Product Datasheet 12

Features

- PC104 format card with 8 onboard changeover relays and digital I/O options.
- Card tracking will handle 4.5 amps at up to 50V. The relays have a 10 amp contact rating.
- Digital output channels can supply up to 25mA (See section **Data I/O** for port limits)
- The 8 I/O channels of port B can be configured for use as either relay contacts or digital input channels via onboard links. Port C is digital I/O only.
- LED channel and power status indicators on Port B.
- Example programs are available for LabView, Visual Basic and C++.
- 2.5mm jack socket or screw terminal power connection option.
- Supplied with nylon feet which will take self-tapping screws.
- Corner mounting holes allow cards to be stacked if required.
- A protective acrylic cover & base is also available.
- All relay contacts (NO/COM/NC) taken to screw terminal blocks.
- 0V, 5V (@150mA) and 12V also taken to a separate 3-way screw terminal block adjacent to the relay contact screw terminal block.
- Standard (9-way D Type straight through) serial cable required for connection to PC serial port.
- CЄ & RoHS compliant.

Description

This card is an industry standard PC104 profile, eight channel relay card. It is designed to be connected to any RS232 compatible serial port and commanded via a simple ASCII/Text command protocol. Each output can be independently set under software control.

The PCB tracking to relay will handle 4.5 amps up to 50V.

The card has two screw terminal blocks which allow connection to all of the NO/Com/NC contacts of the 8 onboard relays. A third screw terminal block is provided giving user access to the 0V, 5V and 12V DC power connections.

Specifications

Serial Interface
Standard RS232 electrical interface with 9-way (female) D Type connector.

Power supply
12V DC

Power consumption
10 mA standby, 200 mA all relays active

Power output (TB3)
12V (current dependant on input supply and 5V (80mA approx..)

Relays
See page 3 for technical details of the relays used

Operating temp range
0-70^{0}C

Output channels
5V (max) @ 25mA (See section **Data I/O** for port limits).

Dimensions
Approx. 90mm (D) 95mm (W) 22mm (H) (excluding feet)

Weight Approx. 170g

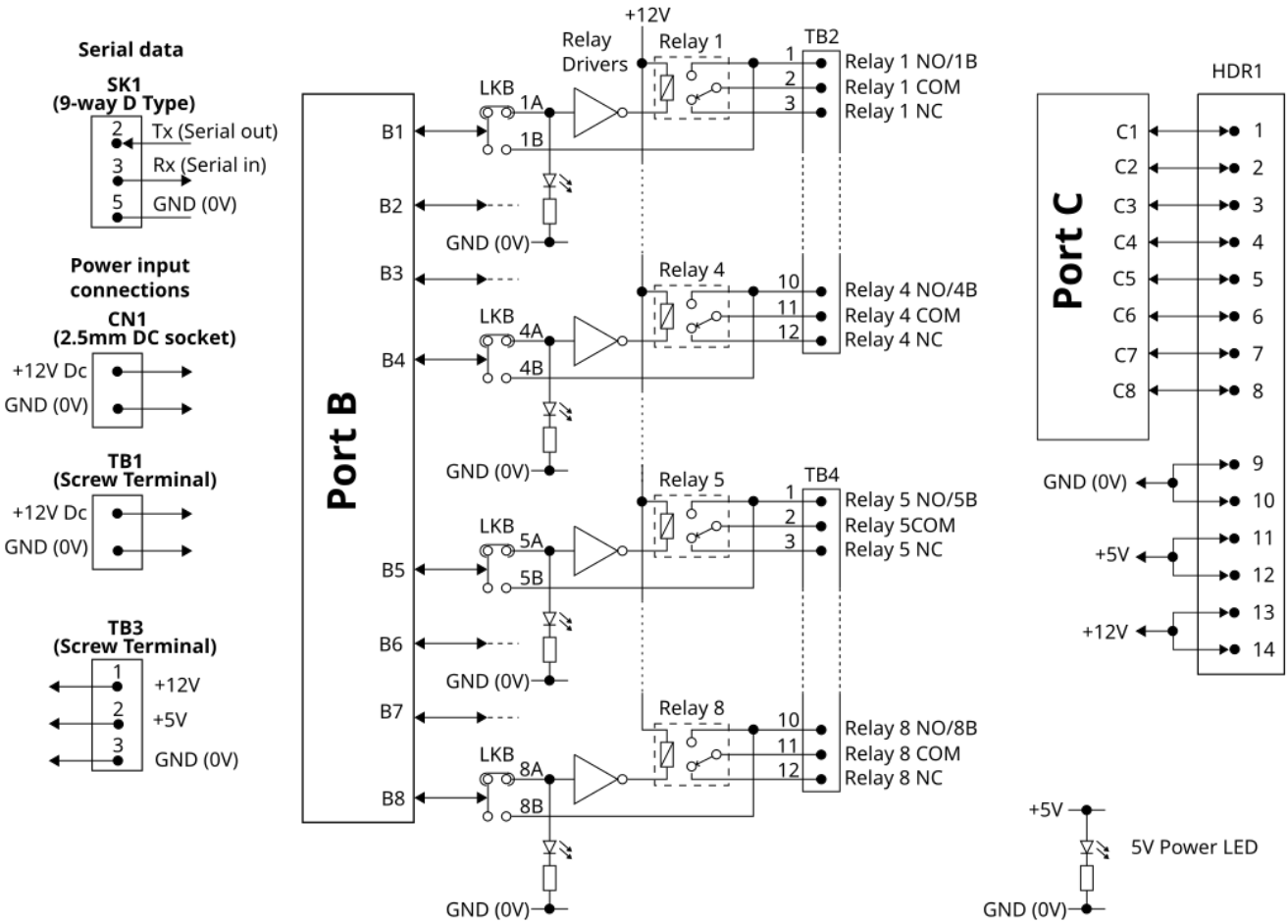
Order code

SERDIO8R
9-way D type input & screw terminal output connector

web:www.easydaq.co.uk
email:sales@easydaq.co.uk
Tel: +44 (0) 1202 916411

Connection details

External connections to the card are shown below:



Product Datasheet 12

Specification:

Power supply
This card requires a +12V DC supply on either CN1 or TB1.
Max current when all relays operating approximately 200mA.

Control Interfaces
RS232 serial at 9600 Baud, 8 data bits, 1 stop bit, no parity. No handshaking.

Data I/O
The SERDIO8R can provide up to 16 data I/O channels. 8 channels are selectable as relay or I/O on port B and 8 dedicated I/O channels are on port C.

It is important to realise that all the data I/O channels are connected directly to the processor and can only handle signals between 0V and 5V with respect to the power supply ground (0V). Voltages applied to these pins that are outside of this range will cause damage to the processor.

Each channel can source or sink 25mA. Each port has a maximum of +/-200mA and the device as a whole has a maximum of +250mA and -300mA.

Operating temp range
-20 to +80^{0}C

Relays

Coil Rated voltage/current	12VDC/19mA
Must operate/release voltage	75%/10% of rated voltage
Maximum track ratings	4.5A, 50VDC
Minimum recommended contact rating	5V @ 20mA
Contact resistance	100mΩ max
Operate/release time	5mS/5mS
Contact material	AuAg overlay, Ag alloy
Operational life (min)	Mechanical 10^7 / Electrical 10^5
Contact arrangement	SPDT, Form C

Detailed description and control:
The SERDIO8 card is controlled by setting the states of ports B and C of the onboard processor. This control is achieved using a simple 2-byte sequence described in the *Command format* section below.

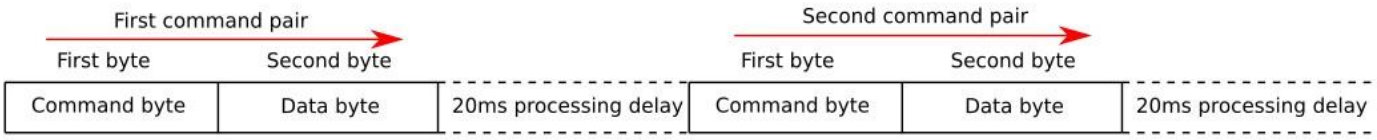
The card had 8 relays that can be controlled via port B and LKB.

LKB is a bank of links that selects between relay control or data I/O for each of the channels on port B.

Port C is directly connected to HRD1 as a general purpose I/O port.

Command format
The card is commanded via simple single ASCII characters (+ status byte). This is a 2-byte pair. These are commands that address each port of the PIC processor device (Hex equivalent shown in brackets). The card can be controlled using a Terminal emulator if connected via RS232 to a PC.

It is important to include a 20ms processing delay between command pairs.



Port B (Channels 1-8) Relay or I/O commands:

Port B has up to 8 relays or 8 Data I/O depending on how the links on LK1 are configured.

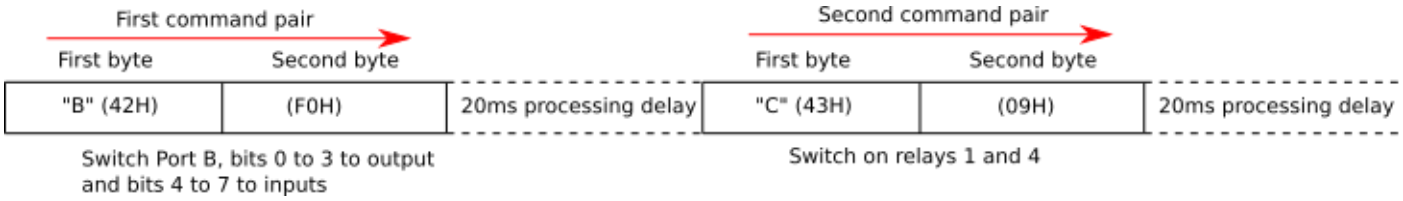
In the following example it is assumed that Relays 1 to 4 are enabled using channels 1 to 4 and the remaining channels, 5 to 8 are set as Data I/O.

ASCII 'B' (42H), X Sets the individual port B channel I/O directions.

A 1 = Input and 0 = output. (i.e., where X=10111111 (AFH) = sets bit 7 as an output, the rest as inputs).

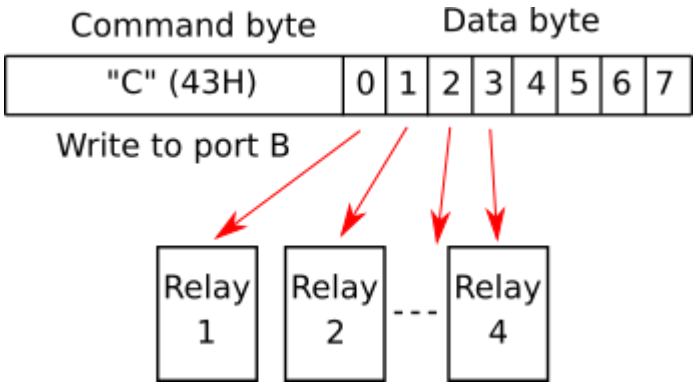
ASCII 'C' (43H), X Write data X to Port B (i.e., X=00000001 (01H), sets channel 1 to active). Data bytes are latched by the card until a further valid data byte is written to it.

Example: To set all Port B bits 0 to 3 to output for controlling the relays, Bits 4 to 7 as inputs and switch on relays 1 and 4:



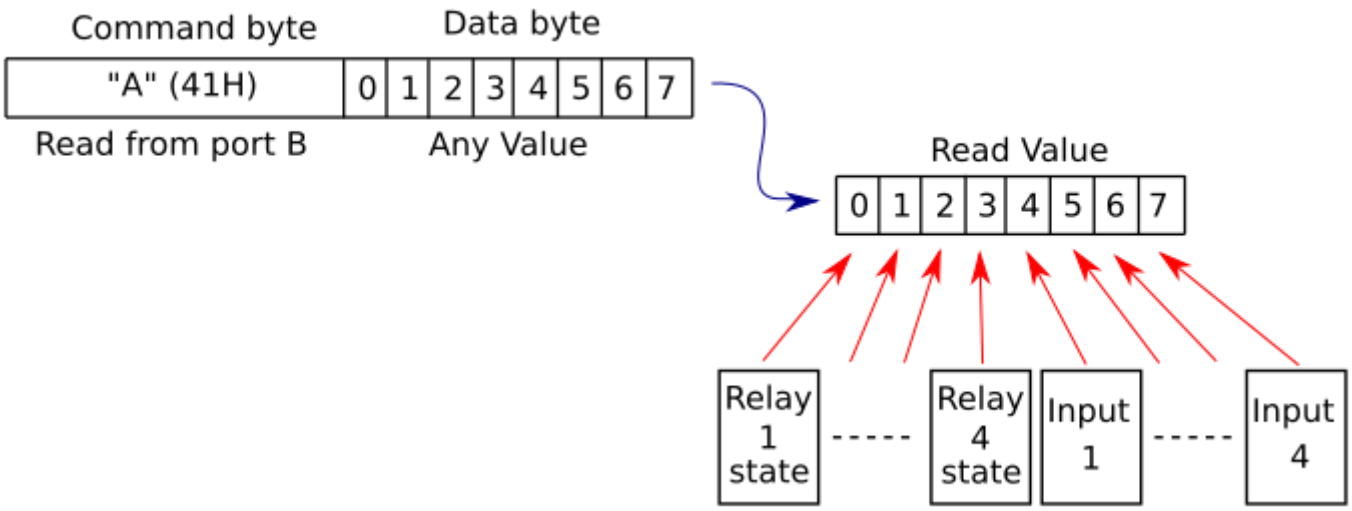
The first byte pair initialises the port to the lower 4 bits as output and the upper 4 bits to input. The second and subsequent byte pairs are then used to control the relays.

The 8 bits of the data byte represent the relays to be controlled. Relay 1 is controlled by Bit 0, relay 2 is controlled by Bit 1 and so on to relay 8 being controlled by Bit 7. But in this case only 4 relays will be controlled as the top nibble of port B is set to input.



Port B (Channels 4-7) Input commands:

This is a two-byte command with the second byte being any value and is ignored. The data byte will be transmitted after the dummy byte has been received.



The value of the 4 inputs is read from the top 4 bits of the returned value.

Note that this command also returns the state of the 4 relays on Port B.

Port C (Channels 1-8) I/O commands:

Port C is controlled in a similar manner to port B just using different commands.

Port C is dedicated I/O and uses HDR1 as its connection to the processor.

Summary of EasyDAQ relay card commands.

Letter	HEX	Function	Notes
A	41	Read Port B	
B	42	Set direction of Port B	
C	43	Write data to Port B	
D	44	Read Port C	
E	45	Set direction of Port C	
F	46	Write data to Port C	
G	47	Read Port D	These instructions are not used on SERDIO8
H	48	Set direction of Port D	
I	49	NOT USED	
J	4A	Write data to Port D	
K	4B	Read Port E	
L	4C	Set direction of Port E	
M	4D	Write data to Port E	

NOTE.
Information in this document is believed to be accurate and reliable. However, EasyDAQ does not give any representations or warranties, expressed or implied, as to the accuracy or completeness of such information and shall have no liability for the consequences of use of such information.

Document versions

Version number	Date	Notes
1.x	2001	Original datasheets
2.0	04/06/2022	Updated with additions and corrections.