



Data Sheet

PLUS+1[®] Controller

MC024-01A



Mobile Machine Management

The MC024-01A is an element of the flexible, powerful, expandable, and affordable PLUS+1 family of mobile machine management products. This device is a general-purpose controller that is 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 MC024-01A 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 10 Vdc power supply for external sensors and has an application key that enables the use of Danfoss developed GUIDE machine control solutions.

Application Development

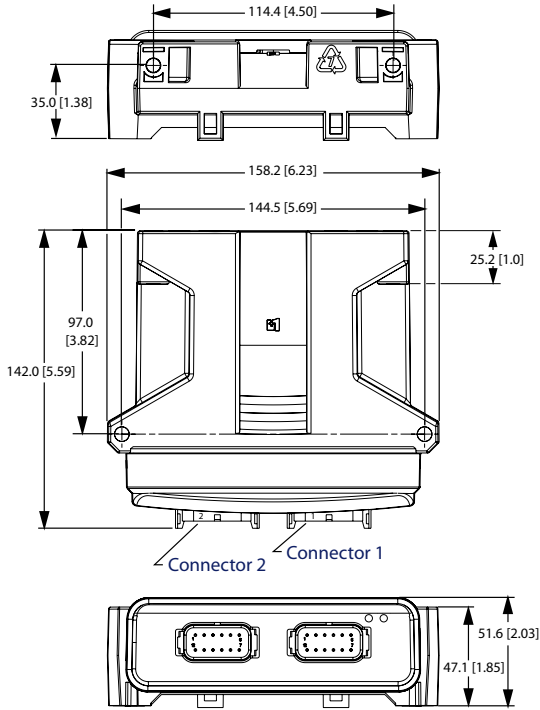
Users develop MC024-01A applications with PLUS+1 GUIDE software. This Microsoft[®] Windows[®] based development environment features a user-friendly, field proven, icon-based graphical programming tool, application downloader, and service/diagnostic tool.

Features

- User-programmable with 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
- 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), pull down (0 Vdc) or pull to center (2.5 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/DOOUT/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/DOOUT/PVGOUT can be used to provide reference power to one PVG valve
- 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
- Regulated power supply for external sensors rated at up to 10 Vdc (depending on sensor load)
- 2 LEDs under user control
- 3 mounting alternatives: stack, end, or side
- Contains application key required to run Danfoss developed machine control application software
- CE compliant

Dimensions and Pin Assignments

MC024-01A Mounting Dimensions in Millimeters [Inches]



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

Specifications

Product Parameters

Supply voltage, minimum	Refer to the <i>Sensor Power Supply Specification</i> 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

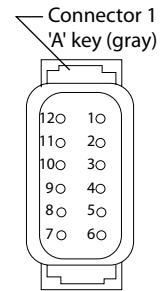
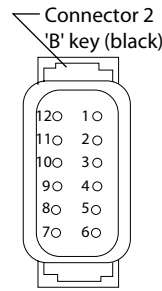
MC024-01A 24 Pin Connector

Connector 2

Pin	Controller function
C2-P1	DIN
C2-P2	DIN/AIN/FreqIN
C2-P3	DIN/AIN/FreqIN
C2-P4	DIN/AIN/FreqIN
C2-P5	DIN/AIN/FreqIN
C2-P6	DIN/AIN/FreqIN
C2-P7	AIN/Temp/Rheo
C2-P8	AIN/Temp/Rheo
C2-P9	PWMOUT/DOUT/PVGOUT
C2-P10	PWMOUT/DOUT/PVGOUT
C2-P11	PWMOUT/DOUT/PVGOUT
C2-P12	PWMOUT/DOUT/PVGOUT

Connector 1

Pin	Controller function
C1-P1	Power ground -
C1-P2	Power supply +
C1-P3	CAN +
C1-P4	CAN -
C1-P5	AIN/CAN shield
C1-P6	DIN
C1-P7	DIN
C1-P8	10 Vdc sensor power +
C1-P9	Sensor power ground -
C1-P10	DIN
C1-P11	DIN
C1-P12	DIN



Use care when wiring mating connector. Above pinouts are for device pins.

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	300 mA sensor load
10	14.2	15.6	15.9
9	12.4	13.5	13.7
8	10.9	11.7	12.1

Product Part Number

MC024-01A	11030728
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Related Products Part Numbers

CG150 CAN/USB Gateway	10104136	
Deutsch® mating connector bag assembly	10102023 (16 to 20 AWG)	10100945 (20 to 24 AWG)
PLUS+1 GUIDE single user license	10101000	

Comprehensive technical information: *PLUS+1 Controller Family Technical Information, 520L0719*
 MC024-01A Application Program Interface (API) Document
 Danfoss product literature on line at: www.danfoss.com

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