

Data Sheet

PLUS+1[®] Controller

XL104-0000



Flexible Machine Management

The XL controller platform provides a solid and powerful background to meet requirements for managing mobile machinery. The modular concept of the XL controller gives you the flexibility meeting a big range of different needs with the same product. The high pin count makes it possible to let this solution fit to control even your most complex machines.



Product Highlights

The XL controller is a power house employing a 32bit Processor, providing the controller with very fast single cycle processing speed and 2.5 MB of internal flash. The architecture of the XL controller platform furthermore gives you the opportunity to comply with current functional safety standards.

Application Development

Users develop XL Controller 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.

Features

- User-programmed with PLUS+1[®] GUIDE and C Open
- 4 pin DEUTSCH DTP connector for power and ground
- 2 x 50 pin DEUTSCH DRC connectors
- Processor: AURIX 32 bit running at 200 MHz 2.5 MB flash, 240kB RAM, Lock Step Core
- External memory:
 - 32 kB EEPROM non-volatile memory
 - 64 MB Flash vault memory
- 12 bit analog-to-digital converter
- 7 to 36 Vdc power supply, monitored internally
- Sensor power output for external sensors each are rated at 5 Vdc to 500mA:
 - 1x 5V Fixed
 - 1x 3V to 12V variable
- 3 CAN 2.0B ports
- SIL2 compliant

Comprehensive technical literature is online at www.danfoss.com

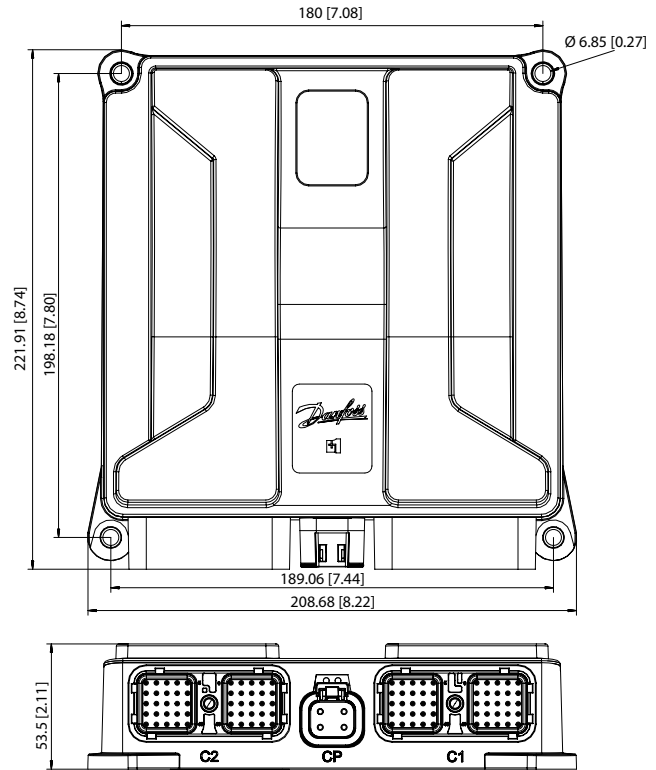
48 Inputs

- 20 digital (DIN) configurable with pull up (5 V) or pull down (0 V)
- 4 universal (DIN/AIN/FreqIn) that are user-defined as either:
 - Analog: with configurable ranges of 0 to 5.25 V, 0 to 36 V, or 0 to 365 mV;
 - Digital: pull up (5 V), pull down (0 V), or pull to center (2.5 V);
 - Frequency: (timing) 1 Hz to 10 kHz
- 4 universal (DIN/AIN/FreqIn/Rheo/4-20mA) that are user-defined as either:
 - Analog: with configurable ranges 0 to 5.25 V, 0 to 36 V, or 0 to 365 mV;
 - Digital: pull up (5 V), pull down (0 V), or pull to center (2.5 V);
 - Frequency: (timing) 1 Hz to 10 kHz
 - Rheostat: (Resistance) 6 ohms to 10K ohms
 - Current: 0.1 mA to 28 mA
- 17 digital/analog (DIN/AIN) that are user-defined as either:
 - Digital: pull up (5 V), pull down (0 V), or pull to center (2.5 V);
 - Analog: 0 to 5.25 V or 0 to 36 V
- 3 digital/analog/CAN shield (DIN/AIN/CAN shield) that are user-defined as either:
 - Digital: pull up (5 V), pull down (0 V), or pull to center (2.5 V);
 - Analog: 0 to 5.25 V or 0 to 36 V

40 Outputs

- 14 digital (DOOUT) 3 A (source only)
- 6 digital (DOOUT) 4 A (source only)
- 12 universal (PWMOUT/DOOUT/PVGOUT) that are user-defined as either:
 - Digital: (3 A), configurable as source or sink;
 - PWM: (33 to 4000 Hz) configurable as open or closed loop with current control
- 8* universal (PWMOUT/DOOUT/PVGOUT) that are user-defined as either:
 - Digital: (3 A), configurable as source or sink;
 - PWM: (33 to 4000 Hz or 20 kHz) configurable as open or closed loop with current control
 - Safety FET Support

Dimensions in mm [in]



Caution

Warranty will be voided if device is opened. Device is not field serviceable. Do not open the device.

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

Caution

PCB damage may occur. To prevent damage to the module all module power supply + pins must be connected to the vehicle power supply to support advertised module maximum output current capacity. DO NOT use module power supply + pins to supply power to other modules on a machine.

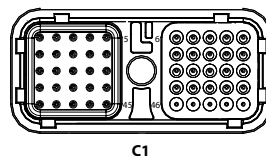
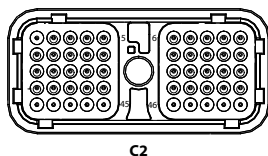
1 DEUTSCH DTP 4 pin connector



Connector pins (CP)

Pin	Function
C-P1	Power ground -
C-P2	Power supply +
C-P3	Power supply +
C-P4	Power supply +

C2 and C1 - DEUTSCH DRC 50 pin connector



Connector pins (C2)

Pin	Function	Pin	Function
C2-P1	DIN/AIN	C2-P26	DIN
C2-P2	DIN/AIN	C2-P27	DIN
C2-P3	DIN/AIN	C2-P28	DIN
C2-P4	DIN/AIN	C2-P29	DIN
C2-P5	DIN/AIN	C2-P30	DIN
C2-P6	DIN/AIN	C2-P31	PWM/DOUT/PVGOUT*
C2-P7	DIN/AIN	C2-P32	PWM/DOUT/PVGOUT*
C2-P8	DIN/AIN	C2-P33	DOUT
C2-P9	Sensor power (3-12V)	C2-P34	DOUT
C2-P10	Sensor ground	C2-P35	DOUT (4A)
C2-P11	DIN	C2-P36	DOUT (4A)
C2-P12	DIN	C2-P37	DOUT
C2-P13	DIN	C2-P38	DOUT
C2-P14	DIN	C2-P39	PWM/DOUT/PVGOUT
C2-P15	DIN	C2-P40	PWM/DOUT/PVGOUT
C2-P16	DIN	C2-P41	PWM/DOUT/PVGOUT*
C2-P17	DIN	C2-P42	PWM/DOUT/PVGOUT*
C2-P18	DIN	C2-P43	DOUT
C2-P19	DIN	C2-P44	DOUT
C2-P20	DIN	C2-P45	DOUT (4A)
C2-P21	DIN	C2-P46	DOUT (4A)
C2-P22	DIN	C2-P47	DOUT
C2-P23	DIN	C2-P48	DOUT
C2-P24	DIN	C2-P49	PWM/DOUT/PVGOUT
C2-P25	DIN	C2-P50	PWM/DOUT/PVGOUT

Connector pins (C1)

Pin	Controller function	Pin	Controller function
C1-P1	CPU ground -	C1-P26	DIN/AIN
C1-P2	CPU supply +	C1-P27	DIN/AIN
C1-P3	CAN 0+	C1-P28	DIN/AIN
C1-P4	CAN 0-	C1-P29	DIN/AIN
C1-P5	CAN 0 shield/AIN	C1-P30	DIN/AIN
C1-P6	DIN/AIN	C1-P31	PWM/DOUT/PVGOUT
C1-P7	DIN/AIN	C1-P32	PWM/DOUT/PVGOUT
C1-P8	Sensor power (5V)	C1-P33	DOUT
C1-P9	Sensor ground	C1-P34	DOUT
C1-P10	DIN/AIN/Freq	C1-P35	DOUT
C1-P11	DIN/AIN	C1-P36	DOUT (4A)
C1-P12	DIN/AIN	C1-P37	PWM/DOUT/PVGOUT*
C1-P13	CAN 1+	C1-P38	PWM/DOUT/PVGOUT*
C1-P14	CAN 1-	C1-P39	PWM/DOUT/PVGOUT
C1-P15	CAN 1 shield/AIN	C1-P40	PWM/DOUT/PVGOUT
C1-P16	DIN/AIN/FreqIn/Rheo/4-20mA	C1-P41	PWM/DOUT/PVGOUT
C1-P17	DIN/AIN/FreqIn/Rheo/4-20mA	C1-P42	PWM/DOUT/PVGOUT
C1-P18	DIN/AIN/FreqIn/Rheo/4-20mA	C1-P43	DOUT
C1-P19	DIN/AIN/FreqIn/Rheo/4-20mA	C1-P44	DOUT
C1-P20	DIN/AIN/FreqIn	C1-P45	DOUT
C1-P21	DIN/AIN/FreqIn	C1-P46	DOUT (4A)
C1-P22	DIN/AIN/FreqIn	C1-P47	PWM/DOUT/PVGOUT*
C1-P23	CAN 2+	C1-P48	PWM/DOUT/PVGOUT*
C1-P24	CAN 2-	C1-P49	PWM/DOUT/PVGOUT
C1-P25	CAN 2 shield/AIN	C1-P50	PWM/DOUT/PVGOUT



Product parameters

Supply voltage	7 to 36 V
Operating temperature (ambient)	– 40°C to 85°C [– 40°F to 185°F]
Storage temperature	– 55°C to 85°C [– 67°F to 185°F]
IP rating (with mating connector attached)	IP 67
EMI/RFI rating	150 V/m
Weight	0.675 kg [1.48 lb]
Vibration	IEC 60068-2-64
Shock	IEC 60068-2-27
Maximum current, sourcing	40/20A at 70/85°C [158/185°F]
Maximum current, sinking	20/12A at 70/85°C [158/185°F]

Product part number

Order code	Part number	Description
XL104-0000	11244762	104-pin full populated 48/40 IN/OUT

Part number	Description
11188220	4 pin DEUTSCH [®] DTP06-4S mating connector bag assembly (10 to 14 AWG)
10102024	50 pin DEUTSCH [®] DRC26-50S01 (C1) mating connector bag assembly (16 to 20 AWG)
11249153	50 pin DEUTSCH [®] DRC26-50S02 (C2) mating connector bag assembly (16 to 20 AWG)
11179523	PLUS+1 [®] GUIDE Professional