Data Sheet

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

Mobile Machine Management

MC088-015 and MC088-01B controllers are elements of the flexible, powerful, expandable, and affordable PLUS+1 family of mobile machine management products. These devices are general-purpose controllers with high current outputs. They are 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 Digital Signal Processor (DSP), providing the controllers with extremely fast single cycle processing speed and 256K internal flash. Both controllers feature 2 MB of serial flash vault memory reserved for the application log feature of PLUS+1 GUIDE software. The MC088-01B has an application key that enables the use of Sauer-Danfoss developed GUIDE machine control solutions. The same GUIDE HWD file is used with both controllers.

Application Development

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.

Local Address:

MC088-015 and MC088-01B Controllers

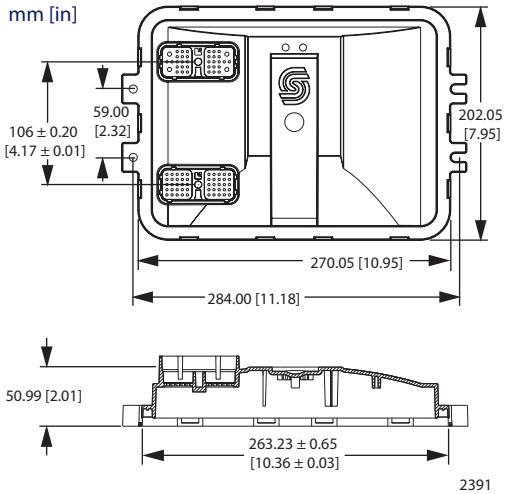
Features

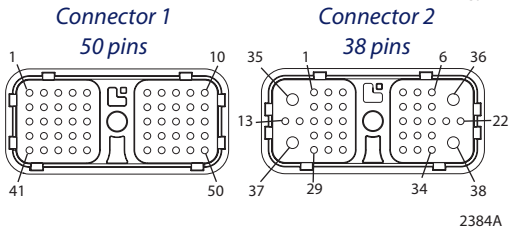
- User-programmable with PLUS+1 GUIDE (Graphical User Integrated Development Environment)
- 88 pins:
  - 1 Deutsch® DRC26-50 connector
  - 1 Deutsch® DRC26-38 connector
- 32 bit fixed-point DSP running at 150 MHz
- 12 bit analog-to-digital converter
- 2 MB serial flash vault memory
- 42 inputs:
  - 6 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) or pull to center (2.5 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 (see *Dimensions and Pin Assignments*, back page, for output pin power supply assignments)
  - 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
- 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 application software control
- MC088-01B contains the application key required to run Sauer-Danfoss developed machine control application software
- CE compliant

11006645 • Rev NB • Oct 2009

MC088-015 and MC088-01B Dimensions and Pin Assignments

mm [in]





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

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 (with mating connector attached)
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)

Product Part Number

MC088-015	10105470
MC088-01B	11071592

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

Connector 1

Pin	Controller function
C1-P1	CPU power ground -
C1-P2	CPU power supply +
C1-P3	CAN0+
C1-P4	CAN0-
C1-P5	AIN/CAN0 shield
C1-P6	DIN
C1-P7	DIN
C1-P8	5 Vdc sensor power +
C1-P9	Sensor power ground -
C1-P10	DIN
C1-P11	DIN
C1-P12	DIN
C1-P13	DIN
C1-P14	DIN/AIN
C1-P15	Din/AIN
C1-P16	DIN/AIN
C1-P17	DIN/AIN
C1-P18	DIN/AIN/FreqIN
C1-P19	DIN/AIN/FreqIN
C1-P20	CAN1+
C1-P21	CAN1-
C1-P22	AIN/CAN1 shield
C1-P23	DIN/AIN/FreqIN
C1-P24	DIN/AIN/FreqIN
C1-P25	DIN/AIN/FreqIN
C1-P26	DIN/AIN/FreqIN
C1-P27	AIN/Temp/Rheo
C1-P28	AIN/Temp/Rheo
C1-P29	AIN/Temp/Rheo
C1-P30	AIN/Temp/Rheo
C1-P31	DOUT (3 A –Pwr = C2P35)
C1-P32	DOUT (3 A –Pwr = C2P35)
C1-P33	DOUT (3 A –Pwr = C2P35)
C1-P34	DOUT/PVG Pwr (3 A –Pwr = C2P35)
C1-P35	DOUT/PVG Pwr (3 A –Pwr = C2P36)
C1-P36	DOUT/PVG Pwr (3 A—Pwr = C2P36)
C1-P37	PWMOUT/DOUT/PVG OUT (3 A—Pwr = C2P35)
C1-P38	PWMOUT/DOUT/PVG OUT (3 A—Pwr = C2P35)
C1-P39	PWMOUT/DOUT/PVG OUT (3 A—Pwr = C2P35)
C1-P40	PWMOUT/DOUT/PVG OUT (3 A—Pwr = C2P35)
C1-P41	PWMOUT/DOUT/PVG OUT (3 A—Pwr = C2P36)
C1-P42	PWMOUT/DOUT/PVG OUT (3 A—Pwr = C2P36)
C1-P43	PWMOUT/DOUT/PVG OUT (3 A—Pwr = C2P36)
C1-P44	PWMOUT/DOUT/PVG OUT (3 A—Pwr = C2P36)
C1-P45	PWMOUT/DOUT/PVG OUT (3 A—Pwr = C2P36)
C1-P46	PWMOUT/DOUT/PVG OUT (3 A—Pwr = C2P36)
C1-P47	DIN/AIN//4-20 mA IN
C1-P48	DIN/AIN//4-20 mA IN
C1-P49	DIN/AIN//4-20 mA IN
C1-P50	DIN/AIN//4-20 mA IN

Connector 2

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

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

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.

Comprehensive technical information: *PLUS+1 Controller Family Technical Information,* **520L0719***; MC088-015/ MC088-01B Application Program Interface (API) 10108068.doc /* Sauer-Danfoss product literature on-line at: www.sauer-danfoss.com