

Documentation | EN

EPP1332-0001, EPP1342-0001

EtherCAT P junctions



Table of contents

1 Foreword	5
1.1 Notes on the documentation.....	5
1.2 Safety instructions	6
1.3 Documentation issue status	7
2 Product group: EtherCAT P Box modules	8
3 Product overview	9
3.1 EPP1332-0001	9
3.1.1 Scope of supply	10
3.2 EPP1342-0001	11
3.2.1 Scope of supply	11
3.3 Technical data	12
3.4 Process image	13
4 Mounting and cabling	14
4.1 Mounting	14
4.1.1 Dimensions	14
4.1.2 Fixing	15
4.1.3 Functional earth (FE).....	15
4.1.4 Tightening torques for plug connectors	15
4.2 EtherCAT P	16
4.2.1 Connection.....	16
4.2.2 EtherCAT P LEDs.....	17
4.2.3 EtherCAT P cable conductor losses M8	18
4.3 Power supply	19
4.3.1 Feed-in.....	19
4.3.2 Status LEDs	20
4.4 Cabling	21
4.5 UL Requirements.....	22
5 Commissioning/Configuration	23
5.1 Configuration in TwinCAT.....	23
5.1.1 Assignment of connectors	23
6 Appendix	25
6.1 General operating conditions.....	25
6.2 Accessories	26
6.3 Version identification of EtherCAT devices	27
6.3.1 Beckhoff Identification Code (BIC).....	31
6.4 Support and Service	33

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

Beckhoff®, TwinCAT®, TwinCAT/BSD®, TC/BSD®, EtherCAT®, EtherCAT G®, EtherCAT G10®, EtherCAT P®, Safety over EtherCAT®, TwinSAFE®, XFC®, XTS® and XPlanar® are registered trademarks of and licensed by Beckhoff Automation GmbH. Other designations used in this publication may be trademarks whose use by third parties for their own purposes could violate the rights of the owners.

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.



EtherCAT® is registered trademark and patented technology, licensed by Beckhoff Automation GmbH, Germany.

Copyright

© Beckhoff Automation GmbH & Co. KG, Germany.

The reproduction, distribution and utilization of this document as well as the communication of its contents to others without express authorization are prohibited.

Offenders will be held liable for the payment of damages. All rights reserved in the event of the grant of a patent, utility model or design.

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 • Scope of delivery added • Structure update
1.1	<ul style="list-style-type: none"> • UL and Atex chapters removed • EPP1322-0001 moved to separate documentation • Chapter "Feed-in" added
1.0.9	<ul style="list-style-type: none"> • Preliminary version
1.0.2	<ul style="list-style-type: none"> • EtherCAT P - Calculating cable length, voltage and current added • Cabling updated • Additional checks added
1.0.1	<ul style="list-style-type: none"> • EtherCAT P connection updated
1.0.0	<ul style="list-style-type: none"> • First release
0.5	<ul style="list-style-type: none"> • First preliminary version

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 \[► 27\]](#).

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.

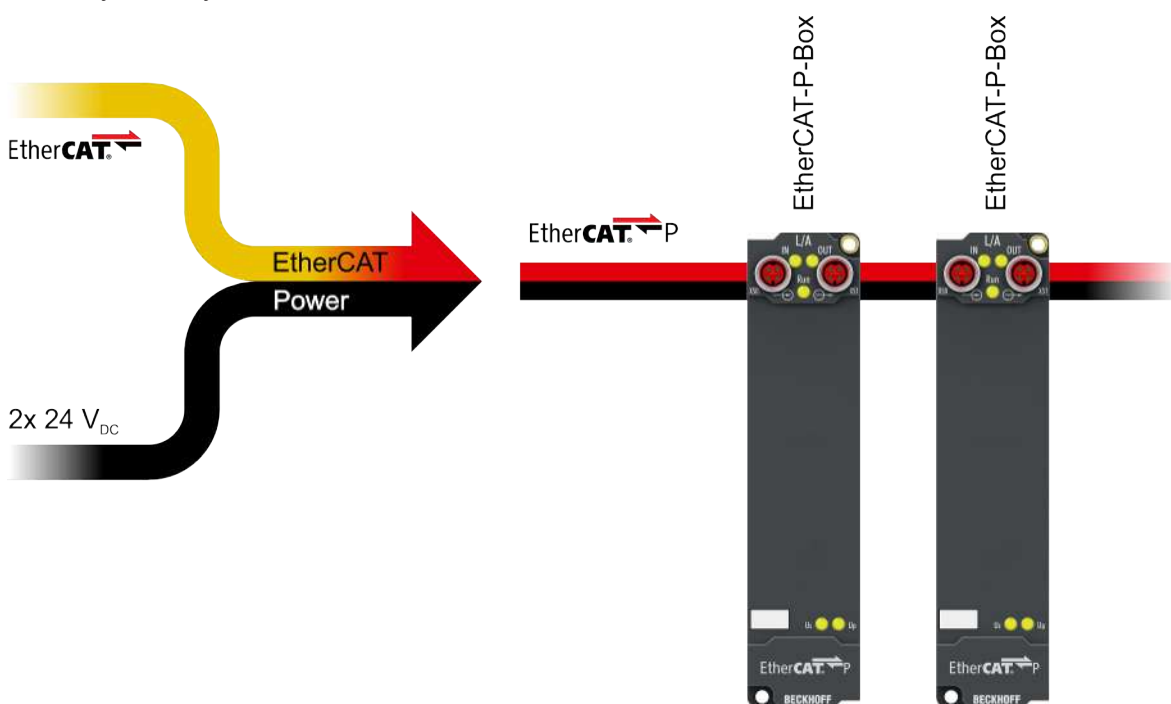


Fig. 1: EtherCAT P



EtherCAT basics

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

3 Product overview

3.1 EPP1332-0001

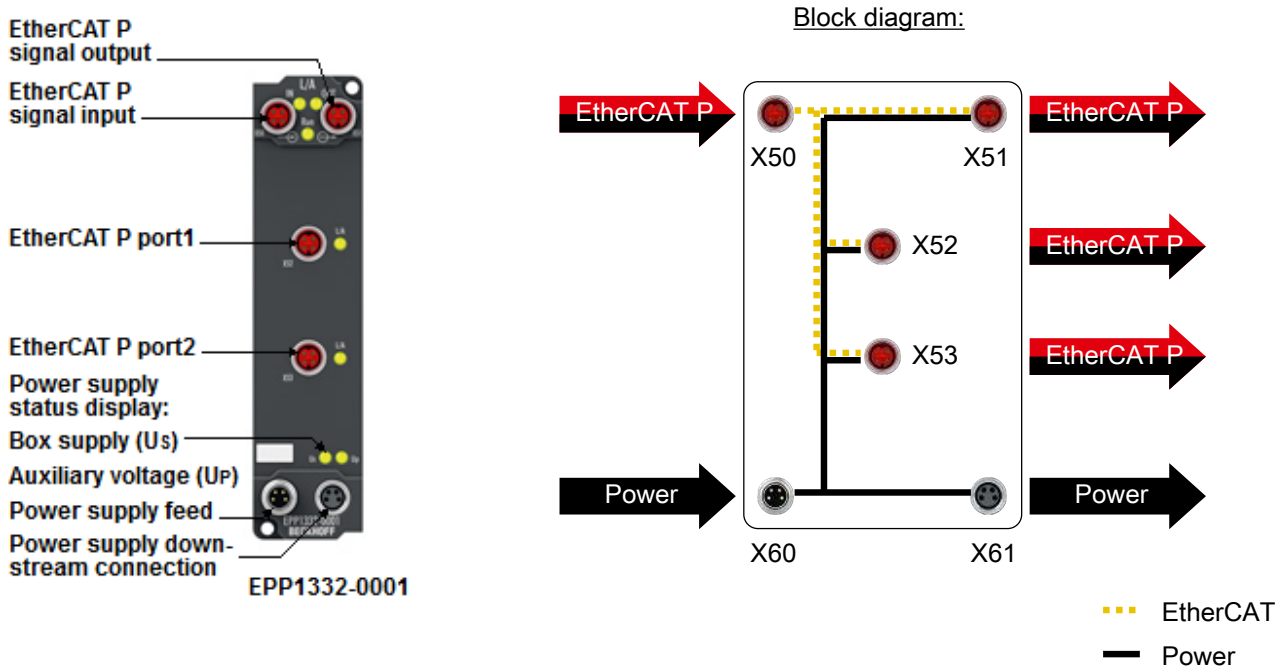


Fig. 2: EPP1332-0001

EPP1332-0001 | EtherCAT P junction with refresh

The EPP1332-0001 EtherCAT P Box has two functions in an EtherCAT P network:

- Junction: EPP1332-0001 distributes the incoming EtherCAT P signal to three output ports.
- Feed-in point for refreshing the supply voltages.

A refresh of the supply voltages may be necessary in EtherCAT P networks with long cables and/or high output currents. It prevents:

- the supply voltages falling below the permissible minimum due to line losses.
- the current carrying capacity of the EtherCAT P cables being exceeded by high output currents.

A planning tool for EtherCAT P networks integrated in TwinCAT provides support for deciding where in the network a refresh of the supply voltages should be applied.

3.1.1 Scope of supply

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

- 1x EtherCAT P Box EPP1332-0001
- 4x 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)

i **Pre-assembled protective caps do not ensure IP67 protection**

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.

3.2 EPP1342-0001

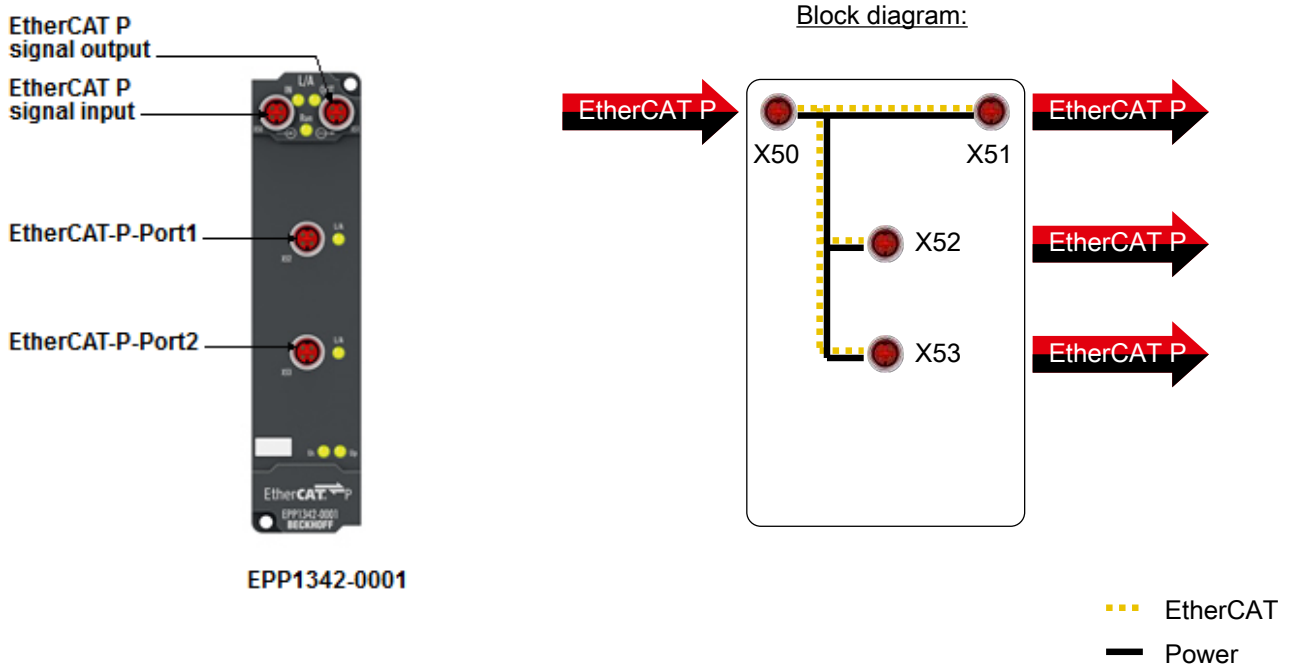


Fig. 3: EPP1342-0001

EPP1342-0001 | EtherCAT P junction

The EPP1342-0001 EtherCAT P Box distributes the incoming EtherCAT P signal to three output ports.

3.2.1 Scope of supply

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

- 1x EtherCAT P Box EPP1342-0001
- 4x protective cap for EtherCAT P socket, M8, red (pre-assembled)
- 10x labels, blank (1 strip of 10)

i Pre-assembled protective caps do not ensure IP67 protection

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.

3.3 Technical data

Technical data	EPP1332-0001	EPP1342-0001
Task in the EtherCAT system	3-port EtherCAT P junction and refresh for U_S and U_P	3-port EtherCAT P junction
Fieldbus	EtherCAT	
Bus interface	M8 socket, shielded, screw-type, 4-pin, EtherCAT P-coded	
Number of channels	IN: 1 x EtherCAT P, OUT: 3 x EtherCAT P	IN: 1 x EtherCAT P, OUT: 3 x EtherCAT P
Nominal input voltage	24 V _{DC} (-15%/+20%)	
Sum current	Max. current 3 A per U_S and U_P	no power supply
Power supply connection	feed: 1 x M8 plug, 4-pin; downstream connection: 1 x M8 socket, 4-pin	not required
Current carrying capacity per EtherCAT P port	max. 3 A per U_S and U_P	
Supply of the module electronics	From the control voltage U_S , via the Feed-in [► 19].	From the control voltage U_S , via the EtherCAT P port X50.
Current consumption of the module electronics	typically 65 mA + load	
Permissible ambient temperature during operation	-25 °C to +60 °C	
Permissible ambient temperature during storage	-40 °C to +85 °C	
Vibration / shock resistance	conforms to EN 60068-2-6 / EN 60068-2-27; see also Technical data [► 12].	
EMC immunity / emission	conforms to EN 61000-6-2 / EN 61000-6-4	
Protection class	IP65, IP66, IP67 (conforms to EN 60529)	
Mounting position	variable	
Approvals	CE, cULus [► 22]	

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 Process image

The process image of the EPP1332-0001 and EPP1342-0001 modules is identical. The process image of EPP1332-0001 is shown here as an example.

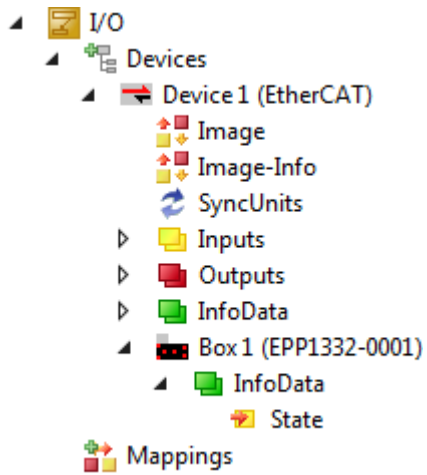
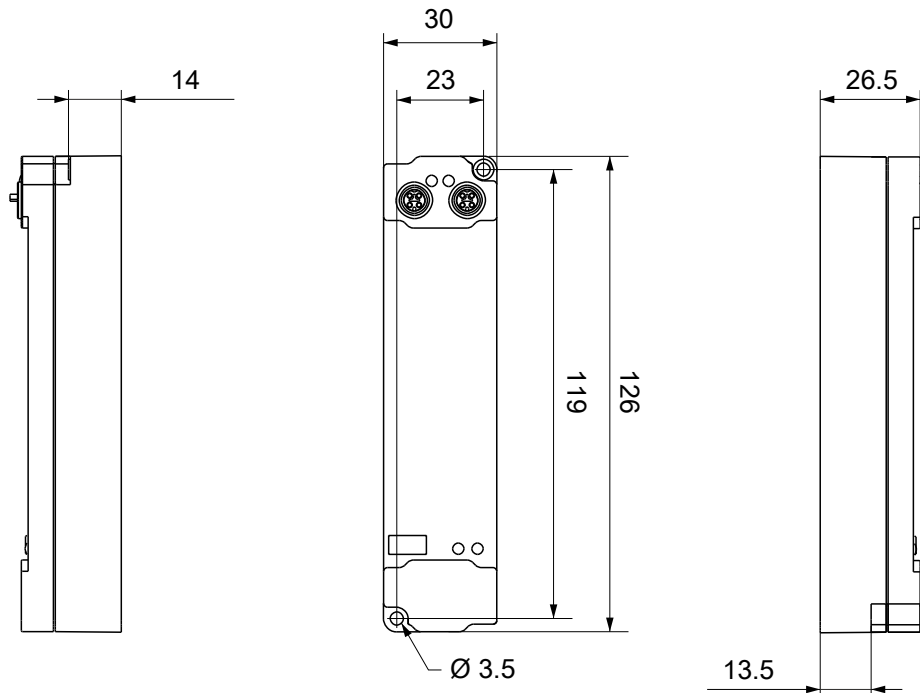


Fig. 4: Process image of EPP1332-0001

4 Mounting and cabling

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 $\text{Ø } 3.5$ 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).

Make sure that the box is grounded to low impedance via the functional earth (FE) connection. You can achieve this, for example, by mounting the box on a grounded machine bed.



Fig. 5: Connection for functional earth (FE)

4.1.4 Tightening torques for plug connectors

Screw M8 connectors tight with a torque wrench. (e.g. ZB8801 from Beckhoff)
Torque: 0.4 Nm.

4.2 EtherCAT P

4.2.1 Connection

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!

EtherCAT P is supplied and forwarded via two EtherCAT P-coded M8 connectors at the upper end of the modules:

- IN: left M8 connector in EtherCAT P coding for EtherCAT P power supply
- OUT: right M8 connector in EtherCAT P coding for EtherCAT P forwarding



Fig. 6: EtherCAT P connector on EtherCAT P Box



Fig. 7: Pin assignment M8, EtherCAT P In and EtherCAT P Out

Pin assignment

The contacts of the EtherCAT P-coded M8 connectors have a maximum current capacity of 3 A.

Contact	Signal	Voltage	Core colors 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.

NOTE

Pay attention to the maximum permissible current!

Pay attention also for the redirection of EtherCAT P, the maximum permissible current for M8 connectors of 3 A must not be exceeded!

4.2.2 EtherCAT P LEDs



Fig. 8: EtherCAT P LEDs

LED display

LED	Display	Meaning
IN L/A	off	no connection to the preceding EtherCAT P module
	Lit	LINK: connection to the preceding EtherCAT P module
	flashing	ACT: Communication with the preceding EtherCAT P module
OUT L/A	off	no connection to the following EtherCAT P module
	Lit	LINK: connection to the following EtherCAT P module
	flashing	ACT: Communication with the following EtherCAT P module
Run	off	Status of the EtherCAT P module is Init
	flashes quickly	Status of the EtherCAT P module is pre-operational
	flashes slowly	Status of the EtherCAT P module is safe-operational
	Lit	Status of the EtherCAT P module is operational

i EtherCAT statuses

The various statuses in which an EtherCAT P module may be found are described in the Basic System Documentation for EtherCAT, which is available for download from our website (www.beckhoff.com) under Downloads.

4.2.3 EtherCAT P cable conductor losses M8

When using ZK700x-xxxx-0xxx EtherCAT P cables it must be ensured that the voltage at the last device is not less than the minimum rated voltage of 20.4 V according to the standard. Variations in the output voltage from the power supply unit must also be taken into account. This ensures that the connected consumers, sensors and actuators are operated within the permitted voltage range.

The voltage calculation tool integrated in TwinCAT can be used for the offline calculation of the cable lengths.

The [EPP9022-0060](#) box with diagnostics can be used for checking during operation.

Conductor losses on the EtherCAT P cables

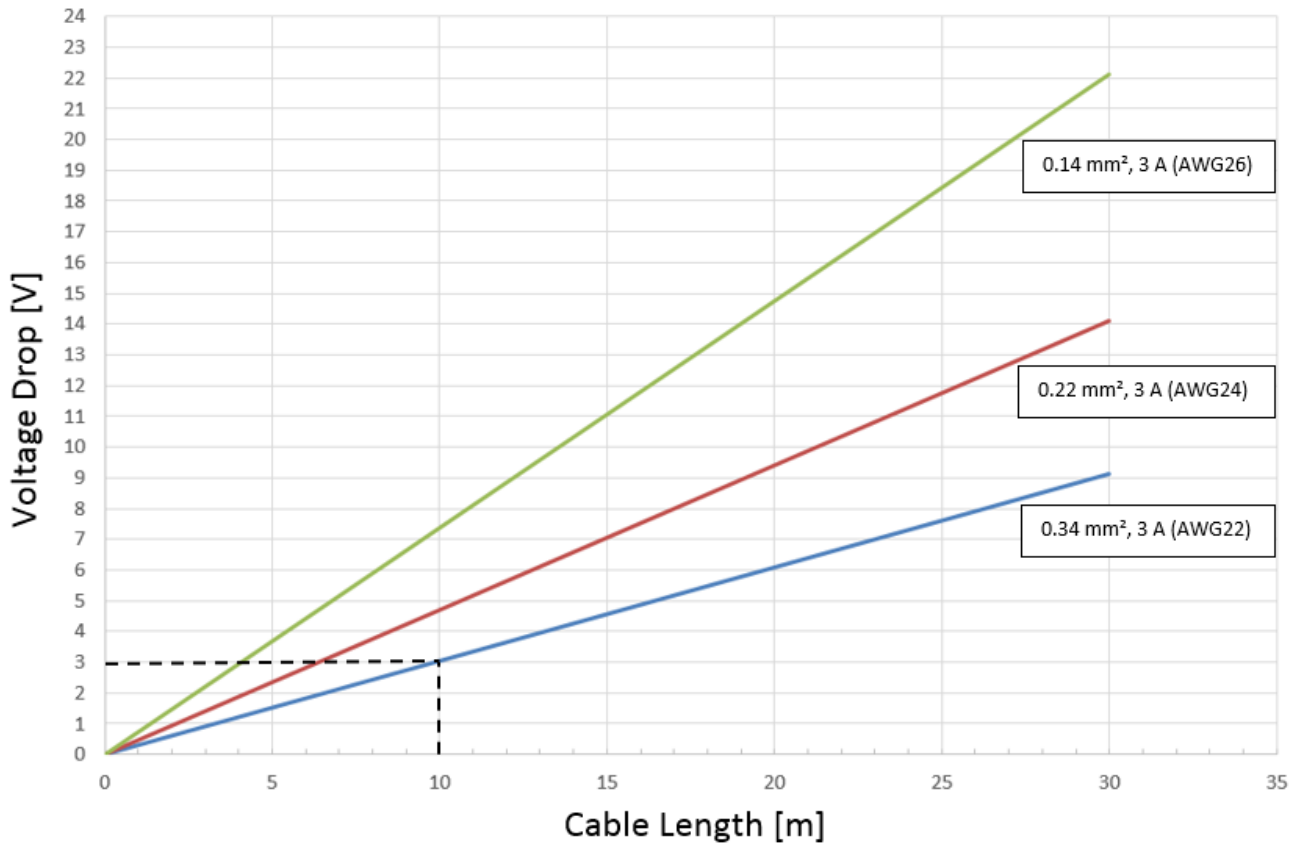


Fig. 9: Conductor losses on the EtherCAT P cables

Example

A 10 meter-long EtherCAT P cable with a cross section of 0.34 mm² has a voltage drop of ~3.0 V with a load of 3 A.

4.3 Power supply

4.3.1 Feed-in

Two M8 connectors at the bottom of the EtherCAT P Box are used for feeding and routing the supply voltages.

- IN (X60): left M8 connector for feeding the supply voltages
- OUT (X61): right M8 connector for routing the supply voltages



Fig. 10: Connections for the supply voltages

Pin assignment

Contact	Voltage
1	Control voltage U_s , +24 V _{DC}
2	Peripheral voltage U_p , +24 V _{DC}
3	GNDs
4	GNDp

The contacts of the M8 connectors can conduct a maximum current of 4 A.

Control voltage U_s

Power is supplied to the fieldbus, the processor logic, the inputs and the sensors from the control voltage U_s . The control voltage is electrically isolated from the fieldbus circuitry.

Peripheral voltage U_p

The peripheral voltage U_p supplies the digital outputs; it can be brought in separately. Hence, if the peripheral voltage is switched off, the fieldbus function as well as the supply and function of the inputs are retained.

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!

4.3.2 Status LEDs

IP 67 modules have two status LEDs, which indicate the state of the supply voltages U_S and U_P .

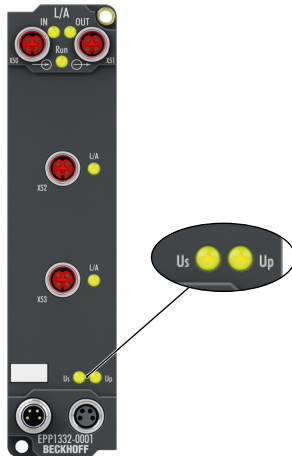


Fig. 11: Status LEDs for U_S and U_P

EPP1332-0001

The status LEDs of the EPP1332-0001 light up green when the supply voltages are applied to the M8 connector for the feed-in.

EPP1342-0001

The status LEDs of the EPP1342-0001 light up green when the supply voltages are applied to the incoming EtherCAT P port.

4.4 Cabling

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](#)

A list of EtherCAT P cables, EtherCAT cables, power cables, sensor cables, Ethernet/EtherCAT connectors and field-configurable connectors can be found under the following link: https://beckhoff.de/english/ethercat-box/ethercat_box_cables.htm

4.5 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. 12: UL label

5 Commissioning/Configuration

5.1 Configuration in TwinCAT

An EtherCAT P Box must be configured in TwinCAT to ensure that its functions can be used in a PLC program.

Under the following link you will find a quick start guide describing the configuration of an EtherCAT P Box in TwinCAT:

<https://infosys.beckhoff.com/content/1033/epioconfiguration/index.html?id=6991403443235907429>

5.1.1 Assignment of connectors

This chapter describes the assignment of the connectors of EPP1332-0001 and EPP1342-0001 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:

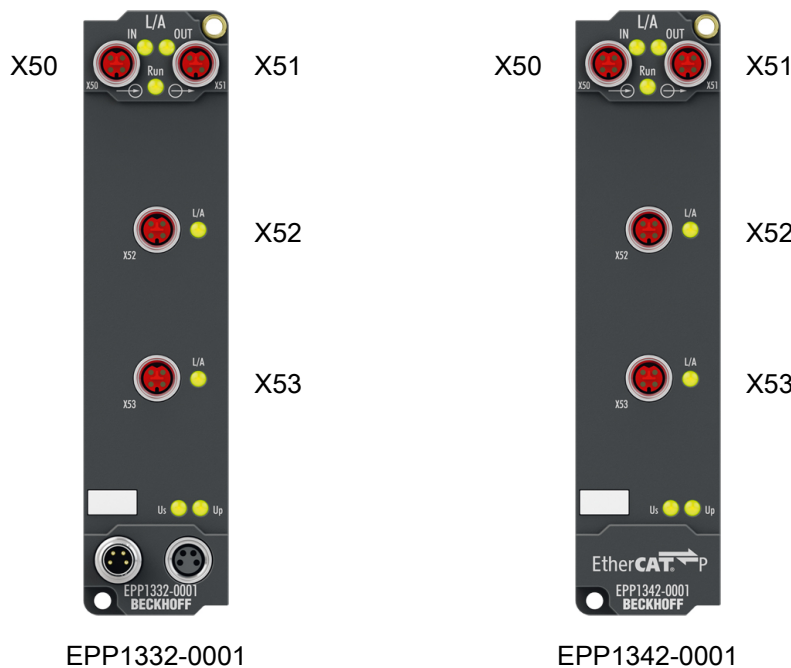


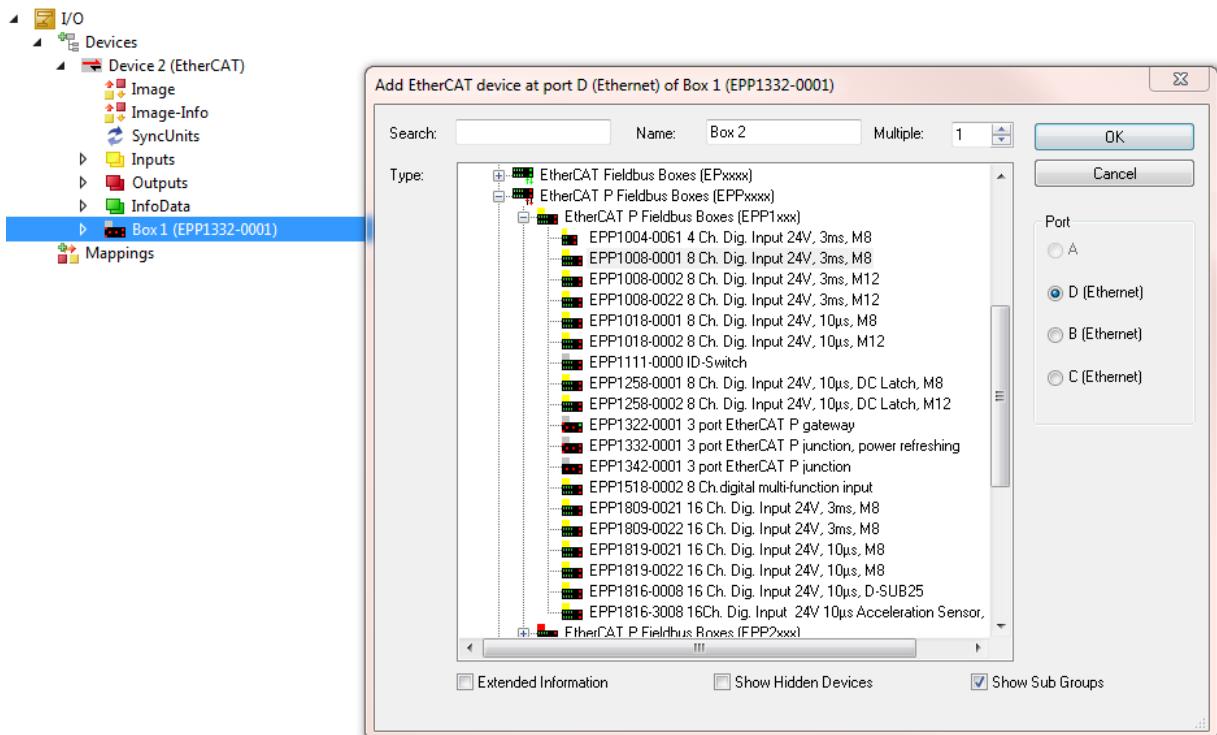
Fig. 13: Connector designations

Type	Connector	Port in TwinCAT
EtherCAT P input	X50	A
EtherCAT P output	X51	C
EtherCAT P output	X52	D
EtherCAT P output	X53	B

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

Example: Attaching an EtherCAT P Box to a junction

- ✓ Requirement: an EtherCAT P junction 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 on the EtherCAT P junction 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 (EPP1332-0001) - 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.

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



Fig. 15: EK1100 EtherCAT coupler, standard IP20 IO device with serial/ batch number



Fig. 16: CU2016 switch with serial/ batch number

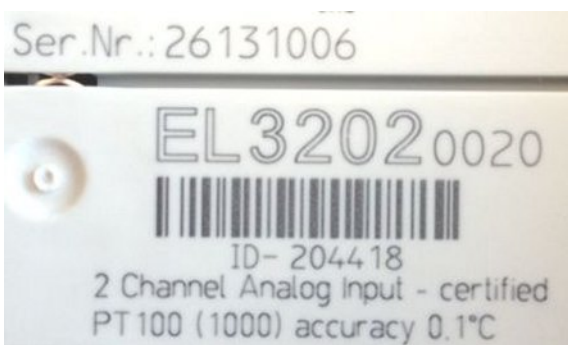


Fig. 17: EL3202-0020 with serial/ batch number 26131006 and unique ID-number 204418

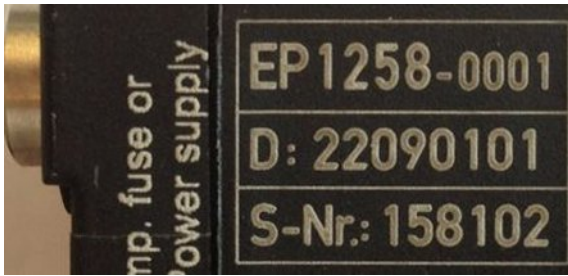


Fig. 18: EP1258-00001 IP67 EtherCAT Box with batch number/ date code 22090101 and unique serial number 158102

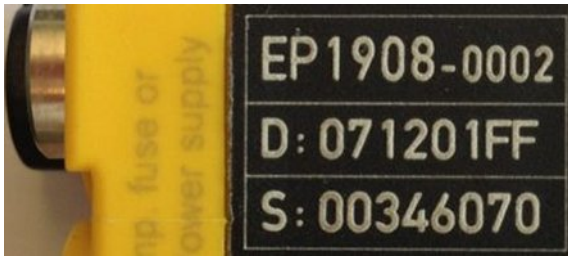


Fig. 19: EP1908-0002 IP67 EtherCAT Safety Box with batch number/ date code 071201FF and unique serial number 00346070



Fig. 20: EL2904 IP20 safety terminal with batch number/ date code 50110302 and unique serial number 00331701



Fig. 21: 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.

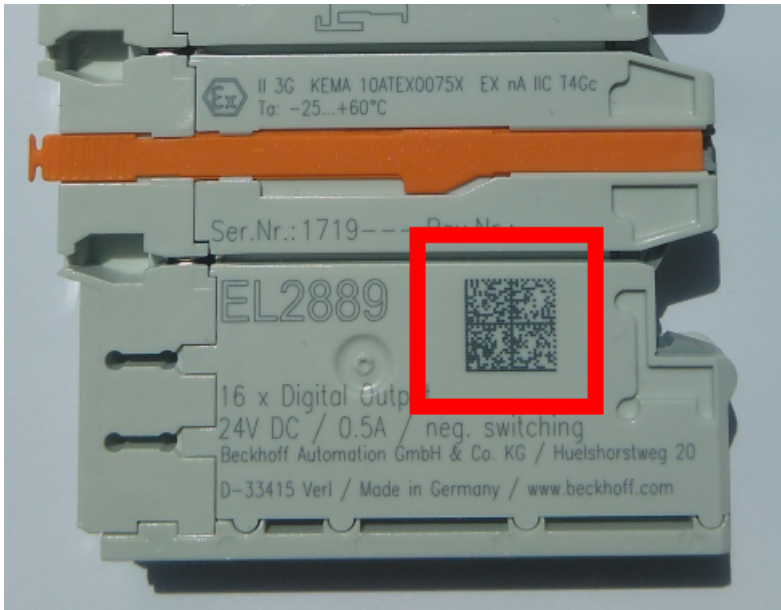


Fig. 22: BIC as data matrix code (DMC, code scheme ECC200)

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
Fax: +49 5246 963 9157
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

Hotline: +49 5246 963 460
Fax: +49 5246 963 479
e-mail: service@beckhoff.com

Beckhoff Headquarters

Beckhoff Automation GmbH & Co. KG

Huelshorstweg 20
33415 Verl
Germany

Phone: +49 5246 963 0
Fax: +49 5246 963 198
e-mail: info@beckhoff.com
web: <https://www.beckhoff.com>

Beckhoff Automation GmbH & Co. KG
Hülshorstweg 20
33415 Verl
Germany
Phone: +49 5246 9630
info@beckhoff.com
www.beckhoff.com