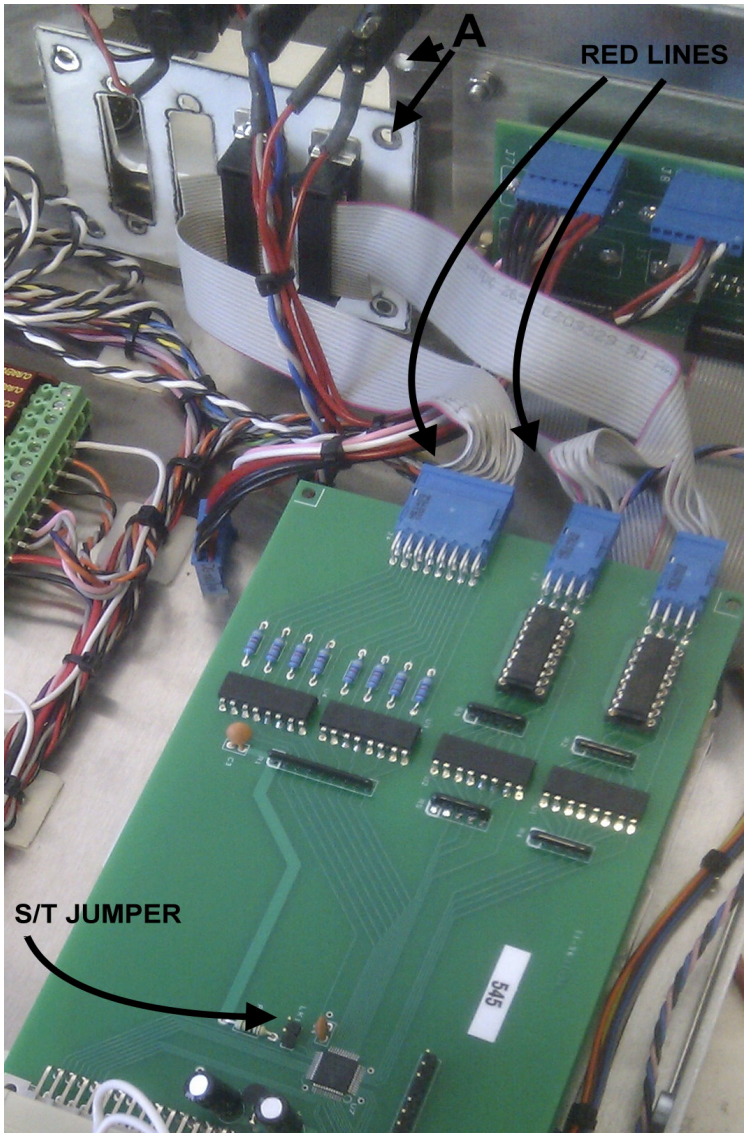
Instructions for fitting and using the general purpose I/O card (11-56A)

Contents of kit

I/O board
Bunch of 2 cables fitted to a rear panel of 4 25w D connectors.
2 mating 25w D connectors.
2 hoods
2 screw pillars

With power off and the power lead disconnected please remove the cover. There are a lot of screws because the spacing is necessary to meet FCC and EC EMC regulations.

You will need to remove the rear blanking panel and replace it with the connector panel as shown below **A**



Disconnect all cables from the card and fit the rear panel.
Remove the two screws holding the top PCB and insert the two tapped pillars provided.
Next fit the new board in the spare socket.
Use the screws from above to secure the new board.

The new board has 3 connectors. From left to right
Inputs SB or TB 0-7, Outputs SA or TA 0-3, Outputs SA or TA 4-7

Refit cables as above. The strip with the red trace should be furthest to left.

There is a jumper on the board (S/T jumper). With the jumper in position the ports are SA and SB. With the jumper removed the ports are TA and TB (see controller manual)

Simple test that the software and hardware are working correctly:

Quick test of the outputs

Enter

```
HEX
55 SA OUT
SA IN X.
(note that is X. i.e. X dot not just X)
```
Answer should be 55
or with the jumper removed
```
HEX 55 TA OUT
TA IN X.
```
Answer should be 55

```
AA SA OUT
SA IN X.
```
Answer AA
Repeat for port TA

25w D skt	Function	8W J2/J3
1	output 7	J3-1
2	output 6	J3-3
3	output 5	J3-5
4	output 4	J3-7
5	output 3	J2-1
6	output 2	J2-3
7	output 1	J2-5
8	output 0	J2-7
14	positive supply for outputs 4,5,6,7	J3-2
15	common ground for outputs 4,5,6,7	J3-4
16	common ground for outputs 4,5,6,7	J3-6
17	common ground for outputs 4,5,6,7	J3-8
18	positive supply for outputs 0,1,2,3	J2-2
19	common ground for outputs 0,1,2,3	J2-4
20	common ground for outputs 0,1,2,3	J2-6
21	common ground for outputs 0,1,2,3	J2-8
25w D plug	**Function**	**16w J4**
1	input 7 neg	1
2	input 6 neg	3
3	input 5 neg	5
4	input 4 neg	7
5	input 3 neg	9
6	input 2 neg	11
7	input 1 neg	13
8	input 0 neg	15
14	input 7 pos	2
15	input 6 pos	4
16	input 5 pos	6
17	input 4 pos	8
18	input 3 pos	10
19	input 2 pos	12
20	input 1 pos	14
21	input 0 pos	16

SB/TB inputs

The inputs are opto-isolated and require an external supply. You connect your – terminal to one of the negative pins and your load between your + terminal and an output pin. In other words to make an input on SB bit 0 you apply a voltage to pins 8 and 21, pin 8 being the negative and 21 being positive (see table above).

The input is most easily monitored with a command similar to PP but PP only shows PB. Instead use

```
SB WATCH
```

This continually displays the input in binary e.g.

11111111

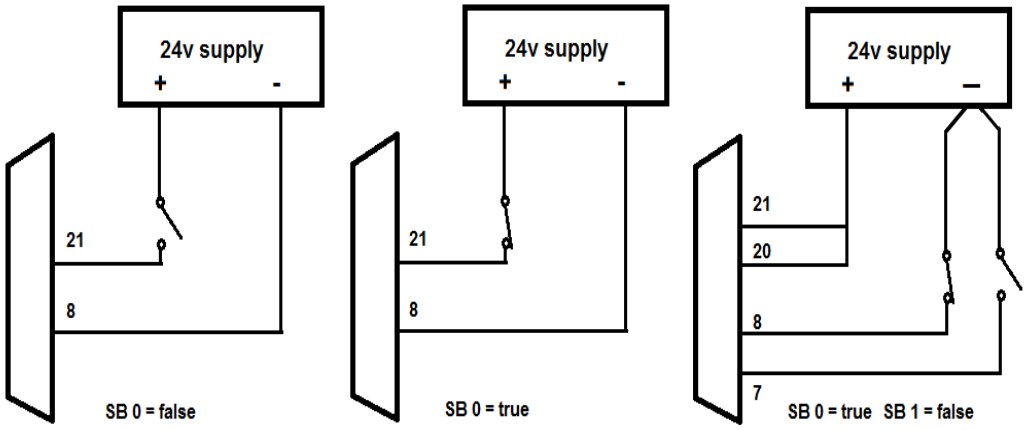
From right to left is ascending value so bit 0 is furthest right and bit 7 is furthest left.

To change an input from 1 to 0 apply a voltage 12-24v between the two pins for that input. For example connect a 24v supply, negative to pin 8, positive to pin 21 and you should see

11111110

All the inputs are independent opto-isolators so you can common up all the + pins if you wish or all the – pins, or use completely independent sources of voltage.

Example: simplest form of inputs – just switch 12 or 24 volts into the inputs. A voltage going into an input turns on the opto-isolator so is read as a 0.




```
SB 0 0 WAIT
```

The system will wait for the switch to close

```
SB 0 1 WAIT
```

The system will wait for the switch to open.

In the third diagram SB WATCH would show

11111110

Operate both the switches and you would see

11111101

SB 1 BIT? Leaves true if the switch is closed e.g.

`SB 1 BIT? .` <enter> (remember the dot means print) 0 `OK` – means switch is open

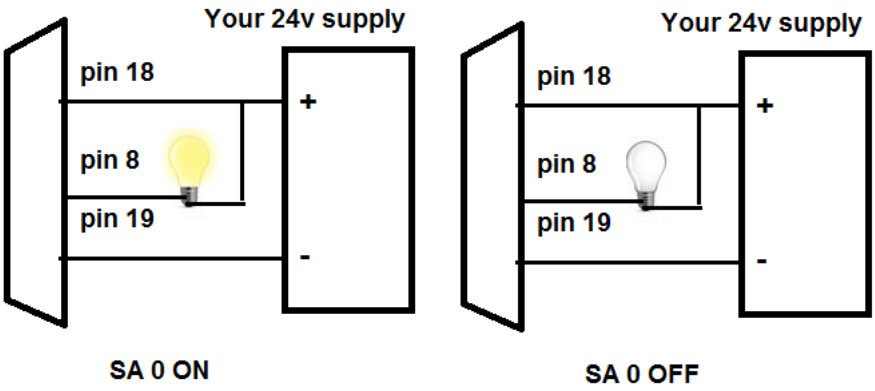
`SB 1 BIT? .` <enter> 2 `OK` – non-zero means switch is closed

SA/TA Outputs

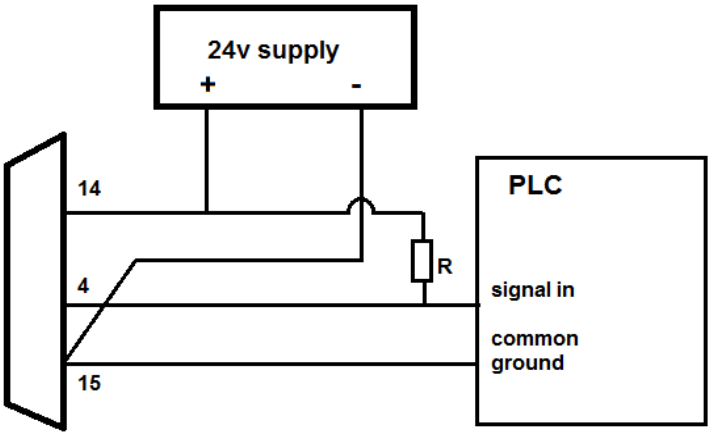
All the outputs are open collector Darlingtons with their ground returns isolated from the controller. You need a separate external 12 or 24v DC supply. There are two sets of 4 outputs each with its own 0v and +v connections. Therefore you can use two separate supplies if you wish or connect one supply to both sets. Connect the + terminal of your supply to pins 14,18 and the – terminal of your supply to pins 15 (and/or16,17) and 19 (and/or 20,21).

You can connect a load e.g. a solenoid or a relay between the output pin and your +v.

Example: 24v lamp to be operated by SA 0 would connect between pin 8 and 18 (24v).



Example: connection to other logic device or PLC via SA 4.



Depending on the instrument you might need a pullup resistor R, e.g. 4K7

SA 4 ON – sends a 0 to the PLC
SA 4 OFF – sends a 1 to the PLC