ENGINEERING TOMORROW

Data Sheet

PLUS+1® Controllers
MC088-015 and MC088-01B

Mobile Machine Management

Danfoss PLUS+1® controllers are elements of the flexible, powerful, expandable, and affordable family of mobile machine management products. These devices are general-purpose controllers that are 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 MC088-015 and MC088-01B controllers employ a Digital Signal Processor (DSP), providing the controllers with extremely fast single cycle processing speed and 256K internal flash. These controllers feature 2 MB of serial flash vault memory reserved for the application log feature of PLUS+1® GUIDE software.

Application development

The MC088-01B 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.

Users develop MC088-015 and MC088-01B 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)
- 32 bit fixed-point DSP running at 150 MHz
- 12 bit analog-to-digital converter
- 2 MB serial flash vault memory
- 1 independent ECU power supply, 9 to 36 Vdc
- 4 independent power supplies for powering output pins, 9 to 36 Vdc
- 2 CAN 2.0B ports, the fixed range analog (AIN/CAN shield) pin may be configured as a shield pin
- Regulated 5 Vdc power supply for external sensors rated at 500 mA
- 2 LEDs under user control
- CE compliant

Comprehensive technical literature online at *powersolutions.danfoss.com*

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88 pins

- 1 DEUTSCH DRC26-50 connector
- 1 DEUTSCH DRC26-38 connector

42 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
- 18 digital (DIN) configurable as pull up (5 Vdc), pull down (0 Vdc)
- 4 digital/analog (DIN/AIN). Digital inputs have the same characteristics as DIN pins, analog input ranges are user configurable as 0 to 5.25 Vdc or 0 to 36 Vdc
- 8 analog (AIN/Temp/Rheo) configurable as 0 to 5.25 Vdc or 0 to 10000 Ohm range
- 4 digital/analog/current (DIN/AIN/4-20 ma IN). Digital inputs have the same characteristics as DIN pins; Analog input ranges are configurable as 0 to 5.25 Vdc or 0 to 36 Vdc; inputs can be configured to measure current with a 4 to 20 mA range
- 2 fixed range analog (AIN/CAN shield) configured as 0 to 5.25 Vdc or CAN shield pin

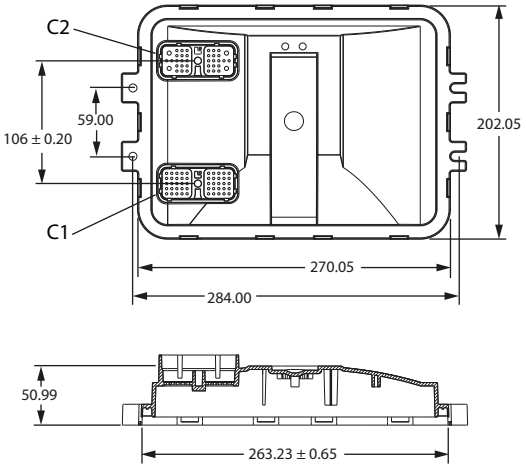
32 outputs

- Outputs are powered by four independent power supply pins
- 13 digital (DOUT) 3 A configurable as source only
- 6 digital (HDOUT) 6 A configurable as source only
- 3 digital/PVG power supply (DOUT/PVG Pwr) 3 A configured to be either DOUT or PVG supply power (one DOUT/PVG Pwr pin will power up to three PVGs)
- 10 universal (PWM/DOUT/PVGOUT) configured to be either
  - Digital: (3 A) source or sink
  - PWM: (3 A, 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

Caution

Warranty will be voided if device is opened. Device is not field serviceable. Do not open the device.

Dimensions in millimeters



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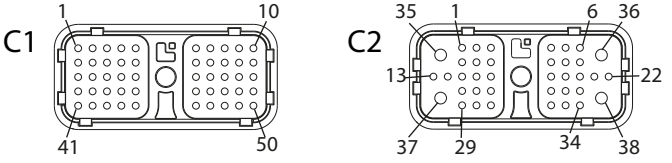
Use care when wiring mating connector. Pinouts are for device pins.

50 pin - C1 and 38 pin - C2 connectors



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50 pin connector - C1

Pin	Controller function	Pin	Controller function
C1-P1	CPU power ground -	C1-P26	DIN/AIN/FreqIN
C1-P2	CPU 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	DOUT (3 A –Pwr = C2P35)
C1-P7	DIN	C1-P32	DOUT (3 A –Pwr = C2P35)
C1-P8	5 Vdc sensor power +	C1-P33	DOUT (3 A –Pwr = C2P35)
C1-P9	Sensor power ground -	C1-P34	DOUT/PVG Pwr (3 A –Pwr = C2P35)
C1-P10	DIN	C1-P35	DOUT/PVG Pwr (3 A –Pwr = C2P36)
C1-P11	DIN	C1-P36	DOUT/PVG Pwr (3 A –Pwr = C2P36)
C1-P12	DIN	C1-P37	PWMOUT/DOUT/PVG OUT (3 A—Pwr = C2P35)
C1-P13	DIN	C1-P38	PWMOUT/DOUT/PVG OUT (3 A—Pwr = C2P35)
C1-P14	DIN/AIN	C1-P39	PWMOUT/DOUT/PVG OUT (3 A—Pwr = C2P35)
C1-P15	DIN/AIN	C1-P40	PWMOUT/DOUT/PVG OUT (3 A—Pwr = C2P35)
C1-P16	DIN/AIN	C1-P41	PWMOUT/DOUT/PVG OUT (3 A—Pwr = C2P36)
C1-P17	DIN/AIN	C1-P42	PWMOUT/DOUT/PVG OUT (3 A—Pwr = C2P36)
C1-P18	DIN/AIN/FreqIN	C1-P43	PWMOUT/DOUT/PVG OUT (3 A—Pwr = C2P36)
C1-P19	DIN/AIN/FreqIN	C1-P44	PWMOUT/DOUT/PVG OUT (3 A—Pwr = C2P36)
C1-P20	CAN1+	C1-P45	PWMOUT/DOUT/PVG OUT (3 A—Pwr = C2P36)
C1-P21	CAN1-	C1-P46	PWMOUT/DOUT/PVG OUT (3 A—Pwr = C2P36)
C1-P22	AIN/CAN1 shield	C1-P47	DIN/AIN//4-20 mA IN
C1-P23	DIN/AIN/FreqIN	C1-P48	DIN/AIN//4-20 mA IN
C1-P24	DIN/AIN/FreqIN	C1-P49	DIN/AIN//4-20 mA IN
C1-P25	DIN/AIN/FreqIN	C1-P50	DIN/AIN//4-20 mA IN

38 pin connector - C2

Pin	Controller function	Pin	Controller function
C2-P1	DOUT (3 A –Pwr = C2P37)	C2-P20	Power ground -
C2-P2	DOUT (3 A –Pwr = C2P37)	C2-P21	DIN
C2-P3	DOUT (3 A –Pwr = C2P37)	C2-P22	HDOUT (6 A—Pwr = C2P38)
C2-P4	DOUT (3 A –Pwr = C2P37)	C2-P23	DIN
C2-P5	DOUT (3 A –Pwr = C2P37)	C2-P24	DIN
C2-P6	DOUT (3 A –Pwr = C2P38)	C2-P25	DIN
C2-P7	DOUT (3 A –Pwr = C2P37)	C2-P26	DIN
C2-P8	AIN/Temp/Rheo	C2-P27	DIN
C2-P9	AIN/Temp/Rheo	C2-P28	DIN
C2-P10	AIN/Temp/Rheo	C2-P29	HDOUT (6 A –Pwr = C2P37)
C2-P11	AIN/Temp/Rheo	C2-P30	DOUT (2 A –Pwr = C2P37)
C2-P12	DOUT (3 A –Pwr = C2P38)	C2-P31	HDOUT (6 A –Pwr = C2P38)
C2-P13	HDOUT (6 A –Pwr = C2P37)	C2-P32	HDOUT (6 A –Pwr = C2P38)
C2-P14	Power ground -	C2-P33	DOUT (2 A –Pwr = C2P37)
C2-P15	DIN	C2-P34	HDOUT (6 A –Pwr = C2P38)
C2-P16	DIN	C2-P35*	Power supply + (20 A)
C2-P17	DIN	C2-P36[1]	Power supply + (22 A)
C2-P18	DIN	C2-P37**	Power supply + (28 A)
C2-P19	DIN	C2-P38[2]	Power supply + (28 A)

* Power supply + pin C2-P35 and C2-P36 should each be protected with a 25 A fuse.

** C2-P37 and C2-P38 should each be protected with a 30 A fuse.

Product parameters

Supply voltage	9 to 36 V_{DC}
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	964 g [2.125 lb]
Maximum current, sourcing	100 A (with all power supply and pins connected)
Maximum current, sinking	24 A (with all ground pins connected)

Ordering information

Product part number

MC088-015	10105470
MC088-01B	11071592

Related products part numbers

CG150 CAN/USB Gateway	11153051	
DEUTSCH mating connector bag assembly	11071844 (16 to 20 AWG)	10105649 (20 to 24 AWG)
PLUS+1® GUIDE Professional	11179523	

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