



Data Sheet

PLUS+1[®] Controllers

MC050-110 and MC050-112



Mobile Machine Management

The MC050-110 and MC050-112 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

The MC050-110 employs a 32 bit Cortex-M3 Processor, providing the controller with extremely fast single cycle processing speed and 512K internal flash. The MC050-112 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.

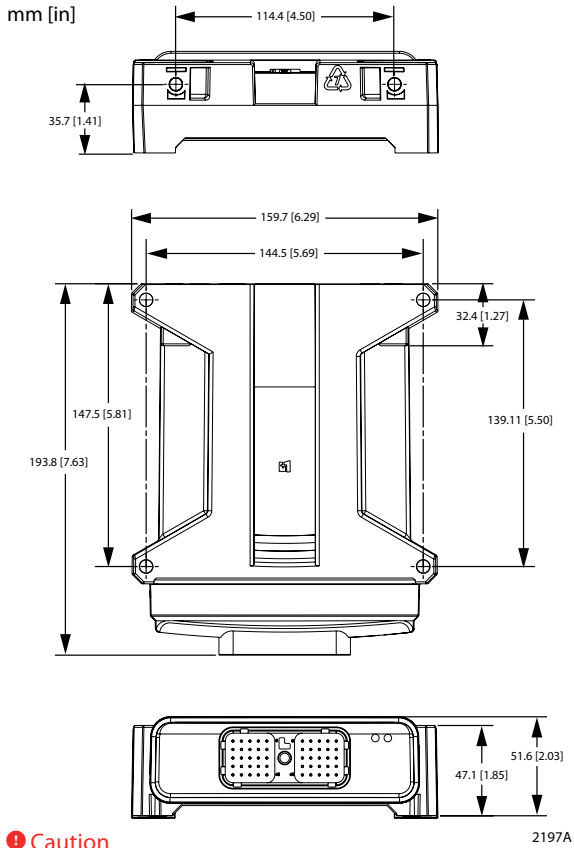
Application Development

Users develop MC050-110 and MC050-112 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)
- 50 pins: (1) Deutsch® DRC connector
- ARM 32 bit Cortex-M3 running at 120 MHz
- FRAM non-volatile memory
- 12 bit analog-to-digital converter
- 22 inputs
 - (6) 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)
 - (4) digital/analog (DIN/AIN) that are user-defined as either:
 - Digital:* pull up (5 Vdc), pull down (0 Vdc) or pull to center (2.5 Vdc);
 - Analog:* 0 to 5.25 Vdc or 0 to 36 Vdc
 - (4) analog (AIN/Temp/Rheo) 0 to 5.25 Vdc or 0 to 10,000 ohm rheostat
 - (2) fixed range analog (AIN/CAN shield) 0 to 5.25 Vdc or CAN shield pin
- 16 outputs
 - (10) 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
 - (3) digital (DOOUT) (3 A), configurable as source only
 - (3) digital/PVG power supply (DOOUT/PVG Pwr) (3 A), user-configurable; one DOOUT/PVG Pwr will power up to three PVGs
- 9 to 36 Vdc power supply, monitored internally
- 2 CAN 2.0 B ports, the fixed range analog input can be configured as the shield pin
- Power supply for external sensors rated at 5 Vdc to 450 mA, monitored and regulated internally
- 2 LEDs under user control
- 3 mounting alternatives: stack, end, or side
- MC050-112 contains application key required to run Danfoss developed machine control application software
- CE compliant

MC050-110 and MC050-012
Dimensions and Pin Assignments



Caution
PCB damage may occur. All device power supply + pins must be connected to battery +.

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

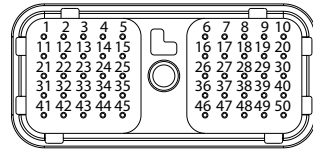
Specifications

| | |
|---|--------------------------------|
| 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 | 0.53 kg [1.16 lb] |
| Vibration | IEC 60068-2-64 |
| Shock | IEC 60068-2-27 test Ea |
| Maximum current, sourcing | 40 A |
| Maximum current, sinking | 8 A |

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MC050-110 and MC050-112 50 Pin Connector



Connector

2198B

| Pin | Controller function | Pin | Controller function |
|--------|-----------------------|---------|---------------------|
| C1-P1 | Power ground - | C1-P26* | DIN/AIN/FreqIN |
| C1-P2 | Power supply + | C1-P27 | AIN/Temp/Rheo |
| C1-P3 | CAN0 + | C1-P28 | AIN/Temp/Rheo |
| C1-P4 | CAN0 - | C1-P29 | AIN/Temp/Rheo |
| C1-P5 | AIN/CAN0 shield | C1-P30 | AIN/Temp/Rheo |
| C1-P6 | DIN | C1-P31 | DOOUT |
| C1-P7 | DIN | C1-P32 | DOOUT |
| C1-P8 | 5 Vdc sensor power + | C1-P33 | DOOUT |
| C1-P9 | Sensor power ground - | C1-P34 | DOOUT/PVG Pwr |
| C1-P10 | DIN | C1-P35 | DOOUT/PVG Pwr |
| C1-P11 | DIN | C1-P36 | DOOUT/PVG Pwr |
| C1-P12 | DIN | C1-P37 | PWMOUT/DOOUT/PVGOUT |
| C1-P13 | DIN | C1-P38 | PWMOUT/DOOUT/PVGOUT |
| C1-P14 | DIN/AIN | C1-P39 | PWMOUT/DOOUT/PVGOUT |
| C1-P15 | DIN/AIN | C1-P40 | PWMOUT/DOOUT/PVGOUT |
| C1-P16 | DIN/AIN | C1-P41 | PWMOUT/DOOUT/PVGOUT |
| C1-P17 | DIN/AIN | C1-P42 | PWMOUT/DOOUT/PVGOUT |
| C1-P18 | DIN/AIN/FreqIN | C1-P43 | PWMOUT/DOOUT/PVGOUT |
| C1-P19 | DIN/AIN/FreqIN | C1-P44 | PWMOUT/DOOUT/PVGOUT |
| C1-P20 | CAN1 + | C1-P45 | PWMOUT/DOOUT/PVGOUT |
| C1-P21 | CAN1 - | C1-P46 | PWMOUT/DOOUT/PVGOUT |
| C1-P22 | AIN/CAN1 shield | C1-P47 | Power supply + |
| C1-P23 | DIN/AIN/FreqIN | C1-P48 | Power supply + |
| C1-P24 | DIN/AIN/FreqIN | C1-P49 | Power supply + |
| C1-P25 | DIN/AIN/FreqIN | C1-P50 | Power supply + |

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

Ordering Information

| | |
|------------------|----------|
| MC050-110 | 11130954 |
| MC050-112 | 11130955 |

| Related product | Danfoss material number | |
|--|----------------------------|----------------------------|
| CG150 CAN/USB Gateway | 10104136 | |
| Deutsch® mating connector bag assembly | 10102024 (16 to 20 AWG) | 10100946 (20 to 24 AWG) |
| PLUS+1 GUIDE single user license | 10101000 | |

Danfoss product literature on line at: www.danfoss.com

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