Description

The Sine Systems model RP-8 Relay Panel is for use with the RFC-1/B Remote Facilities Controller. It consists of a long PC board mounted on a 3.5 inch (2U) rack panel. The RP-8 connects to the RFC-1/B via a 16 conductor flat cable. The cable is supplied with the RFC-1/B.

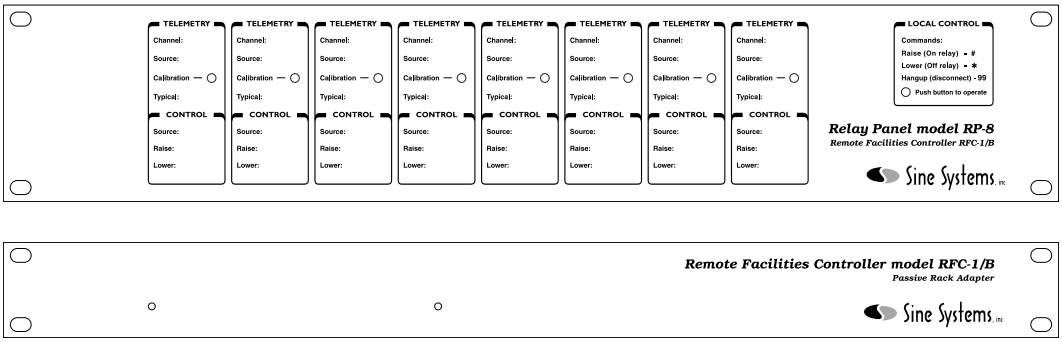
The RP-8 Relay Panel package contains these items:

- 8 Channel Relay Panel model RP-8
- connector for flat cable
- documentation

The flat cable connector attaches to the existing flat cable. A new cable is not included and is not typically needed.

Installation

The RFC-1 and RP-8 are designed to be mounted in a standard 19 inch equipment rack. The system generates little heat and can be mounted in just about any convenient location. The RP-8 panels should be mounted at a location that is convenient to the control and metering sources that will be connected to it.



The cable included with the RFC-1/B system has one connector at each end. If this is a new installation with a single RP-8 relay panel, attach the flat cable to the RFC-1/B at one end and the RP-8 at the other.

If an RP-8 Relay Panels is being added to an existing RFC-1/B system, an additional connector must be added to the existing flat cable so that additional relay panel(s) can operate in the system. Details for installing the new cable connector are provided below.

Flat Cable Connection

Most system I/O occurs through the 16 conductor flat cable that connects the RFC-1/B and the RP-8. Each relay panel requires a connection on this cable. There is only one cable. Connectors are added to is as needed.

Adding a Flat Cable Connector

Installing an additional connector on the flat cable is not difficult but care must be taken. The connector cannot be removed easily once attached. A large pair of pliers or a small vice will be needed to attach the connector .

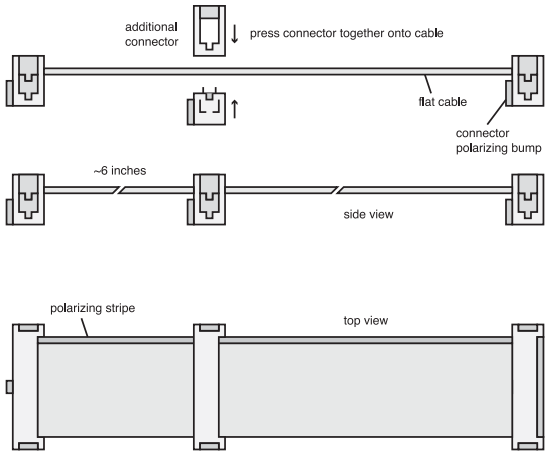
WARNING!

Be sure to note proper orientation of the new connector on the cable before attaching it. Match the polarizing features of new connector to those of the connectors that are already installed. All connectors should face the same direction. The red polarizing stripe on the flat cable will be on the same side of all connectors when the cable is attached to the devices.

To attach a connector on the flat cable:

1) Determine proper orientation of the connector on the flat cable
2) Separate the two parts of the connector and place them over the flat cable at the appropriate location
3) Verify position and orientation of the connector on the cable
4) Press the two parts of the connector together so that the metal spikes pierce the insulation of the cable

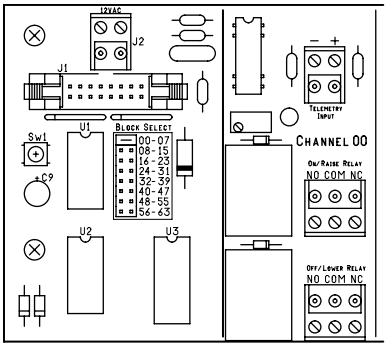
Allow approximately 6 inches between connectors so that there is enough cable to mount the relay panels in the rack. The connectors can be further apart if necessary.



Make sure that the connector is aligned directly across the cable. If the connector is at an angle, the metal teeth on the connector may penetrate the cable insulation at the wrong points and short the conductors or miss them entirely.

Electrical Connections

All connections to the RP-8 are made through depluggable connectors for easy removal during installation and service. All connections are made from the back of the device once installed in the rack.



Power Connection

Each RP-8 relay panel has an input connector labeled 12 VAC to supply system power. The power supply can be connected to any RP-8 to power the system. *Power only needs to be applied to one RP-8 for the entire system.*

Telemetry Connections

Telemetry connections to the RP-8 are made through two-conductor screw terminal connectors. The screw terminal connectors can be removed for easier installation. Grasp the connector firmly and pull it away from the panel; there are no locks or catches. The connector can be plugged onto the terminal posts in several directions: flush or vertical with cable exit up or down. Choose the position that is most convenient and observe proper signal polarity.

Telemetry samples should conform to the following rules:

- for a full scale voltage reading 1.0 volt DC is necessary
- telemetry samples over 5 volts DC can be used but should be dropped with an attenuator
- telemetry samples should never excede 10 volts DC
- telemetry samples can be offset from ground up to 30 volts DC
- positive or negative DC voltages can be metered but not both on the same channel

Control Connections

Control connections to the RP-8 are made through three-conductor screw terminal connectors. The screw terminal connectors can be removed for easier installation. Grasp the connector firmly and pull it away from the panel; there are no locks or catches. The connector can be plugged onto the terminal posts in several directions: flush or vertical with cable exit up or down. Choose the position that is most convenient.

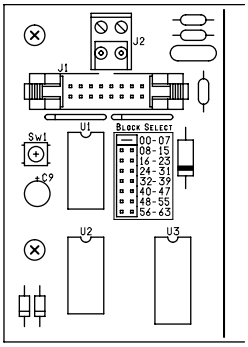
The control relays are SPDT with both normally open (NO) and normally closed (NC) contacts available. Observe proper orientation between the NO, NC and common (COM) terminals when making these connections.

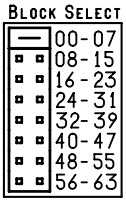
Setup

Complete installation and setup instructions can be found in the *Installation and Operation* manual for the RFC-1/B Remote facilities controller. This documentation contains information for adding a relay panel to an existing system.

Channel Block Selection

Each RP-8 responds to a specific range of channel numbers. Channels are distributed by the RFC-1/B in blocks of eight channels. A jumper on the RP-8 labeled "Block Select" determines which block of channels an RP-8 recognizes. Place the jumper on the pair of pins next to the appropriate range of channel numbers for each RP-8.





Each relay panel should operate on a different channel block. Blocks are usually used continuously from channel 00 up but a block of channels may be skipped if necessary.

Operation

Complete operating instructions can be found in the *Installation and Operation* manual for the RFC-1/B Remote facilities controller. This documentation contains information for adding a relay panel to an existing system.

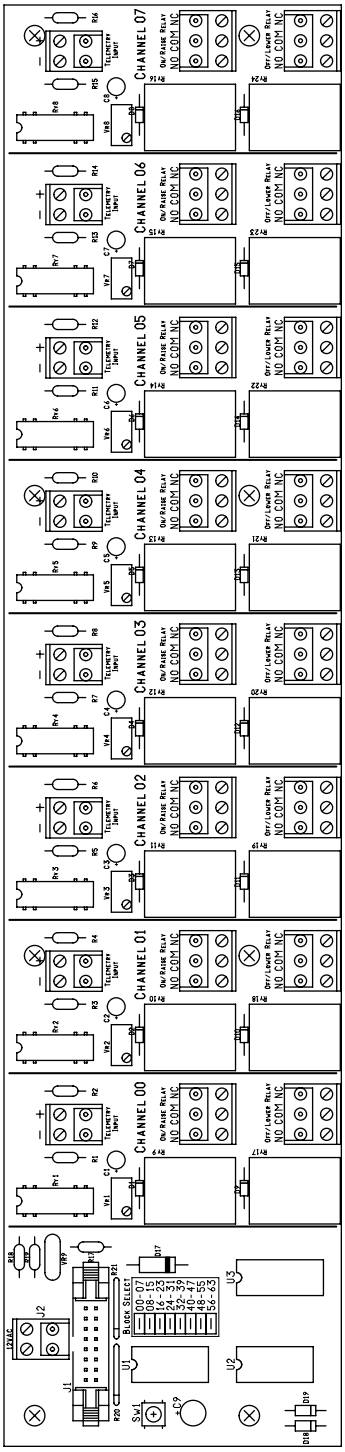
Local Control Button

Each relay panel has a small button toward the right side in the "Local Control" area labeled "Push to operate locally". Pressing this button will activate the RFC-1/B system through the local telephone port. Buttons on all relay panels operate exactly the same when multiple relay panels are used.

Telemetry Calibration Pots

Each telemetry channel has a small hole labeled "Calibration". There is a small brass screw recessed behind the hole. This screw controls a 22 turn potentiometer that is used for telemetry calibration. The pots have a clutch at each extreme to protect the internal mechanism from travelling too far. The pot will turn indefinately in both directions.

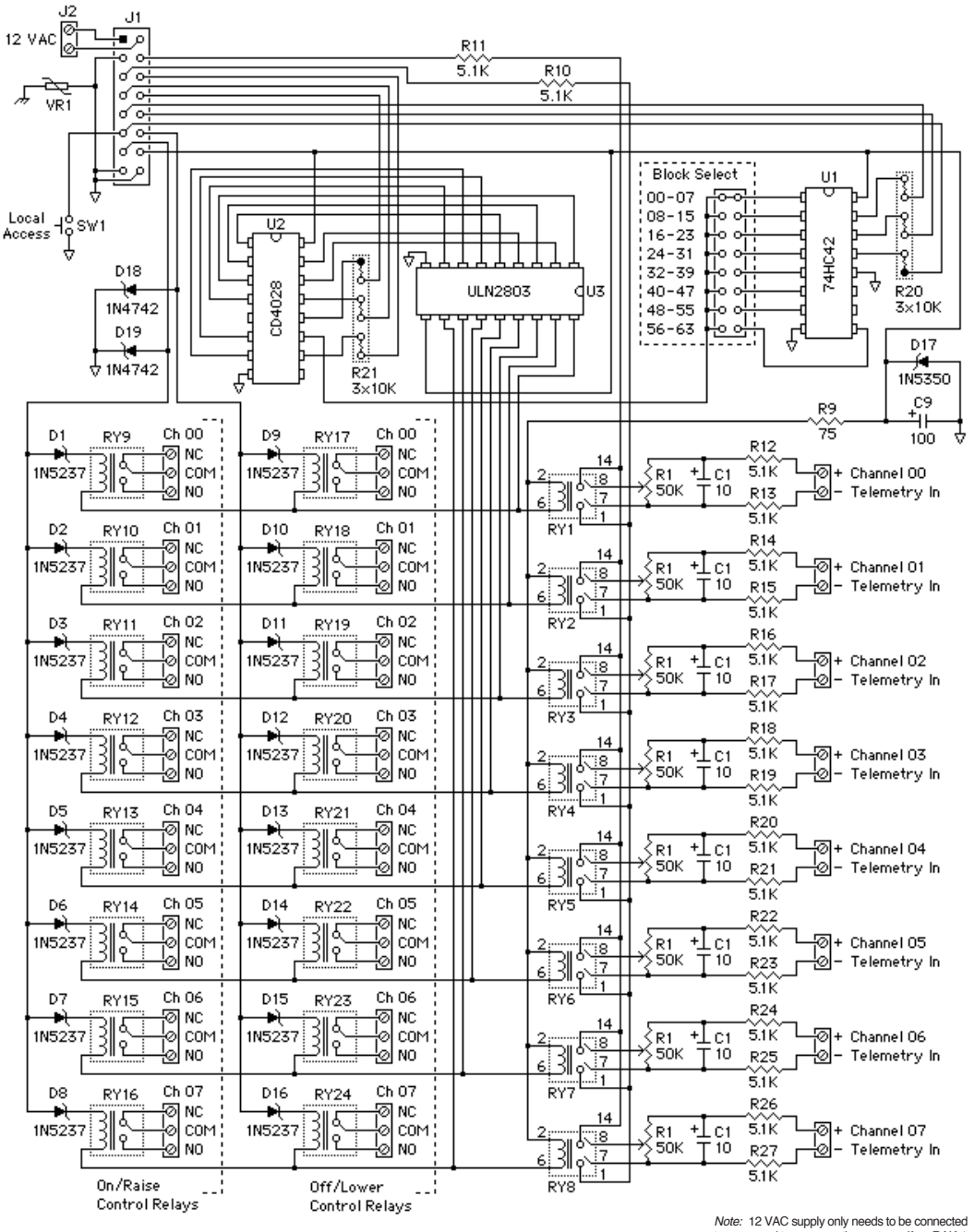
Component Layout



Parts List

Qty	*Part Description and Value*
1	board, PC, RP-8, Rev. 10
8	capacitor, aluminum, radial, 10 μF, 16v/short
1	capacitor, aluminum, radial, 100 μF, 16v/short
1	connector, pin-plug, female, 0.1", 16, IDC
1	connector, pin-plug, female, 0.1", 2, shorting plug
1	connector, pin-plug, male, 0.1", 16, PCB, 0°
9	connector, screw terminal, 5.0 mm, 2, plugable
16	connector, screw terminal, 5.0 mm, 3, plugable
8	connector pins, pin-plug, male, 0.1", 40 x 2, 0.23 gold up/.015 tin dn
9	connector pins, screw terminal, 5.0 mm, 2, PCB, 0°
16	connector pins, screw terminal, 5.0 mm, 3, PCB, 0°
2	diode, zener, 12 V/1 W, 1N4742A
1	diode, zener, 13 V/5 W, 1N5350B
16	diode, zener, 8.2 V/0.5 W, 1N5237B
1	enclosure part, rack panel, aluminum, painted for RP-8
8	hardware, screw, pan head, 4-40 x 1/4", stainless
1	hardware, screw, pan head, M4 x 0.7, 6mm, stainless
1	hardware, washer, flat, 0.171 ID X 0.380 OD (M4), nylon
1	integrated circuit, decoder, 3 to 8 line, 74C42,
1	integrated circuit, decoder, BCD to decimal, CD4028BCN,
1	integrated circuit, driver, octal sink, ULN2803A,
16	miscellaneous, tape, Polymide, 3/8" diameter, Kapton
16	relay, general purpose, 5A contact, 5 volt DC, form 1C
8	relay, reed, DIP, 5 volt DC, form 2A
18	resistor, carbon film, 1/4W, 5.1K, 5%
1	resistor, carbon film, 1/4W, 75, 5%
8	resistor, cermet trimmer, 50K, 22 turn, vertical
2	resistor, SIP, 3 x 10K, isolated
2	socket, DIP, 16,
1	socket, DIP, 18,
1	switch, pushbutton, momentary, SPST, NO, PCB
1	varistor, metal oxide, 85 VDC, 60 VAC

Schematic Diagram



Note: 12 VAC supply only needs to be connected to one panel to power entire system. If an RAK-1 is used then it supplies power to the entire system and no 12 VAC supply is necessary.

Unless otherwise noted, all resistor values are in ohms and all capacitor values are in microfarads.

Sine Systems, Inc.
Model: RP-8 Relay Panel for Remote Facilities Controller RFC-1/B
Revision: 10