



## i CX2040 | Basic CPU module

The CX2040 has a 2.1 GHz Intel® Core™ i7 quad-core CPU. Due to its high power the CPU is equipped with a fan with ball bearings and speed monitoring. In addition to the CPU and chipset the CX2040 also contains the main memory with 4 GB RAM as standard. The controller boots from the CFast flash memory card.

The basic configuration of the CX2040 includes a CFast memory card, two independent Gbit Ethernet interfaces, four USB 2.0 interfaces and a DVI-I interface.

The CPU has a 128 kB NOVRAM persistent data memory for situations where no UPS is used.

The unit can optionally be ordered with a fieldbus or serial interface. Other components from the CX2000 family can be connected via the multi-pin terminals on either side. The operating system is Microsoft Windows Embedded Compact 7 or Windows Embedded Standard 7 P. TwinCAT automation software transforms a CX2040 system into a powerful PLC and Motion Control system that can be operated with or without visualisation. Due to its high-performance the CX2040 can be used for interpolating 3-D path movements with TwinCAT NC I.

Up to four modules can be connected to the basic CPU module. The connection order is irrelevant. Internally the modules are connected via PCI Express and can be connected subsequently to the CPU "in the field".

The power supply for the CPU module comes from a CX2100-0014 or CX2100-0914 power supply module, which is connected on the right-hand side of the CPU. Two further CFast memory card modules (CX2550-0010) can be connected between the power supply unit and the CPU, so that a total of up to three CFast cards can be used. RAID can be used in situations where more than one CFast card is used.

The extended operating temperature range between -25 and +60 °C enables application in climatically demanding situations.

The order identifier is derived as follows:

CX2040-01ST		Optional interfaces:
0	= no TwinCAT	CX2040-N010 = second DVI connection, DVI-D port
1	= with TwinCAT 2 PLC runtime	CX2040-N030 = RS232, D-sub plug
2	= with TwinCAT 2 NC PTP runtime	CX2040-N031 = RS422/RS485, D-sub socket
3	= with TwinCAT 2 NC I runtime	CX2040-B110 = EtherCAT slave, EtherCAT IN and OUT (2 x RJ45)
5	= TwinCAT 3 runtime (XAR)	CX2040-M310 = PROFIBUS master, D-sub socket, 9-pin
0	= no operating system	CX2040-B310 = PROFIBUS slave, D-sub socket, 9-pin
1	= operating system Microsoft Windows Embedded Compact 7	CX2040-M510 = CANopen master, D-sub plug, 9-pin
2	= operating system Microsoft Windows Embedded Standard 7 P 32 bit	CX2040-B510 = CANopen slave, D-sub plug, 9-pin
3	= operating system Microsoft Windows Embedded Standard 7 P 64 bit	CX2040-M930 = PROFINET RT, controller
4	= Windows 10 IoT Enterprise LTSB 32 bit	CX2040-B930 = PROFINET RT, device, Ethernet (2 x RJ45 switch)
5	= Windows 10 IoT Enterprise LTSB 64 bit	CX2040-B931 = PROFINET IRT, device, Ethernet (2 x RJ45 switch)
		CX2040-B950 = EtherNet/IP slave, Ethernet (2 x RJ45 switch)

Since not all combinations make sense, the table "Ordering information" contains a breakdown of the permissible combinations.

Technical data	CX2040
Processor	Intel® Core™ i7 2715QE 2.1 GHz
Number of cores	4
Flash memory	4 or 8 GB CFast card (optionally expandable)
Internal main memory	4 GB DDR3 RAM
Persistent memory	128 KB NOVRAM integrated
Interfaces	2 x RJ45, 10/100/1000 Mbit/s, DVI-I, 4 x USB 2.0, 1 x optional interface
Cooling	integrated fan with ball bearings and speed monitoring
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	Microsoft Windows Embedded Compact 7, Microsoft Windows Embedded Standard 7 P or Microsoft Windows 10 IoT Enterprise LTSB
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 loss	42 W (including the system interfaces)
Dimensions (W x H x D)	144 mm x 100 mm x 91 mm
Weight	approx. 1230 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	CE, UL
TC3 performance class	high performance (70); please see <a href="#">here</a> for an overview of all the TwinCAT 3 performance classes

Ordering information	no operating system	Windows Embedded Compact 7	Windows Embedded Standard 7 P 32 bit	Windows Embedded Standard 7 P 64 bit	Windows 10 IoT Enterprise LTSB 32 bit	Windows 10 IoT Enterprise LTSB 64 bit	no TwinCAT	TwinCAT 2 PLC runtime	TwinCAT 2 NC PTP runtime	TwinCAT 2 NC I runtime	TwinCAT 3 runtime (XAR)
CX2040-0100	x	–	–	–	–	–	x	–	–	–	–
CX2040-0110	–	x	–	–	–	–	x	–	–	–	–
CX2040-0111	–	x	–	–	–	–	–	x	–	–	–
CX2040-0112	–	x	–	–	–	–	–	–	x	–	–
CX2040-0113	–	x	–	–	–	–	–	–	–	x	–
CX2040-0115	–	x	–	–	–	–	–	–	–	–	x
CX2040-0120	–	–	x	–	–	–	x	–	–	–	–
CX2040-0121	–	–	x	–	–	–	–	x	–	–	–
CX2040-0122	–	–	x	–	–	–	–	–	x	–	–
CX2040-0123	–	–	x	–	–	–	–	–	–	x	–
CX2040-0125	–	–	x	–	–	–	–	–	–	–	x
CX2040-0130	–	–	–	x	–	–	x	–	–	–	–
CX2040-0135	–	–	–	x	–	–	–	–	–	–	x
CX2040-0140	–	–	–	–	x	–	x	–	–	–	–
CX2040-0141	–	–	–	–	x	–	–	x	–	–	–
CX2040-0142	–	–	–	–	x	–	–	–	x	–	–
CX2040-0143	–	–	–	–	x	–	–	–	–	x	–
CX2040-0150	–	–	–	–	–	x	x	–	–	–	–
CX2040-0155	–	–	–	–	–	x	–	–	–	–	x

Accessories	
CX1900-0101	DVI-to-VGA passive adaptor for connecting a standard desktop VGA monitor to the CX system (singles out the VGA signals of the DVI-I interface).
CX2900-00xx	Optional expansion: Instead of 4 GB CFast card: 8, 16, 30, 60 GB CFast card Instead of 8 GB CFast card: 16, 30, 32, 60, 64 GB CFast card
CX2900-0101	Housing locking clips

Optional interfaces	
CX2040-N010	DVI-D interface, additional DVI-D port for clone or extended desktop operation
CX2040-N011	DisplayPort interface, additional DisplayPort for clone or extended desktop operation
CX2040-N030	RS232 interface, D-sub plug, 9-pin
CX2040-N031	RS485 interface, D-sub socket, 9-pin, configuration as an end point, without echo, termination on
CX2040-N031-0001	RS485 interface, D-sub socket, 9-pin, configuration as an end point, with echo, termination on
CX2040-N031-0002	RS485 interface, D-sub socket, 9-pin, configuration as drop point, without echo, termination off
CX2040-N031-0003	RS485 interface, D-sub socket, 9-pin, configuration as drop point, with echo, termination off
CX2040-N031-0004	RS422 interface, D-sub socket, 9-pin, configuration as full duplex end point, termination on
CX2040-B110	EtherCAT slave interface, EtherCAT IN and OUT (2 x RJ45)
CX2040-M310	PROFIBUS master interface, D-sub socket, 9-pin
CX2040-B310	PROFIBUS slave interface, D-sub socket, 9-pin
CX2040-M510	CANopen master interface, D-sub plug, 9-pin
CX2040-B510	CANopen slave interface, D-sub plug, 9-pin
CX2040-M930	PROFINET RT, controller interface, Ethernet (2 x RJ45)
CX2040-B930	PROFINET RT, device interface, Ethernet (2 x RJ45 switched)
CX2040-B931	PROFINET IRT, device interface, Ethernet (2 x RJ45 switched), in combination with TwinCAT 3 only
CX2040-B950	EtherNet/IP slave interface, Ethernet (2 x RJ45 switched)

<b>i</b> Product announcement	CX20x0-B931, CX20x0-B950: estimated market release on request
-------------------------------	---