

Data Sheet

PLUS+1[®] Controllers

MC024-02E



Mobile Machine Management

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.

Product Highlights

The MC024-02E employs a Digital Signal Processor (DSP), providing the controller with extremely fast single cycle processing speed and 128K internal flash program memory. This variant of the MC024 features a nominal 8 Vdc power supply for external sensors.

Application development

Users develop MC024-02E 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
- 32 bit fixed-point DSP running at 150 MHz
 - 12 bit analog-to-digital converter
 - 16 bit timers/counters
- 11 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
- Power supply for external sensors rated at up to 8 Vdc (depending on sensor load)
- 2 LEDs under user control
- 3 mounting alternatives: stack, end, or side
- CE compliant

[Comprehensive technical literature online at powersolutions.danfoss.com](http://powersolutions.danfoss.com)



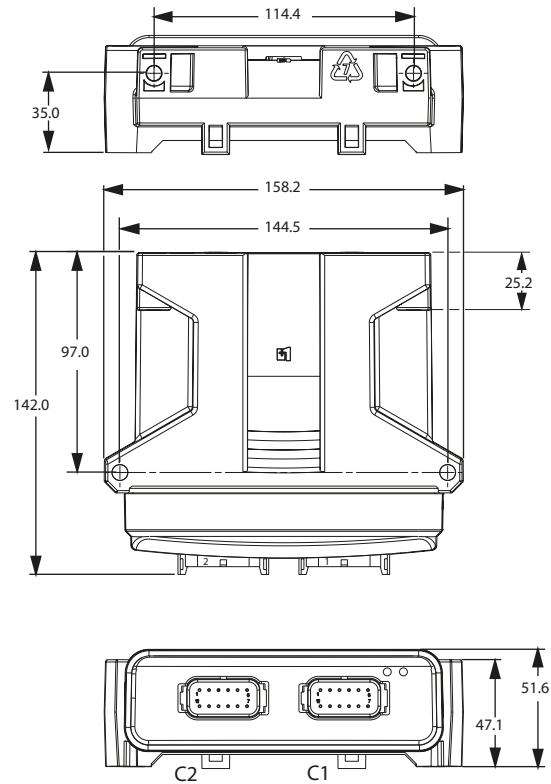
8 Inputs

- (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
- (2) digital (DIN) configurable as pull up (5 Vdc), pull down (0 Vdc) or pull to center (2.5 Vdc)
- (1) fixed range analog (AIN/CAN shield) 0 to 5.25 Vdc or CAN shield pin

8 Outputs

- (8) 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 in millimeters



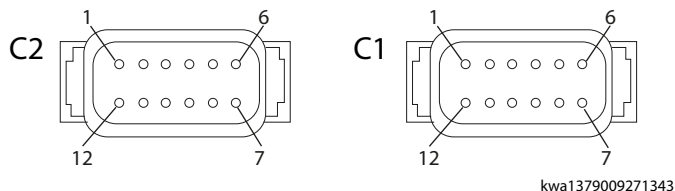
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Caution

Warranty will be voided if device is opened.
 Device is not field serviceable. Do not open the device.

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

12 pin connectors - C2 'B' key (black) and C2 12 C1 'A' key (gray)



12 pin connectors - C2 and C1

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



Product parameters

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

Sensor Power Supply Specification

Sensor power output (Vdc)	Minimum controller supply voltage (Vdc) for selected sensor loads		
	100 mA sensor load	200 mA sensor load	250 mA sensor load
8	11.6	12.4	12.8
7	10.5	11.3	11.6

Ordering information

Product part number

MC024-02E	11085641
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Related products part numbers

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

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