

Data Sheet

# PLUS+1<sup>®</sup> Controllers

## MC024-018 Extended Memory



### Mobile Machine Management

Danfoss PLUS+1<sup>®</sup> 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 members of a distributed machine control system, with intelligence in every node, or as stand-alone controllers.

### Product Highlights

The MC024-018 Extended Memory Controller is pin compatible with the PLUS+1<sup>®</sup> MC024-010 Controller. It employs a Digital Signal Processor (DSP), providing the controller with extremely fast single cycle processing speed and 256K internal flash. Extended Memory features include support of unlimited read-write FRAM, 2 MB flash vault memory, and an application key that enables the use of Danfoss developed GUIDE machine control solutions.

### Application Development

The MC024-018 employs an application key that enables the use of Danfoss developed PLUS+1<sup>®</sup> GUIDE machine control solutions.

Users develop MC024-018 applications with PLUS+1<sup>®</sup> 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<sup>®</sup> GUIDE (Graphical User Integrated Development Environment)
- 24 pins: 2 individually keyed DEUTSCH DTM 12 pin connectors
- 32 bit fixed-point DSP at 150 MHz
  - 12 bit analog-to-digital converter
  - 16 bit timers/counters
- 2 MB flash vault memory
- FRAM non-volatile memory
- 9 to 36 Vdc power supply, monitored internally
- 1 CAN 2.0 B port, the fixed range analog input can be configured as the shield pin
- 2 LEDs under user control
- Power supply for external sensors rated at 5 Vdc to 300 mA and regulated internally
- 3 mounting alternatives: stack, end, or side
- CE compliant



**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

**Specifications**

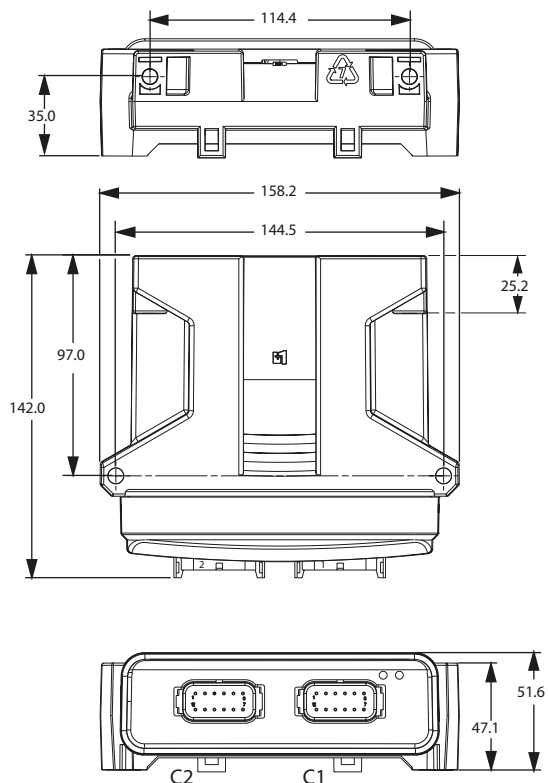
*Product parameters*

<b>Supply voltage</b>	9 to 36 Vdc
<b>Operating temperature (ambient)</b>	-40°C to 70°C [-40°F to 158°F]
<b>Storage temperature</b>	-40°C to 85°C [-40°F to 185°F]
<b>Programming temperature</b>	0°C to 70°C [32°F to 158°F]
<b>IP rating (with mating connector attached)</b>	IP 67
<b>EMI/RFI rating</b>	100 V/M
<b>Weight</b>	0.40 kg [0.88 lb]
<b>Vibration</b>	IEC 60068-2-64
<b>Shock</b>	IEC 60068-2-27 test Ea
<b>Maximum current, sourcing</b>	8 A
<b>Maximum current, sinking</b>	8 A

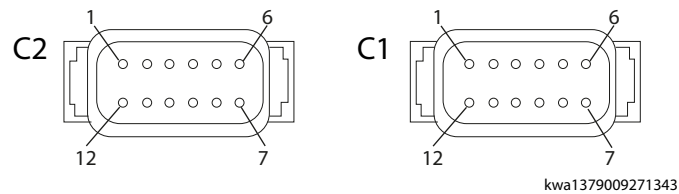
**Dimensions and pin assignments**

*Mounting dimensions and pin assignments*

Dimensions in mm [in]



*Pin connector*



Pin	Controller function	Pin	Controller function
C2-P1	DIN	C1-P1	Power ground -
C2-P2	DIN/AIN/FreqIN	C1-P2	Power supply +
C2-P3	DIN/AIN/FreqIN	C1-P3	CAN +
C2-P4	DIN/AIN/FreqIN	C1-P4	CAN -
C2-P5	DIN/AIN/FreqIN	C1-P5	AIN/CAN shield
C2-P6	DIN/AIN/FreqIN	C1-P6	DIN
C2-P7	AIN/Temp/Rheo	C1-P7	DIN
C2-P8	AIN/Temp/Rheo	C1-P8	5 Vdc sensor power +
C2-P9	PWMOUT/DOUT/ PVGOUT	C1-P9	Sensor power ground -
C2-P10	PWMOUT/DOUT/ PVGOUT	C1-P10	DIN
C2-P11	PWMOUT/DOUT/ PVGOUT	C1-P11	DIN
C2-P12	PWMOUT/DOUT/ PVGOUT	C1-P12	DIN

**⚠ 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.



**Ordering information**

*Product part number*

<b>MC024-018</b>	11106664
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*Related products part numbers*

<b>CG150 CAN/USB Gateway</b>	11153051	
<b>DEUTSCH mating connector bag assembly</b>	10102023 (16 to 20 AWG)	10100945 (20 to 24 AWG)
<b>PLUS+1<sup>®</sup> GUIDE Professional</b>	11179523	

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