

# **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.

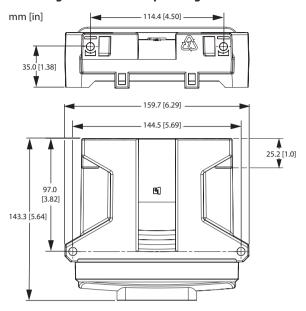
# Features

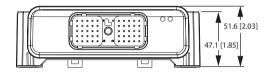
- Programmable in PLUS+1® GUIDE
- Same general I/O content as the PLUS+1® MC050-020 controller
- Dual processors:
  - Primary: 512kB flash, 128kB RAM
  - Secondary: 128kB flash, 64kB RAM
  - Internal micro to micro UART
- 12 bit analog to digital converter
- 7 to 36 Vdc power supply, monitored internally
- (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





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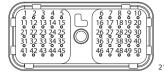
# Caution

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



Pin	Controller function
C1-P1	Power ground -
C1-P2	Power supply +
C1-P3	CAN0+
C1-P4	CAN0 -
C1-P5	DIN/AIN/CAN shield
C1-P6	DIN/AIN/SnsrPwr1.6Vdc
C1-P7	DIN/AIN/SnsrPwr3.3Vdc
C1-P8	3-12Vdc SnsrPwr +
C1-P9	SnsrPwr - (sensor ground)
C1-P10	DIN/AIN
C1-P11	DIN/AIN
C1-P12	DIN/AIN
C1-P13	DIN/AIN
C1-P14	DIN/AIN
C1-P15	DIN/AIN
C1-P16	DIN/AIN
C1-P17	DIN/AIN
C1-P18	DIN/AIN/ResIN/CrntIN
C1-P19	DIN/AIN/ResIN/CrntIN
C1-P20	CAN1 +
C1-P21	CAN1 -
C1-P22	DIN/AIN/CAN shield
C1-P23	DIN/AIN/ResIN/CrntIN
C1-P24	DIN/AIN/ResIN/CrntIN
C1-P25	DIN/AIN/FreqIN

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Pin	Controller function		
C1-P26	DIN/AIN/FreqIN		
C1-P27	DIN/AIN/FreqIN		
C1-P28	DIN/AIN/FreqIN		
C1-P29	DIN/AIN/FreqIN		
C1-P30	DIN/AIN/FreqIN		
C1-P31	DIN/AIN/ResIN/CrntIN		
C1-P32	DIN/AIN/ResIN/CrntIN		
C1-P33	DOUT/PVG Pwr		
C1-P34	DOUT/PVG Pwr		
C1-P35	DOUT/PVG Pwr		
C1-P36	DOUT/PVG Pwr		
C1-P37	DOUT/PVG Pwr		
C1-P38	DOUT/PVG Pwr		
C1-P39	PWMOUT/CrntOUT/DOUT/PVGOUT		
C1-P40	PWMOUT/CrntOUT/DOUT/PVGOUT		
C1-P41	PWMOUT/CrntOUT/DOUT/PVGOUT		
C1-P42	PWMOUT/CrntOUT/DOUT/PVGOUT		
C1-P43	PWMOUT/CrntOUT/DOUT/PVGOUT		
C1-P44	PWMOUT/CrntOUT/DOUT/PVGOUT		
C1-P45	PWMOUT/CrntOUT/DOUT/PVGOUT		
C1-P46	PWMOUT/CrntOUT/DOUT/PVGOUT		
C1-P47	Power supply +		
C1-P48	Power supply +		
C1-P49	Power supply +		
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

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# Product part number

SC050-020	11099060
SC050-022	11103246

### Related products part numbers

CG150 CAN/USB Gateway	10104136
Deutsch® mating connector bag assembly	10102024 (16 to 20 AWG)
PLUS+1® GUIDE single user license	10101000

Danfoss comprehensive *technical information* is on line at: www.danfoss.com

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