

Data Sheet

PLUS+1® XM100 Autonomous Controller



Powerful data processing

The XM100 Autonomous Controller provides the high processing power required for state-of-the-art autonomous mobile machines. This controller is designed to meet the needs of autonomous machines by interfacing with GNSS, LiDAR, Radar and inertial sensors and performing autonomous navigation tasks. Ethernet and CAN connectivity allow the controller to manage complex tasks and command machine sub-systems, such as propel, steering and work function.

Product highlights

The controller includes a powerful quad-core i.MX 6 platform with a Linux OS operating at 1.0 GHz. It has 8GB of flash and 2GB of DDR3 RAM to execute large, complex autonomous applications. This central processing unit delivers the power that will drive the future of your autonomous machine development.

Application development

Users develop applications with PLUS+1® platform that enables novice programmers to quickly develop advanced applications. The PLUS+1® Autonomous Control Library works seamlessly with the controller to enable autonomous machine functionality. PLUS+1® GUIDE is a Microsoft® Windows® based development environment and features a user-friendly, field-proven, graphical programming tool, application downloader, and service/diagnostic tool.



Features

- Programmable with PLUS+1® GUIDE
- 2 x 12-pin DEUTSCH DTP connectors
- Processor: i.MX 6 QuadPlus, 1.0 GHZ
- 8 GB flash, 2 GB DDR3 RAM
- 4 CAN ports
- 4-wire Ethernet port (10/100)
- Audio out
- 2 RGB LEDs
- 6-Axis Inertial Measurement Unit
- GNSS Receiver position accuracy 1.5m CEP50
- GNSS Corrections available for higher accuracy
- 5 Vdc sensor supply output
- 9 to 36 Vdc power supply, monitored internally
- Wake over digital input

Comprehensive technical literature is online at www.danfoss.com

8 inputs

- 4 universal (DIN/AIN/FreqIn/Rheo/4-20 mA) that are user-defined as either:
 - Analog: with configurable ranges 0 to 5.25 Vdc (with over range protection) or 0 to 36 Vdc;
 - Digital: pull up (5 Vdc), pull down (0 Vdc), or pull to center (2.5 Vdc);
 - Frequency: (timing) 1 Hz to 10 kHz
 - Rheostat: (Resistance) from 0 to 1000 Ohm
 - Current: 4 to 20 mA
- 2 digital/analog (DIN/AIN) that are user-defined as either:
 - Analog: 0 to 5.25 Vdc or 0 to 36 Vdc
 - Digital: pull up (5 Vdc), pull down (0 Vdc), or pull to center (2.5 Vdc);
- Ignition Input (K15)
- Wake Input (DigIn)

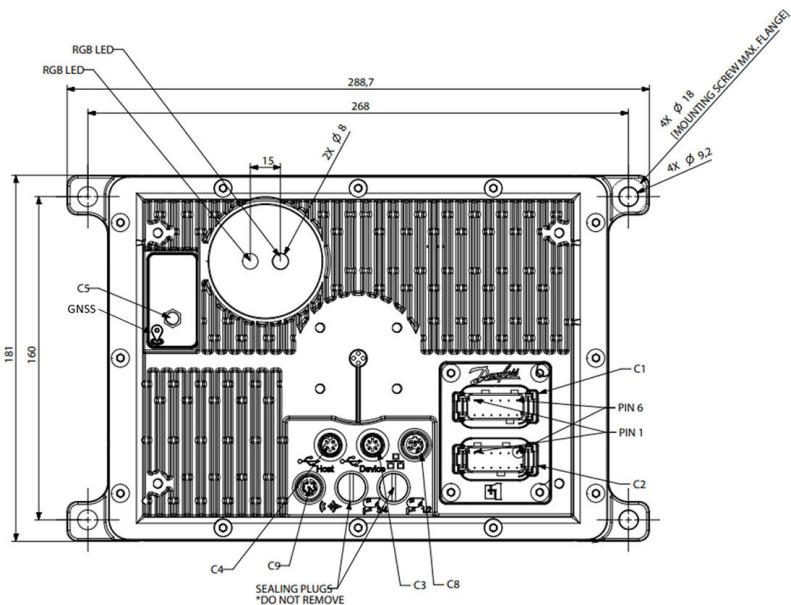
5 outputs

- 4 digital (Sinking DOUT) 500 mA
- Sensor Supply (+5 Vdc)

Technical Specifications

Processor	i.MX6
Supply Voltage	9-36 Vdc
Connector	DEUTSCH DTM06-12SA
IP Rating	IP66 and IP67 front and back
Operating Temperature	-30°C to +70°C [-22°F to 158°F]
Storage Temperature	-40°C to +85°C [-40°F to 185°F]
Vibration/Shock	IEC 60068-2-64 (7.67g) /2-27 (50g)
EMI/RFI Rating	100 V/m
Humidity	IEC 60068-2-78, 60068-2-30
Transients	ISO 7637/1, 2, 3
Certifications	CE, FCC, IC, RCM, RoHS

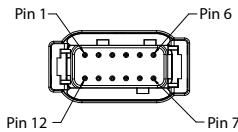
Pin locations and controller dimensions



Data Sheet

XM100 Autonomous Controller

C1 - DEUTSCH DTM06-12SA, 12 pin



C1 pin	Function
1	Power ground -
2	Power supply +
3	CAN 0+
4	CAN 0-
5	Anin / CAN shield
6	CAN 1+
7	CAN 1-
8	Sensor supply out (+5 V)
9	Clamp15 (KL15) Power hold input / Digin
10	Multifunction input (Digin/Anin/Freq/4-20mA/Rheostat)
11	Multifunction input (Digin/Anin/Freq/4-20mA/Rheostat)
12	Digital out (0.5A sinking)

C3 Pin	Function
1	Device data +
2	Device data -
3	Device Vbus
4	Ground

C4 - M12 4 pin, USB Host, "D" key



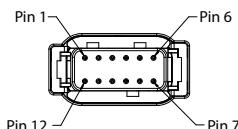
C4 Pin	Function
1	Host data +
2	Host data -
3	Host Vbus
4	Ground

C5 - GNSS antenna SMA coaxial



Antenna must be installed properly to the machine to avoid interference and to ensure the line of site to the sky.

C2 - DEUTSCH DTM06-12SB, 12 pin, "B" key



C2 pin	Function
1	Sensor ground
2	Digital out (0.5A sinking)
3	CAN 2+
4	CAN 2-
5	Anin / CAN shield
6	CAN 3+
7	CAN 3-
8	Multifunction input (Digin/Anin/Freq/4-20mA/Rheostat)
9	Multifunction input (Digin/Anin/Freq/4-20mA/Rheostat)
10	Clamp15 (KL15) Power hold input / Digin
11	Digital out (0.5A sinking)
12	Digital out (0.5A sinking)

C5 Pin	Function
Threads	Ground
Pin	Signal

C8 - M12 5 pin female, Ethernet, "D" key



C8 Pin	Function
1	TxD+
2	RxD+
3	TxD-
4	RxD-

C3 - M12 4 pin, USB Device, "A" key



C9 - M12 8 pin female, Stereo, "A" key



C9 Pin	Function
1	TxD
2	RxD
3	Ground
4	NC
5	Left channel
6	Right channel
7	Ground
8	NC

Product part number

11321919	XM100, ESSN Autonomous Controller
11321920	XM100, ADVN Autonomous Controller

Related products part numbers

Connector kit

10100944	DEUTSCH 12-pin Connector Kit (DTM06-12SA)
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Connection tools

10100744	DEUTSCH stamped contacts terminal crimp tool, size 20
10100745	DEUTSCH solid contacts terminal crimp tool

Cable kit

11231512	Cable, M12 4-pin to USB device (2m)
11130713	Cable, M12 8-Pin to Lead Wires (1.5m)
11130712	Cable, M12 5-Pin to Lead Wires (1.5m)

Antenna

11283266	External GNSS Antenna (5m) Antenna supports L1/L2 bands and is an active antenna.
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Software

11179523 (renew annually with 11179524 to keep software updates)	PLUS+1® GUIDE Professional Software (includes 1 year of software updates, a single user license, Service and Diagnostic tool and Screen Editor)
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