

Data Sheet

PLUS+1[®] Controllers

MC090-020 and MC090-022



Mobile Machine Management

These general purpose modular housings, connectors, and control circuitry are designed as flexible, expandable, powerful, cost effective stand alone modules for smaller machined systems or as total machine management systems with intelligence in every node. These modules communicate with one another and other intelligent systems over a machine Controller Area Network (CAN) data bus.

Product Highlights

The MC090 controller employs a Digital Signal Processor (DSP), providing the controller with extremely fast single cycle processing speed and 1.3 MB internal flash. Features include 2 MB of serial flash vault memory reserved for the application log feature of PLUS+1 GUIDE software.

The MC090-022 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.

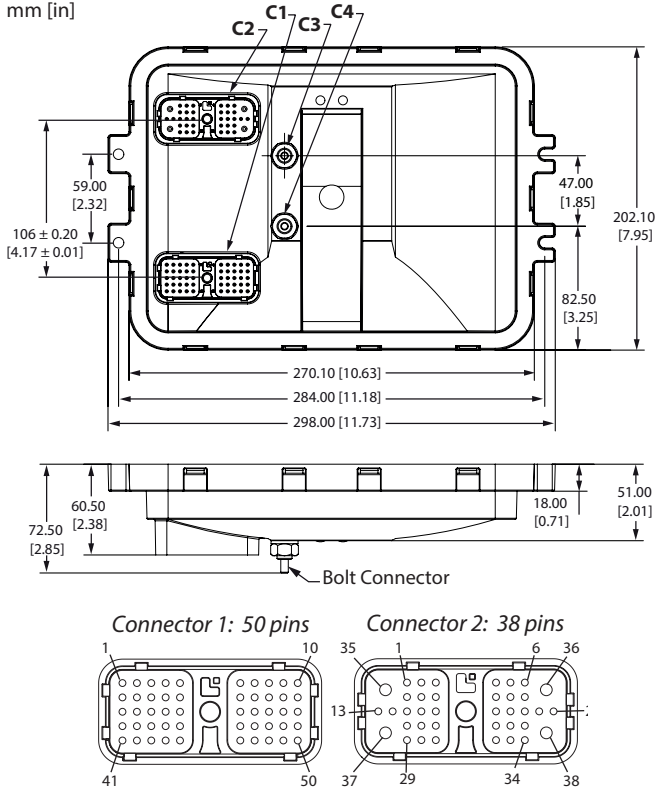
Application Development

PLUS+1[®] hardware modules have input or output pins that support multiple functions. Pins that support multiple input or output types are user-configurable using PLUS+1 GUIDE software. 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)
- 90 pins
 - 1: Deutsch[®] DRC26-50 connector
 - 1: Deutsch[®] DRC26-38 connector
 - 2: M5 power bolts
- 32 bit fixed-point DSP running at 150 MHz
- 12 bit analog-to-digital converter
- 2 MB serial flash vault memory
- 42 user-defined inputs
 - 18: Digital (DIN)
 - 11: Digital/Analog (DIN/AIN)
 - 4: Rheostat (Rheo)
 - 8: Digital with StartUp Function (DIN Start Up)
 - 1: Analog/CAN shield (AIN/CAN shield) configured as 0 to 5.25 Vdc or CAN shield pin
- 29 user-defined outputs
 - 2: 0.5 A Digital: Configured as source only (DOUT 0.5 A)
 - 5: 1.5 A Digital: Configured as source only (DOUT 1.5 A)
 - 3: 3 A Digital: Configured as source only (DOUT 3 A)
 - 10: 6 A Digital/Digital Input: Configured as source only (DOUT 6 A)
 - 6: Universal (PWMOUT/DOUT) that are user-defined as either:
 - Digital* (1.5 A) configurable as source or sink; *PWM* (33 to 4000 Hz), configurable as open or closed loop with current control
 - 2: Universal (PWMOUT/DOUT 15 A) that are user-defined as either:
 - Digital* (15 A) configurable as source or sink; *PWM* (13 kHz fixed), open loop mode only
 - 1: 6 A PWM (195 Hz fixed), open loop and sourcing only
- 8 user-defined inputs/outputs that are defined as
 - Digital inputs (DIN/DOUT 0.5 A)
 - 0.5 A Digital output: Configured as source only
- 1 independent CPU and start up functions power supply 9 to 36 Vdc (also provides power to pin C2-P38)
- 1 independent power supply (C3-P1) for all outputs except C2-P7, C2-P8, C2-P30 and C2-P35, these are supplied from C2-P38
- Power supply for external sensors rated at 5 Vdc to 500 mA, regulated internally
- 2 LEDs, user controlled
- 2 CAN 2.0B ports
- The MC090-022 contains an application key required to run Danfoss developed machine control application software.

Dimensions and Pin Assignments



This device is not field serviceable. Opening the device housing will void the warranty.

This device's entire back surface must be supported when mounting (flatness within 1 mm). Mount device any direction.

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 (mating connector attached)	IP 67
EMI/RFI rating	100 V/m
Weight	1368 g [3.016 lb]
Maximum current, sourcing	86.5 A
Maximum current, sinking	85 A

Product Part Number

MC090-020	11081998
MC090-022	11162753

Related Products Part Numbers

CG150 CAN/USB Gateway	10104136
Deutsch® mating connector bag assembly	11071844 (16 to 20 AWG) 10105649 (20 to 24 AWG)
PLUS+1 GUIDE single user license	10101000

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Connector Assignments

Pin C1	Controller function	Pin C2	Controller function
C1-P1	DIN	C2-P1	DOU 0.5A/DIN
C1-P2	DIN	C2-P2	DOU 0.5A/DIN
C1-P3	CAN0 +	C2-P3	DOU 0.5A/DIN
C1-P4	CAN0 -	C2-P4	DOU 0.5A/DIN
C1-P5	CAN Shield/AIN	C2-P5	DOU 0.5A
C1-P6	N/A	C2-P6	DOU 0.5A
C1-P7	N/A	C2-P7	DOU 1.5A
C1-P8	Sensor Power +	C2-P8	DOU 1.5A
C1-P9	Sensor Power Ground -	C2-P9	DOU 1.5A
C1-P10	DIN	C2-P10	DOU 1.5A
C1-P11	DIN	C2-P11	DOU 1.5A
C1-P12	DIN	C2-P12	DOU 3A
C1-P13	DIN	C2-P13	DOU 3A
C1-P14	DIN	C2-P14	DOU 3A
C1-P15	DIN	C2-P15	DOU 6A
C1-P16	DIN	C2-P16	DOU 6A
C1-P17	DIN	C2-P17	DOU 6A
C1-P18	DIN	C2-P18	DOU 6A
C1-P19	DIN	C2-P19	DOU 6A
C1P20	DIN	C2-P20	DOU 6A
C1-P21	DIN	C2-P21	DOU 6A
C1-P22	DIN	C2-P22	DOU 6A
C1-P23	DIN	C2-P23	DOU 6A
C1-P24	DIN	C2-P24	PWMOUT/DOU 1.5A
C1-P25	DIN	C2-P25	PWMOUT/DOU 1.5A
C1-P26	CAN 1+	C2-P26	PWMOUT/DOU 1.5A
C1-P27	CAN 1 -	C2-P27	PWMOUT/DOU 1.5A
C1-P28	DIN/AIN	C2-P28	PWMOUT/DOU 1.5A
C1-P29	DIN/AIN	C2-P29	PWMOUT/DOU 1.5A
C1-P30	DIN/AIN	C2-P30	PWMOUT/DOU 6A
C1-P31	DIN/AIN	C2-P31	DOU 0.5A/DIN
C1-P32	DIN/AIN	C2-P32	DOU 0.5A/DIN
C1-P33	Rheo	C2-P33	DOU 0.5A/DIN
C1-P34	Rheo	C2-P34	DOU 0.5A/DIN
C1P-35	Rheo	C2-P35	DOU 6A
C1P-36	Rheo	C2-P36	PWMOUT/DOU 15A
C1-P37	DIN/AIN	C2-P37	PWMOUT/DOU 15A
C1-P38	DIN/AIN	C2-P38	CPU Power (Batt +)
C1-P39	DIN/AIN		
C1-P40	DIN/AIN		
C1-P41	DIN/AIN		
C1-P42	DIN/AIN		
C1-P43	DIN StartUp		
C1-P44	DIN StartUp		
C1-P45	DIN StartUp		
C1-P46	DIN StartUp		
C1-P47	DIN StartUp		
C1-P48	DIN StartUp		
C1-P49	DIN StartUp		
C1-P50	DIN StartUp		

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

CPU power supply C2-P38 also provides power to pins C2-P7, C2-P8, C2-P30 and C2-P35 for start up functions.

Comprehensive literature on line at: www.danfoss.com

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