User's Guide

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OME-DB-8325

1. ACCESSORIES
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OME-DB-1825

1. PCB LAYOUT FOR CONNECTING TO OME-ISO-AD32:
2. PCB LAYOUT FOR CONNECTING TO OME-PCI-1802:
OME-DB-8025 TERMINAL BOARD

1. Accessories

The OME-DB-8025 is the cost-effective universal screw terminal board for A/D cards with 20-pin connectors.

2. OME-DB-8025 Layout

![Diagram of OME-DB-8025 Layout]

**NOTE:**

(1) CNA 20 pin connector for A1 to A20
(2) CNB 20 pin connector for B1 to B20
### 3. Pin Assignment

<table>
<thead>
<tr>
<th></th>
<th>A1</th>
<th></th>
<th>B1</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>A2</td>
<td>2</td>
<td>B2</td>
</tr>
<tr>
<td>2</td>
<td>A3</td>
<td>3</td>
<td>B3</td>
</tr>
<tr>
<td>3</td>
<td>A4</td>
<td>4</td>
<td>B4</td>
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<tr>
<td>4</td>
<td>A5</td>
<td>5</td>
<td>B5</td>
</tr>
<tr>
<td>5</td>
<td>A6</td>
<td>6</td>
<td>B6</td>
</tr>
<tr>
<td>6</td>
<td>A7</td>
<td>7</td>
<td>B7</td>
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<tr>
<td>7</td>
<td>A8</td>
<td>8</td>
<td>B8</td>
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<tr>
<td>8</td>
<td>A9</td>
<td>9</td>
<td>B9</td>
</tr>
<tr>
<td>9</td>
<td>A10</td>
<td>10</td>
<td>B10</td>
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<td>A11</td>
<td>11</td>
<td>B11</td>
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<tr>
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<td>A12</td>
<td>12</td>
<td>B12</td>
</tr>
<tr>
<td>12</td>
<td>A13</td>
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<td>B13</td>
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<tr>
<td>13</td>
<td>A14</td>
<td>14</td>
<td>B14</td>
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<td>14</td>
<td>A15</td>
<td>15</td>
<td>B15</td>
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<td>A16</td>
<td>16</td>
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<tr>
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<td>A17</td>
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<td>B17</td>
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<tr>
<td>17</td>
<td>A18</td>
<td>18</td>
<td>B18</td>
</tr>
<tr>
<td>18</td>
<td>A19</td>
<td>19</td>
<td>B19</td>
</tr>
<tr>
<td>19</td>
<td>A20</td>
<td>20</td>
<td>B20</td>
</tr>
</tbody>
</table>
4. Wiring Diagram

5. Capacitor Filter, Voltage Divider & Current input

5.1. Input R/C Filtering

Input filtering is provided on the OME-DB-8025 by installing a resistor and a capacitor on the desired input channel.

For example:
1.6 KHz Low pass filter
Equation: \[ f_{3db} = \frac{1}{2 \pi R C} \]
The steps are shown below
1. Change R1A (0Ω) resistor to 10 KΩ.
2. Install 0.01 uF Capacitor on C1.
5.2. Voltage Divider

If the input signal voltage is greater than the A/D card input range a voltage divider may be used. The OME-DB-8025 provides 2 resistors on each input channel to divide the input voltage signal. The steps are shown below

Step1. Change R1A (0Ω) resistor to 10 KΩ (0.1%).
Step2. Install 10 KΩ(0.1%) on R1B. (Voltage Signal /2)

\[ V/n : \quad n = \frac{R1A}{R1A+R1B} \]

5.3. Current input

If you want to measure a current signal, you have to install a 250Ω resistor in R1B. The steps are shown as below

Current signal range: 0 to 20 mA
R1B changed to 250Ω
Voltage = 20 mA x 250Ω = 5V  ;  Range = 0 to 5V

Formula:
\[ \text{input voltage signal} = \text{input current signal} \times 250\Omega \]
OME-DB-8125 TERMINAL BOARD

1. Accessories

The OME-DB-8125 is the cost-effective universal screw terminal board for A/D cards with a 20-pin connector or 37-pin D-Sub connectors.

2. OME-DB-8125 Layout

![OME-DB-8125 Layout Diagram]

NOTE:
(3) CN5 37-pin D-Sub connector for A1 to A20 & B1 to B20
(4) CN1 20-pin connector for A1 to A20
(5) CN2 20-pin connector for B1 to B20
3. Pin Assignment

37-pin D-Sub connector pin assignment

20-pin connector pin assignment
4. Wiring Diagram

5. Capacitor Filter & Voltage Divider & Current input

5.1. Input R/C Filtering

Input Filtering is provided on the OME-DB-8125 by installing a resistor and a capacitor on the desired input channel.
For example:

1.6 KHz Low pass filter

Equation: \( f_{3db} = \frac{1}{2 \pi R C} \)

The steps are shown below

Step 1. Change R1A (0 Ω) resistor to 10 K Ω.
Step 2. Install 0.01 uF Capacitor on C1.
5.2. Voltage Divider

If the input signal voltage is greater than the A/D card input range a voltage divider may be used. The OME-DB-8125 provides 2 resistors on each input channel to divide the input voltage signal.

The steps are shown below:
- Step 1. Change R1A (0Ω) resistor to 10 KΩ (0.1%).
- Step 2. Install 10 KΩ (0.1%) on R1B. (Voltage Signal /2)

\[ V/n : n = \frac{R1A}{R1A+R1B} \]

5.3. Current Input

If you want to measure a current signal, you must change resistor R1B (0Ω) to 250Ω. The steps are shown as below:

- Current signal range: 0 to 20 mA
- R1B change to 250Ω
- Voltage = 20 mA x 250Ω = 5V ; Range = 0 to 5V

Formula:

\[ \text{input voltage signal} = \text{input current signal} \times 250\Omega \]
The OME-DB-8225 Terminal Board provides convenient wiring for OME-A-82X Series cards.

<table>
<thead>
<tr>
<th>A/D Card Type</th>
<th>Input Mode</th>
</tr>
</thead>
<tbody>
<tr>
<td>OME-A-822HG</td>
<td>Single – Ended or Differential</td>
</tr>
<tr>
<td>OME-A-822DG</td>
<td>Single - Ended or Differential</td>
</tr>
<tr>
<td>OME-A-821PG</td>
<td>Single - Ended or Differential</td>
</tr>
<tr>
<td>OME-A-826PG</td>
<td>Single - Ended or Differential</td>
</tr>
</tbody>
</table>

2. OME-DB-8225 Layout
3. CJC Jumper Setting

The CJC is only for A/D channel 0

3.1. Single-Ended Mode

3.2. Differential Mode

### 4.1. Single - Ended Connection

![Single-Ended Connection Diagram]

- **37Pin Connector**
  - **RA0**: 0Ω (Open detection)
  - **RB0 Resistor**: Open detection
  - **AI0**: Single Ended input

### 4.2. Differential Connection

![Differential Connection Diagram]

- **37Pin Connector**
  - **RA0**: 0Ω (Open detection)
  - **RD0 Resistor**: Open detection
  - **CD0 Capacitor**: Input filtering
  - **CH0**: Differential input

**8225 Single Ended Input**

**8225 Differential Input**
5. CJC Output

The built-in CJC Circuitry produces a 10mV per Deg C output with 0.0 Volts @ -273 Deg C. The OME-A-822 should be protected from drafts and direct sunlight in order to accurately reflect room temperature.

CJC Calibration:
1. Connect the OME-A-82X series to the OME-DB-8225 CN1
3. Set JP1 to 1-2 and JP2 to 2-3 (Single-Ended mode)
4. Read the temperature from a Digital thermometer placed near D1/D2 (See OME-DB-8225 Layout).
5. Read OME-A-82X AI0 (Single-Ended Channel 0)
6. Adjust VR1 until a stable reading of 10mV per deg C is attained.

For example, when the environment temperature is 24 deg C, the reading value of CJC will be 2.97V

\[(273 \text{ deg C} + 24 \text{ deg C}) \times 10 \text{ mV/deg C} = 2.97V\]

You will need an A/D channel for CJC calibration. AI0 is reserved for CJC calibration in single ended mode and CH0-HI & CH0-LO is reserved for differential mode.
6. Open Detect and Input Filtering

Open thermocouple detection and input filtering are provided on the OME-DB-8225 by installing 3 resistors and a capacitor on the desired input channel. For example, if channel 0 is the desired channel, RA0 and RA8 must be removed and RD1 must be installed. These biasing resistors will slowly pull an open input channel to 0 Vdc. This 0 Vdc condition can be sensed and flagged in software.

In single-ended mode, a 10KΩ resistor should replace RA_n. Install a 100MΩ resistor in RB_n and install a 1uF capacitor in C_n. Note: n: Channel 0 to 15

<table>
<thead>
<tr>
<th>Channel</th>
<th>0Ω replaced by</th>
<th>Install 100MΩ</th>
<th>Install 1uF</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>RA0, RA8</td>
<td>RD0</td>
<td>CD0</td>
</tr>
<tr>
<td>1</td>
<td>RA1, RA9</td>
<td>RD1</td>
<td>CD1</td>
</tr>
<tr>
<td>2</td>
<td>RA2, RA10</td>
<td>RD2</td>
<td>CD2</td>
</tr>
<tr>
<td>3</td>
<td>RA3, RA11</td>
<td>RD3</td>
<td>CD3</td>
</tr>
<tr>
<td>4</td>
<td>RA4, RA12</td>
<td>RD4</td>
<td>CD4</td>
</tr>
<tr>
<td>5</td>
<td>RA5, RA13</td>
<td>RD5</td>
<td>CD5</td>
</tr>
<tr>
<td>6</td>
<td>RA6, RA14</td>
<td>RD6</td>
<td>CD6</td>
</tr>
<tr>
<td>7</td>
<td>RA7, RA15</td>
<td>RD7</td>
<td>CD7</td>
</tr>
</tbody>
</table>
7. Voltage Divider & Current input

7.1. Voltage Divider

If the input voltage signal is greater than the input range of the OME-A-82X, a voltage divider can be used. The OME-DB-8225 provides 2 resistor locations on each input channel that can be used to reduce the input voltage signal. Follow the steps shown below:

1. Change RA0 (0 Ω) resistor to 10KΩ (0.1%)
2. Install 10 KΩ (0.1%) on RB0 (Voltage Signal / 2)

\[ V/n : n = \frac{RB0}{(RA0+RB0)} \]

7.2. Current input

If you want to measure current input signal, you should change resistor RA0 (0Ω) to 250Ω. Follow the steps show below:

Current Signal range: 0 to 20mA
RA0 change to 250Ω
Voltage =20 ma X 250Ω = 5V ; Range 0 to 5V

Formula:

input voltage signal = input current signal x 250Ω
## 8. CN3 Timer Counter & D/A Output Connector

<table>
<thead>
<tr>
<th>Pin name</th>
<th>Connector</th>
</tr>
</thead>
<tbody>
<tr>
<td>+5V</td>
<td>From PC +5V</td>
</tr>
<tr>
<td>D.GND</td>
<td>Digital Ground</td>
</tr>
<tr>
<td>EXTCLK</td>
<td>External Clock for OME-A-822HG/DG</td>
</tr>
<tr>
<td>INTCLK</td>
<td>No Function</td>
</tr>
<tr>
<td>DRDY</td>
<td>No Function</td>
</tr>
<tr>
<td>EXTTRG</td>
<td>External Trigger of A/D converter</td>
</tr>
<tr>
<td>COUT1</td>
<td>8254 Counter 1 output (Internal trigger used)</td>
</tr>
<tr>
<td>GATE</td>
<td>8254 Counter 1 Gate (Internal trigger used)</td>
</tr>
<tr>
<td>COUT0</td>
<td>8254 Counter 0 output (Reserved for user)</td>
</tr>
<tr>
<td>GATE0</td>
<td>8254 Counter 0 Gate (Reserved for user)</td>
</tr>
<tr>
<td>AGND</td>
<td>Analog Ground</td>
</tr>
<tr>
<td>EXTVREF2</td>
<td>External reference voltage input of D/A Channel 2</td>
</tr>
<tr>
<td>DAOUT2</td>
<td>Output of D/A Channel 2</td>
</tr>
<tr>
<td>EXTVREF1</td>
<td>External reference Voltage input of D/A Channel 1</td>
</tr>
<tr>
<td>DAOUT1</td>
<td>Output of D/A Channel 1</td>
</tr>
<tr>
<td>VREF</td>
<td>Output of D/A Internal reference Voltage</td>
</tr>
</tbody>
</table>
OME-DB-8325 TERMINAL BOARD

1. Accessories

The OME-DB-8325 is screw terminal board for OME-A-832 isolated A/D card.

2. OME-DB-8325 Layout

![Diagram of OME-DB-8325 layout]

NOTE:
1. A0 to A31 for OME-A-832 analog input channel 0 to channel 31.
2. A.GND for OME-A-832 analog ground.
3. Wiring Diagram

4. Capacitor Filter & Voltage Divider & Current input

4.1. Input R/C Filtering

Input filtering is provided on the OME-DB-8325 by installing a resistor and a capacitor on the desired input channel. For example:

1.6 KHz Low pass filter
Equation: \( f_{3db} = \frac{1}{2 \pi R C} \)
Follow the steps shown below:
Step 1. Change RD1 (0Ω) resistor to 10 KΩ.
Step 2. Install 0.01 uF Capacitor on CD1.
4.2. Voltage Divider

If the input voltage signal is greater than the A/D cards input range, a voltage divider can be used. The OME-DB-8325 provides 2 resistor locations for adding a voltage divider for each input channel. Follow the steps shown below

Step1. Change RD1 (0Ω) resistor to 10 KΩ (0.1%).
Step2. Install 10 KΩ (0.1%) on RD2. (Voltage Signal /2)

\[ V/n = \frac{n}{RD1/(RD1+RD2)} \]

4.3. Current input

If you want to measure current input signal, you should change resistor RD2 (0Ω) resistor to 250Ω. Follow the steps shown below

Current signal range: 0 to 20 mA
RD2 change to 250Ω
Voltage = 20 mA x 250Ω = 5V ; Range = 0 to 5V
Formula:
input voltage signal = input current signal x 250Ω
1. PCB layout for connecting to OME-ISO-AD32:

For differential inputs (R=0 ohm)

OME-DB-1825

D1: for connecting to OME-ISO-AD32

D2: for connecting to OME-DB-889D
For single-ended inputs (R=0 ohm)

Pin assignment of D1 same as **CN1 of OME-ISO-AD32**
Pin assignment of D2 same as **CN1 of OME-DB-889D**
2. PCB layout for connecting to OME-PCI-1802:

For differential input (R=0 ohm)

For single-ended input (R=0 ohm)

Pin assignment of D1 same as CON3 of OME-PCI-1802.
Pin assignment of D2 same as CN1 of OME-DB-889D.
3. Connection to OME-ISO-AD32

4. Connection to OME-PCI-1802

5. Connection to OME-PCI-1802 and multiple OME-DB-889D (16 channels differential)
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2. Model and serial number of the product under warranty, and
3. Repair instructions and/or specific problems relative to the product.

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2. Model and serial number of the product, and
3. Repair instructions and/or specific problems relative to the product.

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- Communications-Based Acquisition Systems
- Plug-in Cards for Apple, IBM & Compatibles
- Datalogging Systems
- Recorders, Printers & Plotters

HEATERS
- Heating Cable
- Cartridge & Strip Heaters
- Immersion & Band Heaters
- Flexible Heaters
- Laboratory Heaters

ENVIRONMENTAL MONITORING AND CONTROL
- Metering & Control Instrumentation
- Refractometers
- Pumps & Tubing
- Air, Soil & Water Monitors
- Industrial Water & Wastewater Treatment
- pH, Conductivity & Dissolved Oxygen Instruments