

Documentation | EN

EPP1322-0001

EtherCAT P junction with feed-in



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1 Foreword

1.1 Notes on the documentation

Intended audience

This description is only intended for the use of trained specialists in control and automation engineering who are familiar with the applicable national standards.

It is essential that the documentation and the following notes and explanations are followed when installing and commissioning these components.

It is the duty of the technical personnel to use the documentation published at the respective time of each installation and commissioning.

The responsible staff must ensure that the application or use of the products described satisfy all the requirements for safety, including all the relevant laws, regulations, guidelines and standards.

Disclaimer

The documentation has been prepared with care. The products described are, however, constantly under development.

We reserve the right to revise and change the documentation at any time and without prior announcement.

No claims for the modification of products that have already been supplied may be made on the basis of the data, diagrams and descriptions in this documentation.

Trademarks

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Patent Pending

The EtherCAT Technology is covered, including but not limited to the following patent applications and patents: EP1590927, EP1789857, EP1456722, EP2137893, DE102015105702 with corresponding applications or registrations in various other countries.



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1.2 Safety instructions

Safety regulations

Please note the following safety instructions and explanations!
Product-specific safety instructions can be found on following pages or in the areas mounting, wiring, commissioning etc.

Exclusion of liability

All the components are supplied in particular hardware and software configurations appropriate for the application. Modifications to hardware or software configurations other than those described in the documentation are not permitted, and nullify the liability of Beckhoff Automation GmbH & Co. KG.

Personnel qualification

This description is only intended for trained specialists in control, automation and drive engineering who are familiar with the applicable national standards.

Description of instructions

In this documentation the following instructions are used.
These instructions must be read carefully and followed without fail!

DANGER

Serious risk of injury!

Failure to follow this safety instruction directly endangers the life and health of persons.

WARNING

Risk of injury!

Failure to follow this safety instruction endangers the life and health of persons.

CAUTION

Personal injuries!

Failure to follow this safety instruction can lead to injuries to persons.

NOTE

Damage to environment/equipment or data loss

Failure to follow this instruction can lead to environmental damage, equipment damage or data loss.



Tip or pointer

This symbol indicates information that contributes to better understanding.

1.3 Documentation issue status

Version	Comment
1.3	<ul style="list-style-type: none"> • Dimensions updated • UL requirements updated
1.2	<ul style="list-style-type: none"> • Front page updated
1.1	<ul style="list-style-type: none"> • Chapter added: Block diagram • Chapter added: Switching on again after a short circuit • Structure update
1.0	First release
0.9	Preliminary version, split off from group document EPP13x2 Version 1.0.2

Firmware and hardware versions

This documentation refers to the firmware and hardware version that was applicable at the time the documentation was written.

The module features are continuously improved and developed further. Modules having earlier production statuses cannot have the same properties as modules with the latest status. However, existing properties are retained and are not changed, so that older modules can always be replaced with new ones.

The firmware and hardware version (delivery state) can be found in the batch number (D-number) printed on the side of the EtherCAT Box.

Syntax of the batch number (D-number)

D: WW YY FF HH

WW - week of production (calendar week)

YY - year of production

FF - firmware version

HH - hardware version

Example with D no. 29 10 02 01:

29 - week of production 29

10 - year of production 2010

02 - firmware version 02

01 - hardware version 01

Further information on this topic: [Version identification of EtherCAT devices \[► 28\]](#).

2 Product group: EtherCAT P Box modules

EtherCAT P

EtherCAT P supplements the EtherCAT technology with a process in which communication and supply voltages are transmitted on a common line. All EtherCAT properties are retained with this process.

Two supply voltages are transmitted per EtherCAT P line. The supply voltages are electrically isolated from each other and can therefore be switched individually. The nominal supply voltage for both is 24 V_{DC}.

EtherCAT P uses the same cable structure as EtherCAT: a 4-core Ethernet cable with M8 connectors. The connectors are mechanically coded so that EtherCAT connectors and EtherCAT P connectors cannot be interchanged.

EtherCAT P Box modules

EtherCAT P Box modules are EtherCAT P slaves with IP67 protection. They are designed for operation in wet, dirty or dusty industrial environments.

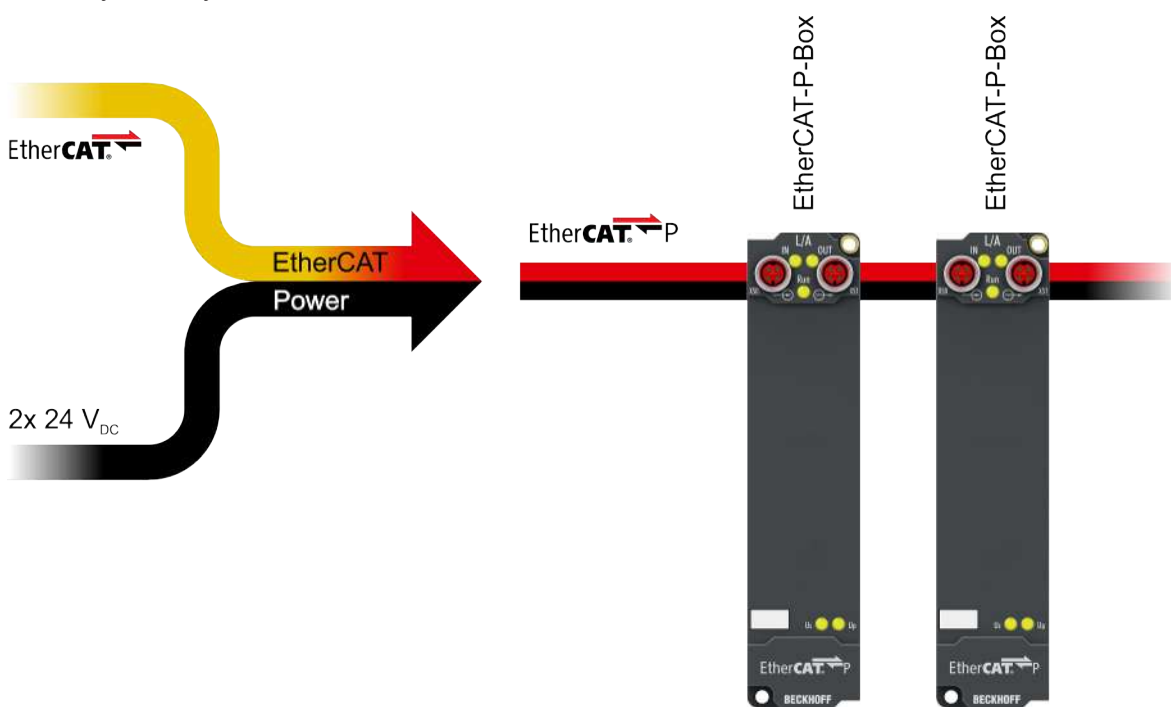


Fig. 1: EtherCAT P



EtherCAT basics

A detailed description of the EtherCAT system can be found in the [EtherCAT system documentation](#).

3 Product overview

3.1 Introduction

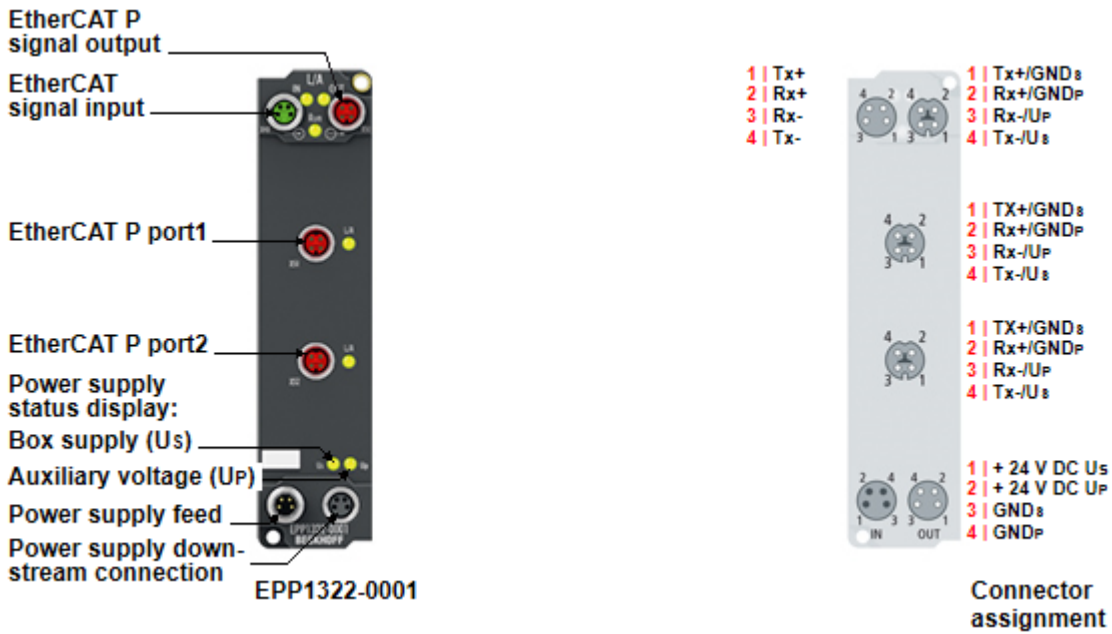


Fig. 2: EPP1322-0001

EPP1322-0001 | EtherCAT P junction with feed-in

The EPP1322-0001 EtherCAT P junction with feed-in forms the start of an EtherCAT P network section.

It converts the incoming EtherCAT signal into an EtherCAT P signal by combining the EtherCAT signal with the applied supply voltages. The EtherCAT P signal is available at three output ports.

In the case of a short circuit on an EtherCAT-P output, the EPP1322-0001 switches the short-circuited output voltage off. [Restart after short-circuit shutdown](#) [▶ 24]

Quick links

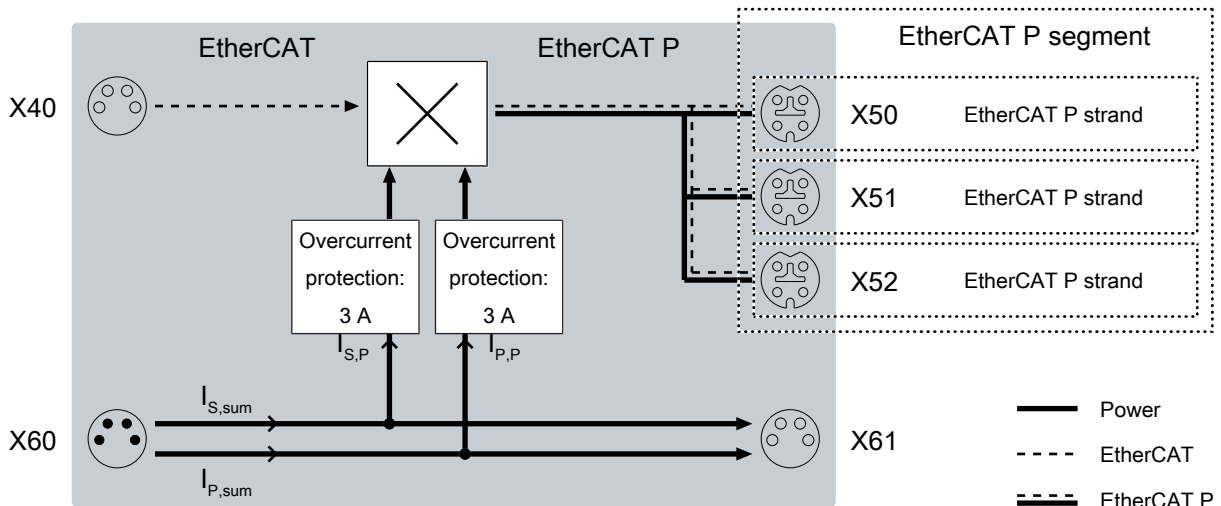
[Technical data](#) [▶ 10]

[Dimensions](#) [▶ 13]

[Connections](#) [▶ 15]

[Commissioning and configuration](#) [▶ 22]

3.2 Block diagram



3.3 Technical data

All values are typical values over the entire temperature range, unless stated otherwise.

EtherCAT input X40	
Connection	1x M8 socket, 4-pin, green
Electrical isolation	500 V

EtherCAT P outputs X50, X51, X52	
Number	3
Connection	3 x M8 socket, 4-pin, P-coded, red
Output current per port	max. 3 A per U_S and U_P , short-circuit proof
Sum output current: $I_{S,P}$, $I_{P,P}$	max. 3 A per U_S and U_P , short-circuit proof
Cable length	max. 70 m per EtherCAT P segment
Number of EtherCAT P slaves	10 EtherCAT P slaves per segment ¹⁾

Supply voltages	
Connection	Input: M8 connector, 4-pin Downstream connection: M8 socket, 4-pin, black
U_S nominal voltage	24 V _{DC} (-15 % / +20 %)
U_S sum current: $I_{S,sum}$	max. 4 A
Current consumption from U_S	100 mA
Rated voltage U_P	24 V _{DC} (-15 % / +20 %)
U_P sum current: $I_{P,sum}$	max. 4 A

Housing data	
Dimensions W x H x D	30 mm x 126 mm x 26.5 mm (without connectors)
Weight	approx. 165 g
Installation position	variable
Material	PA6 (polyamide)

Environmental conditions	
Ambient temperature during operation	-25...+60 °C -25...+55 °C according to cULus
Ambient temperature during storage	-40...+85 °C
Vibration resistance, shock resistance	conforms to EN 60068-2-6 / EN 60068-2-27 Additional checks [► 11]
EMC immunity / emission	conforms to EN 61000-6-2 / EN 61000-6-4
Protection class	IP65, IP66, IP67 (conforms to EN 60529)

Approvals	
Approvals	CE, cULus [► 21]

¹⁾ This value is a typical value. The number of EtherCAT P slaves actually possible per segment can be affected by:

- the switch-on current of sensors/actuators connected to the EtherCAT P slaves
- cable lengths

Additional checks

The boxes have been subjected to the following checks:

Verification	Explanation
Vibration	10 frequency sweeps in 3 axes
	5 Hz < f < 60 Hz displacement 0.35 mm, constant amplitude
	60.1 Hz < f < 500 Hz acceleration 5 g, constant amplitude
Shocks	1000 shocks in each direction, in 3 axes
	35 g, 11 ms

3.4 Scope of supply

Make sure that the following components are included in the scope of delivery:

- 1x EtherCAT P Box EPP1322-0001
- 1x protective cap for EtherCAT socket, M8, green (pre-assembled)
- 3x protective cap for EtherCAT P socket, M8, red (pre-assembled)
- 1x protective cap for supply voltage input, M8, transparent (pre-assembled)
- 1x protective cap for supply voltage output, M8, black (pre-assembled)
- 10x labels, blank (1 strip of 10)

● Pre-assembled protective caps do not ensure IP67 protection

i Protective caps are pre-assembled at the factory to protect connectors during transport. They may not be tight enough to ensure IP67 protection.

Ensure that the protective caps are correctly seated to ensure IP67 protection.

3.5 Process image

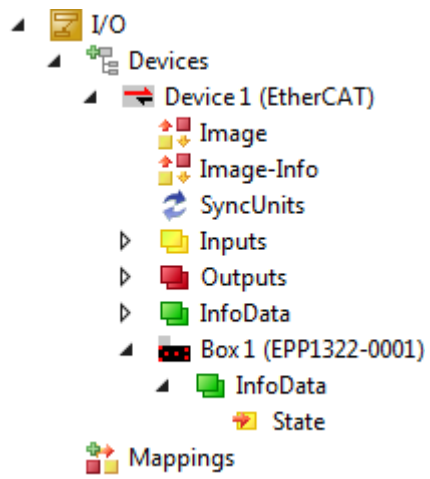
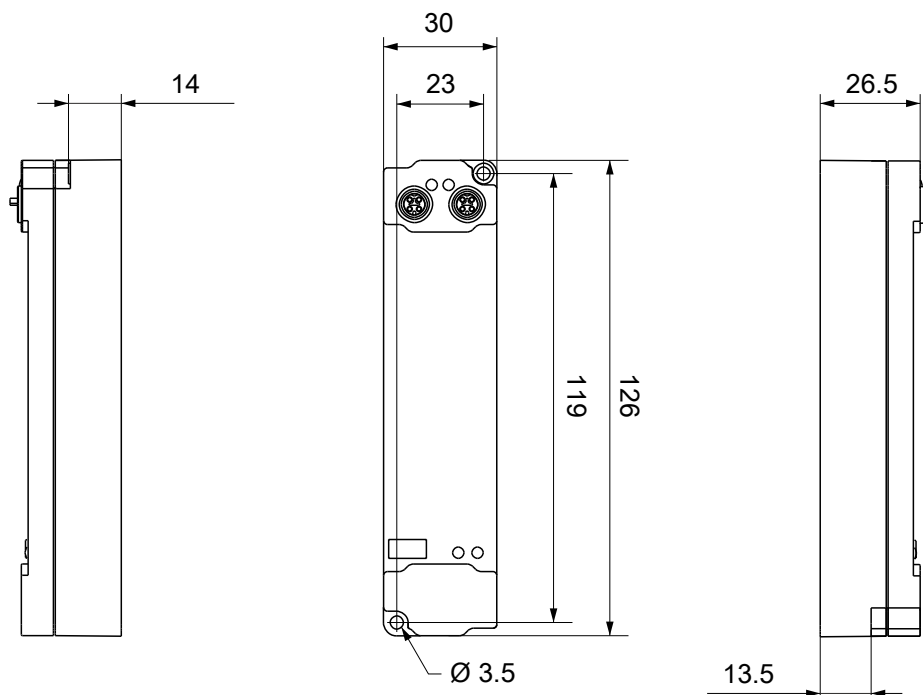


Fig. 3: EPP1322-0001 process image

4 Mounting and connections

4.1 Mounting

4.1.1 Dimensions



All dimensions are given in millimeters.
The drawing is not true to scale.

Housing features

Housing material	PA6 (polyamide)
Sealing compound	polyurethane
Mounting	two fastening holes Ø 3.5 mm for M3
Metal parts	brass, nickel-plated
Contacts	CuZn, gold-plated
Installation position	variable
Protection class	IP65, IP66, IP67 (conforms to EN 60529) when screwed together
Dimensions (H x W x D)	approx. 126 x 30 x 26.5 mm (without connectors)

4.1.2 Fixing

NOTE

Dirt during assembly

Dirty connectors can lead to malfunctions. Protection class IP67 can only be guaranteed if all cables and connectors are connected.

- Protect the plug connectors against dirt during the assembly.

Mount the module with two M3 screws on the fastening holes in the corners of the module. The fastening holes have no thread.

4.1.3 Functional earth (FE)

The upper fastening hole also serves as a connection for functional earth (FE).



Fig. 4: Connection for functional earth (FE)

4.2 Connections

4.2.1 Overview

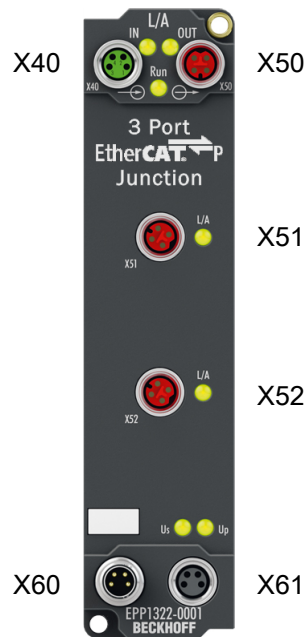


Fig. 5: Connector overview

Name	Function	Connector type	Tightening torque
X40	EtherCAT input [► 16]	M8 socket	0.4 Nm ¹⁾
X50	EtherCAT P output [► 17], port C	M8 socket, p-coded	0.4 Nm ¹⁾
X51	EtherCAT P output [► 17], port D	M8 socket, p-coded	0.4 Nm ¹⁾
X52	EtherCAT P output [► 17], port B	M8 socket, p-coded	0.4 Nm ¹⁾
X60	Supply voltage input [► 19]	M8 plug connector	0.4 Nm ¹⁾
X61	Supply voltage downstream connection [► 19]	M8 socket	0.4 Nm ¹⁾

¹⁾ Mount plugs on these connectors using a torque wrench, e.g. ZB8801 from Beckhoff.

Protective caps

- Seal unused connectors with protective caps.
- Ensure the correct seating of pre-assembled protective caps.
Protective caps are pre-assembled at the factory to protect connectors during transport. They may not be tight enough to ensure IP67 protection.

4.2.2 EtherCAT

4.2.2.1 Connector

NOTE

Risk of confusion: supply voltages and EtherCAT

Defect possible through incorrect insertion.

- Observe the color coding of the connectors:
black: Supply voltages
green: EtherCAT

Connection

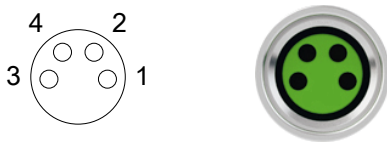


Fig. 6: M8 socket

EtherCAT	M8 connector	Core colors		
Signal	Contact	ZB9010, ZB9020, ZB9030, ZB9032, ZK1090-6292, ZK1090-3xxx-xxxx	ZB9031 and old versions of ZB9030, ZB9032, ZK1090-3xxx-xxxx	TIA-568B
Tx +	1	yellow ¹⁾	orange/white	white/orange
Tx -	4	orange ¹⁾	orange	orange
Rx +	2	white ¹⁾	blue/white	white/green
Rx -	3	blue ¹⁾	blue	green
Shield	Housing	Shield	Shield	Shield

¹⁾ Core colors according to EN 61918

● Adaptation of core colors for cables ZB9030, ZB9032 and ZK1090-3xxxx-xxxx

i For standardization, the core colors of the ZB9030, ZB9032 and ZK1090-3xxx-xxxx cables have been changed to the EN61918 core colors: yellow, orange, white, blue. So there are different color codes in circulation. The electrical properties of the cables have been retained when the core colors were changed.

4.2.2.2 Cables

For connecting EtherCAT devices only shielded Ethernet cables that meet the requirements of at least category 5 (CAT5) according to EN 50173 or ISO/IEC 11801 should be used.

EtherCAT uses four wires for signal transmission.

Thanks to automatic line detection ("Auto MDI-X"), both symmetrical (1:1) or cross-over cables can be used between Beckhoff EtherCAT.

[Detailed recommendations for the cabling of EtherCAT devices](#)

4.2.3 EtherCAT P

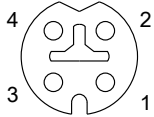
NOTE

Risk of damage to the device!

Bring the EtherCAT/EtherCAT P system into a safe, powered down state before starting installation, disassembly or wiring of the modules!

4.2.3.1 Connector

M8 socket, p-coded



Contact	Signal	Voltage	Core color ¹⁾
1	Tx +	GND _S	yellow
2	Rx +	GND _P	white
3	Rx -	U _P : Peripheral voltage, +24 V _{DC}	blue
4	Tx -	U _S : Control voltage, +24 V _{DC}	orange
Housing	Shield	Shield	Shield

¹⁾ The core colors apply to EtherCAT P cables and ECP cables from Beckhoff.

4.2.4 EtherCAT Status LEDs

L/A (Link/Act)

A green LED labelled "L/A" or "Link/Act" is located next to each EtherCAT/EtherCAT P socket. The LED indicates the communication state of the respective socket:

LED	Meaning
off	no connection to the connected EtherCAT device
lit	LINK: connection to the connected EtherCAT device
flashes	ACT: communication with the connected EtherCAT device

Run

Each EtherCAT slave has a green LED labelled "Run". The LED signals the status of the slave in the EtherCAT network:

LED	Meaning
off	Slave is in "Init" state
flashes uniformly	Slave is in "Pre-Operational" state
flashes sporadically	Slave is in "Safe-Operational" state
lit	Slave is in "Operational" state

Description of the EtherCAT slave states

4.2.5 Supply voltages

The EtherCAT Box is supplied with two supply voltages. The supply voltages are electrically isolated in the EtherCAT Box.

- Control voltage U_s
- Peripheral voltage U_p

Redirection of the supply voltages

The IN and OUT power connections are bridged in the module (not IP204x-Bxxx and IE204x). The supply voltages U_s and U_p can thus easily be transferred from EtherCAT Box to EtherCAT Box.

NOTE

Pay attention to the maximum permissible current!

Pay attention also for the redirection of the supply voltages U_s and U_p , the maximum permissible current for M8 connectors of 4 A must not be exceeded!

4.2.5.1 Connectors

NOTE

Risk of confusion: supply voltages and EtherCAT

Defect possible through incorrect insertion.

- Observe the color coding of the connectors:
 black: Supply voltages
 green: EtherCAT

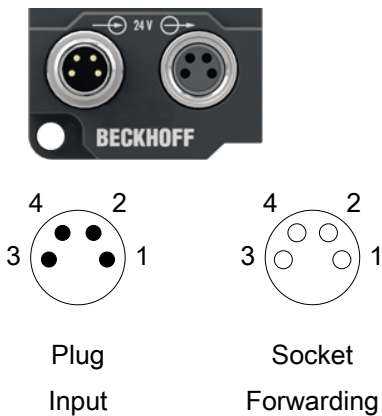


Fig. 7: M8 connector

Contact	Function	Description	Core color ¹⁾
1	U_s	Control voltage	Brown
2	U_p	Peripheral voltage	White
3	GND_s	GND to U_s	Blue
4	GND_p	GND to U_p	Black

¹⁾ The core colors apply to cables of the type: Beckhoff ZK2020-3xxx-xxxx

4.2.5.2 Status LEDs



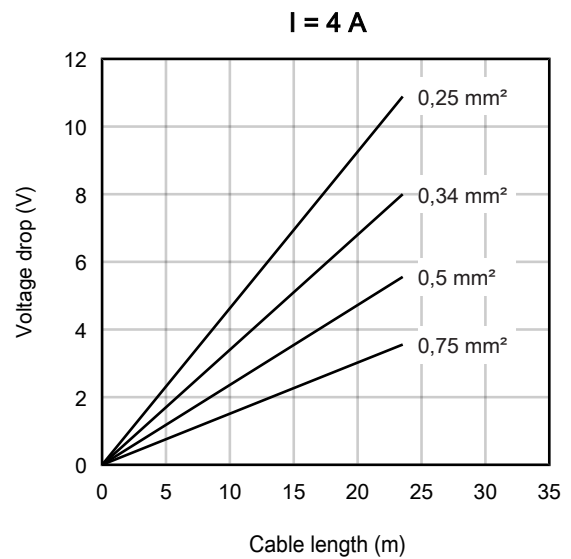
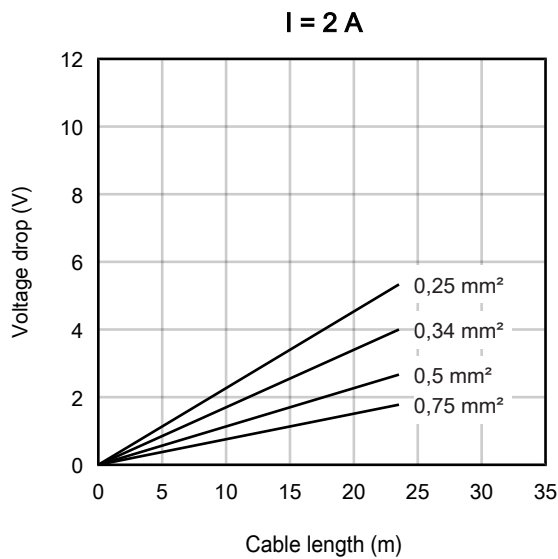
LED	Display	Meaning
U _s (control voltage)	off	Supply voltage U _s is not present
	green illuminated	Supply voltage U _s is present
U _p (peripheral voltage)	off	Supply voltage U _p is not present
	green illuminated	Supply voltage U _p is present

4.2.5.3 Conductor losses

Take into account the voltage drop on the supply line when planning a system. Avoid the voltage drop being so high that the supply voltage at the box lies below the minimum nominal voltage.

Variations in the voltage of the power supply unit must also be taken into account.

Voltage drop on the supply line



4.3 UL Requirements

The installation of the EtherCAT Box Modules certified by UL has to meet the following requirements.

Supply voltage

⚠ CAUTION

CAUTION!

This UL requirements are valid for all supply voltages of all marked EtherCAT Box Modules!
For the compliance of the UL requirements the EtherCAT Box Modules should only be supplied

- by a 24 V_{DC} supply voltage, supplied by an isolating source and protected by means of a fuse (in accordance with UL248), rated maximum 4 Amp, or
- by a 24 V_{DC} power source, that has to satisfy *NEC class 2*.
A *NEC class 2* power supply shall not be connected in series or parallel with another (class 2) power source!

⚠ CAUTION

CAUTION!

To meet the UL requirements, the EtherCAT Box Modules must not be connected to unlimited power sources!

Networks

⚠ CAUTION

CAUTION!

To meet the UL requirements, EtherCAT Box Modules must not be connected to telecommunication networks!

Ambient temperature range

⚠ CAUTION

CAUTION!

To meet the UL requirements, EtherCAT Box Modules has to be operated only at an ambient temperature range of -25 °C to +55 °C!

Marking for UL

All EtherCAT Box Modules certified by UL (Underwriters Laboratories) are marked with the following label.



Fig. 8: UL label

5 Commissioning and configuration

5.1 Integration in TwinCAT

The procedure for integration in TwinCAT is described in this [Quick start guide](#).

5.2 Assignment of connectors

This chapter describes the assignment of the EPP1322-0001 connectors to their representation in TwinCAT. This assignment is required to correctly map an EtherCAT network in TwinCAT "offline" configuration.

An IO module that represents a Box in TwinCAT has four ports: A, B, C, D. Each port represents one connector. The following diagram shows the assignment of the connectors to the ports of an IO module in TwinCAT:

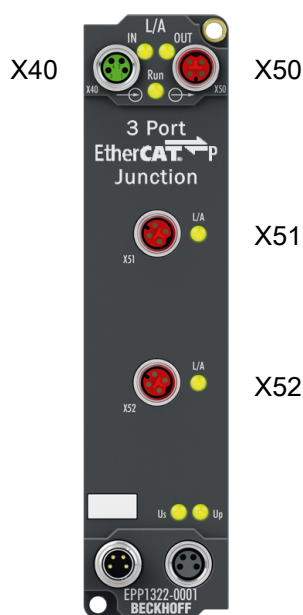


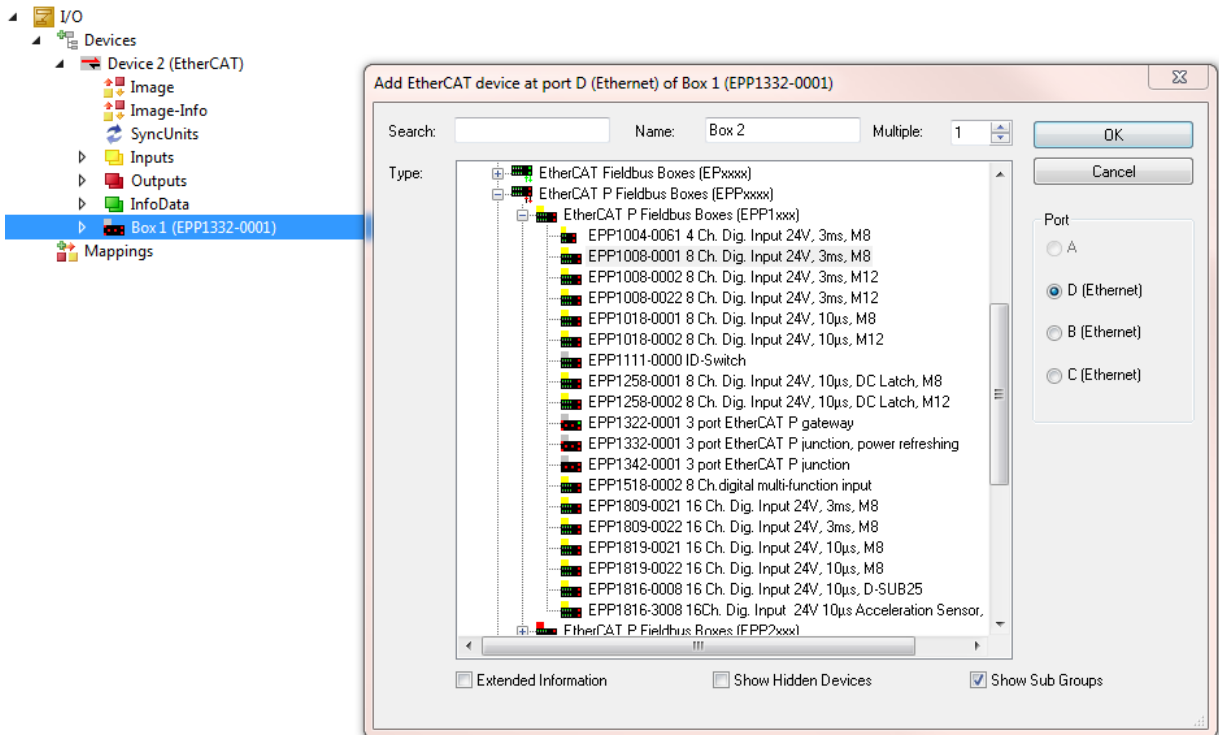
Fig. 9: Connector designations

Type	Connector	Port in TwinCAT
EtherCAT input	X40	A
EtherCAT P output	X50	C
EtherCAT P output	X51	D
EtherCAT P output	X52	B

The following page contains examples of how to use the table.

Example: Attaching an EtherCAT P Box to EPP1322-0001

- ✓ Requirement: An EPP1322-0001 is added to the IO tree in TwinCAT.
- 1. Decide to which connector the EtherCAT P Box is to be connected.
(e.g. at X52)
- 2. Use the table to determine the corresponding port.
(e.g. Port D)
- 3. Right-click EPP1322-0001 in the IO tree.
- 4. Click the menu item **Add new Item...**
- 5. In the window that appears select the EtherCAT P Box to be added and the previously determined port.
(e.g. EPP1008-0001, Port D)



- 6. Click **OK**
- ⇒ Result: The Box was added at the correct position in the IO tree.

Example: Moving a previously added EtherCAT P Box to another connector

- 1. Double-click the EtherCAT P Box in the IO tree.
(e.g. an EPP1008-0001 that was previously connected to X52)
- 2. Click the **EtherCAT** tab.
- 3. Use the table to determine the port of the new connector.
(e.g. X51 → Port C)
- 4. In the **Previous Port** dropdown list box, select the junction IO module and the previously determined port.
(e.g. "Box 1 (EPP1322-0001) - C")
- ⇒ Result: The EtherCAT P Box is connected to the new connector.

Checking the IO configuration graphically

- 1. Double-click the EtherCAT master device in the IO tree.
- 2. Click the **EtherCAT** tab.
- 3. Click the **Topology** button.
- ⇒ Result: A graphical illustration of the network structure created in TwinCAT appears.
Move the mouse pointer over the icons of the IO modules to display their description.

5.3 Restart after short-circuit shutdown

If a short circuit is detected at the EtherCAT P output X50, the affected output voltage is automatically switched off.

The output voltage remains switched off until you carry out a voltage reset of the corresponding supply voltage:

switch the supply voltage U_s/U_p supplied via X40 [▶_19] off and on again.

Tip: Use an EP9224-0037 instead of the EPP132x if you wish to switch a switched-off output voltage on again without a voltage reset. With the EP9224-0037, a switched-off voltage can be switched on again by software means.



Excessively high starting current may also be detected as a short circuit.

Remedy:

- Observe the maximum permissible number of EtherCAT P slaves per segment in the Technical data.
 - Reduce the number of connected EtherCAT P slaves by way of trial.
-

5.4 Decommissioning

⚠ WARNING**Risk of electric shock!**

Bring the bus system into a safe, de-energized state before starting disassembly of the devices!

Disposal

In order to dispose of the device, it must be removed.

In accordance with the WEEE Directive 2012/19/EU, Beckhoff takes back old devices and accessories in Germany for proper disposal. Transport costs will be borne by the sender.

Return the old devices with the note "for disposal" to:

Beckhoff Automation GmbH & Co. KG
Service Department
Stahlstraße 31
D-33415 Verl

6 Appendix

6.1 General operating conditions

Protection degrees (IP-Code)

The standard IEC 60529 (DIN EN 60529) defines the degrees of protection in different classes.

1. Number: dust protection and touch guard	Definition
0	Non-protected
1	Protected against access to hazardous parts with the back of a hand. Protected against solid foreign objects of Ø 50 mm
2	Protected against access to hazardous parts with a finger. Protected against solid foreign objects of Ø 12.5 mm.
3	Protected against access to hazardous parts with a tool. Protected against solid foreign objects Ø 2.5 mm.
4	Protected against access to hazardous parts with a wire. Protected against solid foreign objects Ø 1 mm.
5	Protected against access to hazardous parts with a wire. Dust-protected. Intrusion of dust is not totally prevented, but dust shall not penetrate in a quantity to interfere with satisfactory operation of the device or to impair safety.
6	Protected against access to hazardous parts with a wire. Dust-tight. No intrusion of dust.

2. Number: water* protection	Definition
0	Non-protected
1	Protected against water drops
2	Protected against water drops when enclosure tilted up to 15°.
3	Protected against spraying water. Water sprayed at an angle up to 60° on either side of the vertical shall have no harmful effects.
4	Protected against splashing water. Water splashed against the enclosure from any direction shall have no harmful effects
5	Protected against water jets
6	Protected against powerful water jets
7	Protected against the effects of temporary immersion in water. Intrusion of water in quantities causing harmful effects shall not be possible when the enclosure is temporarily immersed in water for 30 min. in 1 m depth.

*) These protection classes define only protection against water!

Chemical Resistance

The Resistance relates to the Housing of the IP 67 modules and the used metal parts. In the table below you will find some typical resistance.

Character	Resistance
Steam	at temperatures >100°C: not resistant
Sodium base liquor (ph-Value > 12)	at room temperature: resistant > 40°C: not resistant
Acetic acid	not resistant
Argon (technical clean)	resistant

Key

- resistant: Lifetime several months
- non inherently resistant: Lifetime several weeks
- not resistant: Lifetime several hours resp. early decomposition

6.2 Accessories

Mounting

Ordering information	Description
ZS5300-0011	Mounting rail

Labeling material, protective caps

Ordering information	Description
ZS5000-0012	Protective cap for M8 sockets, P-coded, IP67 (50 pieces)
ZS5100-0000	Inscription labels, unprinted, 4 strips of 10
ZS5000-xxxx	Printed inscription labels on enquiry

Cables

A complete overview of pre-assembled cables for fieldbus components can be found [here](#).

Ordering information	Description	Link
ZK1090-3xxx-xxxx	EtherCAT cable M8, green	Website
ZK1093-3xxx-xxxx	EtherCAT cable M8, yellow	Website
ZK2020-3xxx-xxxx	Power cable M8, 4-pin	Website
ZK700x-xxxx-xxxx	EtherCAT P cable M8	Website

Tools

Ordering information	Description
ZB8801-0000	Torque wrench for plugs, 0.4... 1.0 Nm
ZB8801-0001	Torque cable key for M8 / wrench size 9 for ZB8801-0000



Further accessories

Further accessories can be found in the price list for fieldbus components from Beckhoff and online at <https://www.beckhoff.com>.

6.3 Version identification of EtherCAT devices

Designation

A Beckhoff EtherCAT device has a 14-digit designation, made up of

- family key
- type
- version
- revision

Example	Family	Type	Version	Revision
EL3314-0000-0016	EL terminal (12 mm, non-pluggable connection level)	3314 (4-channel thermocouple terminal)	0000 (basic type)	0016
ES3602-0010-0017	ES terminal (12 mm, pluggable connection level)	3602 (2-channel voltage measurement)	0010 (high-precision version)	0017
CU2008-0000-0000	CU device	2008 (8-port fast ethernet switch)	0000 (basic type)	0000

Notes

- The elements mentioned above result in the **technical designation**. EL3314-0000-0016 is used in the example below.
- EL3314-0000 is the order identifier, in the case of "-0000" usually abbreviated to EL3314. "-0016" is the EtherCAT revision.
- The **order identifier** is made up of
 - family key (EL, EP, CU, ES, KL, CX, etc.)
 - type (3314)
 - version (-0000)
- The **revision** -0016 shows the technical progress, such as the extension of features with regard to the EtherCAT communication, and is managed by Beckhoff.
In principle, a device with a higher revision can replace a device with a lower revision, unless specified otherwise, e.g. in the documentation.
Associated and synonymous with each revision there is usually a description (ESI, EtherCAT Slave Information) in the form of an XML file, which is available for download from the Beckhoff web site.
From 2014/01 the revision is shown on the outside of the IP20 terminals, see Fig. "EL5021 EL terminal, standard IP20 IO device with batch number and revision ID (since 2014/01)".
- The type, version and revision are read as decimal numbers, even if they are technically saved in hexadecimal.

Identification number

Beckhoff EtherCAT devices from the different lines have different kinds of identification numbers:

Production lot/batch number/serial number/date code/D number

The serial number for Beckhoff IO devices is usually the 8-digit number printed on the device or on a sticker. The serial number indicates the configuration in delivery state and therefore refers to a whole production batch, without distinguishing the individual modules of a batch.

Structure of the serial number: **KK YY FF HH**

KK - week of production (CW, calendar week)

YY - year of production

FF - firmware version

HH - hardware version

Example with

Ser. no.: 12063A02: 12 - production week 12 06 - production year 2006 3A - firmware version 3A 02 - hardware version 02

Exceptions can occur in the **IP67 area**, where the following syntax can be used (see respective device documentation):

Syntax: D ww yy x y z u

D - prefix designation

ww - calendar week

yy - year

x - firmware version of the bus PCB

y - hardware version of the bus PCB

z - firmware version of the I/O PCB

u - hardware version of the I/O PCB

Example: D.22081501 calendar week 22 of the year 2008 firmware version of bus PCB: 1 hardware version of bus PCB: 5 firmware version of I/O PCB: 0 (no firmware necessary for this PCB) hardware version of I/O PCB: 1

Unique serial number/ID, ID number

In addition, in some series each individual module has its own unique serial number.

See also the further documentation in the area

- IP67: [EtherCAT Box](#)
- Safety: [TwinSafe](#)
- Terminals with factory calibration certificate and other measuring terminals

Examples of markings



Fig. 10: EL5021 EL terminal, standard IP20 IO device with serial/ batch number and revision ID (since 2014/01)



Fig. 11: EK1100 EtherCAT coupler, standard IP20 IO device with serial/ batch number



Fig. 12: CU2016 switch with serial/ batch number

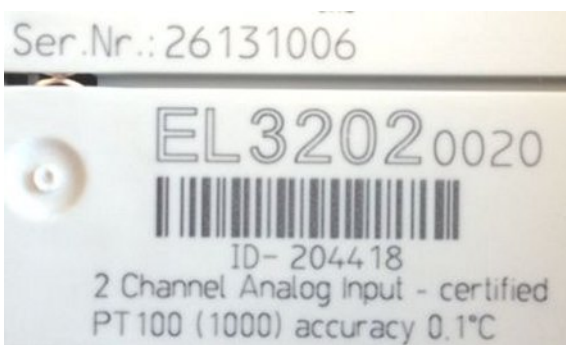


Fig. 13: EL3202-0020 with serial/ batch number 26131006 and unique ID-number 204418



Fig. 14: EP1258-00001 IP67 EtherCAT Box with batch number/ date code 22090101 and unique serial number 158102

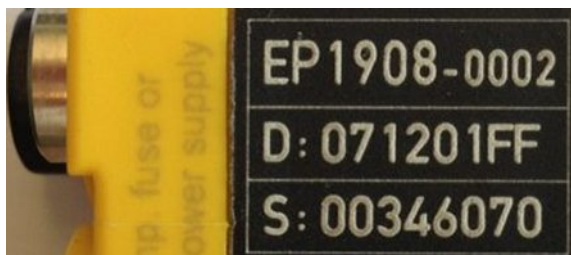


Fig. 15: EP1908-0002 IP67 EtherCAT Safety Box with batch number/ date code 071201FF and unique serial number 00346070



Fig. 16: EL2904 IP20 safety terminal with batch number/ date code 50110302 and unique serial number 00331701



Fig. 17: ELM3604-0002 terminal with unique ID number (QR code) 100001051 and serial/ batch number 44160201

6.3.1 Beckhoff Identification Code (BIC)

The Beckhoff Identification Code (BIC) is increasingly being applied to Beckhoff products to uniquely identify the product. The BIC is represented as a Data Matrix Code (DMC, code scheme ECC200), the content is based on the ANSI standard MH10.8.2-2016.

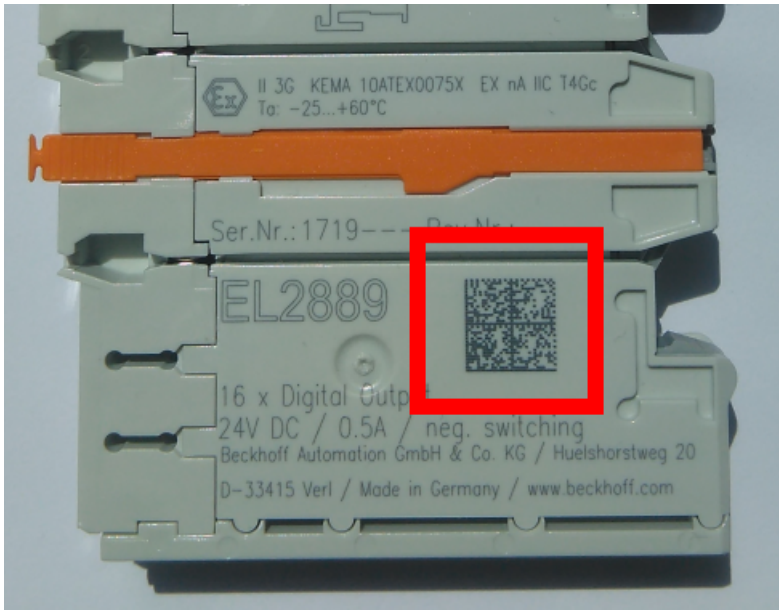


Fig. 18: BIC as data matrix code (DMC, code scheme ECC200)

The BIC will be introduced step by step across all product groups.

Depending on the product, it can be found in the following places:

- on the packaging unit
- directly on the product (if space suffices)
- on the packaging unit and the product

The BIC is machine-readable and contains information that can also be used by the customer for handling and product management.

Each piece of information can be uniquely identified using the so-called data identifier (ANSI MH10.8.2-2016). The data identifier is followed by a character string. Both together have a maximum length according to the table below. If the information is shorter, spaces are added to it. The data under positions 1 to 4 are always available.

The following information is contained:

Item no.	Type of information	Explanation	Data identifier	Number of digits incl. data identifier	Example
1	Beckhoff order number	Beckhoff order number	1P	8	1P 072222
2	Beckhoff Traceability Number (BTN)	Unique serial number, see note below	S	12	S BTNk4p562d7
3	Article description	Beckhoff article description, e.g. EL1008	1K	32	1K EL1809
4	Quantity	Quantity in packaging unit, e.g. 1, 10, etc.	Q	6	Q 1
5	Batch number	Optional: Year and week of production	2P	14	2P 401503180016
6	ID/serial number	Optional: Present-day serial number system, e.g. with safety products or calibrated terminals	51S	12	51S 678294104
7	Variant number	Optional: Product variant number on the basis of standard products	30P	32	30P F971, 2*K183
...					

Further types of information and data identifiers are used by Beckhoff and serve internal processes.

Structure of the BIC

Example of composite information from item 1 to 4 and 6. The data identifiers are marked in red for better display:

BTN

An important component of the BIC is the Beckhoff Traceability Number (BTN, item no. 2). The BTN is a unique serial number consisting of eight characters that will replace all other serial number systems at Beckhoff in the long term (e.g. batch designations on IO components, previous serial number range for safety products, etc.). The BTN will also be introduced step by step, so it may happen that the BTN is not yet coded in the BIC.

NOTE
This information has been carefully prepared. However, the procedure described is constantly being further developed. We reserve the right to revise and change procedures and documentation at any time and without prior notice. No claims for changes can be made from the information, illustrations and descriptions in this information.

6.4 Support and Service

Beckhoff and their partners around the world offer comprehensive support and service, making available fast and competent assistance with all questions related to Beckhoff products and system solutions.

Beckhoff's branch offices and representatives

Please contact your Beckhoff branch office or representative for local support and service on Beckhoff products!

The addresses of Beckhoff's branch offices and representatives round the world can be found on her internet pages: <https://www.beckhoff.com>

You will also find further documentation for Beckhoff components there.

Beckhoff Support

Support offers you comprehensive technical assistance, helping you not only with the application of individual Beckhoff products, but also with other, wide-ranging services:

- support
- design, programming and commissioning of complex automation systems
- and extensive training program for Beckhoff system components

Hotline: +49 5246 963 157
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e-mail: support@beckhoff.com

Beckhoff Service

The Beckhoff Service Center supports you in all matters of after-sales service:

- on-site service
- repair service
- spare parts service
- hotline service

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