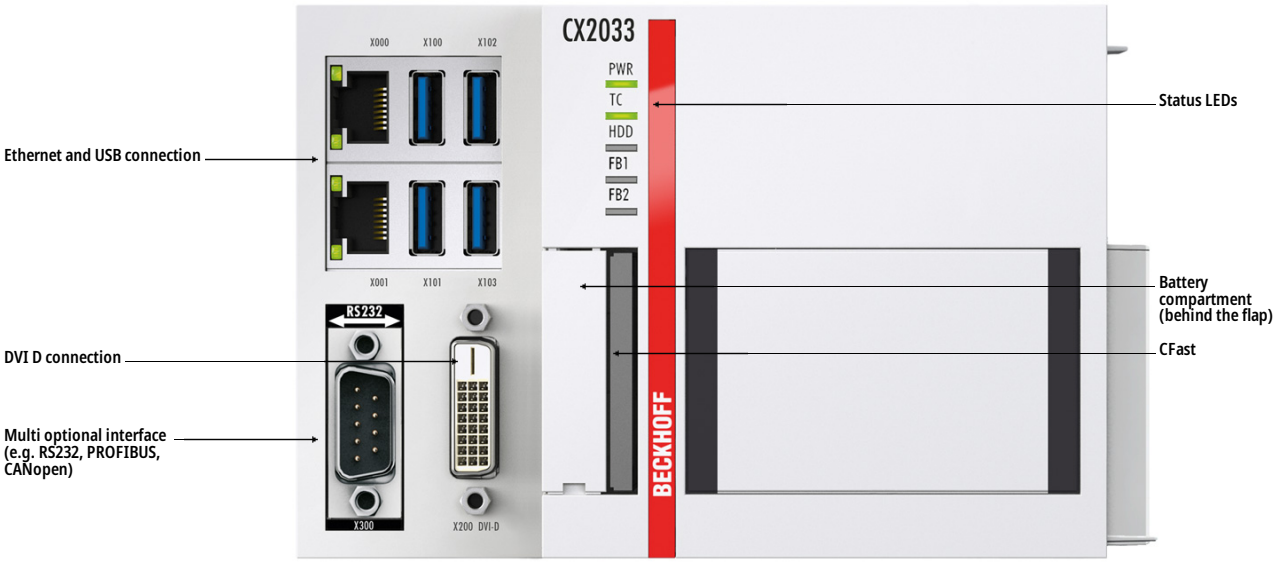
CX2033 | Basic CPU module



Product status: Regular delivery

The CX2033 is a modularly expandable Embedded PC for DIN rail mounting and has an AMD Ryzen™ V1202B CPU with a clock speed of 2.3 GHz and two cores. The power supply unit required for operation enables the direct use and connection of all Beckhoff I/O components to this CPU module.

The TwinCAT automation software turns the CX2033 system into a high-performance PLC and Motion Control system that can be used with or without visualization. Both TwinCAT 2 in 32-bit mode and the latest TwinCAT 3 version in 64-bit mode are supported. Continuing support for TwinCAT 2 by the CX2033 and CX2043 guarantees investment protection for projects and systems that were or will be created with this 32-bit generation.

The devices from the CX20x3 series are characterized by outstanding real-time characteristics under the highest computing loads. This enables deterministic processing with short cycle times on the individual cores of the CPUs.

The basic equipment of the hardware includes two independent Gbit-Ethernet interfaces, four USB 3.1 Gen. 2 ports, one DVI-D interface, and a multi-option interface that can be equipped ex factory with a flexible choice of further interfaces (e.g., serial port, fieldbus, or second video connection).

The internal RAM size is 8 GB; up to 16 GB are also optionally possible. The controller boots from the CFast card and has an internal 128 kB NOVRAM for use as a persistent data memory.

The CX2033 is fanless and has no rotating components. Cooling takes place by passive thermal convection.

The operating system employed is Microsoft Windows 10 IoT Enterprise 2019 LTSC, optionally in the 32-bit or 64-bit version.

Other components from the CX2000 family can be connected via the multi-pin terminals on either side. Up to four modules of the type CX2500-xxxx can be connected on the left side of the basic CPU module. The connection order is irrelevant. Internally, the modules are connected via PCI Express and can be plugged to the CPU in the field.

Modules of the type CX2550 (e.g., hard disks/SSD modules) and a power supply unit of the type CX2100-xxxx can be connected on the right. The power supply unit supplies power to the entire system of CPU module and all plugged optional components. All Beckhoff EL and KL terminals can be connected directly to the power supply unit. A compact unit comprising controller and I/O level is thus created on the DIN rail.

The extended operating temperature range from -25°C to +60°C enables the CX2033 to be used under climatically challenging conditions.

Product information

Technical Data

Technical data	CX2033
Processor	AMD Ryzen™ V1202B 2.3 GHz
Number of cores	2
Flash memory	slot for CFast card
Main memory	8 GB DDR4 RAM (expandable ex factory to 16 GB)
Persistent memory	128 KB NOVRAM integrated
Interfaces	2 x RJ45, 10/100/1000 Mbit/s, 1 x DVI-D, 4 x USB 3.1 Gen. 1, 1 x optional interface
Cooling	passive cooling, optionally with active cooling ex factory
Diagnostics LED	1 x power, 1 x TC status, 1 x flash access, 2 x bus status
Clock	internal battery-backed clock for time and date (battery exchangeable)
Operating system	Windows 10 IoT Enterprise 2019 LTSC, TwinCAT/BSD
Control software	TwinCAT 2 runtime TwinCAT 3 runtime (XAR)
I/O connection	via power supply module (E-bus or K-bus, automatic recognition)
Power supply	24 V DC (-15 %/+20 %)
Max. power consumption	42 W
Dimensions (W x H x D)	144 mm x 99 mm x 91 mm
Weight	approx. 1165 g
Operating/storage temperature	-25…+60 °C/-40…+85 °C
Relative humidity	95 %, no condensation
Vibration/shock resistance	conforms to EN 60068-2-6/EN 60068-2-27
EMC immunity/emission	conforms to EN 61000-6-2/EN 61000-6-4
Protection class	IP 20
Approvals/markings	CE, UL
TwinCAT 3 platform level	Performance Plus (50); please see here for an overview of all the TwinCAT 3 platform level

Ordering Information

Ordering information	
CX2033-0100	no operating system, no TwinCAT
CX2033-0160	Windows 10 IoT Enterprise 2019 LTSC 32 bit, no TwinCAT
CX2033-0161	Windows 10 IoT Enterprise 2019 LTSC 32 bit, TwinCAT 2 PLC runtime
CX2033-0162	Windows 10 IoT Enterprise 2019 LTSC 32 bit, TwinCAT 2 NC PTP runtime
CX2033-0163	Windows 10 IoT Enterprise 2019 LTSC 32 bit, TwinCAT 2 NC I runtime
CX2033-0170	Windows 10 IoT Enterprise 2019 LTSC 64 bit, no TwinCAT
CX2033-0175	Windows 10 IoT Enterprise 2019 LTSC 64 bit, TwinCAT 3 runtime (XAR)
CX2033-0185	TwinCAT/BSD, TwinCAT 3 runtime (XAR)

CX20x3-016x: only 4 GB RAM can be used with Windows 10 IoT Enterprise 2019 LTSC 32 Bit

TwinCAT/BSD requires a CFast flash card with a minimum capacity of 20 GB

Windows 10 IoT Enterprise requires a CFast flash card with a minimum capacity of 40 GB.

TwinCAT 3 runtime (XAR) is preinstalled, without licenses. Please order TwinCAT 3 licenses separately from the TwinCAT 3 Price List.

Options

Options	
CX2900-0010	Operating system preequipped on 2½-inch HDD/SSD for CX20x0, CX20x2 and CX20x3. Requires the extension module CX2550-0020 and one 2½-inch HDD/SSD.
CX2900-0301	“Active cooling”: factory conversion of the CX2033 CPU module for active cooling in order to enable flexible installation positions (see documentation). Active cooling takes place via a fan cartridge. This option requires the use of a power supply unit type CX2100-0014 or CX2100-0914.
CX2900-0305	Memory extension to 16 GB DDR4 RAM, instead of 8 GB DDR4 RAM for CX2033 and CX2043. For the CX2033 this extension reduces the maximum permissible ambient temperature to 50 °C. For operation of the CX2033 up to 60 °C the active cooling CX2900-0301 is required.

Optional interfaces	
CX2033-N010	DVI-D interface, additional DVI-D port for clone or extended display mode. Is not supported by TwinCAT/BSD.
CX2033-N011	DisplayPort interface, additional DisplayPort for clone or extended display mode. Is not supported by TwinCAT/BSD.
CX2033-N030	RS232 interface, D-sub plug, 9-pin
CX2033-N031	RS485 interface, D-sub socket, 9-pin, configuration as an end point, without echo, termination on
CX2033-N031-0001	RS485 interface, D-sub socket, 9-pin, configuration as an end point, with echo, termination on
CX2033-N031-0002	RS485 interface, D-sub socket, 9-pin, configuration as drop point, without echo, termination off
CX2033-N031-0003	RS485 interface, D-sub socket, 9-pin, configuration as drop point, with echo, termination off

CX2033-N031-0004	RS422 interface, D-sub socket, 9-pin, configuration as full duplex end point, termination on
CX2033-M112	2 x EtherCAT master interface
CX2033-B110	EtherCAT slave interface, EtherCAT IN and OUT (2 x RJ45)
CX2033-M310	PROFIBUS master interface, D-sub socket, 9-pin
CX2033-B310	PROFIBUS slave interface, D-sub socket, 9-pin
CX2033-M510	CANopen master interface, D-sub plug, 9-pin
CX2033-B510	CANopen slave interface, D-sub plug, 9-pin
CX2033-M930	PROFINET RT, controller interface, Ethernet (2 x RJ45 switch)
CX2033-B930	PROFINET RT, device interface, Ethernet (2 x RJ45 switched)
CX2033-B950	EtherNet/IP adapter interface, Ethernet (2 x RJ45 switched) Availability: on request

Accessories

Accessories	
CX2900-0038	40 GB CFast card, 3D flash, extended temperature range
CX2900-0040	80 GB CFast card, 3D flash, extended temperature range
CX2900-0042	160 GB CFast card, 3D flash, extended temperature range
CX2900-0101	Housing locking clips
CX2900-0102	Cover for left-side module bus connector, 5 pieces
CX2900-0103	Spare fan cartridge for CX2040, CX2042, CX2043, CX2062, CX2072 and CX2020, CX2030, CX2033 with fan option – cartridge consisting of chassis and 60 mm fan – simple exchange in the field due to wireless installation – dimensions (W x H x D) 67 x 62 x 16 mm
CX1900-0102	Spare battery suitable for CX10x0, CX81x0, CX50x0, CX51x0, CX52x0, CX90x0, CX20xx – lithium button cell type CR2032, 3V/225 mAh – follow polarity when installing