



Saflec Systems (Pty) Ltd

SEB-710
I/O Expansion board
Revision 1.0 - (March, 2011)

Quick Start Guide

Introduction

The SEB-710 is an I/O expansion device for additional inputs and outputs. It has eight relay outputs and eight digital inputs with eight selectable digital inputs or transistor outputs. This device is an expansion board that attaches onto the SDC-550 Multiple Door Controller.

Note: Make sure the power is disconnected while performing your wiring connections to prevent possible shorts or power spikes from causing problems.



Figure 1
SEB-710 I/O Expansion board

Step 1: Installation of the SDC-710 with an existing SDC-550

The SEB-710 will be supplied with the following if supplied separately:

- 10x M3x20mm stand-off's
- 3x M3x10mm stand-off's
- 7x 3mm nuts
- 3x 3mm screws
- 1x Ribbon cable with connectors

1. The SDC-550 (and SEB-700 if used) needs to be removed from the plastic enclosure and the SEB-710 will be mounted first.
2. Install 4x M3x20mm stand-off's with a 3mm nut on each stand as shown in [Figure 2a](#)
3. Install 6x M3x20mm stand-off's directly into mounting holes with the SDC-710 in place as shown in [Figure 2a](#)
4. Mark and drill 3x 3.5mm holes indicated in [Figure 2a](#). Remove SDC-710 and install 3x M3-10mm stand-off's upside down securing it from the back of the box with a 3mm screw.
5. Repeat Step 2 and also secure the stand-off from Step 3 from the top with a 3mm nut.
6. Insert ribbon cable supplied into J6 (expansion port) on the SEB-710 and place the SDC-550 in its original orientation and fasten 9x 3mm screws into stand-off's. Lastly connect ribbon cable to J13 on the SDC-550 (expansion port 2) as shown in [Figure 2b](#).

Note: If an SEB-700 Ethernet Expansion is used, it will be re-installed on top of the SDC-550 with 4x M3 stand-off's and secured from the top with 4x 3mm screws.

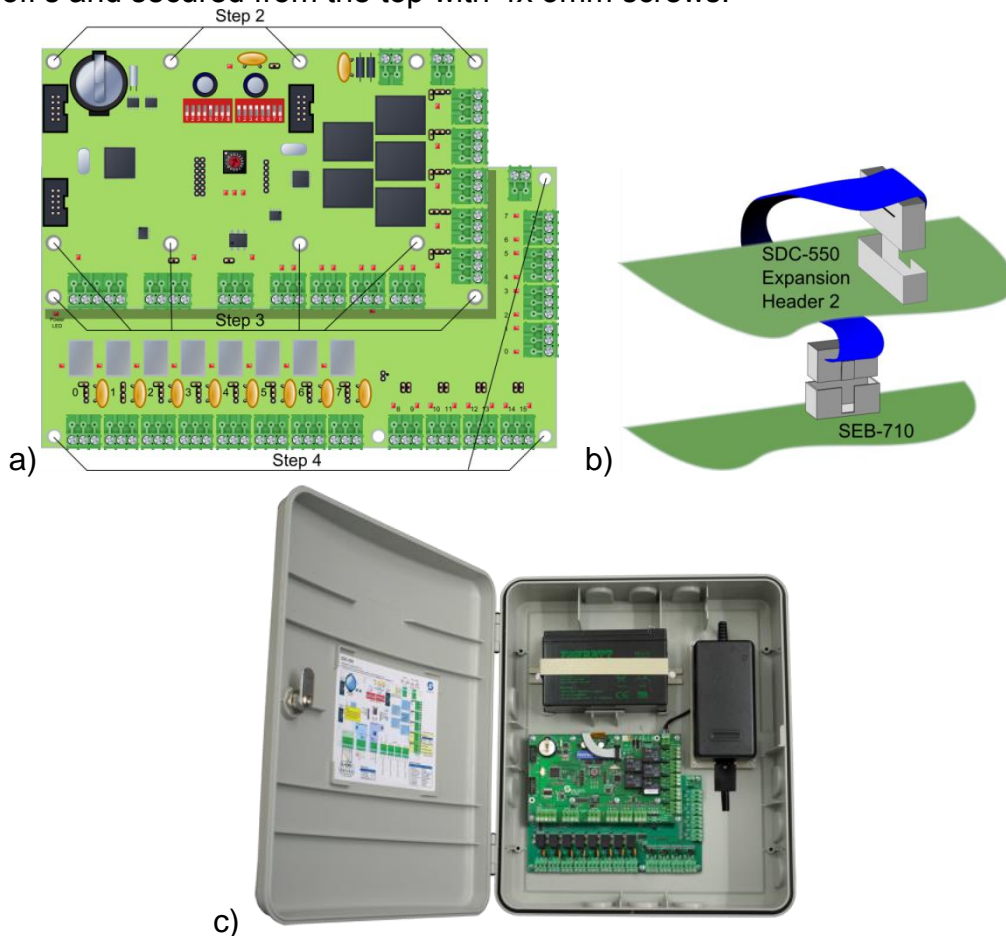


Figure 2
Installation example

Step 2: Connecting power

The SEB-710 is powered from the SDC-550 through the same ribbon cable connected to the SDC-550 as shown in [Figure 2](#), however internally powered outputs have to be powered separately through the internal power connector on the board. The power supplied through the ribbon cable will not power any outputs in the internal mode and will only switch as “dry contacts” if no power is connected to the internal power supply connector. This connector is located on the top, right side of the SEB710 as shown in [Figure 3](#).

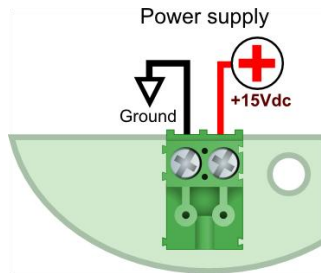


Figure 3

Internal power connector for relay outputs

Note: When you are satisfied that the controller is correctly linked to the power, switch it off again until you have finished wiring your digital inputs and outputs to prevent accidental shorts or power spikes from causing problems.

Step 3: Connecting the digital Inputs

Before wiring the digital inputs make sure that the power is switched off on the controller board. When looking at the controller board with the power connector on the top right of the board, the inputs are located on the right arranged in descending order from input #7 on top to #0 below with a shared common between each input pair. See the diagram below on how to correctly wire them.

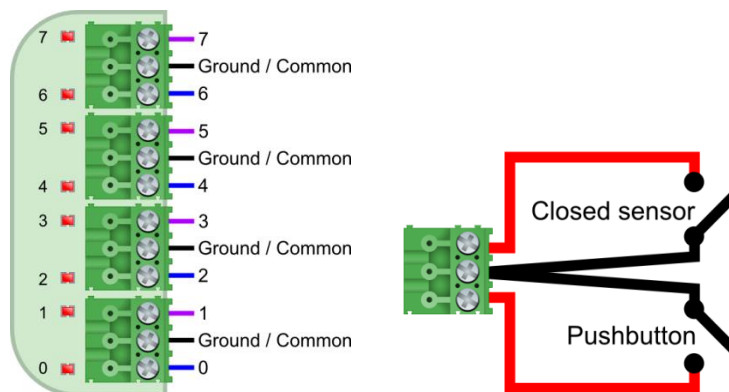


Figure 4

Input locations and example wiring to a pushbutton and closed sensor

Step 4: Using selectable I/O as digital Inputs (Default)

When the output select jumper (J16) is not shorted, the selectable I/O points become digital inputs.

When looking at the controller board with the power connector on the top right of the board, these inputs are located on the bottom right arranged in ascending order from input #8 to #15 with a shared common between each input pair. These can be wired in the same way as the standard inputs.

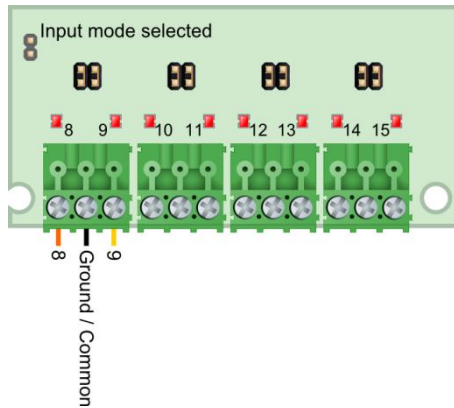


Figure 5

Example wiring selectable I/O 8 -15 as digital Inputs

Step 5: Connecting the Digital Outputs

Before wiring the digital outputs make sure that the power is switched off on the controller board. When looking at the controller board with the power connector to the right, the outputs are arranged in ascending order from left to right.

The outputs can provide 12Vdc power, or simply act as a potential free contact, allowing external DC or AC power to be switched through the relay.

The configuration of this output mode can be accomplished using the jumpers J8 to J15. Possible output modes are listed below.

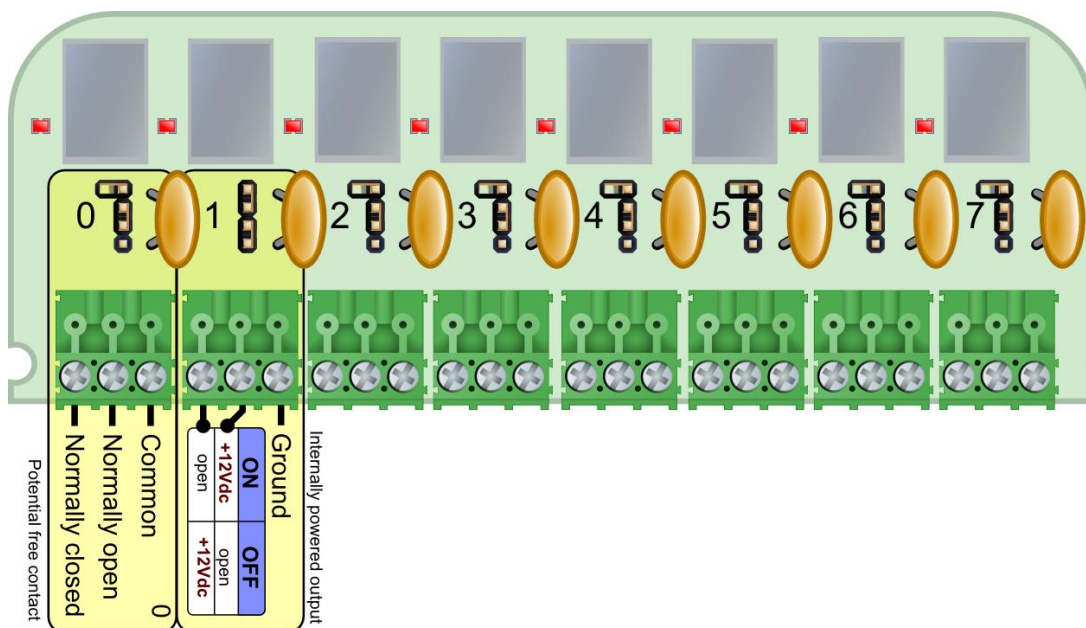


Figure 6

Example setting of relay output 0 and 1 to external & internal mode

Output mode 1: Externally powered Outputs (Default)

To set the output to externally powered mode, place a single jumper in the center of the jumper pin strip as displayed in the diagram below. This provides a potential free contact when switched on/off.

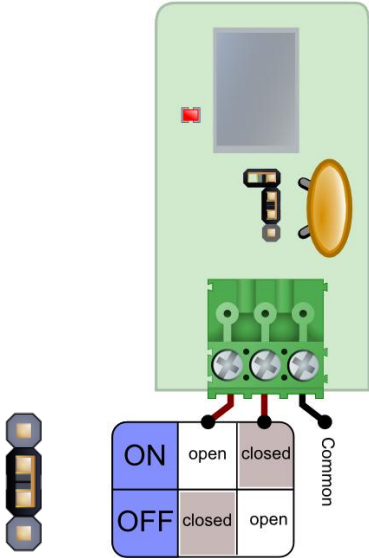


Figure 7

Jumper setting for J8 to J15 – externally powered outputs / potential free contact – relay switched

When in this mode, only the relay is switched when the output is activated. This allows for devices like AC switched locks to be supplied or external power to be provided for an output. Care must be taken not to exceed the contact ratings listed in the section entitled ‘Contact ratings for the output relays’.

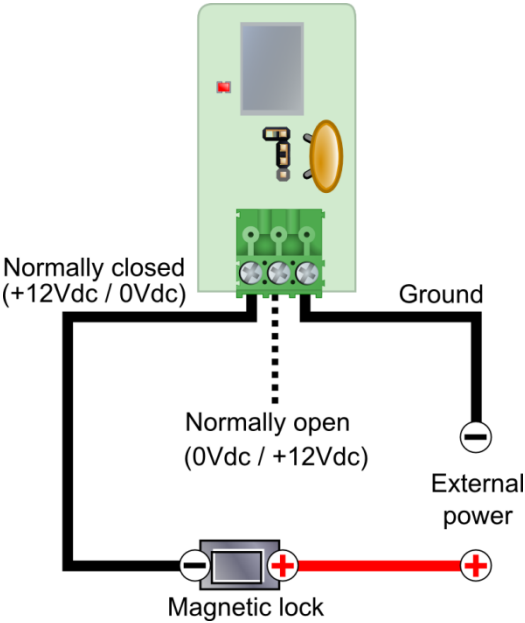


Figure 8

Example wiring for an externally powered magnetic lock – Normally closed

Output mode 2: Internally powered outputs

To set the output to internally powered mode, place two jumpers on the top and bottom side of the jumper pin strip as displayed in the diagram below.

Note: Power should be supplied separately to the internal power connector for the relays to work in this configuration as indicated in Step 2.

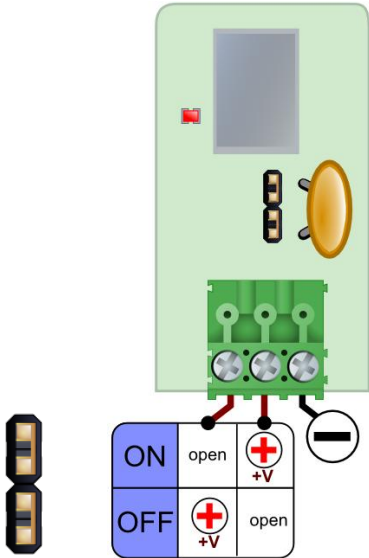


Figure 9
Jumper setting for J8 to J15 – internally powered outputs

When in this mode, power will be switched through the board from the power supply connected to the power connector located in the top right corner. It is recommended to use a battery backup power supply so that minor power interruptions do not disrupt the output power. Make sure that sufficient power is available from the power supply for all internally switched outputs, for the controller and for any readers powered from the power supply.

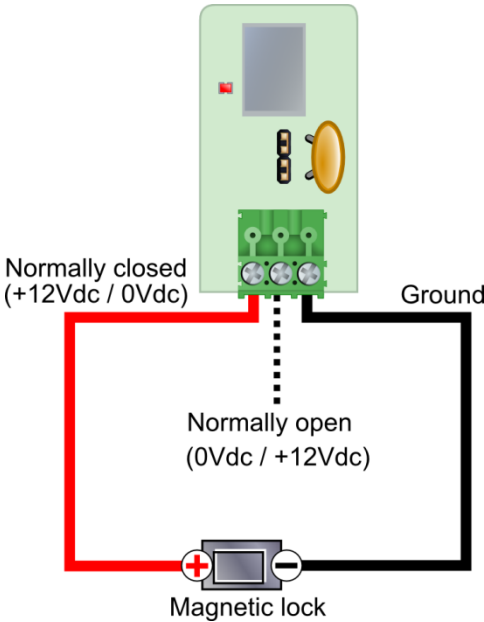


Figure 10
Example wiring for an internally powered magnetic lock – normally closed.

Important: When driving inductive loads such as strike locks, care should be taken to prevent a back-EMF voltage spike. In order to do this a freewheeling diode (also known as flyback diode) should be connected across the load as seen in the figure below.

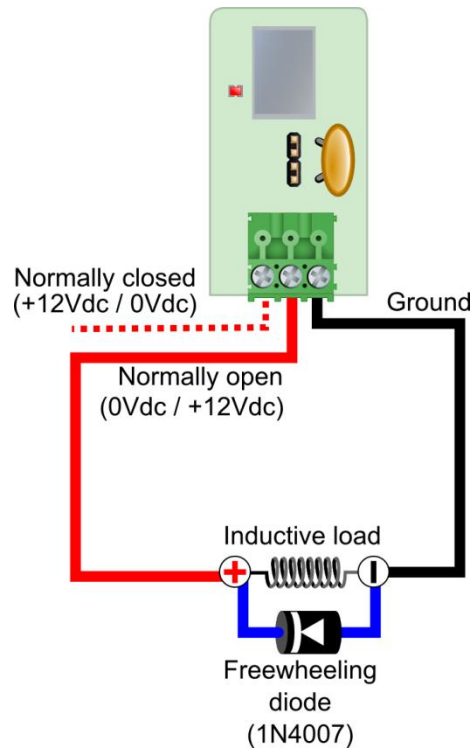


Figure 11

Diagram showing freewheeling diode over an internally powered inductive load (eg. strike lock) – normally open.

Step 6: Using selectable I/O as Transistor Outputs (Optional)

When the output mode jumper (J16) is shorted, the selectable I/O points become open collector transistor outputs.

Looking at the controller board with the power connector on the top right of the board, these outputs are located on the bottom right arranged in ascending order from input #8 to #15 with a shared ground between each output pair. See the diagram below on how to correctly wire them.

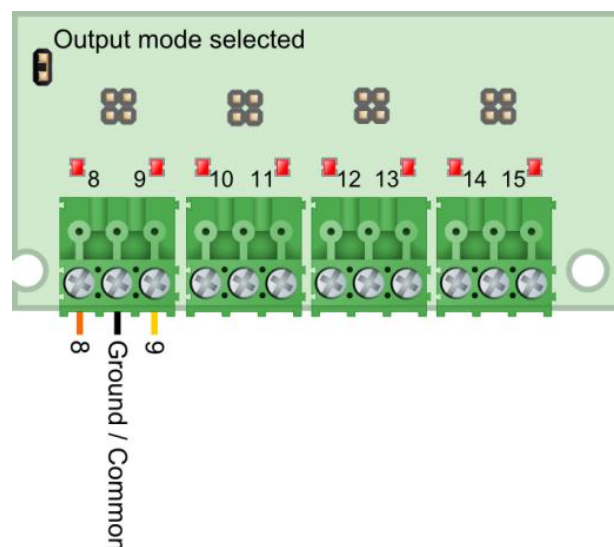


Figure 12

Example wiring of selectable I/O 8 -15 as Transistor Outputs

PRODUCT SPECIFICATIONS

Power requirements	
Operating Voltage (DC)	10 to 14 Vdc
Maximum Current (All IO off)	50 mA
Maximum Current (All IO on)	150 mA
Environmental characteristics	
Operating Temperature	0°C to +70°C
Storage Temperature	-10°C to +80°C
Inputs	
Input Type	Digital
Typical Input Voltage	0 to +12 Vdc
Maximum Input Voltage	-12 to 36Vdc
Maximum Input Current	5 mA
Relay Outputs	
Maximum voltage (AC)	250Vac
Maximum voltage (DC)	220Vdc
Maximum current	500mA (PTC Fuse)
Recommended maximums (Single Relay)	400mA at 30Vdc
Maximum switching current (inductive)	500mA
Note: Care must be taken not to exceed the contact ratings listed or damage to the board will occur.	
MOSFET Outputs	
Maximum voltage (AC)	5Vac
Maximum voltage (DC)	25Vdc
Maximum current	2A
Recommended maximums (Single Output)	500mA at 30Vdc
Maximum switching current (inductive)	100mA