

CERT # US-1892a



**OEM Controls**, the industry leader of electromechanical joystick controls and electronic control systems introduces its family of CAN Bus multiplexing electronic control modules— **OEMCan controllers**. Utilizing over 20 years of experience in the design and manufacturing of microprocessor-based electronic systems as well as listening to the "wish lists" of our customers, OEM Controls has developed the state-of-the-art, environmentally hardened and economical solution for electronic control in the mobile equipment industry.

- On-machine adjustability and troubleshooting— no external device or computer needed.
- Short-circuit, over-voltage and reverse-polarity protection.
- Compact and economical— spread modules out to where they are needed instead of running more cable.
- Versatile— factory programmable I/O designation (input vs. output, sink vs. source).
- 4 channel current regulation on one module.
- High output resolution for precise function control.

## OCI-1 Input Module

**"Master Brain"**

### Inputs

- 4 Analog (Voltage) Inputs (Can also be factory configured for sinking or sourcing digital inputs)
- 11 Bit Input Resolution Option (0-10vdc)— Each input is capable of commanding an output channel with 2,000 discreet output levels
- 10 Bit Input Resolution Option (0-5vdc)— Each input is capable of commanding an output channel with 1,000 discreet output levels
- 8 Digital Inputs can be factory configured for Sinking or Sourcing operation

### Outputs

- Four 1A Digital Outputs (Indicators)— Can also be factory-configured for sourcing digital inputs
- Two 1A Outputs (Thumpers)

### Human Machine Interface

- LCD Display
  - 2 lines @ 16 characters for system operation and error codes
  - Low temperature display
- Membrane Keypad (4 buttons) for calibration— Intuitive menu system works in conjunction with LCD display which allows the operator to choose between the following parameters:
  - Calibration and Adjustment
  - Application state
  - CAN Bus system state
  - Software Information

### Housing / Enclosure Dimensions

- Aluminum Extrusion— approximately 2" H x 4.2" L x 4.2" W (5.2" with mtg feet)

## **OCI-2 Input Module**

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<b>Inputs</b>	<ul style="list-style-type: none"><li>• 4 Analog (Voltage) Inputs (Can also be factory configured for sinking or sourcing digital inputs)</li><li>• 11 Bit Input Resolution Option (0-10vdc)– Each input is capable of commanding an output channel with 2,000 discrete output levels</li><li>• 10 Bit Input Resolution Option (0-5vdc)– Each input is capable of commanding an output channel with 1,000 discrete output levels</li> <li>• 8 Digital Inputs can be factory configured for Sinking or Sourcing operation</li></ul>
<b>Outputs</b>	<ul style="list-style-type: none"><li>• Four 1A Digital Outputs (Indicators)– Can also be factory-configured for sourcing digital inputs</li><li>• Two 1A Outputs (Thumpers)</li></ul>
<b>Housing / Enclosure Dimensions</b>	<ul style="list-style-type: none"><li>• Aluminum Extrusion– approximately 2" H x 4.2" L x 4.2" W (5.2" with mtg feet)</li></ul>

## **OCI-3 Joystick Input Module**

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<b>Inputs</b>	<ul style="list-style-type: none"><li>• 9 pendent wires</li><li>• 1- Remote Analog (500 ohm potentiometer with 62 ohm padding resistors powered from 5 vreg output and system ground connection)</li><li>• 4- On board or remote– Hall Effect circuits</li><li>• 7- Digital– Sourcing only</li><li>• 1- Pulse Pick Up– External to BUS system; drives 1A digital output for Thumper applications</li></ul>
<b>Outputs</b>	<ul style="list-style-type: none"><li>• 3 pendent wires</li><li>• 1- 5V regulated for external pot networks and ratiometric devices</li><li>• 1- Digital - 300mA for indicator lights, etc.</li><li>• 1- Digital 1A for Thumper</li></ul>
<b>Power</b>	<ul style="list-style-type: none"><li>• 8-32V</li></ul>
<b>Connectors</b>	<ul style="list-style-type: none"><li>• All connections to/from circuit are made through pendent wires</li></ul>
<b>Housing / Enclosure Dimensions</b>	<ul style="list-style-type: none"><li>• Optional</li></ul>
<b>Joysticks</b>	<ul style="list-style-type: none"><li>• Direct mount– Primary design for JS8-based controllers (HJS8, JS8, MS8 and FP3)</li></ul>

## **OCI-4 Joystick Input Module**

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<b>Inputs</b>	<ul style="list-style-type: none"><li>• 1 Analog– On board or remote; Hall Effect circuits</li><li>• 4 Digital– Sourcing only</li></ul>
<b>Outputs</b>	<ul style="list-style-type: none"><li>• None available</li></ul>
<b>Housing / Enclosure</b>	<ul style="list-style-type: none"><li>• Optional</li></ul>
<b>Joysticks</b>	<ul style="list-style-type: none"><li>• Direct mount– Primary design for MS7-based controller</li></ul>

## **OCO-1 Output Module**

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- Inputs**
- 4 Digital Inputs (Can be factory configured for sinking or sourcing operation)
- Outputs**
- Programmable (Proportional or Digital)– 8 Outputs (4 Channels) 3A PWM or digital sourcing
    - Proportional Outputs 1 through 4 calibrated with PWM frequency A
    - Proportional Outputs 5 through 8 calibrated with PWM frequency B
    - 11 Bit resolution (4 outputs, 2 channels)– Each output is capable of providing 2,000 discreet output levels
    - 8 Bit resolution (8 outputs, 4 channels)– Each output is capable of providing 200 discreet output levels
  - Factory configurable as diode or zener clamped
- Digital Outputs**
- 4 Outputs of Sourcing Digital– 3A (Configurable as sourcing digital inputs)
- Housing / Enclosure Dimensions**
- Aluminum Extrusion: approximately 2" H x 6.2" L x 4.2" W (5.2" with mtg feet)

## **OCO-2 Output Module with Load Regulation and High Resolution PWM Output**

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- Inputs**
- 2 Analog (Voltage) Inputs (Can also be factory configured for sinking or sourcing digital inputs)
  - 11 Bit Input Resolution Option (0-10vdc)– Each input is capable of commanding an output channel with 2,000 discreet output levels
  - 10 Bit Input Resolution Option (0-5vdc)– Each input is capable of commanding an output channel with 1,000 discreet output levels
- Proportional Outputs**
- Programmable (Proportional or Digital)– 8 Outputs (4 Channels) of current regulated / 3A PWM or digital sourcing outputs
    - Proportional Outputs 1 through 4 calibrated with PWM frequency A
    - Proportional Outputs 5 through 8 calibrated with PWM frequency B
    - 11 Bit resolution– Each output is capable of providing 2,000 discreet output levels
  - 4 Outputs (2 channels) of non-current regulated / 14 Bit 3A PWM or Digital Sourcing Outputs
    - Proportional Outputs 9 through 12 calibrated with PWM frequency C
    - 14 Bit resolution– Each output is capable of providing 20,000 discreet output levels
  - Current regulated  $\pm 5\%$  for system voltage variation of  $\pm 25\%$  and valve resistance increase of 0-50%
- Digital Outputs**
- 2 Outputs of Sourcing Digital– 3A
- Housing / Enclosure Dimensions**
- Aluminum Extrusion: approximately 2" H x 7.2" L x 4.2" W (5.2" with mtg feet)

## **OCO-3 Output Module**

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### ***Danfoss PVEA Driver***

- Inputs**
- 4 Analog (Voltage) Inputs (Can also be factory configured for sinking or sourcing digital inputs)
  - 11 Bit Input Resolution Option (0-10vdc)– Each input is capable of commanding an output channel with 2,000 discreet output levels
  - 10 Bit Input Resolution Option (0-5vdc)– Each input is capable of commanding an output channel with 1,000 discreet output levels
- Proportional Outputs**
- 4 Analog Outputs– Ratiometric signal output for supply voltage range of 11-32V or
  - 4 Digital Outputs (Danfoss valve enables)– Can be 8 bit PWM diode or zener clamped outputs or 3A sourcing digital
- Digital Outputs**
- 4 Digital Outputs of Sourcing Digital– 3A
- Housing / Enclosure Dimensions**
- Aluminum Extrusion: approximately 2" H x 6.2" L x 4.2" W (5.2" with mtg feet)

## OCD-1 Display Module

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<b>Communications</b>	<ul style="list-style-type: none"><li>• J1939– To receive information from the engine</li><li>• CanOpen</li></ul>
<b>Inputs</b>	<ul style="list-style-type: none"><li>• 4 Analog 0-10V– can be used as digital (Can also be factory configured for sinking or sourcing digital inputs)</li><li>• 8 Digital (Can also be factory configured for sinking or sourcing digital inputs)</li></ul>
<b>Outputs</b>	<ul style="list-style-type: none"><li>• 4 Digital– 1A for indicator lights, etc. (Can also be factory configured for sourcing digital inputs)</li><li>• 2 Digital 1A for Thumpers</li></ul>
<b>Power</b>	<ul style="list-style-type: none"><li>• 2 pins– 8-32V</li></ul>
<b>Connectors</b>	<ul style="list-style-type: none"><li>• 2 Deutsch 12 pin</li><li>• 1 2 pin J1939</li><li>• 1 RS232 for programming, troubleshooting and TDL</li></ul>
<b>Display</b>	<ul style="list-style-type: none"><li>• 5.7" screen, (320 x 240 pixels)</li><li>• Monochrome, white LED backlit– sunlight transfective, extended temperature</li><li>• Programmable and downloadable images via PC, Windows based, HTML software</li></ul>
<b>Calibration and screen scrolling</b>	<ul style="list-style-type: none"><li>• 6 push-button membrane keypad</li><li>• Touch-screen optional</li></ul>
<b>Housing / Enclosure Dimensions</b>	<ul style="list-style-type: none"><li>• Aluminum or Steel Fabricated</li></ul>
<b>Example Application Requirements</b>	To graphically display: ladder vs. truck position; monitor water stream and flow rate; distance from objects/buildings (alphanumeric); load/envelope monitoring and warning indication depending on basket position, angle and length; other critical truck information (% Air remaining, Flow rate, Hydraulic pressure, Water pressure, Engine information)

## CAN Bus Systems Common System Specifications

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<b>Power Requirements</b>	<ul style="list-style-type: none"><li>• 8-32VDC</li><li>• Protection: Reverse polarity / Short Circuit / Over voltage</li></ul>
<b>Connectors</b>	<ul style="list-style-type: none"><li>• Main I/O– Two 12 pin Deutsch DT series connectors (24 pins)</li></ul>
<b>Communication</b>	<ul style="list-style-type: none"><li>• Standard Protocol CANOPEN &amp; CAN 2.0 B</li></ul>
<b>Future/Optional Protocol</b>	<ul style="list-style-type: none"><li>• J1939</li></ul>
<b>Operational Indicator</b>	<ul style="list-style-type: none"><li>• Visual Indication of Node State with a tri-color LED (Status LED)<ul style="list-style-type: none"><li>• GREEN– System Run</li><li>• RED– Error</li><li>• YELLOW– Download Mode</li></ul></li></ul>
<b>Environment</b>	<ul style="list-style-type: none"><li>• Temp: -40 - +70C operating; Humidity: 10-95% RM</li><li>• Protection: High performance silicone conformal coating tested to IP-65 or greater</li></ul>
<b>EMC Compliance</b>	<ul style="list-style-type: none"><li>• Radiated Immunity: EN 61000-4-3:1995, 30V/m</li><li>• ESD: IEC 61000-4-2:1995</li><li>• Electrical Fast Transient: IEC 61000-4-4:1994</li><li>• Surge Immunity: IEC61000-4-5:1995</li><li>• Conducted Immunity: IEC 61000-4-6:1996</li><li>• Radiated Emissions: EN 55011:1998, Class B</li><li>• Radiated Emissions: EN 55022:1998, Class B</li></ul>

**⚠ WARNING:** It is the purchaser's responsibility to determine the suitability of any OEM Controls product for an intended application, and to insure that it is installed and guarded in accordance with all federal, state, local and private safety and health regulations, codes and standards.

Due to the unlimited variety of machines, vehicles and equipment on which our controls are used, and the numerous standards which are frequently the subject of varying interpretation, it is impossible for OEM Controls personnel to provide expert advice regarding the suitability of a given controller for a specific application. The flexibility of our products allows us to offer thousands of custom configurations. We can advise you of the various features that are available and you can examine models to see what meets your needs. We believe our customers' engineering departments should be the qualified experts in their own product field. If the product will be used in a safety critical application, the customer must undertake appropriate testing and evaluation to prevent injury to the ultimate user.

Should you have any questions or if any of the above warning is unclear, please contact OEM Controls at 10 Controls Drive, Shelton, CT 06484, FAX: 203.929.3867, TEL: 203.929.8431.

