



Data Sheet

# PLUS+1<sup>®</sup> Extended Memory Controller MC050-018



**Mobile machine management**

The MC050-018 Extended Memory Controller is an element of the flexible, powerful, expandable and affordable PLUS+1 family of mobile machine management products. It is a general-purpose controller that is equally suited for use as an element of a distributed machine control system or as a stand-alone device.

**Product highlights**

The MC050-018 Extended Memory Controller is pin compatible with the PLUS+1 MC050-010 Controller. It employs a Digital Signal Processor (DSP), providing the controller with extremely fast single cycle processing speed and 256KB internal flash. Extended Memory features include support of unlimited read-write FRAM, 2 MB flash vault memory and an application key that enables the use of Danfoss developed GUIDE machine control solutions.

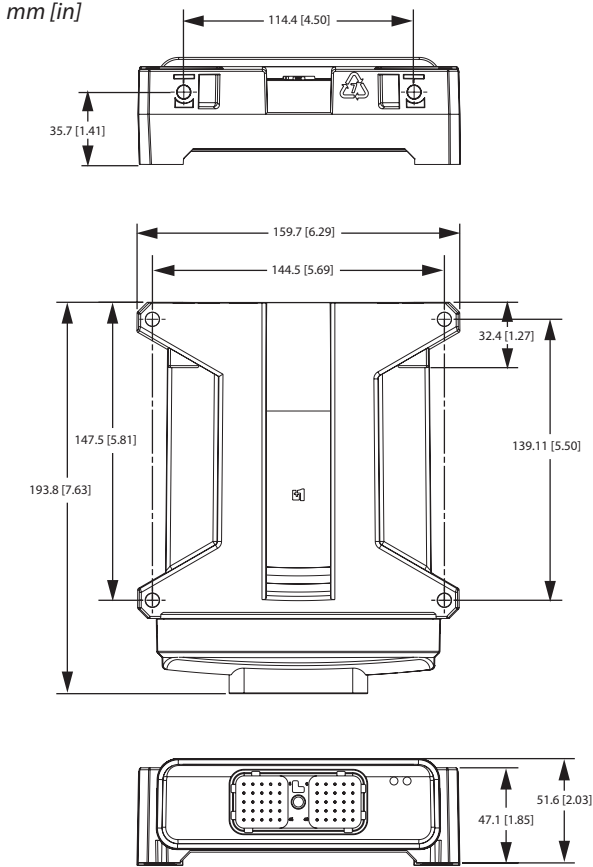
**Application development**

Users develop MC050-018 applications with PLUS+1 GUIDE. This Microsoft Windows based development environment features a user-friendly, field proven, graphical programming tool, application downloader, and service/diagnostic tool.

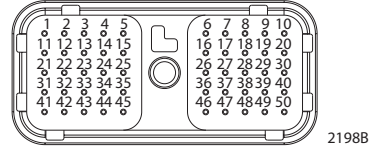
Features

- User-programmable with PLUS+1 GUIDE (Graphical User Integrated Development Environment)
- Contains application key required to run Danfoss developed machine control application software
- 50 pins: 1 Deutsch<sup>®</sup> DRC connector
- 32 bit fixed-point DSP running at 150 MHz
- 2 MB flash vault memory
- 12 bit analog-to-digital converter
- FRAM non-volatile memory
- 22 inputs
  - 6 universal (DIN/AIN/FreqIN) that are user-defined as either:
    - Analog:* With configurable ranges 0 to 5.25 Vdc 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:* With configurable ranges 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/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.
  - 3 digital (DOUT) (3 A), configurable as source only
  - 3 digital/PVG power supply (DOUT/PVG Pwr) (3 A), user-configurable; one DOUT/PVG Pwr will power up to three PVGs
- 9 to 36 Vdc power supply, monitored internally
- 2 CAN 2.0 B ports
- 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
- CE compliant

Dimensions and pin assignments



MC050-018 50 pin connector



Connector

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 +

**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.

\* Recommendation is to not use pin C1p26 as a frequency input. If used, recommendation is to disable internal filtering and use filter inside the application instead.

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

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	0.53 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

Product part number

<b>MC050-018</b>	11106656
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Related products part numbers

<b>CG150 CAN/USB Gateway</b>	10104136	
<b>DEUTSCH mating connector bag assembly</b>	10102024 (16 to 20 AWG)	10100946 (20 to 24 AWG)
<b>PLUS+1 GUIDE single user license</b>	10101000	

Danfoss product literature on line at:  
[www.danfoss.com](http://www.danfoss.com)

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