



AIM104- IO32

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-IO32 is an 8-bit PC/104 module providing 32 channels of digital I/O. Each channel may be configured as an input or an output. The module also has the facility to define the power-up/reset state of those channels to be used as outputs. The I/O connector conforms to Arcom's standard Signal Conditioning System (SCS) and may be used to drive a range of Signal Conditioning Boards (SCB), see Arcom's Eurocard catalogue for more details.

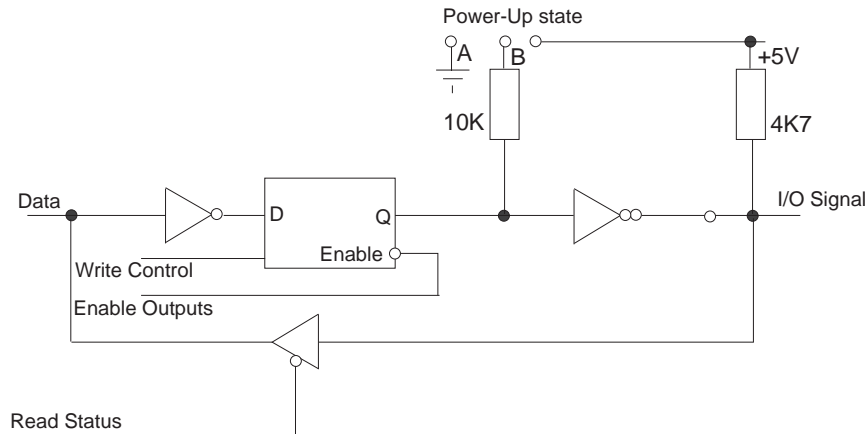
Features

- 32-channel digital I/O
- Each channel has a current sink capability of 24mA @ 0.45V
and source current of 500µA @ 2.7V
- Bit programmable for input or output
- Module access LED (on all decoded addresses)
- 8-bit PC/104 (IEEE996) bus interface
- I/O connector configured for Arcom Signal Conditioning System
- Operating temperature range, -20°C to +70°C
- Power consumption from the host, max 250mA @ +5V
- MTBF: 820,000 hours (using generic figures from MIL-HDBK-217F at ground benign)

Operation

When a channel is set low ('0'), the output is active and is sinking current. All outputs are enabled by writing 01h to the Output Enable Control Register.

Since each channel has an output which is an open collector drive, each channel may alternatively be configured as an input by switching the output OFF (by writing a '0' to the output) and then driving the I/O signal either high or pulling it low from an external signal. On power up or on system reset, the outputs are disabled. The power-on links can then be used to set the start up output state for groups of eight channels.



Note: If a channel is to be configured as an input, it is necessary that the power-up link for that group of 8 channels is set in the 'A' position. This means that any channels to be used as outputs will be set high, or OFF. A good rule is to keep the channels to be used as inputs and those to be used as outputs in separate groups of 8 channels. It is necessary to write to the output control latches, before the latch outputs are enabled. The read back registers connect directly to the I/O signals and therefore reflect the true state of the I/O point. If an I/O signal is low, it is read back as a '0'.

I/O Map

The module register addresses are accessed at the following locations :

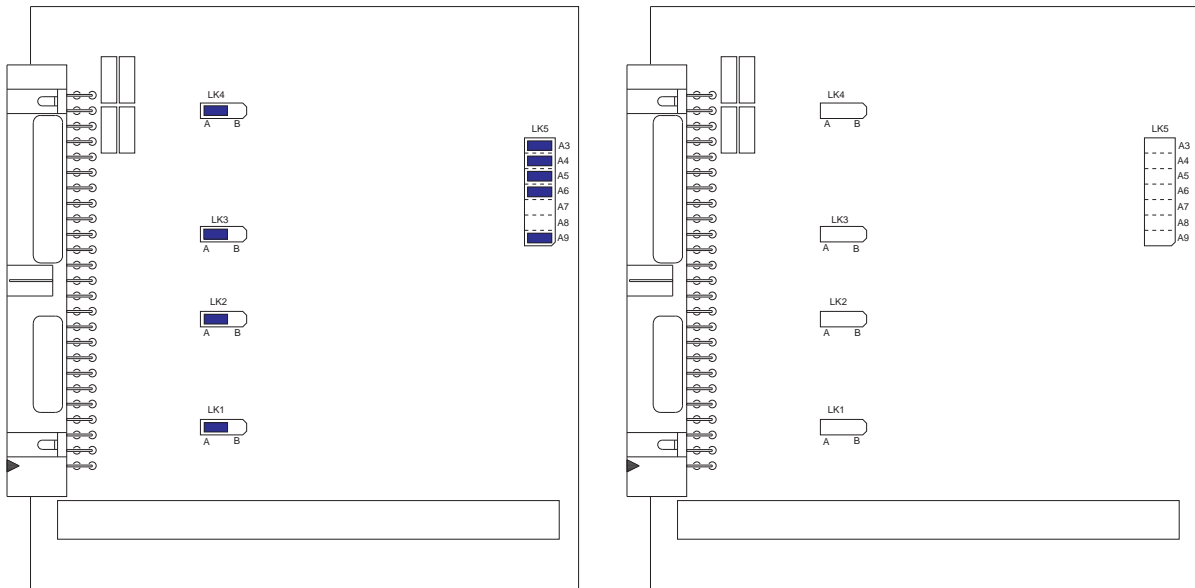
Address	Read/ Write	Register Name	Bit Functions
Base	Write	Output Control Latches Ch.0-7	Bit 0-7 0 = Output '0' 1 = Output '1'
Base	Read	Status of Ch.0-7	Bit 0-7 0 = Input '0' 1 = Input '1'
Base +1	Write	Output Control Latches Ch.8-15	Bit 0-7 0 = Output '0' 1 = Output '1'
Base +1	Read	Status of Ch.8-15	Bit 0-7 0 = Input '0' 1 = Input '1'
Base +2	Write	Output Control Latches Ch.16-23	Bit 0-7 0 = Output '0' 1 = Output '1'
Base +2	Read	Status of Ch.16-23	Bit 0-7 0 = Input '0' 1 = Input '1'
Base +3	Write	Output Control Latches Ch.24-31	Bit 0-7 0 = Output '0' 1 = Output '1'
Base +3	Read	Status of Ch.24-31	Bit 0-7 0 = Input '0' 1 = Input '1'
Base +4	Write	Output Enable Control	Bit 0 0 = Disabled Only 1 = Enabled
Base +5 to Base +7	Read/Write	Not Used	

Links

The base address of the module is set using LK5. The board access LED provides a momentary flash when the board is successfully accessed. The board decodes 8 bytes from the base address.

Default Link Position [Address is 180h]

User Configuration Record



Power Up Output State Control

Links 1 - 4 may be used to select the power up state of the groups of 8 I/O channels.

- LK1 Position A for output channels 0 - 7 set to '1'
 Position B for output channels 0 - 7 reset to '0'

- Lk2 Position A for output channels 8 - 15 set to '1'
 Position B for output channels 8 - 15 reset to '0'

- LK3 Position A for output channels 16 - 23 set to '1'
 Position B for output channels 16 - 23 reset to '0'

- LK4 Position A for output channels 24 - 31 set to '1'
 Position B for output channels 24 - 31 reset to '0'

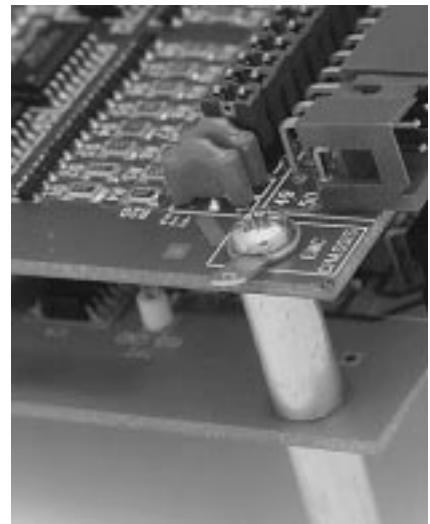
I/O Connector (PL2) Pin Assignments

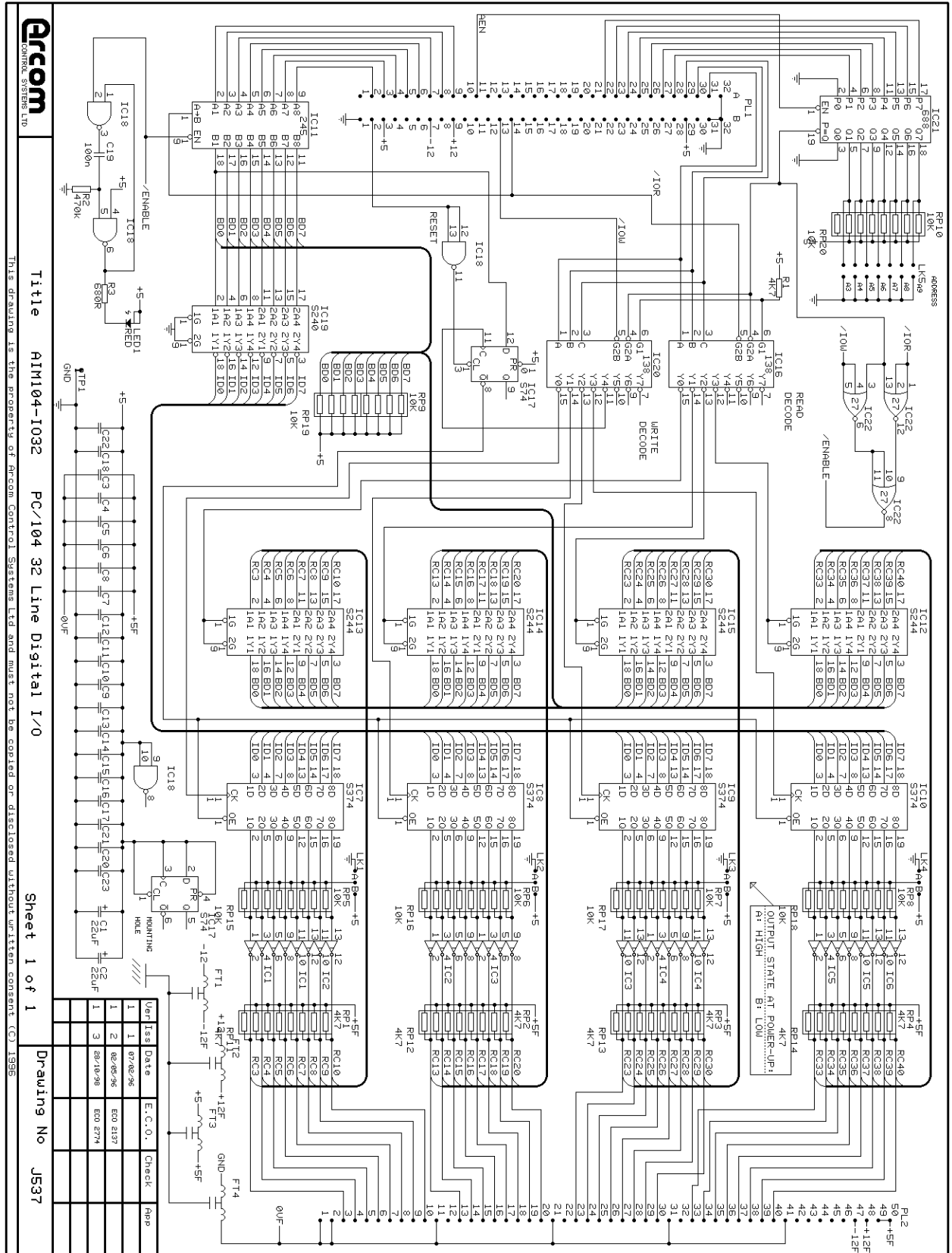
Pin No.	Function	Pin No.	Function
1	0V	2	0V
3	I/O Channel 0	4	I/O Channel 1
5	I/O Channel 2	6	I/O Channel 3
7	I/O Channel 4	8	I/O Channel 5
9	I/O Channel 6	10	I/O Channel 7
11	0V	12	No connection
13	I/O Channel 8	14	I/O Channel 9
15	I/O Channel 10	16	I/O Channel 11
17	I/O Channel 12	18	I/O Channel 13
19	I/O Channel 14	20	I/O Channel 15
21	0V	22	No connection
23	I/O Channel 16	24	I/O Channel 17
25	I/O Channel 18	26	I/O Channel 19
27	I/O Channel 20	28	I/O Channel 21
29	I/O Channel 22	30	I/O Channel 23
31	0V	32	No connection
33	I/O Channel 24	34	I/O Channel 25
35	I/O Channel 26	36	I/O Channel 27
37	I/O Channel 28	38	I/O Channel 29
39	I/O Channel 30	40	I/O Channel 31
41	No connection	42	No connection
43	No connection	44	No connection
45	No connection	46	No connection
47	-12V	48	+12V
49	+5V	50	+5V

EMC Issues

The opto-isolation provides a good barrier for noise emissions generated by the high frequency host PC/104 system. The AIM104-IO32 includes additional filter components on board to minimise the emissions of high frequency noise. The filter requires that the earth tab supplied with the module is connected by a good earth wire to the chassis of the system.

If the electronic system requires input protection against high voltage transients (to meet CE requirements) it is recommended that an external interface board is located at the point where the external wiring enters the electronic system enclosure.





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Title AIM104-1032 PC/104 32 Line Digital I/O

Sheet 1 of 1

Drawing No J537

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Ver Iss	Date	E.C.O.	Check	App
1	07/02/96	B00	B197	
2	08/05/96	B00	B197	
3	28/10/98	B00	B774	

Revision History

Manual	PCB	Comments	
Issue A	V1 I2	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 & 2774] (Manual split up into Datasheets + mods. to resistor pack).

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

Full information about other Arcom products is available via the **Fax-on-Demand System**, (Telephone Numbers are listed below), or by contacting our **WebSite** in the UK at: www.arcom.co.uk or in the US at: www.arcomcontrols.com

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If you intend to write your own low level software, you can start with the source code on the disk which is supplied. This is example code only to illustrate use on Arcom's products. It has not been commercially tested. No warranty is made in respect of this code and Arcom shall incur no liability whatsoever or howsoever arising from any use made of the code.

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