



# VMEbus Analogue I/O

Slave Analogue Input/Output  
for VMEbus and Module Systems

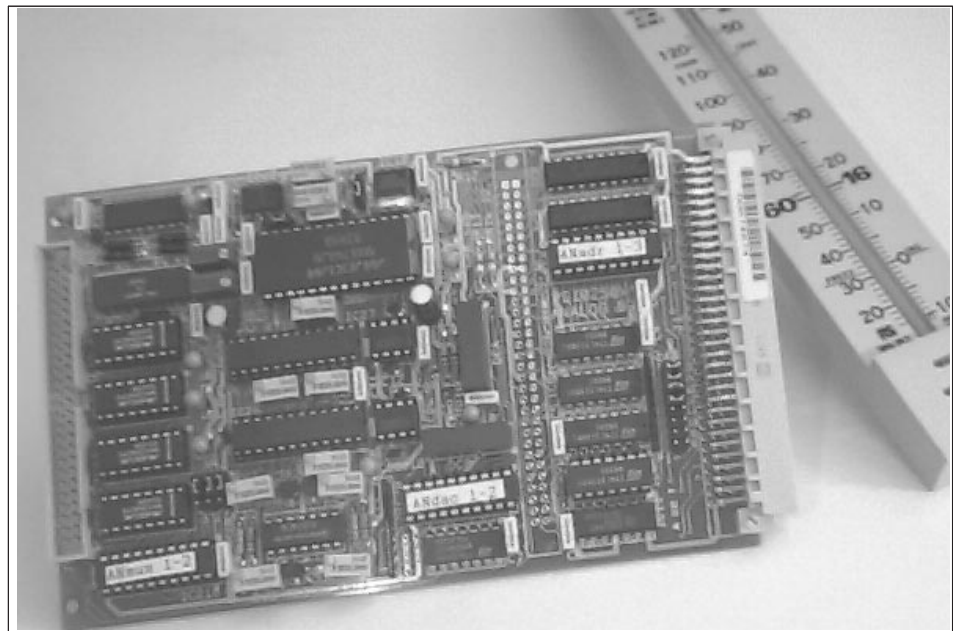
The picture shows a 12-bit Analogue I/O board fitted with 4 DACs.

## Features

- 32 single ended inputs or 16 differential inputs
- 12 bit resolution
- Sample and hold
- AD674 12uS converter
- 50kHz throughput
- 0 to 10, -5 to +5 or -10 to +10 inputs
- Input over voltage protection
- Software selectable gains
- Gains 1, 10, 100 or 1000
- 4 DAC outputs option
- Sign bit for +/-10 Volts output
- Very easy to use
- Software drivers for 68K and Module system
- 'C' library of examples
- 16 bit bus access
- VMEbus Slave Rev C.1
- 3U single-height Euro-card 100\*160mm

## Description

The V-350/4 single height euro-cards provide analogue input and output to VMEbus and Module Bus systems. The inputs are multiplexed and can be hardware configured as 32 single ended or 16 differential channels. The signals pass through a software programmable amplifier with gains of 1, 10,



100 and 1000. After sampling the 12 bit analog to digital converter can give a throughput of 50kHz. The software interface is very simple only requiring a single write to start the conversion and a read to collect the converted data. The write can also latch the next multiplexer channel to optimise throughput.

On the V-354 there are also 4 digital to analogue outputs. These are 12 bit plus sign giving outputs of +/-10 Volts with settling time better than us. The software interface only requires a single write to any channel.

The ADC used in the industry standard 574 series offering true 12 bit data acquisition at rate of up to 50kHz. During conversion the data may change and in fact a new channel can be selected and settled ready for the next conversion.

The inputs can be link configured for single ended, differential and

quasi differential mode. The quasi mode means that voltage drops along the cable, due to the power supply currents, are ignored because the common input is separate to the power ground. Full differential mode gives the best noise rejection as well as ignoring power supply currents.

The amplifier is based on an instrumentation amplifier with differential inputs offering high input impedance, low bias currents, low offsets, excellent linearity and a wide gain range. Voltages common to both inputs are rejected. The gain is software selectable in decade steps.

The DAC outputs are provided as an optional extra on the V-354 board. There are 4 independent DACs each of 12 bit magnitude and each having their own sign bits giving outputs of 10 Volts. The settling times are better than 2us and outputting a value is a single write operation.

The drawing opposite is a block diagram of the 12-bit Analogue board with four 12-bit DACs fitted. The same board is available without the DACs.

## Specification

### Analog to digital converter

12 bit resolution

1 bit linearity

12µs conversion rate

### Settling time

15µs for gains 1,10,100

50µs for gain 1000

### Acquisition time

4µs

### Inputs

32 Single ended or  
16 differential

Input common mode +/-10 Volts

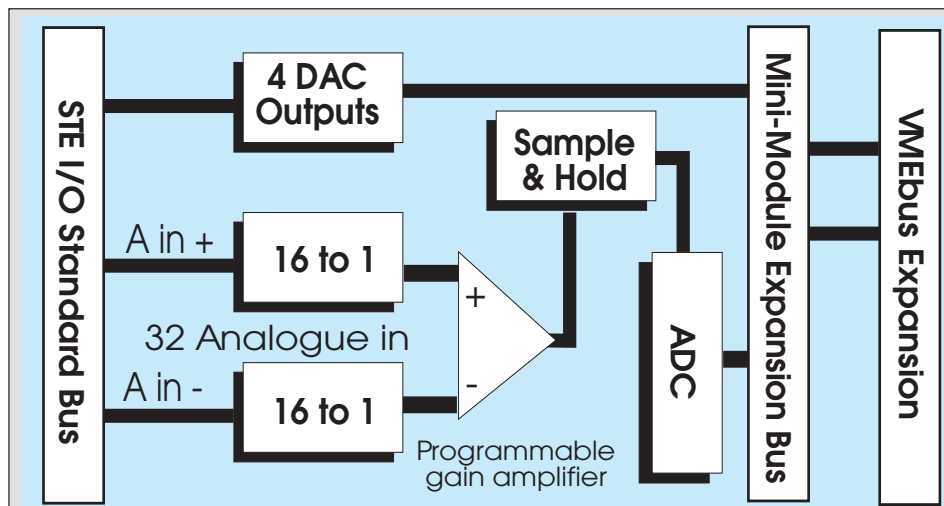
Input bias current 15nA

Absolute max. 70 Volts

ESD protection 4000 Volts

### Gain by software switching

1, 10, 100, 1000



### Outputs (V-354 only)

12 bit magnitude

1 bit sign

4 Channels

Settling time 2µs

scale +/- 10 Volts

load 2K ohms

### VMEbus Slave Interface

Rev.C.1.

Data transfer A16:D16

Modifiers \$29,\$2D

### Address decoding

256 bytes short address space

### Connectors

50-way I/O bus IDC connector

96-way VMEbus connector

### Power Requirements

5 Volts 500mA(typ)

+/- 12 Volts may be required for  
signal conditioning.

### Temperature Range

0-55 degC

### Humidity

0 to 90% RH (non condensing)

### Size

3U Euro-card, 100\*160mm

## Order Codes

### Module Version

K-350 12-bit Analogue card

K-354 12-bit Analogue card with 4 DACs

### VMEbus Version

V-350 VMEbus Analogue card

V-354 VMEbus Analogue card with 4 DACs

### Miscellaneous

MV-350 Technical Manual

V354 970307

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