Data Sheet

PLUS+1® Extended Memory Controller MC050-128

Mobile Machine Management
The MC050-128 Extended Memory Controller 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 MC050-128 Extended Memory Controller is pin compatible with the PLUS+1 MC050-120 Controller. It employs a 32 bit Cortex-M3 Processor, providing the controller with extremely fast single cycle processing speed and 1024K internal flash. Extended Memory features include 2 MB flash vault memory for application data logging and an application key that enables the use of Danfoss developed GUIDE machine control solutions.

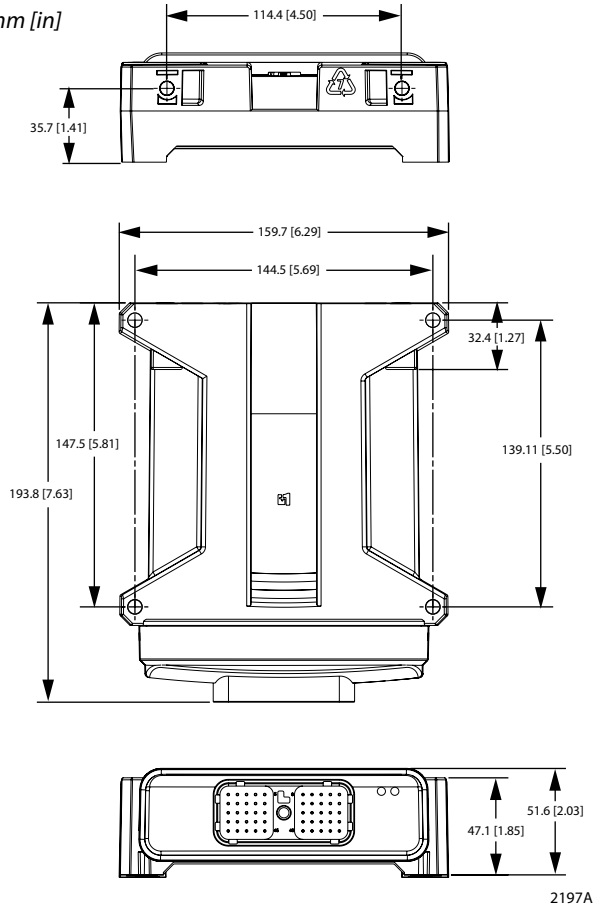
Application Development
Users develop MC050-128 applications with PLUS+1 GUIDE. This Microsoft® Windows® based development environment features a user-friendly, field proven, icon-based graphical programming tool, application downloader, and service/diagnostic tool.

Features

- User-programmable with PLUS+1 GUIDE (Graphical User Integrated Development Environment)
- Contains application key required to run Danfoss developed machine control application software
- 50 pins: 1 Deutsch® DRC connector
- ARM 32 bit Cortex-M3 running at 120 MHz
- FRAM non-volatile memory
- 2 MB flash vault memory
- 12 bit analog-to-digital converter
- 24 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
  - 10 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
  - 2 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
- 14 outputs
  - 6 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
  - 6 digital (DOUT) 3 A, configurable as source only
  - 2 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 500 mA, and regulated internally
- 2 LEDs under user control
- 3 mounting alternatives: stack, end, or side
- CE compliant

MC050-128 Dimensions and Pin Assignments

mm [in]



Caution

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

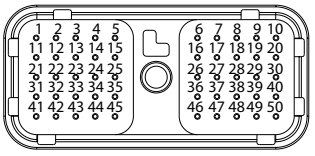
Caution

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

MC050-128 50 pin Connector



Pin	Controller function	Pin	Controller function
C1-P1	Power ground -	C1-P26	DIN/AIN/FreqIN
C1-P2	Power supply +	C1-P27	DIN/AIN/FreqIN
C1-P3	CAN0 +	C1-P28	DIN/AIN/FreqIN
C1-P4	CAN0 -	C1-P29	DIN/AIN/FreqIN
C1-P5	AIN/CAN1 shield	C1-P30	DIN/AIN/FreqIN
C1-P6	DIN	C1-P31	AIN/Temp/Rheo
C1-P7	DIN	C1-P32	AIN/Temp/Rheo
C1-P8	5 Vdc sensor power +	C1-P33	DOUT
C1-P9	Sensor power ground -	C1-P34	DOUT
C1-P10	DIN	C1-P35	DOUT
C1-P11	DIN	C1-P36	DOUT
C1-P12	DIN	C1-P37	DOUT
C1-P13	DIN	C1-P38	DOUT
C1-P14	DIN	C1-P39	DOUT/PVG Pwr
C1-P15	DIN	C1-P40	DOUT/PVG Pwr
C1-P16	DIN	C1-P41	PWMOUT/DOUT/PVGOUT
C1-P17	DIN	C1-P42	PWMOUT/DOUT/PVGOUT
C1-P18	DIN/AIN	C1-P43	PWMOUT/DOUT/PVGOUT
C1-P19	DIN/AIN	C1-P44	PWMOUT/DOUT/PVGOUT
C1-P20	CAN1 +	C1-P45	PWMOUT/DOUT/PVGOUT
C1-P21	CAN1 -	C1-P46	PWMOUT/DOUT/PVGOUT
C1-P22	AIN/CAN2 shield	C1-P47	Power supply +
C1-P23	DIN/AIN	C1-P48	Power supply +
C1-P24	DIN/AIN	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

MC050-128	11130961

Related products	**Danfoss part numbers**	
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	10101079	

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

Danfoss
Power Solutions (US) Company
2800 East 13th Street
Ames, IA 50010, USA
Phone: +1 515 239 6000

Danfoss
Power Solutions GmbH & Co. OHG
Krokamp 35
D-24539 Neumünster, Germany
Phone: +49 4321 871 0

Danfoss
Power Solutions ApS
Nordborgvej 81
DK-6430 Nordborg, Denmark
Phone: +45 7488 2222

Danfoss
Power Solutions Trading (Shanghai) Co. Ltd.
Building #22, No. 1000 Jin Hai Rd
Jin Qiao, Pudong New District
Shanghai, China 201206
Phone: +86 21 3418 5200