



Data Sheet

PLUS+1® Controller

SC050-020 and SC050-022

**Advanced mobile machine management**

These PLUS+1® controllers are advanced elements of the PLUS+1® family of mobile machine management products. The design of this general purpose controller includes features required for sophisticated machine control strategies. It is equally suited for use in safety related or general machine control applications.

Product highlights

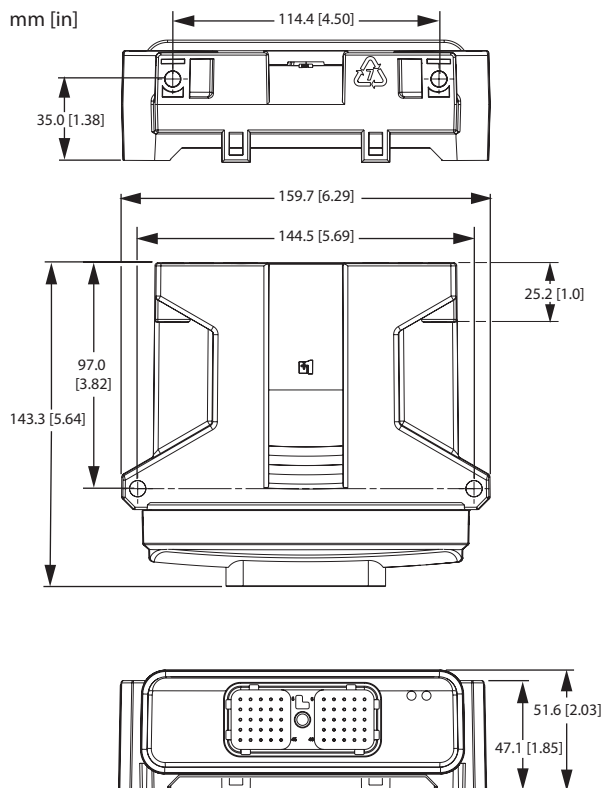
These controllers are pin compatible with the PLUS+1® MC equivalent controller. These controllers have dual micro controllers with the secondary having access to all controller inputs and supervisory control of outputs. These controllers support smart digital inputs. Current measurement capability has been added to some multifunction inputs. Device outputs can be individually controlled by the secondary processor. These controllers support low power capability.

Application development

These controllers have an application key that enables the use of Danfoss developed GUIDE machine control solutions. The same Guide HWD file is used with both controllers. The user can develop these controllers' applications using either the PLUS+1® GUIDE development environment or C-code. Application code can be written in both the primary and secondary micro processors.

Features

- Programmable in PLUS+1® GUIDE
- Same general I/O content as the PLUS+1® MC050-020 controller
- Dual processors:
 - Primary: 512kB flash, 128kB RAM
 - Secondary: 128kB flash, 64kB RAM
 - Internal micro to micro UART
- 12 bit analog to digital converter
- 7 to 36 Vdc power supply, monitored internally
- (24) user-defined inputs
 - (6) Digital/Analog/Resistance/4-20mA current
 - (6) Digital/Analog /Frequency
 - (2) Digital/Analog/CAN Shield
 - (1) Digital/Analog/1.6 Vdc sensor power (for smart digital input capability)
 - (1) Digital/Analog/3.3 Vdc sensor power (for smart digital input capability)
- (8) Digital/Analog
- (14) user-defined 3A PWM outputs
 - (6) Digital/PVG Pwr (DOUT/PVG Pwr sourcing only)
 - One DOUT/PVG Pwr will power up to 3 PVG's
- (8) PWM: (PWMOUT/CrntOUT/DOUT/PVGOUT), (30 to 4000 Hz or 20 kHz) configurable as open or closed loop with current control
- Any PWMOUT/CrntOUT/DOUT/PVGOUT can be used to provide reference power to one PVG valve
- Each PWM output may have a unique frequency
- (2) CAN 2.0B ports, the shield pin can be configured as a DIN/AIN
- User-defined 3 to 12 Vdc regulated power supply for external sensors
- (2) LEDs under user control
 - Both have alternate yellow color under kernel control to indicate low-level software/hardware failures
- Power supply for external sensors rated at 5 Vdc to 500 mA
- Operating temperature range: -40° C to +85° C
- EMC rating is 150 V/m

Mounting dimensions and pin assignments


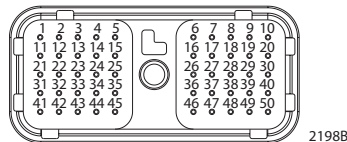
P200 077

Caution

PCB damage may occur. All device power supply + pins must be connected to battery +.

Caution

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

Pin connector


2198B

Pin	Controller function	Pin	Controller function
C1-P1	Power ground -	C1-P26	DIN/AIN/FreqIN
C1-P2	Power supply +	C1-P27	DIN/AIN/FreqIN
C1-P3	CAN0 +	C1-P28	DIN/AIN/FreqIN
C1-P4	CAN0 -	C1-P29	DIN/AIN/FreqIN
C1-P5	DIN/AIN/CAN shield	C1-P30	DIN/AIN/FreqIN
C1-P6	DIN/AIN/SnsrPwr1.6Vdc	C1-P31	DIN/AIN/ResIN/CrntIN
C1-P7	DIN/AIN/SnsrPwr3.3Vdc	C1-P32	DIN/AIN/ResIN/CrntIN
C1-P8	3-12Vdc SnsrPwr +	C1-P33	DOU/PVG Pwr
C1-P9	SnsrPwr - (sensor ground)	C1-P34	DOU/PVG Pwr
C1-P10	DIN/AIN	C1-P35	DOU/PVG Pwr
C1-P11	DIN/AIN	C1-P36	DOU/PVG Pwr
C1-P12	DIN/AIN	C1-P37	DOU/PVG Pwr
C1-P13	DIN/AIN	C1-P38	DOU/PVG Pwr
C1-P14	DIN/AIN	C1-P39	PWMOUT/CrntOUT/DOU/PVGOUT
C1-P15	DIN/AIN	C1-P40	PWMOUT/CrntOUT/DOU/PVGOUT
C1-P16	DIN/AIN	C1-P41	PWMOUT/CrntOUT/DOU/PVGOUT
C1-P17	DIN/AIN	C1-P42	PWMOUT/CrntOUT/DOU/PVGOUT
C1-P18	DIN/AIN/ResIN/CrntIN	C1-P43	PWMOUT/CrntOUT/DOU/PVGOUT
C1-P19	DIN/AIN/ResIN/CrntIN	C1-P44	PWMOUT/CrntOUT/DOU/PVGOUT
C1-P20	CAN1 +	C1-P45	PWMOUT/CrntOUT/DOU/PVGOUT
C1-P21	CAN1 -	C1-P46	PWMOUT/CrntOUT/DOU/PVGOUT
C1-P22	DIN/AIN/CAN shield	C1-P47	Power supply +
C1-P23	DIN/AIN/ResIN/CrntIN	C1-P48	Power supply +
C1-P24	DIN/AIN/ResIN/CrntIN	C1-P49	Power supply +
C1-P25	DIN/AIN/FreqIN	C1-P50	Power supply +

Use care when wiring mating connector.
Above pinouts are for device pins.

Specifications
Product parameters

Supply voltage	7 to 36 Vdc
Operating temperature (ambient)	-40° C to 85° C [-40° F to 185° F]
Storage temperature	-40° C to 85° C [-40° F to 185° F]
Programming temperature	-40° C to 85° C [-40° F to 185° F]
IP rating (with mating connector attached)	IP 67
EMI/RFI rating	150 V/M
Weight	0.53 kg [1.16 lb]
Vibration	IEC 60068-2-64
Shock	IEC 60068-2-27 test Ea
Maximum current, sourcing	40 A
Maximum current, sinking	8 A

Danfoss Power Solutions (US) Company
2800 East 13th Street
Ames, IA 50010, USA
Phone: +1 515 239 6000

Danfoss Power Solutions GmbH & Co. OHG
Krokamp 35
D-24539 Neumünster, Germany
Phone: +49 4321 871 0

Danfoss Power Solutions ApS
Nordborgvej 81
DK-6430 Nordborg, Denmark
Phone: +45 7488 2222

Danfoss Power Solutions Trading (Shanghai) Co. Ltd.
Building #22, No. 1000 Jin Hai Rd
Jin Qiao, Pudong New District
Shanghai, China 201206
Phone: +86 21 3418 5200

Danfoss can accept no responsibility for possible errors in catalogues, brochures and other printed material. Danfoss reserves the right to alter its products without notice. This also applies to products already on order provided that such alterations can be made without changes being necessary in specifications already agreed. All trademarks in this material are property of the respective companies. Danfoss and the Danfoss logotype are trademarks of Danfoss A/S. All rights reserved.