



# Intelligent I/O

With 12 Opto Isolated Inputs, 4 Relay Outputs and a Serial Communication channel and PLC option

The photograph shows a picture of the intelligent Digital I/O Board.

## Features

- 12 Opto Isolated Inputs.
- 4 Relay Outputs.
- Powered from 7 to 35 Volts d.c. or 5 to 24Volts a.c.
- Serial Communications port with RS232 or RS485 and Modbus options.
- High performance 68000 based CPU with up to 1M-byte of EPROM memory and 512 k-byte of Static RAM.
- Additional non-volatile EEPROM memory for program or data table storage.
- Program in assembler, C, Modula-2 or ladder logic.
- Expansion bus compatible with a wide range of I/O cards.
- Status LEDs on all digital Inputs and Outputs.
- Screw terminal connections to all external signals.
- Easy DIN rail mounting or wall mounting.
- Euro-card size (100 x 220mm) for rack mounting.

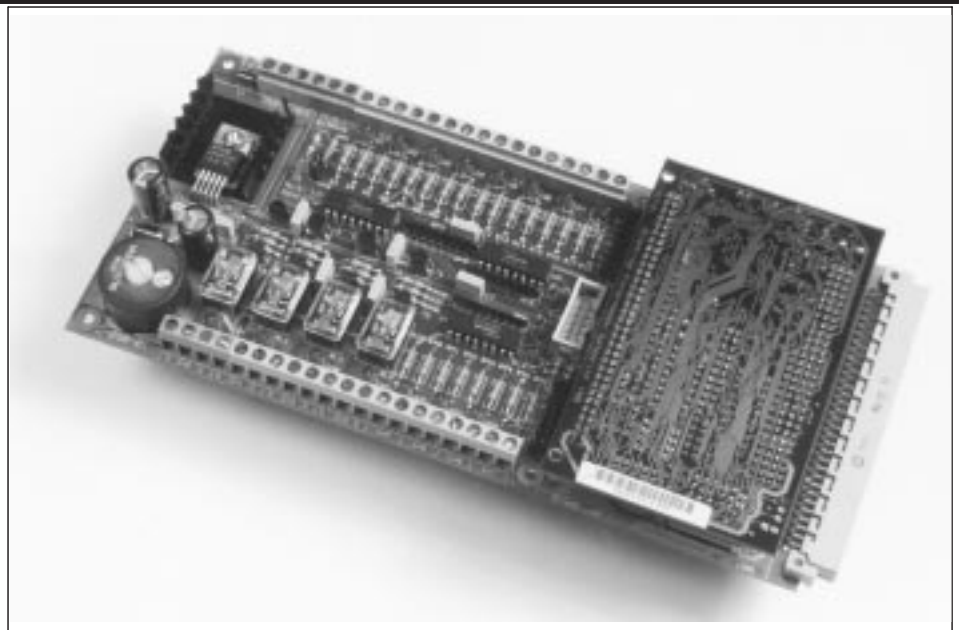
## Description

### Power Supply

The Intelligent Digital I/O Board can be powered from a wide range of sources. The input voltage range is from 7 to 35 Volts d.c or 5 to 24 Volts a.c, voltages that are found in factory racking systems. The power supply uses a switch mode regulator to generate the supply voltage for the logic on the board, so that the power drawn from the input supply is constant independent of the function.

### Relay Outputs

The relay outputs use subminiature single pole change over relays. These can be used to switch larger relays if re-



quired. The contact rating of each of the relay channels is 28V d.c. at 1 Amp or 120V a.c. at 0.5 Amp. The contacts of all four relays are accessible using the screw terminals provided. A visual indication of the state of the relay output lines is provided by a LED. If the LED is lit then the relay has been turned on.

### Opto Isolated Inputs

The twelve opto isolated inputs use a.c opto isolators enabling both d.c and a.c input signals to be used. The input voltage is optimised for use with 28V d.c. signals, or for use with 240V a.c signals. For either input value the switch over voltage is approximately half way between 0 and the maximum input voltage. When the input voltage is high an LED is turned on for each channel. Isolation is provided up to 5000V r.m.s. on each of the twelve channels. Approximately 2.5mA is required to turn each channel on.

When the board is used with a.c inputs a filter capacitor may be enabled to prevent the input from detecting the on-off effect of the a.c signal. This is done by means of a jumper link on the board.

As each input provides a.c or d.c connection, the inputs are non polarised.

### Serial Communications Port

The serial port on the board can be used for programming from a P.C. or communicating on a network of up to 127 units using the optional Modbus protocol. When used with a network the station number is programmed using a set of links on the board. When used with RS232 buffers the serial port can be connected to a P.C. for logging events or programming. With RS485 buffers fitted the unit can be connected to a multi drop network. Baud rates of up to 38.4k can be used but the default rate is 9600, common on many terminals. The serial port can be configured to work with 5, 6, 7 or 8 data bits, odd, even or no parity

The RS485 signals are connected to the outside world by screw terminals. RS485 is a differential network which makes it ideal for transferring data over long distances or in noisy environments which are commonly found in industrial sites.

The RS232 serial connector is a 10 way boxed header that is compatible with the 9 pin serial ports commonly found on P.C.s. This is an interface between two devices only. It is not recommended for long distances and is not differential.

## Programming

The Intelligent Digital I/O board uses our own operating system to interface between the code and the hardware. The operating system supports code that is written in the popular computer programming languages, C or Modula-2 or the standard ladder logic that is very common on PLCs. All programs are written on a P.C. and either down loaded into the memory or blown into the EPROM. The board has an EEPROM fitted which can also be used for storing either the application program or data tables for use by the application program. Data that is stored in this memory can be changed easily but it is not lost when power is removed from the unit.

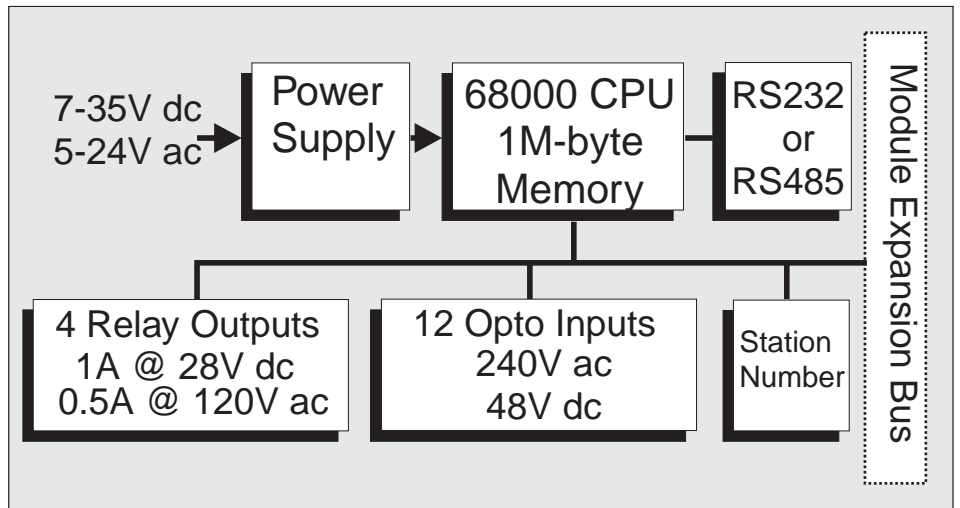
## Use as a PLC

When used as a PLC, a RUN switch is provided to prevent accidental reprogramming of the PLC. When the switch is set to RUN the code will run but if an attempt is made to change the program in any way the PLC will require confirmation before the change is made.

## Specification

### Power

7 to 35 Volts d.c.  
5 to 24 Volts a.c 50/60Hz



### Program Memory

Upto 1 M-byte EPROM  
Upto 512 K-byte RAM  
(32K supplied as standard)  
512 byte EEPROM

### Inputs

12 Opto Isolated inputs  
Isolation 5000V r.m.s  
28V d.c. or 240V a.c.  
LED indication of ON/OFF

### Outputs

4 Relay outputs

28V d.c. @ 1A  
240V a.c. @ 0.5A  
Insulation 100M Ohms  
Power 0.45W

### Serial

1 Serial Port  
RS232 P.C. Compatible Serial  
RS485 Multi drop network  
Upto 127 Network Stations  
Modbus option

### Environmental

Temperature Range 0 to 60 degC  
-40 to +85 degC available, please  
contact us for details.  
Humidity 0 to 90% RH

### Mounting

DIN Rail  
100 x 220mm Rack

## Order Codes

### Intelligent Digital I/O Controllers (IDC)

K-050 IDC with 28 Volt d.c. Opto Inputs  
K-051 IDC with 240 Volt a.c. Opto Inputs

### Programming Packs

H-050 C Programming Pack For IDC Boards  
H-051 Ladder Logic Programming Pack for IDC.

### Miscellaneous

MP-050 Technical Manual for Intelligent Digital  
I/O Board (supplied free in Packs)

plc970512



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