

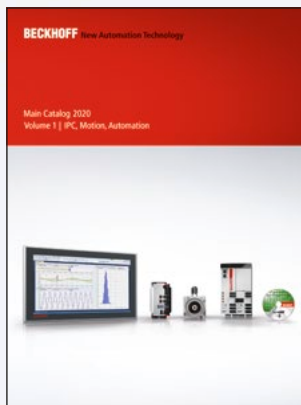
BECKHOFF New Automation Technology

Product Overview | 2020



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Order no. DK111x

**Main Catalog 2020
Volume 1 | IPC, Motion,
Automation**



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**Main Catalog 2020
Volume 2 | I/O**



Order no. DK130x

News Catalog



Order no. DK131x

News Overview

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IPC



10 The IPC Company

I/O



30 The I/O Company

Motion

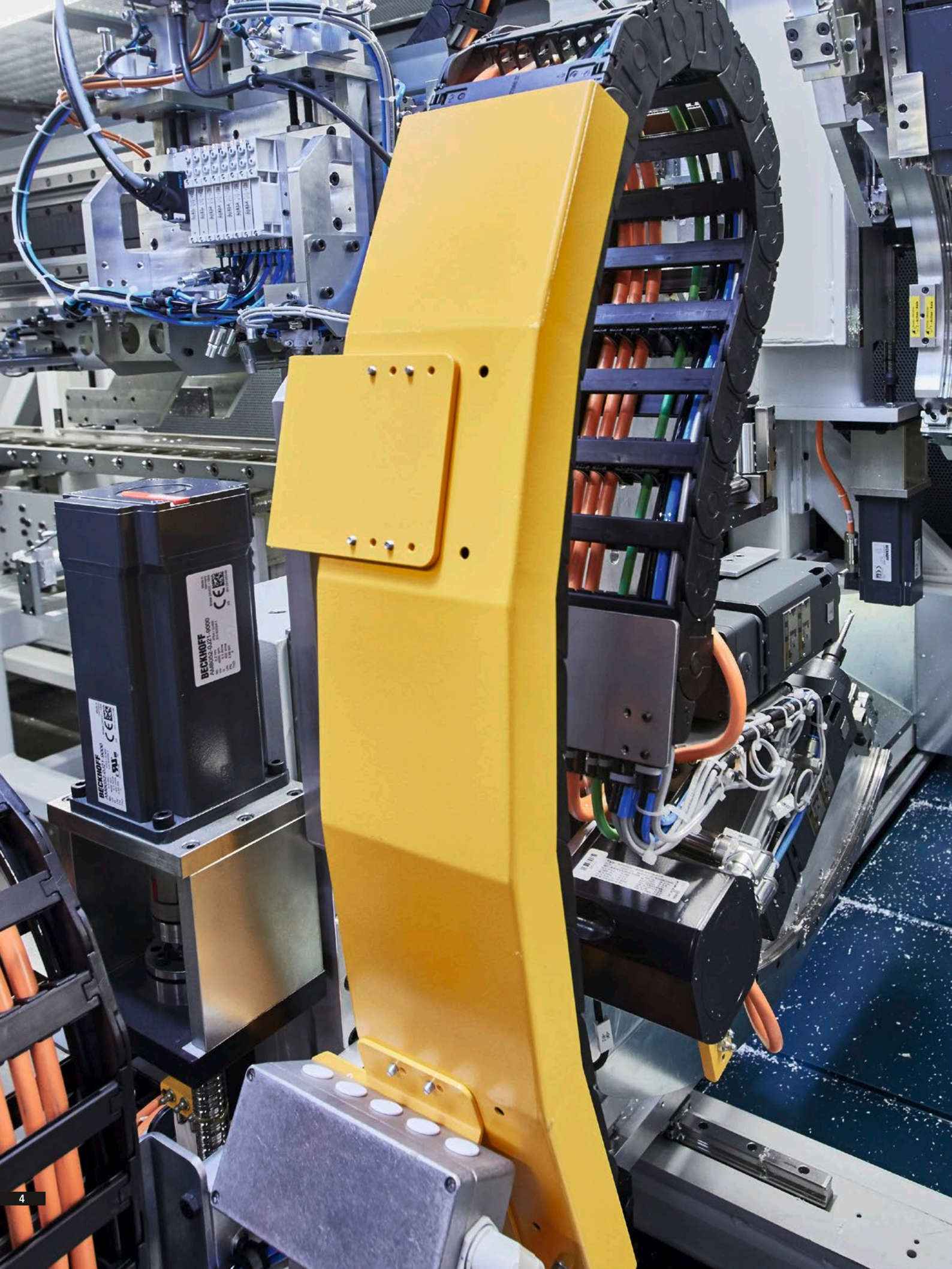


70 The Motion Company

Automation



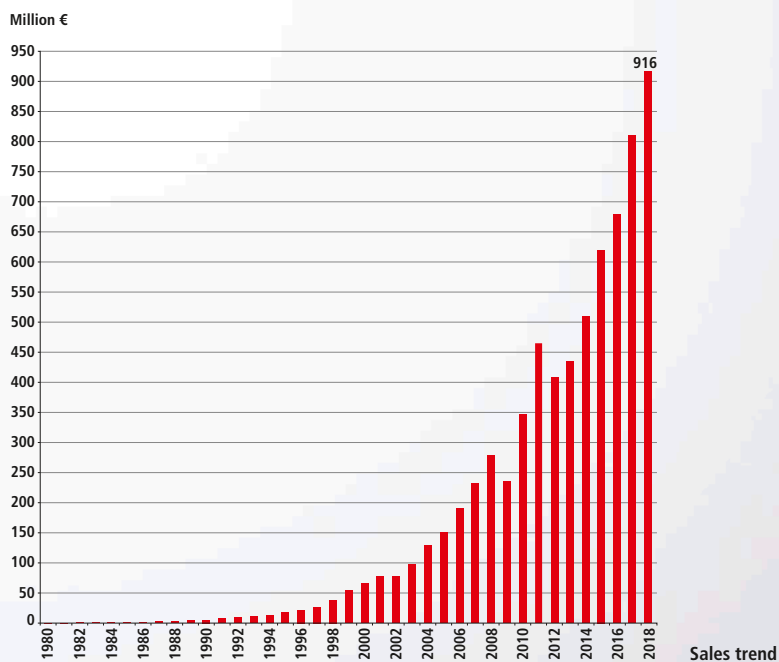
84 The Automation Company



New Automation Technology

Beckhoff implements open automation systems based on PC Control technology. The product range covers Industrial PCs, I/O and Fieldbus Components, Drive Technology and automation software. Products that can be used as separate components or integrated into a complete and seamless control system are available for all industries. The Beckhoff New Automation Technology philosophy represents universal and open control and automation solutions that are used worldwide in a wide variety of different applications, ranging from CNC-controlled machine tools to intelligent building automation.

The central divisions of Beckhoff, such as development, production, administration, distribution, marketing, support and service are located at the Beckhoff Automation GmbH & Co. KG headquarters in Verl, Germany. Rapidly growing presence in the international market is taking place through subsidiaries and branch offices. Through worldwide co-operation with partners, Beckhoff is represented in more than 75 countries.



Beckhoff Automation

- Headquarters: Verl, Germany
- Sales 2018: 916 million € (+13 %)
- Staff worldwide: 4,300 (+10 %)
- Sales offices Germany: 22
- Subsidiaries/branch offices worldwide: 38
- Distributors worldwide: 75

(as of 03/2019)

PC-based control technology

Since the foundation of the company in 1980, continuous development of innovative products and solutions using PC-based control technology has been the basis for the continued success of Beckhoff. Many automation technology standards that are taken for granted today were conceptualized by Beckhoff at an early stage and successfully introduced to the market.

The Beckhoff PC Control philosophy and the invention of the Lightbus system, the Bus Terminals and TwinCAT automation software represent milestones in automation technology and have become accepted as high-performance alternatives to traditional control technology. EtherCAT, the real-time Ethernet solution, makes forward-looking, high-performance technology available for a new generation of leading edge control concepts.

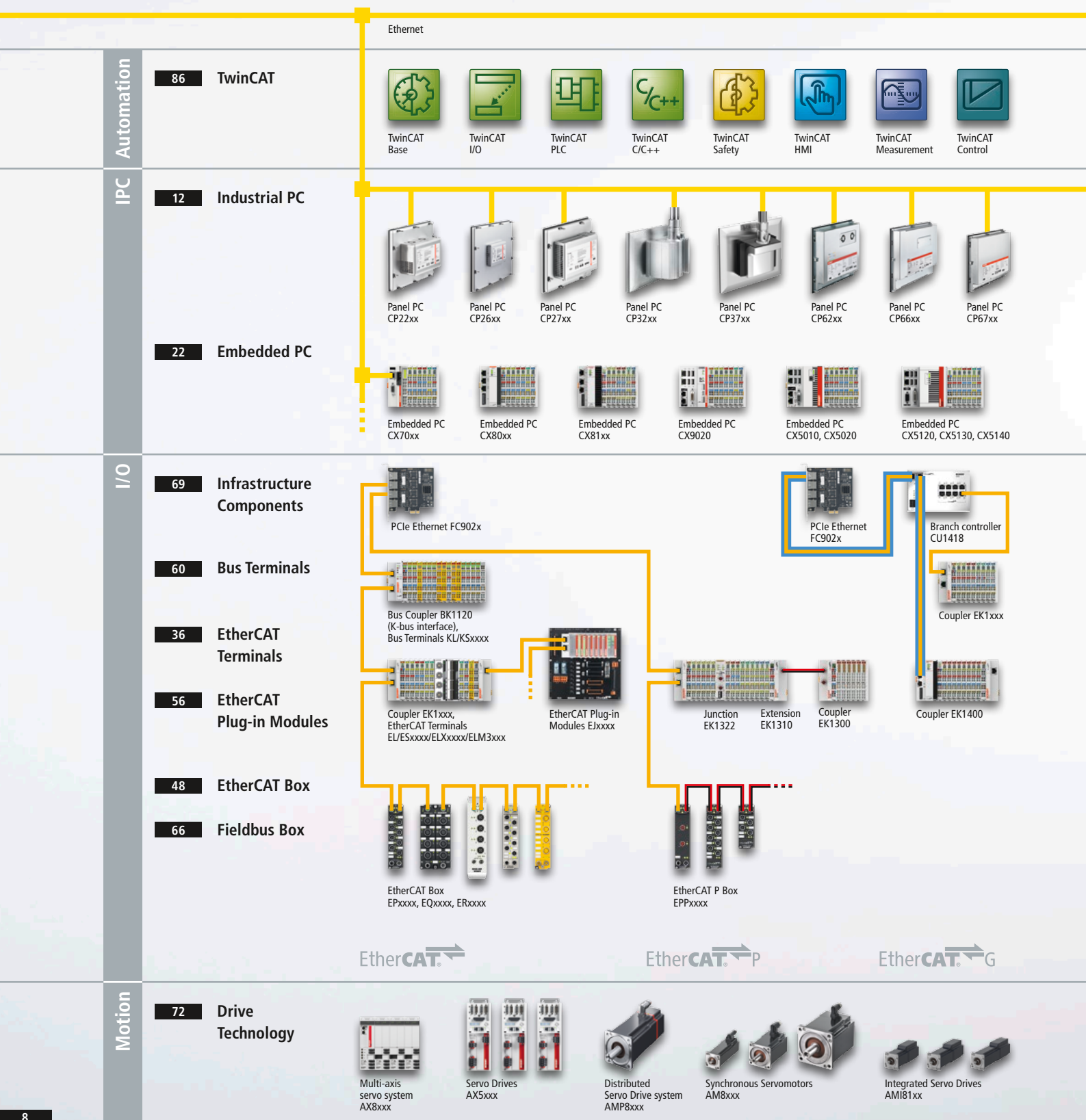


Milestones

- 1982** P1000 – single-board motion controller
- 1986** PC Control – first PC-based machine controller
- 1988** S1000 – software PLC/NC on PC (DOS)
- 1989** Lightbus – high-speed fieldbus utilizing optical fibre
- 1990** All-in-one PC motherboard
- 1995** Bus Terminal – fieldbus technology in terminal block format
- 1996** TwinCAT – real-time software package under Windows with PLC and motion control functions
- 1998** Control Panel – remote IPC Control Panels
- 1999** Fieldbus Box – the I/O system in IP 67
- 2002** CX1000 – modular Embedded PCs for DIN rail mounting
- 2003** EtherCAT – real-time Ethernet fieldbus system
- 2005** TwinSAFE – the compact safety solution
- 2005** AX5000 – EtherCAT Servo Drives
- 2007** Industrial Motherboards – made in Germany
- 2008** XFC – eXtreme Fast Control Technology
- 2009** HD Bus Terminals – 16-channel terminals in 12 mm
- 2010** TwinCAT 3 – eXtended Automation Technology
- 2011** AM8000 – Synchronous Servomotors with One Cable Technology
- 2012** 2nd generation of Control Panels – Panel PCs and Control Panels with multi-touch technology
- 2012** XTS – eXtended Transport System
- 2014** Many-core control – industrial server maximizes industrial computing power
- 2014** AX8000 – multi-axis servo system
- 2014** EtherCAT Plug-in Modules – Bus Terminals for circuit boards
- 2015** EtherCAT P – One Cable Automation
- 2015** TwinCAT HMI – for platform-independent user interfaces
- 2015** TwinCAT IoT – for simple cloud communication
- 2015** TwinCAT Analytics – recording and analysis of process data
- 2016** EtherCAT measurement modules – system-integrated high-end measurement technology
- 2017** Process technology – system-integrated solutions for explosion protection requirement
- 2017** C60xx – the generation of ultra-compact IPCs
- 2017** AMP8000 – Distributed Servo Drive system
- 2017** TwinCAT Vision – machine vision integrated into automation technology
- 2018** Embedded PCs with ARM Cortex™-M7 processor
- 2018** EtherCAT G – Ultimate I/O Performance
- 2018** XPlanar – Flying Motion
- 2019** C70xx – multi-core Industrial PCs in IP 65/67
- 2019** TwinCAT Machine Learning – scalable, open and in real time
- 2019** TwinCAT Cloud Engineering – smart engineering directly in the cloud



System overview





TwinCAT
Speech



TwinCAT
Vision



TwinCAT
Motion



TwinCAT
PTP



TwinCAT
NC I



TwinCAT
CNC



TwinCAT
Robotics



TwinCAT
Connectivity



TwinCAT
Industrie 4.0



TwinCAT
Industry specific



TwinCAT
BACnet



Panel PC
CP72xx



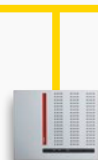
Panel PC
CP77xx



19-inch slide-in
PC C5xxx



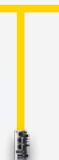
Control cabinet PC
C61xx



Control cabinet PC
C66xx



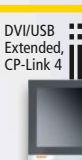
Control cabinet PC
C69xx



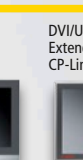
Compact Industrial
PC C60xx



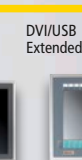
Compact Industrial
PC C70xx



Built-in Control
Panel CP29xx



Control Panel
CP39xx



Built-in Control
Panel CP69xx



Control Panel
CP79xx



Embedded PC
CX5230, CX5240



Embedded PC
CX2020, CX2030, CX2040



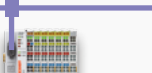
Embedded PC
CX2042, CX2062, CX2072



Embedded PC
CX2033, CX2043



PCI PROFIBUS FC310x



Bus Coupler BK3xx0,
Bus Terminals KL/KSxxxx



Bus Coupler EK3100,
EtherCAT Terminals EL/ESxxxx



Compact Box
IPxxxx-B31x



Coupler Box
IL230x-B31x



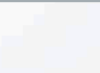
Extension Box
IExxxx



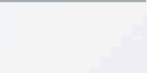
PCIe CANopen FC512x



Bus Coupler BK5xx0,
Bus Terminals KL/KSxxxx



Compact Box
IPxxxx-B51x



Coupler Box
IL230x-B51x



Extension Box
IExxxx



PCIe Ethernet FC902x



Bus Coupler BK9xxx,
Bus Terminals KL/KSxxxx



Bus Coupler EK9x00,
EtherCAT Terminals EL/ESxxxx



Coupler Box
IL230x-B90x



Extension Box
IExxxx

EtherCAT

CANopen

CC-Link

DeviceNet

Ethernet TCP/IP

EtherNet/IP

INTERBUS

LIGHTBUS

Modbus

PROFIBUS

PROFINET

RS232
RS485

SERCOS
the automation bus

BACnet

DALI

DMX

EIB/KNX

enocean

IO-Link

LON

M-Bus

MP2+BUS

OPC UA

PTP/IEEE 1588

Wired

PROFIBUS

CANopen

PROFINET

EtherNet/IP



Servomotors with anodized
housing AM87xx



Stainless steel servomotors
AM88xx



Linear Servomotors
ALxxxx, AAxxxx



Compact Drive
Technology



XTS | eXtended Transport System



XPlanar | eXtended
planar motor system

The IPC Company

The Industrial PC (IPC) is the hardware centerpiece of PC-based control technology. Beckhoff supplies Industrial PCs suitable for any application, which are based on open standards, enabling individual configuration to meet a wide range of control requirements.

Whether in the form of an Embedded PC with a compact form-factor for DIN rail mounting, a control cabinet PC, or as a Panel PC, in-house motherboard development enables Beckhoff to respond quickly to IT trends and customer-specific requirements.

► www.beckhoff.com/IPC

Multi-touch Panel PCs 14

- large model variety
- high computing power
- display sizes from 7-inch to 24-inch
- easy installation in control cabinets or on mounting arms
- special versions for explosion protection
- customer-specific implementations

► www.beckhoff.com/multi-touch

Multi-touch Control Panels 15

- large model variety
- display sizes from 7-inch to 24-inch
- landscape and portrait orientation
- easy installation in control cabinets or on mounting arms
- special versions for explosion protection
- customer-specific implementations

► www.beckhoff.com/multi-touch

Single-touch Panels 16

- Control Panels or Panel PCs
- display sizes from 5.7-inch to 19-inch
- easy installation in control cabinets or on mounting arms
- customer-specific implementations

► www.beckhoff.com/single-touch





Ultra-compact Industrial PCs

Control cabinet Industrial PCs 18

- high computing power
- industrial-strength housing designs
- easy installation
- high flexibility in terms of display connections

► www.beckhoff.com/Control-cabinet-PC

Embedded PCs 22

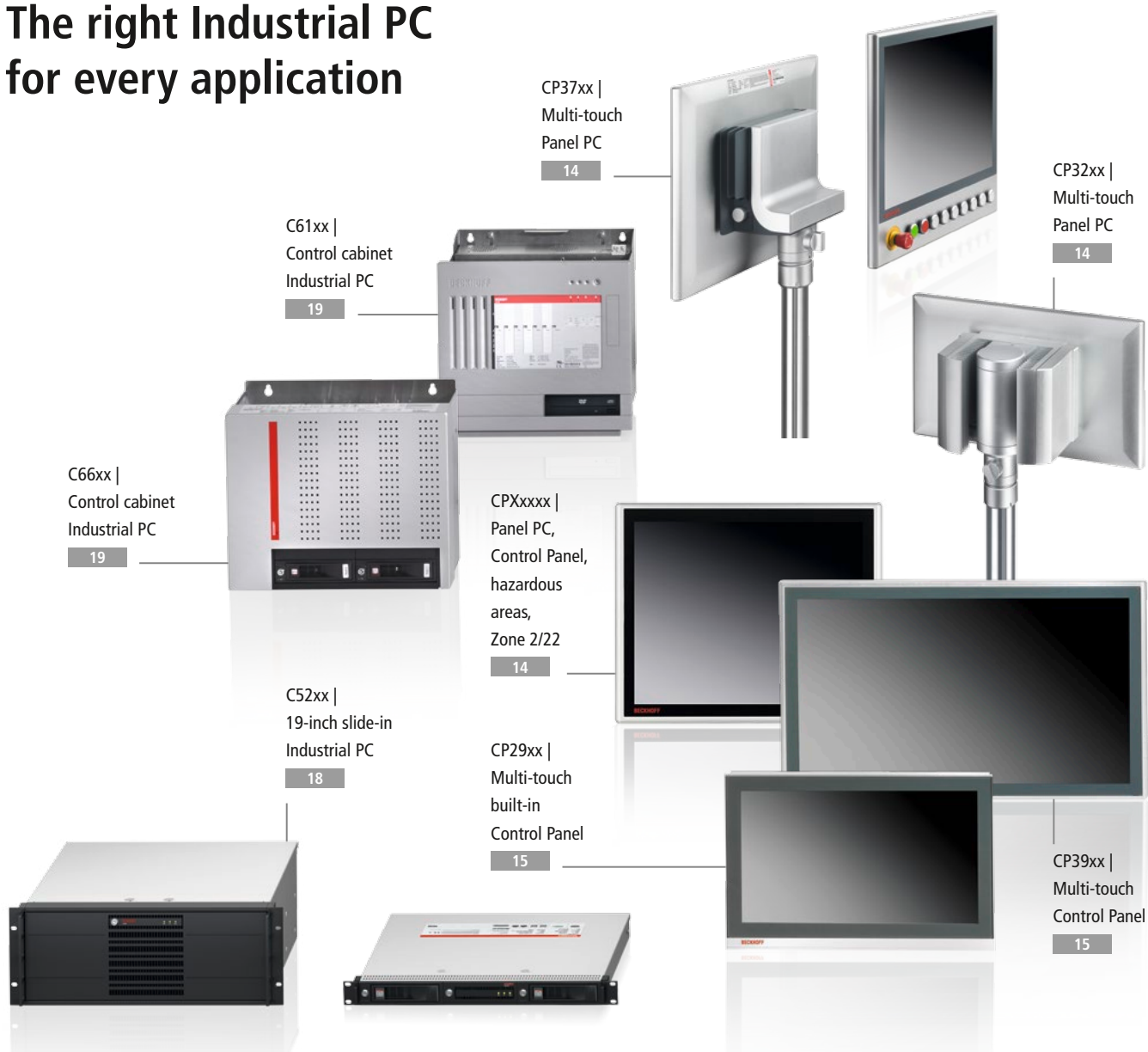
- scalable performance range
- up to 12 cores
- compact design
- direct I/O interface
- modular extension options
- DIN rail mounting

► www.beckhoff.com/Embedded-PC



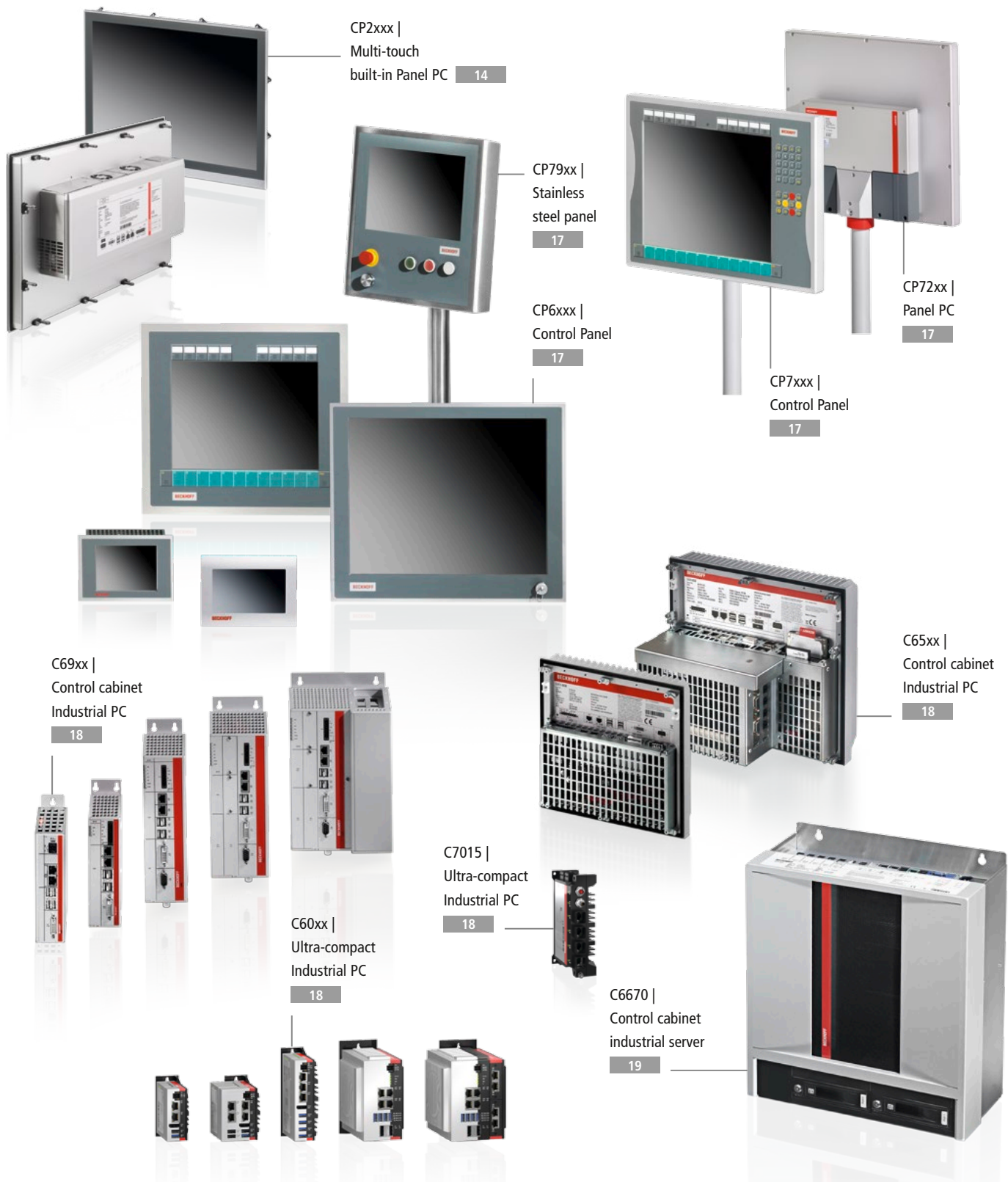
- large model variety of Industrial PCs and Embedded PCs
- high-performance PCs, featuring a wide range of processors, from Intel® Celeron® to top of the line Core™ i7 processors
- long-term availability of all Industrial PCs and Embedded PCs
- As the inventor of PC-based control technology, Beckhoff closely cooperates with global technology partners Intel and Microsoft.

The right Industrial PC for every application



Industrial PCs

	Compact motherboard Intel® Core™/ Intel® Celeron®/ Intel® Pentium®	Compact motherboard Intel Atom®	3½-inch motherboard Intel® Core™	3½-inch motherboard Intel Atom®/ Intel® Celeron® ULV	3½-inch motherboard ARM Cortex™-A8	ATX motherboard Intel® Core™	Control Panel
Multi-touch Panel PCs/Control Panels			CP22xx CP32xx	CP27xx/CPX27xx CP37xx/CPX37xx	CP26xx		CP29xx/CPX29xx CP39xx/CPX39xx
Single-touch Panel PCs/Control Panels		CP77xx	CP62xx CP72xx	CP67xx	CP66xx		CP69xx CP79xx
19-inch slide-in Industrial PCs			C5210			C5240	
Control cabinet Industrial PCs			C6920/C6930 C6515/C6525	C6905/C6915 C6925		C6140/C6150 C6240/C6250 C6640/C6650	
Ultra-compact Industrial PCs	C6025 C6030 C6032	C6015 C6017 C7015					



Control cabinet industrial server

SSI EEB motherboard
2 x Intel® Xeon®
C6670

Multi-touch Panel PCs

► www.beckhoff.com/multi-touch



Multi-touch built-in Panel PCs, front side IP 65

	Display	7-inch	12-inch	12.1-inch	15-inch	15.6-inch	18.5-inch	19-inch	21.5-inch	24-inch
	Resolution	800 x 480	800 x 600	1280 x 800	1024 x 768	1366 x 768	1366 x 768	1280 x 1024	1920 x 1080	1920 x 1080
	Format	5:3	4:3	16:10	4:3	16:9	16:9	5:4	16:9	16:9
CP22xx – up to Intel® Core™ i3/i5/i7	multi-finger touch screen		CP2212	CP2213	CP2215	CP2216	CP2218	CP2219	CP2221	CP2224
CP26xx – ARM Cortex™-A8	dual-finger touch screen	CP2607	CP2612	CP2613	CP2615	CP2616	CP2618	CP2619	CP2621	CP2624
CP27xx – Intel® Celeron® ULV or Atom®	multi-finger touch screen, only horizontal		CP2712	CP2713	CP2715 CPX2715	CP2716	CP2718	CP2719 CPX2719	CP2721 CPX2721	CP2724

Multi-touch Panel PCs, all sides IP 65

	Display	7-inch	12-inch	12.1-inch	15-inch	15.6-inch	18.5-inch	19-inch	21.5-inch	24-inch
	Resolution	800 x 480	800 x 600	1280 x 800	1024 x 768	1366 x 768	1366 x 768	1280 x 1024	1920 x 1080	1920 x 1080
	Format	5:3	4:3	16:10	4:3	16:9	16:9	5:4	16:9	16:9
CP32xx – up to Intel® Core™ i3/i5/i7	multi-finger touch screen, only horizontal		CP3212		CP3215	CP3216	CP3218	CP3219	CP3221	CP3224
CP37xx – Intel Atom®	multi-finger touch screen, only horizontal		CP3712	CP3713	CP3715 CPX3715	CP3716	CP3718	CP3719 CPX3719	CP3721 CPX3721	CP3724
CP37xx- 1600-0020 – Intel Atom®	multi-finger touch screen, only horizontal, fanless without heat sink				CP3715- 1600- 0020 <u>i</u>	CP3716- 1600- 0020 <u>i</u>	CP3718- 1600- 0020 <u>i</u>	CP3719- 1600- 0020 <u>i</u>	CP3721- 1600- 0020 <u>i</u>	CP3724- 1600- 0020 <u>i</u>

Multi-touch Control Panels

► www.beckhoff.com/multi-touch



CP29xx



CP39xx



CP39xx-14xx-0010

Multi-touch built-in Control Panels, front side IP 65

	Display	7-inch	12-inch	12.1-inch	15-inch	15.6-inch	18.5-inch	19-inch	21.5-inch	24-inch
	Resolution	800 x 480	800 x 600	1280 x 800	1024 x 768	1366 x 768	1366 x 768	1280 x 1024	1920 x 1080	1920 x 1080
	Format	5:3	4:3	16:10	4:3	16:9	16:9	5:4	16:9	16:9
CP29xx-0000 – DVI/USB Extended interface*	multi-finger touch screen	CP2907- 0000	CP2912- 0000	CP2913- 0000	CP2915- 0000 CPX2915- 0000	CP2916- 0000	CP2918- 0000	CP2919- 0000 CPX2919- 0000	CP2921- 0000 CPX2921- 0000	CP2924- 0000
CP29xx-0010 – CP-Link 4*	multi-finger touch screen	CP2907- 0010	CP2912- 0010	CP2913- 0010	CP2915- 0010	CP2916- 0010	CP2918- 0010	CP2919- 0010	CP2921- 0010	CP2924- 0010

Multi-touch Control Panels, all sides IP 65

	Display	7-inch	12-inch	12.1-inch	15-inch	15.6-inch	18.5-inch	19-inch	21.5-inch	24-inch
	Resolution	800 x 480	800 x 600	1280 x 800	1024 x 768	1366 x 768	1366 x 768	1280 x 1024	1920 x 1080	1920 x 1080
	Format	5:3	4:3	16:10	4:3	16:9	16:9	5:4	16:9	16:9
CP39xx-0000 – DVI/USB Extended interface*	multi-finger touch screen	CP3907- 0000	CP3912- 0000	CP3913- 0000	CP3915- 0000	CP3916- 0000	CP3918- 0000	CP3919- 0000	CP3921- 0000	CP3924- 0000
CP39xx-0010 – CP-Link 4*	multi-finger touch screen	CP3907- 0010	CP3912- 0010	CP3913- 0010	CP3915- 0010 CPX3915- 0010	CP3916- 0010	CP3918- 0010	CP3919- 0010 CPX3919- 0010	CP3921- 0010 CPX3921- 0010	CP3924- 0010
CP39xx- 14xx-0010 – CP-Link 4*	multi-finger touch screen, stainless steel housing					CP3916- 14xx-0010	CP3918- 14xx-0010			

*For further information on DVI/USB Extended and CP-Link 4 see page

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Single-touch Panels

► www.beckhoff.com/single-touch



Single-touch built-in Panel PCs, front side IP 54/65

	Display	5.7-inch	6.5-inch	7-inch	10.1-inch	12-inch	15-inch	19-inch
	Resolution	640 x 480	640 x 480	800 x 480	1024 x 600	800 x 600	1024 x 768	1280 x 1024
	Format	4:3	4:3	5:3	17:10	4:3	4:3	5:4
	Protect. class front	IP 65	IP 65	IP 54	IP 54	IP 65	IP 65	IP 65
CP62xx – 3½-inch motherboard – up to Intel® Core™ i3/i5/i7	without keys					CP6201	CP6202	CP6203
	function keys					CP6211	CP6212	CP6213
	numerical					CP6221	CP6222	CP6223
	alphanumeric					CP6231	CP6232 CP6242	CP6233
CP66xx – 3½-inch motherboard – ARM Cortex™-A8	without keys	CP6607	CP6609			CP6601	CP6602	CP6603
	function keys		CP6619			CP6611	CP6612	CP6613
	numerical		CP6629			CP6621	CP6622	CP6623
	alphanumeric					CP6631	CP6632	CP6633
CP6606, CP6600 – 3½-inch motherboard – ARM Cortex™-A8	without keys			CP6606	CP6600			
CP67xx – 3½-inch motherboard – Intel® Celeron® ULV or Atom®	without keys	CP6707				CP6701	CP6702	CP6703
	function keys					CP6711	CP6712	CP6713
	numerical					CP6721	CP6722	CP6723
	alphanumeric					CP6731	CP6732 CP6742	CP6733
CP6706, CP6700 – 3½-inch motherboard – Intel® Celeron® ULV or Atom®	without keys			CP6706	CP6700			



Without keys



Function keys



Numeric keyboard



Alphanumeric keyboard



With PLC keys on the sides



CP72xx



CP77xx



CP69xx



CP79xx



CP790x-14xx, stainless steel

Single-touch Panel PCs, all sides IP 65

	Display	5.7-inch	6.5-inch	7-inch	10.1-inch	12-inch	15-inch	19-inch
	Resolution	640 x 480	640 x 480	800 x 480	1024 x 600	800 x 600	1024 x 768	1280 x 1024
	Format	4:3	4:3	5:3	17:10	4:3	4:3	5:4
CP72xx – 3½-inch motherboard – up to Intel® Core™ i3/i5/i7	without keys					CP7201	CP7202	CP7203
	function keys					CP7211	CP7212	CP7213
	numerical					CP7221	CP7222	CP7223
	alphanumeric					CP7231	CP7232 CP7242	CP7233
CP77xx – CP motherboard – Intel® Celeron® ULV or Atom®	without keys					CP7701	CP7702	CP7703
	function keys					CP7711	CP7712	CP7713
	numerical					CP7721	CP7722	CP7723
	alphanumeric					CP7731	CP7732	CP7733

Single-touch built-in Control Panels, front side IP 54/65

	Display	5.7-inch	6.5-inch	7-inch	10.1-inch	12-inch	15-inch	19-inch
	Resolution	640 x 480	640 x 480	800 x 480	1024 x 600	800 x 600	1024 x 768	1280 x 1024
	Format	4:3	4:3	5:3	17:10	4:3	4:3	5:4
	Protect. class front	IP 65	IP 65	IP 54	IP 54	IP 65	IP 65	IP 65
CP69xx – DVI/USB Extended interface*	without keys	CP6907	CP6909	CP6906	CP6900	CP6901	CP6902	CP6903
	function keys		CP6919			CP6911	CP6912	CP6913
	numerical		CP6929			CP6921	CP6922	CP6923
	alphanumeric					CP6931	CP6932/42	CP6933

Single-touch Control Panels, all sides IP 65

	Display	5.7-inch	6.5-inch	7-inch	10.1-inch	12-inch	15-inch	19-inch
	Resolution	640 x 480	640 x 480	800 x 480	1024 x 600	800 x 600	1024 x 768	1280 x 1024
	Format	4:3	4:3	5:3	17:10	4:3	4:3	5:4
CP79xx – DVI/USB Extended interface*	without keys		CP7909			CP7901	CP7902	CP7903
	function keys		CP7919			CP7911	CP7912	CP7913
	numerical		CP7929			CP7921	CP7922	CP7923
	alphanumeric					CP7931	CP7932/42	CP7933
CP790x-14xx – DVI/USB Extended interface*	without keys, stainless steel housing					CP7901-14xx	CP7902-14xx	CP7903-14xx

*For further information on DVI/USB Extended see page

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Control cabinet/Ultra-compact Industrial PCs



Control cabinet Industrial PCs with 3½-inch motherboard

	Processor	Intel Atom®	Intel® Celeron® ULV	Intel® Celeron®, Intel® Core™ i3/i5/i7 4th Generation	Intel® Celeron®, Intel® Core™ i3/i5/i7 6th/7th Generation
C5210, 19-inch slide-in Industrial PCs	1 rack unit			C5210-0020	C5210-0030
C65xx	fanless RAID			C6515-0050 C6525-0050	C6515-0060 C6525-0060
C69xx, compact Industrial PCs, connectors on front	fanless	C6905-0010 C6905-0020			
	fanless, 1 CFast card slot	C6915-0010 C6915-0020			
	fanless, 2 PCIe module slots	C6925-0030 C6925-0040		C6925-0020	
	optional plug-in card slots			C6920-0050	C6920-0060
	2 PCIe module slots, optional plug-in card slots			C6930-0050	C6930-0060

Ultra-compact Industrial PCs with compact industrial motherboard

	Processor	Intel Atom®	Intel® Celeron®, Intel® Core™ i3/i5/i7 8th Generation, series U	Intel® Celeron®, Intel® Pentium®, Intel® Core™ i3/i5/i7 6th/7th Generation	Intel® Celeron®, Intel® Pentium®, Intel® Core™ i3/i5/i7 8th/9th Generation
C60xx, ultra-com- pact Industrial PCs	fanless, without slots	C6015-0010 C6015-0020		C6025-0000	
	optional interfaces and/or an optional 1-second UPS	C6017-0010 C6017-0020			
	up to 2 M.2 SSDs and/or 2 PCIe com- pact module slots			C6030-0060 C6032-0060	C6030-0070 C6032-0070
C70xx, ultra-com- pact Industrial PCs IP 65/67	fanless	C7015-0020			



Control cabinet Industrial PCs with ATX motherboard

	Processor	Intel® Pentium®, Intel® Core™ i3/i5/i7 4 th Generation	Intel® Pentium®, Intel® Core™ i3/i5/i7 6 th /7 th Generation
C5240, 19-inch slide-in Industrial PCs	7 slots, 4 rack units	C5240-0000	C5240-0010
C61xx, connectors on top	7 slots	C6140-0060 C6150-0060	C6140-0070 C6150-0070
C62xx, connectors on front	7 slots	C6240-0060 C6250-0070	C6240-0070 C6250-0080
C6640/C6650, connectors on top	7 slots	C6640-0040	C6640-0050
	7 slots, 2 removable frames	C6650-0040	C6650-0050

Control cabinet industrial server with SSI EEB motherboard

	Processor	2 x Intel® Xeon®	2 x Intel® Xeon® Scalable
C6670	6 slots, 2 removable frames	C6670-0000	C6670-0010

Customization options for Panel PCs and Control Panels

- stainless steel housings
- special membrane keyboards
- integration of electro-mechanical keyboards
- flush-mounted touch screens
- adaptation of membrane colors
- integration of customer logos



Built-in panel
with individual
front laminate



Stainless steel panel



Stainless steel panel with
emergency stop



Customer-specific multi-touch
Control Panel



Multi-touch Control Panel
for machine tools



Multi-touch Control Panel
with push-button extension

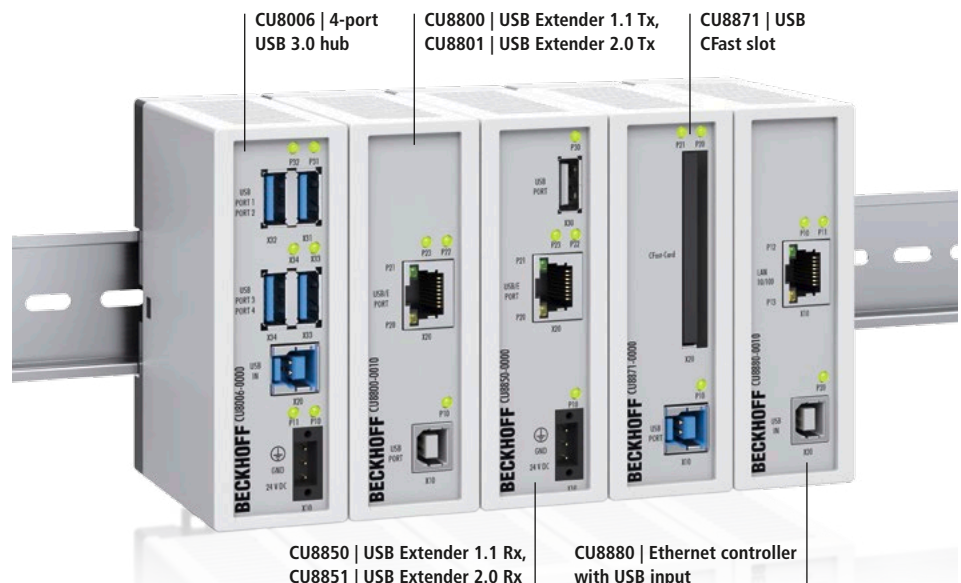


Control Panel with
CNC push-button extension

Industrial PC accessories

CU8xxx modules

Different modules enable the use of various technologies in the industrial environment. All modules are intended for DIN rail mounting.

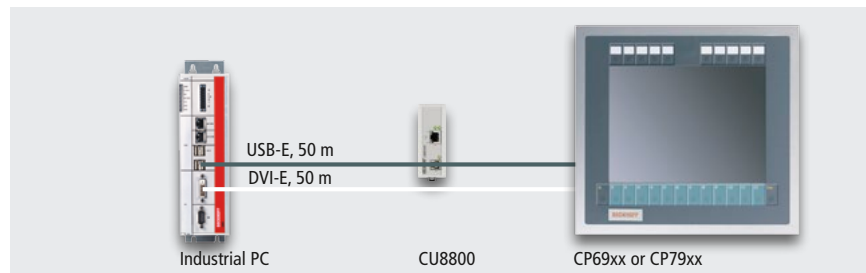


DVI/USB Extended

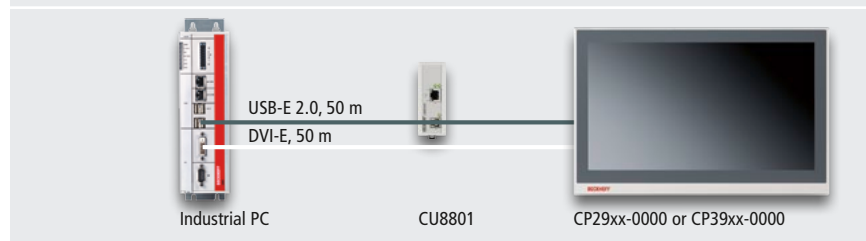
The DVI/USB Extended technology enables remote panel operation at a distance of up to 50 m from the PC. The DVI graphics signal is directly transmitted from the PC via DVI E cable. A signal processor in the Control Panels restores the DVI signal after it a distance of 50 m. For connection of the CP69xx and CP79xx Control Panels, a CU8800 USB Extender box is connected to an USB port of the PC. The signal is transmitted by the CU8800 USB Extender (USB-E) via Cat.5 cable over 50 m max. and is reconverted by the Control Panel into USB 1.1 with 12 Mbit/s.

For the CP29xx-0000 and CP39xx-0000 Control Panels, the USB signal from the PC is converted into USB Extended 2.0 by the USB Extender box CU8801, transmitted to the Control Panel via Cat.5 cable over 50 m max. to be reconverted into USB 2.0 with 480 Mbit/s. An USB hub in the Control Panel enables the connection of two external USB devices such as a keyboard or USB stick, in addition to touch screen and push-button extension.

DVI/USB Extended for CPX69xx or CP79xx
via the CU8800 transmitter box



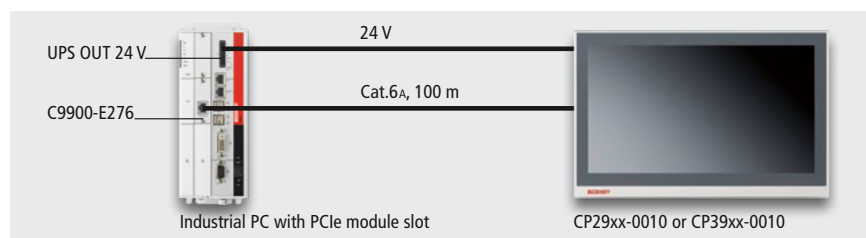
DVI/USB Extended 2.0 for CP29xx-
0000 or CP39xx-0000 via the CU8801
transmitter box



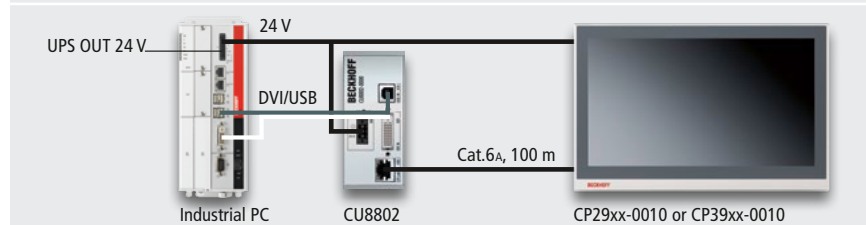
CP-Link 4: The One Cable Display Link

With CP-Link 4 operating panels can be located up to 100 m away from the Industrial PC. The single-cable solution can be used to transfer video signals, USB 2.0 and the power supply in an industrial Cat.6A cable, thus significantly reducing cable and installation costs. A further benefit is the use of purely passive displays. The CP-Link 4 technology is supported by the Beckhoff multi-touch panel series CP29xx-0010 (built-in version) and CP39xx-0010 (mounting arm version).

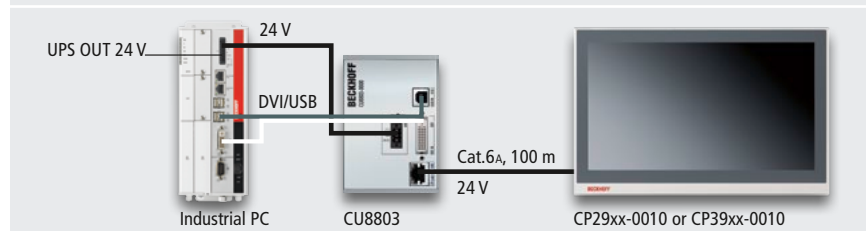
CP-Link 4 – The Two Cable Display Link:
via C9900-E276 PCIe module integrated
in the PC



CP-Link 4 – The Two Cable Display Link:
via CU8802 transmitter box



CP-Link 4 – The One Cable Display Link:
DVI, USB and 24 V via CU8803 transmitter box



► www.beckhoff.com/CP-Link4

Embedded PC

► www.beckhoff.com/Embedded-PC



Embedded PC

Basic CPU	CX70xx	 CX80xx	CX81xx
Processor	ARM Cortex™-M7, 400 MHz	ARM9, 400 MHz	ARM Cortex™-A9, 800 MHz
Flash memory	512 MB microSD (optionally 1 GB, 2 GB, 4 GB or 8 GB)	slot for microSD card, 512 MB included (expandable)	slot for microSD card, 512 MB included (expandable)
Main memory	32 MB SDR (internal, not expandable)	64 MB DDR2 RAM (not expandable)	512 MB DDR3 RAM (not expandable)
Interfaces	programming interface: 1 x Ethernet 10/100 Mbit/s (RJ45)	1 x RJ45 10/100 Mbit/s, 1 x USB device (behind the front flap), fieldbus interface	1 x RJ45 10/100 Mbit/s, 1 x USB device (behind the front flap), fieldbus interface
I/O connection	E-bus or K-bus, automatic recognition	E-bus or K-bus, automatic recognition	E-bus or K-bus, automatic recognition
System interfaces	integrated	integrated	integrated
DVI/USB	–	–	–
RS232	CX7080	CX8080	CX8180
RS422/RS485	CX7080	CX8080	CX8180
Audio	–	–	–
Ethernet	in the basic CPU	in the basic CPU	in the basic CPU
4-port USB hub	–	–	–
Memory medium	in the basic CPU	in the basic CPU	in the basic CPU
Fieldbus interfaces	expandable via EtherCAT Terminals	integrated or expandable via EtherCAT Terminals	integrated or expandable via EtherCAT Terminals
EtherCAT	EL6695 slave	CX8010 slave	CX8110 slave
PROFIBUS	EL6731 master	CX8030 master	EL6731 master
	EL6731-0010 slave	CX8031 slave	EL6731-0010 slave
CANopen	EL6751 master	CX8050 master	EL6751 master
	EL6751-0010 slave	CX8051 slave	EL6751-0010 slave
DeviceNet	EL6752 master	EL6752 master	EL6752 master
	EL6752-0010 slave	EL6752-0010 slave	EL6752-0010 slave
PROFINET RT	EL6631 controller	CX8093 device	EL6631 controller
	EL6631-0010 device		EL6631-0010 device
EtherNet/IP	EL6652 master	CX8095 slave	EL6652 master
	EL6652-0010 slave		EL6652-0010 slave
UPS options	–	1-second UPS	1-second UPS



CX9020	CX5010	CX5020
ARM Cortex™-A8, 1 GHz	Intel Atom® Z510, 1.1 GHz clock frequency	Intel Atom® Z530, 1.6 GHz clock frequency
2 x slot for microSD card, 512 MB included (expandable)	slot for Compact Flash card, 128 MB included (expandable)	slot for Compact Flash card, 128 MB included (expandable)
1 GB DDR3 RAM (not expandable)	512 MB RAM (not expandable)	512 MB RAM (expandable ex factory to 1 GB)
2 x RJ45 10/100 Mbit/s (internal switch), 1 x DVI-D, 4 x USB 2.0, 1 x optional interface	2 x RJ45 10/100/1000 Mbit/s, 1 x DVI-D, 4 x USB 2.0, 1 x optional interface	2 x RJ45 10/100/1000 Mbit/s, 1 x DVI-D, 4 x USB 2.0, 1 x optional interface
E-bus or K-bus, automatic recognition	E-bus or K-bus, automatic recognition	E-bus or K-bus, automatic recognition
integrated	integrated	integrated
in the basic CPU	in the basic CPU	in the basic CPU
CX9020-N030	CX5010-N030	CX5020-N030
CX9020-N031	CX5010-N031	CX5020-N031
CX9020-N020	CX5010-N020	CX5020-N020
in the basic CPU	in the basic CPU	in the basic CPU
in the basic CPU	in the basic CPU	in the basic CPU
2 nd microSD slot in the basic CPU	in the basic CPU	in the basic CPU
integrated or expandable via EtherCAT Terminals	integrated or expandable via EtherCAT Terminals	integrated or expandable via EtherCAT Terminals
CX9020-B110 slave	CX5010-B110 slave	CX5020-B110 slave
CX9020-M310 master	CX5010-M310 master	CX5020-M310 master
CX9020-B310 slave	CX5010-B310 slave	CX5020-B310 slave
CX9020-M510 master	CX5010-M510 master	CX5020-M510 master
CX9020-B510 slave	CX5010-B510 slave	CX5020-B510 slave
EL6752 master	EL6752 master	EL6752 master
EL6752-0010 slave	EL6752-0010 slave	EL6752-0010 slave
CX9020-M930 controller	CX5010-M930 controller	CX5020-M930 controller
CX9020-B930 device	CX5010-B930 device	CX5020-B930 device
CX9020-B950 slave	CX5010-B950 slave	CX5020-B950 slave
1-second UPS (optional)	1-second UPS	1-second UPS



Embedded PC

Basic CPU	CX5120	CX5130	CX5140
Processor	Intel Atom® E3815, 1.46 GHz	Intel Atom® E3827, 1.75 GHz	Intel Atom® E3845, 1.91 GHz
Flash memory	slot for CFast card and microSD card, cards not included	slot for CFast card and microSD card, cards not included	slot for CFast card and microSD card, cards not included
Main memory	2 GB DDR3 RAM (not expandable)	4 GB DDR3 RAM (not expandable)	4 GB DDR3 RAM (not expandable)
Interfaces	2 x RJ45 10/100/1000 Mbit/s, 1 x DVI-I, 4 x USB 2.0, 1 x optional interface	2 x RJ45 10/100/1000 Mbit/s, 1 x DVI-I, 4 x USB 2.0, 1 x optional interface	2 x RJ45 10/100/1000 Mbit/s, 1 x DVI-I, 4 x USB 2.0, 1 x optional interface
I/O connection	E-bus or K-bus, automatic recognition	E-bus or K-bus, automatic recognition	E-bus or K-bus, automatic recognition
System interfaces	integrated	integrated	integrated
DVI/USB	in the basic CPU	in the basic CPU	in the basic CPU
DisplayPort	–	CX5130-N011	CX5140-N011
RS232	CX5120-N030	CX5130-N030	CX5140-N030
RS422/RS485	CX5120-N031	CX5130-N031	CX5140-N031
Audio	CX5120-N020	CX5130-N020	CX5140-N020
Ethernet	in the basic CPU	in the basic CPU	in the basic CPU
Power over Ethernet	–	–	–
4-port USB hub	in the basic CPU	in the basic CPU	in the basic CPU
Memory medium	in the basic CPU	in the basic CPU	in the basic CPU
Fieldbus interfaces	integrated or expandable via EtherCAT Terminals	integrated or expandable via EtherCAT Terminals	integrated or expandable via EtherCAT Terminals
EtherCAT	CX5120-B110 slave	CX5130-B110 slave	CX5140-B110 slave
PROFIBUS	CX5120-M310 master	CX5130-M310 master	CX5140-M310 master
	CX5120-B310 slave	CX5130-B310 slave	CX5140-B310 slave
CANopen	CX5120-M510 master	CX5130-M510 master	CX5140-M510 master
	CX5120-B510 slave	CX5130-B510 slave	CX5140-B510 slave
DeviceNet	EL6752 master	EL6752 master	EL6752 master
	EL6752-0010 slave	EL6752-0010 slave	EL6752-0010 slave
PROFINET RT	CX5120-M930 controller	CX5130-M930 controller	CX5140-M930 controller
	CX5120-B930 device	CX5130-B930 device	CX5140-B930 device
PROFINET IRT	CX5120-B931 device	CX5130-B931 device	CX5140-B931 device
EtherNet/IP	CX5120-B950 slave	CX5130-B950 slave	CX5140-B950 slave
UPS options	1-second UPS	1-second UPS	1-second UPS



CX5230	i	CX5240	i
Intel Atom® x5-E3930, 1.3 GHz, 2 cores		Intel Atom® x5-E3940, 1.6 GHz, 4 cores	
slot for CFast card and microSD card, cards not included		slot for CFast card and microSD card, cards not included	
4 GB DDR4 RAM (internal, not expandable)		8 GB DDR4 RAM (internal, not expandable)	
2 x RJ45 10/100/1000 Mbit/s, 1 x DVI-D, 4 x USB 3.0, 1 x optional interface		2 x RJ45 10/100/1000 Mbit/s, 1 x DVI-D, 4 x USB 3.0, 1 x optional interface	
E-bus or K-bus, automatic recognition		E-bus or K-bus, automatic recognition	
modularly expandable		modularly expandable	
in the basic CPU, 2 nd DVI port as option CX5230-N010		in the basic CPU, 2 nd DVI port as option CX5240-N010	
CX5230-N011		CX5240-N011	
CX5230-N030 or CX2500-0030		CX5240-N030 or CX2500-0030	
CX5230-N031 or CX2500-0031		CX5240-N031 or CX2500-0031	
CX2500-0020		CX2500-0020	
in the basic CPU or CX2500-0060		in the basic CPU or CX2500-0060	
CX2500-0061		CX2500-0061	
in the basic CPU or CX2500-0070		in the basic CPU or CX2500-0070	
in the basic CPU		in the basic CPU	
integrated or expandable via EtherCAT Terminals		integrated or expandable via EtherCAT Terminals	
CX5230-B110 slave		CX5240-B110 slave	
CX5230-M310 or CX2500-M310 master		CX5240-M310 or CX2500-M310 master	
CX5230-B310 or CX2500-B310 slave		CX5240-B310 or CX2500-B310 slave	
CX5230-M510 or CX2500-M510 master		CX5240-M510 or CX2500-M510 master	
CX5230-B510 or CX2500-B510 slave		CX5240-B510 or CX2500-B510 slave	
EL6752 master		EL6752 master	
EL6752-0010 slave		EL6752-0010 slave	
CX5230-M930 controller		CX5240-M930 controller	
CX5230-B930 device		CX5240-B930 device	
CX5230-B931 device		CX5240-B931 device	
CX5230-B950 slave		CX5240-B950 slave	
1-second UPS		1-second UPS	



Embedded PC

Basic CPU	CX2020	CX2030	CX2040
Processor	Intel® Celeron® 827E 1.4 GHz	Intel® Core™ i7 2610UE 1.5 GHz	Intel® Core™ i7 2715QE 2.1 GHz
Flash memory	20 GB or 40 GB CFast flash card (depending on the operating system), optionally extendable	20 GB or 40 GB CFast flash card (depending on the operating system), optionally extendable	20 GB or 40 GB CFast flash card (depending on the operating system), optionally extendable
Main memory	2 GB DDR3 RAM (expandable ex factory to 4 GB)	2 GB DDR3 RAM (expandable ex factory to 4 GB)	4 GB DDR3 RAM (not expandable)
Interfaces	2 x RJ45 10/100/1000 Mbit/s, 1 x DVI-I, 4 x USB 2.0, 1 x optional interface	2 x RJ45 10/100/1000 Mbit/s, 1 x DVI-I, 4 x USB 2.0, 1 x optional interface	2 x RJ45 10/100/1000 Mbit/s, 1 x DVI-I, 4 x USB 2.0, 1 x optional interface
I/O connection	via power supply module (E-bus or K-bus, automatic recognition)	via power supply module (E-bus or K-bus, automatic recognition)	via power supply module (E-bus or K-bus, automatic recognition)
System interfaces	modularly expandable	modularly expandable	modularly expandable
DVI/USB	in the basic CPU, 2 nd DVI port as option CX2020-N010	in the basic CPU, 2 nd DVI port as option CX2030-N010	in the basic CPU, 2 nd DVI port as option CX2040-N010
DisplayPort	CX2020-N011	CX2030-N011	CX2040-N011
RS232	CX2020-N030 or CX2500-0030	CX2030-N030 or CX2500-0030	CX2040-N030 or CX2500-0030
RS422/RS485	CX2020-N031 or CX2500-0031	CX2030-N031 or CX2500-0031	CX2040-N031 or CX2500-0031
Audio	CX2500-0020	CX2500-0020	CX2500-0020
Ethernet	in the basic CPU or CX2500-0060	in the basic CPU or CX2500-0060	in the basic CPU or CX2500-0060
10G Ethernet	—	—	—
Power over Ethernet	CX2500-0061	CX2500-0061	CX2500-0061
4-port USB hub	in the basic CPU or CX2500-0070	in the basic CPU or CX2500-0070	in the basic CPU or CX2500-0070
Memory medium	in the basic CPU or CX2550-0010/ CX2550-0020	in the basic CPU or CX2550-0010/ CX2550-0020	in the basic CPU or CX2550-0010/ CX2550-0020
USB extension	CX2550-0179 (USB 1.1) or CX2550-0279 (USB 2.0)	CX2550-0179 (USB 1.1) or CX2550-0279 (USB 2.0)	CX2550-0179 (USB 1.1) or CX2550-0279 (USB 2.0)
Fieldbus interfaces	integrated or expandable via EtherCAT Terminals	integrated or expandable via EtherCAT Terminals	integrated or expandable via EtherCAT Terminals
EtherCAT	CX2020-B110 slave	CX2030-B110 slave	CX2040-B110 slave
Lightbus	EL6720 master	EL6720 master	EL6720 master
PROFIBUS	CX2020-M310 or CX2500-M310 master CX2020-B310 or CX2500-B310 slave	CX2030-M310 or CX2500-M310 master CX2030-B310 or CX2500-B310 slave	CX2040-M310 or CX2500-M310 master CX2040-B310 or CX2500-B310 slave
CANopen	CX2020-M510 or CX2500-M510 master CX2020-B510 or CX2500-B510 slave	CX2030-M510 or CX2500-M510 master CX2030-B510 or CX2500-B510 slave	CX2040-M510 or CX2500-M510 master CX2040-B510 or CX2500-B510 slave
DeviceNet	EL6752 master EL6752-0010 slave	EL6752 master EL6752-0010 slave	EL6752 master EL6752-0010 slave
PROFINET RT	CX2020-M930 controller CX2020-B930 device	CX2030-M930 controller CX2030-B930 device	CX2040-M930 controller CX2040-B930 device
PROFINET IRT	CX2020-B931 device	CX2030-B931 device	CX2040-B931 device
EtherNet/IP	CX2020-B950 slave	CX2030-B950 slave	CX2040-B950 slave
UPS options	CX2100-0904, CX2100-0914	CX2100-0904, CX2100-0914	CX2100-0914



CX2042	CX2062	CX2072
Intel® Xeon® D-1527 2.2 GHz, 4 cores	Intel® Xeon® D-1548 2.0 GHz, 8 cores	Intel® Xeon® D-1567 2.1 GHz, 12 cores
slot for CFast card, card not included	slot for CFast card, card not included	slot for CFast card, card not included
8 GB DDR4 RAM (expandable ex factory to 64 GB)	8 GB DDR4 RAM (expandable ex factory to 64 GB)	8 GB DDR4 RAM (expandable ex factory to 64 GB)
2 x RJ45 10/100/1000 Mbit/s, 1 x DVI-I, 4 x USB 3.0, 1 x optional interface	2 x RJ45 10/100/1000 Mbit/s, 1 x DVI-I, 4 x USB 3.0, 1 x optional interface	2 x RJ45 10/100/1000 Mbit/s, 1 x DVI-I, 4 x USB 3.0, 1 x optional interface
via power supply module (E-bus or K-bus, automatic recognition)	via power supply module (E-bus or K-bus, automatic recognition)	via power supply module (E-bus or K-bus, automatic recognition)
modularly expandable	modularly expandable	modularly expandable
in the basic CPU, 2 nd DVI port as option CX2042-N010	in the basic CPU, 2 nd DVI port as option CX2062-N010	in the basic CPU, 2 nd DVI port as option CX2072-N010
CX2042-N011	CX2062-N011	CX2072-N011
CX2042-N030 or CX2500-0030	CX2062-N030 or CX2500-0030	CX2072-N030 or CX2500-0030
CX2042-N031 or CX2500-0031	CX2062-N031 or CX2500-0031	CX2072-N031 or CX2500-0031
—	—	—
in the basic CPU or CX2500-0060	in the basic CPU or CX2500-0060	in the basic CPU or CX2500-0060
CX2042-N067 or CX2042-N167	CX2062-N067 or CX2062-N167	CX2072-N067 or CX2072-N167
CX2500-0061	CX2500-0061	CX2500-0061
in the basic CPU or CX2500-0070	in the basic CPU or CX2500-0070	in the basic CPU or CX2500-0070
in the basic CPU or CX2550-0010/ CX2550-0020	in the basic CPU or CX2550-0010/ CX2550-0020	in the basic CPU or CX2550-0010/ CX2550-0020
CX2550-0179 (USB 1.1) or CX2550-0279 (USB 2.0)	CX2550-0179 (USB 1.1) or CX2550-0279 (USB 2.0)	CX2550-0179 (USB 1.1) or CX2550-0279 (USB 2.0)
integrated or expandable via EtherCAT Terminals	integrated or expandable via EtherCAT Terminals	integrated or expandable via EtherCAT Terminals
CX2042-B110 slave	CX2062-B110 slave	CX2072-B110 slave
EL6720 master	EL6720 master	EL6720 master
CX2042-M310 or CX2500-M310 master	CX2062-M310 or CX2500-M310 master	CX2072-M310 or CX2500-M310 master
CX2042-B310 or CX2500-B310 slave	CX2062-B310 or CX2500-B310 slave	CX2072-B310 or CX2500-B310 slave
CX2042-M510 or CX2500-M510 master	CX2062-M510 or CX2500-M510 master	CX2072-M510 or CX2500-M510 master
CX2042-B510 or CX2500-B510 slave	CX2062-B510 or CX2500-B510 slave	CX2072-B510 or CX2500-B510 slave
EL6752 master	EL6752 master	EL6752 master
EL6752-0010 slave	EL6752-0010 slave	EL6752-0010 slave
CX2042-M930 controller	CX2062-M930 controller	CX2072-M930 controller
CX2042-B930 device	CX2062-B930 device	CX2072-B930 device
CX2042-B931 device	CX2062-B931 device	CX2072-B931 device
CX2042-B950 slave	CX2062-B950 slave	CX2072-B950 slave
—	—	—



Embedded PC

Basic CPU	CX2033	i	CX2043	i
Processor	AMD Ryzen™ V1202B 2.3 GHz		AMD Ryzen™ V1807B 3.35 GHz	
Flash memory	slot for CFast card		slot for CFast card	
Main memory	8 GB DDR4 RAM (internal, not expandable)		16 GB DDR4 RAM (internal, not expandable)	
Interfaces	2 x RJ45, 10/100/1000 Mbit/s, DVI-D, 4 x USB 3.1 Gen. 2, 1 x optional interface		2 x RJ45, 10/100/1000 Mbit/s, DVI-D, 4 x USB 3.1 Gen. 2, 1 x optional interface	
I/O connection	via power supply module (E-bus or K-bus, automatic recognition)		via power supply module (E-bus or K-bus, automatic recognition)	
System interfaces	modularly expandable		modularly expandable	
DVI/USB	in the basic CPU, 2 nd DVI port as option CX2033-N010		in the basic CPU, 2 nd DVI port as option CX2043-N010	
DisplayPort	CX2033-N011		CX2043-N011	
RS232	CX2033-N030 or CX2500-0030		CX2043-N030 or CX2500-0030	
RS422/RS485	CX2033-N031 or CX2500-0031		CX2043-N031 or CX2500-0031	
Audio	CX2500-0020		CX2500-0020	
Ethernet	in the basic CPU or CX2500-0060		in the basic CPU or CX2500-0060	
Power over Ethernet	CX2500-0061		CX2500-0061	
4-port USB hub	in the basic CPU or CX2500-0070		in the basic CPU or CX2500-0070	
Memory medium	in the basic CPU or CX2550-0010/ CX2550-0020		in the basic CPU or CX2550-0010/ CX2550-0020	
USB extension	CX2550-0179 (USB 1.1) or CX2550-0279 (USB 2.0)		CX2550-0179 (USB 1.1) or CX2550-0279 (USB 2.0)	
Fieldbus interfaces	integrated or expandable via EtherCAT Terminals		integrated or expandable via EtherCAT Terminals	
EtherCAT	CX2033-B110 slave		CX2043-B110 slave	
Lightbus	EL6720 master		EL6720 master	
PROFIBUS	CX2033-M310 or CX2500-M310 master CX2033-B310 or CX2500-B310 slave		CX2043-M310 or CX2500-M310 master CX2043-B310 or CX2500-B310 slave	
CANopen	CX2033-M510 or CX2500-M510 master CX2033-B510 or CX2500-B510 slave		CX2043-M510 or CX2500-M510 master CX2043-B510 or CX2500-B510 slave	
DeviceNet	EL6752 master EL6752-0010 slave		EL6752 master EL6752-0010 slave	
PROFINET RT	CX2033-M930 controller CX2033-B930 device		CX2043-M930 controller CX2043-B930 device	
PROFINET IRT	CX2033-B931 device		CX2043-B931 device	
EtherNet/IP	CX2033-B950 slave		CX2043-B950 slave	
SERCOS	—		—	
UPS options	CX2100-0904, CX2100-0914		CX2100-0914	



CX1010	CX1020	CX1030
compatible with Intel® Pentium® MMX, clock frequency 500 MHz	Intel® Celeron® M ULV, 1 GHz clock frequency	Intel® Pentium® M, 1.8 GHz clock frequency
slot for Compact Flash card, 128 MB included (expandable)	slot for Compact Flash card, 128 MB included (expandable)	slot for Compact Flash card, 128 MB included (expandable)
256 MB DDR RAM (not expandable)	256 MB DDR RAM (expandable ex factory to 1 GB)	256 MB DDR RAM (expandable ex factory to 1 GB)
1 x RJ45 10/100 Mbit/s	2 x RJ45 10/100 Mbit/s (internal switch)	2 x RJ45 10/100 Mbit/s (internal switch)
via power supply module (E-bus, K-bus, K-bus/IP-Link)	via power supply module (E-bus, K-bus, K-bus/IP-Link)	via power supply module (E-bus, K-bus, K-bus/IP-Link)
modularly expandable	modularly expandable	modularly expandable
CX1010-N010	CX1020-N010	CX1030-N010
—	—	—
CX1010-N030 (COM 1/2)	CX1020-N030 (COM 1/2)	CX1030-N030 (COM 1/2)
CX1010-N040 (COM 3/4)	CX1020-N040 (COM 3/4)	CX1030-N040 (COM 3/4)
CX1010-N031 (COM 1/2)	CX1020-N031 (COM 1/2)	CX1030-N031 (COM 1/2)
CX1010-N041 (COM 3/4)	CX1020-N041 (COM 3/4)	CX1030-N041 (COM 3/4)
CX1010-N020	CX1020-N020	CX1030-N020
CX1010-N060	CX1020-N060	CX1030-N060
—	—	—
—	—	—
in the basic CPU	—	—
—	—	—
modularly expandable	modularly expandable	modularly expandable
EL6695 slave	EL6695 slave	EL6695 slave
CX1500-M200 master	CX1500-M200 master	CX1500-M200 master
CX1500-M310 master	CX1500-M310 master	CX1500-M310 master
CX1500-B310 slave	CX1500-B310 slave	CX1500-B310 slave
CX1500-M510 master	CX1500-M510 master	CX1500-M510 master
CX1500-B510 slave	CX1500-B510 slave	CX1500-B510 slave
CX1500-M520 master	CX1500-M520 master	CX1500-M520 master
CX1500-B520 slave	CX1500-B520 slave	CX1500-B520 slave
—	—	—
—	—	—
—	—	—
CX1500-M750 SERCOS II master	CX1500-M750 SERCOS II master	CX1500-M750 SERCOS II master
CX1100-0910, -0900	CX1100-0920	CX1100-0930

The I/O Company

Beckhoff supplies a complete range of fieldbus components for all common I/O and bus systems. With Bus Terminals offering IP 20 protection and Fieldbus Box modules in IP 67, a comprehensive range of devices is available for a wide variety of signal types and fieldbus systems. In addition to components for conventional bus systems, Beckhoff offers an integrated product range optimized for EtherCAT. Invented by Beckhoff, this real-time Ethernet solution for industrial automation has global acceptance and is characterized by outstanding performance and simple handling. The result is high-precision machine and plant control and significantly increased production efficiency.

► www.beckhoff.com/IO

► www.beckhoff.com/EtherCAT



EtherCAT Box 48

- IP 67 EtherCAT I/O system
- high performance for harsh environments
- compact and robust
- can be mounted directly on machines, outside of control cabinets and terminal boxes
- integrated sensor/actuator supply directly via EtherCAT P

► www.beckhoff.com/EtherCAT-Box

EtherCAT Plug-in Modules 56

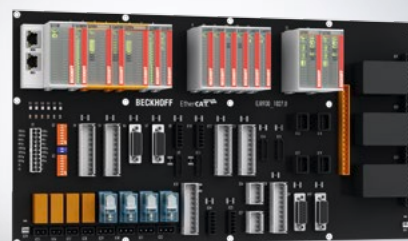
- very compact EtherCAT I/O system in IP 20 for plug-in into a circuit board (signal distribution board)
- optimized for high-volume production
- application-specific connector interface
- Use of cable harnesses avoids wiring errors.

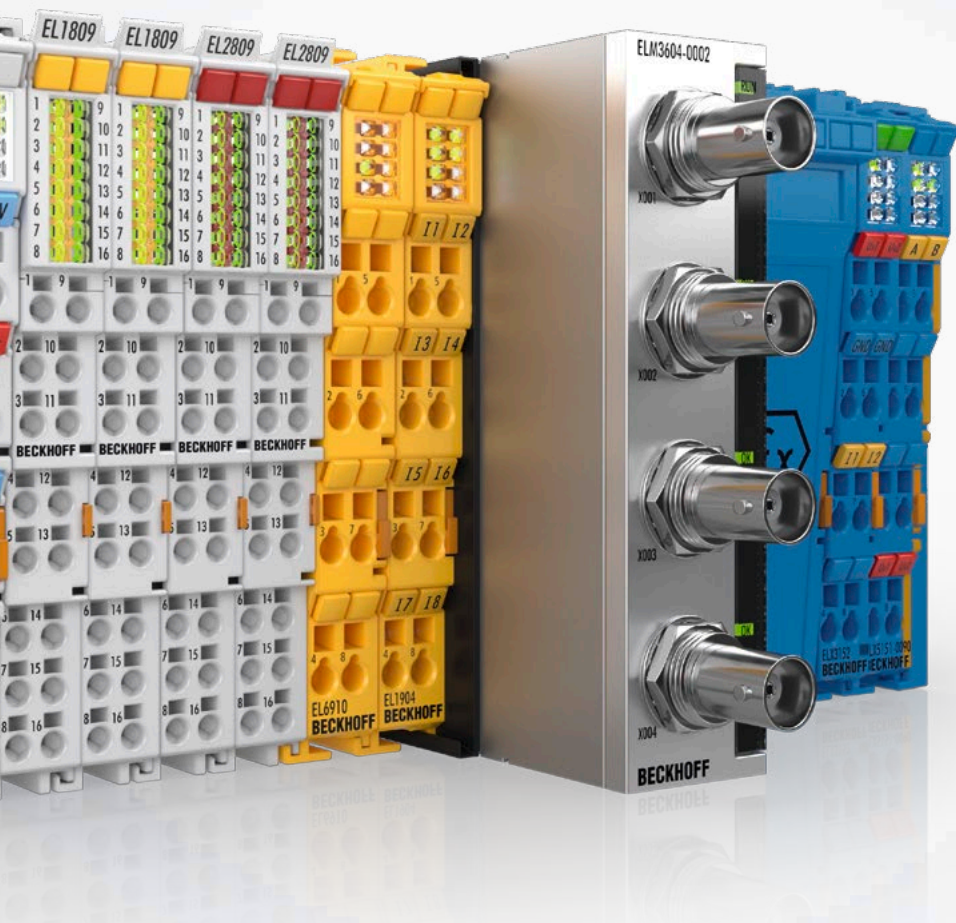
► www.beckhoff.com/EtherCAT-Plug-in-Modules

Bus Terminals 60

- open, fieldbus-neutral IP 20 I/O system
- more than 400 different Bus Terminals
- support for more than 20 fieldbus systems
- gateways for subordinate bus systems
- system-integrated safety I/O terminals available

► www.beckhoff.com/BusTerminal





EtherCAT Terminals 36

- IP 20 EtherCAT I/O system
- real-time Ethernet performance retained into each terminal
- standard digital and analog signals
- complex automation functions directly in the terminal system
- highly precise measurement technology
- condition monitoring
- drive technology
- process technology
- electronic overcurrent protection
- gateways for subordinate fieldbus systems
- TwinSAFE PLC and safety I/Os

► www.beckhoff.com/EtherCAT-Terminal

Fieldbus Box 66

- open, fieldbus-neutral IP 67 I/O system
- 12 fieldbus systems, 24 signal types
- compact and robust
- can be mounted directly on machines, outside of control cabinets and terminal boxes while reducing machine footprint
- IO-Link box modules for inexpensive point-to-point connections

► www.beckhoff.com/FieldbusBox

Infrastructure Components 69

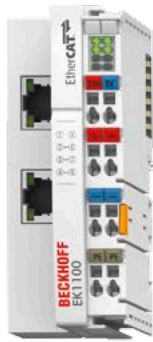
- PC cards for all common fieldbus systems
- Industrial Ethernet switches
- EtherCAT junctions and media converters in IP 20 and IP 67 ratings
- EtherCAT G/G10 components

► www.beckhoff.com/Infrastructure-components



- comprehensive, modular I/O system for all signal types and fieldbus systems
- universal product range optimized for EtherCAT
- high investment security: mature I/O technology based on more than 20 years of success in the field
- Beckhoff is the I/O pioneer, developing the Bus Terminal concept and EtherCAT.

System overview EtherCAT I/O



EK EtherCAT Coupler series



EtherCAT Coupler with integrated digital I/Os



Bus Coupler (e.g. PROFIBUS) for EtherCAT Terminals



Embedded PC series CX, further Embedded PCs see page 22

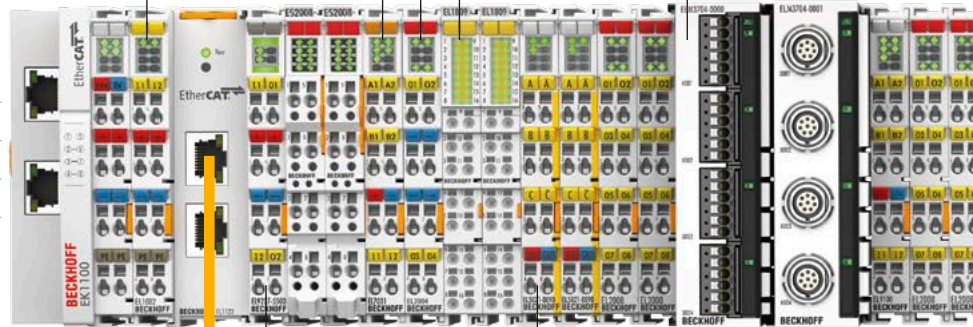
Free mix of signals: more than 200 different EtherCAT Terminals enable connection of all common sensors and actuators.

Motion terminals for stepper, servo or DC motors or hydraulic valves

EtherCAT Terminals in 1-, 2-, 4-, 8- and 16-channel modularity

HD EtherCAT Terminals (high-density) with 16 connection points offer high packing density on 12 mm.

High-end measurement technology with attractive pricing through series production, seamlessly integrated into the automation system.

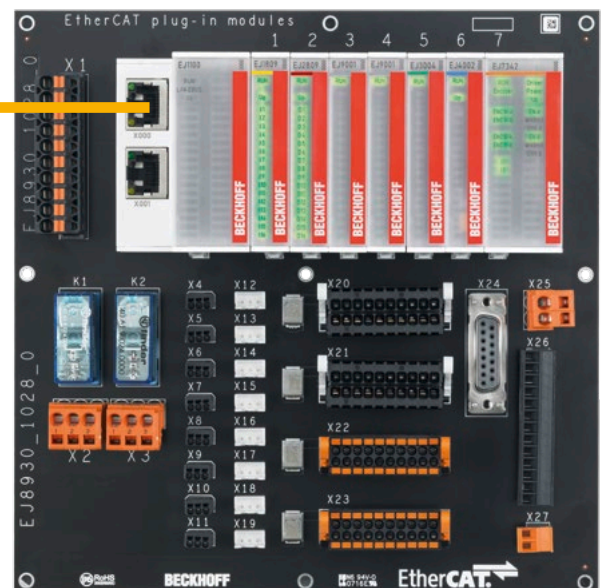


100 m Industrial Ethernet cable (100BASE-TX)

Integrated electronic overcurrent protection for safeguarding of potential groups incl. monitoring function

With the aid of the TwinSAFE SC technology it is possible to make use of standard signals for safety tasks in any network or fieldbus.

EtherCAT plug-in modules: very compact EtherCAT I/O system in IP 20 for plug-in into a circuit board (signal distribution board)



TwinSAFE: safety I/Os and compact Safety PLC for up to 212 safety-relevant bus devices

Ultra-fast I/O terminals for I/O response times < 100 µs for fast I/O, oversampling and timestamp

Optional fieldbus integration via decentralized fieldbus master/slave terminals

ELX terminals: direct connection of intrinsically safe sensors and actuators

2000/20,000 m fibre optic (100BASE-FX)

50 m Plastic Optical Fibre (100BASE-FX POF)

High-speed measurement, high-precision measurement, condition monitoring, energy monitoring

IP 67
EtherCAT P
Box

IP 67
EtherCAT
Box

IP 69K EtherCAT Box
(stainless steel)

IP 67
EtherCAT Box
(die-cast zinc)

Product overview fieldbus systems

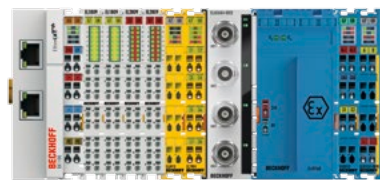
Fieldbus	EtherCAT Terminals	EtherCAT Box	EtherCAT Plug-in Modules	Bus Terminals		Fieldbus Box
	Couplers/Gateways	Modules		Bus Couplers/ Master terminals	PLC (IEC 61131-3)	Compact Box
 EtherCAT	EK1xxx, EKM1xxx	EPxxxx	EJxxxx	BK1120		
	EL6695 bridge	ERxxxx		BK1150		
		EQxxxx		BK1250		
 EtherCAT P	EK13xx	EPPxxxx				
		EP1312				
 LIGHTBUS	EL6720 master			BK20x0		IPxxxx-B200
 PROFIBUS	EK3100			BK3xx0	BC31x0	IPxxxx-B31x
	EL6731 master/slave				BX3100	
 INTERBUS	EL6740-0010 slave			BK4020		IPxxxx-B400
 CANopen	EL6751 master/slave			BK51xx	BC5150	IPxxxx-B51x
					BX5100	
 DeviceNet	EL6752 master/slave			BK52x0	BC5250	IPxxxx-B52x
					BX5200	
 CC-Link	EL6711-0010 slave 			BK7150		
 Modbus				BK7350	BC7300	IPxxxx-B730
 sercos the automation bus				BK7520		
 RS485	EL6021, EL6022	EP600x	EJ6002	BK8000	BC8050	IPxxxx-B800
		EPP600x		KL6021	BX8000	
				KL6041		
 RS232	EL6001, EL6002	EP600x	EJ6002	BK8100	BC8150	IPxxxx-B810
		EPP600x		KL6001	BX8000	
				KL6031		
 Ethernet TCP/IP	EK9000			BK9xx0	BC9xxx	
	EL6601, EL6614 switch port				BX9000	
 PROFINET	EK9300	EP9300		BK9xx3		
	EL6631 RT controller/device					
	EL6632 IRT controller 					
 EtherNet/IP	EK9500			BK9xx5		
	EL6652 master/slave					

AS-Interface	EL6201			KL62x1		
IO-Link	EL6224 master	EP622x, EPP6228 master	EJ6224 master	KL6224 master		
EIB/KNX				KL6301		
LON				KL6401		
MP-Bus				KL6771		
M-Bus				KL6781		
DALI/DSI				KL6811		
DALI 2				KL6821		
IEEE 1588	EL6688					
DMX	EL6851					
EnOcean				KL658x		
SMI				KL6841		
BACnet	EL6861					

[illegible]

EtherCAT Terminals

► www.beckhoff.com/EtherCAT-Terminal



EtherCAT Couplers

EtherCAT Couplers E-bus	EK1100	EK1100-0008 M8 connection	EK1000 Ethernet/TSN	 EK1300 EtherCAT P	EK1400 EtherCAT G	
	EK1101 ID switch	EK1101-0008 ID switch, M8 connection	EK1101-0010 ID switch, Extended Distance	 EK1101-0080 ID switch, Fast Hot Connect	EKM1101 ID switch and diagnostics	
	EK1501 ID switch, multimode fibre optic	EK1501-0010 ID switch, singlemode fibre optic	EK1501-0100 ID switch, multimode fibre optic to RJ45	EK1541 ID switch, POF		
EtherCAT Couplers E-bus with integrated digital I/Os	EK1814 4 inputs + 4 outputs	EK1818 8 inputs + 4 outputs	EK1828 4 inputs + 8 outputs	EK1828-0010 8 outputs		
	EK1914 4 standard inputs, 4 standard outputs, 2 safe inputs, 2 safe outputs	EK1960 TwinSAFE Logic, 20 safe inputs, 24 safe outputs				
EtherCAT Couplers K-bus	BK1120 Bus Coupler (Economy plus)	BK1150 "Compact"	BK1250 E-bus to K-bus interface			
Bus Couplers (for ELxxxx)	EK3100 PROFIBUS	EK9000 Modbus TCP/UDP	EK9160 IoT	 EK9300 PROFINET RT	EK9500 EtherNet/IP	
Extension system and junctions	EK1110 extension end terminal	EK1110-0008 extension end terminal, M8	EK1110-0043 EtherCAT EJ coupler, CX and EL terminal connection	EK1121-0010 1-port junction, Extended Distance	 EK1122 2-port junction	
	EK1122-0008 2-port junction, M8	EK1122-0080 2-port junction, Fast Hot Connect	EK1310 EtherCAT P extension with feed-in	EK1322 EtherCAT P junction with feed-in	EK1521 multimode fibre optic junction	
	EK1521-0010 singlemode fibre optic junction	EK1561 POF junction				

Embedded PCs with E-bus interface see page 22 , Infrastructure Components see page 69

i Product announcement for availability status see www.beckhoff.com

EtherCAT Terminals | Digital input 24 V DC: EL1xxx/ES1xxx

Signal	2-channel	4-channel	8-channel	16-channel
Filter 3.0 ms	EL1002 type 3	EL1004 type 3	EL1004-0020 > 2500 V	EL1008 type 3, 1-wire
		EL1104 type 3, with sensor supply	EL1804 type 3, 8 x 24 V, 4 x 0 V	EL1808 type 3, 8 x 24 V DC, 2-wire
		EL1084 ground switching	EL1024 type 2	EL1852 type 3, 8 inputs, 8 outputs, I _{max} = 0.5 A, flat-ribbon cable
			EL1088 ground switching	EL1859 type 3, 8 inputs, 8 outputs, I _{max} = 0.5 A
Filter 10 µs	EL1012 type 3	EL1104 type 3	EL1034 type 1, potential-free inputs	EL1862 type 3, flat-ribbon cable
		EL1114 type 3, with sensor supply	EL1814 type 3, 8 x 24 V, 4 x 0 V, 3-wire	EL1862-0010 flat-ribbon cable, ground switching
			EL1094 ground switching	EL1889 ground switching
			EL1018 type 3	EL1819 type 3
XFC: T _{ON} /T _{OFF} 1 µs	EL1202 type 3, fast input			
	EL1252 type 3, timestamp	EL1254 type 3, timestamp	EL1258 multi-timestamping	EL1259 8 multi-time- stamping inputs and outputs
	EL1262 type 3, oversampling			
Counter	EL1502 type 1, 100 kHz, 32 bit			
	EL1512 type 1, 1 kHz, 32 bit			
Safe input		EL1904 TwinSAFE, 4 safe inputs	EL2911 TwinSAFE Logic, 4 safe inputs, 1 safe output	EL1918 TwinSAFE Logic, 8 safe inputs

EtherCAT Terminals | Digital input: EL1xxx/ES1xxx/ELX1xxx

Signal	2-channel	4-channel	8-channel
5 V DC		EL1124	
12 V DC		EL1144	
48 V DC		EL1134 type 1	
120 V AC/DC	EL1712 power contacts		
120 V DC	EL1712-0020 power contacts		
120...230 V AC	EL1702 power contacts		
	EL1722 no power contacts		
220 V DC	EL1702-0020 power contacts		
Thermistor	EL1382		
NAMUR	EL1052	EL1054	
Ex i, NAMUR	ELX1052	ELX1054	ELX1058 

The standard EtherCAT Terminals (ELxxxx) can be optionally ordered as ESxxxx with pluggable wiring level.
EN 61131-2 specification ► www.beckhoff.com/EN61131-2

EtherCAT Terminals | Digital output 24 V DC: EL2xxx/ES2xxx/ELX2xxx

Signal	1-channel	2-channel	4-channel	8-channel	16-channel
I_{max} = 0.5 A		EL2002	EL2004	EL2008	EM2042 D-sub connection
			EL2014 with diagnostics	EL2878-0005 flat-ribbon cable, with diagnostics	EL2872 flat-ribbon cable
				EL2808 8 x 0 V	EL2809
				EL1852 type 3, 8 inputs, 8 outputs, I _{max} = 0.5 A, flat-ribbon cable	EL2819 with diagnostics
			EL2084 ground switching	EL2088 ground switching	EL2889 ground switching
				EL1859 8 inputs, 8 outputs, filter 3.0 ms, type 3	EL2872-0010 flat-ribbon cable, ground switching
I_{max} = 2.0 A		EL2022	EL2024	EL2828	
		EL2032 with diagnostics	EL2034 with diagnostics		
I_{max} = ∑ 8.0 A		EL2042 2 x 4.0 A/1 x 8.0 A			
XFC: T_{ON}/T_{OFF} 1 μs		EL2202 push-pull outputs	EL2212 overexcitation, multi-timestamping	EL1259 8 multi-timestamping inputs and outputs	
		EL2252 timestamp	EL2262 oversampling	EL2258 multi-timestamping	
Ex i		ELX2002		ELX2008	
Safe output	EL2911 TwinSAFE Logic, 4 safe inputs, 1 safe output	EL2912 TwinSAFE Logic, 2 safe outputs	EL2904 TwinSAFE, 4 safe outputs		

EtherCAT Terminals | Digital output: EL2xxx/ES2xxx

Signal	2-channel	4-channel	8-channel
5 V DC		EL2124 I _{max} = ±20 mA	
12 V DC		EL2024-0010 I _{max} = 2.0 A	
30 V AC/DC (I_{max} = 2.0 A)		EL2784	EL2788
		EL2794 potential-free	EL2798 potential-free
48 V AC/DC	ELM2742-0000  2 x multiplexer, 1 x 4 solid-state relays	ELM2744-0000  4 x multiplexer, 1 x 4 solid-state relays	
Relay (up to 230 V AC)	EL2602 I _{max} = 5.0 A, make contact, power contacts	EL2622 I _{max} = 5.0 A, make contact, no power contacts	EL2612 I _{max} = 2.0 A, change-over, no power contacts
	EL2602-0010 I _{max} = 5.0 A, make contact, power contacts, contact- protecting switching	EL2622-0010 I _{max} = 5.0 A, make contact, no power contacts, contact- protecting switching	EL2652 I _{max} = 1.0 A, change-over, no power contacts
			EL2624 I _{max} = 2.0 A, make contact, no power contacts
			EL2634 I _{max} = 4.0 A, make contact, 250 V AC/30 V DC

The standard EtherCAT Terminals (ELxxxx) can be optionally ordered as ESxxxx with pluggable wiring level.

EtherCAT Terminals | Digital output: EL2xxx/ES2xxx

Signal	1-channel	2-channel			
Triac (12...230 V AC)		EL2712 $I_{max} = 0.5 \text{ A}$, power contacts	EL2722 $I_{max} = 1.0 \text{ A}$, mutually locked outputs	EL2732 $I_{max} = 0.5 \text{ A}$, no power contacts	
PWM		EL2502 24 V DC, $I_{max} = 0.5 \text{ A}$	EL2502-0010 push-pull outputs, separate frequency can be set for each channel, timestamp		
Frequency output	EL2521 1-channel AB, 0...500 kHz, RS422	EL2522 2-channel AB, 1-channel ABC, 0...4 MHz			
	EL2521-0024 1-channel AB, 0...500 kHz, 24 V DC				
Current control	EL2595 LED constant current terminal	EL2596 LED strobe control, 24 V DC	EL2535 24 V DC, $I_{max} = \pm 50 \text{ mA}$, $\pm 1 \text{ A}$, $\pm 2 \text{ A}$	EL2545 50 V DC, $I_{max} = \pm 3.5 \text{ A}$	
	EL2596-0010 LED strobe control, 48 V DC	EL2535-0005 24 V DC, $I_{max} = \pm 5 \text{ A}$			

EtherCAT Terminals | Analog input: EL3xxx/ES3xxx/ELM3xxx/ELX3xxx

Signal	1-channel	2-channel	4-channel	5-/6-/8-channel
±10 V	EL3001 single-ended, 12 bit	EL3002 single-ended, 12 bit	EL3004 single-ended, 12 bit	EL3008 single-ended, 12 bit
	EL3101 differential input, 16 bit	EL3102 differential input, 16 bit	EL3602 differential input, 24 bit	
		EL3702 differential input, 16 bit, oversampling		
0...10 V	EL3061 12 bit	EL3161 16 bit	EL3062 12 bit	EL3162 16 bit
0...30 V		EL3062-0030 12 bit		
±30 V... ±20 mV		ELM3002-0000 24 bit, 20 ksp/s, push-in	ELM3004-0000 24 bit, 10 ksp/s, push-in	
±200 mV		EL3602-0002 differential input, 24 bit		
±150 mV		EL3702-0015 differential input, 16 bit, oversampling		
±75 mV		EL3602-0010 differential input, 24 bit		
±10 V/ 0...20 mA			EL3174 16 bit, NAMUR NE43	EL3174-0002 16 bit, electrically isolated, NAMUR NE43
			EL3174-0032 16 bit, electrically isolated, NAMUR NE43, $\pm 3 \text{ V}$	EL3174-0090 16 bit, NAMUR NE43, TwinSAFE SC
		ELM3142-0000 24 bit, 1 ksp/s, push-in	ELM3144-0000 24 bit, 1 ksp/s, push-in	ELM3146-0000 24 bit, 1 ksp/s, push-in
				ELM3148-0000 24 bit, 1 ksp/s, push-in

EtherCAT Terminals | Analog input: EL3xxx/ES3xxx/ELM3xxx/ELX3xxx

Signal	1-channel		2-channel		4-channel		5-/6-/8-channel
0...20 mA	EL3041 single-ended, 12 bit	EL3141 single-ended, 16 bit	EL3042 single-ended, 12 bit	EL3142 single-ended, 16 bit	EL3044 single-ended, 12 bit	EL3144 single-ended, 16 bit	EL3048 single-ended, 12 bit
	EL3011 differential input, 12 bit	EL3111 differential input, 16 bit	EL3742 differential input, 16 bit, oversampling	EL3012 differential input, 12 bit	EL3014 differential input, 12 bit	EL3114 differential input, 16 bit	
			EL3112 differential input, 16 bit	EL3612 differential input, 24 bit			
4...20 mA	EL3051 single-ended, 12 bit	EL3151 single-ended, 16 bit	EL3052 single-ended, 12 bit	EL3152 single-ended, 16 bit	EL3054 single-ended, 12 bit	EL3154 single-ended, 16 bit	EL3058 single-ended, 12 bit
	EL3021 differential input, 12 bit	EL3121 differential input, 16 bit	EL3022 differential input, 12 bit	EL3122 differential input, 16 bit	EL3024 differential input, 12 bit	EL3124 differential input, 16 bit	
		EL3621-0020 differential input, 24 bit	EL3182 single-ended, 16 bit, HART			EL3124-0090 16 bit, TwinSAFE SC	
Ex i, 0/4...20 mA	ELX3181 4...20 mA, single-ended, 16 bit, HART		ELX3152 0/4...20 mA, single-ended, 16 bit	ELX3152-0090 0/4...20 mA, single-ended, 16 bit, TwinSAFE SC	ELX3184  4...20 mA, single-ended, 16 bit, HART		ELX3158  0/4...20 mA, single-ended, 16 bit
±20 mA			EL3112-0011 differential input, 16 bit	ELM3102-0000 24 bit, 20 ksp, NAMUR NE43	ELM3104-0000 24 bit, 10 ksp, NAMUR NE43		
±10 mA			EL3142-0010 single-ended, 16 bit				
Multi-function	EL3751 24 bit, 10 ksp		ELM3702-0000  24 bit, 10 ksp, push-in		ELM3704-0000  24 bit, 10 ksp, push-in	ELM3704-0001  24 bit, 10 ksp, LEMO	
Thermo- couple/mV	EL3311 16 bit		EL3312 16 bit		EL3314 16 bit	EL3314-0090 16 bit, TwinSAFE SC	EL3318 16 bit
					EL3314-0002 24 bit, electrically isolated		
Ex i, thermo- couple/mV			ELX3312 16 bit	ELX3312-0090 16 bit, TwinSAFE SC	ELX3314 16 bit	ELX3314-0090 16 bit, TwinSAFE SC	
Resistance thermometer (RTD)	EL3201 16 bit		EL3202 16 bit		EL3204 2-wire, 16 bit	EL3204-0200 16 bit, universal input for RTD	EL3208 16 bit
					EL3214 3-wire, 16 bit	EL3214-0090 16 bit, TwinSAFE SC	EL3208-0010 PT1000, Ni1000, NTC 1.8...100 k, potentiom. 1, 5, 10 kΩ
Ex i, resistance thermometer (RTD)			ELX3202 16 bit	ELX3202-0090 16 bit, TwinSAFE SC	ELX3204 2-wire, 16 bit	ELX3204-0090 2-wire, 16 bit, TwinSAFE SC	
Measurement bridge (SG)	EL3351	EL3356 self-calibration	ELM3502-0000 24 bit, 20 ksp		ELM3504-0000 24 bit, 10 ksp		
	EL3356-0010 24 bit, 10 ksp	EL3356-0090 TwinSAFE SC	ELM3542-0000  24 bit, 1 ksp, push-in		ELM3544-0000  24 bit, 1 ksp, push-in		
Ex i, measurement bridge (SG)	ELX3351 16 bit	ELX3351-0090 16 bit, TwinSAFE SC					
Measurement technology	EL3681 digital multimeter terminal, 18 bit		EL3692 resistance measurement, 100 mΩ...10 MΩ				EL3255 potentiometer measurement, 5-channel

The standard EtherCAT Terminals (ELxxxx) can be optionally ordered as ESxxxx with pluggable wiring level.

EtherCAT Terminals | Analog input: EL3xxx/ES3xxx/ELM3xxx/ELX3xxx

Signal	1-channel	2-channel	4-channel	5-/6-/8-channel
Ex i, potentiometer		ELX3252  potentiometer measurement		
Condition monitoring/ IEPE		EL3632 16 bit, 50 ksp/s	ELM3602-0002 24 bit, 50 ksp/s	ELM3604-0002 24 bit, 20 ksp/s
Pressure measuring	EM3701 differential pressure, ±100 hPa	EM3702 relative pressure, 7500 hPa	EM3712 relative pressure, ±1000 hPa	

EtherCAT Terminals | Analog input 3-phase power measurement terminal: EL3xxx

Signal	≤ 500 V					> 500 V
Power measurement	EL3403 500 V AC, 1 A	EL3423 480 V AC/DC, 1 A, Economy	EL3433 500 V AC, 10 A	EL3443 480 V AC/DC, 1 A, extended functionalities	EL3443-0010 480 V AC/DC, 5 A, extended functionalities	EL3413 690 V AC, 5 A
	EL3443-0011 480 V AC/DC, 100 mA, extended functionalities	EL3443-0013 480 V AC/DC, 333 mV, extended functionalities	EL3446  distributed power measurement	EL3483 480 V AC/DC, mains monitor	EL3483-0060 480 V AC/DC, mains monitor with voltage measurement	EL3453 690 V AC, 5 A, extended functionalities
Power monitoring	EL3773 500 V AC/DC, 10 ksp/s					EL3783 690 V AC, 20 ksp/s

EtherCAT Terminals | Analog output: EL4xxx/ES4xxx/ELX4xxx

Signal	1-channel	2-channel		4-channel		8-channel
0...10 V	EL4001 12 bit	EL4002 12 bit	EL4102 16 bit	EL4004 12 bit	EL4104 16 bit	EL4008 12 bit
±10 V	EL4031 12 bit	EL4032 12 bit	EL4132 16 bit	EL4034 12 bit	EL4134 16 bit	EL4038 12 bit
		EL4732 16 bit, oversampling				
0...20 mA	EL4011 12 bit	EL4012 12 bit	EL4112 16 bit	EL4014 12 bit	EL4114 16 bit	EL4018 12 bit
		EL4712 16 bit, oversampling				
4...20 mA	EL4021 12 bit	EL4022 12 bit		EL4024 12 bit		EL4028 12 bit
		EL4122 16 bit		EL4124 16 bit		
Ex i, 0/4...20 mA	ELX4181 16 bit, HART			ELX4154 single-ended, 16 bit		
±10 mA		EL4112-0010 16 bit				

EtherCAT Terminals | Position measurement: EL5xxx/ES5xxx/ELX5xxx

Signal	1-channel			2-channel	
Absolute encoder	EL5001 SSI encoder interface	EL5001-0011 SSI monitor terminal	EL5001-0090 SSI encoder interface, TwinSAFE SC	EL5002 SSI encoder interface	EL5032 EnDat 2.2 interface
				EL5032-0090 EnDat 2.2 interface, TwinSAFE SC	EL5042 BiSS C interface, unidirectional
				EL5072  SinCos encoder interface, 1 V _{PP}	
Incremental encoder	EL5151 incremental encoder interface 24 V DC	EL5151-0021 incremental encoder interface 24 V DC, parameterizable 24 V DC output	EL5151-0090 incremental encoder interface 24 V DC, TwinSAFE SC	EL5152 incremental encoder interface 24 V DC	
	EL5101 incremental encoder interface, RS422, 4 million increments/s	EL5101-0010 incremental encoder interface, RS422, 20 million increments/s	EL5101-0011 incremental encoder interface, RS422, oversampling	EL5101-0090 incremental encoder interface, RS422, TwinSAFE SC	
	EL5021 SinCos encoder interface, 1 V _{PP}	EL5021-0090 SinCos encoder interface, 1 V _{PP} , TwinSAFE SC			
Ex i, incremental encoder	ELX5151 incremental encoder interface, 32 bit, NAMUR	ELX5151-0090 incremental encoder interface, 32 bit, NAMUR, TwinSAFE SC			

EtherCAT Terminals | Communication: EL6xxx/ES6xxx

Signal	1-channel			2-channel	4-channel
System	EL6090 display terminal	EL6070 license key terminal	EL6080 memory terminal 128 kbyte		
Serial	EL6001 RS232, 115.2 kbaud	EL6021 RS422/RS485, 115.2 kbaud		EL6002 RS232, 115.2 kbaud, D-sub	EL6022 RS422/RS485, 115.2 kbaud, D-sub
EtherCAT/ Ethernet	EL6601 switch port	EL6688 IEEE 1588 master/slave		EL6692 EtherCAT bridge	EL6695 EtherCAT bridge, high performance
Master	EL6201 AS-Interface	EL6631 PROFINET RT	EL6632  PROFINET IRT		EL6224 IO-Link
	EL6652 EtherNet/IP	EL6720 Lightbus	EL6731 PROFIBUS		EL6224-0090 IO-Link, TwinSAFE SC
	EL6751 CANopen	EL6752 DeviceNet	EL6851 DMX		
	EL6861 BACnet, MS/TP, RS485				
Slave	EL6631-0010 PROFINET RT	EL6652-0010 EtherNet/IP	EL6711-0010  CC-Link		
	EL6731-0010 PROFIBUS	EL6740-0010 Interbus	EL6751-0010 CANopen		
	EL6752-0010 DeviceNet	EL6851-0010 DMX			
Safety	EL6910 TwinSAFE Logic	EL6900 TwinSAFE Logic	EL6930 TwinSAFE Logic and PROFIsafe gateway		

The standard EtherCAT Terminals (ELxxxx) can be optionally ordered as ESxxxx with pluggable wiring level.

EtherCAT Terminals | Motion: EL7xxx/ES7xxx/EM7xxx

	< 3 A	3...5 A	> 5 A
Servomotor	EL7201-9014 <i>I_{ms}</i> = 2.8 A, 50 V DC, OCT, STO	EL7211-9014 <i>I_{ms}</i> = 4.5 A, 50 V DC, OCT, STO	EL7221-9014 <i>I_{ms}</i> = 7...8 A with ZB8610, 50 V DC, OCT, STO
	EL7201-0010 <i>I_{ms}</i> = 2.8 A, 50 V DC, OCT	EL7211-0010 <i>I_{ms}</i> = 4.5 A, 50 V DC, OCT	ZB8610 fan cartridge for EtherCAT and Bus Terminals
	EL7201 <i>I_{ms}</i> = 2.8 A, 50 V DC, resolver	EL7211 <i>I_{ms}</i> = 4.5 A, 50 V DC, resolver	
Stepper motor	EL7031 <i>I_{max}</i> = 1.5 A, 24 V DC	EL7041 <i>I_{max}</i> = 5.0 A, 50 V DC, incremental encoder	
	EL7031-0030 <i>I_{max}</i> = 2.8 A, 24 V DC	EL7041-0052 <i>I_{max}</i> = 5.0 A, 50 V DC	
	EL7037 <i>I_{max}</i> = 1.5 A, 24 V DC, incremental encoder, vector control	EL7047 <i>I_{max}</i> = 5.0 A, 50 V DC, incremental encoder, vector control	
		EL7047-9014 <i>I_{max}</i> = 5.0 A, 50 V DC, incremental encoder, vector control, STO 	
DC motor output stage	EL7332 <i>I_{max}</i> = 1.0 A, 24 V DC	EL7342 <i>I_{max}</i> = 3.5 A, 50 V DC, incremental encoder	
		EL7411-9014 <i>I_{ms}</i> = 4.5 A, 50 V DC, STO 	
		EL7411 <i>I_{ms}</i> = 4.5 A, 50 V DC	
4-axis interface	EM7004 4 incremental encoders, 32 digital I/Os 24 V DC, 4 analog outputs ±10 V		

EtherCAT Terminals | System terminals: EL9xxx/ES9xxx/ELM9xxx/ELX9xxx

Signal	System				
Components for system bus	EL9011 bus end cover	EL9012 bus end cover for power and E-bus contacts	ELM9012 bus end cover for ELMxxxx, black	ELX9012 bus end cover for ELXxxxx, blue	EL9195 shield terminal
	EL9070 shield terminal	EL9080 isolation terminal			
Potential distribution	EL9180 2 clamping units per power contact	EL9181 2 x 8 terminal points	EL9182 8 x 2 terminal points	EL9183 1 x 16 terminal points	EL9184 8 x 24 V DC, 8 x 0 V DC
	EL9185 4 clamping units at 2 power contacts	EL9185-0010 4 clamping units at 2 power contacts, potential supply function	EL9186 8 x 24 V DC	EL9187 8 x 0 V DC	EL9188 16 x 24 V DC
	EL9189 16 x 0 V DC				
Potential supply, 24 V DC	EL9100	EL9110 diagnostics	EL9200 with fuse	EL9210 diagnostics, with fuse	EL9520 AS-Interface potential supply with filter
Potential supply, 120...230 V AC	EL9150 with LED	EL9160 diagnostics	 EL9190	EL9250 with fuse, with LED	 EL9260  diagnostics, with fuse
	EL9290 with fuse 				
Overcurrent protection, 24 V DC	EL9221 1-channel	EL9222 2-channel	EL9227 2-channel, extended functionalities		
Power supply	EL9410 input 24 V DC, output 5 V DC/2 A	ELM9410 input 24 V DC, output 5 V DC/2 A	ELX9410 input 24 V DC, output 5 V DC/1 A	EL9505 input 24 V DC, output 5 V DC/0.5 A	EL9508 input 24 V DC, output 8 V DC/0.5 A
	EL9510 input 24 V DC, output 10 V DC/0.5 A	EL9512 input 24 V DC, output 12 V DC/0.5 A	EL9515 input 24 V DC, output 15 V DC/0.5 A	EL9560 input 24 V DC, output 24 V DC/0.1 A with electrical isolation	ELX9560 power supply, 24 V DC, electrically isolated
Filtering and smoothing	EL9540 surge filter terminal for field supply	EL9550 surge filter terminal for system/field supply	EL9550-0012 surge filter terminal for system/field supply with up to 10 A	EL9576 brake chopper terminal, up to 72 V DC, 155 µF	ZB8110 external braking resistor

Product overview current transformers

► www.beckhoff.com/SCT



Accuracy class 1

Primary current	Primary conductor for connecting	Max. diameter round conductor						
		Ø 7.6 mm	Ø 13.5 mm	Ø 18 mm	Ø 18.5 mm	Ø 20 mm	Ø 22 mm	Ø 25.7 mm
1 A	SCT0111-0001							
2.5 A	SCT0111-0002							
5 A	SCT0111-0005							
10 A	SCT0111-0010							
15 A	SCT0111-0015							
20 A	SCT0111-0020							
25 A	SCT0111-0025							
30 A	SCT0111-0030							
32 A		SCT1111-0032						
35 A		SCT1111-0035						
40 A		SCT1111-0040						
50 A		SCT1111-0050	SCT3111-0050					
60 A		SCT1111-0060	SCT3111-0060		SCT6101-0060 ⁽²⁾			SCT2111-0060
64 A		SCT1111-0064						
75 A			SCT3111-0075		SCT6101-0075 ⁽²⁾			SCT2111-0075
80 A			SCT3111-0080					SCT2111-0080
100 A			SCT3111-0100	SCT3215-0100	SCT6101-0100 ⁽²⁾	SCT7105-0100 ⁽²⁾		SCT2111-0100
150 A			SCT3111-0150	SCT3215-0150	SCT6101-0150 ⁽²⁾			SCT2111-0150
200 A				SCT3215-0200	SCT6311-0200 ⁽¹⁾	SCT7105-0200 ⁽²⁾		SCT2111-0200
250 A				SCT3215-0250	SCT6311-0250 ⁽¹⁾	SCT7115-0250 ⁽¹⁾	SCT3315-0250	SCT2111-0250
300 A							SCT3315-0300	SCT2111-0300
400 A						SCT7115-0400 ⁽¹⁾	SCT3315-0400	SCT2111-0400
500 A							SCT3315-0500	SCT2111-0500
600 A							SCT3315-0600	
750 A								
800 A								
1000 A								
1250 A								
1500 A								
2000 A								
2500 A								
3000 A								
4000 A								
5000 A								

⁽¹⁾split-core CT, for retrofitting existing systems, ⁽²⁾accuracy class 3



EtherCAT Terminals



SCT01xx



SCT1111

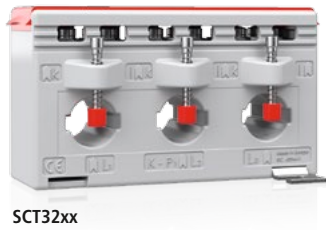


SCT21xx

Accuracy class 0.5

Primary current	Primary conductor for connecting	Max. diameter round conductor						
		Ø 7.6 mm	Ø 13.5 mm	Ø 18 mm	Ø 18.5 mm	Ø 20 mm	Ø 22 mm	Ø 25.7 mm
1 A	SCT0121-0001							
2.5 A	SCT0121-0002							
5 A	SCT0121-0005							
10 A	SCT0121-0010							
15 A	SCT0121-0015							
20 A	SCT0121-0020							
25 A	SCT0121-0025							
30 A	SCT0121-0030							
150 A			SCT3121-0150					SCT2121-0150
200 A					SCT6321-0200 ⁽¹⁾			SCT2121-0200
250 A					SCT6321-0250 ⁽¹⁾			SCT2121-0250
300 A								SCT2121-0300
400 A						SCT7125-0400 ⁽¹⁾		SCT2121-0400
500 A								SCT2121-0500
600 A								SCT2121-0600
750 A								
800 A								
1000 A								
1250 A								
1500 A								
2000 A								
2500 A								
3000 A								
4000 A								
5000 A								

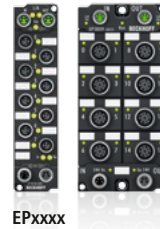
⁽¹⁾split-core CT, for retrofitting existing systems



	Ø 27.9 mm	Ø 31.8 mm	Ø 42.4 mm	2 x Ø 42.4 mm	Ø 43.7 mm	Ø 50 mm	Ø 54.7 mm	Ø 70 mm	Ø 80 mm
	SCT6421-0400 ⁽¹⁾								
	SCT6421-0500 ⁽¹⁾					SCT7225-0500			
		SCT2221-0600	SCT6625-0600 ⁽¹⁾			SCT7225-0600			
		SCT2221-0750	SCT6625-0750 ⁽¹⁾						SCT7325-0750 ⁽¹⁾
				SCT6725-0800 ⁽¹⁾	SCT2321-0800				
				SCT6725-1000 ⁽¹⁾	SCT2321-1000				SCT7325-1000 ⁽¹⁾
					SCT2421-1250				
					SCT2421-1500				SCT7325-1500 ⁽¹⁾
									SCT7425-1500 ⁽¹⁾
							SCT2525-2000		SCT7425-2000 ⁽¹⁾
								SCT2625-2500 ⁽¹⁾	SCT7425-2500 ⁽¹⁾
									SCT7425-3000 ⁽¹⁾
									SCT7425-4000 ⁽¹⁾
									SCT7425-5000 ⁽¹⁾

EtherCAT Box

► www.beckhoff.com/EtherCAT-Box



EtherCAT Box | Digital input: EP1xxx

Signal	8-channel		16-channel	
24 V DC, filter 3.0 ms	EP1008-0001 ⁽¹⁾ 8 x M8	EP1008-0002 ^(1, 2) 4 x M12	EP1809-0021 ⁽¹⁾ 16 x M8	EP1809-0022 ^(1, 2) 8 x M12
		EP1008-0022 ⁽¹⁾ 8 x M12		EP1809-0042 8 x M12, EtherCAT M12 <i>i</i>
24 V DC, filter 10 µs	EP1018-0001 ⁽¹⁾ 8 x M8	EP1018-0002 ⁽¹⁾ 4 x M12	EP1819-0021 ⁽¹⁾ 16 x M8	EP1819-0022 ⁽¹⁾ 8 x M12
	EP1098-0001 ⁽¹⁾ 8 x M8, ground switching		EP1816-0003 IP 20 plug	EP1816-0008 D-sub, 25-pin
	EP1258-0001 ⁽¹⁾ 8 x M8, 2-channel timestamp	EP1258-0002 ⁽¹⁾ 4 x M12, 2-channel timestamp		EP1816-3008 D-sub, 25-pin, acceleration sensor
24 V DC, counter	EP1518-0002 ⁽¹⁾ 4 x M12, multi-function input			
24 V DC, safe inputs	EP1908-0002 TwinSAFE, 8 safe inputs	EP1918-0002 TwinSAFE Logic, 8 safe inputs <i>i</i>		

EtherCAT Box | Digital output: EP2xxx

Signal	4-channel	8-channel		16-channel	24-channel
24 V DC, $I_{max} = 0.5 A$		EP2008-0001 ⁽¹⁾ 8 x M8	EP2008-0002 ^(1, 2) 4 x M12		
24 V DC, $I_{max} = 0.5 A$, $\Sigma 4 A$			EP2008-0022 ⁽¹⁾ 8 x M12	EP2809-0021 ⁽¹⁾ 16 x M8	EP2809-0022 ^(1, 2) 8 x M12
				EP2816-0003 IP 20 plug	EP2816-0004 M16, 19-pin
				EP2816-0008 D-sub, 25-pin	EP2816-0010 2 x D-sub, 9-pin
24 V DC, $I_{max} = 0.5 A$, $\Sigma 16 A$				EP2809-0042 <i>i</i> 8 x M12	EP2817-0008 D-sub, 25-pin
24 V DC, $I_{max} = 2 A$, $\Sigma 4 A$		EP2028-0001 ⁽¹⁾ 8 x M8	EP2028-0002 ⁽¹⁾ 4 x M12		
		EP2038-0001 ⁽¹⁾ 8 x M8, with diagnostics	EP2038-0002 ⁽¹⁾ 4 x M12, with diagnostics		
24 V DC, $I_{max} = 2.8 A$, $\Sigma 16 A$			EP2028-0032 8 x M12		
			ER2028-1032 8 x M12		
25 V AC/ 30 V DC	EP2624-0002 ⁽¹⁾ relay output, 4 x M12				
24 V DC, safe outputs			EP2918-0032 TwinSAFE Logic, 8 safe outputs		

EPxxxx: industrial housing in IP 67, ⁽¹⁾also as ERxxxx: zinc die-cast housing in IP 67, ⁽²⁾also as EQxxxx: stainless steel housing in IP 69K



Product announcement

for availability status see www.beckhoff.com

EtherCAT Box Digital combi: EP23xx					
Signal	8-channel		12-channel	16-channel	
24 V DC, filter 3.0 ms	EP2308-0001 ⁽¹⁾ 8 x M8, 4 inputs + 4 outputs, I _{max} = 0.5 A	EP2308-0002 ⁽¹⁾ 4 x M12, 4 inputs + 4 outputs, I _{max} = 0.5 A		EP1859-0042  8 x M12, 8 inputs + 8 outputs, I _{max} = 0.5 A	
	EP2328-0001 ⁽¹⁾ 8 x M8, 4 inputs + 4 outputs, I _{max} = 2 A	EP2328-0002 ⁽¹⁾ 4 x M12, 4 inputs + 4 outputs, I _{max} = 2 A		EP2339-0021 ⁽¹⁾ 16 x M8, 16 inputs/outputs, I _{max} = 0.5 A, ∑ 4 A	EP2339-0022 ^(1, 2) 8 x M12, 16 inputs/outputs, I _{max} = 0.5 A, ∑ 4 A
	EP2338-1001 ⁽¹⁾ 8 x M8, 8 inputs/outputs, I _{max} = 0.5 A	EP2338-1002 ⁽¹⁾ 4 x M12, 8 inputs/outputs, I _{max} = 0.5 A		EP2339-0003 16 inputs/outputs, I _{max} = 0.5 A, ∑ 4 A, connector with spring-loaded system	EP2339-0042  8 x M12, 16 inputs/outputs, I _{max} = 0.5 A, ∑ 16 A, EtherCAT M12
24 V DC, filter 10 µs	EP2318-0001 ⁽¹⁾ 8 x M8, 4 inputs + 4 outputs, I _{max} = 0.5 A	EP2318-0002 ⁽¹⁾ 4 x M12, 4 inputs + 4 outputs, I _{max} = 0.5 A		EP2349-0021 ⁽¹⁾ 16 x M8, 16 inputs/outputs, I _{max} = 0.5 A, ∑ 4 A	EP2349-0022 ⁽¹⁾ 8 x M12, 16 inputs/outputs, I _{max} = 0.5 A, ∑ 4 A
	EP2338-0001 ⁽¹⁾ 8 x M8, 8 inputs/outputs, I _{max} = 0.5 A	EP2338-0002 ⁽¹⁾ 4 x M12, 8 inputs/outputs, I _{max} = 0.5 A		EP2316-0003 8 inputs + 8 outputs, I _{max} = 0.5 A, connector with spring-loaded system	EP2316-0008 8 inputs + 8 outputs, D-sub, 25-pin
Safety			EP1957-0022 TwinSAFE Logic, 8 safe inputs, 4 safe outputs		

EtherCAT Box Analog input: EP3xxx				
Signal	1-channel	2-channel	4-channel	
±10 V, ±20 mA		EP3162-0002 parameterizable, electrically isolated, single-ended, 16 bit		
±10 V, 0/4...20 mA		EP3182-1002 2 analog inputs, parameterizable, single- ended, 16 bit, 2 digital control outputs (sink/ source type), 24 V DC, short-circuit proof	EP3174-0002 ^(1, 2) parameterizable, differential inputs, 16 bit	EP3174-0092 parameterizable, differential inputs, 16 bit, TwinSAFE SC
			EP3184-0002 ⁽¹⁾ parameterizable, single-ended, 16 bit	EP3184-1002 ⁽¹⁾ parameterizable, single-ended, 16 bit, 2 channels per socket
Resistance thermometer (RTD)			EP3204-0002 ^(1, 2) PT100, PT200, PT500, PT1000, Ni100, Ni120, Ni1000, 16 bit	
Thermo- couple/mV			EP3314-0002 ^(1, 2) type J, K, L, B, E, N, R, S, T, U, 16 bit	
Measurement bridge (SG)	EP3356-0022 24 bit, self-calibration			
Condition monitoring/IEPE		EP3632-0001 16 bit		
Accelerometers		EP3752-0000 2 x 3 axes		
Pressure measuring			EP3744-0041 4 pressure inputs -1...1 bar (differential pressure to fifth connection)	EP3744-1041 4 pressure inputs 0...7 bar (differential pressure to fifth connection)

EtherCAT Box | Analog output: EP4xxx

Signal	4-channel
±10 V, 0/4...20 mA	EP4174-0002 ⁽¹⁾ parameterizable, 16 bit

EtherCAT Box | Analog combi: EP43xx

Signal	4-channel	16-channel
±10 V, 0/4...20 mA	EP4374-0002 ⁽¹⁾ 2 inputs + 2 outputs, parameterizable, 16 bit	EP4378-1022 4 inputs + 4 outputs, U/I parameterizable per channel, 8 digital I/Os, 24 V DC/3.0 ms
±10 mA, ±20 mA	EP4314-1002 2 inputs + 2 outputs, parameterizable per channel, 2 digital inputs, 24 V DC/3.0 ms	

EtherCAT Box | Position measurement: EP5xxx

Function	M12	Other
SSI encoder interface	EP5001-0002 1 MHz, 32 bit	
Incremental encoder interface RS422	EP5101-0002 ⁽¹⁾ 32/16 bit, 5 V DC sensor supply	EP5101-0011 32/16 bit, 5 V DC sensor supply, D-sub, 4 million increments/s
	EP5101-1002 ⁽¹⁾ 32/16 bit, 24 V DC sensor supply	EP5101-2011 32/16 bit, 5 V DC sensor supply, D-sub, 20 million increments/s
Incremental encoder interface 24 V DC	EP5151-0002 ⁽¹⁾ 32/16 bit	

EtherCAT Box | Communication: EP6xxx

Function	1-channel	2-channel	4-channel	8-channel	Other
Serial interface	EP6001-0002 ⁽¹⁾ RS232, RS422/RS485, 5 V DC/1 A	EP6002-0002 ⁽¹⁾ RS232, RS422/RS485			
IO-Link master			EP6224-2022 Class A	EP6228-0022 Class A	
			EP6224-0042  Class A, EtherCAT M12	EP6228-0042  Class A, EtherCAT M12	
			EP6224-3022 Class B	EP6228-3032 Class B	
				EP6228-3132 4 x Class A, 4 x Class B	
				EP6228-3142  4 x Class A, 4 x Class B, EtherCAT M12	
Status and diagnostic information					EP6090-0000  display box

EPxxxx: industrial housing in IP 67, ⁽¹⁾also as ERxxxx: zinc die-cast housing in IP 67, ⁽²⁾also as EQxxxx: stainless steel housing in IP 69K

EtherCAT Box | Motion: EP7xxx

Function	1-channel	2-channel	Other
Servomotor	EP7211-0034 $I_{ms} = 4.5 \text{ A}$, 50 V DC, OCT, STO		
Stepper motor	EP7041-1002⁽¹⁾ $I_{max} = 1.5 \text{ A}$, incremental encoder, 2 digital inputs, 1 digital output EP7041-0002⁽¹⁾ $I_{max} = 5 \text{ A}$, incremental encoder, 2 digital inputs, 1 digital output EP7041-2002⁽¹⁾ $I_{max} = 5 \text{ A}$, incremental encoder, 2 digital inputs, 1 digital output, motor connection via plug EP7041-3002⁽¹⁾ $I_{max} = 5 \text{ A}$, incremental encoder, for high-speed applications, encoder system (24 V DC encoder) EP7041-3102 $I_{max} = 5 \text{ A}$, incremental encoder, for high-speed applications, encoder system (5 V DC encoder)		EP7047-9032 $I_{ms} = 5.0 \text{ A}$, 50 V DC, OCT, STO 
DC motor output stage		EP7342-0002⁽¹⁾ $I_{max} = 3.5 \text{ A}$, 50 V DC	

EtherCAT Box | Special functions: EP8xxx

Function	M12
Special functions	EP8309-1022⁽¹⁾ 8 digital inputs/outputs, 2 x tachometer input, 2 x 0/4...20 mA input, 1 x 0/4...20 mA output, 1 x 1.2 A PWMi output

EtherCAT Box | System: EPxxxx

Function	M8	M12	Other
EtherCAT Box	EP1111-0000 3 decimal ID switches		
Junctions	EP1122-0001 EtherCAT, 2 channels EP1312-0001 EtherCAT P, 2 ports EP9128-0021 EtherCAT, 8-way		
Power distribution			EP9214-0023 4/4-channel, 7/8" plug, 7/8" socket EP9224-0023 4/4-channel, 7/8" plug, 7/8" socket, with current measurement and data logging EP9221-0057  1-channel, ENP B17 plug, ENP B17 socket, ENP to EtherCAT P EP9224-0037 4-channel, ENP B17 plug, ENP B17 socket, ENP to EtherCAT P
PROFINET RT EtherCAT Box		EP9300-0022 EtherCAT Box interface with PROFINET RT	
EtherCAT media converters fibre optic			EP9521-0020 1-channel, multimode
Brake chopper box			EP9576-1032 up to 72 V DC

EtherCAT P Box

► www.beckhoff.com/EtherCAT-P-Box



EtherCAT P Box | Digital input: EPP1xxx

Signal	4-channel	8-channel		16-channel	
24 V DC, filter 3.0 ms	EPP1004-0061 4 x M8	EPP1008-0001 8 x M8	EPP1008-0002 4 x M12	EPP1809-0021 16 x M8	EPP1809-0022 8 x M12
			EPP1008-0022 8 x M12		
24 V DC, filter 10 µs		EPP1018-0001 8 x M8	EPP1018-0002 4 x M12	EPP1819-0021 16 x M8	EPP1819-0022 8 x M12
		EPP1258-0001 8 x M8, 2-channel timestamp	EPP1258-0002 4 x M12, 2-channel timestamp	EPP1816-0003 IP 20 plug	EPP1816-0008 D-sub, 25-pin
				EPP1816-3008 D-sub, 25-pin, acceleration sensor	
24 V DC, counter			EPP1518-0002 4 x M12, multi-function input		

EtherCAT P Box | Digital output: EPP2xxx

Signal	4-channel	8-channel		16-channel	24-channel
24 V DC, $I_{\max} = 0.5 \text{ A}$		EPP2008-0001 8 x M8	EPP2008-0002 4 x M12		
24 V DC, $I_{\max} = 0.5 \text{ A},$ $\Sigma 3 \text{ A}$			EPP2008-0022 8 x M12	EPP2809-0021 16 x M8	
				EPP2809-0022 8 x M12	
				EPP2816-0008 D-sub, 25-pin	EPP2817-0008 D-sub, 25-pin
				EPP2816-0010 2 x D-sub, 9-pin	
				EPP2816-0004 M16, 19-pin	
24 V DC, $I_{\max} = 2 \text{ A},$ $\Sigma 3 \text{ A}$		EPP2028-0001 8 x M8	EPP2028-0002 4 x M12		
		EPP2038-0001 8 x M8, with diagnostics	EPP2038-0002 4 x M12, with diagnostics		
25 V AC/ 30 V DC	EPP2624-0002 relay output, 4 x M12				

EtherCAT P Box | Digital combi: EPP23xx

Signal	4-channel	8-channel		16-channel	
24 V DC, filter 10 μ s	EPP2334-0061 4 x M8, 4 inputs/outputs, $I_{\max} = 0.5 \text{ A}$, $\Sigma 3 \text{ A}$	EPP2318-0001 8 x M8, 4 inputs + 4 outputs, $I_{\max} = 0.5 \text{ A}$	EPP2318-0002 4 x M12, 4 inputs + 4 outputs, $I_{\max} = 0.5 \text{ A}$	EPP2349-0021 16 x M8, 16 inputs/outputs, $I_{\max} = 0.5 \text{ A}$, $\Sigma 3 \text{ A}$	EPP2349-0022 8 x M12, 16 inputs/outputs, $I_{\max} = 0.5 \text{ A}$, $\Sigma 3 \text{ A}$
		EPP2338-0001 8 x M8, 8 inputs/outputs, $I_{\max} = 0.5 \text{ A}$, $\Sigma 3 \text{ A}$	EPP2338-0002 4 x M12, 8 inputs/outputs, $I_{\max} = 0.5 \text{ A}$, $\Sigma 3 \text{ A}$	EPP2316-0003 8 inputs + 8 outputs, $I_{\max} = 0.5 \text{ A}$, $\Sigma 3 \text{ A}$, connector with spring-loaded system	EPP2316-0008 8 inputs + 8 outputs, $I_{\max} = 0.5 \text{ A}$, $\Sigma 3 \text{ A}$, D-sub, 25-pin
24 V DC, filter 3.0 ms		EPP2308-0001 8 x M8, 4 inputs + 4 outputs, $I_{\max} = 0.5 \text{ A}$	EPP2308-0002 4 x M12, 4 inputs + 4 outputs, $I_{\max} = 0.5 \text{ A}$	EPP2339-0021 16 x M8, 16 inputs/outputs, $I_{\max} = 0.5 \text{ A}$, $\Sigma 3 \text{ A}$	EPP2339-0022 8 x M12, 16 inputs/outputs, $I_{\max} = 0.5 \text{ A}$, $\Sigma 3 \text{ A}$
		EPP2328-0001 8 x M8, 4 inputs + 4 outputs, $I_{\max} = 2 \text{ A}$, $\Sigma 3 \text{ A}$	EPP2328-0002 4 x M12, 4 inputs + 4 outputs, $I_{\max} = 2 \text{ A}$, $\Sigma 3 \text{ A}$	EPP2339-0003 16 inputs/outputs, $I_{\max} = 0.5 \text{ A}$, $\Sigma 3 \text{ A}$, connector with spring-loaded system	
		EPP2338-1001 8 x M8, 8 inputs/outputs, $I_{\max} = 0.5 \text{ A}$, $\Sigma 3 \text{ A}$	EPP2338-1002 4 x M12, 8 inputs/outputs, $I_{\max} = 0.5 \text{ A}$, $\Sigma 3 \text{ A}$		

EtherCAT P Box | Analog input: EPP3xxx

Signal	2-channel	4-channel
±10 V, 0/4...20 mA		EPP3174-0002 parameterizable, differential input, 16 bit
		EPP3184-0002 parameterizable, single-ended, 16 bit
Resistance thermometer (RTD)		EPP3204-0002 PT100, PT200, PT500, PT1000, Ni100, Ni120, Ni1000, 16 bit
Thermo-couple/mV		EPP3314-0002 type J, K, L, B, E, N, R, S, T, U, 16 bit
Condition monitoring/IEPE	EPP3632-0001 16 bit	
Accelerometers	EPP3752-0000 2 x 3 axes	
Pressure measuring		EPP3744-0041 4 pressure inputs -1...1 bar (differential pressure to fifth connection)
		EPP3744-1041 4 pressure inputs 0...7 bar (differential pressure to fifth connection)

EtherCAT P Box | Analog output: EPP4xxx

Signal	4-channel
±10 V, 0/4...20 mA	EPP4174-0002 parameterizable, 16 bit

EtherCAT P Box | Analog combi: EPP43xx

Signal	4-channel
±10 mA, ±20 mA	EPP4314-1002 2 inputs + 2 outputs, parameterizable per channel, 2 digital inputs, 24 V DC/3.0 ms
±10 V, 0/4...20 mA	EPP4374-0002 2 inputs + 2 outputs, parameterizable, 16 bit

EtherCAT P Box | Position measurement: EPP5xxx

Function	M12	Other
SSI encoder interface	EPP5001-0002 1 MHz, 32 bit	
Incremental encoder interface RS422	EPP5101-0002 32/16 bit, 5 V DC sensor supply	EPP5101-1002 32/16 bit, 24 V DC sensor supply
Incremental encoder interface 24 V DC	EPP5151-0002 32/16 bit	EPP5101-0011 32/16 bit, 5 V DC sensor supply, D-sub, 4 million increments/s

EtherCAT P Box | Communication: EPP6xxx

Function	1-channel	2-channel	8-channel
Serial interface	EPP6001-0002 RS232, RS422/RS485, 5 V DC/1 A	EPP6002-0002 RS232, RS422/RS485	
IO-Link master			EPP6228-0022 Class A, 8 ports

EtherCAT P Box | Motion: EPP7xxx

Function	1-channel	2-channel
Stepper motor	EPP7041-1002 $I_{max} = 1.5 \text{ A}$, 50 V DC, incremental encoder	EPP7041-3002 $I_{max} = 5.0 \text{ A}$, 50 V DC, incremental encoder
DC motor output stage		EPP7342-0002 $I_{max} = 3.5 \text{ A}$, 50 V DC

EtherCAT P Box | System: EPPxxxx

Function	1-channel	2-channel	4-channel
EtherCAT P Box	EPP1111-0000 with ID switch	EPP9022-0060 4 x diagnostics (U_s , U_r , I_s , I_r)	
	EPP9001-0060 EtherCAT P/EtherCAT connector with power transmission	EPP9022-9060 4 x diagnostics (U_s , U_r , I_s , I_r), TwinSAFE SC	
Junctions		EPP1322-0001 3 ports, with feed-in	
		EPP1332-0001 3 ports, with refresh	
		EPP1342-0001 3 ports	
Supply module EtherCAT to EtherCAT P	EPP1321-0060 EtherCAT to EtherCAT P		
Power distribution ENP to EtherCAT P	EP9221-0057 ENP B17 plug, ENP B17 socket		EP9224-0037 ENP B17 plug, ENP B17 socket

EtherCAT Plug-in Modules



EtherCAT Couplers

EtherCAT Couplers E-bus	EJ1100	EJ1101-0022
Extension system and junctions	EJ1122 2-port junction	external: connectors, power supply module and optional ID switches

EtherCAT Plug-in Modules | Digital input 24 V DC: EJ1xxx

Signal	4-channel	8-channel	16-channel
Filter 10 μ s			EJ1819 type 3
Filter 3.0 ms		EJ1008 type 3	EJ1809 type 3
		EJ1859 type 3, 8 inputs, 8 outputs	EJ1889 ground switching
Safe input	EJ1914 TwinSAFE Logic, 4 safe inputs	EJ1918 TwinSAFE Logic, 8 safe inputs	
		EJ1957 TwinSAFE Logic, 8 safe inputs, 4 safe outputs	

EtherCAT Plug-in Modules | Digital input: EJ1xxx

Signal	8-channel
3.3 V DC/ 5 V DC	EJ1128

EtherCAT Plug-in Modules | Digital output 24 V DC: EJ2xxx

Signal	1-channel	2-channel	4-channel	8-channel	16-channel
$I_{max} = 0.5$ A				EJ2008	EJ2809
				EJ1859 type 3, 8 inputs, 8 outputs	EJ2889 ground switching
Safe output			EJ2914 TwinSAFE Logic, 4 safe outputs	EJ2918 TwinSAFE Logic, 8 safe outputs	
			EJ1957 TwinSAFE Logic, 8 safe inputs, 4 safe outputs		
PWM	EJ2521-0224 24 V DC, 1 A	EJ2502 24 V DC, 0.5 A			

EtherCAT Plug-in Modules | Digital output: EJ2xxx

Signal	8-channel
3.3 V DC/ 5 V DC	EJ2128

EtherCAT Plug-in Modules | Analog input: EJ3xxx

Signal	2-channel	4-channel	5-channel	8-channel
± 10 V		EJ3004 single-ended, 12 bit		
		EJ3104 differential input, 16 bit		EJ3108 6 x differential inputs, 2 x single-ended, 16 bit
0...10 V				EJ3068 single-ended, 12 bit

EN 61131-2 specification ► www.beckhoff.com/EN61131-2

EtherCAT Plug-in Modules | Analog input: EJ3xxx

Signal	2-channel	4-channel	5-channel	8-channel
0...20 mA				EJ3048 single-ended, 12 bit
4...20 mA				EJ3058 single-ended, 12 bit
Thermocouple				EJ3318 type J, K, L...U, 16 bit
Resistance thermometer (RTD)	EJ3202 16 bit	EJ3214 16 bit		
Potentiometer			EJ3255 16 bit	

EtherCAT Plug-in Modules | Analog output: EJ4xxx

Signal	2-channel	4-channel	8-channel
0...10 V	EJ4002 12 bit		EJ4008 12 bit
±10 V	EJ4132 16 bit	EJ4134 16 bit	
0...20 mA			EJ4018 12 bit
4...20 mA		EJ4024 12 bit	

EtherCAT Plug-in Modules | Position measurement: EJ5xxx

Signal	1-channel	2-channel
Absolute encoder		EJ5002 SSI encoder interface
Incremental encoder	EJ5101 incremental encoder interface RS422	

EtherCAT Plug-in Modules | Communication: EJ6xxx

Signal	1-channel	2-channel	4-channel
Master		EJ6002 serial interface RS232, RS485 or RS422	EJ6224 IO-Link
			EJ6224-0090 IO-Link, TwinSAFE SC
Safety	EJ6910 TwinSAFE Logic		

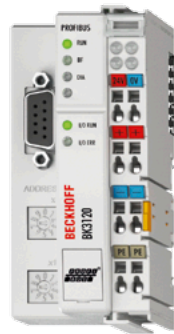
EtherCAT Plug-in Modules | Motion: EJ7xxx

	< 3 A	3...5 A
Servomotor		EJ7211-0010 $I_{rms} = 4.5$ A, 50 V DC, OCT
		EJ7211-9414 $I_{rms} = 4.5$ A, 50 V DC, OCT, STO, TwinSAFE SC
Stepper motor	EJ7031 $I_{max} = 1.5$ A, 24 V DC	EJ7041-0052 $I_{max} = 5.0$ A, 50 V DC
		EJ7047 $I_{max} = 5.0$ A, 50 V DC, incremental encoder, vector control
DC motor output stage		EJ7342 $I_{max} = 3.5$ A, 50 V DC, incremental encoder

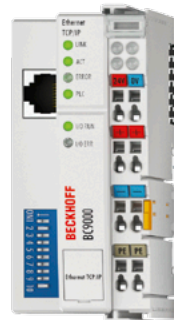
EtherCAT Plug-in Modules | System: EJ9xxx

Signal	Power supply and accessories		
Power supply	EJ9400 input 24 V DC, E-bus power supply, 2.5 A	EJ9404 input 24 V DC, E-bus power supply, 12 A	EJ9505 input 24 V DC, output 5 V DC, 0.5 A
Filtering and smoothing	EJ9576 brake chopper module, up to 72 V DC, 155 µF		
	System		
System	EJ9001 placeholder module		

System overview fieldbus I/O



Bus Coupler series BK, the link between Bus Terminals and fieldbus



Bus Terminal Controller series BC with integrated IEC 61131-3 PLC



Bus Terminal Controller series BX with integrated IEC 61131-3 PLC and extended interfaces



Embedded PC series CX, further Embedded PCs see page 22

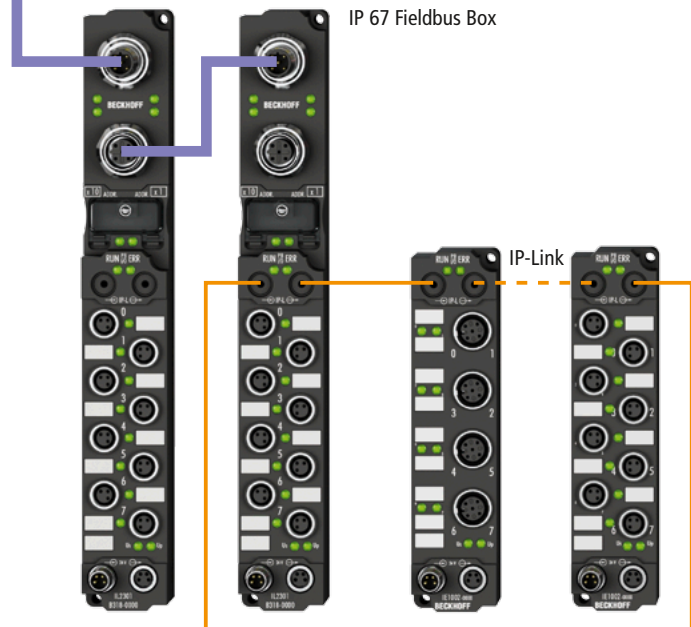
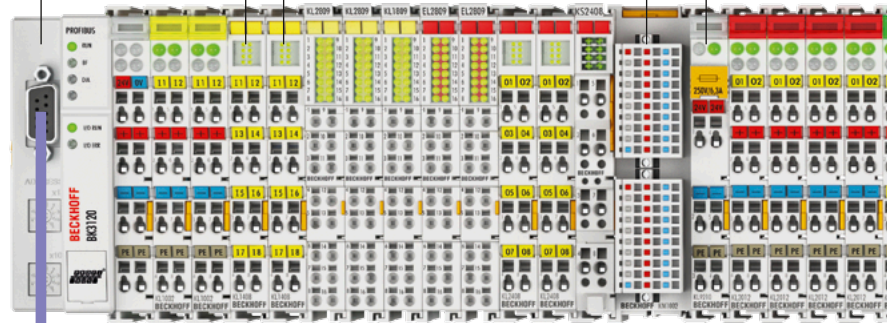
The head station of the Bus Terminals: from Bus Coupler with fieldbus interface to Embedded PC

Free mix of signals: about 400 different Bus Terminals for connection to all common sensors and actuators

Potential feed terminals enable configuration of different potential groups.

Bus Terminals in 1-, 2-, 4-, 8- and 16-channel modularity

The terminal modules with plug-in wiring combine 16, 32 or 64 digital I/Os within a very small space and with high packing density.



IP 67 Fieldbus Box

Compact Box

Coupler Box/
PLC Box

Extension Box modules

IP-Link

3-phase power measurement capability enables all relevant electrical data of the supply network to be measured.

Communication terminals enable the integration of subsystems such as AS-Interface, RS232 and RS485.

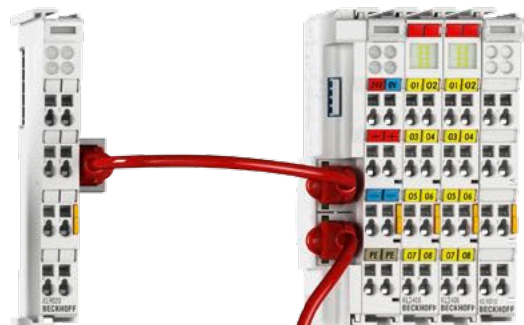
Integrated safety: the TwinSAFE Bus Terminals enable the connection of all common safety sensors and actuators.

Bus Terminals with a maximum measurement error of $\pm 0.01\%$

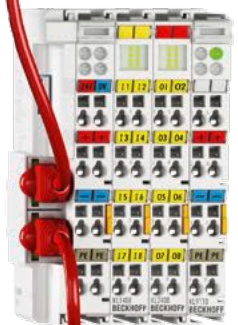
IO-Link box modules



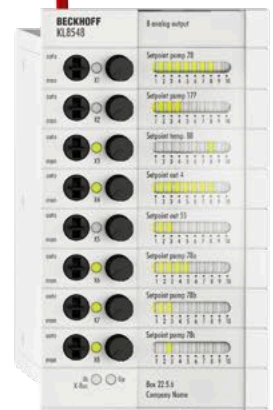
Bus end terminal



The terminal bus extension enables the connection of up to 255 Bus Terminals (instead of 64) to a single station.



Manual operating modules enable switching, controlling and monitoring of digital and analog signals as well as setting and reading of data and values in the event of a controller failure. Process data connection via K-bus interface with K-bus extension (up to 31 modules). Signal connection via KL9309.



Bus Terminals

► www.beckhoff.com/BusTerminal



Bus Coupler				PLC			
Fieldbus slave	Standard	Economy plus	Compact	Controller for TwinCAT 2 (IEC 61131-3)			
				Program memory 32/96 kbyte	Program memory 48 kbyte	Program memory 128 kbyte	Program memory 256 kbyte
EtherCAT ➔		BK1120	BK1150				
			BK1250				
LIGHTBUS	BK2000	BK2020					
PROFI BUS		BK3120 12 Mbaud	BK3150 12 Mbaud	BC3100 12 Mbaud	BC3150 12 Mbaud		BX3100 12 Mbaud
		BK3520 12 Mbaud, fibre optic					
INTERBUS		BK4020					
CANopen		BK5120	BK5150		BC5150		BX5100
			BK5151				
DeviceNet		BK5220	BK5250		BC5250		BX5200
CC-Link			BK7150				
Modbus			BK7350	BC7300	BC8050		
					BC8150		
sercos the automation bus		BK7520					
RS485 ↔	BK8000				BC8050		BX8000
RS232 ↔	BK8100				BC8150		BX8000
Ethernet TCP/IP	BK9000		BK9050	BC9000	BC9050	BC9020	BX9000
	BK9100 2-channel switch			BC9100 2-channel switch	BC9191 Room Controller	BC9191-0100 Room Controller	
						BC9120 2-channel switch	
PROFI NET	BK9103 2-channel switch		BK9053				
EtherNet/IP	BK9105 2-channel switch		BK9055				



Embedded PC									
	CX70xx	CX80xx	CX81xx	CX9020	CX1010	CX50xx	CX51xx, CX52xx	CX1020, CX1030	CX20xx
		CX8010	CX8110	optional ⁽²⁾		optional ⁽²⁾	optional ⁽²⁾		optional ⁽²⁾
					optional ⁽¹⁾			optional ⁽¹⁾	
		CX8030 master		optional ⁽²⁾	optional ⁽¹⁾	optional ⁽²⁾	optional ⁽²⁾	optional ⁽¹⁾	optional ⁽²⁾
		CX8031 slave		optional ⁽²⁾	optional ⁽¹⁾	optional ⁽²⁾	optional ⁽²⁾	optional ⁽¹⁾	optional ⁽²⁾
		CX8050 master		optional ⁽²⁾	optional ⁽¹⁾	optional ⁽²⁾	optional ⁽²⁾	optional ⁽¹⁾	optional ⁽²⁾
		CX8051 slave		optional ⁽²⁾	optional ⁽¹⁾	optional ⁽²⁾	optional ⁽²⁾	optional ⁽¹⁾	optional ⁽²⁾
			optional ⁽³⁾	optional ⁽³⁾	optional ⁽³⁾	optional ⁽³⁾	optional ⁽³⁾	optional ⁽³⁾	optional ⁽³⁾
	CX7080	CX8080	CX8180	optional ⁽²⁾	optional ⁽²⁾	optional ⁽²⁾	optional ⁽²⁾	optional ⁽²⁾	optional ⁽²⁾
	CX7080	CX8080	CX8180	optional ⁽²⁾	optional ⁽²⁾	optional ⁽²⁾	optional ⁽²⁾	optional ⁽²⁾	optional ⁽²⁾
		CX8090	CX8190	CX9020	CX1010	CX5010	CX5120	CX1020	CX2020
						CX5020	CX5130	CX1030	CX2030
							CX5140		CX2040
							CX5230		CX2042
							CX5240		CX2062
									CX2072
		CX8093		optional ⁽²⁾	optional ⁽³⁾	optional ^(2, 3)	optional ^(2, 3)	optional ⁽³⁾	optional ^(2, 3)
		CX8095		optional ⁽²⁾	optional ⁽³⁾	optional ^(2, 3)	optional ^(2, 3)	optional ⁽³⁾	optional ^(2, 3)

⁽¹⁾via modular fieldbus interface, ⁽²⁾via hardware, ⁽³⁾via software library

Bus Terminals Digital input: KL1xxx/KS1xxx						KM1xxx
Signal	2-channel	4-channel	8-channel	16-channel	4-/16-/32-/64-ch.	
5 V DC		KL1124				
24 V DC, filter 3.0 ms	KL1002 type 3	KL1104 type 3	KL1304 type 2	KL1408 type 3	KL1809 type 3	
	KL1302 type 2	KL1402 type 3	KL1154 positive/ground switching	KL1184 ground switching	KL1488 ground switching	KL1862 type 3, flat-ribbon cable
	KL1052 positive/ground switching	KL1352 NAMUR	KL1404 type 3, 4 x 2-wire connection	KL1804 type 3, 8 x 24 V, 4 x 0 V	KL1808 type 3, 8 x 24 V DC	KL1889 ground switching
	KL1212 type 1, short-circuit protected sensor supply	KL1362 break-in alarm		KL1859 8 inputs, 8 outputs, type 3, I _{max} = 0.5 A	KL1862-0010 type 3, flat-ribbon cable, ground switching	KL1862 type 3, flat-ribbon cable
24 V DC, filter 0.2 ms	KL1012 type 3	KL1312 type 2	KL1114 type 3	KL1314 type 2	KL1418 type 3	KL1819 type 3
		KL1412 type 3	KL1164 positive/ground switching	KL1194 ground switching	KL1498 ground switching	KL1872 type 3, flat-ribbon cable
			KL1414 type 3, 4 x 2-wire connection	KL1434 type 2, 4 x 2-wire connection		
			KL1814 type 3, 8 x 24 V, 4 x 0 V			
24 V DC, counter	KL1501 type 1, 100 kHz, 32 bit	KL1512 type 1, 1 kHz, 16 bit				
24 V DC	KL1232 pulse expansion	KL1382 thermistor	KL1904 TwinSAFE, 4 safe inputs			
≥ 48 V DC	KL1032 filter 3.0 ms	KL1712-0060				
120 V AC/DC	KL1712					
230 V AC	KL1702 120/230 V AC	KL1722 no power contacts	KL1704			

Bus Terminals Digital output: KL2xxx/KS2xxx						KM2xxx
Signal	2-channel	4-channel	8-channel	16-channel	16-/32-/64-channel	
5 V DC		KL2124				
24 V DC, I _{max} = 0.5 A	KL2012	KL2114	KL2408	KL2809		
				KL2819 with diagnostics	KL2809 type 3, flat-ribbon cable	KL2809 type 3, flat-ribbon cable
	KL2032 reverse voltage protection	KL2184 ground switching	KL2488 ground switching	KL2889 ground switching	KL2889 ground switching	KL2889 ground switching
		KL2134 reverse voltage protection	KL2808 8 x 0 V	KL2872 flat-ribbon cable	KL2872 flat-ribbon cable	KL2872 flat-ribbon cable
	KL2212 diagnostics, protected sensor supply	KL2404 4 x 2-wire	KL1859 type 3, 8 inputs, 8 outputs, filter 3.0 ms	KL2872-0010 flat-ribbon cable, ground switching	KL2872-0010 flat-ribbon cable, ground switching	KL2872-0010 flat-ribbon cable, ground switching

The standard Bus Terminals (KLxxxx) can be optionally ordered as KSxxxx with pluggable wiring level.
EN 61131-2 specification ► www.beckhoff.com/EN61131-2

Bus Terminals Digital output: KL2xxx/KS2xxx					KM2xxx
Signal	1-channel	2-channel	4-channel	8-channel	2-/4-channel
24 V DC, $I_{\max} = 2.0 \text{ A}$		KL2022	KL2424 4 x 2-wire	KL2828 8 x 2-wire	
30 V AC/DC, $I_{\max} = 2.0 \text{ A}$, solid state relay			KL2784		
			KL2794 potential-free	KL2798 potential-free	
24 V DC		KL2442 2 x 4 A/1 x 8 A	KL2904 TwinSAFE, 4 safe outputs		
Relay > 100 V AC	KL2631 400 V AC, make contact	KL2612 125 V AC, change-over			
230 V AC	KL2641 relay, make contact, manual operation, $I_{\max} = 16 \text{ A}$	KL2602 relay, make contact, $I_{\max} = 5 \text{ A}$	KL2622 relay, make contact, no power contacts, $I_{\max} = 5 \text{ A}$	KL2634 relay, make contact, 250 V AC/30 V DC	KM2604 relay, $I_{\max} = 16 \text{ A}$, 4-channel
	KL2751 universal dimmer, 300 W	KL2602-0010 relay, make contact, $I_{\max} = 5 \text{ A}$, contact- protecting switching	KL2622-0010 relay, make contact, no power contacts, $I_{\max} = 5 \text{ A}$, contact-protecting switching		KM2614 relay, $I_{\max} = 16 \text{ A}$, 4-channel, manual operation
	KL2761 universal dimmer, 600 W	KL2652 relay, change-over, $I_{\max} = 5 \text{ A}$	KL2702 solid state relay, $I_{\max} = 0.3 \text{ A}$		KM2774 triac outputs, $I_{\max} = 1.5 \text{ A}$
	KL2701 solid state relay, $I_{\max} = 3 \text{ A}$	KL2712 triac	KL2722 triac, mutually locked outputs		KM2642 relay, $I_{\max} = 6 \text{ A}$, manual/automatic operation, relay state readable
		KL2732 triac, mutually locked outputs, no power contacts	KL2692 cycle monitoring (watchdog)		KM2652 relay, $I_{\max} = 6 \text{ A}$, manual/automatic operation, switch and relay state readable
PWM		KL2502 24 V DC, $I_{\max} = 0.1 \text{ A}$	KL2512 24 V DC, $I_{\max} = 1.5 \text{ A}$, ground switching		
		KL2535 $I_{\max} = \pm 1 \text{ A}$, 24 V DC, current-controlled	KL2545 $I_{\max} = \pm 3.5 \text{ A}$, 50 V DC, current-controlled		
Frequency output	KL2521				

Bus Terminals Motion: KL2xxx/KS2xxx		
	< 3 A	3...5 A
Stepper motor	KL2531 $I_{\max} = 1.5 \text{ A}$, 24 V DC	KL2541 $I_{\max} = 5.0 \text{ A}$, 50 V DC, incremental encoder
DC motor output stage	KL2532 $I_{\max} = 1.0 \text{ A}$, 24 V DC	KL2552 $I_{\max} = 5.0 \text{ A}$, 50 V DC, incremental encoder
	KL2284 reverse switching, $I_{\max} = 2.0 \text{ A}$, 0...24 V DC	
AC motor speed controller	KL2791 230 V AC, 200 VA, 1-phase AC motor	

Bus Terminals Analog input: KL3xxx/KS3xxx, KM3xxx						
Signal	1-channel		2-channel		4-channel	8-channel
0...2 V, 0...500 mV			KL3172 0...2 V, 16 bit, 0.05 %	KL3172-0500 0...500 mV, 16 bit, 0.05 %		
±2 V			KL3182 16 bit, 0.05 %			
0...10 V	KL3061 single-ended, 12 bit		KL3062 single-ended, 12 bit	KL3162 16 bit, 0.05 %	KL3064 single-ended, 12 bit	
					KL3464 single-ended, 12 bit	KL3468 single-ended, 12 bit
±10 V	KL3001 differential input, 12 bit		KL3002 differential input, 12 bit	KL3102 differential input, 16 bit	KL3404 single-ended, 12 bit	KL3408 single-ended, 12 bit
				KL3132 16 bit, 0.05 %		
0...20 mA	KL3011 differential input, 12 bit	KL3041 with sensor supply, 12 bit	KL3012 differential input, 12 bit	KL3112 differential input, 16 bit	KL3044 single-ended, 12 bit	KL3448 single-ended, 12 bit
			KL3042 with sensor supply, 12 bit	KL3142 16 bit, 0.05 %	KL3444 single-ended, 12 bit	
4...20 mA	KL3021 differential input, 12 bit	KL3051 with sensor supply, 12 bit	KL3022 differential input, 12 bit	KL3122 differential input, 16 bit	KL3054 single-ended, 12 bit	KL3458 single-ended, 12 bit
			KL3052 with sensor supply, 12 bit	KL3152 16 bit, 0.05 %	KL3454 single-ended, 12 bit	
Resistance thermometer (RTD)	KL3201 PT100...1000, Ni100, 16 bit		KL3202 PT100...1000, Ni100, 16 bit	KL3222 PT100, 4-wire connection, high-precision	KL3204 PT100...1000, Ni100...1000, 2-wire connection	KL3208-0010 PT1000, Ni1000, NTC 1.8... 100 k, potentiom. 1, 5, 10 kΩ
					KL3214 PT100...1000, Ni100...1000, KTY, 3-wire connection	KL3228 PT1000, Ni1000
Thermo- couple/mV	KL3311 type J, K, L...U, 16 bit		KL3312 type J, K, L...U, 16 bit		KL3314 type J, K, L...U, 16 bit	
Measurement bridge (SG)	KL3351 strain gauge, 16 bit	KL3356 strain gauge, 16 bit, self-calibration				
Oscilloscope	KL3361 ±16 mV		KL3362 ±10 V			
Measurement technology	KL3681 digital multimeter, 18 bit		KL3403 power measurement, 3-phase, 1 A	KL3403-0010 power measurement, 3-phase, 5 A		
Pressure measuring	KM3701 differential pressure, -100...+100 hPa	KM3701-0340 differential pressure, up to 340 hPa	KM3702 relative pressure, 7500 hPa	KM3712 relative pressure, -1000...+1000 hPa		

Bus Terminals Analog output: KL4xxx/KS4xxx					KM4xxx
Signal	1-channel	2-channel	4-channel	8-channel	2-channel
0...10 V	KL4001 12 bit, potential-free output	KL4002 12 bit	KL4004 12 bit, no power contacts		KM4602 12-bit manual/automatic operation
			KL4404 12 bit	KL4408 12 bit	
±10 V	KL4031 12 bit, potential-free output	KL4032 12 bit	KL4034 12 bit, no power contacts		
		KL4132 16 bit	KL4434 12 bit	KL4438 12 bit	
			KL4494 12 bit, 2 x input, 2 x output		
0...20 mA	KL4011 12 bit	KL4012 12 bit	KL4414 12 bit	KL4418 12 bit	
		KL4112 16 bit			
4...20 mA	KL4021 12 bit	KL4022 12 bit	KL4424 12 bit	KL4428 12 bit	

The standard Bus Terminals (KLxxxx) can be optionally ordered as KSxxxx with pluggable wiring level.

Bus Terminals | Special functions: KL5xxx/KS5xxx, KL6xxx/KS6xxx, KL8xxx

Signal				Signal	
Position measurement	KL5001	KL5051	KL5121	Safety	KL6904
	SSI encoder interface	SSI encoder interface, bidirectional	incremental encoder interface with programmable outputs		TwinSAFE Logic Bus Terminal, 4 safe outputs
	KL5101	KL5151	KL5152		
	incremental encoder interface RS422	incremental encoder interface 24 V DC, 1-channel, 32 bit	incremental encoder interface 24 V DC, 2-channel, 32 bit	Manual operation	KL8519
	KL5111				16-channel digital input signal module
	incremental encoder interface 24 V DC				KL8524
Communication	KL6001	KL6031	KL6011	Power terminals	4 x 2-channel digital output, 24 V DC, 0.5 A
	serial interface RS232, 19.2 kbaud	serial interface RS232, 115.2 kbaud	serial interface TTY, 20 mA current loop		KL8528
	KL6051	KL6021	KL6041		8-channel digital output, 24 V DC, 0.5 A
	data exchange terminal, 32 bit	serial interface RS422/RS485, 19.2 kbaud	serial interface RS422/RS485, 115.2 kbaud		KL8548
	KL6201	KL6211	KL6224		8-channel analog output, 0...10 V
	AS-Interface master terminal	AS-Interface master terminal with power contacts	IO-Link master		
	KL6301	KL6401	KL6581		
	EIB/KNX Bus Terminal	LON Bus Terminal	EnOcean master		
	KL6583	KL6771	KL6781		
	EnOcean transmitter/receiver	MP-Bus master terminal	M-Bus master terminal		KL8001
	KL6811	KL6821	KL6831		switching capacity 5.5 kW, nominal current 0.9...9.9 A, connection mechanism for Siemens contactors (Sirius 3R series)
	DALI/DSI master and power supply terminal	DALI 2 multi-master and power supply terminal	SMI terminal, LoVo		
	KL6841				
	SMI terminal, 230 V AC				

Bus Terminals | System terminals: KL9xxx/KS9xxx

Signal	System		Signal	Potential supply	Power supply and accessories
System	KL9010	KL9070	24 V DC	KL9100	KL9400
	bus end terminal	shield terminal			K-bus power supply, 2 A
	KL9020	KL9050		KL9110	KL9505
	terminal bus extension end terminal	terminal bus extension coupler terminal		diagnostics	output 5 V DC, 0.5 A
Potential distribution terminals	KL9060	KL9309		KL9200	KL9508
	adapter terminal for power terminal KL8xxx	adapter terminal for KL85xx manual operating modules		with fuse	output 8 V DC, 0.5 A
	KL9080	KL9195		KL9210	KL9510
	isolation terminal	shield terminal		diagnostics, with fuse	output 10 V DC, 0.5 A
	KL9180	KL9181			KL9512
	2 terminal points per power contact	2 x 8 terminal points			output 12 V DC, 0.5 A
	KL9182	KL9183			KL9515
	8 x 2 terminal points	1 x 16 terminal points			output 15 V DC, 0.5 A
	KL9184	KL9185		KL9520	KL9528
	8 x 24 V DC, 8 x 0 V DC	only 2 power contacts		AS-Interface potential supply	AS-Interface power supply terminal
	KL9186	KL9187			KL9560
	8 x 24 V DC	8 x 0 V DC			output 24 V DC, 0.1 A
	KL9188	KL9189			
	16 x 24 V DC	16 x 0 V DC			
	KL9380				
	mains filter, approx. 1 µF				
Filter	KL9540		50 V DC		KL9570
	surge filter terminal for field supply				buffer capacitor terminal, 500 µF
	KL9540-0010	KL9550	120... 230 V AC	KL9150	
	surge filter field supply for analog terminals	surge filter terminal for system/field supply		KL9160	diagnostics
				KL9250	with fuse
Diode array	KL9300			KL9260	diagnostics, with fuse
	4 diodes, potential-free				
	KL9301	KL9302	Up to 400 V AC	KL9190	
	7 diodes, common cathode	7 diodes, common anode		KL9290	with fuse

Fieldbus Box

► www.beckhoff.com/FieldbusBox



Fieldbus Box	Compact Box	Coupler Box	PLC Box
Fieldbus	Fieldbus Box without IP-Link interface	Fieldbus Box with IP-Link interface	Controller for TwinCAT 2 (IEC 61131-3) with IP-Link interface
EtherCAT		IL230x-B110	
LIGHTBUS	IPxxx-B200	IL230x-B200	
PROFIBUS	IPxxx-B310 IPxxx-B318 with integrated tee-connector	IL230x-B310 IL230x-B318 with integrated tee-connector	IL230x-C310 IL230x-C318 with integrated tee-connector
INTERBUS	IPxxx-B400	IL230x-B400	
CANopen	IPxxx-B510 IPxxx-B518 with integrated tee-connector	IL230x-B510 IL230x-B518 with integrated tee-connector	
DeviceNet	IPxxx-B520 IPxxx-B528 with integrated tee-connector	IL230x-B520 IL230x-B528 with integrated tee-connector	
Modbus	IPxxx-B730	IL230x-B730	
RS485	IPxxx-B800	IL230x-B800	
RS232	IPxxx-B810	IL230x-B810	IL230x-C810
Ethernet TCP/IP		IL230x-B900 IL230x-B901	IL230x-C900
PROFINET		IL230x-B903	
EtherNet/IP		IL230x-B905	

Fieldbus Box | Digital input: IP1xxx-Bxxx

Signal	2-channel	8-channel
24 V DC, filter 3.0 ms		IP1000-Bxxx ⁽¹⁾ 8 x 8 mm IP1001-Bxxx ⁽¹⁾ 8 x M8 IP1002-Bxxx ⁽¹⁾ 4 x M12
24 V DC, filter 0.2 ms		IP1010-Bxxx ⁽¹⁾ 8 x 8 mm IP1011-Bxxx ⁽¹⁾ 8 x M8 IP1012-Bxxx ⁽¹⁾ 4 x M12
Counter	IP1502-Bxxx ⁽¹⁾ up/down counter 24 V DC, 100 kHz	

Fieldbus Box | Digital output: IP2xxx-Bxxx

Signal	2-channel	8-channel	16-channel
24 V DC, I _{max} = 0.5 A		IP2000-Bxxx ⁽¹⁾ 8 x 8 mm IP2001-Bxxx ⁽¹⁾ 8 x M8 IP2002-Bxxx ⁽¹⁾ 4 x M12	
24 V DC, I _{max} = 0.5 A, Σ 4 A			IE2808 D-sub
24 V DC, I _{max} = 2 A, Σ 4 A		IP2020-Bxxx ⁽¹⁾ 8 x 8 mm IP2021-Bxxx ⁽¹⁾ 8 x M8 IP2022-Bxxx ⁽¹⁾ 4 x M12	
24 V DC, I _{max} = 2 A, Σ 12 A		IP2040-Bxxx ⁽¹⁾ 8 x 8 mm IP2041-Bxxx ⁽¹⁾ 8 x M8 IP2042-Bxxx ⁽¹⁾ 4 x M12	
PWM, I _{max} = 2.5 A	IP2512-Bxxx ⁽¹⁾ 4 x M12		

⁽¹⁾also as IExxxx: Extension Box, ⁽²⁾also as ILxxxx-Bxxx: Coupler Box, ⁽³⁾also as ILxxxx-Cxxx: PLC Box

Fieldbus Box | Digital combi: IP23xx-Bxxx, IP24xx-Bxxx

Signal	8-channel			16-channel		
24 V DC, filter 3.0 ms, $I_{\max} = 0.5 \text{ A}$	IP2300-Bxxx ^(1, 2, 3) 8 x 8 mm, 4 inputs + 4 outputs	IP2301-Bxxx ^(1, 2, 3) 8 x M8, 4 inputs + 4 outputs	IP2302-Bxxx ^(1, 2, 3) 4 x M12, 4 inputs + 4 outputs	IP2400-Bxxx ⁽¹⁾ 8 x 8 mm, 8 inputs/outputs	IP2401-Bxxx ⁽¹⁾ 8 x M8, 8 inputs/outputs	IE2403 IP 20 plug
24 V DC, filter 0.2 ms, $I_{\max} = 0.5 \text{ A}$	IP2310-Bxxx ⁽¹⁾ 8 x 8 mm, 4 inputs + 4 outputs	IP2311-Bxxx ⁽¹⁾ 8 x M8, 4 inputs + 4 outputs	IP2312-Bxxx ⁽¹⁾ 4 x M12, 4 inputs + 4 outputs			
24 V DC, filter 3.0 ms, $I_{\max} = 2 \text{ A}, \Sigma 4 \text{ A}$	IP2320-Bxxx ⁽¹⁾ 8 x 8 mm, 4 inputs + 4 outputs	IP2321-Bxxx ⁽¹⁾ 8 x M8, 4 inputs + 4 outputs	IP2322-Bxxx ⁽¹⁾ 4 x M12, 4 inputs + 4 outputs			
24 V DC, filter 0.2 ms, $I_{\max} = 2 \text{ A}, \Sigma 4 \text{ A}$	IP2330-Bxxx ⁽¹⁾ 8 x 8 mm, 4 inputs + 4 outputs	IP2331-Bxxx ⁽¹⁾ 8 x M8, 4 inputs + 4 outputs	IP2332-Bxxx ⁽¹⁾ 4 x M12, 4 inputs + 4 outputs			

Fieldbus Box | Analog input: IP3xxx-Bxxx

Signal	4-channel
$\pm 10 \text{ V}$	IP3102-Bxxx ⁽¹⁾ differential inputs, 16 bit
0/4...20 mA	IP3112-Bxxx ⁽¹⁾ differential inputs, 16 bit
Resistance thermometer	IP3202-Bxxx ⁽¹⁾ PT100, PT200, PT500, PT1000, Ni100, 16 bit
Thermo-couple/mV	IP3312-Bxxx ⁽¹⁾ type J, K, L, B, E, N, R, S, T, U, 16 bit

Fieldbus Box | Analog output: IP4xxx-Bxxx

Signal	4-channel
$\pm 10 \text{ V}$	IP4132-Bxxx ⁽¹⁾
0/4...20 mA	IP4112-Bxxx ⁽¹⁾

Fieldbus Box | Position measurement: IP5xxx-Bxxx

Function	1-channel
Absolute encoder	IP5009-Bxxx ⁽¹⁾ SSI encoder interface
Incremental encoder	IP5109-Bxxx ⁽¹⁾ incremental encoder interface, 1 MHz
	IP5209-Bxxx SinCos encoder interface, 12-pin
	IP5209-Bxxx-1000 SinCos encoder interface, 9-pin

Fieldbus Box | Communication: IP6xxx-Bxxx

Function	1-channel
Serial interface	IP6002-Bxxx ⁽¹⁾ RS232
	IP6012-Bxxx ⁽¹⁾ 0...20 mA (TTY)
	IP6022-Bxxx ⁽¹⁾ RS422/RS485



Fieldbus Box | Digital input: EPI1xxx

Signal	8-channel		16-channel	
24 V DC, filter 3.0 ms	EPI1008-0001 ⁽¹⁾ 8 x M8	EPI1008-0002 ⁽¹⁾ 4 x M12	EPI1809-0021 ⁽¹⁾ 16 x M8	EPI1809-0022 ⁽¹⁾ 8 x M12

Fieldbus Box | Digital output: EPI2xxx

Signal	8-channel		16-channel	
24 V DC, $I_{\max} = 0.5 \text{ A}$	EPI2008-0001 ⁽¹⁾ 8 x M8	EPI2008-0002 ⁽¹⁾ 4 x M12		
24 V DC, $I_{\max} = 0.5 \text{ A}$, $\Sigma 4 \text{ A}$			EPI2809-0021 ⁽¹⁾ 16 x M8	EPI2809-0022 ⁽¹⁾ 8 x M12

Fieldbus Box | Digital combi: EPI23xx

Signal	8-channel		16-channel	
24 V DC, filter 3.0 ms, $I_{\max} = 0.5 \text{ A}$	EPI2338-0001 ⁽¹⁾ 8 x M8	EPI2338-0002 ⁽¹⁾ 4 x M12		
24 V DC, filter 3.0 ms, $I_{\max} = 0.5 \text{ A}$, $\Sigma 4 \text{ A}$			EPI2339-0021 ⁽¹⁾ 16 x M8	EPI2339-0022 ⁽¹⁾ 8 x M12

Fieldbus Box | Analog input: EPI3xxx

Signal	4-channel
$\pm 10 \text{ V}$, 0/4...20 mA	EPI3174-0002 ⁽¹⁾ parameterizable, differential input, 16 bit

Fieldbus Box | Analog output: EPI4xxx

Signal	4-channel
$\pm 10 \text{ V}$, 0/4...20 mA	EPI4374-0002 ⁽¹⁾ 2 inputs + 2 outputs, parameterizable, 16 bit

EPIxxxx: industrial housing in IP 67, ⁽¹⁾also as ERIxxxx: zinc die-cast housing in IP 67

Infrastructure Components

► [www.beckhoff.com/
Infrastructure-components](http://www.beckhoff.com/Infrastructure-components)



Ethernet components

	Gbit/s	100 Mbit/s
Switches	CU2208 8 x RJ45, IP 20	CU2008 8 x RJ45, IP 20
		CU2608 8 x M12 (D-coded), IP 67
		CU2016 16 x RJ45, IP 20
		CU2005 5 x RJ45, IP 20
Port multiplier	CU2508 1 x RJ45 (+ 8 x RJ45: 100 Mbit/s)	
PCI	FC9024-0000 4 x RJ45, PCIe	FC9004-0000 4 x RJ45
	FC9022-0000 2 x RJ45, PCIe	FC9002-0000 2 x RJ45
	FC9011-0000 1 x RJ45	FC9001-0010 1 x RJ45
Mini PCI	FC9151-0000 1 x RJ45	FC9051-0000 1 x RJ45

EtherCAT components

	Gbit/s, IP 20	100 Mbit/s, IP 20	100 Mbit/s, IP 67
Junctions	CU1423 junction, 3 x RJ45	CU1123 junction, 3 x RJ45	
	CU1411 branch controller, 1 port	CU1123-0010 junction, 3 x RJ45, Extended Distance	
	CU1418 branch controller, 8 ports	CU1124 junction, 4 x RJ45	
		CU1128 junction, 8 x RJ45	EP9128-0021 junction, 8 x M8
Media converters		CU1521-0000 multimode	EP9521-0020 multimode
		CU1521-0010 singlemode	
		CU1561 POF	
Slave (PCI)		FC1100 1-channel	
		FC1121 1-channel, PCIe	

PC Fieldbus Cards

	PCI			Mini PCI	
LIGHTBUS	FC2001-0000 1-channel	FC2002-0000 2-channel			
	FC3101-0000 1-channel	FC3101-0002 1-channel, 32 kbyte NOVRAM	FC3121 1-channel, PCIe	FC3151-0000 1-channel	FC3151-0002 1-channel, 128 kbyte NOVRAM
	FC3102-0000 2-channel	FC3102-0002 2-channel, 32 kbyte NOVRAM	FC3122 2-channel, PCIe		
CANopen	FC5101-0000 1-channel	FC5101-0002 1-channel, 32 kbyte NOVRAM	FC5121 1-channel, PCIe	FC5151-0000 1-channel	FC5151-0002 1-channel, 128 kbyte NOVRAM
	FC5102-0000 2-channel	FC5102-0002 2-channel, 32 kbyte NOVRAM	FC5122 2-channel, PCIe		
DeviceNet	FC5201-0000 1-channel	FC5201-0002 1-channel, 32 kbyte NOVRAM		FC5251-0000 1-channel	FC5251-0002 1-channel, 128 kbyte NOVRAM
	FC5202-0000 2-channel	FC5202-0002 2-channel, 32 kbyte NOVRAM			
sercos the automation bus	FC7501-0000 1-channel	FC7502-0000 2-channel		FC7551-0000 1-channel	FC7551-0002 1-channel, 128 kbyte NOVRAM
	FC9321-0010 1-channel, IRT device, PCIe	FC9361-0010 1-channel, IRT device, PCIe, compact			

The Motion Company

In combination with the motion control solutions offered by the company's TwinCAT automation software, Beckhoff Drive Technology provides an advanced, all-inclusive drive system. PC-based control technology from Beckhoff is ideally suited for single- and multi-axis positioning tasks with high dynamic requirements.

The AX5000 and AX8000 Servo Drive series with high-performance EtherCAT communication offer the best-possible performance and dynamics. Servomotors with One Cable Technology (OCT), combining power and feedback systems into one standard motor cable, reduce material and commissioning costs.

► www.beckhoff.com/DriveTechnology

Servo Drives 72

- available as multi-axis system or stand-alone version (1-/2-channel)
- high-speed EtherCAT communication
- nominal current types, up to 170 A
- flexible motor type selection
- optimized for multi-axis applications
- 17 drive-integrated safety functions

► www.beckhoff.com/Servo-Drives

Distributed Servo Drive system 74

- servo drives directly integrated into the motor
- STO/SS1 safety function as standard; optionally Safe Motion
- Advanced power electronics ensure minimal derating.
- no changes in machine design required

► www.beckhoff.com/AMP8000

Synchronous Servomotors 75

- for demanding positioning tasks
- highly dynamic behavior
- brushless three-phase motors
- permanent magnet in the rotor
- 24 bit encoder with SIL 2 safety integration

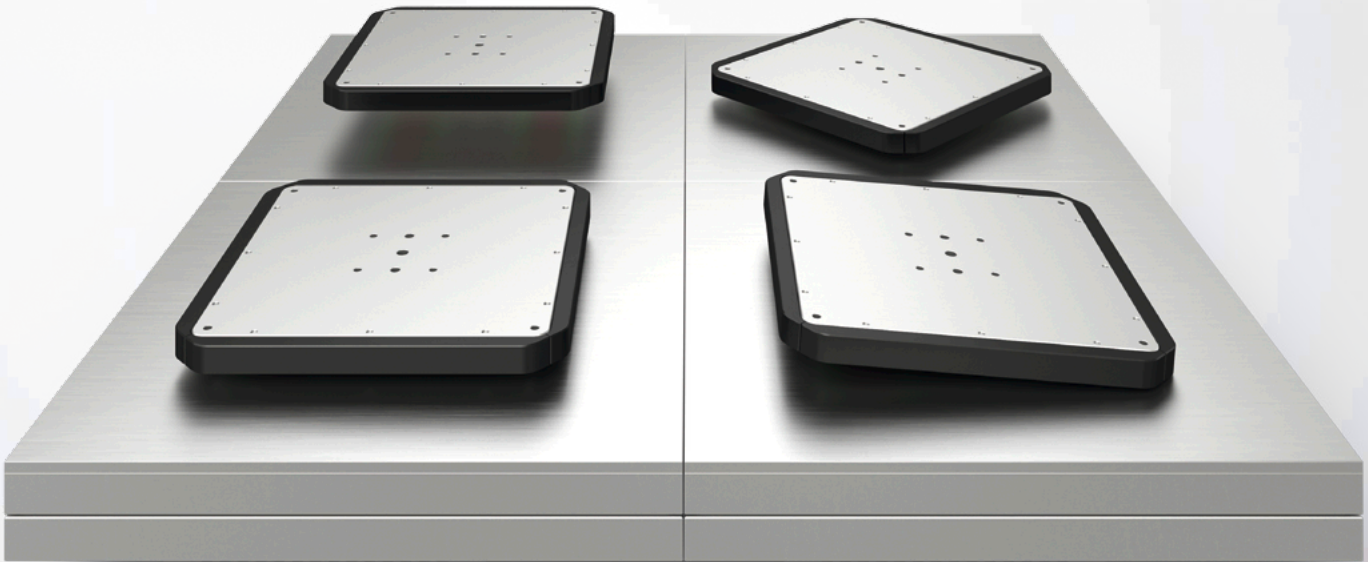
► www.beckhoff.com/Servomotors



eXtended planar motor system XPlanar 81

- free-floating movers for non-contact movement
- 6 degrees of freedom
- integrated position feedback
- highly flexible floor and track layout
- ideal for the food and pharma industry

► www.beckhoff.com/XPlanar



Compact Drive Technology 78

- high performance in small design
- motors and output stages for the < 48 V DC low voltage range
- servo, BLDC, stepper and DC motor output stages in IP 20 or IP 67
- smart servo drive with integrated output stage for machines without control cabinets

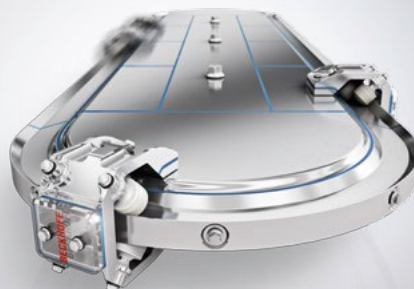
► www.beckhoff.com/compact-drive-technology

eXtended Transport System XTS 82

- linear motor on an endless path
- replaces traditional mechanics with advanced mechatronic solutions
- software-based functional changes
- individual product transport with continuous material flow

► www.beckhoff.com/XTS

XPlanar®



- scalable product range of servo drive technology
- integrated safety technology in compliance with safety performance level PL e, integrated into compact Drive Technology up to safety performance level PL d
- As the pioneer of One Cable Technology and the eXtended Transport System, Beckhoff specializes in manufacturing efficient, space-saving motion solutions.

Servo Drives

► www.beckhoff.com/Servo-Drives



AX8000

AX8000 | Multi-axis servo system: power supply modules

	AX8620-0000-0000	AX8640-0000-0000
DC-Link output current	1~: 5 A DC without mains choke/7 A DC with mains choke 3~: 20 A DC	3~: 40.0 A DC
Rated supply voltage	1 x 100...240 V AC 3 x 200...480 V AC	3 x 200...480 V AC

Any number of axis modules can be added provided that the rated output current of the power supply modules is sufficient.

AX8000 | Multi-axis servo system: axis modules

	AX8108-0xx0-0000	AX8118-0xx0-0000	AX8206-0xx0-0000
Rated output current (axis)	8 A	18 A	6 A
Number of channels	1	1	2
Feedback system	OCT, multi-feedback	OCT, multi-feedback	OCT, multi-feedback
TwinSAFE safe drive technology	STO/SS1, Safe Motion	STO/SS1, Safe Motion	STO/SS1, Safe Motion

AX8000 | Combined power supply and axis modules

	AX8525-0xx0-0000 	AX8540-0xx0-0000 
Rated supply voltage	3 x 200...480 V AC	3 x 200...480 V AC
Rated input current	70 A AC	70 A AC
DC-Link output current	80 A DC, thereof max. 50 A DC for the AX-Bridge	80 A DC, thereof max. 50 A DC for the AX-Bridge
Rated output current (axis)	25 A	40 A
Peak output current (axis)	50 A	80 A
Feedback system	OCT, multi-feedback	OCT, multi-feedback
TwinSAFE safe drive technology	STO/SS1, Safe Motion	STO/SS1, Safe Motion

AX8000 | Multi-axis servo system: option modules

	1-channel	2-channel
Coupling modules for AMP8000	AX8831-0000-0000 For AX86xx-0000	AX8832-0000-0000
Capacitor module	AX8810-0000-0000 For AX81xx-0xx0, AX82xx-0xx0	
Energy recovery modules	AX8820-00xx-0000	



AX5000

AX5000 | Digital Compact Servo Drives

	AX5101...AX5112	AX5201...AX5206	AX5118...AX5140	AX5160...AX5193
Number of channels	1	2	1	1
Rated output current (axis)	3~: 1.5...12 A, 1~: 1.5...4.5 A	3~: 1.5...6 A (total device current: 3...12 A), 1~: 1.5 A (total device current: 3...9 A)	3~: 18...40 A	3~: 60...170 A
Rated supply voltage	3 x 100...480 V AC (wide voltage range), 1 x 100...240 V AC	3 x 100...480 V AC (wide voltage range), 1 x 100...240 V AC	3 x 100...480 V AC (wide voltage range)	3 x 400...480 V AC
Feedback system	OCT, multi-feedback	OCT, multi-feedback	OCT, multi-feedback	multi-feedback

AX5000 | Digital Compact Servo Drives: options

	1-channel		2-channel	
Encoder option cards	AX5701 1 V _{PP} : BiSS B, Hiperface, EnDat 2.1	AX5721 EnDat 2.2, BiSS C	AX5702 1 V _{PP} : BiSS B, Hiperface, EnDat 2.1	AX5722 EnDat 2.2, BiSS C
	STO/SS1		Safe Motion	
TwinSAFE safe drive technology	AX5801-0200 for AX5101...AX5140 and AX5201...AX5206		AX5805-0000 for AX5101...AX5140 and AX5201...AX5206	AX5806-0000 for AX5160...AX5193
	Power supply		Power distribution	
AX-Bridge	AX5901 for AX5101...AX5125 and AX5201...AX5206	AX5902 for AX5140	AX5911 for AX5101...AX5112 and AX5201...AX5206	AX5912 for AX5118 and AX5125
	Brake energy recovery			
Brake module	AX5021 connection of external brake resistors			

Distributed Servo Drive system

► www.beckhoff.com/AMP8000



AMP804x | Distributed Servo Drive, flange code F4

Data for 560 V DC	AMP8041-Dxyz	AMP8041-Exyz	AMP8042-Exyz	AMP8043-Exyz
Standstill torque	2.25 Nm	2.40 Nm	3.90 Nm	5.35 Nm
Rated speed	3000 min ⁻¹	6000 min ⁻¹	2500 min ⁻¹	2500 min ⁻¹
Rated power	0.69 kW	1.44 kW	0.97 kW	1.31 kW
Standstill current	1.60 A	3.00 A	2.05 A	2.75 A
Connection technology	ECP B23 plug	ECP B23 plug	ECP B23 plug	ECP B23 plug
One Cable Automation (OCA)	yes	yes	yes	yes

AMP805x | Distributed Servo Drive, flange code F5

Data for 560 V DC	AMP8051-Exyz	AMP8051-Gxyz	AMP8052-Fxyz	AMP8053-Gxyz
Standstill torque	4.55 Nm	4.60 Nm	7.80 Nm	10.75 Nm
Rated speed	2500 min ⁻¹	5000 min ⁻¹	2000 min ⁻¹	2000 min ⁻¹
Rated power	1.14 kW	2.17 kW	1.49 kW	1.98 kW
Standstill current	2.60 A	4.50 A	3.15 A	4.45 A
Connection technology	ECP B23 plug	ECP B23 plug	ECP B23 plug	ECP B23 plug
One Cable Automation (OCA)	yes	yes	yes	yes

AX883x | Coupling modules for AMP8000

	AX8831-0000-0000	AX8832-0000-0000
Function	coupling module	coupling module
Number of channels	1	2
DC-Link output current	20 A DC	2 x 20 A DC
Rated output current 24 V	10 A DC	2 x 10 A DC
DC-Link voltage	max. 875 V DC	max. 875 V DC

AMP8805, AMP8620 | Distribution/power supply module for AMP8000

	AMP8805-1000-0000	AMP8620-2005-0000
Function	distribution module	power supply module
Number of channels	1 x power IN 565...680 V DC, 5 x power OUT 565...680 V DC/Σ max. 20 A DC, 1 x EtherCAT P OUT	1 x power IN 400...480 V AC, 1 x EtherCAT/EtherCAT P, 5 x power OUT 565...680 V DC/Σ max. 20 A DC, 2 x EtherCAT P OUT Σ max. 6 A DC
DC-Link voltage	565...680 V DC	565...680 V DC
DC-Link capacitance	940 µF	940 µF
Protection class	IP 65	IP 65

Synchronous Servomotors

► www.beckhoff.com/Servomotors



AM8000



AM8100



AM8500



AM8700



AM8800



AM8000, AM8500
with fan

Synchronous Servomotors, OCT

	Flange code						
	F1 (40 mm)	F2 (58 mm)	F3 (72 mm)	F4 (87 mm)	F5 (104 mm)	F6 (142 mm)	F7 (197 mm)
Standard 400 V AC		AM802x $M_0 = 0.50 \dots 1.20 \text{ Nm}$	AM803x $M_0 = 1.37 \dots 3.22 \text{ Nm}$	AM804x $M_0 = 2.37 \dots 5.65 \text{ Nm}$	AM805x $M_0 = 4.80 \dots 13.8 \text{ Nm}$, up to 17.2 Nm with fan	AM806x $M_0 = 12.8 \dots 35.0 \text{ Nm}$, up to 49.0 Nm with fan	AM807x $M_0 = 29.0 \dots 92.0 \text{ Nm}$, up to 129 Nm with fan
Standard 230 V AC	AM801x $M_0 = 0.20 \dots 0.52 \text{ Nm}$						
Standard 48 V DC	AM811x $M_0 = 0.20 \dots 0.52 \text{ Nm}$	AM812x $M_0 = 0.50 \dots 0.80 \text{ Nm}$	AM813x $M_0 = 1.35 \dots 2.37 \text{ Nm}$	AM8141 $M_0 = 2.40 \text{ Nm}$			
Increased inertia 400 V AC			AM853x $M_0 = 1.37 \dots 3.22 \text{ Nm}$	AM854x $M_0 = 2.37 \dots 5.65 \text{ Nm}$	AM855x $M_0 = 4.80 \dots 11.4 \text{ Nm}$, up to 15.4 Nm with fan	AM856x $M_0 = 12.8 \dots 29.0 \text{ Nm}$, up to 41.4 Nm with fan	
Anodized 400 V AC			AM873x* $M_0 = 1.38 \dots 3.22 \text{ Nm}$	AM874x* $M_0 = 2.45 \dots 5.65 \text{ Nm}$	AM875x* $M_0 = 4.90 \dots 11.4 \text{ Nm}$	AM876x* $M_0 = 12.80 \dots 29.0 \text{ Nm}$	
Stainless steel 400 V AC			AM883x* $M_0 = 0.85 \dots 1.85 \text{ Nm}$	AM884x* $M_0 = 1.60 \dots 3.50 \text{ Nm}$	AM885x* $M_0 = 3.10 \dots 6.40 \text{ Nm}$	AM886x* $M_0 = 7.75 \dots 16.7 \text{ Nm}$	

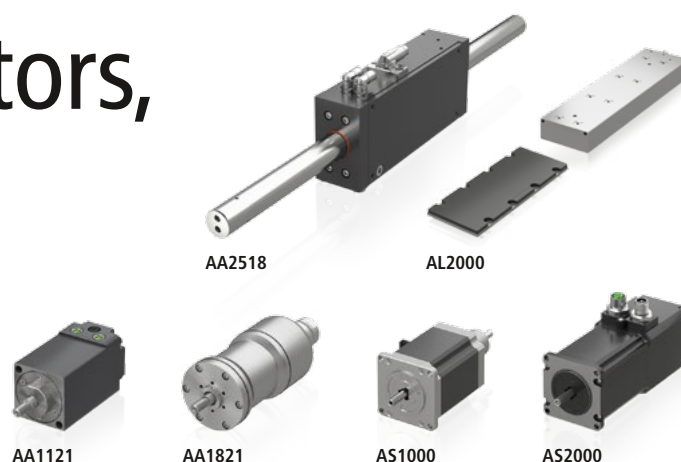
Synchronous Servomotors, 2-cable standard

	Flange code							
	F1 (40 mm)	F2 (58 mm)	F3 (72 mm)	F4 (87 mm)	F5 (104 mm)	F6 (142 mm)	F7 (197 mm)	F8 (260 mm)
Standard 400 V AC		AM802x $M_0 = 0.50 \dots 1.20 \text{ Nm}$	AM803x $M_0 = 1.37 \dots 3.22 \text{ Nm}$	AM804x $M_0 = 2.37 \dots 5.65 \text{ Nm}$	AM805x $M_0 = 4.80 \dots 11.4 \text{ Nm}$, up to 15.4 Nm with fan	AM806x $M_0 = 12.8 \dots 35.0 \text{ Nm}$, up to 49.0 Nm with fan	AM807x $M_0 = 29.0 \dots 92.0 \text{ Nm}$, up to 129 Nm with fan	
		AM302x $M_0 = 0.87 \dots 1.41 \text{ Nm}$	AM303x* $M_0 = 1.15 \dots 2.79 \text{ Nm}$	AM304x* $M_0 = 1.95 \dots 6.00 \text{ Nm}$	AM305x* $M_0 = 4.70 \dots 14.9 \text{ Nm}$	AM306x* $M_0 = 11.9 \dots 25.0 \text{ Nm}$	AM307x* $M_0 = 29.7 \dots 53.0 \text{ Nm}$	AM308x $M_0 = 75.0 \dots 180 \text{ Nm}$
Standard 230 V AC	AM301x $M_0 = 0.18 \dots 0.41 \text{ Nm}$	AM302x $M_0 = 0.48 \dots 0.87 \text{ Nm}$	AM3031 $M_0 = 1.20 \text{ Nm}$					
	AM801x $M_0 = 0.20 \dots 0.52 \text{ Nm}$							
Standard 48 V DC	AM811x $M_0 = 0.20 \dots 0.52 \text{ Nm}$	AM812x $M_0 = 0.50 \dots 0.80 \text{ Nm}$	AM813x $M_0 = 1.35 \dots 2.37 \text{ Nm}$	AM8141 $M_0 = 2.40 \text{ Nm}$				
Increased inertia 400 V AC			AM853x $M_0 = 1.37 \dots 3.22 \text{ Nm}$	AM854x $M_0 = 2.37 \dots 5.65 \text{ Nm}$	AM855x $M_0 = 4.80 \dots 11.4 \text{ Nm}$, up to 15.4 Nm with fan	AM856x $M_0 = 12.8 \dots 29.0 \text{ Nm}$, up to 41.4 Nm with fan		
Anodized 400 V AC			AM873x* $M_0 = 1.38 \dots 3.22 \text{ Nm}$	AM874x* $M_0 = 2.45 \dots 5.65 \text{ Nm}$	AM875x* $M_0 = 4.90 \dots 11.4 \text{ Nm}$	AM876x* $M_0 = 12.80 \dots 29.0 \text{ Nm}$		
Stainless steel 400 V AC			AM883x* $M_0 = 0.85 \dots 1.85 \text{ Nm}$	AM884x* $M_0 = 1.60 \dots 3.50 \text{ Nm}$	AM885x* $M_0 = 3.10 \dots 6.40 \text{ Nm}$	AM886x* $M_0 = 7.75 \dots 16.7 \text{ Nm}$		

*Please note the different flange size.

Linear Servomotors, stepper motors

- www.beckhoff.com/Linear-motors
- www.beckhoff.com/Stepper-motors



Linear Servomotors

	AA2518	 AL2000	AL2400	AL2800
Especially suitable for	maximum power density	maximum power density	confined spaces	highest demands on force
Magnetic path width	–	80 mm	50 mm	130 mm
Cooling	water cooling	air cooling	air cooling	air cooling, partly water cooling
Max. speed	8 m/s	7 m/s	12 m/s	6 m/s
Max. force	1050 N	225...1800 N	120...720 N	1800...6750 N
Protection class	IP 65	IP 64	IP 64	IP 64

Linear actuators

	AA1121	 AA1821	
Rated force	270 N*	148 N*	
Peak force	800 N	800 N	
Max. movement	10 mm	10 mm	
Max. acceleration	7 m/s ²	7 m/s ²	
Variant	standard	stainless steel	
Protection class	IP 54	IP 69K	

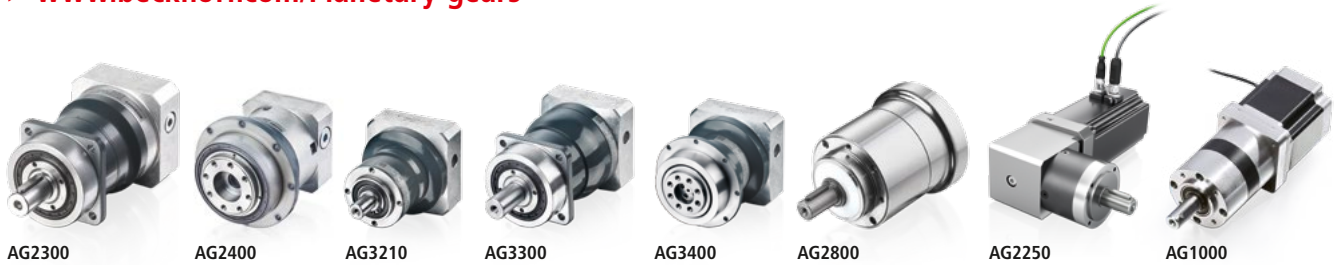
*depending on the thermal connection

Stepper motors

	AS1000	AS2000
Sizes	N1 (NEMA17), N2 (NEMA23), N3 (NEMA34)	N2 (NEMA23), N3 (NEMA34)
Resolution	1.8°/200 full steps	1.8°/200 full steps
Encoder	incremental, 1024 lines	incremental, 1024 lines
Standstill torque < 3 A	0.38...0.60 Nm	0.80 Nm
Standstill torque > 3 A	1.20...5.00 Nm	1.50...8.00 Nm
Protection class	IP 43, AS1060: IP 20	IP 54

Planetary gear units

► www.beckhoff.com/Planetary-gears



Planetary gear units for AM8000/AM8500

	AG2300	AG2400	AG3210	AG3300	AG3400
Type	high-end	high-end	economy	economy	economy
Variant	standard (MF), high-speed (MC)	standard (MF)	standard (MF)	standard (MF)	standard (MF)
Output type	shaft	flange	shaft	shaft	flange
Gear ratios	1-stage $i = 3 \dots 10$, 2-stage $i = 16 \dots 100$	1-stage $i = 4 \dots 10$, 2-stage $i = 16 \dots 100$	1-stage $i = 3 \dots 10$, 2-stage $i = 9 \dots 100$	1-stage $i = 3 \dots 10$, 2-stage $i = 9 \dots 100$	1-stage $i = 3 \dots 10$, 2-stage $i = 9 \dots 100$
Protection class	IP 65	IP 65	IP 64	IP 65	IP 64

Planetary gear units for other motor series

	AG2800	AG2250	AG1000
Type	economy	economy	economy
Variant	stainless steel	straight and angled versions	standard
Motor series	AM8800	AM8100, AS2000	AS1000
Output type	shaft	shaft	shaft
Gear ratios	1-stage $i = 3 \dots 10$, 2-stage $i = 9 \dots 100$	1-stage $i = 3 \dots 10$, 2-stage $i = 9 \dots 64$	1-stage $i = 3.7$ or 6.75
Protection class	IP 69K	IP 54	IP 43, AS1060: IP 20

Compact Drive Technology

► www.beckhoff.com/compact-drive-technology



EtherCAT
Terminals



EtherCAT
Plug-in Modules



Bus Terminals

	Product group	BLDC motors	DC motors		
		4.5...8 A	< 3 A	3...5 A	> 5 A
I/O	EtherCAT Terminals IP 20	EL7411-9014 I_{ms} = 4.5 A, 50 V DC, STO	EL7332 I_{max} = 1.0 A, 24 V DC	EL7332+ZB8610 I_{max} = 3.0 A, 24 V DC	
		EL7411-9014+ ZB8610 I_{ms} = 7...8 A, 50 V DC, STO		EL7342 I_{max} = 3.5 A, 50 V DC, incremental encoder	EL7342+ZB8610 I_{max} = 6.5 A, 50 V DC, incremental encoder
		EL7411 I_{ms} = 4.5 A, 50 V DC			
	EtherCAT Plug-in Modules IP 20			EJ7342 I_{max} = 3.5 A, 50 V DC, incremental encoder	
	Bus Terminals IP 20		KL2532 I_{max} = 1.0 A, 24 V DC	KL2552 I_{max} = 5.0 A, 50 V DC, incremental encoder	
	EtherCAT Box modules IP 67			EP/ER7342-0002 I_{max} = 3.5 A, 50 V DC	
	EtherCAT P Box modules IP 67			EPP7342-0002 I_{max} = 3.5 A, 50 V DC	
Motion	Flange code F1 (40 mm)				
	Flange code F2 (58 mm)				
	Flange code F3 (72 mm)				
	Flange code F4 (87 mm)				



EtherCAT Box modules



EtherCAT P Box modules



Integrated Servo Drives, rear view



Flange code F1



Flange code F2



Flange code F3



Flange code F4

Servomotors				Integrated Servo Drives	
	< 3 A	3...5 A	> 5 A	3...5 A	> 5 A
	EL7201-9014 $I_{ms} = 2.8 \text{ A}$, 50 V DC, OCT, STO	EL7201-9014+ZB8610 $I_{ms} = 4.5 \text{ A}$, 50 V DC, OCT, STO	EL7221-9014 $I_{ms} = 7...8 \text{ A}$ with ZB8610, 50 V DC, OCT, STO		
	EL7201-0010 $I_{ms} = 2.8 \text{ A}$, 50 V DC, OCT	EL7201-0010+ZB8610 $I_{ms} = 4.5 \text{ A}$, 50 V DC, OCT			
	EL7201 $I_{ms} = 2.8 \text{ A}$, 50 V DC, resolver	EL7201+ZB8610 $I_{ms} = 4.5 \text{ A}$, 50 V DC, resolver			
		EL7211-9014 $I_{ms} = 4.5 \text{ A}$, 50 V DC, OCT, STO			
		EL7211-0010 $I_{ms} = 4.5 \text{ A}$, 50 V DC, OCT			
		EL7211 $I_{ms} = 4.5 \text{ A}$, 50 V DC, resolver			
		EJ7211-9414 $I_{ms} = 4.5 \text{ A}$, 50 V DC, OCT, STO, TwinSAFE SC			
		EJ7211-0010 $I_{ms} = 4.5 \text{ A}$, 50 V DC, OCT			
		EP7211-0034 $I_{ms} = 4.5 \text{ A}$, 50 V DC, OCT, STO			
	AM8111-wFyz 2.8 A, 48 V DC, 0.20 Nm, 4000 min ⁻¹	AM8112-wFyz 4.7 A, 48 V DC, 0.38 Nm, 4500 min ⁻¹			
		AM8113-wFyz 4.8 A, 48 V DC, 0.52 Nm, 3000 min ⁻¹			
		AM8121-wFyz 4.0 A, 48 V DC, 0.50 Nm, 3000 min ⁻¹		AMI8121-ab00-wFyz	
		AM8122-wFyz 4.0 A, 48 V DC, 0.80 Nm, 2000 min ⁻¹	AM8122-wJyz 8.0 A, 48 V DC, 0.80 Nm, 4500 min ⁻¹		AMI8122-ab00-wFyz 8.0 A, 48 V DC, 0.70 Nm, 4500 min ⁻¹
					AMI8123-ab00-wFyz 8.0 A, 48 V DC, 1.10 Nm, 3000 min ⁻¹
		AM8131-wFyz 5.0 A, 48 V DC, 1.35 Nm, 1000 min ⁻¹	AM8131-wJyz 8.0 A, 48 V DC, 1.35 Nm, 1800 min ⁻¹		
			AM8132-wJyz 8.0 A, 48 V DC, 2.37 Nm, 1000 min ⁻¹		
			AM8141-wJyz 8.0 A, 48 V DC, 2.40 Nm, 1000 min ⁻¹		



Flange code N1



Flange code N2



Flange code N3

Product group		Stepper motors		
		< 3 A	3...5 A	> 5 A
I/O	EtherCAT Terminals IP 20	EL7037 $I_{\max} = 1.5 \text{ A}$, 24 V DC, incremental encoder, vector control	EL7037+ZB8610 $I_{\max} = 3.0 \text{ A}$, 24 V DC, incremental encoder, vector control	
		EL7031 $I_{\max} = 1.5 \text{ A}$, 24 V DC	EL7047-9014 $I_{\max} = 5.0 \text{ A}$, 50 V DC, incremental encoder, vector control, STO	EL7047-9014+ZB8610 $I_{\max} = 6.5 \text{ A}$, 50 V DC, incremental encoder, vector control, STO
			EL7047 $I_{\max} = 5.0 \text{ A}$, 50 V DC, incremental encoder, vector control	EL7047+ZB8610 $I_{\max} = 6.5 \text{ A}$, 50 V DC, incremental encoder, vector control
			EL7041 $I_{\max} = 5.0 \text{ A}$, 50 V DC, incremental encoder	
	EtherCAT Plug-in Modules IP 20	EJ7031 $I_{\max} = 1.5 \text{ A}$, 24 V DC	EJ7047 $I_{\max} = 5.0 \text{ A}$, 50 V DC, incremental encoder, vector control	
			EJ7041-0052 $I_{\max} = 5.0 \text{ A}$, 50 V DC	
	Bus Terminals IP 20	KL2531 $I_{\max} = 1.5 \text{ A}$, 24 V DC	KL2541 $I_{\max} = 5.0 \text{ A}$, 50 V DC, incremental encoder	
	EtherCAT Box modules IP 67	EP/ER7041-1002 $I_{\max} = 1.5 \text{ A}$, 50 V DC, incremental encoder	EP/ER7041-3002 $I_{\max} = 5.0 \text{ A}$, 50 V DC, incremental encoder	
			EP7047-9032 $I_{\text{rms}} = 5.0 \text{ A}$, 50 V DC, OCT, STO	
	EtherCAT P Box modules IP 67	EPP7041-1002 $I_{\max} = 1.5 \text{ A}$, 50 V DC, incremental encoder	EPP7041-3002 $I_{\max} = 5.0 \text{ A}$, 50 V DC, incremental encoder	
Motion	Flange code N1 (NEMA17)	AS1010-0000 1.0 A, 48 V DC, 0.38 Nm		
		AS1020-0xyz 1.0 A, 48 V DC, 0.50 Nm		
	Flange code N2 (NEMA23)	AS1030-0000 1.5 A, 48 V DC, 0.60 Nm	AS1050-0xyz 5.0 A, 48 V DC, 1.20 Nm	AS2022-0Hy0 5.6 A, 48 V DC, 1.50 Nm
		AS2021-0Dy0 2.0 A, 48 V DC, 0.80 Nm		AS2023-0Hy0 5.6 A, 48 V DC, 1.80 Nm
				AS2023-0Jy0 6.4 A, 48 V DC, 2.30 Nm
	Flange code N3 (NEMA34)		AS1060-wxyz 5.0 A, 48 V DC, 5.00 Nm	AS2041-1Hy0 5.6 A, 48 V DC, 3.30 Nm
				AS2042-1Hy0 5.6 A, 48 V DC, 6.40 Nm
				AS2043-1Jy0 6.5 A, 48 V DC, 8.00 Nm

XPlanar | eXtended planar motor system

► www.beckhoff.com/XPlanar



Tiles



Movers



Starter kits

Tiles

APS1003-0000	4 active areas, 110/230 V AC/24 V DC, 4.0 kg, 240 mm x 240 mm x 67 mm	i
APS2003-0000	rotor area, 110/230 V AC/24 V DC, 4.0 kg, 240 mm x 240 mm x 67 mm	i

Movers

APM1002-0000	95 x 95 x 12 mm, 0.39 kg, 0.4 kg payload	i
APM1003-0000	155 x 155 x 12 mm, 1.27 kg, 1.5 kg payload	i
APM1004-0000	275 x 275 x 12 mm, 5.0 kg, 6.0 kg payload	i
APM1005-0000	155 x 275 x 12 mm, 2.5 kg, 3.0 kg payload	i

Software

TF5890-0v80	software license, TwinCAT 3 XPlanar, TwinCAT 3 platform P80 (Very High Performance)	i
TF5890-0v81	software license, TwinCAT 3 XPlanar, TwinCAT 3 platform P81 (Many-core, 5...8 Cores)	i
TF5890-0v82	software license, TwinCAT 3 XPlanar, TwinCAT 3 platform P82 (Many-core, 9...16 Cores)	i
TF5890-0v83	software license, TwinCAT 3 XPlanar, TwinCAT 3 platform P83 (Many-core, 17...32 Cores)	i
TF5890-0v84	software license, TwinCAT 3 XPlanar, TwinCAT 3 platform P84 (Many-core, 33...64 Cores)	i

Starter kits

APS9000	6 (2 x 3) APS1003 planar motor tiles, 2 APM1003 movers, Industrial PC, software, pre-installed, ready for operation
APS9001	12 (4 x 3) APS1003 planar motor tiles, 4 APM1003 movers, Industrial PC, software, pre-installed, ready for operation

XTS | eXtended Transport System

► www.beckhoff.com/XTS



Motor modules

	Standard with interface for guide rails	without interface for guide rails (Black Line)	Hygienic with interface for guide rails	without interface for guide rails (Black Line)
Straight	AT2000-0250 UL-certified	AT2000-0250-0002 UL-certified	ATH2000-0250	ATH2000-0250-0002
	AT2000-0233 for L-, U-, O- and Z-shaped geometries, UL-certified	AT2000-0233-0002 for L-, U-, O- and Z-shaped geometries, UL-certified		
	AT2001-0250 with feed, not UL-certified	AT2001-0250-0002 with feed, not UL-certified	ATH2001-0250 with feed	ATH2001-0250-0002 with feed
	AT2001-0250-0003 with feed, UL-certified	AT2001-0250-0004 with feed, UL-certified		
	AT2002-0249 with rotatable B23 ENP connector for infeed, UL-certified	AT2002-0249-0002 with rotatable B23 ENP connector for infeed, UL-certified		
Curved, 180° (clothoid)	AT2050-0500 UL-certified	AT2050-0500-0002 UL-certified	ATH2050-0500	ATH2050-0500-0002
			ATH2051-0500 with feed	ATH2051-0500-0002 with feed
Positive curve, 45°	AT2040-0250 UL-certified	AT2040-0250-0002 UL-certified		
	AT2041-0250 with feed, not UL-certified	AT2041-0250-0002 with feed, not UL-certified		
	AT2041-0250-0003 with feed, UL-certified	AT2041-0250-0004 with feed, UL-certified		
Positive curve, 22.5°	AT2020-0250 UL-certified	AT2020-0250-0002 UL-certified		
	AT2021-0250-0003 with feed, UL-certified	AT2021-0250-0004 with feed, UL-certified		
Negative curve, -22.5°	AT2025-0250 UL-certified	AT2025-0250-0002 UL-certified		
	AT2026-0250-0003 with feed, UL-certified	AT2026-0250-0004 with feed, UL-certified		

Movers

	Standard Mover	Mover 1	Hygienic Mover	Mover 1
6 rollers	AT9011-0050-0550 length 50 mm	AT9011-0050-1550 length 50 mm	ATH9011-0075-0550 stainless steel mover, length 75 mm	ATH9011-0075-1550 stainless steel mover, length 75 mm
	AT9011-0070-0550 length 70 mm	AT9011-0070-1550 length 70 mm	ATH9013-0075-0550 aluminum mover, length 75 mm	ATH9013-0075-1550 aluminum mover, length 75 mm
12 rollers	AT9012-0050-0550 length 50 mm	AT9012-0050-1550 length 50 mm		



Standard
guide rails



Hygienic
guide rails



Standard
starter kits

Guide rails

	Standard	Hygienic
Straight	AT9000-xxxx length 250...2500 mm, without lock	ATH9000-xxxx length 250...2000 mm, without lock
	AT9100-xxxx length 250...2500 mm, with lock	ATH9100-xxxx length 500...2000 mm, with lock
		ATH9200-xxxx length 250...2000 mm, connector, without lock
Positive curve, 180°	AT9020-2250 length 2250 mm, for 22.5° motor module ⁽¹⁾	
	AT9040-1250 length 1250 mm, for 45° motor module ⁽¹⁾	
	AT9050-0500 length 500 mm, for 180° motor module ⁽²⁾	ATH9050-0500-0075 length 500 mm, for 180° motor module
Positive curve, 90°	AT9040-0750 length 750 mm, for 45° motor module ⁽¹⁾	
Positive curve, 45°	AT9040-0500 length 500 mm, for 45° motor module ⁽¹⁾	
Positive curve, 22.5°	AT9020-0500 length 500 mm, for 22.5° motor module ⁽¹⁾	
Negative curve, -22.5°	AT9025-0500 length 500 mm, for -22.5° motor module ⁽¹⁾	
Positive curve, 360°	AT9142-2000 length 2000 mm, for 45° motor module ⁽¹⁾	

Starter kits

	Mover 70 mm length
Small	AT2000-0500-0070
Medium	AT2000-1000-0070
Large	AT2000-1500-0070

⁽¹⁾Suitable for mover type AT9011-0050-0550. For mover AT9011-0070-0550, add -0070 to the order specification.

⁽²⁾Suitable for mover types AT9011-0050-0550 and AT9012-0050-0550. For mover AT9011-0070-0550, add -0070 to the order specification.

The Automation Company

Beckhoff offers comprehensive system solutions in numerous performance classes for all areas of automation. The control technology is exceptionally scalable – from high-performance Industrial PCs to mini-PLCs – and can be adapted precisely to application-specific requirements. TwinCAT automation software integrates real-time control with PLC, NC and CNC functions in a single feature-filled package.

► www.beckhoff.com/Automation

Efficient engineering

- integration into Microsoft Visual Studio®
- wide selection of programming languages: IEC 61131-3, C/C++, MATLAB®/Simulink®, Safety C/FBD
- modular software development
- automatic code generation interface
- link to source code control systems

High performance

- cycle times from 50 µs
- multi-core support
- support of 32-bit and 64-bit operating systems
- pre-emptive multitasking

Connectivity

- useable with all fieldbus systems
- open and expandable for IT trends – today and tomorrow
- adheres to industry-specific and standard protocols
- ideal for IoT and cloud computing applications

► www.beckhoff.com/TwinCAT3





TwinCAT 3 86

- one software platform for engineering and runtime
- integrated real-time support
- software modules for PLC, NC, CNC, robotics, HMI, measurement technology, analytics, safety, machine vision, machine learning

TwinCAT 2 92

- open, compatible PC hardware
- embedded IEC 61131-3 software PLC, software NC and software CNC
- connection to all common fieldbuses

TwinSAFE 96

- integrated safety system from I/Os to drives
- compact safety PLC
- certified for solutions up to IEC 61508 SIL 3 and DIN EN ISO 13849-1:2008 PL e
- safety engineering integrated into TwinCAT 3

► www.beckhoff.com/TwinCAT2

► www.beckhoff.com/TwinSAFE



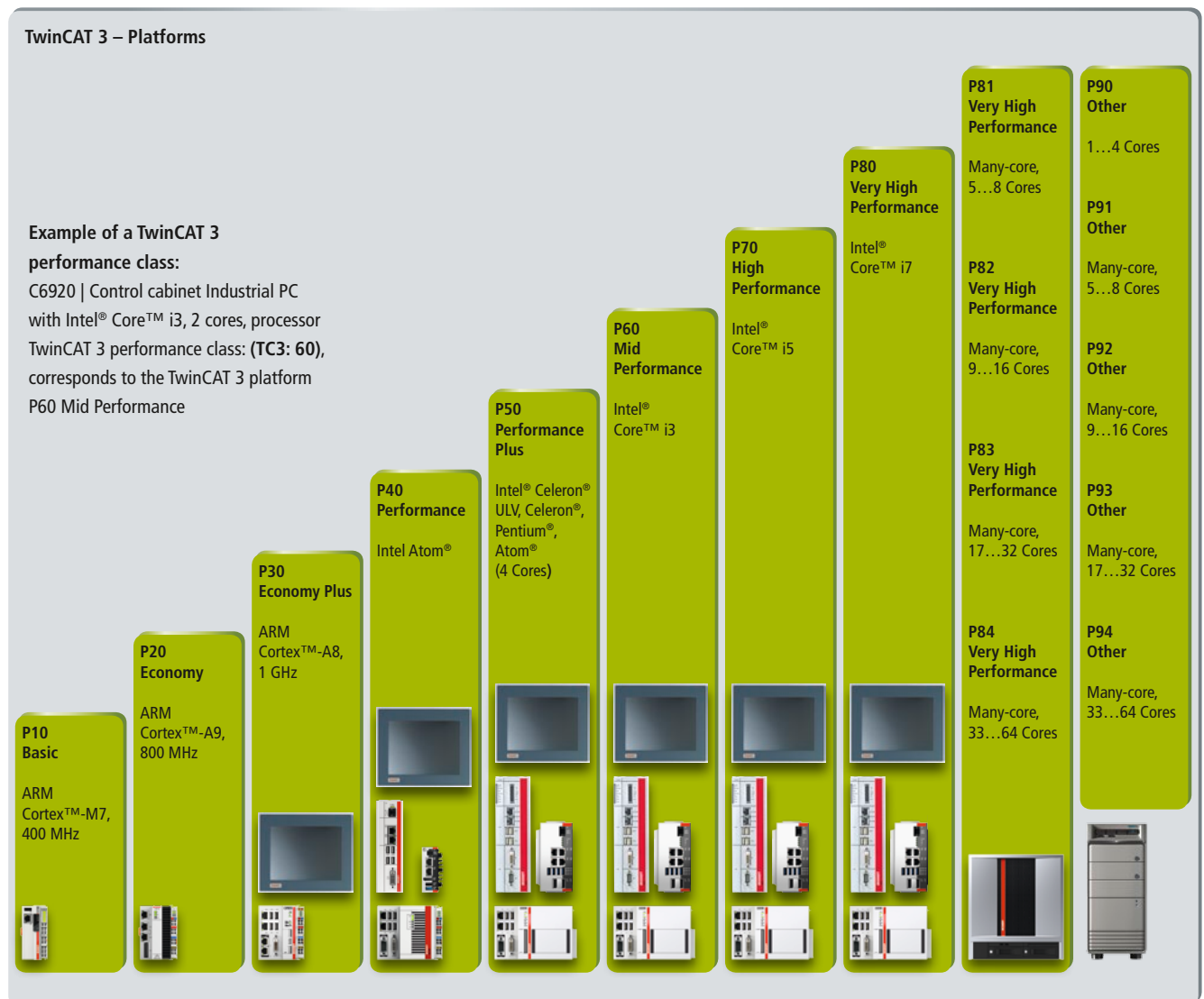
- efficient, universal engineering
- programming in different languages
- Open, hardware-independent control system gives freedom of choice in terms of automation and control components.
- scalable control platform from single- to multi-core CPUs
- all control functions on a single, centralized platform: PLC, motion control, robotics, measurement technology, a.o.

TwinCAT 3

► www.beckhoff.com/TwinCAT3

The TwinCAT 3 runtime components are available for different platforms. The platform levels correspond to the various TwinCAT 3 performance classes of the Beckhoff PCs. The TwinCAT 3 performance class of a Beckhoff PC depends on the configuration and the technical data of the PC (including the processor).

The following overview shows the various TwinCAT 3 platforms. The controllers integrated in the platform classifications represent sample configurations. The TwinCAT 3 performance class required for a TwinCAT 3 Runtime component can be found in the product description of the respective Beckhoff PC.



The controllers integrated in the platform categorization are only example configurations.

TwinCAT 3 – eXtended Automation Engineering (XAE)

TwinCAT 3 – eXtended Automation Runtime (XAR)

Base

TC1270 | TC3 PLC/NC PTP 10/NC I/CNC
 TC1260 | TC3 PLC/NC PTP 10/NC I
 TC1250 | TC3 PLC/NC PTP 10
 TC1200 | TC3 PLC
 TC1100 | TC3 I/O
 TC1000 | TC3 ADS

TC1220 | TC3 PLC/C++/MATLAB®/Simulink®
 TC1210 | TC3 PLC/C++
 TC1100 | TC3 I/O
 TC1000 | TC3 ADS

TC1320 | TC3 C++/MATLAB®/Simulink®
 TC1300 | TC3 C++
 TC1100 | TC3 I/O
 TC1000 | TC3 ADS

Functions

TF1xxx | System

TF5xxx | Motion

TF2xxx | HMI

TF6xxx | Connectivity

TF3xxx | Measurement

TF7xxx | Vision

TF4xxx | Controller

TF8xxx | Industry specific

TwinCAT 3 is divided into components. The TwinCAT 3 engineering components enable the configuration, programming and debugging of applications. The TwinCAT 3 runtime consists of further components – basic components and functions. The basic components can be extended by functions.

TwinCAT 3 | Engineering

TE1000	TC3 Engineering	TwinCAT 3 engineering environment
TE1010	TC3 Realtime Monitor	tool for precise diagnostics and optimization of the runtime behavior of tasks in the TwinCAT 3 runtime
TE1111	TC3 EtherCAT Simulation	easy configurations of simulation environments with several EtherCAT slaves
TE1120	TC3 XCAD Interface	transfer of existing engineering results from ECAD tools
TE1130	TC3 CAD Simulation Interface	link between TwinCAT and a 3D CAD system for SiL simulation i
TE1200	TC3 PLC Static Analysis	analysis tool that tests PLC software on the basis of coding rules
TE1300	TC3 Scope View Professional	software oscilloscope for the graphical display of data captured from several target systems
TE1310	TC3 Filter Designer	graphic engineering tool for determining coefficient digital filters
TE1400	TC3 Simulink® Target	TwinCAT target for Simulink® for generating TwinCAT 3 modules
TE1401	TC3 MATLAB® Target	TwinCAT target for MATLAB® for generating TwinCAT 3 modules i
TE1410	TC3 MATLAB®/Simulink® Interface	communication interface between MATLAB®/Simulink® and the TwinCAT 3 runtime
TE1420	TC3 Target for FMI	interface for simulation tools that support the Functional Mockup Interface (FMI) i
TE1500	TC3 Valve Diagram Editor	graphical tool for designing the characteristic curve of a hydraulic valve
TE1510	TC3 Cam Design Tool	graphic design tool for electronic cam plates
TE1610	TC3 EAP Configurator	a tool for visualizing and configuring communication networks, in which data exchange based on the EtherCAT Automation Protocol (EAP) takes place or is to be established
TE2000	TC3 HMI Engineering	tool for developing platform-independent user interfaces
TE3500	TC3 Analytics Workbench	complete solution for 24/7 monitoring of machines and systems incl. visualization on analysis dashboards
TE3520	TC3 Analytics Service Tool	process data analysis tool for commissioning and service technicians
TE5910	TC3 Motion Designer	TC3 Motion Designer for drive dimensioning
TE5950	TC3 Drive Manager 2	for commissioning the AX8000 multi-axis servo system or the I/O components EL72xx, EP72xx and EJ72xx

TwinCAT 3 | Base

TC1000	TC3 ADS	TwinCAT 3 ADS
TC1100	TC3 I/O	TwinCAT 3 I/O
TC1200	TC3 PLC	TwinCAT 3 PLC
TC1210	TC3 PLC/C++	TwinCAT 3 PLC and C++
TC1220	TC3 PLC/C++/MATLAB®/Simulink®	TwinCAT 3 PLC, C++ and modules generated in MATLAB®/Simulink®
TC1250	TC3 PLC/NC PTP 10	TwinCAT 3 PLC and NC PTP 10
TC1260	TC3 PLC/NC PTP 10/NC I	TwinCAT 3 PLC, NC PTP 10 and NC I
TC1270	TC3 PLC/NC PTP 10/NC I/CNC	TwinCAT 3 PLC, NC PTP 10, NC I and CNC
TC1275	TC3 PLC/NC PTP 10/NC I/CNC E	TwinCAT 3 PLC, NC PTP 10, NC I and CNC E
TC1300	TC3 C++	TwinCAT 3 C++
TC1320	TC3 C++/MATLAB®/Simulink®	TwinCAT 3 C++ and modules generated in MATLAB®/Simulink®

TwinCAT 3 | Functions

System

TF1800	TC3 PLC HMI	stand-alone tool for displaying visualizations from the PLC development environment
TF1810	TC3 PLC HMI Web	display of visualizations from the PLC development environment in a web browser
TF1910	TC3 UML	UML (Unified Modeling Language) for modeling of PLC software

HMI

TF2000	TC3 HMI Server	modular web server, includes a client connection and a target connection
TF20xx	TC3 HMI Clients Packs	optional extension of the TC3 HMI Server with up to 100 additional client connections
TF20xx	TC3 HMI Targets Packs	optional extension of the TC3 HMI Server with up to 100 additional control systems
TF2110	TC3 HMI OPC UA	server extension for access to TwinCAT target systems or other controllers via OPC UA
TF2200	TC3 HMI Extension SDK	software development kit (C++/.NET) for programming application-specific solutions
TF2300	TC3 HMI Scope	software oscilloscope for graphic display of time sequences 

Measurement

TF3300	TC3 Scope Server	data preparation for visual display in the TwinCAT 3 Scope View
TF3500	TC3 Analytics Logger	The TwinCAT Analytics Logger enables the cyclic archiving of the process image.
TF3510	TC3 Analytics Library	PLC library used for online or offline analysis in the PLC runtime of the TwinCAT Analytics Workbench
TF3520	TC3 Analytics Storage Provider	IoT client: interface to one or more storage facilities for raw and analysis data from various sources
TF3550	TC3 Analytics Runtime	runtime "container" for the Analytics application, which was configured and developed in the Analytics Workbench
TF356x	TC3 Analytics Controller Packs	extension of the TC3 Analytics Workbench for the analysis of up to 128 additional controllers
TF3600	TC3 Condition Monitoring Level 1	PLC library for the implementation of condition monitoring for machines
TF3601	TC3 Condition Monitoring Level 2	expanded PLC library for the implementation of condition monitoring for machines 
TF3650	TC3 Power Monitoring	TwinCAT Power Monitoring PLC library
TF3680	TC3 Filter	PLC library for implementing digital filters
TF3800	TC3 Machine Learning Inference Engine	execution module of trained classical machine learning algorithms 
TF3810	TC3 Neural Network Inference Engine	execution module of trained neural networks 
TF3900	TC3 Solar Position Algorithm	precise calculation of the sun's position

Controller

TF4100	TC3 Controller Toolbox	basic controllers (P, I, D), complex controllers (PI, PID), pulse width modulation, ramps, signal generators and filters
TF4110	TC3 Temperature Controller	temperature control for monitoring and controlling different temperature ranges
TF4500	TC3 TwinCAT Speech	enables the multilingual input and output of queries or information implemented in an industrially compatible way 

Motion

TF5000	TC3 NC PTP 10 Axes	NC PTP (point-to-point movements) for up to 10 axes
TF5010	TC3 NC PTP Axes Pack 25	extension of TwinCAT 3 NC PTP to up to 25 axes
TF5020	TC3 NC PTP Axes Pack unlimited	extension of TwinCAT 3 NC PTP to over 25 axes
TF5050	TC3 NC Camming	using the TwinCAT NC cam plate functionality (table coupling)
TF5055	TC3 NC Flying Saw	implementing flying saw functionality
TF5060	TC3 NC FIFO Axes	implementation of a pre-defined user setpoint generator for an NC axis
TF5065	TC3 Motion Control XFC	high-precision logging and switching of digital signals in relation to axis positions

TwinCAT 3 | Functions

Motion

TF5100	TC3 NC I	NC I with 3 interpolating axes and 5 additional axes
TF5110	TC3 Kinematic Transformation L1	realization of different kinematic transformations Level 1
TF5111	TC3 Kinematic Transformation L2	realization of different kinematic transformations Level 2
TF5112	TC3 Kinematic Transformation L3	realization of different kinematic transformations Level 3
TF5113	TC3 Kinematic Transformation L4	realization of different kinematic transformations Level 4
TF5120	TC3 Robotics mxAutomation	direct communication between the PLC and the KUKA KR C4 robot control
TF5130	TC3 Robotics uniVAL PLC	direct communication between the PLC and the CS8C robotics controller from Stäubli
TF5200	TC3 CNC	CNC path control software
TF5210	TC3 CNC E	CNC path control software export version
TF5220	TC3 CNC Axes Pack	extension to up to a total of 64 axes/controlled spindles, of which a maximum of 32 can be path axes and a maximum of 12 can be controlled spindles
TF5225	TC3 CNC Measurement	optional package of CNC cycles that supports the measurement of tools or workpieces directly on the machine
TF5230	TC3 CNC Channel Pack	further CNC channel, extension to a maximum of 12 channels, channel synchronization, axis transfer between channels
TF5240	TC3 CNC Transformation	transformation functionality (5-axis functionality)
TF5245	TC3 CNC Kinematic Optimization	optional CNC package that optimizes the determination of kinematic parameters for rotary axes in 5-axis kinematics
TF5250	TC3 CNC HSC Pack	extending the CNC with HSC technology (high-speed cutting)
TF5260	TC3 CNC Spline Interpolation	path programming via splines with programmable spline type, Akima-spline, B-spline
TF5270	TC3 CNC Virtual NCK Basis	virtual TwinCAT CNC for simulation in a Windows environment
TF5271	TC3 CNC Virtual NCK Options	virtual TwinCAT CNC for simulation in a Windows environment
TF5280	TC3 CNC Volumetric Compensation	extension for compensating geometric machine errors based on an ISO-standardized parametric model
TF5290	TC3 CNC Cutting Plus	technology package for extending the CNC functionality for cutting operations
TF5410	TC3 Motion Collision Avoidance	collision avoidance and controlled accumulation when operating a number of linearly and/or translationally dependent axes with TC3 NC PTP
TF5420	TC3 Motion Pick-and-Place	for handling tasks carried out by gantry robots and other kinematics
TF5800	TC3 Digital Cam Server	fast cam controller with monitoring for various fieldbuses 
TF5810	TC3 Hydraulic Positioning	algorithms for control and positioning of hydraulic axes
TF5850	TC3 XTS Extension	decouples servo algorithms from the hardware and calculates them centrally
TF5890	TC3 XPlanar	calculation of the mover position, precise position control, as well as monitoring and diagnostics

Connectivity

TF6010	TC3 ADS Monitor	recording and diagnostics functions for the communication of TwinCAT systems
TF6020	TC3 JSON Data Interface	interface for the exchange of data in JSON format between the TwinCAT system and custom applications 
TF6100	TC3 OPC UA	access to TwinCAT in accordance with OPC UA with UA server (DA/HA/AC) and UA client (DA)
TF6120	TC3 OPC DA	access to TwinCAT variables, in accordance with OPC DA and OPC XML DA specification
TF6220	TC3 EtherCAT Redundancy 250	extension of the TwinCAT EtherCAT master with cable redundancy capability for up to 250 slaves
TF6221	TC3 EtherCAT Redundancy 250+	extension of the TwinCAT EtherCAT master with cable redundancy capability for more than 250 slaves
TF6225	TC3 EtherCAT External Sync	extension of the TwinCAT EtherCAT master with an option to synchronize the Beckhoff real-time communication with external signals
TF6250	TC3 Modbus TCP	communication with Modbus TCP devices (server and client functionality)
TF6255	TC3 Modbus RTU	serial communication with Modbus end devices
TF6270	TC3 PROFINET RT Device	communication via PROFINET (PROFINET slave)
TF6271	TC3 PROFINET RT Controller	communication via PROFINET (PROFINET master)
TF6280	TC3 Ethernet/IP Slave	communication via EtherNet/IP (EtherNet/IP slave)
TF6281	TC3 Ethernet/IP Master	communication via EtherNet/IP (EtherNet/IP master)



TwinCAT 3 | Functions

Connectivity

TF6300	TC3 FTP	easy access from TwinCAT PLC to FTP server
TF6310	TC3 TCP/IP	communication via generic TCP/IP server
TF6311	TC3 TCP/UDP Realtime	direct access from real-time to Ethernet communication
TF6340	TC3 Serial Communication	communication via serial Bus Terminals or PC COM ports with the 3964R and RK512 protocol
TF6350	TC3 SMS/SMTP	sending SMS and e-mails from the PLC
TF6360	TC3 Virtual Serial COM	virtual serial COM driver for Windows platforms
TF6420	TC3 Database Server	accessing databases from the PLC
TF6421	TC3 XML Server	read and write access to XML files from the PLC
TF6500	TC3 IEC 60870-5-10x	communication according to IEC 60870-101, -102, -103, -104
TF6510	TC3 IEC 61850/IEC 61400-25	communication according to IEC 61850 and IEC 61400-25 
TF6600	TC3 RFID Reader Communication	connection of RFID readers to the TwinCAT PLC
TF6610	TC3 S5/S7 Communication	communication with S5/S7 controllers
TF6650	TC3 DBC File Import for CAN	reading of DBC file formats 
TF6701	TC3 IoT Communication (MQTT)	provides basic publisher/subscriber-based data connectivity via MQTT
TF6710	TC3 IoT Functions	provides connectivity for cloud-based communication services
TF6720	TC3 IoT Data Agent	gateway application for data connectivity between TwinCAT runtime and IoT services
TF672x	TC3 IoT Data Agent Packs	extension of the TC3 IoT Data Agent for up to 256 additional ADS target runtimes or OPC UA namespaces
TF6730	TC3 IoT Communicator	sends process data and push notifications from TwinCAT to smartphones and tablets through a messaging service
TF6735	TC3 IoT Communicator App	smartphone and tablet app to receive and visualize live data and push notifications sent from TwinCAT
TF6760	TC3 IoT HTTPS/REST	basic functions for HTTP/HTTPS communication in the form of a PLC library providing the ability to address REST APIs as a client

Vision

TF700x	TC3 GigE Vision Connector	interface for the configuration and integration of GigE Vision cameras directly into TwinCAT
TF7100	TC3 Vision Base	extensive PLC library with a large number of widely varying functions and algorithms for solving image processing tasks
TF7200	TC3 Vision Matching 2D	extension to find and compare objects based on learned references, contours, feature points or other properties
TF7250	TC3 Vision Code Reading	functions for reading various 1D and 2D codes
TF7300	TC3 Vision Metrology 2D	detection of edges, holes and circular arcs as well as the determination of lengths, distances, diameters, angles and coordinates, all with sub-pixel accuracy

Industry specific

TF8000	TC3 HVAC	library covering all technical systems in building automation
TF8010	TC3 Building Automation Basic	executing basic room automation functions
TF8020	TC3 BACnet	communication with data networks of building automation and building control systems
TF8040	TC3 Building Automation	software package covering all technical building automation services
TF8050	TC3 Lighting Solution	software package for simple commissioning of DALI lighting controllers
TF8310	TC3 Wind Framework	framework for the development of operational management software for wind turbines
TF8810	TC3 AES70 (OCA)	communication library for the operation of a system as an OCA (Open Control Architecture) controller or OCA device in an OCA network

TwinCAT 2

► www.beckhoff.com/TwinCAT2

TX1200 TwinCAT PLC	
PC hardware	standard PC/IPC hardware, no extras
Operating systems	Windows 7/10, Windows CE*
Real-time	Beckhoff real-time kernel
I/O system	EtherCAT, Lightbus, PROFIBUS DP/MC, Interbus, CANopen, DeviceNet, SERCOS, Ethernet
Runtime system	4 multi-tasking PLCs each with 4 tasks in each PLC runtime system, development and runtime systems on one PC or separately (CE: only runtime)
Memory	process image size, flags area, program size, POU size, number of variables only limited by the size of the user memory (max. 2 GB with NT/2000/XP/Vista)
Cycle time	adjustable from 50 µs
Link time	1 µs (Intel® Core™ 2 Duo)
Programming	IEC 61131-3: IL, FBD, LD, SFC, ST, powerful library management, convenient debugging

TX1100 TwinCAT I/O	
PC hardware	standard PC/IPC hardware, no extras
Operating systems	Windows 7/10, Windows CE*
Real-time	Beckhoff real-time kernel

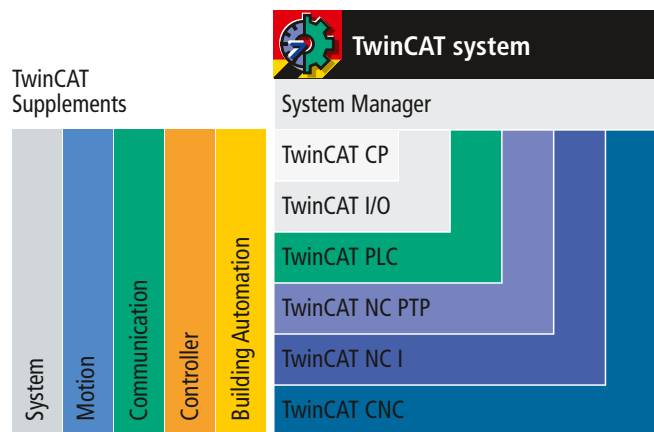
Multi-purpose I/O interface for all common fieldbus systems, PC Fieldbus Cards and interfaces with integrated real-time driver

TX1250 TwinCAT NC PTP	
TwinCAT PLC	inclusive
PC hardware	standard PC/IPC hardware, no extras
Operating systems	Windows 7/10, Windows CE*
Real-time	Beckhoff real-time kernel
I/O system	EtherCAT, Lightbus, PROFIBUS DP/MC, Interbus, CANopen, DeviceNet, SERCOS, Ethernet
Programming	performed using function blocks for TwinCAT PLC according to IEC 61131-3 (standardized PLCopen Motion Control libraries), convenient axis commissioning menus in the System Manager
Runtime system	NC point-to-point including TwinCAT PLC
Number of axes	up to 255
Axis types	electrical and hydraulic servo drives, frequency converter drives, stepper motor drives, switched drives (fast/crawl axes)
Cycle time	50 µs upwards, typically 1 ms (selectable)
Axis functions	standard axis functions: start/stop/reset/reference, velocity override, special functions: master/slave cascading, cam plates, electronic gearings, online distance compensation of segments, flying saw

TX1000 TwinCAT CP	
PC hardware	standard PC/IPC hardware, no extras
Operating systems	Windows 7/10, Windows Embedded WES2009/WES7*
Real-time	Beckhoff real-time kernel

Windows driver for Beckhoff Control Panel

*Version-dependent/older operating system versions are available on request from our service department.



TX1260 TwinCAT NC I	
TwinCAT PLC	inclusive
TwinCAT NC PTP	inclusive
PC hardware	standard PC/IPC hardware, no extras
Operating systems	Windows 7/10, Windows CE*
Real-time	Beckhoff real-time kernel
I/O system	EtherCAT, Lightbus, PROFIBUS DP/MC, Interbus, CANopen, DeviceNet, SERCOS, Ethernet
Programming	DIN 66025 programs for NC interpolation, access via function blocks from TwinCAT PLC according to IEC 61131-3
Runtime system	NC interpolation, including TwinCAT NC PTP and PLC
Number of axes	max. 3 axes and up to 5 auxiliary axes per group, 1 group per channel, max. 31 channels
Axis types	electrical servo axes, stepper motor drives
Interpreter functions	subroutines and jumps, programmable loops, zero shifts, tool compensations, M and H functions
Geometries	straight lines and circular paths in 3D space, circular paths in all main planes, helices with base circles in all main planes linear, circular, helical interpolation in the main lanes and freely definable planes, Bezier splines, look-ahead function
Axis functions	online reconfiguration of axes in groups, path override, slave coupling to path axes, auxiliary axes, axis error and sag compensation, measuring functions
Operation	automatic operation, manual operation (jog/inching), single block operation, referencing, handwheel operation (motion/superposition)

TS511x TwinCAT NC I Options	
Options	TS511x TwinCAT Kinematic Transformation

TX1270 TwinCAT CNC	
TwinCAT PLC	inclusive
TwinCAT NC PTP	inclusive
TwinCAT NC I	inclusive
PC hardware	standard PC/IPC hardware, no extras
Operating systems	Windows 7/10*
Real-time	Beckhoff real-time kernel
I/O system	EtherCAT, Lightbus, PROFIBUS DP/MC, CANopen, DeviceNet, SERCOS, Ethernet
Programming	DIN 66025 programming language with high-level language extensions, access via function blocks from TwinCAT PLC according to IEC 61131-3
Runtime system	CNC, including TwinCAT NC I, NC PTP, PLC
Number of axes/spindles	8 path axes/controlled spindles, max. of 64 axes/controlled spindles (optional), max. 12 channels (optional)
Axis types	electrical servo-axes, analog/encoder interface via fieldbus, digital interface via fieldbus
Interpreter functions	subroutines and jumps, programmable loops, zero shifts, tool compensations, M and H functions, mathematical functions, programming of parameters/variables, user macros, spindle and help functions, tool functions
Geometries	linear, circular, helical interpolation in the main planes and freely definable planes, max. 32 interpolating path axes per channel, look-ahead function
Axis functions	coupling and gantry axis function, override, axis error and sag compensation, measuring functions
Operation	automatic operation, manual operation (jog/inching), single block operation, referencing, block search, handwheel operation (motion/superposition)

TS52xx TwinCAT CNC Options	
Options	TS5220 TwinCAT CNC Axes Pack
	TS5230 TwinCAT CNC Channel Pack
	TS5240 TwinCAT CNC Transformation
	TS5250 TwinCAT CNC HSC Pack
	TS5260 TwinCAT CNC Spline Interpolation

TwinCAT 2 Supplements | System

TS1010	TwinCAT Eventlogger	alarm and diagnostic system for logging events which occur in the TwinCAT system
TS1110	TwinCAT Simulation Manager	simplified preparation and configuration of a simulation environment
TS1120	TwinCAT ECAD Import	importing engineering results from an ECAD program
TS1140	TwinCAT Management Server	central administration of Beckhoff CE control systems
TS1150	TwinCAT Backup	backing up and restoring files, operating system and TwinCAT settings
TS1600	TwinCAT Engineering Interface Server	co-ordinating programming tasks via a central source code management system
TS1800	TwinCAT PLC HMI	displaying visualizations created in PLC Control
TS1800-0030	TwinCAT PLC HMI CE	displaying visualizations created in PLC Control on Windows CE platforms
TS1810	TwinCAT PLC HMI Web	displaying visualizations created in PLC Control in a web browser
TS3300	TwinCAT Scope 2	graphical analysis tool for displaying time-continuous signals
TS3900	TwinCAT Solar Position Algorithm	precise calculation of the sun's position
TS622x	TwinCAT EtherCAT Redundancy	extension of the TwinCAT EtherCAT master with cable redundancy capability
TS6420	TwinCAT Database Server	accessing databases from the PLC
TS6420-0030	TwinCAT Database Server CE	accessing databases from the PLC for Windows CE platforms
TS6421	TwinCAT XML Data Server	reading and writing of XML-based data by the PLC
TS6421-0030	TwinCAT XML Data Server CE	reading and writing of XML-based data by the PLC for Windows CE platforms

TwinCAT 2 Supplements | Controller

TS4100	TwinCAT PLC Controller Toolbox	modules for basic controllers (P, I, D), complex controllers (PI, PID), pulse width modulation, ramps, signal generators and filters
TS4110	TwinCAT PLC Temperature Controller	instanced temperature control function block for monitoring and controlling different temperature ranges

TwinCAT 2 Supplements | Motion

TS1500	TwinCAT Valve Diagram Editor	graphical tool for designing the characteristic curve of a hydraulic valve
TS1510	TwinCAT Cam Design Tool	graphic design tool for electronic cam plates
TS5050	TwinCAT NC Camming	using the TwinCAT NC cam plate functionality (table coupling)
TS5055	TwinCAT NC Flying Saw	implementing flying saw functionality
TS5060	TwinCAT NC FIFO Axes	implementation of a pre-defined user setpoint generator for an NC axis
TS5065	TwinCAT PLC Motion Control XFC	high-precision logging and switching of digital signals in relation to axis positions
TS5066	TwinCAT PLC Remote Synchronization	remote synchronization
TS511x	TwinCAT Kinematic Transformation	implementation of different kinematic transformations for TwinCAT PTP or TwinCAT NC I
TS5800	TwinCAT Digital Cam Server	software implementation of fast cam controller
TS5810	TwinCAT PLC Hydraulic Positioning	control and adjustment of hydraulic axes

TwinCAT 2 Supplements | Communication

TS6100	TwinCAT OPC UA Server	access to TwinCAT in accordance with OPC UA with UA server (DA/HA/AC) and UA client (DA)
TS6100-0030	TwinCAT OPC UA Server CE	access to TwinCAT in accordance with OPC UA with UA server (DA/HA/AC) and UA client (DA) for Windows CE platforms
TS6120	TwinCAT OPC Server	access to TwinCAT variables in accordance with the OPC DA/OPC XML DA specification
TS6250	TwinCAT Modbus TCP Server	communication with Modbus TCP devices (server and client functionality)
TS6250-0030	TwinCAT Modbus TCP Server CE	communication with Modbus TCP devices (server and client functionality) for Windows CE platforms
TS6255	TwinCAT PLC Modbus RTU	serial communication with Modbus end devices
TS6270	TwinCAT PROFINET RT Device	TwinCAT PROFINET RT device turns every PC-based controller into a PROFINET RT device.
TS6271	TwinCAT PROFINET RT Controller	TwinCAT PROFINET RT controller turns every PC-based controller into a PROFINET RT controller.
TS6280	TwinCAT EtherNet/IP Slave	TwinCAT EtherNet/IP slave turns every PC-based controller into an EtherNet/IP slave.
TS6300	TwinCAT FTP Client	basic access from TwinCAT PLC to FTP server
TS6310	TwinCAT TCP/IP Server	communication via generic TCP servers
TS6310-0030	TwinCAT TCP/IP Server CE	communication via generic TCP servers for Windows CE platforms
TS6340	TwinCAT PLC Serial Communication	communication via serial Bus Terminals or PC COM ports
TS6341	TwinCAT PLC Serial Communication 3964R/RK512	communication via serial Bus Terminals or PC COM ports with the 3964R and RK512 protocol
TS6350	TwinCAT SMS/SMTP Server	sending SMS and e-mails from the PLC
TS6350-0030	TwinCAT SMS/SMTP Server CE	sending SMS and e-mails from the PLC for Windows CE platforms
TS6360	TwinCAT Virtual Serial COM Driver	virtual serial COM driver for Windows and Windows CE platforms
TS6370	TwinCAT DriveCOM OPC Server	fieldbus-independent communication connections between the engineering tool and the drive
TS6371	TwinCAT DriveTop Server	configuring Indramat SERCOS drives with DriveTop software on TwinCAT systems
TS650x	TwinCAT PLC IEC 60870-5-101, -102, -103, -104 Master	implementation of IEC 60870-101, -102, -103 and -104 masters
TS650x-0030	TwinCAT PLC IEC 60870-5-104 Master CE	implementation of IEC 60870-104 masters under Windows CE
TS6507	TwinCAT PLC IEC 60870-5-101, -104 Slave	implementation of IEC 60870-101 and -104 slaves
TS6507-0030	TwinCAT PLC IEC 60870-5-104 Slave CE	implementation of IEC 60870-104 slaves under Windows CE
TS6509	TwinCAT PLC IEC 61400-25 Server	IEC 61400-25 communication
TS6511	TwinCAT PLC IEC 61850 Server	IEC 61850 communication
TS6600	TwinCAT PLC RFID Reader Communication	connection of RFID readers to the TwinCAT PLC
TS6610	TwinCAT PLC S5/S7 Communication	communication with S5/S7 controllers

TwinCAT 2 Supplements | Building Automation

TS8000	TwinCAT PLC HVAC	automation of HVAC and sanitary installations
TS8010	TwinCAT PLC Building Automation Basic	executing basic room automation functions
TS8020	TwinCAT BACnet/IP	communication with the data networks of the building automation and building control systems
TS8035	TwinCAT FIAS Server	communication between TwinCAT PLC and a system using the FIAS standard
TS8036	TwinCAT Crestron Server	communication between a TwinCAT PLC and a Crestron controller
TS8040	TwinCAT Building Automation	software package covering all technical building automation services
TS8100	TwinCAT Building Automation Framework	configuration and commissioning of building automation projects

TwinSAFE

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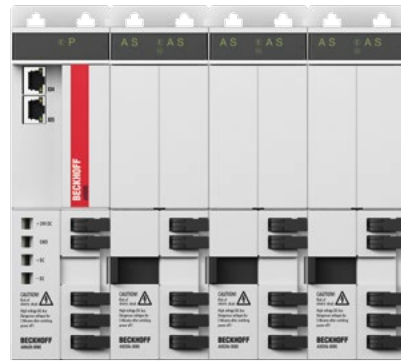


EK1960

TwinSAFE			
Dedicated controller		Integrated controller	
EtherCAT Terminals	EL6900 TwinSAFE Logic	EtherCAT Terminals	EK1960 TwinSAFE Logic, 20 safe inputs, 24 safe outputs
	EL6910 TwinSAFE Logic, PROFIsafe master and slave support		EL1918 TwinSAFE Logic, 8 safe inputs
	EL6930 TwinSAFE Logic, PROFIsafe slave support		EL2911 TwinSAFE Logic, 4 safe inputs, 1 safe output
			EL2912 TwinSAFE Logic, 2 safe outputs
EtherCAT Plug-in Modules	EJ6910 TwinSAFE Logic	EtherCAT Box	EP1918-0002 ⓘ TwinSAFE Logic, 8 safe inputs
			EP1957-0022 TwinSAFE Logic, 8 safe inputs, 4 safe outputs
			EP2918-0032 TwinSAFE Logic, 8 safe outputs
Bus Terminals	KL6904 TwinSAFE Logic, 4 safe outputs	EtherCAT Plug-in Modules	EJ1914 TwinSAFE Logic, 4 safe inputs
			EJ1918 TwinSAFE Logic, 8 safe inputs
			EJ1957 TwinSAFE Logic, 8 safe inputs, 4 safe outputs
			EJ2914 TwinSAFE Logic, 4 safe outputs
			EJ2918 TwinSAFE Logic, 8 safe outputs
		Drive Technology	AX81xx-0100, AX82xx-0100 TwinSAFE Logic, feedback: OCT, TwinSAFE: STO/SSI
			AX81xx-0200, AX82xx-0200 TwinSAFE Logic, feedback: OCT, TwinSAFE: Safe Motion



EJ1914



AX8000

I/O

EtherCAT Terminals

EK1914

4 standard inputs, 4 standard outputs,
2 safe inputs, 2 safe outputs

EK1960

TwinSAFE Logic, 20 safe inputs, 24 safe outputs

EL1904

TwinSAFE, 4 safe inputs

EL1918

TwinSAFE Logic, 8 safe inputs

EL2904

TwinSAFE, 4 safe outputs

EL2911

TwinSAFE Logic, 4 safe inputs, 1 safe output

EL2912

TwinSAFE Logic, 2 safe outputs

EtherCAT Box

EP1908-0002

TwinSAFE, 8 safe inputs

EP1918-0002

TwinSAFE Logic, 8 safe inputs

EP1957-0022

TwinSAFE Logic, 8 safe inputs, 4 safe outputs

EP2918-0032

TwinSAFE Logic, 8 safe outputs

EtherCAT Plug-in Modules

EJ1914

TwinSAFE Logic, 4 safe inputs

EJ1918

TwinSAFE Logic, 8 safe inputs

EJ1957

TwinSAFE Logic, 8 safe inputs, 4 safe outputs

EJ2914

TwinSAFE Logic, 4 safe outputs

EJ2918

TwinSAFE Logic, 8 safe outputs

Bus Terminals

KL1904

TwinSAFE, 4 safe inputs

KL2904

TwinSAFE, 4 safe outputs

KL6904

TwinSAFE Logic, 4 safe outputs

Drive Technology

Option cards

AX5801-0200

drive-integrated safety functions: STO, SS1

AX5805, AX5806

drive-integrated safety functions: STO, SOS, SS1, SS2, SLS,
SSM, SSR, SMS, SLP, SCA, SLI, SAR, SMA, SDIp and SDIn

Axis modules

AX81xx-0100, AX82xx-0100

TwinSAFE Logic, feedback: OCT, TwinSAFE: STO/SS1

AX81xx-0110, AX82xx-0110

TwinSAFE Logic, feedback: OCT, TwinSAFE: STO/SS1 + multi-feedback

AX81xx-0200, AX82xx-0200

TwinSAFE Logic, feedback: OCT, TwinSAFE: Safe Motion

AX81xx-0210, AX82xx-0210

TwinSAFE Logic, feedback: OCT, TwinSAFE: Safe Motion + multi-feedback

Combined power supply and axis modules

AX85xx-0100

TwinSAFE Logic, feedback: OCT, TwinSAFE: STO/SS1

AX85xx-0110

TwinSAFE Logic, feedback: OCT, TwinSAFE: STO/SS1 + multi-feedback

AX85xx-0200

TwinSAFE Logic, feedback: OCT, TwinSAFE: Safe Motion

AX85xx-0210

TwinSAFE Logic, feedback: OCT, TwinSAFE: Safe Motion + multi-feedback

Distributed servo drives

AMP804x, AMP805x

TwinSAFE Logic, TwinSAFE: STO/SS1, standstill torque 2.25...10.75 Nm

Servomotor terminals

EL7201-9014

$I_{ms} = 2.8 \text{ A}$, 50 V DC, OCT, STO

EL7211-9014

$I_{ms} = 4.5 \text{ A}$, 50 V DC, OCT, STO

EL7221-9014

$I_{ms} = 7...8 \text{ A}$ with ZB8610, 50 V DC, OCT, STO

Servomotor module

EP7211-0034

$I_{ms} = 4.5 \text{ A}$, 50 V DC, OCT, STO

Servomotor output stage

EJ7211-9414

$I_{ms} = 4.5 \text{ A}$, 50 V DC, OCT, STO, TwinSAFE SC

Stepper motor terminal

EL7047-9014

$I_{max} = 5.0 \text{ A}$, 50 V DC, incremental encoder, vector control, STO

Stepper motor module

EP7047-9032

$I_{ms} = 5.0 \text{ A}$, 50 V DC, OCT, STO

DC motor output stage

EL7411-9014

$I_{ms} = 4.5 \text{ A}$, 50 V DC, STO

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