



# AIM104-RELAY8/IN8

## Assembly Kit

Each AIM104 module is supplied with a mounting kit to secure the module.

## Handling

All AIM104's contain CMOS devices which could be damaged in the event of static electricity being discharged through them. At all times please observe anti-static precautions when handling the board and always unpack and install the board in an anti-static working area.

## Software

A Utility Disk is supplied with your AIM104. It contains a host of software utilities designed specifically for each AIM104. Please refer to the *README.TXT* file on the disk for further information. It also includes a test program *EXAMP-01.EXE* which may be used to confirm access to the board. A summary of the software drivers can be found in the AIM104-Software Library.

## Introduction

The AIM104-RELAY8/IN8 is an 8-bit PC/104 module providing 8 changeover relays, and 8 opto-isolated inputs. The module provides upto 1500V electrical isolation between your PC/104 based control system and the electrical system you are controlling. The isolation between adjacent channels is limited by the wiring and connectors to 100V. The power switching rating for the relay contacts is 60W (resistive load). The relays and board layout are designed to switch voltages up to 220v DC (125v AC) and currents up to 1.0A. However the Low Voltage Directive specifies that the product may only be safely used up to 48v DC.

The board includes jumper options for each digital input to select a 10ms input debounce filter.

## Features

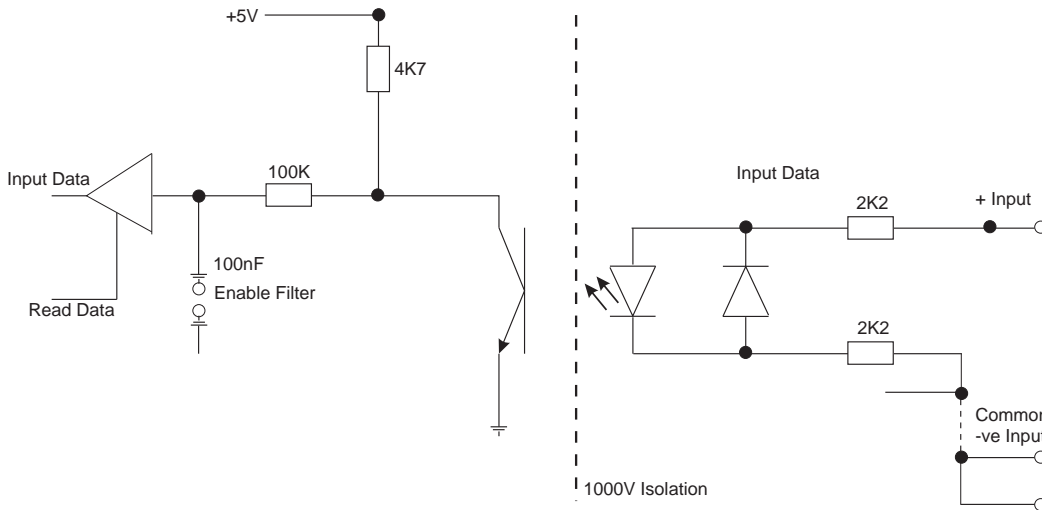
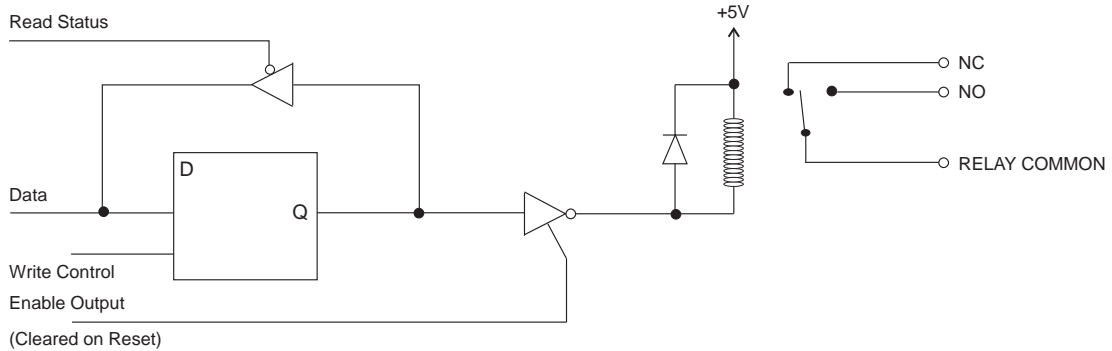
- 8 changeover relays with a power switching rating of 60W (resistive load)
- Switching voltage upto 48v DC and switching currents up to 1.0A
- Output status readback register
- Relay drivers disabled on power up and reset
- Both normally closed and normally open relay terminals are available at the I/O connector
- 8 Opto-isolated inputs
- Opto-input switching voltage : 10v to 30v
- Maximum input frequency :   Filter Disabled 10KHz  
  Filter enabled 50Hz
- Input Switching time (@ 24v) : Filter disabled :           Switching ON : 5 $\mu$ s  
  Switching OFF : 50 $\mu$ s  
  Filter enabled :           Switching ON : 10ms  
  Switching OFF : 5ms
- All inputs include reverse protection diodes
- Board access LED
- Operating temperature range, -20°C - +70°C
- Power consumption +5V +/- 0.25V   250mA typical
- MTBF: 91,195 hours (using generic figures from MIL-HDBK-217F at benign ground)

# Operation

Each relay is switching by writing a '1' to the relay output register. On power up or reset the output latches that drive the relay drivers are disabled. To enable them it is necessary to write '01' to address base +1. For system initialisation, it is recommended that the output register is written with the required relay states before the relay enable bit is set.

The status of the opto inputs is read from I/O address base+1. When an input channel is switched on the value read by the host will be a '0'.

# Links



# I/O Map

Address offset	Register name	Read/Write	Comments
00	Relay output	Write	Write to relays 0-7
00	Relay status	Read	Readback from relay drivers
01	Relay enable	Write	Enable relay driver latches
01	Opto-inputs	Read	Read Opto-inputs 0-7

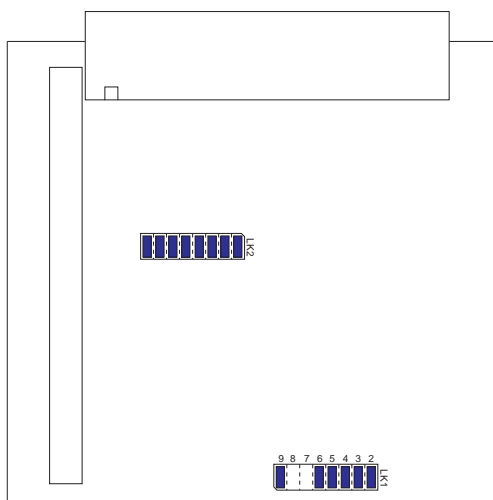
	Bit Function
Relay outputs	Bit 0-7 for relay 0-7 '0' = Relay NC contacts closed '1' = Relay NO contacts closed
Relay status	Bit 0-7 '0' = Relay NC position '1' = Relay NO position
Relay enable	Bit 0 '0' = All relays off (NC position) '1' = Relays controlled by relay output register
Opto inputs	Bit 0-7 '0' = Input ON '1' = Input OFF

# Address Selection

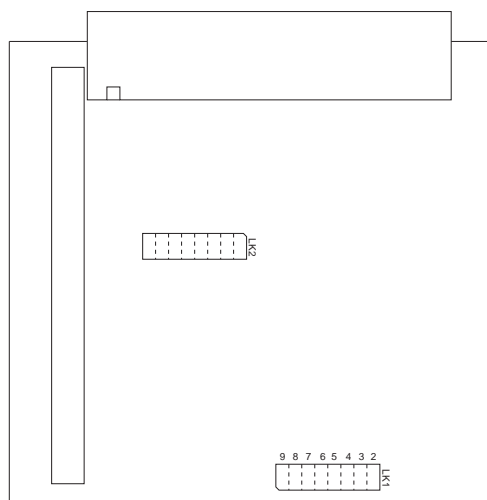
## LK1

The base address of the module is set using LK1; inserting a jumper selects '0'.

Default Link Position [Address is 180h]



User Configuration Record



## Input filter Selection

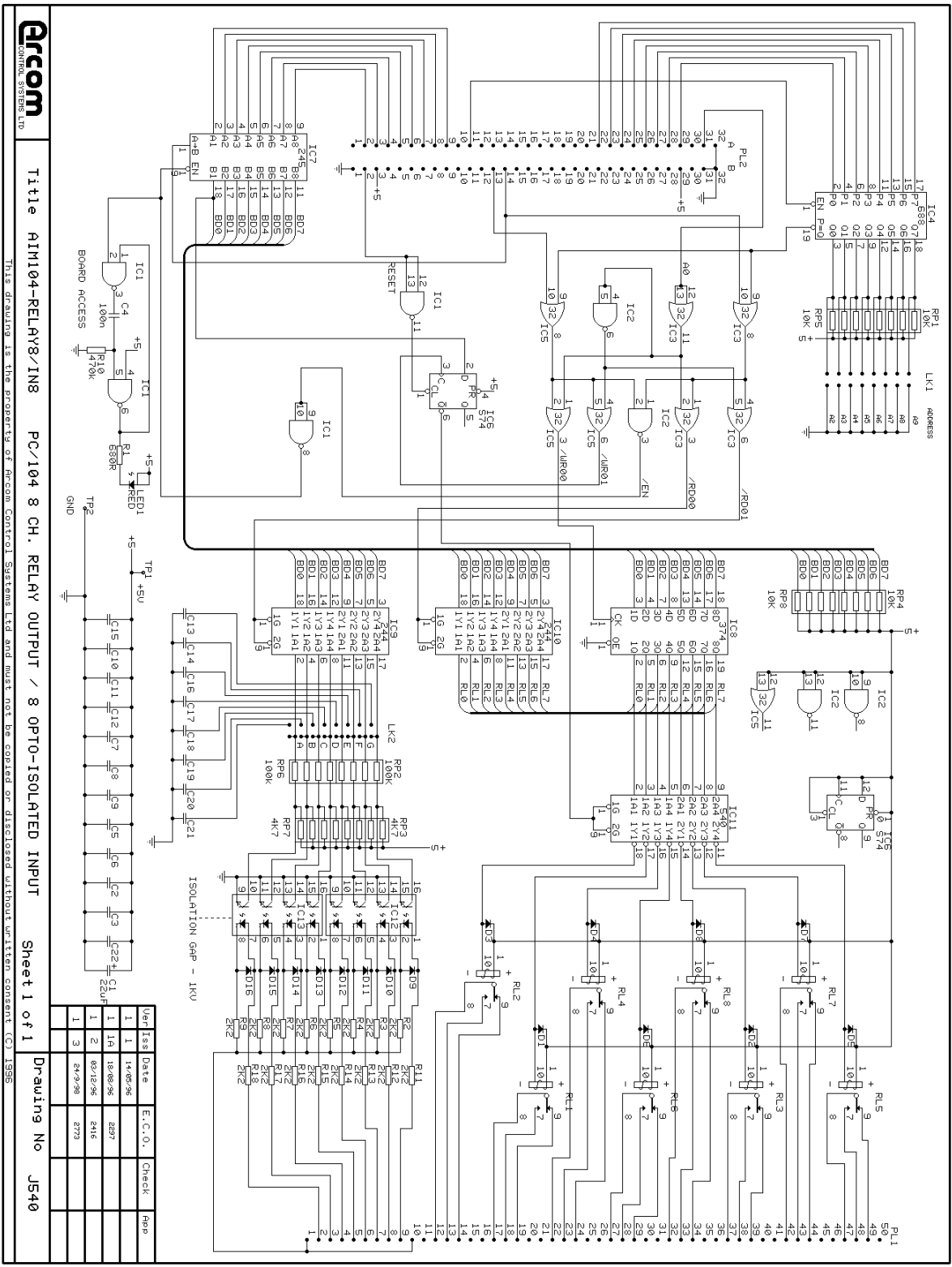
Each opto-isolated input channel can be set to include an input filter to reduce input reading errors caused by switch contact bounce.

Channel 0: Link 2A

Channel 7: Link 2H

## Output Connector PL1 pin assignments

Pin No.	Function	Pin No.	Function
1	Common -ve input	2	Opto +ve input Bit 0
3	Opto +ve input Bit 1	4	Opto +ve input Bit 2
5	Opto +ve input Bit 3	6	Opto +ve input Bit 4
7	Opto +ve input Bit 5	8	Opto +ve input Bit 6
9	Opto +ve input Bit 7	10	Common -ve input
11	Not connected	12	Relay 0 common
13	Relay 0 NO	14	Relay 0 NC
15	Not connected	16	Not connected
17	Relay 1 common	18	Relay 1 NO
19	Relay 1 NC	20	Not connected
21	Not connected	22	Relay 2 common
23	Relay 2 NO	24	Relay 2 NC
25	Not connected	26	Not connected
27	Relay 3 common	28	Relay 3 NO
29	Relay 3 NC	30	Not connected
31	Not connected	32	Relay 4 common
33	Relay 4 NO	34	Relay 4 NC
35	Not connected	36	Not connected
37	Relay 5 common	38	Relay 5 NO
39	Relay 5 NC	40	Not connected
41	Not connected	42	Relay 6 common
43	Relay 6 NO	44	Relay 6 NC
45	Not connected	46	Not connected
47	Relay 7 common	48	Relay 7 NO
49	Relay 7 NC	50	Not connected



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Title: AIM104-RELAY8/IN8 PC/104 8 CH. RELAY OUTPUT / 8 OPTO-ISOLATED INPUT

Sheet 1 of 1

Drawing No: J540

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## Revision History

Manual	PCB	Comments	
Issue A	V1 I1A	960920	First full release of manual. (Aim104 Module Manual).
Issue B	V1 I2	961223	Edits to J538, J541, J559 & Aim104 Software Library. (Aim104 Module Manual).
Issue C	V1 I2	970604	[ECO 2494, 2502, 2516] (Aim Module Manual).
Issue D	V1 I3	981116	[ECO 2679 & 2773] (Manual split up into Datasheets + PCB change to V1 I3 - Resistor Pack Mods).
Issue E	V1 I3	990211	[ECO2800]

**NOTE:** 960920- The Arcom Aim104 Modules were all put together in one manual (2192-08164-000-000), then updated to Issues B and C (2192-08240-000-000 & 2192-08521-000-000). During the lifetime of Issue C it was decided that the Aim Module Manual should be split into separate Datasheets [ECO 2679]. Hence, the Revision History for Issues A, B & C of the manual refer to the Aim Module Manual as was.

## Product Information

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