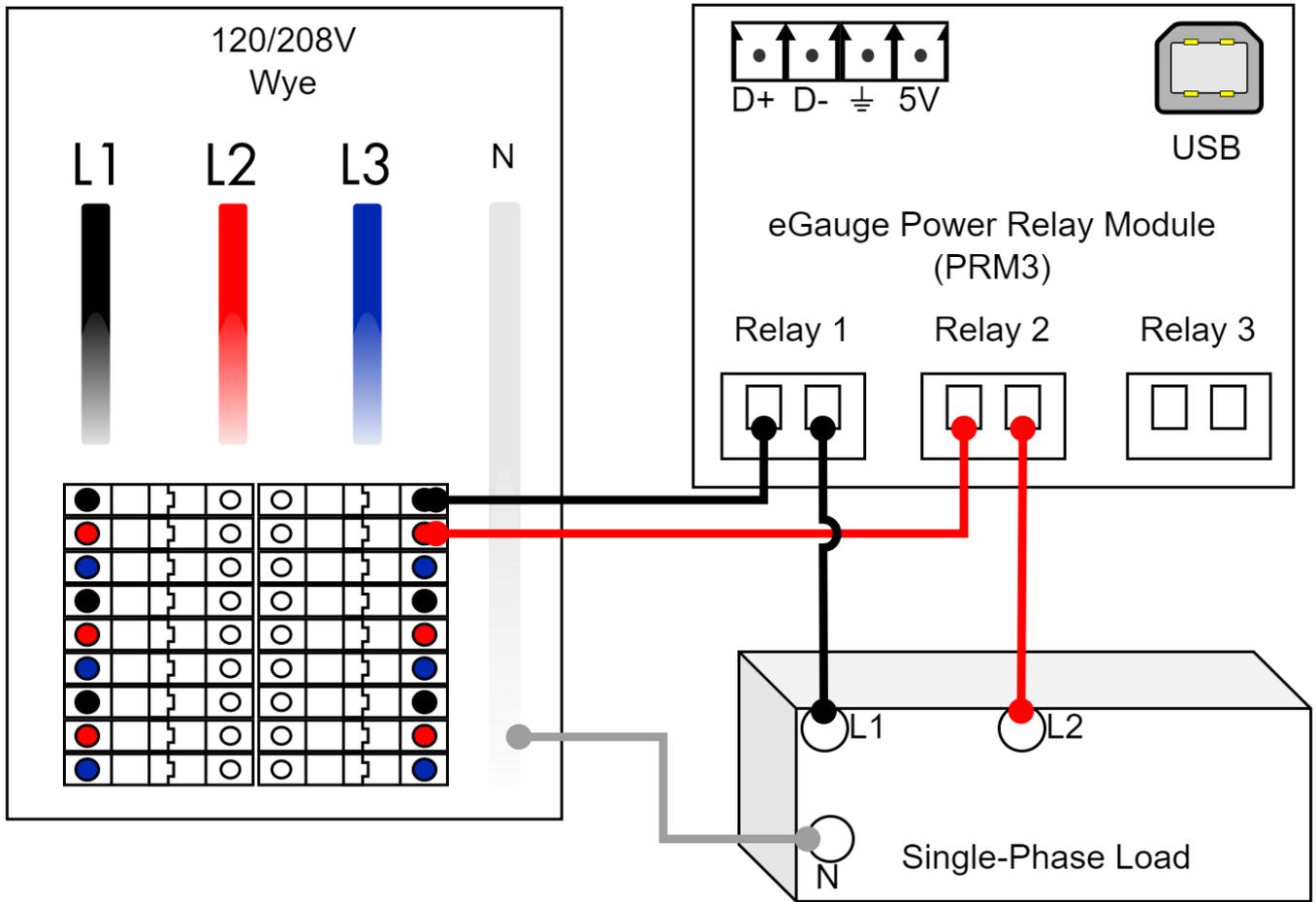
Be sure to control all 3 relay inputs simultaneously when turning on or off the three-phase load.



## Single-phase load wiring

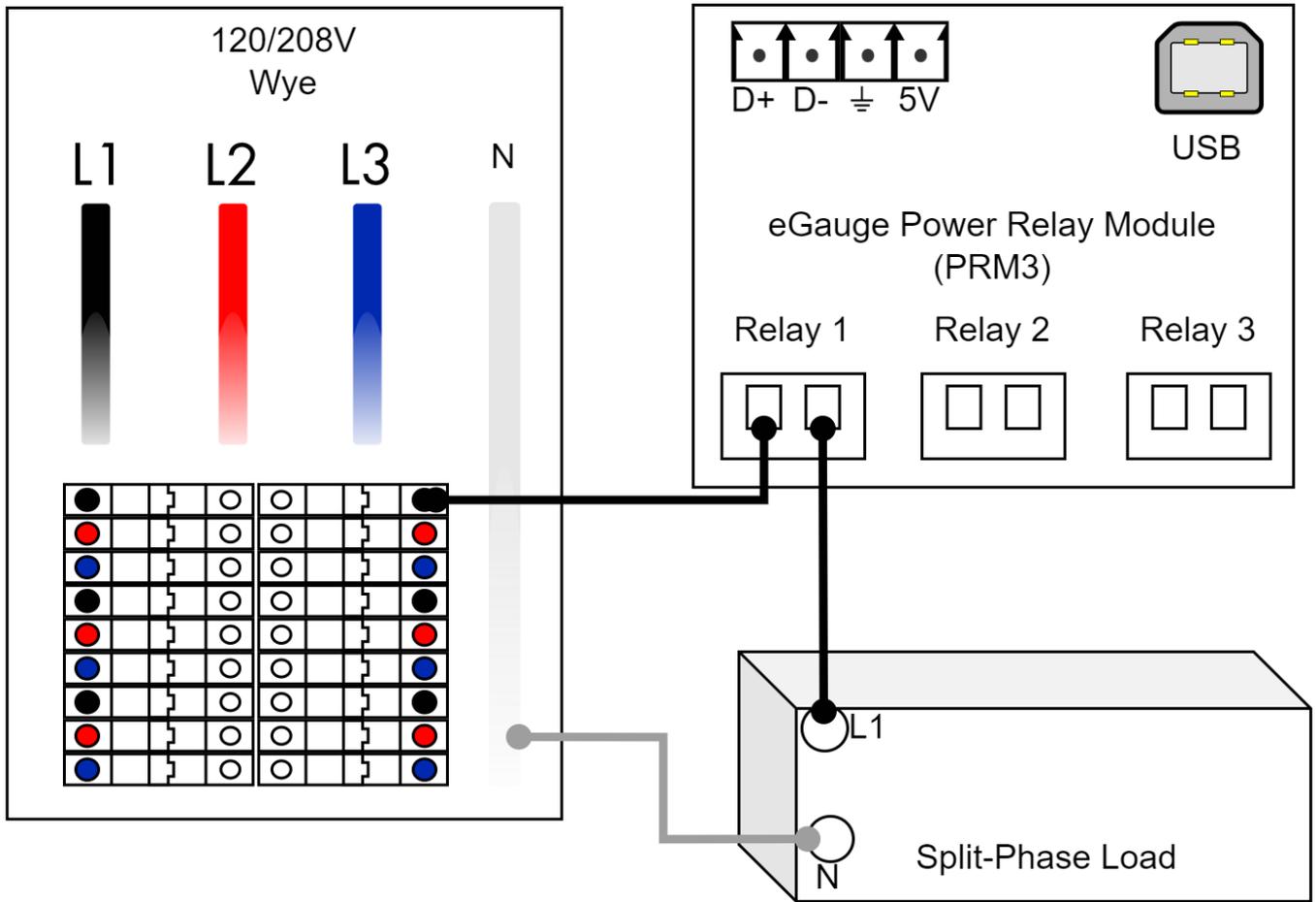
Neutral may or may not be used depending on the load.

Be sure to control the two relay inputs simultaneously when turning on or off the single-phase load.



## Split-phase load wiring

Neutral may or may not be used depending on the load.



## Related Material

- [PRM3 software documentation](#)
- [Lua Scripting](#)

Please visit [kb.egauge.net](http://kb.egauge.net) for the most up-to-date documentation.