ENGINEERING TOMORROW

Data Sheet

PLUS+1® Controllers
MC090-020 and MC090-022

Mobile Machine Management

This product is 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 flash.

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)
- 32 bit fixed-point DSP running at 150 MHz
- 12 bit analog-to-digital converter
- 2 MB serial flash vault memory
- 90 pins
  - 1: DEUTSCH DRC26-50 connector
  - 1: DEUTSCH DRC26-38 connector
  - 2: M5 power bolts
- 1 independent power supply for all outputs except C2-P7, C2-P8, C2-P30 and C2-P35
- 1 independent CPU and start up functions power supply 9 to 36 Vdc (also provides power to 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

- 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

Inputs

- 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

Outputs

- 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

Specifications

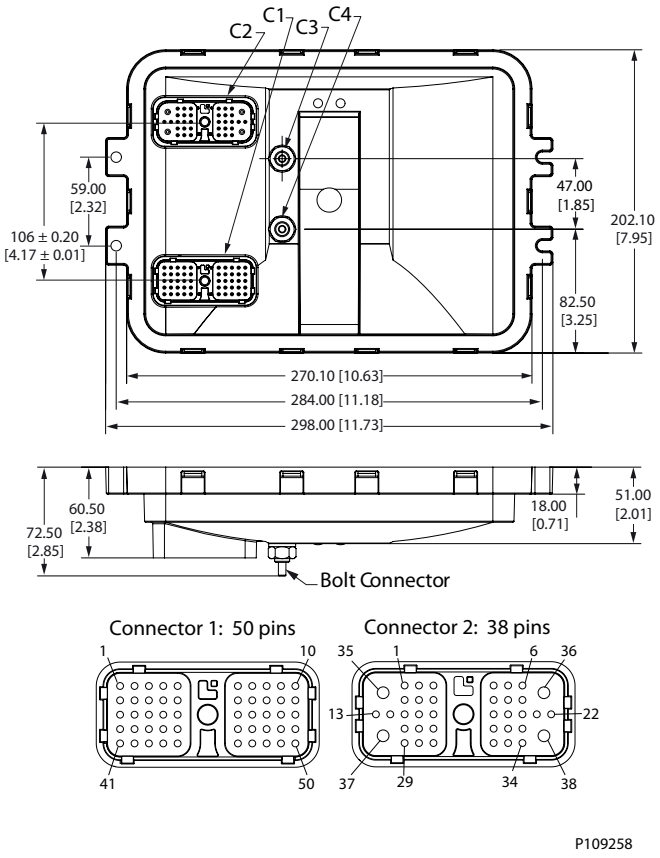
Product parameters

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 (with 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

Dimensions

Mounting dimensions and pin assignments

Dimensions in mm [in]



Caution

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.

Ordering information

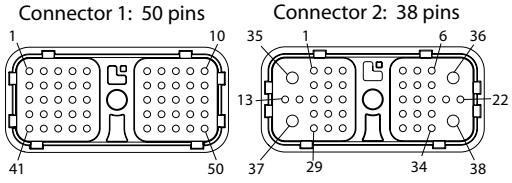
Product part number

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	

Pin connector



Pin C1	Controller function	Pin C2	Controller function
C1-P1	DIN	C2-P1	DOUT 0.5A/DIN
C1-P2	DIN	C2-P2	DOUT 0.5A/DIN
C1-P3	CAN 0 +	C2-P3	DOUT 0.5A/DIN
C1-P4	CAN 0 -	C2-P4	DOUT 0.5A/DIN
C1-P5	CAN Shield/AIN	C2-P5	DOUT 0.5A
C1-P6	N/A	C2-P6	DOUT 0.5A
C1-P7	N/A	C2-P7	DOUT 1.5A
C1-P8	Sensor Power +	C2-P8	DOUT 1.5A
C1-P9	Sensor Power Ground -	C2-P9	DOUT 1.5A
C1-P10	DIN	C2-P10	DOUT 1.5A
C1-P11	DIN	C2-P11	DOUT 1.5A
C1-P12	DIN	C2-P12	DOUT 3A
C1-P13	DIN	C2-P13	DOUT 3A
C1-P14	DIN	C2-P14	DOUT 3A
C1-P15	DIN	C2-P15	DOUT 6A
C1-P16	DIN	C2-P16	DOUT 6A
C1-P17	DIN	C2-P17	DOUT 6A
C1-P18	DIN	C2-P18	DOUT 6A
C1-P19	DIN	C2-P19	DOUT 6A
C1P20	DIN	C2-P20	DOUT 6A
C1-P21	DIN	C2-P21	DOUT 6A
C1-P22	DIN	C2-P22	DOUT 6A
C1-P23	DIN	C2-P23	DOUT 6A
C1-P24	DIN	C2-P24	PWMOUT/DOUT 1.5A
C1-P25	DIN	C2-P25	PWMOUT/DOUT 1.5A
C1-P26	CAN 1+	C2-P26	PWMOUT/DOUT 1.5A
C1-P27	CAN 1 -	C2-P27	PWMOUT/DOUT 1.5A
C1-P28	DIN/AIN	C2-P28	PWMOUT/DOUT 1.5A
C1-P29	DIN/AIN	C2-P29	PWMOUT/DOUT 1.5A
C1-P30	DIN/AIN	C2-P30	PWMOUT/DOUT 6A
C1-P31	DIN/AIN	C2-P31	DOUT 0.5A/DIN
C1-P32	DIN/AIN	C2-P32	DOUT 0.5A/DIN
C1-P33	Rheo	C2-P33	DOUT 0.5A/DIN
C1-P34	Rheo	C2-P34	DOUT 0.5A/DIN
C1-P35	Rheo	C2-P35	DOUT 6A
C1-P36	Rheo	C2-P36	PWMOUT/DOUT 15A
C1-P37	DIN/AIN	C2-P37	PWMOUT/DOUT 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 listed 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.