



Data Sheet

PLUS+1® Controllers

MC024-110 and MC024-112

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 MC024-110 employs a 32 bit Cortex-M3 Processor, providing the controller with extremely fast single cycle processing speed and 512K internal flash. The MC024-112 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

The MC024-112 employs an application key that enables the use of Danfoss developed PLUS+1® GUIDE machine control solutions. The same PLUS+1® GUIDE HWD file is used with both controllers.

Users develop MC024-112 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
- ARM 32 bit Cortex-M3 RUNNING AT 120 MHz
 - 12 bit analog-to-digital converter
 - 16 bit timers/counters
- 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
- Power supply for external sensors rated at 5 Vdc to 300 mA and regulated internally
- 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

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

Supply voltage	9 to 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	-40°C to 70°C [-40°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

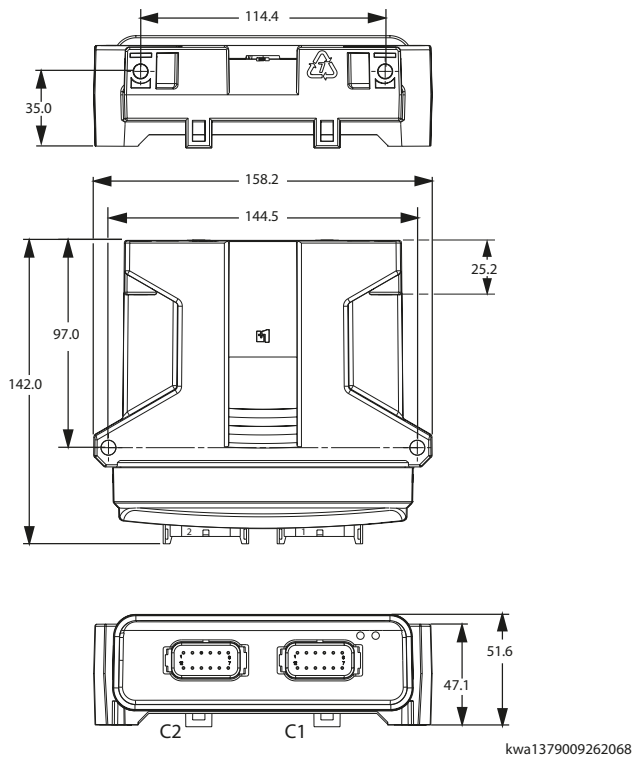
Data Sheet

MC024-110 and MC024-112

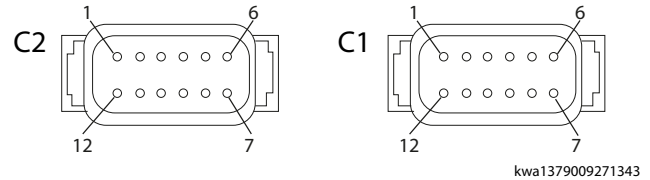
Dimensions and pin assignments

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/DOOUT/ PVGOUT	C1-P9	Sensor power ground -
C2-P10	PWMOUT/DOOUT/ PVGOUT	C1-P10	DIN
C2-P11	PWMOUT/DOOUT/ PVGOUT	C1-P11	DIN
C2-P12	PWMOUT/DOOUT/ 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.

**Niehues**

Hydraulik · Automation

ENGINEERING
TOMORROW**Ordering information***Product part number*

MC024-110	11130919
MC024-112	11130920

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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