ENGINEERING TOMORROW

Data Sheet

PLUS+1® Controllers
MC050-155 and MC050-15B

Mobile machine management

The MC050-155 and MC050-15B 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 32 bit Cortex-M3 Processor, providing the controllers with extremely fast single cycle processing speed and 512K internal flash. Both controllers feature three CAN ports, one 1.66 and one 3.3 or 5 volt regulated sensor supply. The MC050-15B 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 MC050-155 and MC050-15B 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
- 9 to 36 Vdc power supply, monitored internally
- 3 CAN 2.0 B ports, the fixed range analog inputs can be used as the shield pin
- Power supply for external sensors, monitored and regulated internally
  - 1.6 Vdc rated at 500 mA
  - 3.3 Vdc rated at 450 mA
  - 5.0 Vdc rated at 450 mA
- 2 LEDs under user control
- 3 mounting alternatives: stack, end, or side
- MC050-15B contains application key required to run Danfoss developed machine control application software
- CE compliant

Comprehensive technical literature is online at *www.danfoss.com*

36 inputs

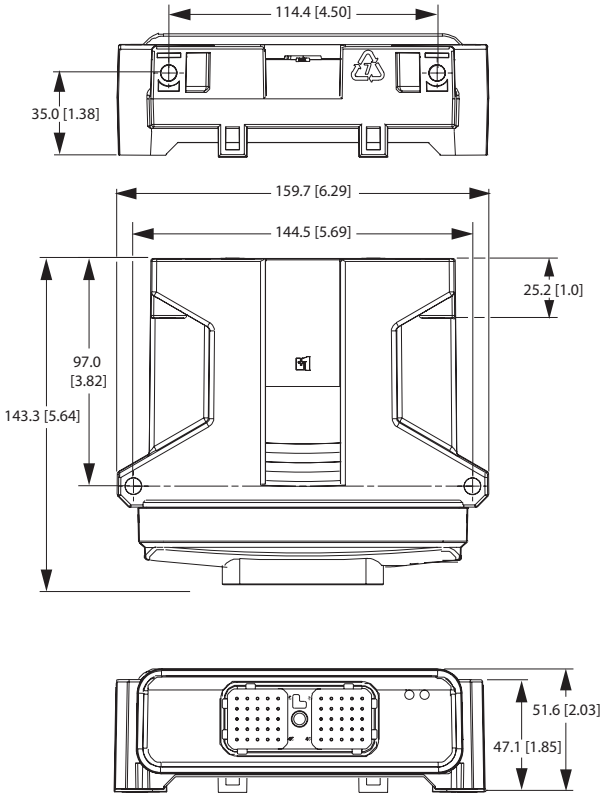
- 4 universal (DIN/AIN/FreqIN) that are user-defined as either:
  - Analog: with configurable ranges 0 to 5.25 Vdc (with over range protection) or 0 to 36 Vdc
  - Digital: pull up (5 Vdc), pull down (0 Vdc) or pull to center (2.5 Vdc)
  - Frequency (timing): 1 Hz to 10 kHz
- 29 digital/analog (DIN/AIN)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

3 outputs

- 2 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
- 1 digital/PVG Pwr (DOUT/PVG Pwr) sourcing only one DOUT/PVG Pwr will power up to 3 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

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	0.40 kg [0.88 lb]
Maximum current, sourcing	8 A
Maximum current, sinking	6 A

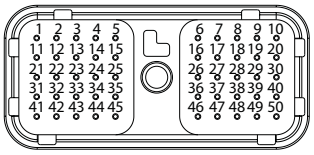
Related product	Danfoss material number	
CG150 CAN/USB Gateway	10104136	
DEUTSCH mating connector bag assembly	10102024 (16 to 20 AWG)	10100946 (20 to 24 AWG)
PLUS+1® GUIDE single user license	10101079	

Ordering information

MC050-155	11130958
MC050-15B	11130959

Pin information

50-pin connector



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Pin	Controller function	Pin	Controller function
C1-P1	Power ground -	C1-P26	DIN/AIN
C1-P2	Power supply +	C1-P27	DIN/AIN
C1-P3	CAN0+	C1-P28	DIN/AIN
C1-P4	CAN0-	C1-P29	DIN/AIN
C1-P5	AIN/CAN0 shield	C1-P30	DOUT/PVG Pwr
C1-P6	CAN1+	C1-P31	DIN/AIN
C1-P7	CAN1-	C1-P32	DIN/AIN
C1-P8	3.3/5 Vdc sensor power +	C1-P33	DIN/AIN
C1-P9	Sensor power ground -	C1-P34	DIN/AIN
C1-P10	1.66 Vdc sensor power +	C1-P35	DIN/AIN
C1-P11	CAN2+	C1-P36	DIN/AIN
C1-P12	CAN2-	C1-P37	DIN/AIN
C1-P13	AIN/CAN1 shield	C1-P38	DIN/AIN
C1-P14	AIN/CAN2 shield	C1-P39	DIN/AIN
C1-P15	DIN/AIN	C1-P40	PWMOUT/ DOUT/PVGOUT
C1-P16	DIN/AIN	C1-P41	DIN/AIN
C1-P17	DIN/AIN	C1-P42	DIN/AIN
C1-P18	DIN/AIN	C1-P43	DIN/AIN
C1-P19	DIN/AIN	C1-P44	DIN/AIN
C1-P20	DIN/AIN	C1-P45	DIN/AIN
C1-P21	DIN/AIN	C1-P46	DIN/AIN/FreqIN
C1-P22	DIN/AIN	C1-P47	DIN/AIN/FreqIN
C1-P23	DIN/AIN	C1-P48	DIN/AIN/FreqIN
C1-P24	DIN/AIN	C1-P49	DIN/AIN/FreqIN
C1-P25	DIN/AIN	C1-P50	PWMOUT/ DOUT/PVGOUT