

CX9001-0x01, CX9010-0x01: with E-bus interface

CX9001-1x01, CX9010-1x01: with K-bus interface

## CX9001, CX9010 | Basic CPU module with BACnet/IP

The CX90xx is a compact, DIN rail-mountable Ethernet controller with Intel® IXP420 with XScale® technology and 266 MHz (CX9001) or 533 MHz (CX9010) clock frequency. The connection for the Beckhoff I/O systems is directly integrated in the CPU module. The CX90xx is available in two basic versions: one version for Bus Terminals with K-bus, the other one for EtherCAT Terminals with E-bus.

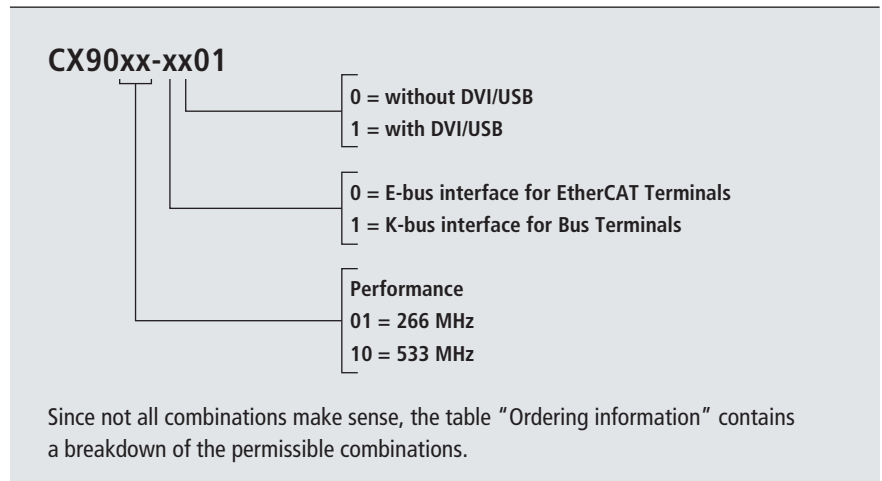
With the TwinCAT BACnet/IP supplement, the CX90xx becomes a BACnet controller with BBC profile, which can serve as a client or server. Thanks to the range of over 400 different Bus Terminals, the Embedded PC can also be used as a gateway between DALI, EnOcean, KNX/EIB, LON, M-Bus, MP-BUS, Modbus and other interfaces. BACnet objects can be created and managed simply and clearly with the aid of the system manager. BACnet properties of client and server objects can be read and also written cyclically as process data and via ADS.

The CX90xx comprises the CPU, the internal flash memory and NOVRAM as non-volatile memory. Two Ethernet RJ 45 interfaces are also part of the basic configuration. These interfaces are connected to an internal switch and offer a simple option for creating a line topology without the need for additional Ethernet switches.

The TwinCAT automation software transforms a CX90xx system into a powerful PLC and Motion Control system that can be operated with or without visualisation. Further system interfaces can be connected to the CPU module ex factory. The CX90x0-N010

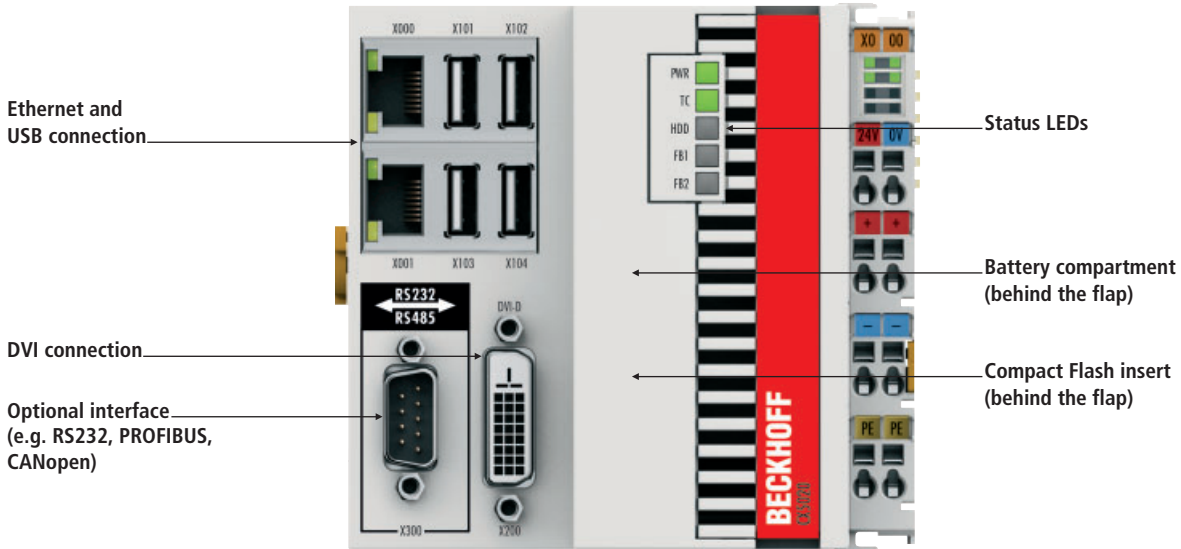
option can be connected to Beckhoff Control Panels or standard monitors with DVI or VGA input via the DVI and USB interfaces. Devices such as printer, scanner, mouse, keyboard, mass storage, CR-RW, etc. can be connected via the USB 2.0 interfaces. The module CX90x0-N030 offers two serial RS232 interfaces with a maximum transfer speed of 115 kbaud. These two interfaces can be implemented as RS422/RS485, in which case they are identified as CX90x0-N031.

The order identifier of the basic CPU module is derived as follows:



Technical data	CX90xx-0x01	CX90xx-1x01
BACnet device profile	BBC (BACnet Building Controller)	
Configuration	via TwinCAT System Manager	
Protocol	BACnet/IP (client and server) according to ISO 16484-5:2007	
Feature	automatic creation of BACnet/IP objects for I/O modules, automatic creation of BACnet/IP objects from the PLC program, EDE export/import	
Extended BACnet functions	dynamic creation of BACnet/IP objects, BBMD, UTF8 support, COV-P, UTC time synchronisation	
Processor	266/533 MHz Intel® IXP420 with XScale® technology	
Flash memory	32 MB Flash (internal, not expandable)	
Internal main memory	128 MB RAM (internal, not expandable)	
Interfaces	2 x RJ 45 (Ethernet, internal switch), 10/100 Mbit/s	
Diagnostics LED	1 x power, 2 x LAN, 1 x L/A, 1 x flash access	1 x power, 2 x LAN, 1 x K-bus, 1 x flash access
Clock	internal battery-backed clock for time and date (battery exchangeable)	
Operating system	Microsoft Windows CE	
Control software	TwinCAT CE PLC runtime	
Power supply	24 V DC (-15 %/+20 %)	
Dielectric strength	500 V (supply/internal electronics)	
I/O connection	E-bus (EtherCAT Terminals)	K-bus (Bus Terminals)
NOVRAM	128 kbytes	
I/O-DPRAM	–	4 kbytes
Current supply I/O terminals	2 A	
Max. power loss	6 W (including the system interfaces CX90x0-xxxx)	
Dimensions (W x H x D)	58 mm x 100 mm x 91 mm	
Weight	approx. 295 g (without heat sink), approx. 375 g (with heat sink for variants with DVI/USB interface)	
Operating/storage temperature	0...+55 °C/-25...+85 °C	
Relative humidity	95 %, no condensation	
Vibration/shock resistance	conforms to EN 60068-2-6/EN 60068-2-27/29	
EMC immunity/emission	conforms to EN 61000-6-2/EN 61000-6-4	
Protection class	IP 20	
Approvals	CE, UL	

Ordering information	Performance	E-bus	K-bus	DVI/USB
CX9001-0001+CX1800-1044	266 MHz	x	–	–
CX9001-0101+CX1800-1044	266 MHz	x	–	x
CX9010-0001+CX1800-1044	533 MHz	x	–	–
CX9010-0101+CX1800-1044	533 MHz	x	–	x
CX9001-1001+CX1800-1044	266 MHz	–	x	–
CX9001-1101+CX1800-1044	266 MHz	–	x	x
CX9010-1001+CX1800-1044	533 MHz	–	x	–
CX9010-1101+CX1800-1044	533 MHz	–	x	x



Ethernet and USB connection

DVI connection

Optional interface (e.g. RS232, PROFIBUS, CANopen)

Status LEDs

Battery compartment (behind the flap)

Compact Flash insert (behind the flap)

## CX5000 | Embedded PC series with BACnet/IP

The CX5010 and CX5020 are Embedded PCs from the CX5000 series based on Intel® Atom™ processors and differ only by the CPU version. The CX5010 has a 1.1 GHz Intel® Atom™ Z510 processor, while the CX5020 has a 1.6 GHz Intel® Atom™ Z530 processor.

With the TwinCAT BACnet/IP supplement, the CX50x0 becomes a BACnet controller with BBC profile, which can serve as a client

or server. Thanks to the range of over 400 different Bus Terminals, the Embedded PC can also be used as a gateway between DALI, EnOcean, KNX/EIB, LON, M-Bus, MP-BUS, Modbus and other interfaces. BACnet objects can be created and managed simply and clearly with the aid of the system manager. BACnet properties of client and server objects can be read and also written cyclically as process data and via ADS.



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

The order identifier of the CX5000 devices is derived as follows:

### CX50x0-x1xx

- 1 = with TwinCAT PLC runtime
- 2 = with TwinCAT PLC/NC runtime
- 1 = operating system Windows CE
- 2 = operating system Windows Embedded Standard
- 0 = E-bus interface for EtherCAT Terminals
- 1 = K-bus interface for Bus Terminals
- 1 = CPU Intel® Atom™ processor 1.1 GHz
- 2 = CPU Intel® Atom™ processor 1.6 GHz

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

Technical data	CX5010-x1xx	CX5020-x1xx
BACnet device profile	BBC (BACnet Building Controller)	
Configuration	via TwinCAT System Manager	
Protocol	BACnet/IP (client and server) according to ISO 16484-5:2007	
Feature	automatic creation of BACnet/IP objects for I/O modules, automatic creation of BACnet/IP objects from the PLC program, EDE export/import	
Extended BACnet functions	dynamic creation of BACnet/IP objects, BBMD, UTF8 support, COV-P, UTC time synchronisation	
Processor	processor Intel® Atom™ Z510, 1.1 GHz clock frequency	processor Intel® Atom™ Z530, 1.6 GHz clock frequency
Flash memory	64 MB Compact Flash card (optionally extendable)	
Internal main memory	512 MB RAM (internal, not expandable)	512 MB RAM (optionally 1 GB installed ex factory)
Persistent memory	integrated 1-second UPS (1 MB on Compact Flash card)	
Interfaces	2 x RJ 45, 10/100/1000 Mbit/s, DVI-D, 4 x USB 2.0, optional 1 x RS232/RS422/RS485	
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 CE or Microsoft Windows Embedded Standard	
Control software	TwinCAT PLC runtime or TwinCAT NC PTP runtime	
Power supply	24 V DC (-15 %/+20 %)	
Dielectric strength	500 V (supply/internal electronics)	
Current supply I/O terminals	2 A	
Max. power loss	12 W (including the system interfaces)	12.5 W (including the system interfaces)
Dimensions (W x H x D)	100 mm x 100 mm x 91 mm	
Operating/storage temperature	-25...+60 °C/-40...+85 °C	
Relative humidity	95 %, no condensation	
Vibration/shock resistance	conforms to EN 60068-2-6/EN 60068-2-27/29	
EMC immunity/emission	conforms to EN 61000-6-2/EN 61000-6-4	
Protection class	IP 20	
Approvals	CE, UL	

Ordering information	E-bus	K-bus	Windows CE	Windows Embedded Standard	TwinCAT PLC runtime	TwinCAT NC runtime
CX5010-0111	x	–	x	–	x	–
CX5010-0112	x	–	x	–	x	x
CX5010-0121	x	–	–	x*	x	–
CX5010-0122	x	–	–	x*	x	x
CX5010-1111	–	x	x	–	x	–
CX5010-1112	–	x	x	–	x	x
CX5010-1121	–	x	–	x*	x	–
CX5010-1122	–	x	–	x*	x	x

Ordering information	E-bus	K-bus	Windows CE	Windows Embedded Standard	TwinCAT PLC runtime	TwinCAT NC runtime
CX5020-0111	x	–	x	–	x	–
CX5020-0112	x	–	x	–	x	x
CX5020-0121	x	–	–	x*	x	–
CX5020-0122	x	–	–	x*	x	x
CX5020-1111	–	x	x	–	x	–
CX5020-1112	–	x	x	–	x	x
CX5020-1121	–	x	–	x*	x	–
CX5020-1122	–	x	–	x*	x	x

\*CX50x0 systems with Microsoft Embedded Standard require Compact Flash with a capacity of at least 2 GB (must be ordered separately).

Options	
CX50x0 with CE	ordering number of the CX + CX1800-1044 (BACnet image)
CX50x0 with XPe	ordering number of the CX + TwinCAT BACnet/IP supplement (licence key necessary), TwinCAT 2.11 R3