



October 6, 2011

The SUMMIT is a PC/104 6 channel 16-bit analog output and 24 channel high current digital I/O module. It is designed for high reliability and long life.

### Analog Outputs

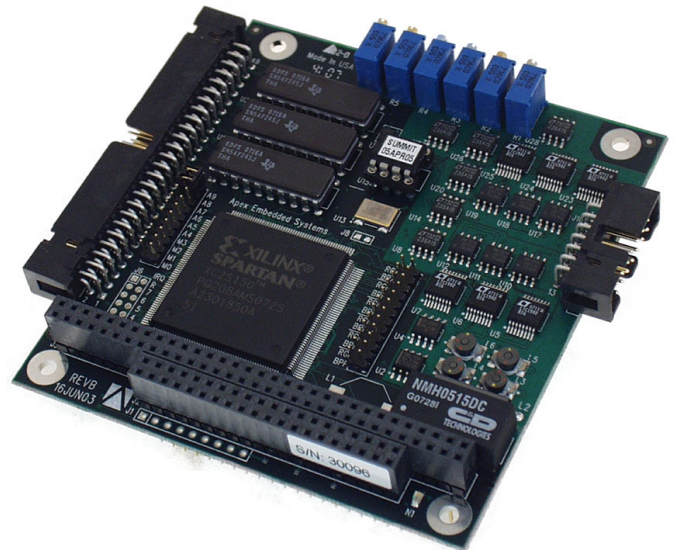
- **Resolution.** 16-bits.
- **Ranges.**  $\pm 10V$ ,  $\pm 5V$ , 0-5V, 0-10V
- **Channels.** Six
- **Output Type:** single-ended.
- **Output Update:** Either individual channels, simultaneous via software or hardware input strobe.

### Digital Inputs/Outputs

- **Interface:** One 8255 mode 0 compatibility both software and hardware.
- **Channels:** three groups of 8 channels
- **Inputs:** Each input has a 10K pull up resistor.
- **High-Current Outputs** can sink 64 milliamps, and source 18 milliamps. This is true even while operating at high temperatures.
- **Direct Interfacing to OPTO-22's isolated I/O racks.** Digital I/O connector is organized to allow direct connection to OPTO-22's isolated I/O racks that use the G4 serial of I/O modules, the PB16-H, PB16-J, PB16-K, PB16-L, PB8H and the PB24HQ.

### General

- **Environmental:** Wide operating temperature from  $-40^{\circ}\text{C}$  to  $+85^{\circ}\text{C}$ .
- **Out-gassing and fire avoidance:** We do not use any tantalum or electrolytic capacitors in any products.
- **Reliability:** MTBF of 734,136 hours per MIL-HDBK-217F ground benign at  $40^{\circ}\text{C}$ .
- **Polarized Connectors** prevent incorrect cable installations.
- **LED Status:** An LED displays valid card activity which is useful for both product development and field status.
- **Flexible CPU Support:** eight or sixteen bit data bus is supported.
- **Single +5V Operation:** Power less than 1.2 Watts.



### Support

- **Long Term Commitment:** We are committed to delivering long product life and dedicated to ongoing product updates and improvements to enhance long product life.
- **Customer Service:** We are committed to serving our customers. We offer 24/7 online ordering with a variety of payment and shipping options for quick and hassle free ordering.
- **Production:** Designed and Manufactured in Wisconsin, USA, utilizing an ISO 9001 manufacturing facility.
- **Software Drivers:** Linux, Windows and DOS drivers are available as well as other third party software tools (legacy compatibility with many other cards).
- **Individual Customer Assistance:** We will do whatever we can to assist you in designing in our products.

### Accessories

- Cable. Flat ribbon cable, 50-pin w/3M polarized IDC sockets and pull tab, 18-inches in length.
- 50-Pin Terminal Breakout Board.

### Apex Embedded Systems LLC

116 Owen Road  
Monona, WI 53716  
Voice: 608-256-0767  
email: [customer.service@apexembeddedsystems.com](mailto:customer.service@apexembeddedsystems.com)  
web: [www.apexembeddedsystems.com](http://www.apexembeddedsystems.com)

## Technical Specifications

### Analog Outputs

**Resolution:** 16 bits  
**Number of channels:** 2 D/A  
**Output voltage ranges:**  $\pm 10V$ ,  $\pm 5V$ , 0-5V, 0-10V or user defined range between 0 and 10V. Each channel independently configurable by jumpers.  
**Maximum Current:** 5 milliamps per channel  
**Offset error:** less than 8 LSB  
**Output Coupling:** DC  
**Initial Output State:** less than 20 millivolts independent of range.  
**Gain error:** Adjustable to 0 by potentiometer  
**Settle Time:** 10 microseconds  
**Differential non-linearity:**  $\pm 1\text{LSB}$  max  
**Integral non-linearity:**  $\pm 1\text{LSB}$  max  
**DAC Update:** Selectable by jumper: (1) simultaneous by reading any DAC register, (2) simultaneous updating by reading at base\_address + 0xF register and (4) simultaneous via external digital strobe.  
**Monotonicity Guaranteed**

### Software Compatibility

Software compatibility providing additional third party support.  
Compatible with the following boards: Measurement Computing CIO-DDA06/16 and Keithley DDA-06.

### Digital I/O

**Functionality:** 82C55A compatible, mode 0 only.  
**Number of Digital I/O:** 24 TTL compatible, grouped into three 8-bit registers. All digital I/O have 10K pull up resistors to +5V.  
**Input Voltage:** Logic 0: 0.0V min, 0.8V max; Logic 1: 2.0V min, 5.5V max  
**Input Current:** Input current due to 10K pull-up resistor to +5V. Logic 0: -0.5mA at 0.8V, and Logic 1: -260uA at 2.4V.  
**Output Voltage:** Logic 0: 0.0V min, 0.4V max; Logic 1: 2.4V min, 3.3V max.  
**Output Current:** Logic 0: sink 64 mA; Logic 1: source 18mA.

### General

**Operating temperature range:**  $-40^{\circ}\text{C}$  to  $+85^{\circ}\text{C}$   
**Storage temperature range:**  $-55^{\circ}\text{C}$  to  $125^{\circ}\text{C}$   
**Factory Calibration:** Full NIST Traceable  
**Humidity:** 0 to 95% non-condensing  
**Power Supply:** 5VDC  $\pm 5\%$ ; 1.2 Watts max **improved!**  
**Interface:** PC/104 8-bit or 16-bit data.  
**Weight:** 0.2 lbs (91 grams), excluding spacers.

### Ordering Information

**Description:** Summit COTs PC/104 6-Channel 16-Bit Analog Output and 24-Channel Digital I/O Module  
**SKU:** SUMMIT

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