Overview
The CDM-A108 and CDM-A116 are 24-bit analog input modules that significantly increase the number of analog channels in a datalogger system. The CDM-A108 has eight differential channels and the CDM-A116 has 16 differential channels. The CDM-A108 and CDM-A116 feature a 24-bit, analog-to-digital converter and a low-noise, analog front-end to provide superior analog measurements. They also can make simultaneous measurements, support period average measurements, and include both current and voltage excitation channels.

Benefits and Features
- 8 differential or 16 single-ended inputs on the CDM-A108
- 16 differential or 32 single-ended inputs on the CDM-A116
- Ability to make simultaneous measurements
- 3.0 kHz maximum multiplexed sample rate using fast (100 μs) input settling
- 30 kHz maximum burst sample rate
- 24-bit sigma-delta ADC with 16 user-programmable notch frequencies from 30000 to 2.5 Hz, including 50 and 60 Hz. Previous generations of dataloggers could notch out 50 or 60 Hz ±5000 mV, ±1000 mV, and ±200 mV input range
- CANbus 2.0A/2.0B capable; contact Campbell Scientific for details

Specifications
Power Requirements
- Voltage: 9.6 to 32 Vdc

Typical Current Drain
- Sleep: <1 mA
- Active 1 Hz Scan: 2 mA (estimated)*
- Active 20 Hz Scan: 20 mA*

Estimated Accuracy
- ±(0.04% of reading + offset), 0° to 40°C
- ±(0.06% of reading + offset), -40° to 70°C
- ±(0.08% of reading + offset), -55° to 85°C

Voltage/Current Excitation Outputs
- Voltage Excitation: ±5 V @ 50 mA
- Current Excitation: ±2.5 mA; ±5 V compliance voltage
- Number of Voltage/Current Excitation Outputs: 2 (CDM-A108), 4 (CDM-A116)

Period Averaging
- Traditional period averaging on analog input channels

EU Declaration of Conformity
- www.campbellsci.com/cdm-a108
- www.campbellsci.com/cdm-a116

*Assumes one single-ended measurement with the first notch frequency (f_n) at 30 kHz.
Specifications Continued

The CR6 (shown above) and CR1000X measure CDM devices natively, and therefore do not require an SC-CPI.

General Purpose Outputs

SW5V Outputs
- Number of Outputs: 2 (CDM-A108), 4 (CDM-A116)
- Output Resistance: 30 Ω

SW12V Outputs
- Number of Outputs: 1 (CDM-A108), 2 (CDM-A116)
- Typical Limit: 200 mA
- Minimum Limit: 180 mA

12V Outputs
- Number of Outputs: 1 (CDM-A108), 2 (CDM-A116)
- Typical Limit: 200 mA
- Minimum Limit: 180 mA

Communication

CPI: For datalogger connection. Baud rate selectable from 50 kbps to 1 Mbps. Allowable cable length varies depending on baud rate, number of nodes, cable quality, and noise environment, but can be as long as 700 m under proper conditions.
- USB: USB 2.0 full speed connection available for attaching to a computer. Port is used to configure the module and download updates via our Device Configuration Utility.

Physical
- Dimensions: 20.3 x 12.7 x 5.1 cm (8 x 5 x 2 in.)
- Mounting: Standard 1-inch grid; din rail mounting available
- Operating Temperature: -40° to +70°C (standard), -55° to +85°C (extended)

Typical Measurement Performance

<table>
<thead>
<tr>
<th>Analog Voltage Measurement Range and Resolution</th>
<th>Typical Effective Resolution</th>
</tr>
</thead>
<tbody>
<tr>
<td>$f_{m}$ (Hz)</td>
<td>Range (mV)</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>30000</td>
<td>±5000</td>
</tr>
<tr>
<td></td>
<td>±1000</td>
</tr>
<tr>
<td></td>
<td>±200</td>
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<tr>
<td>60</td>
<td>±5000</td>
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<td>±1000</td>
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<td>±200</td>
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<td>50</td>
<td>±5000</td>
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<td>±1000</td>
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<tr>
<td></td>
<td>±200</td>
</tr>
<tr>
<td>2.5</td>
<td>±5000</td>
</tr>
<tr>
<td></td>
<td>±1000</td>
</tr>
<tr>
<td></td>
<td>±200</td>
</tr>
</tbody>
</table>

1. First notch frequency
2. Range overhead of ~6% on all ranges guarantees that full-scale values will not cause over range.
3. Effective resolution (ER) in bits is computed from ratio of full-scale range to RMS noise.

Analog Voltage Measurement Speed

<table>
<thead>
<tr>
<th>$f_{m}$ (Hz)</th>
<th>Multiplexed Measurement</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>With Input Reversal</td>
</tr>
<tr>
<td></td>
<td>Time (ms)</td>
</tr>
<tr>
<td>30000</td>
<td>1.46</td>
</tr>
<tr>
<td>60</td>
<td>34.73</td>
</tr>
<tr>
<td>50</td>
<td>41.50</td>
</tr>
<tr>
<td>2.5</td>
<td>801.40</td>
</tr>
</tbody>
</table>

1. Default settling time of 500 µs.
2. Refers to multiplexing circuitry internal to the CDM-A100 series.

Warranty
- One year against defects in materials and workmanship.