Mobile Machine Management

This product is designed as flexible, expandable, powerful, cost effective stand-alone modules for smaller machined systems or as total machine management systems with intelligence in every node. These modules communicate with one another and other intelligent systems over a machine Controller Area Network (CAN data bus).

Product Highlights

The MC090 controller employs a Digital Signal Processor (DSP), providing the controller with extremely fast single-cycle processing speed and 1.3 MB flash.

The MC090-022 has an application key that enables the use of Danfoss developed GUIDE machine control solutions. The same GUIDE HWD file is used with both controllers.

Application Development

PLUS+1® hardware modules have input or output pins that support multiple functions. Pins that support multiple input or output types are user-configurable using PLUS+1® GUIDE software. This Microsoft® Windows® based development environment features a user-friendly, field proven, icon-based graphical programming tool, application downloader, and service/diagnostic tool.

Features

- User-programmable with PLUS+1® GUIDE (Graphical User Integrated Development Environment)
- 32 bit fixed-point DSP running at 150 MHz
- 12 bit analog-to-digital converter
- 2 MB serial flash vault memory
- 90 pins
- 1 independent power supply for all outputs except C2-P7, C2-P8, C2-P30 and C2-P35
- 1 independent CPU and start up functions power supply 9 to 36 Vdc (also provides power to C2-P38)
- Power supply for external sensors rated at 5 Vdc to 500 mA, regulated internally
- 2 LEDs, user controlled
- 2 Can 2.0B-ports
- The MC090-022 contains an application key required to run Danfoss developed machine control application software
• 8 user-defined inputs/outputs that are defined as
  — Digital inputs (DIN/DOUT 0.5 A)
  — 0.5 A Digital output: Configured as source only

Inputs
• 42 user-defined inputs
  — 18: Digital (DIN)
  — 11: Digital/Analog (DIN/AIN)
  — 4: Rheostat (Rheo)
  — 8: Digital with StartUp Function (DIN Start Up)
  — 1: Analog/CAN shield (AIN/CAN shield) configured as 0 to 5.25 Vdc or CAN shield pin

Outputs
• 29 user-defined outputs
  — 2: 0.5 A Digital: Configured as source only (DOUT 0.5 A)
  — 5: 1.5 A Digital: Configured as source only (DOUT 1.5 A)
  — 3: 3 A Digital: Configured as source only (DOUT 3 A)
  — 10: 6 A Digital/Digital Input: Configured as source only (DOUT 6 A)
  — 6: Universal (PWMOUT/DOUT) that are user-defined as either: Digital (1.5 A) configurable as source or sink; PWM (33 to 4000 Hz), configurable as open or closed loop with current control
  — 2: Universal (PWMOUT/DOUT 15 A) that are user-defined as either: Digital (15 A) configurable as source or sink; PWM (13 kHz fixed), open loop mode only
  — 1: 6 A PWM (195 Hz fixed), open loop and sourcing only

Specifications

<table>
<thead>
<tr>
<th>Product parameters</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Supply voltage</td>
<td>9 to 36 Vdc</td>
</tr>
<tr>
<td>Operating temperature (ambient)</td>
<td>-40°C to 70°C [-40°F to 158°F]</td>
</tr>
<tr>
<td>Storage temperature</td>
<td>-40°C to 85°C [-40°F to 185°F]</td>
</tr>
<tr>
<td>Programming temperature</td>
<td>0°C to 70°C [32°F to 158°F]</td>
</tr>
<tr>
<td>IP rating (with mating connector attached)</td>
<td>IP 67</td>
</tr>
<tr>
<td>EMI/RFI rating</td>
<td>100 V/M</td>
</tr>
<tr>
<td>Weight</td>
<td>1368 g [3.016 lb]</td>
</tr>
<tr>
<td>Maximum current, sourcing</td>
<td>86.5 A</td>
</tr>
<tr>
<td>Maximum current, sinking</td>
<td>85 A</td>
</tr>
</tbody>
</table>
**Dimensions**

*Mounting dimensions and pin assignments*

**Dimensions in mm [in]**

<table>
<thead>
<tr>
<th>Connector 1: 50 pins</th>
<th>Connector 2: 38 pins</th>
</tr>
</thead>
<tbody>
<tr>
<td>106 ± 0.20 [4.17 ± 0.01]</td>
<td>60.00 [2.36]</td>
</tr>
<tr>
<td>82.50 [3.25]</td>
<td>72.50 [2.85]</td>
</tr>
<tr>
<td>106 ± 0.20 [4.17 ± 0.01]</td>
<td>106 ± 0.20 [4.17 ± 0.01]</td>
</tr>
<tr>
<td>270.10 [10.63]</td>
<td>270.10 [10.63]</td>
</tr>
<tr>
<td>284.00 [11.18]</td>
<td>284.00 [11.18]</td>
</tr>
<tr>
<td>298.00 [11.73]</td>
<td>298.00 [11.73]</td>
</tr>
</tbody>
</table>

**Bolt Connector**

**Caution**

This device is not field serviceable. Opening the device housing will void the warranty.

This device’s entire back surface must be supported when mounting (flatness within 1 mm). Mount device any direction.

**Ordering information**

**Product part number**

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Order Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>MC090-020</td>
<td>11081998</td>
</tr>
<tr>
<td>MC090-022</td>
<td>11162753</td>
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</table>

**Related products part numbers**

<table>
<thead>
<tr>
<th>Product</th>
<th>Order Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>CG150 CAN/USB Gateway</td>
<td>10104136</td>
</tr>
<tr>
<td>DEUTSCH mating connector bag assembly</td>
<td>11071844 (16 to 20 AWG)</td>
</tr>
<tr>
<td>PLUS+1® GUIDE single user license</td>
<td>10101000</td>
</tr>
</tbody>
</table>
Pin C1 | Controller function | Pin C2 | Controller function
--- | --- | --- | ---
C1-P1 | DIN | C2-P1 | DOUT 0.5A/DIN
C1-P2 | DIN | C2-P2 | DOUT 0.5A/DIN
C1-P3 | CAN 0+ | C2-P3 | DOUT 0.5A/DIN
C1-P4 | CAN 0- | C2-P4 | DOUT 0.5A/DIN
C1-P5 | CAN Shield/AIN | C2-P5 | DOUT 0.5A
C1-P6 | N/A | C2-P6 | DOUT 0.5A
C1-P7 | N/A | C2-P7 | DOUT 1.5A
C1-P8 | Sensor Power + | C2-P8 | DOUT 1.5A
C1-P9 | Sensor Power Ground | C2-P9 | DOUT 1.5A

C1-P10 | DIN | C2-P10 | DOUT 1.5A
C1-P11 | DIN | C2-P11 | DOUT 1.5A
C1-P12 | DIN | C2-P12 | DOUT 3A
C1-P13 | DIN | C2-P13 | DOUT 3A
C1-P14 | DIN | C2-P14 | DOUT 3A
C1-P15 | DIN | C2-P15 | DOUT 6A
C1-P16 | DIN | C2-P16 | DOUT 6A
C1-P17 | DIN | C2-P17 | DOUT 6A
C1-P18 | DIN | C2-P18 | DOUT 6A
C1-P19 | DIN | C2-P19 | DOUT 6A
C1P20 | DIN | C2-P20 | DOUT 6A
C1-P21 | DIN | C2-P21 | DOUT 6A
C1-P22 | DIN | C2-P22 | DOUT 6A
C1-P23 | DIN | C2-P23 | DOUT 6A
C1-P24 | DIN | C2-P24 | PWMOUT/DOUT 1.5A
C1-P25 | DIN | C2-P25 | PWMOUT/DOUT 1.5A

Use care when wiring mating connector. Pinouts listed are for device pins.

CPU power supply C2-P38 also provides power to pins C2-P7, C2-P8, C2-P30 and C2-P35 for start up functions.