

Data Sheet

PLUS+1[®] Controllers

MC012-020 and 022



Mobile machine management

MC012-020 and 022 controllers are elements of the flexible, powerful, expandable, and affordable PLUS+1[®] 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

Both controllers employ a Digital Signal Processor (DSP), providing the controllers with extremely fast single-cycle processing speed and 128K internal flash. Both controllers feature multifunction input pins that are capable of receiving inputs from RTD temperature sensors. The MC012-022 has an application key that enables the use of Danfoss developed GUIDE machine control solutions. The same GUIDE HWD file is used with all four controllers.

Application development

Users develop MC012-020 and 022 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)
- 32 bit fixed-point DSP running at 150 MHz
 - 12 bit analog-to-digital converter
 - 16 bit timers/counters
- 12 pin DEUTSCH DTM connector
- 9 to 36 Vdc power supply, monitored internally
- 1 CAN 2.0B port, the fixed range analog input can be configured as the shield pin
- Power supply for external sensors rated at 5 Vdc to 100 mA and regulated internally
- 2 LEDs under user control
- 3 mounting alternatives: stack, end , or side
- The MC012-022 controller contains the application key required to run Danfoss developed machine control application software
- CE compliant

Comprehensive technical literature online
at powersolutions.danfoss.com



4 Inputs

- (3) universal (DIN/AIN/FreqIN/Rheo) 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
 - *Resistance*: 0 to 10,000 ohm
- (1) fixed range analog (AIN/CAN shield) 0 to 5.25 Vdc or CAN shield pin

- *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

2 Outputs

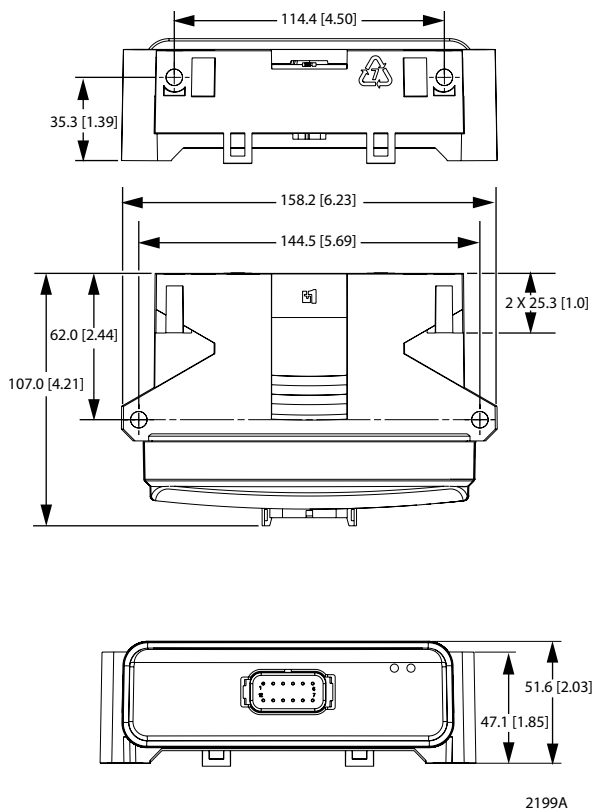
- (2) universal (PWMOUT/DOUT/PVGOUT) that are user-defined as either:

Specifications

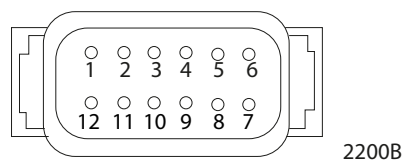
Product parameters

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	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

Dimensions and pin assignments



12 Pin Connector



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

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

Caution

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



Ordering information

Product part number

MC012-020	11085514
MC012-022	11085515

Related products part numbers

CG150 CAN/USB Gateway	10104136	
DEUTSCH mating connector bag assembly	10102025 (16 to 20 AWG)	10100944 (20 to 24 AWG)
PLUS+1[®] GUIDE single user license	10101000	

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