

Data Sheet

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

## MC050-128



### Mobile machine management

The MC050-128 Extended Memory controllers are elements of the flexible, powerful, expandable, and affordable PLUS+1<sup>®</sup> 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 MC050-128 Extended Memory Controller is pin compatible with the PLUS+1<sup>®</sup> 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 Extended Memory applications with PLUS+1<sup>®</sup> GUIDE. This Microsoft<sup>®</sup> Windows<sup>®</sup> 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<sup>®</sup> 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
- 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 MB flash vault memory
- 2 LEDs under user control
- 3 mounting alternatives: stack, end, or side
- MC050-128 contains application key required to run Danfoss developed machine control application software
- CE compliant

Comprehensive technical literature is online at [www.danfoss.com](http://www.danfoss.com)

**24 inputs**

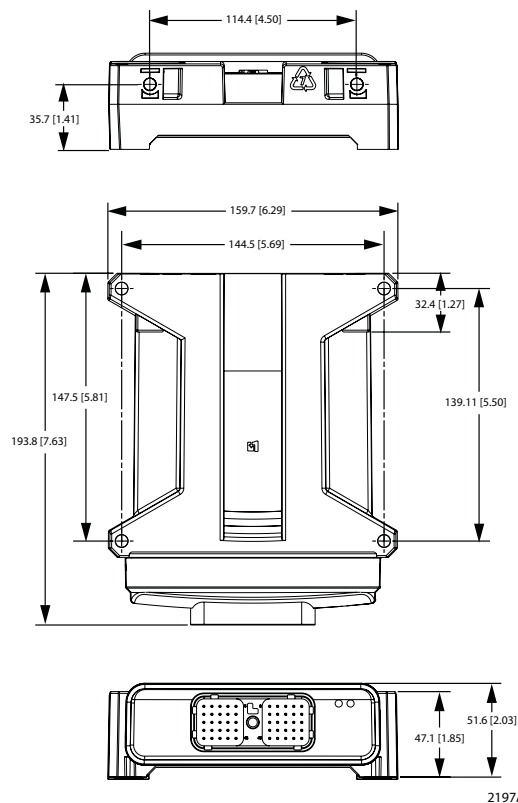
- 6 universal (DIN/AIN/FreqIN) that are user-defined as either:
  - Analog: with configurable ranges 0 to 5.25 Vdc (with over range protection) or 0 to 36 Vdc
  - Digital: pull up (5 Vdc), pull down (0 Vdc) or pull to center (2.5 Vdc)
  - Frequency (timing): 1 Hz to 10 kHz
- 10 digital (DIN) configurable 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

**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

**Dimensions**

mm [in]



**! Caution**

PCB damage may occur. All device power supply + pins must be connected to battery +. This device is not field serviceable. Opening the device housing will void the warranty.

**Technical specifications**

<b>Supply voltage</b>	9 to 36 Vdc
<b>Operating temperature (ambient)</b>	-40°C to 70°C [-40°F to 158°F]
<b>Storage temperature</b>	-40°C to 85°C [-40°F to 185°F]
<b>Programming temperature</b>	-40°C to 70°C [-40°F to 158°F]
<b>IP rating (with mating connector attached)</b>	IP 67
<b>EMI/RFI rating</b>	100 V/m
<b>Weight</b>	0.53 kg [1.16 lb]
<b>Vibration</b>	IEC 60068-2-64
<b>Shock</b>	IEC 60068-2-27 test Ea
<b>Maximum current, sourcing</b>	40 A
<b>Maximum current, sinking</b>	8 A

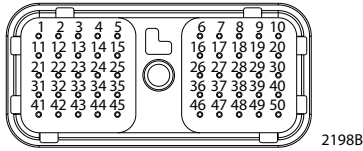
Related products	Danfoss part numbers	
CG150 CAN/USB gateway	10104136	
Deutsch® mating connector bag assembly	10102024 (16 to 20 AWG)	10100946 (20 to 24 AWG)
PLUS+1® GUIDE single user license	10101079	

**Ordering information**

<b>MC050-128</b>	11130961
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## Pin information

### 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 +