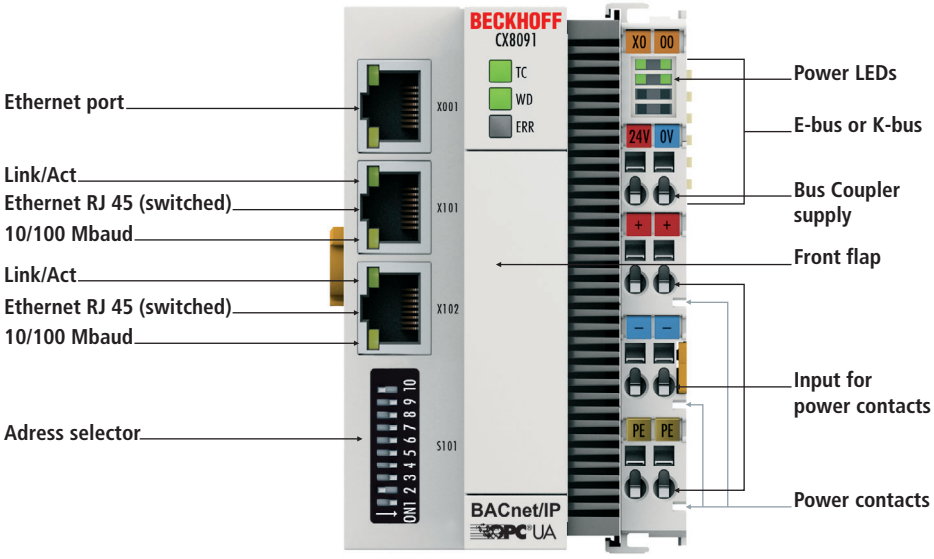
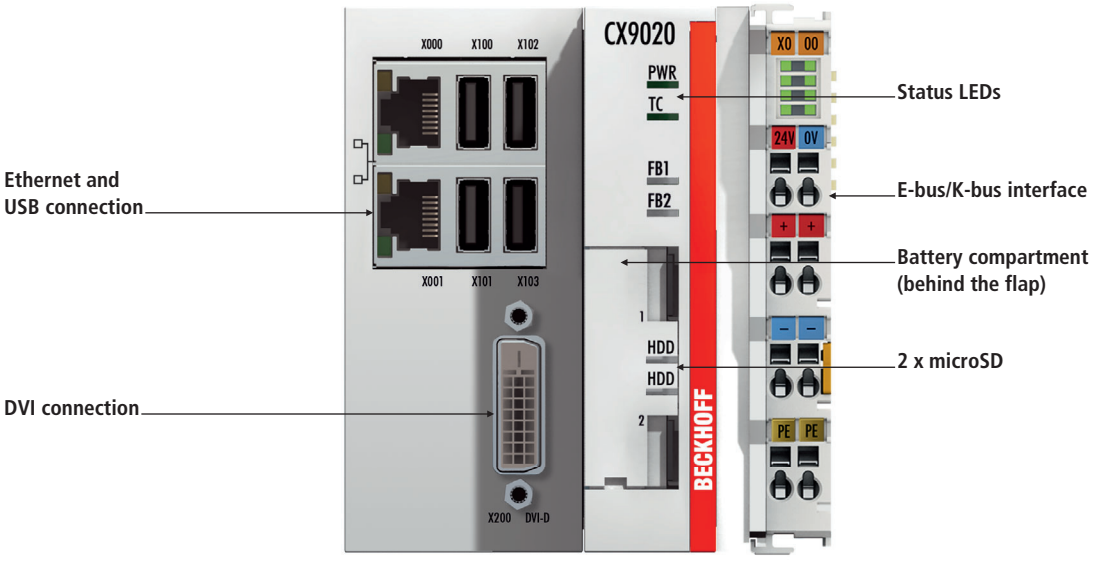


CX8091 | Embedded PC for BACnet/IP

The CX8091 is a compact, DIN rail-mountable Ethernet controller with a 400 MHz 32-bit CPU. The BACnet or OPC UA protocols can be operated via the switched Ethernet fieldbus interface. Alternatively K-bus or E-bus terminals can be connected; the CX8091 automatically detects which system is connected during the start-up phase. The control system is programmed with TwinCAT 2 via the fieldbus interface or the additional Ethernet port.

BACnet (Building Automation Control Network) is a standardised, manufacturer-independent communication protocol for building automation. Areas of application include HVAC, lighting control, safety and fire alarm technology.

Technical data	CX8091
BACnet device profile	B-BC (BACnet Building Controller)
Configuration	via TwinCAT System Manager
Feature	automatic creation of BACnet/IP objects for I/O modules, automatic creation of BACnet/IP objects from the PLC program, EDE export/import, view and acknowledgement of alarm and event notifications
Extended BACnet functions	dynamic creation of BACnet/IP objects, BBMD, master function for time synchronisation, COV-P, full character set support, algorithmic change reporting (Event Enrollment), compatible with AMEV AS-B profile
Protocol	BACnet/IP (client and server) according to ISO 16484-5:2012 (revision 12)
Programming	TwinCAT 2 PLC
Programming languages	IEC 61131-3
Web visualisation	yes
Online change	yes
Up/down load code	yes/yes
Interfaces	1 x Ethernet 10/100 Mbit/s, 1 x USB device (behind the front flap)
Bus interface	2 x RJ 45 (switched)
I/O connection	E-bus (EtherCAT Terminals) or K-bus (Bus Terminals), automatic recognition
Clock	internal battery-backed clock for time and date (battery behind the front flap, exchangeable)
UPS	1-second UPS (for 1 MB of persistent data)
Operating system	Microsoft Windows CE 6
Web-based management	yes
Current supply I/O terminals	2 A
Max. power loss	3 W
Dimensions (W x H x D)	65 mm x 100 mm x 80 mm
Operating/storage temperature	0…+55 °C/-25…+85 °C
Relative humidity	95 %, no condensation
Protection class	IP 20
Approvals	BACnet WSPCert certificate, BTL listing



CX9020 | Basic CPU module with BACnet/IP

The CX9020 is a compact, DIN rail-mountable Ethernet control system with 1 GHz ARM Cortex™-A8 CPU. The connection for the Beckhoff I/O systems is directly integrated into the CPU module. The unit offers automatic bus system identification (K-bus or E-bus) and independently switches in the corresponding mode. The CX9020 comprises the CPU with two microSD card slots, the internal RAM and 128 kB NOVRAM as non-volatile memory. The basic configuration also includes two switched Ethernet RJ 45 interfaces, four USB-2.0 interfaces and a DVI-D interface. The RJ 45 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 operating system is Microsoft Windows Embedded Compact 7. TwinCAT 2 automation software transforms a CX9020 system into a powerful PLC and Motion Control system that can be operated with or without visualisation. Optionally, the unit can be ordered with a fieldbus, serial or audio interface.

BACnet (Building Automation Control Network) is a standardised, manufacturer-independent communication protocol for building automation. BACnet/IP is used in HVAC, lighting control, security and fire alarm technology.

With the TwinCAT BACnet/IP supplement, the CX9020 becomes a BACnet controller with B-BC-profile, which can act 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, EIB/KNX, 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. The BACnet properties of client and server objects can be read and also written both acyclically via ADS and cyclically as process data.

If the order option CX1800-1052 is chosen, the Embedded PCs are delivered with WEC7 operating system with a pre-installed and certified BACnet image. The image already contains the licence key.

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

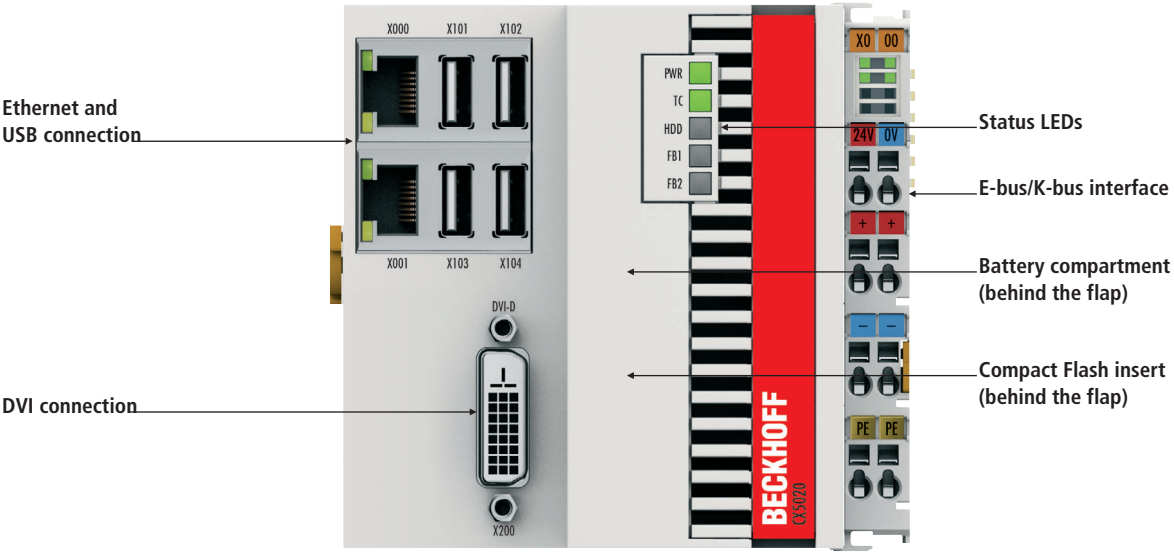
The order identifier of the basic CPU module is derived as follows:

Optional interfaces:

CX9020-N020 = audio interface
CX9020-N030 = RS232, D-sub plug
CX9020-N031 = RS422/RS485, D-sub socket
CX9020-B110 = EtherCAT slave, EtherCAT IN and OUT (2 x RJ 45)
CX9020-M310 = PROFIBUS master, D-sub socket, 9-pin
CX9020-B310 = PROFIBUS slave, D-sub socket, 9-pin
CX9020-M510 = CANopen master, D-sub plug, 9-pin
CX9020-B510 = CANopen slave, D-sub plug, 9-pin
CX9020-M930 = PROFINET RT, controller
CX9020-B930 = PROFINET RT, device, Ethernet (2 x RJ 45 switch)
CX9020-B950 = EtherNet/IP slave, Ethernet (2 x RJ 45 switch)

Technical data	CX9020
BACnet device profile	B-BC (BACnet Building Controller)
Configuration	via TwinCAT System Manager
Protocol	BACnet/IP (client and server) according to ISO 16484-5:2012 (revision 12)
Feature	automatic creation of BACnet/IP objects for I/O modules, automatic creation of BACnet/IP objects from the PLC program, EDE export/import, view and acknowledgement of alarm and event notifications
Extended BACnet functions	dynamic creation of BACnet/IP objects, BBMD, master function for time synchronisation, COV-P, full character set support, algorithmic change reporting (Event Enrollment), compatible with AMEV AS-B profile
Processor	ARM Cortex™-A8, 1 GHz
Flash memory	256 MB microSD (optionally expandable), 2 x microSD card slot
Internal main memory	1 GB DDR3 RAM
Persistent memory	128 KB NOVRAM integrated
Interfaces	2 x RJ 45 (Ethernet, internal switch), 10/100 Mbit/s, DVI-D, 4 x USB 2.0, 1 x optional interface
Diagnostics LED	1 x power, 1 x TC status, 2 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, English
Control software	TwinCAT 2 CE PLC runtime
Power supply	24 V DC (-15 %/+20 %)
Dielectric strength	500 V (supply/internal electronics)
NOVRAM	128 kbytes
Current supply I/O terminals	2 A
Max. power loss	5 W (including the system interfaces)
Dimensions (W x H x D)	85 mm x 100 mm x 91 mm
Operating/storage temperature	-25…+60 °C/-25…+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	BACnet WSPCert certificate, BTL listing

Ordering information	
CX9020-0111 + CX1800-1052	Embedded PC CX9020 with TwinCAT PLC runtime and BACnet/IP image



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. Apart from the clock speed, the two processors also differ by the fact that the Z530 features hyperthreading technology, i.e. it has two virtual CPU cores for more effective execution of software.

BACnet (Building Automation Control Network) is a standardised, manufacturer-independent communication protocol for building automation. BACnet/IP is used in HVAC, lighting control, security and fire alarm technology.

The TwinCAT BACnet/IP supplement transforms the CX50x0 into a BACnet controller with B-BC profile that can act 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, EIB/KNX, 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 via ADS and cyclically as process data.

If the order option CX1800-1052 is chosen, Embedded PCs are delivered with CE6 operating system with a pre-installed and certified BACnet image. The image already contains the necessary licence key. For Embedded PCs with WES2009 operating system (Windows Embedded Standard 2009) the TS8020 TwinCAT BACnet/IP Supplement must be activated with the licence key.

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-x1x1

- 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.

Optional interfaces:

CX50x0-N020 = audio interface
CX50x0-N030 = RS232, D-sub plug
CX50x0-N031 = RS422/RS485, D-sub socket
CX50x0-M310 = PROFIBUS master, D-sub socket, 9-pin
CX50x0-B310 = PROFIBUS slave, D-sub socket, 9-pin
CX50x0-M510 = CANopen master, D-sub plug, 9-pin
CX50x0-B510 = CANopen slave, D-sub plug, 9-pin
CX50x0-M930 = PROFINET RT, controller
CX50x0-B930 = PROFINET RT, device, Ethernet (2 x RJ 45 switch)
CX50x0-B950 = EtherNet/IP slave, Ethernet (2 x RJ 45 switch)
CX50x0-B110 = EtherCAT slave, EtherCAT IN and OUT (2 x RJ 45)

Technical data	CX5010-x1x1	CX5020-x1x1
BACnet device profile	B-BC (BACnet Building Controller)	
Configuration	via TwinCAT System Manager	
Protocol	BACnet/IP (client and server) according to ISO 16484-5:2012 (revision 12)	
Feature	automatic creation of BACnet/IP objects for I/O modules, automatic creation of BACnet/IP objects from the PLC program, EDE export/import, view and acknowledgement of alarm and event notifications	
Extended BACnet functions	dynamic creation of BACnet/IP objects, BBMD, master function for time synchronisation, COV-P, full character set support, algorithmic change reporting (Event Enrollment), compatible with AMEV AS-B profile	
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 2 PLC runtime or TwinCAT 2 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	
EMC immunity/emission	conforms to EN 61000-6-2/EN 61000-6-4	
Protection class	IP 20	
Approvals	BACnet WSPCert certificate, BTL listing	

Ordering information	E-bus	K-bus	Windows CE 6	Windows Embedded Standard 2009	TwinCAT 2 PLC runtime
CX5010-0111 + CX1800-1052	x	–	x	–	x
CX5010-0121 + TS8020	x	–	–	x*	x
CX5010-1111 + CX1800-1052	–	x	x	–	x
CX5010-1121 + TS8020	–	x	–	x*	x

Ordering information	E-bus	K-bus	Windows CE 6	Windows Embedded Standard 2009	TwinCAT 2 PLC runtime
CX5020-0111 + CX1800-1052	x	–	x	–	x
CX5020-0121 + TS8020	x	–	–	x*	x
CX5020-1111 + CX1800-1052	–	x	x	–	x
CX5020-1121 + TS8020	–	x	–	x*	x

***CX50x0 systems with Microsoft Embedded Standard 2009 require Compact Flash with a capacity of at least 2 GB (must be ordered separately).**

Options	
CX50x0 with CE	ordering number of the CX + CX1800-1052 (BACnet image)
CX50x0 with XPe	ordering number of the CX + TS8020 supplement TwinCAT BACnet/IP (licence key necessary), TwinCAT 2.11 R3