Danfoss PLUS+1® controllers are elements of the flexible, powerful, expandable, and affordable family of mobile machine management products. These devices are general-purpose controllers that are equally suited for use as a member of a distributed machine control system, with intelligence in every node, or as a stand-alone controller.

The MC024-118 Extended Memory Controller is pin compatible with the PLUS+1® MC024-110 Controller. It employs a 32 bit Cortex-M3 Processor, providing the controller with extremely fast single cycle processing speed and 1024K internal flash. Extended Memory features include support of unlimited read-write FRAM, 2 MB flash vault memory for application data logging, and an application key that enables the use of Danfoss developed GUIDE machine control solutions.

The MC024-118 employs an application key that enables the use of Danfoss developed PLUS+1® GUIDE machine control solutions.

Users develop MC024-118 applications with PLUS+1® GUIDE. 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)
- 24 pins: 2 individually keyed DEUTSCH DTM 12 pin connectors
- FRAM non-volatile memory
- 2 MB flash vault memory
- CE compliant
- ARM 32 bit Cortex-M3 at 120 MHz
  - 12 bit analog-to-digital converter
  - 16 bit timers/counters
- 9 to 36 V\textsubscript{DC} power supply, monitored internally
- 2 LEDs under user control
- 3 mounting alternatives
- 1 CAN 2.0 B port, the fixed range analog input can be configured as the shield pin
- Power supply for external sensors rated at 5 V\textsubscript{DC} to 300 mA regulated internally

Comprehensive technical literature is online at [www.danfoss.com](http://www.danfoss.com)
**Technical Specifications**

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supply voltage</td>
<td>9 to 36 VDC</td>
</tr>
<tr>
<td>Operating (ambient) / Programming temperature</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>IP rating (with mating connector)</td>
<td>IP 67</td>
</tr>
<tr>
<td>EMI/RFI rating</td>
<td>100 V/m</td>
</tr>
<tr>
<td>Weight</td>
<td>0.40 kg [0.88 lb]</td>
</tr>
<tr>
<td>Vibration/Shock</td>
<td>IEC 6006B-2: 64/27 test Ea</td>
</tr>
<tr>
<td>Max. current (source/sink)</td>
<td>8 A</td>
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</tbody>
</table>

14 Inputs

- 5 universal (DIN/AIN/FreqIN) that are user-defined as either
  - Analog: with configurable ranges 0 to 5.25 VDC (with over-range protection) or 0 to 36 VDC
  - Digital: pull up (5 VDC), pull down (0 VDC), or pull to center (2.5 VDC)
  - Frequency (timing): 1 Hz to 10 kHz
- 6 digital (DIN) configurable as pull up (5 VDC) or pull down (0 VDC)
- 2 analog (AIN/Temp/Rheo) 0 to 5.25 VDC or 0 to 10,000 ohm rheostat
- 1 fixed range analog (AIN/CAN shield) 0 to 5.25 VDC or CAN shield pin

4 Outputs

- 4 universal (PWMOUT/DOUT/PVGOUT) that are user-defined as either
  - Digital: (3 A), configurable as source or sink
  - PWM: (30 to 4000 Hz), configurable as open or closed loop with current control
  - Analog voltage: open loop PWM at 4000 Hz;
  - Any PWMOUT/DOUT/ PVGOUT can be used to provide reference power to one PVG valve

**Dimensions**

Mounting dimensions (mm)

![Dimensions Diagram]

**Caution**

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

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

**Pin assignments**

12-pin connectors: C2/C1

![Pin Diagram]

**Ordering Information**

<table>
<thead>
<tr>
<th>Model</th>
<th>Part Number</th>
</tr>
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<tbody>
<tr>
<td>MC024-118</td>
<td>11130921</td>
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**Related products part numbers**

<table>
<thead>
<tr>
<th>Product</th>
<th>Part Number</th>
<th>AWG</th>
</tr>
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<tbody>
<tr>
<td>CG150 CAN/USB Gateway</td>
<td>11153051</td>
<td></td>
</tr>
<tr>
<td>DEUTSCH mating connector bag assembly</td>
<td>10102023 (16 to 20 AWG)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>10100945 (20 to 24 AWG)</td>
<td></td>
</tr>
<tr>
<td>PLUS+® GUIDE Professional</td>
<td>11179523</td>
<td></td>
</tr>
</tbody>
</table>
## C2 controller 12-pin functions:
1. DIN
2. DIN/AIN/FreqIn
3. DIN/AIN/FreqIn
4. DIN/AIN/FreqIn
5. DIN/AIN/FreqIn
6. DIN/AIN/FreqIn
7. AIN/Temp/Rheo
8. AIN/Temp/Rheo
9. PWMOUT/DOUT/PVGOUT
10. PWMOUT/DOUT/PVGOUT
11. PWMOUT/DOUT/PVGOUT
12. PWMOUT/DOUT/PVGOUT

## C1 controller 12-pin functions:
1. Power ground –
2. Power supply +
3. CAN +
4. CAN –
5. AIN/CAN shield
6. DIN
7. DIN
8. 5 VDC Sensor power +
9. Sensor power ground –
10. DIN
11. DIN
12. DIN