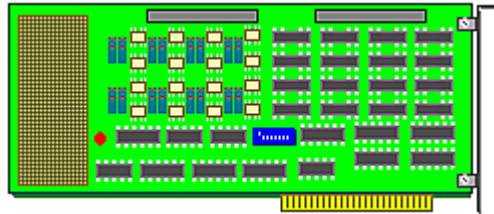


306-2

**SMATLAB**  
INDUSTRIAL AUTOMATION SERIES



## USER'S MANUAL FOR SMARTLAB 16 CHANNEL RELAY OUTPUT / 16 CHANNEL PHOTO ISOLATOR INPUT CARD



**16 channels relay output / photo isolator input adapter**

Product Code:A16RELAY / PHOTO

### INTRODUCTION

The 16 channels relay output / photo isolator input adapter provides relay output functions. The relay output part provides 16 relays to drive 16 different output channels. Each relay channel can be used to control ON/ OFF of external devices, to drive external high power relays, to activate alarms Ketc.

The photo isolator input part provides 16 photo couple digital input channels, which allow the input signals to be completely floated and prevent the ground loop.

### The features of 16 channels relay output / 16 channels photo isolator input adapter are:

Support 16 relay output channels and 16 photo couple input channels

1. Max contact rating for relay: 150V / DC 1AMP.
2. Response time for relay: 1 ms minimum.
3. Contact resistance for relay: 0.2 OHM maximum.
4. Support several operating modes which are programmable
5. Sixteen LED indicate when I/O is operating.
6. Port address selectable.

### The package includes following item

#### Package Contains:

16 channels relay output / 16 channels photo couple input adapter.  
User's manual.





## HARDWARE INSTALLATION

Your 16 channels relay output / 16 channels photo couple input adapter is designed to be inserted in any available slot in your computer. In order to gain access to the expansion slots, follow the steps listed in the following.

Set the switch and jumper.

Connect the expansion flat cable to 40 pin connector.

Turn off all power of your computer and all peripheral devices before installing your adapter.

Remove the cover of the computer.

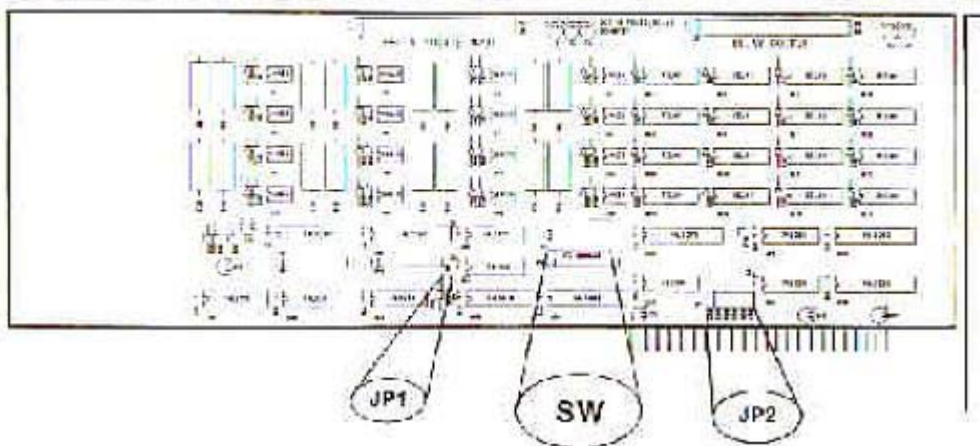
Insert your reconfigured adapter into any available slot. Make sure your I/O card is firmly seated in the chosen slot.

Replace the cover of the computer.

## HARDWARE CONFIGURATION

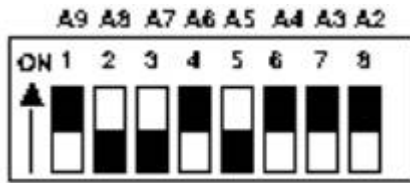
Before you use the 16 channels relay output / 16 channels photo couple input adapter, you must ensure that the I/O address is set correctly, and set IRQ that you needs. Observe the figure in the following, the proper settings for the 16 channels relay output / 16 channels photo couple input adapter is described in the following.

## DECISION COMPUTER INTERNATIONAL CO.,



### 2.1 Switch and Jumper Settings

## 1. I/O Address



DIP switch is used to set base I/O address, you may set I/O address ranges from 000H to 3FCH increments of 4. Observe figure above, to set the switch ON means 0 and set the switch OFF means 1. SW1 corresponds to address A9, SW2 corresponds to address A8, etc. The figure above is set to 1A0H.

Base Address + 0 :

Relay output channel 1 to 8.

Base Address + 1:

Relay output channel 9 to 16.

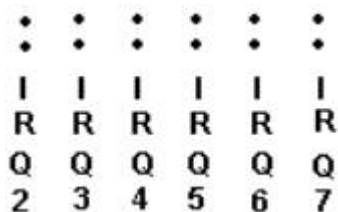
Base Address + 0 :

Photo input channel 1 to 8.

Base Address + 1 :

Photo Input channel 9 to 16.

## 2. IRQ Setting



The jumper is used to set IRQ for photo couple input, if you need not to use IRQ, please do not short the jumper

## 2.3 Function Description

### 1. Relay Output

(Base address + 0) is used to control channel 1 to 8, (Base address + 1) is used to control channel 9 to 16. When set the correspond bit to 1, it turns on the relay, this means relay is set to close state, when set the correspond bit to 0, it turns off the relay, this means relay is set to open state.

### 2. Photo Couple Input

(Base address + 0) is used to control channel 1 to 8, (Base address + 1) is used to control channel 9 to 16. When input voltage range from 0 to 2 VDC, then input circuit turns off and its correspond bit will set to 0, when input voltage range from 3 to 45 VDC, then input circuit turns on and its correspond bit will be set to 1. Do not input signal more than 50 VDC, otherwise the circuit will overload.

## 2.4 Pin Assignments

## 1. Connector 1 (J1)

Pin	Description
1,2	Relay channel 1
3,4	Relay channel 2
5,6	Relay channel 3
7,8	Relay channel 4
9,10	Relay channel 5
11,12	Relay channel 6
13,14	Relay channel 7
15,16	Relay channel 8
17,18	Relay channel 9
19,20	Relay channel 10
21,22	Relay channel 11
23,24	Relay channel 12
25,26	Relay channel 13
27,28	Relay channel 14
29,30	Relay channel 15
31,32	Relay channel 16
33,34	GND
35,36	DC +5V
37,38	DC +12V
39,40	GND

## 2. Connector 1 (J1)

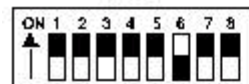
Pin	Description	Pin	Description
1	Input channel 1-	21	Input channel 11-
2	Input channel 1+	22	Input channel 11+
3	Input channel 2-	23	Input channel 12-
4	Input channel 2+	24	Input channel 12+
5	Input channel 3-	25	Input channel 13-
6	Input channel 3+	26	Input channel 13+
7	Input channel 4-	27	Input channel 14-
8	Input channel 4+	28	Input channel 14+
9	Input channel 5-	29	Input channel 15-
10	Input channel 5+	30	Input channel 15+
11	Input channel 6-	31	Input channel 16-
12	Input channel 6+	32	Input channel 16+
13	Input channel 7-	33	GND
14	Input channel 7+	34	GND
15	Input channel 8-	35	DC +5V
16	Input channel 8+	36	DC +5V
17	Input channel 9-	37	DC +12V
18	Input channel 9+	38	DC +12V
19	Input channel 10-	39	GND
20	Input channel 10+	40	GND

**APPENDIX B****ADDRESS SETTING**

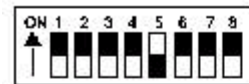




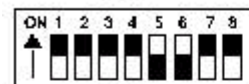
000H



010H



020H



030H



040H



050H



100H



110H



120H



130H



140H



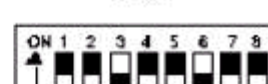
150H



160H



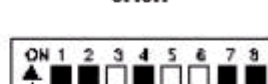
080H



090H



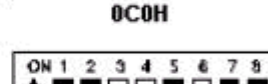
0A0H



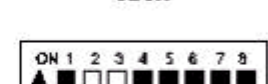
0B0H



0C0H



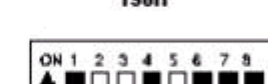
0D0H



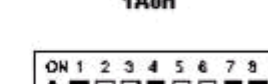
180H



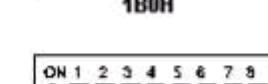
190H



1A0H



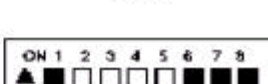
1B0H



1C0H

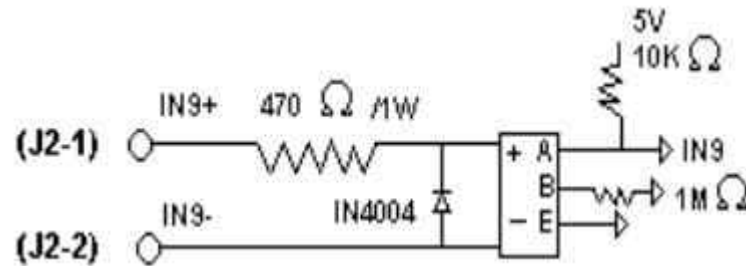


1D0H



1E0H



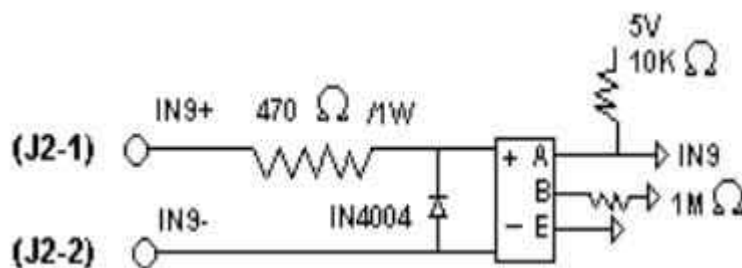


## APPENDIX D

### PROGRAMMING GUIDE

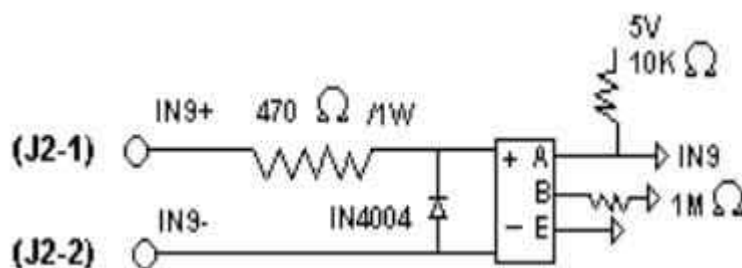
In this APPENDIX, we will define the I/O format and how to use it.

#### D.1 Relay control group 1 output format

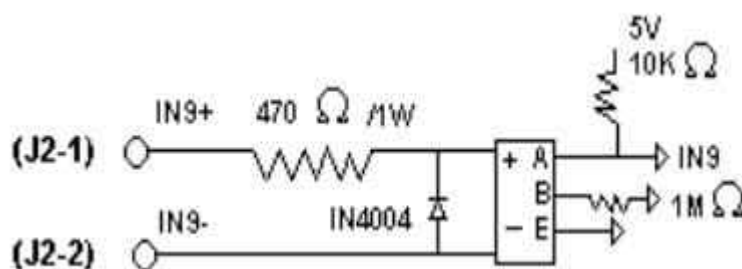


- 1.The address is (Base address + 0).
- 2.Bit 0 control the relay channel 1, the pin 1 and pin 2 of J1 connector (J1-1 and J1-2) shows the output condition of channel 1.
- 3.When set bit 0 = 0, then J1-1 and J1-2 will be open.
- 4.When set bit 0 = 1, then J1-1 and J1-2 will be close.
- 5.Bit 0 to bit 7 represents relay channel 1 to channel 8.

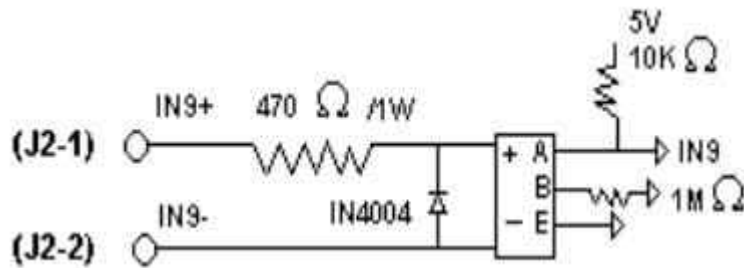
#### D.2 Relay control group 2 output format



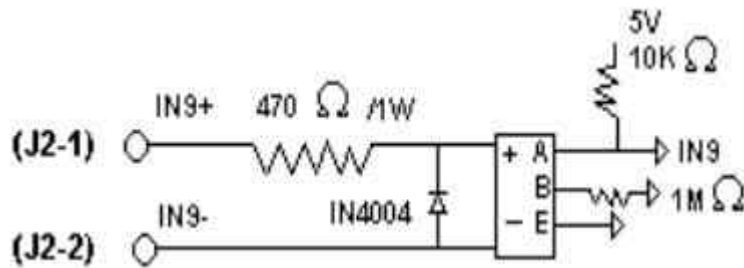
#### D.3 Photo isolate group 1 input format



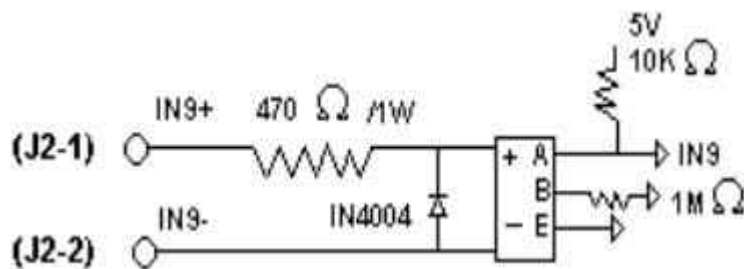
- 1.The address is (Base address + 0).
- 2.Bit 0 represents input condition of pin 1 and pin 2 of J2 connector (J2-1 and J2-2).
- 3.Bit 0 to bit 7 represents input channel 1 to channel 8.
- 4.The input hardware configuration is



#### D.4 Photo isolate group 2 input format



- 1.The address is (Base address + 1).
- 2.Bit 0 represents input condition of pin 17 and pin 18 of J2 connector (J2-17 and J2-18).
- 3.Bit 0 to bit 7 represents input channel 9 to channel 16.
- 4.The input hardware configuration is



### Technical data - Isolated input Output and Relay Output

**Isolated input: The digital signal input with isolated protection.**


#### Photo Isolator :

[Word File 4N35](#)

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BRD-1A05D

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