



Data Sheet

# PLUS+1® SC Controller SC024-120 and SC024-122



**Advanced Mobile Machine Management**

These PLUS+1® SC 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 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.

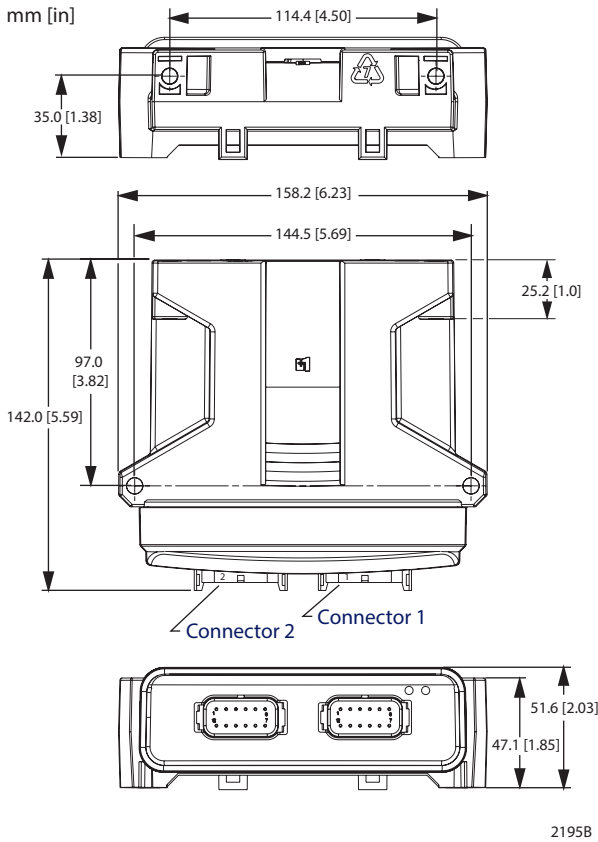
**Application Development**

The SC024-122 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® GUIDE development environment. Application code can be written for both the primary and secondary processors.

**Features**

- Programmable in PLUS+1® GUIDE
- Same general I/O content as the PLUS+1® MC024-020 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
- (8) user-defined inputs
  - (5) Digital/Analog/Frequency
  - (1) 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) user-defined 3A PWM outputs
  - Digital: Configurable as source or sink
  - PWM: (33 to 4000 Hz or 20 kHz) configurable as open or closed loop with current control
  - Analog voltage: Open loop PWM at 20,000 Hz
- Each PWM output may have a unique frequency
- (1) 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 is -40°C to +85°C.
- EMC rating is 150 V/m.
- CE Compliant
- Certified SIL 2 Capable per IEC 61508

Mounting Dimensions and Pin Assignments



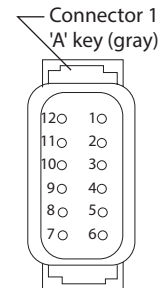
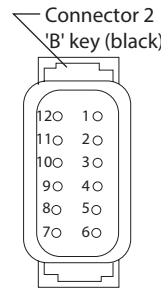
Pin Connector

Connector 2

Pin	Controller function
C2-P1	DIN/AIN/FreqIN
C2-P2	DIN/AIN/FreqIN
C2-P3	PWMOUT/CrntOUT/DOOUT
C2-P4	PWMOUT/CrntOUT/DOOUT
C2-P5	PWMOUT/CrntOUT/DOOUT
C2-P6	PWMOUT/CrntOUT/DOOUT
C2-P7	PWMOUT/CrntOUT/DOOUT
C2-P8	PWMOUT/CrntOUT/DOOUT
C2-P9	PWMOUT/CrntOUT/DOOUT
C2-P10	PWMOUT/CrntOUT/DOOUT
C2-P11	Power supply +
C2-P12	Power supply +

Connector 1

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/SnsrPwr 1.6Vdc
C1-P7	DIN/AIN/SnsrPwr 3.3Vdc
C1-P8	3-12 Vdc SnsrPwr +
C1-P9	SnsrPwr - (sensor ground)
C1-P10	DIN/AIN/FreqIN
C1-P11	DIN/AIN/FreqIN
C1-P12	DIN/AIN/FreqIN



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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.

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]
IP rating (with mating connector attached)	IP 67
EMI/RFI rating	150 V/M
Weight	0.40 kg [0.88 lb]
Vibration	IEC 60068-2-64
Shock	IEC 60068-2-27 test Ea
Maximum current, sourcing	24 A
Maximum current, sinking	8 A

Product Part Number

SC024-120	11159590
SC024-122 (with application key)	11159593

Related Products Part Numbers

CG150-2 CAN/USB Gateway	11153051
Deutsch® mating connector bag assembly	10102023 (16 to 20 AWG)
PLUS+1 GUIDE single user license	10101000

Danfoss comprehensive technical information is on line at: [www.danfoss.com](http://www.danfoss.com)

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