

- 16 channel analog output with 12-bit resolution
- 24 channel digital I/O
- Extended temperature operation
- RoHS compliant

## Highlights

### Analog Output

16 analog outputs with 12-bit resolution.

### Multiple Output Ranges

Configure output ranges via software or with on-board jumpers.

### DAC Update

Update outputs individually or simultaneously.

### Dual ISA Modes

Enhanced 16-bit ISA functionality is provided while retaining 8-bit compatibility.

### Read-back Function

Read-back of DAC and SPAN codes for simplified programming and setup.

### Configurable Reset

Configure outputs to reset to zero or mid-scale on power-up.

### Digital I/O

24-channels of CMOS/TTL compatible digital I/O.

### RoHS Compliant

Meets EU Directive 2002/95/EC.

## Overview

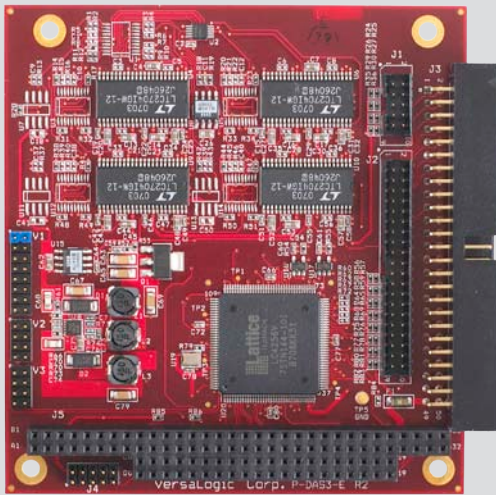
The VCM-DAS-3 I/O module provides 16 channels of 12-bit resolution analog outputs along with 24 digital I/O lines on a single PC/104 module. The rugged VCM-DAS-3 is designed to provide capabilities beyond what is presently available on the market while maintaining drop-in compatibility with current industry standards. Ideal applications include process control, closed-loop servo control, and motor-control.

## Details

The versatile VCM-DAS-3 I/O module has four LTC2704 quad 12-bit D/A converter chips which provide sixteen 12-bit analog output channels. All output ranges can be configured independently via software or in groups of eight by jumpers. Both unipolar and bipolar mode are fully supported by this module. All analog output channels can be updated individually or simultaneously, either with a software command or in response to an external trigger. The analog outputs can source or sink up to 5mA each. All outputs can be configured to reset to either zero scale or mid-scale on power-up. To facilitate programming and simplify setup, read-back functionality is provided. Enhanced 16-bit ISA functionality is also provided while retaining 8-bit compatibility.

An 82C55 compatible chip provides 24 lines of CMOS/TTL compatible digital I/O which power-up in input mode. Pull-up resistors provide known logic levels during startup.

The VCM-DAS-3 is designed and tested for extended temperature operation (-40° to +85°C) and is fully RoHS-compliant. It requires only +5VDC from the system power supply via the PC/104 bus. I/O connections can be made with either a 2mm latching connector or a 50-pin shrouded header for 0.1" legacy connectors.



## Ordering Information

VCM-DAS-3a ... 12-bit, 16 channel D/A converter with 24-bit digital I/O

## Accessories

VL-CBR-4004.....I/O cable assembly and paddleboard (RoHS)  
 VL-HDW-101..... Standoff Pkg., metric thread  
 VL-HDW-203..... PC/104 board extractor tool, metal

## Specifications

Specifications		
<b>General</b>	Power Requirements	Vcc +5.0V±10% @ 0.5A (2.5W) typ.
	Bus Speed	PC/104: 8 MHz 16-bit and 8-bit compatible
	Compatibility	PC/104: Compatible RoHS: Compliant
<b>Mechanical</b>	Board Size	3.55" x 3.775" (90 mm x 96 mm)
	Storage Temperature	-40° to +85°C
	Operating Temperature	-40° to +85°C
	Thermal Shock	5°C/min over operating temperature
	Vibration, Sinusoidal Sweep	2g constant acceleration from 5 to 500Hz, 20 minutes per axis, MIL-STD-202G, Method 204, Modified Condition A
	Vibration, Random	.02g <sup>2</sup> /Hz (5.35g rms) 15 minutes per axis, MIL-STD-202G, Method 214A, Condition A
	Mechanical Shock	30g half-sine, 11 ms duration per axis, MIL-STD-202G, Method 213B, Condition J
	Humidity	Less than 95%, noncondensing
<b>Analog Outputs</b>	Number of Outputs	16
	Resolution	12-bits
	Output Ranges	Bipolar: ±10V, ±5V, ±2.5V, -2.5V to 7.5V Unipolar: 0 to 10V, 0 to 5V
	Output Current	±5 mA max per channel
	Output Impedance	0.015 Ohm (max)
	Settling Time	8 μs Typ. (±10V range, 20V step to ±1LSB)
	Accuracy	±1LSB
	Integral Nonlinearity	±1LSB
	Differential Nonlinearity	±1LSB
	Calibration	One gain and one zero adjustment for all 16 channels
	Gain Temp. Coefficient	±2 ppm/°C
	Update Method	Simultaneous or individual via software command or external trigger
Reset	Outputs reset to 0V when board is jumpered for Enhanced Mode, midscale otherwise	
<b>Digital I/O</b>	Number of Channels	24 channels
	Compatibility	CMOS / TTL
	Low Input Voltage	-0.3V min, 0.8V max
	High Input Voltage	2.0V min, 5.5V max
	Low Output Voltage	0.4V max
	High Output Voltage	3.0V min
	Output Current	+4mA / -8mA max
	Pull-up Resistor	10K Ohm
Reset	All channels set to input mode	
<b>Software</b>	Operating Systems	Compatible with most x86 operating systems, including Windows 95/98/NT/CE/XP, QNX, VxWorks, and Linux

Data represents standard operation at 25°C with 5.0V supply unless otherwise noted. Specifications are subject to change without notice. PC/104 is a trademark of the PC/104 Consortium.