

Data Sheet

# PLUS+1<sup>®</sup> SC Controllers

## SC050-120 and SC050-122

### Advanced mobile machine management

These PLUS+1<sup>®</sup> SC controllers are advanced elements of the PLUS+1<sup>®</sup> 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.

These controllers are pin compatible with the PLUS+1<sup>®</sup> MC equivalent controller. These controllers have dual processors with the secondary processor 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.

The SC050-122 controller has an application key that enables the use of Danfoss developed GUIDE machine control solutions. The same GUIDE HWD files are used with both controllers. The user can develop applications for these controllers using the PLUS+1<sup>®</sup> GUIDE development environment. Application code can be written for both the primary and secondary processors.



### Features

- Programmable in PLUS+1<sup>®</sup> GUIDE
- Same general I/O content as the PLUS+1<sup>®</sup> 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
- 14 user-defined outputs
- 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 yy EMC rating is 150 V/m
- CE Compliant
- Certified SIL 2 Capable per IEC 61508

Comprehensive technical literature online  
at [powersolutions.danfoss.com](http://powersolutions.danfoss.com)

**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

**User-defined outputs**

- (6) 3A Digital: configurable as source only
- (8) 3A PWM: (33 to 4000 Hz or 20 kHz) configurable as open or closed loop with current control

**Specifications**

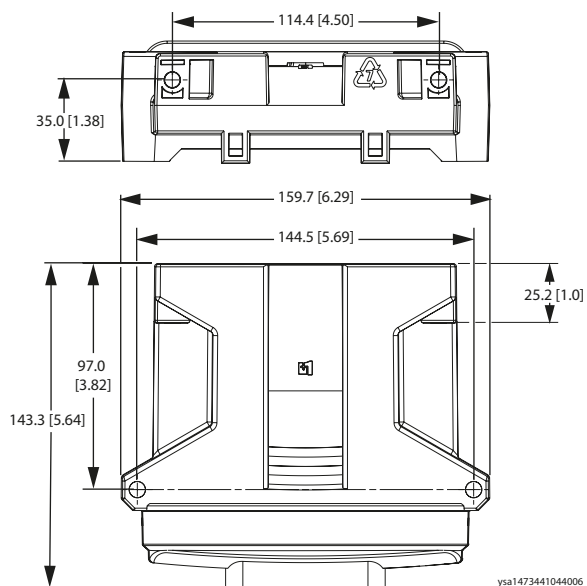
*Product parameters*

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

### Dimensions and pin assignments

#### Mounting dimensions and pin assignments

Dimensions in mm [in]



**! Caution**

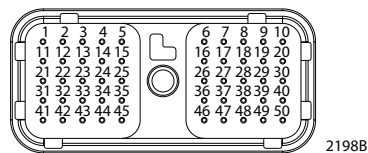
PCB damage may occur. All device power supply + pins must be connected to battery +.

**! Caution**

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

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

#### Pin connector



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	DOUT
C1-P9	SnsrPwr - (sensor ground)	C1-P34	DOUT
C1-P10	DIN/AIN	C1-P35	DOUT
C1-P11	DIN/AIN	C1-P36	DOUT
C1-P12	DIN/AIN	C1-P37	DOUT
C1-P13	DIN/AIN	C1-P38	DOUT
C1-P14	DIN/AIN	C1-P39	PWMOUT/CrntOUT/ DOUT
C1-P15	DIN/AIN	C1-P40	PWMOUT/CrntOUT/ DOUT
C1-P16	DIN/AIN	C1-P41	PWMOUT/CrntOUT/ DOUT
C1-P17	DIN/AIN	C1-P42	PWMOUT/CrntOUT/ DOUT
C1-P18	DIN/AIN/ResIN/CrntIN	C1-P43	PWMOUT/CrntOUT/ DOUT
C1-P19	DIN/AIN/ResIN/CrntIN	C1-P44	PWMOUT/CrntOUT/ DOUT
C1-P20	CAN1 +	C1-P45	PWMOUT/CrntOUT/ DOUT
C1-P21	CAN1 -	C1-P46	PWMOUT/CrntOUT/ DOUT
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 +



*Product part number*

<b>SC050-120</b>	11159588
<b>SC050-122 (with application key)</b>	11159591

*Related products part numbers*

<b>CG150 CAN/USB Gateway</b>	11153051
<b>DEUTSCH mating connector bag assembly</b>	10102024 (16 to 20 AWG)
<b>PLUS+1<sup>®</sup> GUIDE single user license</b>	10101000

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