

Model: 8R5PR
8 Channel
RS485 Relay Xpander

Installation Manual

Product Revisions F/G



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Features

- 8 Channel Relay Controller
- 5 Amp Relays
- RS485 Network Interface
- Programmable Individual Relay Channel Operation
 - Latched Mode
 - Pulsed Mode (with programmable pulse length up to 3240 seconds (54 minutes))
- Supported by **STARGATE** and the family of controllers using **WinEVM** PC Setup and Programming Software

Product Content

This product kit contains the following items:

- 1 8R5PR Control Unit
- 1 Power Transformer, 120VAC/12VDC, 500mA
- 1 Installation Manual

Relay Channel Specifications

Channels: 8
Type: SPDT (Single Pole, Double Throw)
Contact Rating: 5 Amp, 30 VDC / 5 Amp, 240 VAC

Caution! This unit is not rated for use with 120/240 Volt connections.

Relay LED's

Each relay channel has an indicator LED. The LED will be on when the relay is on.

Status LED

The status LED is a multifunction indicator that shows the power is on and that the unit is working properly. It also acts as an RS485 signal reception indicator by flashing when RS485 commands are both **received AND addressed** to the unit.

LED Flashing Slowly: When the control unit is first powered, the status LED will start flashing *slowly* to indicate power is OK and the unit is running. In normal operation, slow flashing also indicates RS485 commands being addressed to this unit are not being received.

LED flashing rapidly: When an RS485 network command is addressed to, and has been received by the unit, the status LED will flash rapidly. Once the unit is recognized by the RS485 network and starts to poll the unit on a frequent basis, the LED *may* flash rapidly and continuously depending on how many devices are on the RS485 network.

Auxiliary Power Output

The 8R5PR has auxiliary 12VDC power output terminals (J13) that can be used to provide power to switched loads. Maximum power output available for all loads is 400 mA. A resettable fuse on the 8R5PR control board protects this output. The fuse will reset 30 to 90 seconds after a short is removed.

Installation

Bench Test First!

It is recommended that you perform a bench test of the unit before permanent installation. Refer to the wiring diagram at the end of this document.

First connect the provided 12VDC power transformer to the 8R5PR's power jack. Then plug the power transformer into a 110 VAC outlet.

Note: To insure continuous operation of the unit, be sure the 120VAC outlet is not switched.

Do not connect the unit to the RS485 network terminals yet.

The status LED should be flashing slowly. This indicates the unit is powered up and it is ready.

Do not proceed until the unit gets to the slow flashing LED state.

Set the unit's RS485 network address on dipswitch SW2. See the dipswitch address setting section.

Connect the 8R5PR's RS485 terminals to an RS485 channel on an external Star Hub, or directly to the RS485 terminals on the Controller.

- Follow the wiring diagrams in this document
- Connect the 'D+' terminal to the other '+' or positive connection
- Connect the 'D-' terminal to the other '-' or negative connection

Note: The RS485 12V connection from the Controller's RS485 channel is not used.

Configure the Controller to add the device to its RS485 network using WinEVM Software. Use the 'Define' menu item and select 'RS485 I/O devices' (or 8CUR on older versions).

Refer to the **8R5PR Setup** section and the WinEVM manual for complete setup and programming instructions.

Once the Controller recognizes the 8R5PR unit and starts polling it, the Status LED will start flashing rapidly.

You are now ready to use the unit.

Connecting Loads to the Relays

Each relay has a Normally Open (NO) and a Normally Closed (NC) contact as well as the Common (C) connection. Connect your loads as needed.

- Do NOT exceed the relay's 5 Amp rating.
- Do NOT exceed the 40V Class 2 Voltage rating.
- Do NOT use with 120VAC or 240VAC loads.

Connecting Inductive Loads

If you are connecting inductive loads such as large contactors/relays, solenoids or sprinkler valves, you must install transient voltage suppressor/surge absorbers (called "ZNR" devices) across the relay contact terminals (Common (C) and Normally Open (NO) typically) to provide arc suppression and noise reduction.

For 24VAC loads (a sprinkler valve, for example), use a 56-volt ZNR. Reference Part: Panasonic part number: ERZ-V07D560, available from Digi-Key, Part number: P7296-ND (www.digikey.com).

A kit of 8 ZNR's is included with the control unit. Additional ZNR's are available from Digi-Key.

See wiring diagram for connection information.

RS485 Operation

The 8R5PR unit is controlled by network commands from a Controller's RS485's network. It is a half duplex, 2-wire (with ground) network. Data signals are Data '+' and Data '-'.

The network protocol is 9600 baud, no parity, 8 data bits, 1 stop bit, and no flow control.

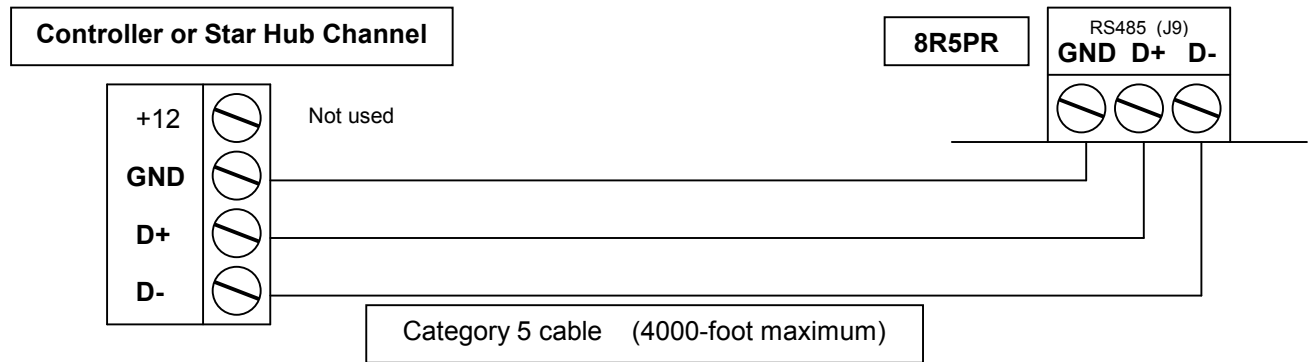
Use WinEVM PC setup and programming software provided with your Controller to configure and use this product.

RS485 Network Connection

Connect the Controller or Star Hub channel ground to the 8R5PR's RS-485 terminal block (J9). Observe network polarity. Always wire '+' to '+' and '-' to '-'. If you cannot communicate, try reversing the '+' and '-' connections.

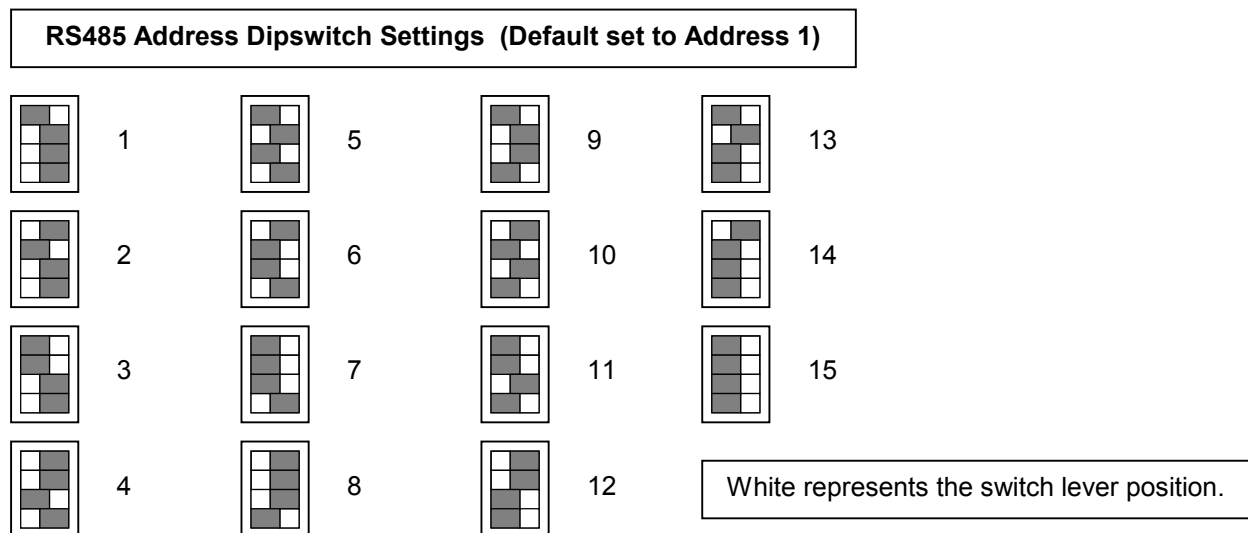
Recommended wiring is at least Category 3 cable with Category 5 or higher cable preferred. Maximum cable length is 4000 feet but actual maximum length depends on depends on network wiring topology.

Recommended wiring topology uses a star hub configuration (8AH485 external RS485 hub(s)). Each device is homerun wired to it's own channel on a hub and can have a 4000-foot maximum cable length.



Setting the Network Address

The 8R5PR network address is set with the 4-position dipswitch SW2. Set the dipswitch according to the table below. If 2 or more 8R5PR units are used, set each 8R5PR unit to a **different** network address.



8R5PR Setup

The 8R5PR must be “defined” to the Controller to which it is connected. The WinEVM PC setup program provided with the Controller is used for this purpose.

Install WinEVM on your PC and connect the Controller to the PC Serial Port. Start the program and verify you are correctly connected to the Controller. Use ‘Utilities – System Information’ or click the ‘Sys Info’ icon in the main menu bar at the top of the WinEVM screen. If an information window is returned after clicking ‘Sys Info’, you are connected to the Controller.

Define the 8R5PR to the Controller

- Click the ‘Define’ menu item in the WinEVM main menu bar.
- Click ‘RS485 I/O’ from the ‘Define’ drop down menu.
- Click the device with the address you want to install (example: ‘Addr1’).
- Click ‘Define’
- A Window will pop-up for that device address (example: ‘RS485 Address 1’).
- Click the device type ‘8 CH Relay’.
- Enter a descriptive name for the 8R5PR. (This will appear in schedules and logs.)
- Enter a Name for each relay channel. It could be the name of the controlled object connected to the relay channel or a number scheme making sense for your particular application.
- Click ‘OK’ to exit.

The device is now configured.

Testing the 8R5PR

Once defined, you can test the unit using WinEVM’s ‘MegaController’ direct I/O commands. Open the “MegaController” by clicking on the main menu bar item.

- Click the ‘I/O’ button in the ‘MegaController’ window.
- The ‘I/O Access’ window will open. It will show the 8R5PR unit you have just defined (as well as others you may have previously defined).
- Select a relay channel on the new 8R5PR unit.
- Click on ‘Set Relay’ to turn on the relay or ‘Clear Relay’ to turn off the relay.
- Relays will turn on and off as commanded. The relay state changes with each command.

Relay state changes will show up in the MegaController’s logging window (if ‘Relay Outputs’ is checked in the ‘Logging Messages’ list).

Using the 8R5PR

Once the unit is defined to the system, individual relay channels can be used in the following programming functions:

- THEN Actions in Events
- THEN Macros
- IF Macros (Relay State)
- LCD Keypad button actions

Relay Programming

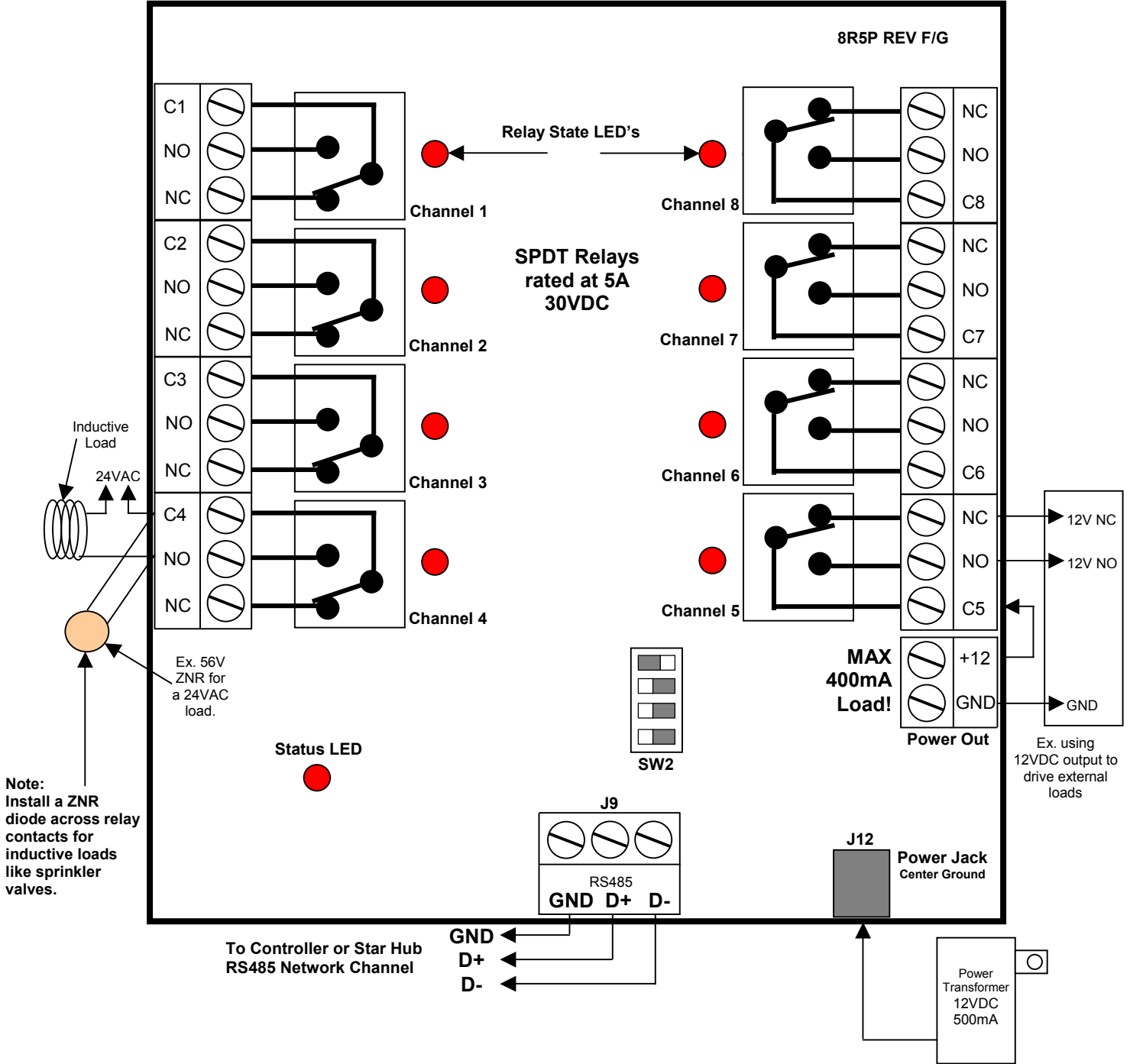
When adding a ‘Relay Output’ to a WinEVM Schedule Event, you can select the output to be either:

- On / Off
- Pulse Output

Pulse output length can be defined as a fixed number of seconds (1 to 3240) or as a user-defined variable. See the WinEVM programming manual for details on relay output programming.

Wiring Diagram

Rev. F/G PCB



Note:
Install a ZNR diode across relay contacts for inductive loads like sprinkler valves.

Status LED:	
Operating Mode	Function
Slow Flashing	Power on; unit ready, but no RS485 commands are being received.
Fast Flashing	RS485 network command received for this unit's address.
Note: When connected to the RS485 network, the LED may flash continuously due to frequent polling.	

INDUCTIVE LOAD NOTE: If you are controlling inductive loads such as large contactors/relays, solenoids or sprinkler valves, you must install transient voltage suppressor/surge absorbers (called "ZNR" devices) across the relay contacts to provide arc suppression and noise reduction. For 24VAC loads (sprinkler valves), use a 56-volt ZNR. 8 are included with the unit. If you need additional ZNR's they are available from Digi-Key (www.digikey.com) Reference Part: Panasonic part number: ERZ-V07D560, Digi-Key part number: P7296-ND