

- Low Cost Matrix, Multiplexer or Uncommitted Relay Configurations
- Selectable I²C or RS-232 Interface
- Simple ASCII Instruction Set
- High Quality Pickering Reed Relays
- Choice of SPST, SPDT and Screened Relays
- RF Screened Versions With Bandwidth to 300MHz
- Suitable For Building Switching Systems in Test Fixtures
- Standard 72-pin SIM Connector
- 3 Year Warranty



Pickering Interfaces SIM Reed Relay Cards offer a choice of switching configurations using low cost industry standard SIM connectors. They are ideal for placing switching systems in fixtures close to the unit under test.

These cards free the designer from the detail of routing complex switching circuits, you may select from a wide range of cards using built in RS-232 and I²C interfaces.

They are intended to be mounted on to a simple motherboard and can be used to construct very high density switching networks. SIM based switching cards also allow for very simple in-field maintenance. The range is as follows:

1010 Series Uncommitted Relays	1020 Series Multiplexers	1030 Series Matrices
8 x SPST 16 x SPST 16 x SPDT	8 chan, 1-pole 8 chan, 2-pole 16 chan, 1-pole 16 chan, 2-pole	8 x 2, 1-pole 8 x 2, 2-pole 8 x 4, 1-pole 8 x 4, 2-pole

Automatic Self-Test

A logic only Self-Test is invoked at power on and may also be operated under software command. Self-Test pass is indicated on a PCB mounted LED with a full pass/fail description available via either the I²C or RS-232 interfaces.

Connections

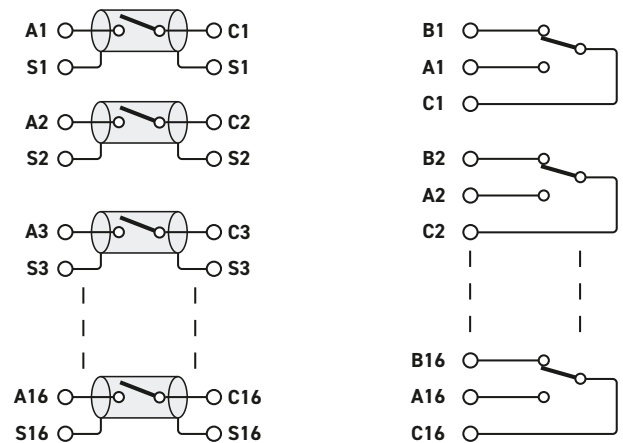
All control and signal lines are made using the 72-pin SIM connector. There is also a 4-pin plug for connection to the I²C or RS-232 interface. Other connector types may be available.

Software Support

SIM relay cards have a simple ASCII control language (the same commands work with either I²C or RS-232). Pickering also have drivers available to assist with software development and debugging for NI LabView.

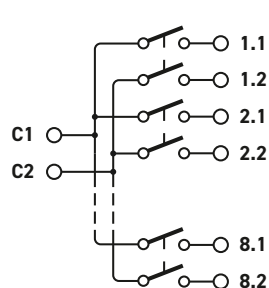
Microcontroller Based Design

The relay cards have a built-in single chip microcontroller with a standard hardware selectable I²C or RS-232 interface with read/write capability. Ledged reed relays are used throughout to simplify maintenance operations.

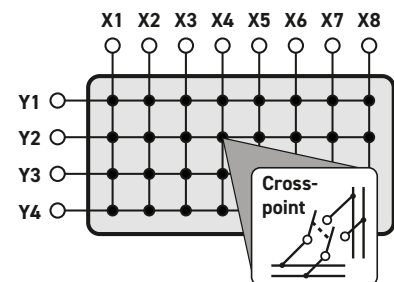


16 x Screened Relays, 1-Pole

16 x Changeover Relays



16 to 1 Multiplexer, 2-Pole



8 x 4 Matrix, 2-Pole

Example Configurations for the SIM Reed Relay Card

I²C Communication

SIM relay cards use a message based method of communication with the controller, all data is exchanged through a single read/write register.

A DIP switch is provided for I²C addressing. This controls addressing bits 4 to 1, in addition jumpers are available for bits 5 to 7 (if required). All 7 address bits are also available on the SIM connector, allowing the I²C address to be read from the motherboard.

RS-232 Port

The cards can also be configured with an RS-232 port (9600 baud, 8 bit, no parity, no handshaking). This is provided on a 4-pin Molex connector (a jumper on the PCB selects RS-232 or I²C use for this port). An adapter lead is available that allows use with a standard 9-pin D-type. The RS-232 port allows the card to be controlled and monitored from any RS-232 terminal.

RS-232 to I²C Converter Card

The RS-232 to I²C converter 1080-001 allows control of multiple relay cards that are set for I²C operation. Like the relay cards, the converter card uses the SIM card mechanical profile.

Constructing Large Switching Networks

RS-232 Control: If just one card is to be run you simply connect your RS-232 lead to the SIM RS-232 port (4-pin connector on the SIM card), but if more than one card is to be controlled you must use the 1080-001 converter card to provide conversion from RS-232 to the I²C interfaces of the relay cards.

I²C Control: When using the I²C bus any number (up to 128) of SIMRC cards can be run.

Screened Versions For RF Use

Relay cards are available in RF versions, that are designed for use in 50Ω or 75Ω systems. All connections are via the 72-pin edge connector. Care must be taken with the motherboard layout to ensure good RF performance (for example correct track dimensions and good ground planes), please contact Pickering for further assistance. Versions suitable for RF use have "RF" in their product code suffix.

Dimensions

The SIM relay card conforms to the same outline dimensions as a standard SIM (Single In Line Memory Module):

- Width - 108mm
- Height - 12mm
- Depth - 39mm for matrix cards, 23mm for all others

Operating/Storage Conditions

Operating Conditions

Operating Temperature:	0°C to +55°C
Humidity:	Up to 95% non-condensing
Altitude:	5000m

Storage and Transport Conditions

Storage Temperature:	-20°C to +75°C
Humidity:	Up to 95% non-condensing
Altitude:	15000m

General Switching Specification

Maximum Voltage:	100VDC
Maximum Power:	20W
Maximum Switch Current:	1.0A
Characteristic Impedance (screened versions):	50Ω
Bandwidth (SPST screened version):	300MHz
Bandwidth (16-channel screened version):	60MHz
Bandwidth (8 x 4 matrix screened version):	60MHz
On Path Resistance (1 relay):	<150mΩ
Off Path Resistance:	>1x10 ⁹ Ω
Differential Thermal Offset:	<10μV
Switching Time (1 relay):	1.5ms †
Switching Time (16 data block):	2.5ms †
Relay Mechanical Settling Time:	<300μs
Expected Life (Low power):	>1x10 ⁹ ops.
Expected Life (Max power):	>5x10 ⁶ ops.

† Typical time with I²C maximum transfer rate of 100kBits

Switching Specification - SPDT Relays Only

Maximum Voltage:	100VDC
Maximum Power:	3W
Maximum Switch Current:	0.25A
Maximum Carry Current:	1.0A

LED Indicators

Built in LED indicators are provided to show status and power.

Power Supply Requirements

Required Voltage:	5V ±0.25V
Current:	100mA typical per SIM <200mA with 8 relays selected <500mA with 32 relays selected

Carrier Card - Small Outline PCB

The small outline PCB 1091-001 supports one SIM card and provides an easy method of wiring a cable to the SIM card by soldered connections.

Carrier Card - RF

The RF carrier 1092-001 hosts a single relay SIM card and brings the connections out on RF connectors. It provides a simple way of connecting to relay cards that are specified for RF use.

Carrier Card - 3 SIM Cards

The 3 SIM card carrier 1050-001 supports three SIM Relay Cards and a 1080-001 Converter Ca to provide an RS-232 interface. Connections for the signal lines are brought out on three 50-pin D-type connectors.

Product Order Codes

Series 1010 - Uncommitted Reed Relay Cards

16 x SPST Reed Relays	1010-R-16-1-5/1D
16 x SPDT Reed Relays	1010-R-16-1-5/3D
16 x SPST Screened Reed Relays	1010-R-16-1RF-5/1D
8 x SPST Reed Relays	1010-R-8-1-5/1D

Series 1020 - Multiplexer Cards

16-Channel, 1-Pole	1020-R-16-1-5/1D
16-Channel, 2-Pole	1020-R-16-2-5/1D
16-Channel, 1-Pole Screened	1020-R-16-1RF-5/1D
8-Channel, 1-Pole	1020-R-8-1-5/1D
8-Channel, 2-Pole	1020-R-8-2-5/1D

Series 1030 - Matrix Cards

8 x 2 Matrix, 1-Pole	1030-R-8-2-1-5/1D
8 x 2 Matrix, 2-Pole	1030-R-8-2-2-5/1D
8 x 2 Matrix, 1-Pole Screened	1030-R-8-2-1RF-5/1D
8 x 4 Matrix, 1-Pole	1030-R-8-4-1-5/1D
8 x 4 Matrix, 2-Pole	1030-R-8-4-2-5/1D
8 x 4 Matrix, 1-Pole Screened	1030-R-8-4-1RF-5/1D

Carrier Cards

Small outline PCB with single SIM socket	1091-001
RF PCB with 72-pin SIM socket	1092-001
SIM relay card carrier PCB including mating connectors 3 x male 50-pin D-types and 1 x female 9-pin D-type	1050-001
SIM relay card carrier kit 1050-001 PCB including RS-232 to I ² C converter (1080-001) and mating connectors	1050-002

Support Products

RS-232 to I ² C converter card	1080-001
RS-232 9-pin D-type lead	1081-001
72-pin SIM socket	1090-001

Latest Details

Please refer to our web site for latest product details:

pickeringtest.com