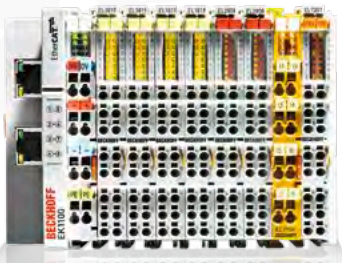
BECKHOFF New Automation Technology

Product Overview | 2018

Industrial PC
Embedded PC



EtherCAT
EtherCAT Terminal
EtherCAT Box
EtherCAT Plug-in Modules
Bus Terminal
Fieldbus Box
Infrastructure Components

Drive Technology

TwinCAT
TwinSAFE

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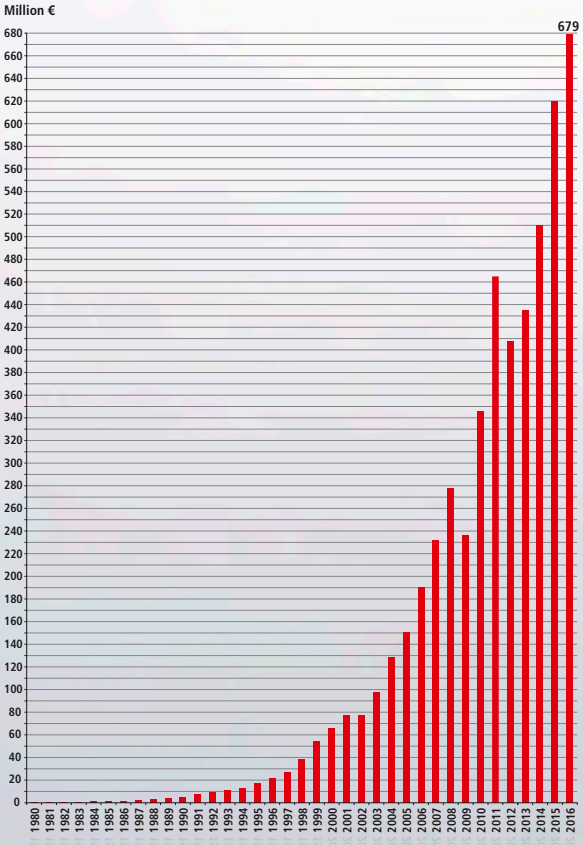
New Automation Technology

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.



Turnover development

Beckhoff Automation

- Headquarters: Verl, Germany
- Sales 2016: **679 million € (+9.5 %)**
- Staff worldwide: **3850**
- Sales Offices Germany: **20**
- Subsidiaries/Branch Offices worldwide: **34**
- Distributors worldwide: **in more than 75 countries**

(as of 11/2017)

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 conceptualised 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 utilising 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 maximises 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

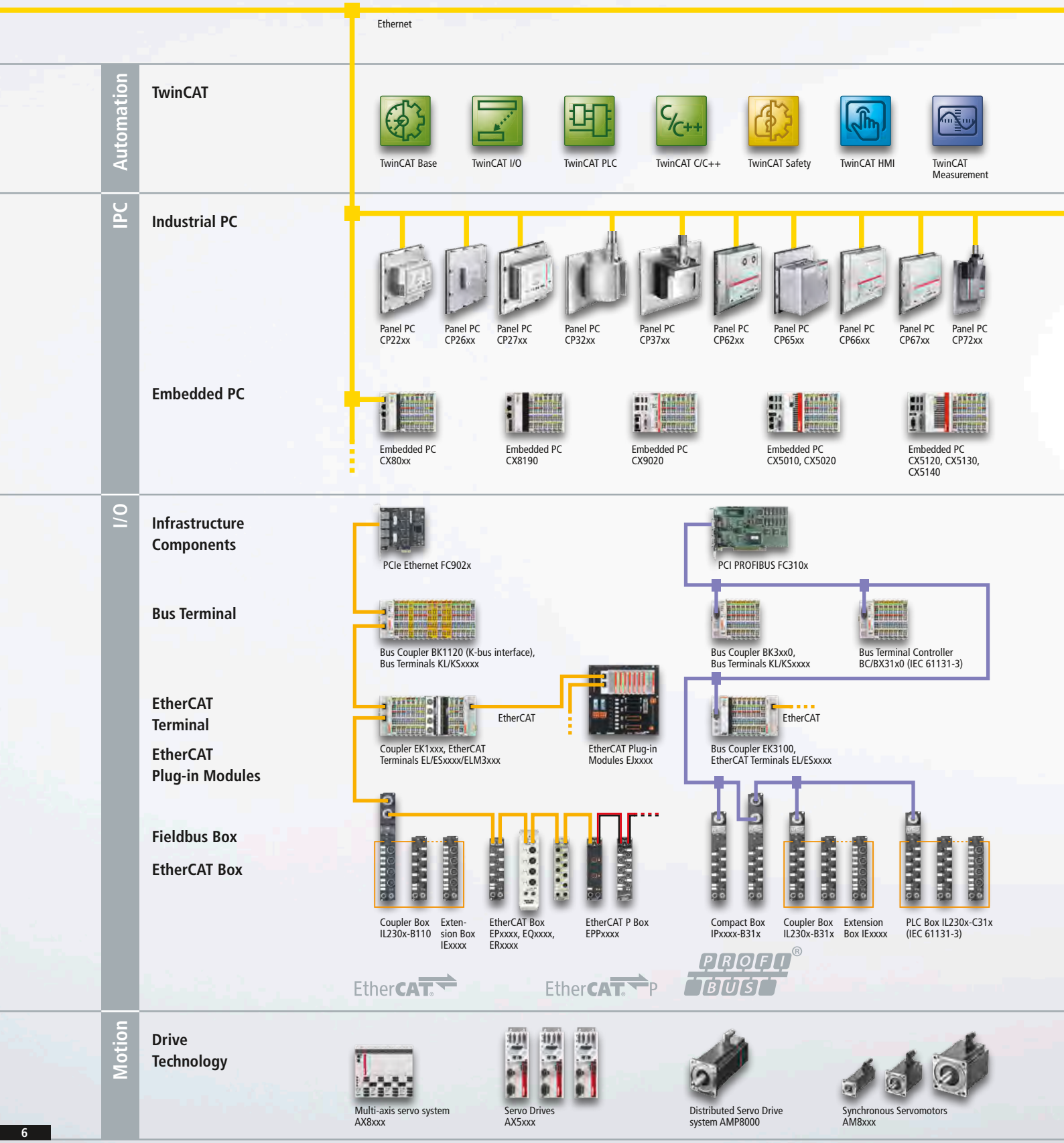
Headquarters **Headquarters distributor**

Subsidiary **Subsidiary distributor**

Worldwide presence on all continents

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.

System overview




TwinCAT Vision


TwinCAT Control


TwinCAT Motion


TwinCAT PTP


TwinCAT NC I


TwinCAT CNC


TwinCAT Robotics


TwinCAT Connectivity


TwinCAT Industrie 4.0


TwinCAT Industry specific


Panel PC CP77xx


Panel PC C36xx


19-inch slide-in PC C5xxx

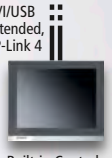

Control cabinet PC C61xx

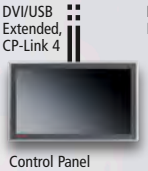

Built-in Industrial PC C65xx


Control cabinet PC C66xx


Control cabinet PC C60xx


Control cabinet PC C69xx


DVI/USB Extended, CP-Link 4
Built-in Control Panel CP29xx


DVI/USB Extended, CP-Link 4
Control Panel CP39xx


DVI/USB Extended
Built-in Control Panel CP69xx


DVI/USB Extended
Control Panel CP79xx


Embedded PC CX2020, CX2030, CX2040


Embedded PC CX2042, CX2062, CX2072


PCIe CANopen FC512x


PCI DeviceNet FC520x


Bus Coupler BK5xx0, Bus Terminals KL/KSxxxx


Bus Terminal Controller BC/BX5xx0 (IEC 61131-3)


Ethernet Switch CU20xx

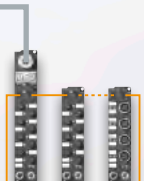

PCIe Ethernet FC902x

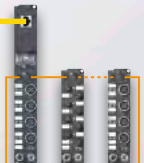

Bus Coupler BK9xx0, Bus Terminal Controller BC/BX9xx0 (IEC 61131-3)


EtherCAT
Bus Coupler EK9000, EtherCAT Terminals EL/ESxxxx


Compact Box IPxxxx-B5x0


Compact Box IPxxxx-B5x8

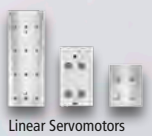

Coupler Box IL230x-B5xx
Extension Box IExxxx


Coupler Box IL230x-B90x, PLC Box IL230x-C900 (IEC 61131-3)

CANopen
DeviceNet
Ethernet TCP/IP

Modbus
LIGHTBUS
RS232
RS485
AS-i
sercos
the automation bus
EtherNet/IP
INTERBUS
PROFINET
MP-BUS
IO-Link
SMI
enocean
DALI
EIB/KNX
LON
DMX
M-Bus
ControlNet
CC-Link


Stainless steel servomotors AM88xx


Linear Servomotors ALxxxx


Compact Drive Technology


XTS | eXtended Transport System

The IPC Company

The Industrial PC (IPC) is the hardware centrepiece 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 12

- 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 13

- 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 14

- 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**

Control cabinet Industrial PC

Embedded PC

Control cabinet Industrial PCs 16

- High computing power
- Industrial-strength housing designs
- Easy installation
- High flexibility in terms of display connections

▶ www.beckhoff.com/Control-cabinet-PC

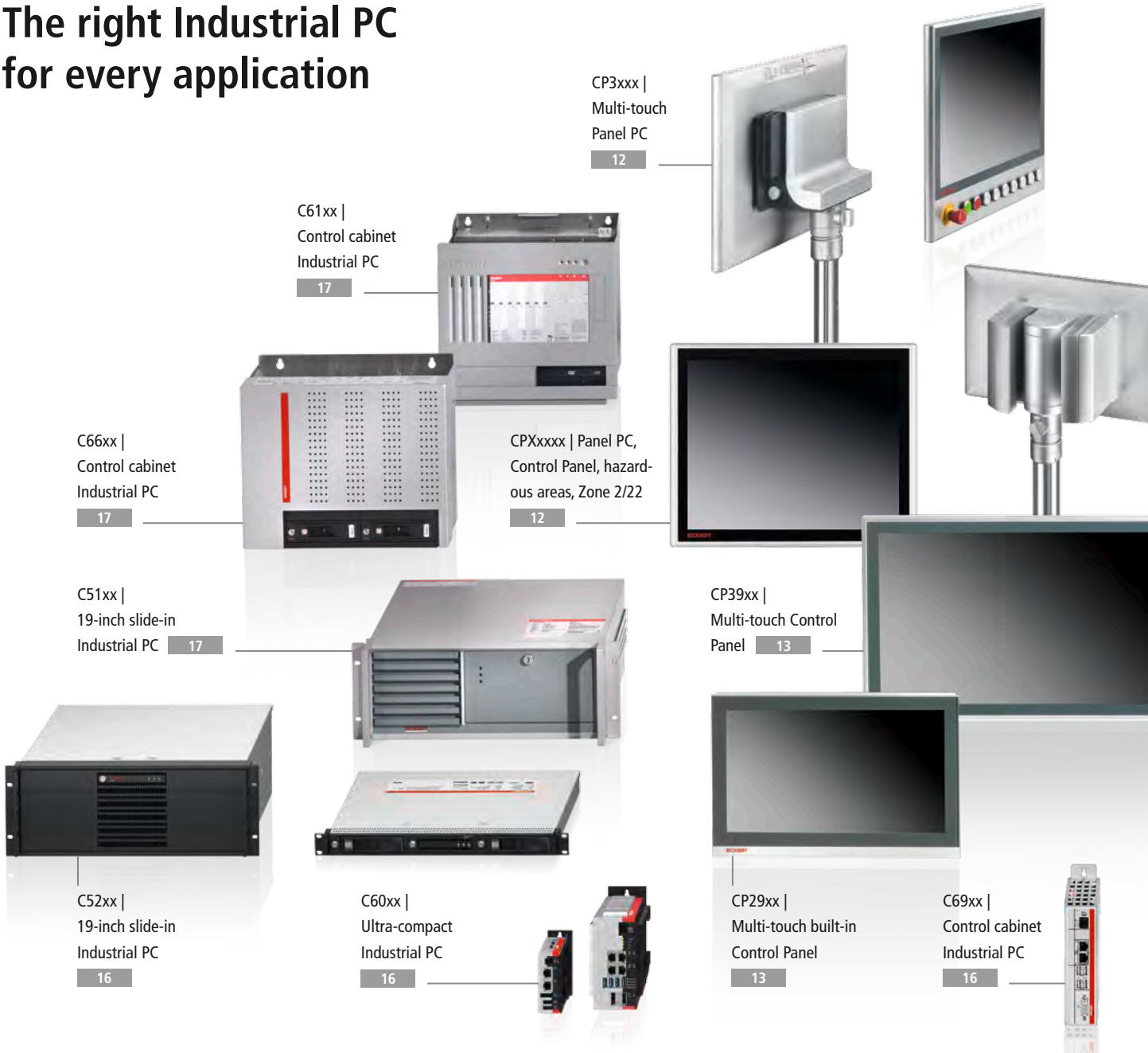
Embedded PCs 20

- Scalable performance range
- Up to 12 cores
- Compact design
- Direct I/O interface
- Modular extension options
- DIN rail mounting

▶ www.beckhoff.com/Embedded-PC

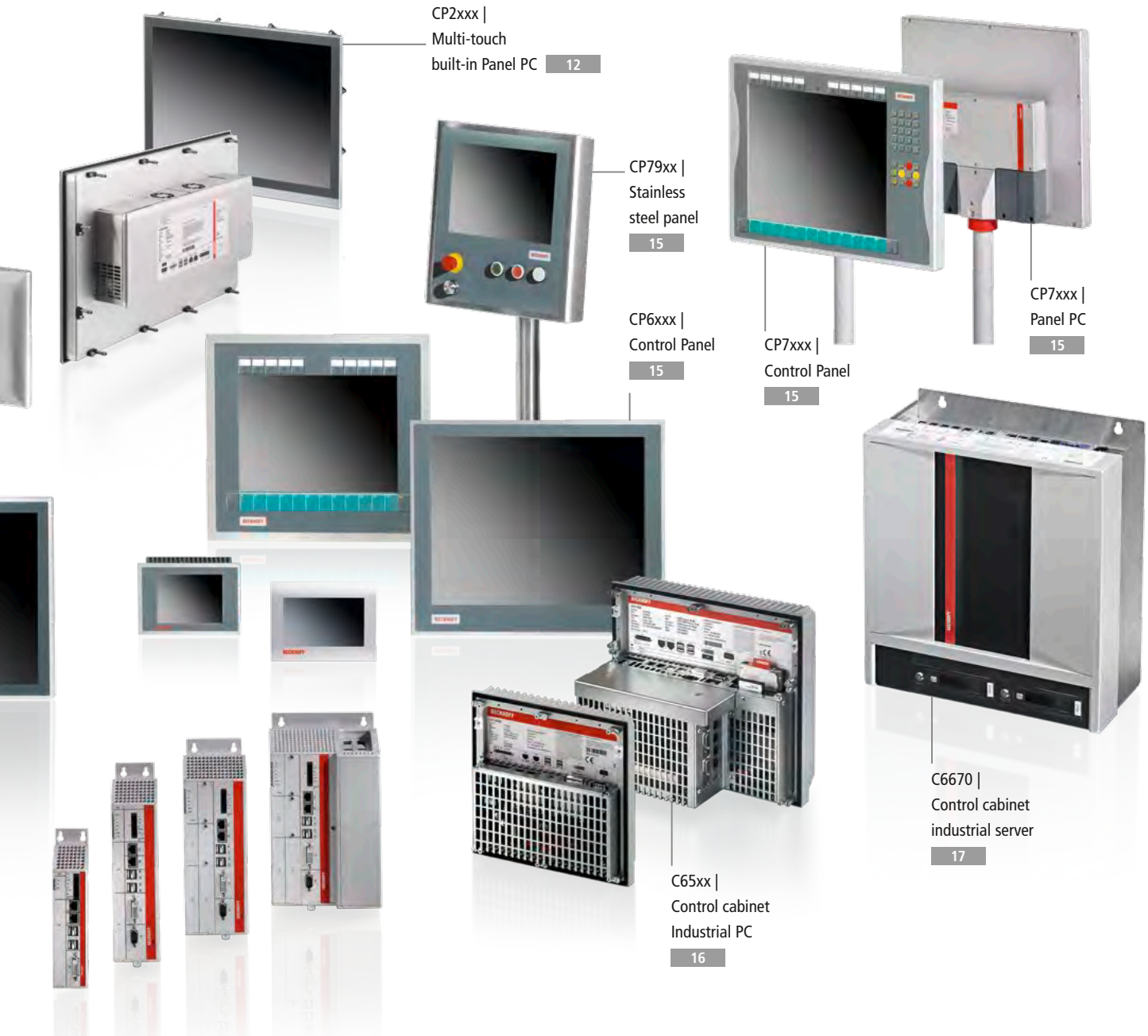
- **Wide variety of device variants of Industrial PCs and Embedded PCs**
- **High-performance PCs, featuring a wide range of processors, from Intel® Celeron® to top of the line Core™ i7 processors**
- **Long-term availability of all Industrial PCs and Embedded PCs**
- **As the inventor of PC-based control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

The right Industrial PC for every application



Industrial PCs

	ATX motherboard Intel® Core™	3½-inch motherboard Intel® Core™	3½-inch motherboard Intel® Atom™/ Celeron® ULV	3½-inch motherboard ARM Cortex™-A8	Control Panels
Multi-touch Panel PCs/Control Panels		CP22xx CP32xx	CP27xx/CPX27xx CP37xx/CPX37xx	CP26xx	CP29xx/CPX29xx CP39xx/CPX39xx
Single-touch Panel PCs/Control Panels	CP65xx C36xx	CP62xx CP72xx	CP67xx CP77xx	CP66xx	CP69xx CP79xx
19-inch slide-in Industrial PCs	C5102 C5240	 C5210			
Control cabinet Industrial PCs	C6140/C6150 C6240/C6250 C6640/C6650	C6515/C6525			
Compact Industrial PCs		C6920/C6930	C6905/C6915 C6925		



Ultra-compact Industrial PCs

Compact motherboard Intel® Atom™	Compact motherboard Intel® Core™
C6015	C6030

Control cabinet industrial server

SSI EEB motherboard 2 x Intel® Xeon®
C6670

Multi-touch Panel PCs

▶ **www.beckhoff.com/multi-touch**

CP22xx

CP26xx

CP27xx

CP32xx

CP37xx

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

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

Multi-touch Panel PCs, all sides IP 65

	Display Resolution Format	7-inch 800 x 480 5:3	12-inch 800 x 600 4:3	15-inch 1024 x 768 4:3	15.6-inch 1366 x 768 16:9	18.5-inch 1366 x 768 16:9	19-inch 1280 x 1024 5:4	21.5-inch 1920 x 1080 16:9	24-inch 1920 x 1080 16:9
CP32xx – up to 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**	**CP3715** **CPX3715** i	**CP3716**	**CP3718**	**CP3719** **CPX3719** i	**CP3721** **CPX3721** i	**CP3724**

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

Multi-touch Control Panels

▶ **www.beckhoff.com/multi-touch**

CP29xx

CP39xx

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

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

Multi-touch Control Panels, all sides IP 65

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

*For further information on DVI/USB Extended and CP-Link 4 see page 19

Single-touch Panels

▶ **www.beckhoff.com/single-touch**


CP62xx


CP65xx


CP66xx


CP67xx


C36xx

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	without keys					**CP6201**	**CP6202**	**CP6203**
– 3½-inch motherboard	function keys					**CP6211**	**CP6212**	**CP6213**
	numerical					**CP6221**	**CP6222**	**CP6223**
– up to Core™ i3/i5/i7	alphanumerical					**CP6231**	**CP6232**	**CP6233**
							CP6242	
CP65xx	without keys					**CP6501**	**CP6502**	**CP6503**
– ATX motherboard	function keys					**CP6511**	**CP6512**	**CP6513**
– up to Core™ i3/i5/i7	numerical					**CP6521**	**CP6522**	**CP6523**
	alphanumerical					**CP6531**	**CP6532**	**CP6533**
– 7 slots free							**CP6542**	
CP66xx	without keys	**CP6607**	**CP6609**			**CP6601**	**CP6602**	**CP6603**
– 3½-inch motherboard	function keys		**CP6619**			**CP6611**	**CP6612**	**CP6613**
	numerical		**CP6629**			**CP6621**	**CP6622**	**CP6623**
– ARM Cortex™-A8	alphanumerical					**CP6631**	**CP6632**	**CP6633**
CP6606, CP6600 – 3½-inch motherboard – ARM Cortex™-A8	without keys			**CP6606**	**CP6600**			
CP67xx	without keys	**CP6707**				**CP6701**	**CP6702**	**CP6703**
– 3½-inch motherboard	function keys					**CP6711**	**CP6712**	**CP6713**
	numerical					**CP6721**	**CP6722**	**CP6723**
– Celeron™ ULV or Intel® Atom™	alphanumerical					**CP6731**	**CP6732**	**CP6733**
							CP6742	
CP6706, CP6700 – 3½-inch motherboard – Celeron™ ULV or Intel® Atom™	without keys			**CP6706**	**CP6700**			
C36xx	without keys					**C3620**	**C3640**	
– ATX motherboard – up to Core™ i3/i5/i7 – 7 slots free								

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	without keys					CP7201	CP7202	CP7203
– 3½-inch motherboard	function keys					CP7211	CP7212	CP7213
– up to Core™ i3/i5/i7	numerical					CP7221	CP7222	CP7223
	alphanumerical					CP7231	CP7232	CP7233
							CP7242	
CP77xx	without keys					CP7701	CP7702	CP7703
– CP motherboard	function keys					CP7711	CP7712	CP7713
– Celeron® ULV	numerical					CP7721	CP7722	CP7723
	alphanumerical					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	without keys	CP6907	CP6909	CP6906	CP6900	CP6901	CP6902	CP6903
– DVI/USB Extended interface*	function keys		CP6919			CP6911	CP6912	CP6913
	numerical		CP6929			CP6921	CP6922	CP6923
	alphanumerical					CP6931	CP6932	CP6933
							CP6942	

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	without keys		CP7909			CP7901	CP7902	CP7903
– DVI/USB Extended interface*	function keys		CP7919			CP7911	CP7912	CP7913
	numerical		CP7929			CP7921	CP7922	CP7923
	alphanumerical					CP7931	CP7932	CP7933
							CP7942	
CP79xx-14xx	without keys,					CP7901-	CP7902-	CP7903-
– DVI/USB Extended interface*	stainless steel housing					14xx	14xx	14xx

*For further information on DVI/USB Extended see page 19

Control cabinet Industrial PCs

▶ **www.beckhoff.com/Control-cabinet-PC**

C5210

C65x5
basic configuration

C65x5
with PCIe module slots

C6525
with plug-in card slots

C69xx

C69x0
with plug-in card slots

C60xx

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
19-inch slide-in Industrial PC series C5210	1 rack unit			**C5210-0020**	**C5210-0030** i
Control cabinet PC series C65xx	fanless			**C6515-0050**	**C6515-0060** i
	RAID			**C6525-0050**	**C6525-0060** i
Compact Industrial PC series C69xx, connectors on front	fanless	**C6905-0010**			
	fanless, 1 CFast card slot	**C6915-0010**			
	fanless, 2 PCIe module slots	**C6925-0030**	**C6925-0020**		
	optional plug-in card slots			**C6920-0050**	**C6920-0060** i
	2 PCIe module slots, optional plug-in card slots			**C6930-0050**	**C6930-0060** i

Ultra-compact control cabinet Industrial PCs with compact industrial motherboard

	Processor	Intel® Atom™	Intel® Celeron®, Intel® Pentium®, Intel® Core™ i3/i5/i7 6th/7th Generation
Ultra-compact Industrial PC series C60xx	fanless, without slots	**C6015-0010** i	
	up to 2 M.2 SSDs		**C6030-0060** i

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

C5102

C5240

C6140

C6150

C6240

C6250

C6640

C6650

C6670

Control cabinet Industrial PCs with ATX motherboard

	Processor	Intel® Pentium®, Intel® Core™ i3/i5/i7 4th Generation	Intel® Pentium®, Intel® Core™ i3/i5/i7 6th/7th Generation
19-inch slide-in Industrial PC series C5xxx	7 slots, 4 rack units	**C5102-0060** **C5240-0000** i	**C5102-0070** i **C5240-0010** i
Control cabinet PC series C61xx, connectors on top	7 slots	**C6140-0060** **C6150-0060**	**C6140-0070** i **C6150-0070** i
Control cabinet PC series C62xx, connectors on front	7 slots	**C6240-0060** **C6250-0070**	**C6240-0070** i **C6250-0080** i
Control cabinet PC series C6640/C6650, connectors on top	7 slots	**C6640-0040**	**C6640-0050** i
	7 slots, 2 removable frames	**C6650-0040**	**C6650-0050** i

Control cabinet industrial server with SSI EEB motherboard

	Processor	2 x Intel® Xeon®
Control cabinet industrial server C6670	6 slots, 2 removable frames	**C6670**

Customisation 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 colours
- 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

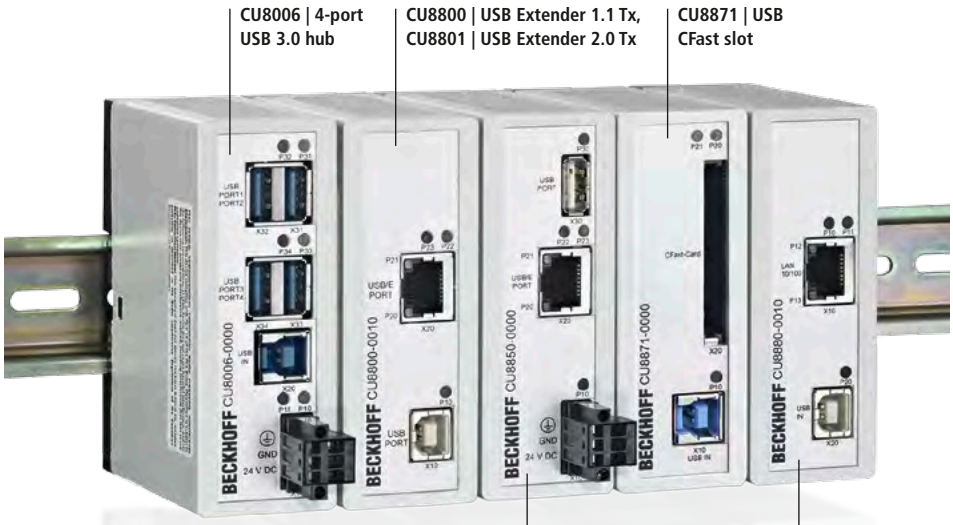
Multi-touch Control Panel with push-button extension

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.

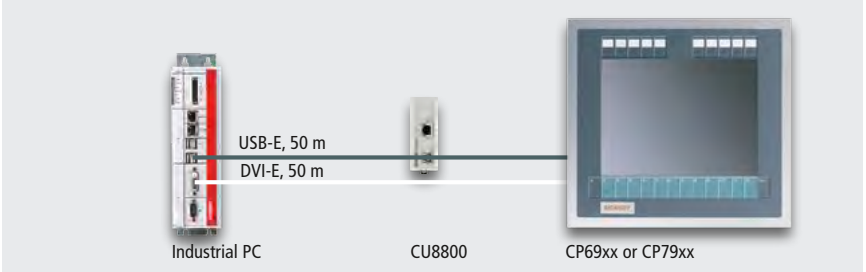


DVI/USB Extended

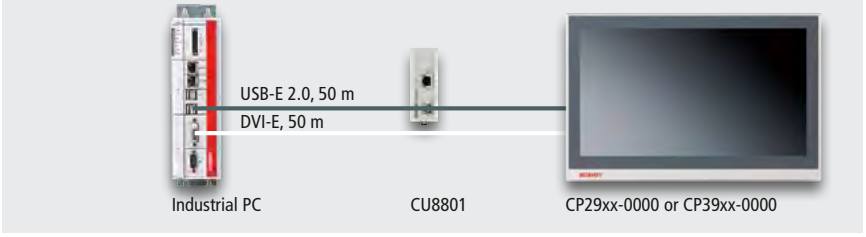
The DVI/USB Extended technology enables remote panel operation at a distance of up to 50 m from the PC. The DVI graphics signal is directly transmitted from the PC via DVI E cable. A signal processor in the Control Panels restores the DVI signal after it a distance of 50 m. For connection of the CP69xx 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



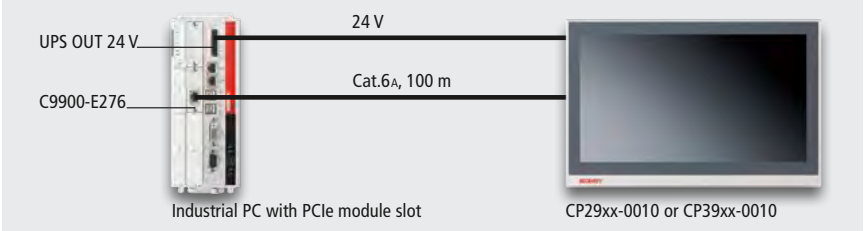
DVI/USB Extended 2.0 for CP29xx-0000 or CP39xx-0000 via the CU8801 transmitter box



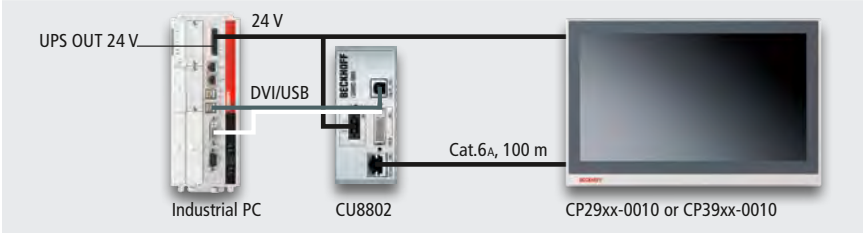
CP-Link 4: The One Cable Display Link

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 new Beckhoff multi-touch panel series CP29xx-0010 (built-in version) and CP39xx-0010 (mounting arm version).

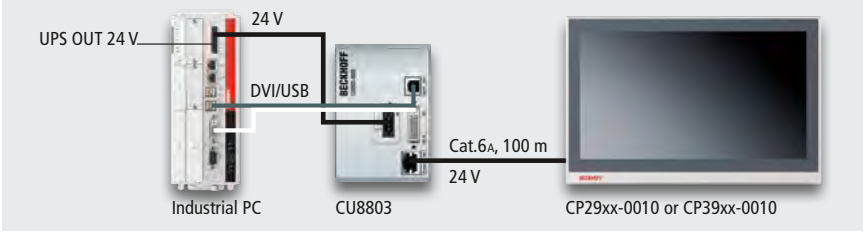
CP-Link 4 – The Two Cable Display Link: via C9900-E276 PCIe module integrated in the PC



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	**CX80xx**	**CX8190**	**CX9000, CX9010**
Processor	32 bit, 400 MHz	ARM Cortex™-A9, 800 MHz	Intel® IXP420 with XScale® technology, clock frequency 266/533 MHz
Flash memory	512 MB microSD (optionally expandable), 1 x microSD card slot	512 MB microSD (optionally expandable), 1 x microSD card slot	32 MB Flash (internal, not expandable)
Internal main memory	64 MB RAM (internal, not expandable)	512 MB DDR3 RAM (internal, not expandable)	128 MB RAM (internal, not expandable)
Interfaces	1 x RJ45 (Ethernet), 2 x RJ45 (RT Ethernet, internal switch), 100 Mbit/s	1 x RJ45 (Ethernet), 2 x RJ45 (RT Ethernet, internal switch), 100 Mbit/s	2 x RJ45 (Ethernet, internal switch), 10/100 Mbit/s
I/O connection	E-bus or K-bus, automatic recognition	E-bus or K-bus, automatic recognition	direct connection for E-bus or K-bus
System interfaces	**optionally integrated or via EtherCAT Terminals**	**optionally integrated or via EtherCAT Terminals**	**modularly expandable**
DVI/USB	–	–	CX90x0-N010
RS232	CX8080	–	CX9000-N030
			CX9010-N030
RS422/RS485	CX8080	–	CX9000-N031
			CX9010-N031
Audio	–	–	–
Ethernet	in the basic CPU	in the basic CPU	–
4-port USB hub	–	–	CX90x0-N070
Memory medium	–	–	CX90x0-A001
Fieldbus interfaces	**optionally integrated or via EtherCAT Terminals**	**via EtherCAT Terminals**	**via EtherCAT Terminals**
EtherCAT	CX8010 slave	–	–
Lightbus	EL6720 master	EL6720 master	EL6720 master
PROFIBUS	CX8030 master	EL6731 master	EL6731 master
	CX8031 slave	EL6731-0010 slave	EL6731-0010 slave
CANopen	CX8050 master	EL6751 master	EL6751 master
	CX8051 slave	EL6751-0010 slave	EL6751-0010 slave
DeviceNet	EL6752 master	EL6752 master	EL6752 master
	EL6752-0010 slave	EL6752-0010 slave	EL6752-0010 slave
PROFINET RT	CX8093 device	–	–
EtherNet/IP	CX8095 slave	–	–
SERCOS interface	–	–	–
UPS options	**1-second UPS**	**1-second UPS**	–

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

	CX9020	CX1010	CX5010, CX5020
	ARM Cortex™-A8, 1 GHz	compatible with Intel® Pentium® MMX, clock frequency 500 MHz	Intel® Atom™, 1.1/1.6 GHz clock frequency
	512 MB microSD (optionally expandable), 2 x microSD card slot	128 MB Compact Flash card (optionally expandable)	128 MB Compact Flash card (optionally expandable)
	1 GB DDR3 RAM	256 MB DDR RAM (not expandable)	CX5010: 512 MB RAM (internal, not expandable), CX5020: 512 MB RAM (optional expandable to 1 GB)
	2 x RJ45 (Ethernet, internal switch), 10/100 Mbit/s, DVI-D, 4 x USB 2.0, 1 x optional interface	1 x RJ45 (Ethernet), 10/100 Mbit/s	2 x RJ45, 10/100/1000 Mbit/s, DVI-D, 4 x USB 2.0, 1 x optional interface
	E-bus or K-bus, automatic recognition	via power supply module (E-bus, K-bus, K-bus/IP-Link)	E-bus or K-bus, automatic recognition
	optionally integrated	**modularly expandable**	**optionally integrated**
	in the basic CPU	CX1010-N010	in the basic CPU
	CX9020-N030	CX1010-N030 (COM 1/2)	CX50x0-N030
		CX1010-N040 (COM 3/4)	
	CX9020-N031	CX1010-N031 (COM 1/2)	CX50x0-N031
		CX1010-N041 (COM 3/4)	
	CX9020-N020	CX1010-N020	CX50x0-N020
	in the basic CPU	CX1010-N060	in the basic CPU
	in the basic CPU	–	in the basic CPU
	2nd microSD slot in the basic CPU	–	in the basic CPU
	optionally integrated or via EtherCAT Terminals	**modularly expandable**	**optionally integrated or via EtherCAT Terminals**
	CX9020-B110 slave	–	CX50x0-B110 slave
	EL6720 master	CX1500-M200 master	EL6720 master
		CX1500-B200 slave	
	CX9020-M310 master	CX1500-M310 master	CX50x0-M310 master
	CX9020-B310 slave	CX1500-B310 slave	CX50x0-B310 slave
	CX9020-M510 master	CX1500-M510 master	CX50x0-M510 master
	CX9020-B510 slave	CX1500-B510 slave	CX50x0-B510 slave
	EL6752 master	CX1500-M520 master	EL6752 master
	EL6752-0010 slave	CX1500-B520 slave	EL6752-0010 slave
	CX9020-M930 controller	–	CX50x0-M930 controller
	CX9020-B930 device		CX50x0-B930 device
	CX9020-B950 slave	–	CX50x0-B950 slave
	–	CX1500-M750 SERCOS II master	–
	1-second UPS (optional)	**CX1100-0910, -0900**	**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 (card not included), slot for microSD card	slot for CFast card (card not included), slot for microSD card	slot for CFast card (card not included), slot for microSD card
Internal 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, DVI-I, 4 x USB 2.0, 1 x optional interface	2 x RJ45, 10/100/1000 Mbit/s, DVI-I, 4 x USB 2.0, 1 x optional interface	2 x RJ45, 10/100/1000 Mbit/s, 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	**optionally integrated**	**optionally integrated**	**optionally integrated**
DVI/USB	in the basic CPU	in the basic CPU	in the basic CPU
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
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	**optionally integrated or via EtherCAT Terminals**	**optionally integrated or via EtherCAT Terminals**	**optionally integrated or via EtherCAT Terminals**
EtherCAT	CX5120-B110 slave	CX5130-B110 slave	CX5140-B110 slave
Lightbus	EL6720 master	EL6720 master	EL6720 master
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 i	CX5130-B931 device i	CX5140-B931 device i
EtherNet/IP	CX5120-B950 slave i	CX5130-B950 slave i	CX5140-B950 slave i
SERCOS interface	–	–	–
UPS options	**1-second UPS**	**1-second UPS**	**1-second UPS**

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

	CX1020	CX1030
	Intel® Celeron® M ULV, 1 GHz clock frequency	Intel® Pentium® M, 1.8 GHz clock frequency
	128 MB Compact Flash card (optionally expandable)	128 MB Compact Flash card (optionally expandable)
	256 MB DDR RAM (expandable to 512 MB, 1 GB)	256 MB DDR RAM (expandable to 512 MB, 1 GB)
	2 x RJ45 (Ethernet, internal switch), 10/100 Mbit/s	2 x RJ45 (Ethernet, internal switch), 10/100 Mbit/s
	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**
	CX1020-N010	CX1030-N010
	CX1020-N030 (COM 1/2)	CX1030-N030 (COM 1/2)
	CX1020-N040 (COM 3/4)	CX1030-N040 (COM 3/4)
	CX1020-N031 (COM 1/2)	CX1030-N031 (COM 1/2)
	CX1020-N041 (COM 3/4)	CX1030-N041 (COM 3/4)
	CX1020-N020	CX1030-N020
	CX1020-N060	CX1030-N060
	–	–
	–	–
	modularly expandable	**modularly expandable**
	–	–
	CX1500-M200 master	CX1500-M200 master
	CX1500-B200 slave	CX1500-B200 slave
	CX1500-M310 master	CX1500-M310 master
	CX1500-B310 slave	CX1500-B310 slave
	CX1500-M510 master	CX1500-M510 master
	CX1500-B510 slave	CX1500-B510 slave
	CX1500-M520 master	CX1500-M520 master
	CX1500-B520 slave	CX1500-B520 slave
	–	–
	–	–
	–	–
	CX1500-M750 SERCOS II master	CX1500-M750 SERCOS II master
	CX1100-0920	**CX1100-0930**



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	4 or 8 GB CFast flash card (optionally expandable)	4 or 8 GB CFast flash card (optionally expandable)	4 or 8 GB CFast flash card (optionally expandable)
Internal main memory	2 GB DDR3 RAM (optionally expandable)	2 GB DDR3 RAM (optionally expandable)	4 GB DDR3 RAM
Interfaces	2 x RJ45, 10/100/1000 Mbit/s, DVI-I, 4 x USB 2.0, 1 x optional interface	2 x RJ45, 10/100/1000 Mbit/s, DVI-I, 4 x USB 2.0, 1 x optional interface	2 x RJ45, 10/100/1000 Mbit/s, 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, 2nd DVI port as option CX2020-N010	in the basic CPU, 2nd DVI port as option CX2030-N010	in the basic CPU, 2nd DVI port as option CX2040-N010
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
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	**optionally integrated or via EtherCAT Terminals**	**optionally integrated or via EtherCAT Terminals**	**optionally integrated or 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	CX2030-M310 or CX2500-M310 master	CX2040-M310 or CX2500-M310 master
	CX2020-B310 or CX2500-B310 slave	CX2030-B310 or CX2500-B310 slave	CX2040-B310 or CX2500-B310 slave
CANopen	CX2020-M510 or CX2500-M510 master	CX2030-M510 or CX2500-M510 master	CX2040-M510 or CX2500-M510 master
	CX2020-B510 or CX2500-B510 slave	CX2030-B510 or CX2500-B510 slave	CX2040-B510 or CX2500-B510 slave
DeviceNet	EL6752 master	EL6752 master	EL6752 master
	EL6752-0010 slave	EL6752-0010 slave	EL6752-0010 slave
PROFINET RT	CX2020-M930 controller	CX2030-M930 controller	CX2040-M930 controller
	CX2020-B930 device	CX2030-B930 device	CX2040-B930 device
PROFINET IRT	CX2020-B931 device i	CX2030-B931 device i	CX2040-B931 device i
EtherNet/IP	CX2020-B950 slave i	CX2030-B950 slave i	CX2040-B950 slave i
UPS options	**CX2100-0904, CX2100-0914**	**CX2100-0904, CX2100-0914**	**CX2100-0904, CX2100-0914**

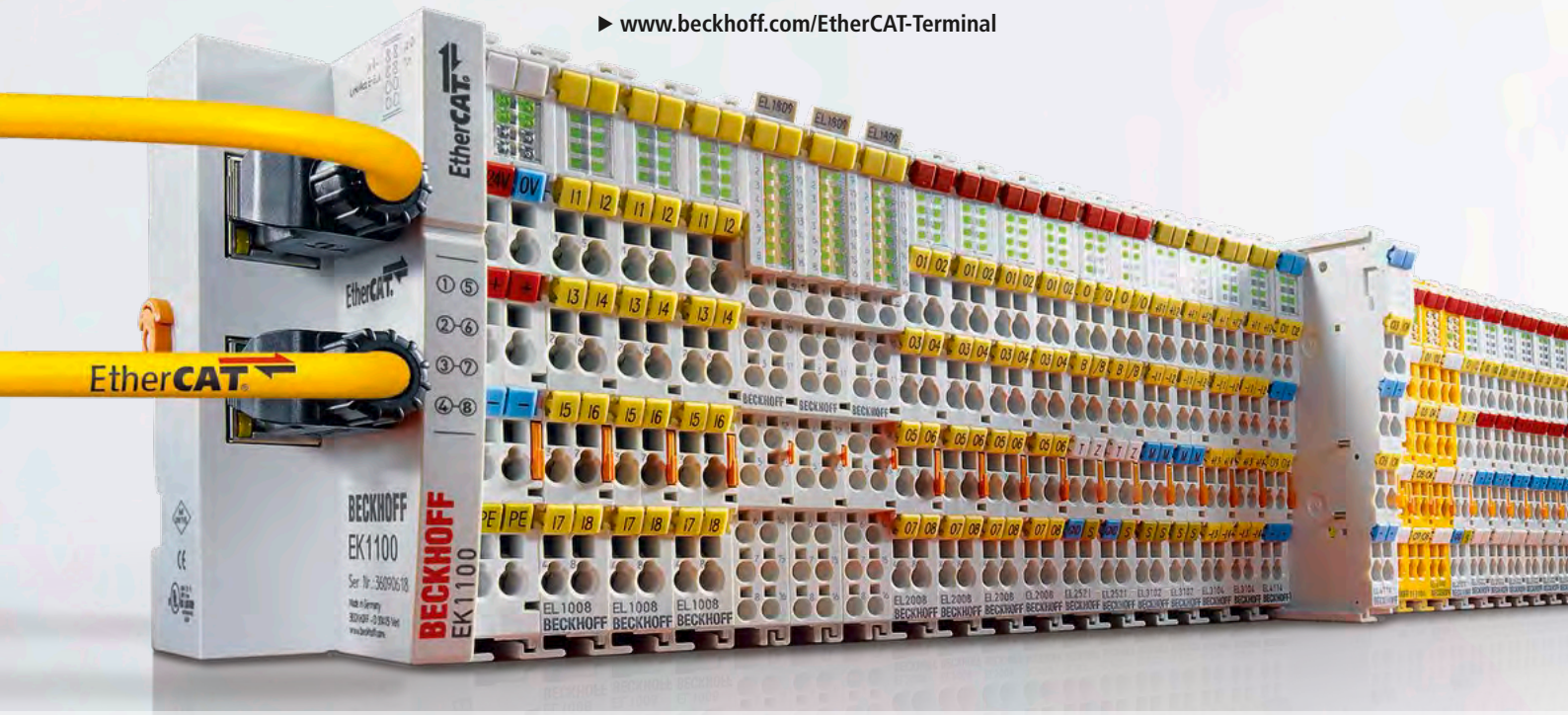
i **Product announcement** for availability status see www.beckhoff.com

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 (optionally expandable)	8 GB DDR4 RAM (optionally expandable)	8 GB DDR4 RAM (optionally expandable)
2 x RJ45, 10/100/1000 Mbit/s, 4 x USB 3.0, 1 x DVI-I	2 x RJ45, 10/100/1000 Mbit/s, 4 x USB 3.0, 1 x DVI-I	2 x RJ45, 10/100/1000 Mbit/s, 4 x USB 3.0, 1 x DVI-I
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, 2nd DVI port as option CX2042-N010	in the basic CPU, 2nd DVI port as option CX2062-N010	in the basic CPU, 2nd DVI port as option CX2072-N010
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
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)
optionally integrated or via EtherCAT Terminals	**optionally integrated or via EtherCAT Terminals**	**optionally integrated or 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 i	CX2062-B931 device i	CX2072-B931 device i
CX2042-B950 slave	CX2062-B950 slave	CX2072-B950 slave
–	–	–

EtherCAT Terminals 32

- IP 20 EtherCAT I/O system
- Real-time Ethernet performance retained into each terminal
- Integration of highly precise measurement technology, condition monitoring, drive technology and process technology
- Electronic overcurrent protection
- Gateways for subordinate fieldbus systems
- TwinSAFE PLC and safety I/Os

▶ **www.beckhoff.com/EtherCAT-Terminal**



EtherCAT Box 40

- 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**
▶ **www.beckhoff.com/EtherCAT-P-Box**

EtherCAT Plug-in Modules 48

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

▶ **www.beckhoff.com/EtherCAT-Plug-in-Modules**

Bus Terminals 52

- 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**

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 optimised for EtherCAT. Invented by Beckhoff, this real-time Ethernet solution for industrial automation has global acceptance and is characterised 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**

Fieldbus Box 58

- 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**

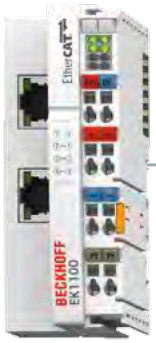
Infrastructure Components 61

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

▶ **www.beckhoff.com/Infrastructure-components**

- **Comprehensive, modular I/O system for all signal types and fieldbus systems**
- **Universal product range optimised 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 20

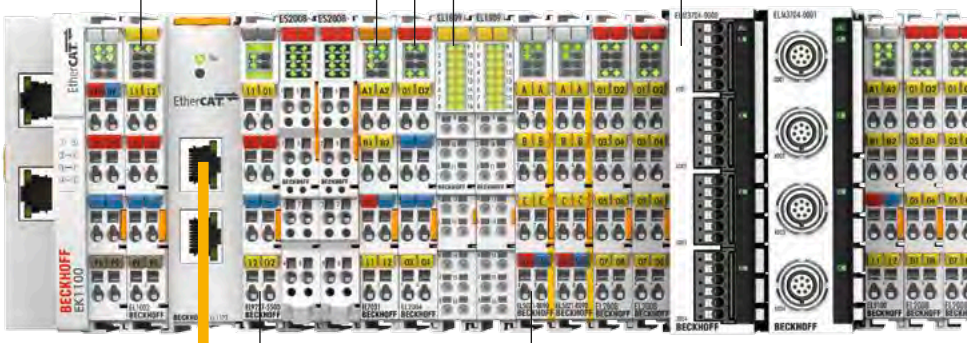
Free mix of signals: more than 200 different EtherCAT Terminals enable connection of all common sensors and actuators.

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.

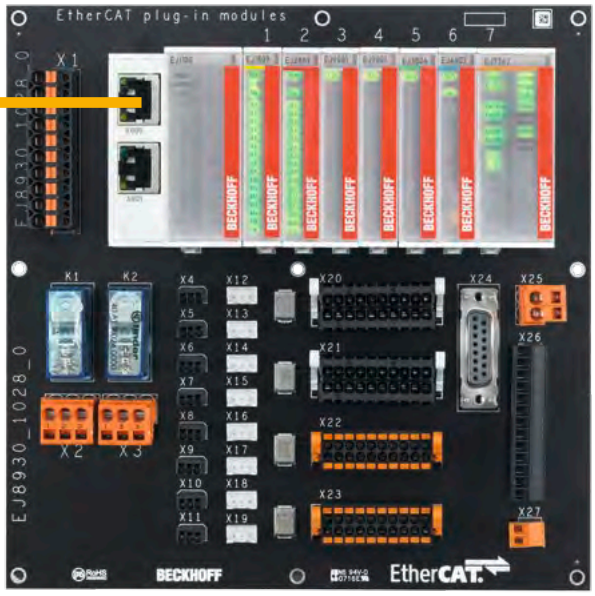
High-end measurement technology with attractive pricing through series production, seamlessly integrated into the automation system.



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.

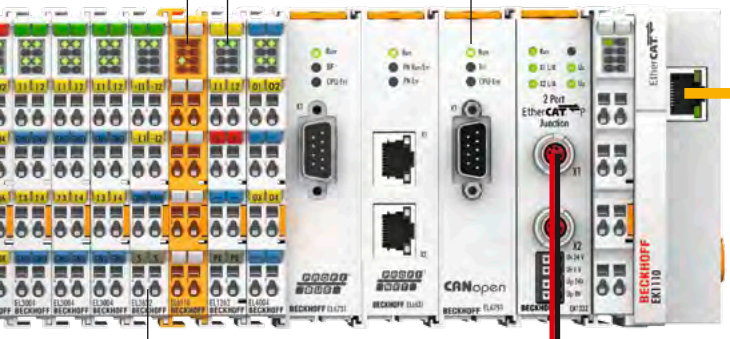


EtherCAT plug-in modules: very compact EtherCAT I/O system in IP 20 for plug-in into a circuit board (signal distribution board)

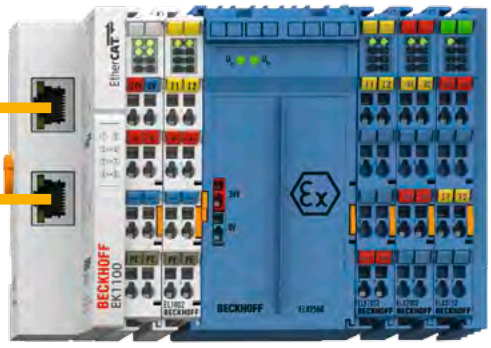
TwinSAFE: safety I/Os and compact Safety PLC for up to 128 safetyrelevant bus devices

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

Optional fieldbus integration via decentralised field-bus master/slave terminals



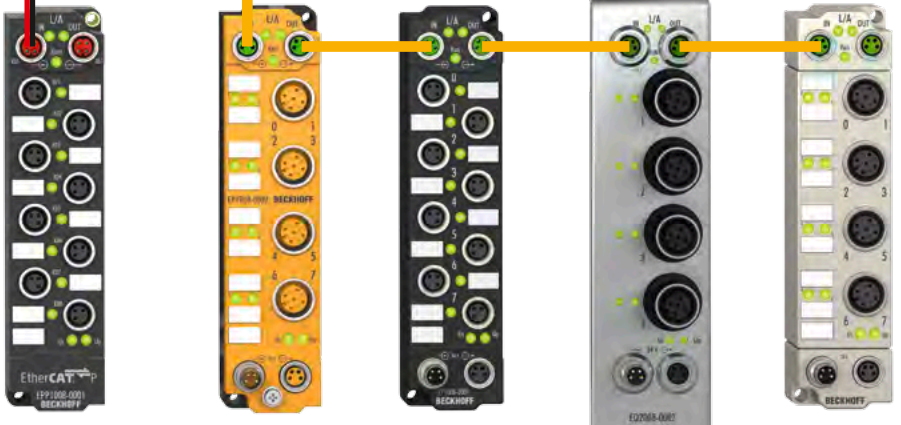
High-speed measurement, high-precision measurement, Condition Monitoring, energy monitoring



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)



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

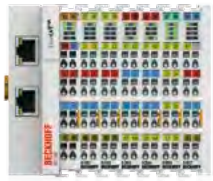
Fieldbus	EtherCAT Terminal	EtherCAT Box	EtherCAT Plug-in Modules	Bus Terminal		Fieldbus Box	
	Couplers/Gateways	Modules		Bus Couplers/ Master term.	PLC (IEC 61131-3)	Compact Box	Coupler Box
EtherCAT	EK1xxx, EKM1xxx	EPxxxx	EJxxxx	BK1120			IL230x-B110
	EL6695 bridge	EQxxxx		BK1150			
		ERxxxx		BK1250			
EtherCAT P	EK13xx i	EPPxxxx					
		EP1312					
LIGHTBUS	EL6720 master			BK20x0		IPxxxx-B200	IL230x-B200
PROFIBUS	EK3100			BK3xx0	BC31x0	IPxxxx-B31x	IL230x-B31x
	EL6731 master/slave			LC3100	BX3100		
INTERBUS	EL6740 slave			BK40x0		IPxxxx-B400	IL230x-B400
CANopen	EL6751 master/slave			BK51xx	BC5150	IPxxxx-B51x	IL230x-B51x
				LC5100	BX5100		
DeviceNet	EL6752 master/slave			BK52x0	BC5250	IPxxxx-B52x	IL230x-B52x
				LC5200	BX5200		
ControlNet				BK7000			
CC-Link				BK7150			
Modbus				BK73x0	BC7300	IPxxxx-B730	IL230x-B730
sercos the automation bus				BK7520			
RS485	EL6021, EL6022	EP600x		BK8000	BC8050	IPxxxx-B800	IL230x-B800
		EPP600x		KL6021	BX8000		
				KL6041			
RS232	EL6001, EL6002	EP600x		BK8100	BC8150	IPxxxx-B810	IL230x-B810
		EPP600x		KL6001	BX8000		
				KL6031			
Ethernet TCP/IP	EK9000			BK9xx0	BC9xxx		IL230x-B90x
	EL6601, EL6614 switch port				BX9000		
PROFINET	EK9300	EP9300		BK9xx3			IL230x-B903
	EL6631 RT controller/device						
	EL6632 IRT controller i						
EtherNet/IP	EK9500 i			BK9xx5			IL230x-B905
	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				KL68x1			
BACnet	EL6861						

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

		Fieldbus Modules	Infrastructure Components	Embedded PC	Drive Technology	Accessories
PLC Box (IEC 61131-3)	IO-Link box	For thermo-couples/mV	Interfaces	Master/Slave	Servo Drives	Connectors/ Cables
		FM33xx-B110	FC90xx, FC11xx	CXxxxx	AX8000	ZS1090-00xx
			CUxxxx		AX5000	ZK1090-9191
			EP9xxx			ZK1090-xxxx
						ZB7xxx
						ZK/ZS7xxx
			FC200x	CX1500-M/B200		Z1xxx
IL230x-C31x		FM33xx-B310	FC31xx	CXxxxx		ZB3xxx
				CX2500-M/B310		ZK/ZS1031
						ZB4200
			FC51xx	CXxxxx		ZB51xx
				CX2500-M/B510		ZK/ZS1052
			FC52xx	CX1500-M/B520		ZB52xx
						ZK/ZS1052
				CXxxxx		ZK/ZS1031
			FC75xx	CXxxxx		
				CXxxxx		ZK/ZS1031
IL230x-C810				CXxxxx		ZK/ZS1031
IL230x-C900			FC90xx	CXxxxx		ZS1090-00xx
			CU2xxx, CU2508 Ethernet Switch			ZB90x0
						ZK1090-xxxx
			CU2508	CXxxxx		ZS1090-00xx
						ZB90x0
			FC93xx IRT device			ZK1090-xxxx
			CU2508	CXxxxx		ZS1090-00xx
	EPIxxxx, ERIxxxx devices					

EtherCAT Terminal

▶ www.beckhoff.com/EtherCAT-Terminal



EtherCAT Couplers

EtherCAT Couplers E-bus	**EK1100**	**EK1000** i Ethernet/TSN	**EK1300** i EtherCAT P	**EK1101** ID switch	**EKM1101** i ID switch and diagnostics
	EK1101-0080 ID switch, Fast Hot Connect	**EK1100-0008** M8 connection	**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 inputs + 4 outputs, 2 safe inputs + 2 safe outputs	**EK1960** TwinSAFE Compact Controller, 20 safe digital inputs, 10 safe digital outputs			
EtherCAT Couplers K-bus	**BK1120**	**BK1150** "Compact"	**BK1250** between E-bus and K-bus terminals		
Bus Couplers (for ELxxxx)	**EK3100** PROFIBUS	**EK9000** Modbus TCP/UDP	**EK9160** i IoT	**EK9300** PROFINET RT	**EK9500** i EtherNet/IP
Extension system and junctions	**EK1110** extension end terminal	**EK1110-0008** extension end terminal, M8	**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 20, Infrastructure Components see page 61

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

EtherCAT Terminal | 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	**EL1809** type 3
		EL1104 with sensor supply, type 3	**EL1804** 8 x 24 V, 4 x 0 V, type 3, 3-wire	**EL1808** 8 x 24 V DC, type 3, 2-wire	**EL1862** flat-ribbon cable, type 3
		EL1084 negative switching	**EL1024** type 2	**EL1859** type 3, 8 inputs, 8 outputs, I_{max} = 0.5 A	**EL1862-0010** flat-ribbon cable, negative switching
				EL1088 negative switching	**EL1889** negative switching
Filter 10 µs	**EL1012** type 3	**EL1014** type 3	**EL1034** potential-free inputs, type 1	**EL1018** type 3	**EL1819** type 3
		EL1114 with sensor supply, type 3	**EL1814** 8 x 24 V, 4 x 0 V, type 3, 3-wire		**EL1872** flat-ribbon cable, type 3
			EL1094 negative switching	**EL1098** negative switching	
XFC: T_{ON}/T_{OFF} 1 µs	**EL1202** fast input, type 3			**EL1258** multi-timestamping	
	EL1252 timestamp, type 3			**EL1259** 8 multi-timestamping inputs and outputs	
	EL1262 oversampling, type 3				
Counter	**EL1502** 100 kHz, 32 bit, type 1				
	EL1512 1 kHz, 16 bit, type 1				
Safe input		**EL1904** TwinSAFE, 4 safe inputs			

EtherCAT Terminal | Digital input: EL1xxx/ES1xxx/ELX1xxx

Signal	2-channel	4-channel
5 V DC		**EL1124**
12 V DC		**EL1144**
48 V DC		**EL1134** filter 10 µs, 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**	

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 Terminal | 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		EL2872 flat-ribbon cable
					EL2808 8 x 0 V	EL2809
						EL2819 with diagnostics
				EL2084 negative switching	EL2088 negative switching	EL2889 negative switching
					EL1859 8 inputs, 8 outputs, filter 3.0 ms, type 3	EL2872-0010 flat-ribbon cable, negative 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				
Safe output	EL2901 i TwinSAFE, 1 safe output	EL2902 i TwinSAFE, 2 safe outputs		EL2904 TwinSAFE, 4 safe outputs		

EtherCAT Terminal | Digital output: EL2xxx/ES2xxx

Signal	1-channel	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
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	EL2624 I_{max} = 2.0 A, make contact, 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		

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

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

EtherCAT Terminal | Digital output: EL2xxx/ES2xxx

Signal	1-channel	2-channel			4-channel	8-channel
Triac (12…230 V AC)		**EL2712** I_{max} = 0.5 A, power contacts	**EL2722** I_{max} = 1.0 A, mutually locked outputs	**EL2732** I_{max} = 0.5 A, no power contacts		
PWM		**EL2502** 24 V DC, I_{max} = 0.5 A				
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	**EL2535** 24 V DC, I_{max} = ±50 mA, ±1 A or ±2 A	**EL2545** 50 V DC, I_{max} = ±3.5 A			

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

Signal	1-channel	2-channel		4-channel		5-/8-channel
Multi-function	**EL3751** 24 bit, 10 ksps	**ELM3702** 24 bit, 10 ksps		**ELM3704** 24 bit, 10 ksps	**ELM3704-0001** 24 bit, 10 ksps, LEMO	
				EL3174 16 bit, NAMUR NE43	**EL3174-0002** 16 bit, electrically isolated, NAMUR NE43	
				EL3174-0032 16 bit, electrically isolated, NAMUR NE43, ±3 V	**EL3174-0090** 16 bit, NAMUR NE43, TwinSAFE SC	
±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	**EL3104** differential input, 16 bit		
		EL3702 differential input, 16 bit, oversampling				
0…10 V	**EL3061** 12 bit	**EL3161** 16 bit	**EL3062** 12 bit	**EL3162** 16 bit	**EL3064** 12 bit	**EL3164** 16 bit	**EL3068** 12 bit
0…30 V			**EL3062-0030** 12 bit			
±30 V… ±20 mV			**ELM3002** 24 bit, 20 ksps		**ELM3004** 24 bit, 10 ksps	
±200 mV			**EL3602-0002** differential input, 24 bit			
±75 mV			**EL3602-0010** differential input, 24 bit			

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

Signal	1-channel		2-channel		4-channel		5-/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** single-ended, 16 bit, HART		**ELX3152** single-ended, 16 bit				
±20 mA			**EL3112-0011** differential input, 16 bit	**ELM3102** 24 bit, 20 ksps, NAMUR NE43	**ELM3104** 24 bit, 10 ksps, NAMUR NE43		
±10 mA			**EL3142-0010** single-ended, 16 bit				
Thermo-couple/mV	**EL3311** 16 bit		**EL3312** 16 bit		**EL3314** 16 bit	**EL3314-0090** 16 bit, TwinSAFE SC	**EL3318** 16 bit
					EL3314-0002 i 24 bit, electrically isolated		
Ex i, thermo-couple/mV			**ELX3312** 16 bit		**ELX3314** 16 bit		
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	
Ex i, resistance thermometer (RTD)			**ELX3202** 16 bit		**ELX3204** 2-wire, 16 bit		
Measurement bridge (SG)	**EL3351**	**EL3356** self-calibration	**ELM3502** i 24 bit, 20 ksps		**ELM3504** i 24 bit, 10 ksps		
	EL3356-0010 24 bit, 10 ksps	**EL3356-0090** TwinSAFE SC					
Ex i, measurement bridge (SG)	**ELX3351** 16 bit						

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

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

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

Signal	1-channel	2-channel		4-channel	5-/8-channel
Measurement technology	**EL3681** digital multimeter terminal, 18 bit	**EL3692** resistance measurement, 10 mΩ…10 MΩ			**EL3255** potentiometer measurement, 5-channel
Condition Monitoring/ IEPE		**EL3632** 16 bit, 50 ksps	**ELM3602** 24 bit, 50 ksps	**ELM3604** 24 bit, 20 ksps	
Pressure measuring	**EM3701** differential pressure measuring, -100…+100 hPa	**EM3702** relative pressure measuring, 7500 hPa	**EM3712** relative pressure measuring, -1000…+1000 hPa		

EtherCAT Terminal | 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 functionality	**EL3443-0010** 480 V AC/DC, 5 A, extended functionality	**EL3483** 480 V AC/DC, mains monitor	**EL3413** 690 V AC, 5 A
Power monitoring	**EL3773** 500 V AC/DC, 10 ksps						**EL3783** 690 V AC, 20 ksps

EtherCAT Terminal | 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** HART, 16 bit					
±10 mA		**EL4112-0010** 16 bit				

EtherCAT Terminal | Position measurement: EL5xxx/ES5xxx/ELX5xxx

Signal	1-channel				2-channel	
Absolute encoder	**EL5001** SSI encoder interface	**EL5001-0011** SSI monitor terminal	**EL5001-0090** i SSI encoder interface, TwinSAFE SC		**EL5002** SSI encoder interface	**EL5032** EnDat 2.2 interface
						EL5042 BiSS-C interface, unidirectional
Incremental encoder	**EL5151** incremental encoder interface 24 V DC	**EL5151-0021** incremental encoder interface 24 V DC, parameterisable 24 V DC output	**EL5151-0090** i 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 NAMUR					

EtherCAT Terminal | 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	**EL6614** switch port
Master	**EL6201** AS-Interface	**EL6631** PROFINET RT	**EL6632** i 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	**EL6731-0010** PROFIBUS			
	EL6740-0010 Interbus	**EL6751-0010** CANopen	**EL6752-0010** DeviceNet			
	EL6851-0010 DMX					
Safety	**EL6900** TwinSAFE Logic	**EL6910** TwinSAFE Logic	**EL6930** TwinSAFE/PROFIsafe logic and gateway			

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

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

EtherCAT Terminal | Motion: EL7xxx/ES7xxx/EM7xxx

	< 3 A	3…5 A	> 5 A
Servomotor	**EL7201-9014** I_{rms} = 2.8 A, 50 V DC, OCT, STO	**EL7211-9014** I_{rms} = 4.5 A, 50 V DC, OCT, STO	**EL7221-9014** I_{rms} = 7…8 A with ZB8610, 50 V DC, OCT, STO
	EL7201-0010 I_{rms} = 2.8 A, 50 V DC, OCT	**EL7211-0010** I_{rms} = 4.5 A, 50 V DC, OCT	**ZB8610** fan cartridge for EtherCAT and Bus Terminals
	EL7201 I_{rms} = 2.8 A, 50 V DC, resolver	**EL7211** I_{rms} = 4.5 A, 50 V DC, resolver	
Stepper motor	**EL7031** I_{max} = 1.5 A, 24 V DC	**EL7041** I_{max} = 5.0 A, 50 V DC, incremental encoder	
	EL7031-0030 I_{max} = 2.8 A, 24 V DC, 2 AI	**EL7041-0052** i I_{max} = 5.0 A, 50 V DC	
	EL7037 I_{max} = 1.5 A, 24 V DC, incremental encoder, vector control	**EL7047** I_{max} = 5.0 A, 50 V DC, incremental encoder, vector control	
DC motor output stage	**EL7332** I_{max} = 1.0 A, 24 V DC	**EL7342** I_{max} = 3.5 A, 50 V DC, incremental encoder	
		EL7411-9014 i I_{rms} = 4.5 A, 50 V DC, STO	
4-axis interface	**EM7004** 4 incremental encoders, 32 digital I/Os 24 V DC, 4 analog outputs ±10 V		

EtherCAT Terminal | 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	**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** i diagnostics	**EL9190**	**EL9250** i with fuse, with LED	**EL9260** i diagnostics, with fuse
	EL9290 i with fuse				
Overcurrent protection, 24 V DC	**EL9221** i 1-channel	**EL9222** i 2-channel	**EL9227** i 2-channel, extended functionalities		
Power supply	**EL9410** input 24 V DC, output 5 V DC/2 A	**ELM9410** i input 24 V DC, output 5 V DC/2 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** for ELXxxxx, input 24 V DC, output 24 V DC/1.0 A	
Filtering and smoothing	**EL9540** surge filter terminal for field supply	**EL9550** surge filter terminal for system/field supply	**EL9576** brake chopper terminal, up to 72 V DC, 155 µF	**ZB8110** external ballast resistor	

EtherCAT Box

▶ www.beckhoff.com/EtherCAT-Box

EtherCAT Box | Digital I/O

Input		8 x M8	16 x M8	4 x M12	8 x M12	Other
24 V DC	8-channel filter 3.0 ms	EP1008-0001 ER1008-0001		EP1008-0002 ER1008-0002 EQ1008-0002	EP1008-0022 ER1008-0022	
	8-channel filter 10 µs	EP1018-0001 ER1018-0001		EP1018-0002 ER1018-0002		
	8-channel filter 10 µs, negative switching	EP1098-0001 ER1098-0001				
	8-channel 2-channel timestamp	EP1258-0001 ER1258-0001		EP1258-0002 ER1258-0002		
	8-channel multi-function input			EP1518-0002 ER1518-0002		
	8-channel TwinSAFE, 8 safe inputs			EP1908-0002		
	16-channel filter 3.0 ms		EP1809-0021 ER1809-0021		EP1809-0022 ER1809-0022 EQ1809-0022	
	16-channel filter 10 µs		EP1819-0021 ER1819-0021		EP1819-0022 ER1819-0022	
	16-channel filter 10 µs, D-sub, 25-pin					EP1816-0008 EP1816-3008 acceleration sensor
Output		**8 x M8**	**16 x M8**	**4 x M12**	**8 x M12**	**Other**
24 V DC	8-channel I_{max} = 0.5 A	EP2008-0001 ER2008-0001		EP2008-0002 ER2008-0002 EQ2008-0002	EP2008-0022 ER2008-0022	
	8-channel I_{max} = 2 A, ∑ 4 A	EP2028-0001 ER2028-0001		EP2028-0002 ER2028-0002		
	8-channel I_{max} = 2.8 A, ∑ 16 A				EP2028-0032 ER2028-1032	
	8-channel I_{max} = 2 A, ∑ 4 A, with diagnostics	EP2038-0001 ER2038-0001		EP2038-0002 ER2038-0002		
	16-channel I_{max} = 0.5 A, ∑ 4 A		EP2809-0021 ER2809-0021		EP2809-0022 ER2809-0022 EQ2809-0022	
	16-channel I_{max} = 0.5 A, ∑ 4 A					EP2816-0008 D-sub, 25-pin EP2816-0010 2 x D-sub, 9-pin EP2816-0004 M16, 19-pin EP2816-0003 IP 20 plug
	24-channel I_{max} = 0.5 A					EP2817-0008 D-sub, 25-pin
25 V AC/ 30 V DC	4-channel relay output			EP2624-0002 ER2624-0002		

EPxxxx: industrial housing in IP 67, ERxxxx: zinc die-cast housing in IP 67, EQxxxx: stainless steel housing in IP 69K

EtherCAT Box | Digital I/O

Combi		8 x M8	16 x M8	4 x M12	8 x M12	Other
24 V DC	**8-channel** 4 inputs + 4 outputs, filter 3.0 ms, I_{max} = 0.5 A	**EP2308-0001** ER2308-0001		**EP2308-0002** ER2308-0002		
	8-channel 4 inputs + 4 outputs, filter 10 µs, I_{max} = 0.5 A	**EP2318-0001** ER2318-0001		**EP2318-0002** ER2318-0002		
	8-channel 4 inputs + 4 outputs, filter 3.0 ms, I_{max} = 2 A	**EP2328-0001** ER2328-0001		**EP2328-0002** ER2328-0002		
	8-channel 8 inputs/outputs, filter 10 µs, I_{max} = 0.5 A	**EP2338-0001** ER2338-0001		**EP2338-0002** ER2338-0002		
	8-channel 8 inputs/outputs, filter 3.0 ms, I_{max} = 0.5 A	**EP2338-1001** ER2338-1001		**EP2338-1002** ER2338-1002		
	16-channel 16 inputs/outputs, filter 3.0 ms, I_{max} = 0.5 A, ∑ 4 A		**EP2339-0021** ER2339-0021		**EP2339-0022** ER2339-0022 **EQ2339-0022**	
	16-channel 16 inputs/outputs, filter 10 µs, I_{max} = 0.5 A, ∑ 4 A		**EP2349-0021** ER2349-0021		**EP2349-0022** ER2349-0022	
	16-channel 8 inputs + 8 outputs, filter 10 µs, I_{max} = 0.5 A					**EP2316-0008** D-sub, 25-pin **EP2316-0003** IP 20 plug

EtherCAT Box | Analog I/O

Input		M8	M12
±10 V, 0/4…20 mA	**2-channel** parameterisable, with galvanic isolation, single-ended, 16 bit		**EP3162-0002**
	4-channel parameterisable, differential inputs, 16 bit		**EP3174-0002** ER3174-0002 **EQ3174-0002** **EP3174-0092** TwinSAFE SC
	2-channel 2 analog inputs, parameterisable, single-ended, 16 bit, 2 digital control outputs (sink/source type), 24 V DC, short-circuit-proof		**EP3182-1002**
	4-channel parameterisable, single-ended, 16 bit		**EP3184-0002** ER3184-0002 **EP3184-1002** 2 channels per socket ER3184-1002 2 channels per socket
Resistance thermometer (RTD)	**4-channel** PT100, PT200, PT500, PT1000, Ni100, Ni120, Ni1000, 16 bit		**EP3204-0002** ER3204-0002 **EQ3204-0002**
Thermo-couple/mV	**4-channel** type J, K, L, B, E, N, R, S, T, U, 16 bit		**EP3314-0002** ER3314-0002 **EQ3314-0002**
Measuring bridge (SG)	**1-channel** 24 bit, self-calibration		**EP3356-0022**
Condition Monitoring/ IEPE	**2-channel**	**EP3632-0001**	
Pressure measuring	**4-channel** differential/absolute pressure measurement, 6 digital inputs, 2 digital outputs	**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)	

Output		M8	M12
±10 V, 0/4…20 mA	**4-channel** parameterisable, 16 bit		**EP4174-0002** ER4174-0002
	4-channel 2 inputs + 2 outputs, parameterisable, 16 bit		**EP4374-0002** ER4374-0002

EPxxxx: industrial housing in IP 67, ERxxxx: zinc die-cast housing in IP 67, EQxxxx: stainless steel housing in IP 69K

Product announcement for availability status see www.beckhoff.com

EtherCAT Box | Special functions

Function		M8	M12	Other
Position measurement	**SSI encoder interface** 1 MHz, 32 bit		**EP5001-0002**	
	Incremental encoder interface RS422 32/16 bit, 5 V DC sensor supply		**EP5101-0002** ER5101-0002	**EP5101-0011** D-sub, 4 million increments/s **EP5101-2011** D-sub, 20 million increments/s
	Incremental encoder interface RS422 32/16 bit, 24 V DC sensor supply		**EP5101-1002** ER5101-1002	
	Incremental encoder interface 24 V DC 32/16 bit		**EP5151-0002** ER5151-0002	
Communi-cation	**Serial interface** 1-channel, RS232, RS422/RS485, 5 V DC/1 A		**EP6001-0002** ER6001-0002	
	Serial interface 2-channel, RS232, RS422/RS485		**EP6002-0002** ER6002-0002	
	IO-Link master 4 ports		**EP6224-2022** Class A **EP6224-3022** Class B	
	IO-Link master 8 ports		**EP6228-0022** Class A **EP6228-3032** Class B	
Motion	**Servomotor module** I_{rms} = 4.5 A, 50 V DC, OCT, STO			**EP7211-9034**
	Stepper motor module I_{max} = 1.5 A, 50 V DC, incremental encoder		**EP7041-1002** ER7041-1002	
	Stepper motor module I_{max} = 5 A, 50 V DC, incremental encoder		**EP7041-0002** ER7041-0002 **EP7041-2002** ER7041-2002 **EP7041-3002** ER7041-3002 **EP7041-3102**	
	DC motor output stage I_{max} = 3.5 A, 50 V DC		**EP7342-0002** ER7342-0002	
Special functions	**Multi-functional I/O box** 8 digital inputs/outputs, 2 x tacho input, 2 x 0/4…20 mA input, 1 x 0/4…20 mA output, 1 x 1.2 A PWMi output		**EP8309-1022** ER8309-1022	
System	**EtherCAT Box** 3 decimal ID switches	**EP1111-0000**		
	EtherCAT junction 2-channel	**EP1122-0001**		
	EtherCAT P junction 2 ports	**EP1312-0001**		
	EtherCAT junction 8 ports	**EP9128-0021**		
	Power distribution 4/4-channel			**EP9214-0023** 7/8" plug, 7/8" socket
	Power distribution with current measurement/data logging 4/4-channel			**EP9224-0023** 7/8" plug, 7/8" socket
	1-channel power distribution box ENP to EtherCAT P			**EP9221-0057** ENP-B17 plug, ENP-B17 socket
	4-channel power distribution box ENP to EtherCAT P			**EP9224-0037** ENP-B17 plug, ENP-B17 socket
	PROFINET RT EtherCAT Box EtherCAT Box interface with PROFINET RT		**EP9300-0022**	
	EtherCAT media converter fibre optic 1-channel			**EP9521-0020**

EtherCAT P Box

▶ www.beckhoff.com/EtherCAT-P-Box

EtherCAT P Box | Digital I/O

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

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

Product announcement for availability status see www.beckhoff.com

EtherCAT P Box | Digital I/O

Combi		4 x M8	8 x M8	16 x M8	4 x M12	8 x M12	Other
24 V DC	**4-channel** 4 inputs/outputs, filter 10 µs, I_{max} = 0.5 A, ∑ 3 A	**EPP2334-0061**					
	8-channel 4 inputs + 4 outputs, filter 3.0 ms, I_{max} = 0.5 A		**EPP2308-0001**		**EPP2308-0002**		
	8-channel 4 inputs + 4 outputs, filter 10 µs, I_{max} = 0.5 A		**EPP2318-0001**		**EPP2318-0002**		
	8-channel 4 inputs + 4 outputs, filter 3.0 ms, I_{max} = 2 A, ∑ 3 A		**EPP2328-0001**		**EPP2328-0002**		
	8-channel 8 inputs/outputs, filter 10 µs, I_{max} = 0.5 A, ∑ 3 A		**EPP2338-0001**		**EPP2338-0002**		
	8-channel 8 inputs/outputs, filter 3.0 ms, I_{max} = 0.5 A, ∑ 3 A		**EPP2338-1001**		**EPP2338-1002**		
	16-channel 16 inputs/outputs, filter 3.0 ms, I_{max} = 0.5 A, ∑ 3 A			**EPP2339-0021**		**EPP2339-0022**	
	16-channel 16 inputs/outputs, filter 10 µs, I_{max} = 0.5 A, ∑ 3 A			**EPP2349-0021**		**EPP2349-0022**	
	16-channel 8 inputs + 8 outputs, filter 10 µs, I_{max} = 0.5 A, ∑ 3 A						**EPP2316-0008** D-sub, 25-pin **EPP2316-0003** IP 20 plug

EtherCAT P Box | Analog I/O

Input		M8	M12
±10 V, 0/4…20 mA	**4-channel** parameterisable, differential input, 16 bit		**EPP3174-0002**
	4-channel parameterisable, single-ended, 16 bit		**EPP3184-0002**
Resistance thermometer (RTD)	**4-channel** PT100, PT200, PT500, PT1000, Ni100, Ni120, Ni1000, 16 bit		**EPP3204-0002**
Thermo-couple/mV	**4-channel** type J, K, L, B, E, N, R, S, T, U, 16 bit		**EPP3314-0002**
Condition Monitoring/ IEPE	**2-channel**	**EPP3632-0001**	
Pressure measuring	**4-channel** differential/absolute pressure measurement, 6 digital inputs, 2 digital outputs	**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)	
Output		**M8**	**M12**
±10 V, 0/4…20 mA	**4-channel** parameterisable, 16 bit		**EPP4174-0002**
	4-channel 2 inputs + 2 outputs, parameterisable, 16 bit		**EPP4374-0002**

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

EtherCAT P Box | Special functions

Function		M8	M12	Other
Position measurement	**Incremental encoder interface RS422** 32/16 bit, 5 V DC sensor supply		EPP5101-0002	EPP5101-0011 D-sub, 4 million increments/s
	Incremental encoder interface RS422 32/16 bit, 24 V DC sensor supply		EPP5101-1002	
	Incremental encoder interface 24 V DC 32/16 bit		EPP5151-0002	
Communi-cation	**Serial interface** 1-channel, RS232, RS422/RS485, 5 V DC/1 A		EPP6001-0002	
	Serial interface 2-channel, RS232, RS422/RS485		EPP6002-0002	
	IO-Link master Class A, 8 ports		EPP6228-0022	
Motion	**Stepper motor module** I_{max} = 1.5 A, 50 V DC, incremental encoder		EPP7041-1002	
	Stepper motor module I_{max} = 5.0 A, 50 V DC, incremental encoder		EPP7041-3002	
	DC motor output stage I_{max} = 3.5 A, 50 V DC		EPP7342-0002	
System	**EtherCAT P Box** 3 decimal ID switches	EPP1111-0000		
	EtherCAT P junction 3 ports, with feed-in	EPP1322-0001		
	EtherCAT P junction 3 ports, with refresh	EPP1332-0001		
	EtherCAT P junction 3 ports	EPP1342-0001		
	EtherCAT P Box EtherCAT P/EtherCAT connector with power transmission	EPP9001-0060		
	EtherCAT P Box 4 x diagnostics (U_S, U_P, I_S, I_F)	EPP9022-0060		

EtherCAT Plug-in Modules

▶ **www.beckhoff.com/EtherCAT-Plug-in-Modules**

EtherCAT Couplers

EtherCAT Couplers E-bus	**EJ1100**	**EJ1101-0022** 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 µs			**EJ1819** type 3
Filter 3.0 ms		**EJ1008** type 3	**EJ1809** type 3
		EJ1859 type 3, 8 inputs, 8 outputs	**EJ1889** negative switching
Safe input	**EJ1914** TwinSAFE, 4 safe inputs	**EJ1918** TwinSAFE, 8 safe inputs	
		EJ1957 TwinSAFE, 8 safe inputs, 4 safe outputs	

EtherCAT Plug-in Modules | Digital input: EJ1xxx

Signal	8-channel
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** negative switching
Safe output			**EJ2914** TwinSAFE, 4 safe outputs	**EJ2918** TwinSAFE, 8 safe outputs	
			EJ1957 TwinSAFE, 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 | Analog input: EJ3xxx

Signal	2-channel	4-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…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	

EN 61131-2 specification ▶ **www.beckhoff.com/EN61131-2**

Product announcement for availability status see www.beckhoff.com

EtherCAT Plug-in Modules | Analog output: EJ4xxx

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

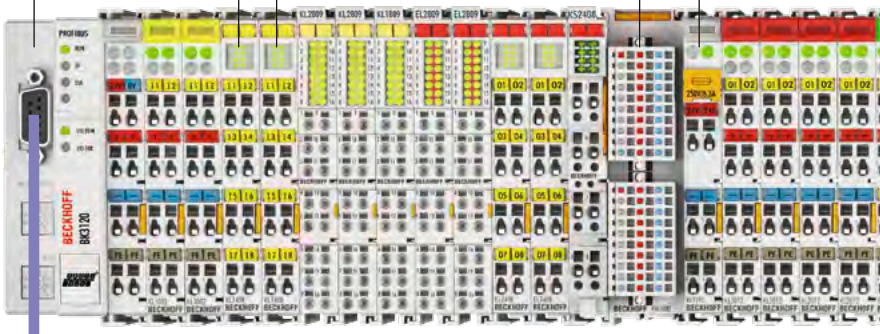
The head station of the Bus Terminals: from Bus Coupler with fieldbus interface to Embedded PC

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

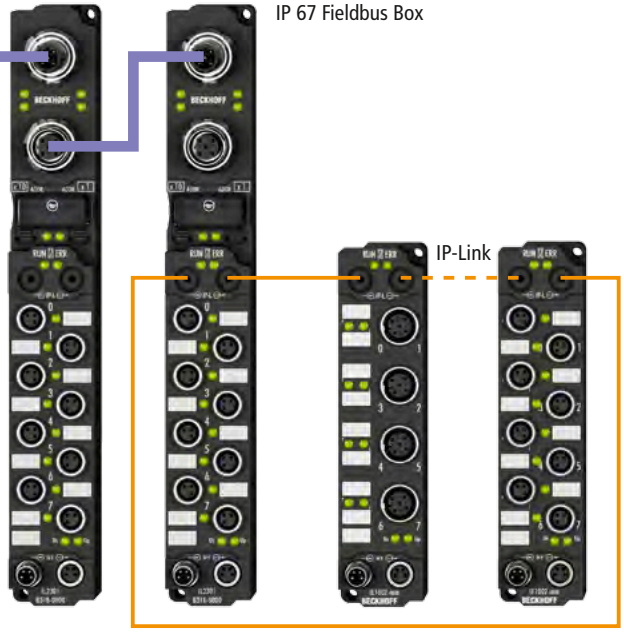
Potential feed terminals enable configuration of different potential groups.

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

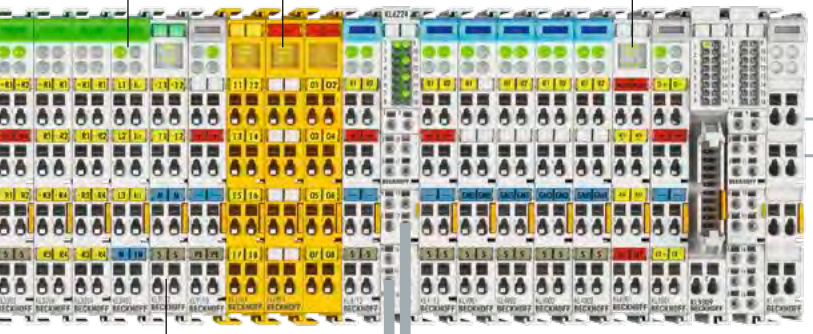
Extension Box modules

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

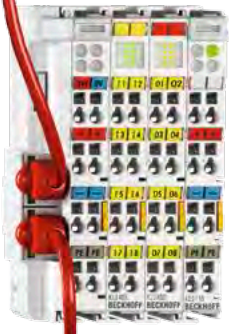
Communication terminals enable the integration of subsystems such as AS-Interface, RS232 and RS485.

Bus end terminal

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

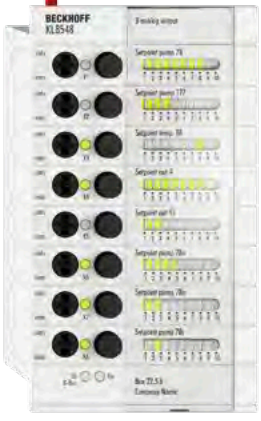


The terminal bus extension enables the connection of up to 255 Bus Terminals (instead of 64) to a single station.



Bus Terminals with a maximum measurement error of ±0.01%

IO-Link box modules



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 Terminal

▶ **www.beckhoff.com/BusTerminal**

	Bus Coupler					PLC		
Fieldbus slave	Standard	Economy only digital I/Os	Economy plus	Compact	Low Cost only digital I/Os	Controller (IEC 61131-3) Program memory 32/96 kbyte	Program memory 48 kbyte	Program memory 128 kbyte
EtherCAT			BK1120	BK1150				
				BK1250				
LIGHTBUS	BK2000	BK2010	BK2020					
PROFIBUS		BK3010 1.5 Mbaud						
	BK3100 12 Mbaud	BK3110 12 Mbaud	BK3120 12 Mbaud	BK3150 12 Mbaud	LC3100 12 Mbaud	BC3100 12 Mbaud	BC3150 12 Mbaud	
			BK3520 12 Mbaud, fibre optic					
INTERBUS	BK4000		BK4020					
CANopen		BK5110	BK5120	BK5150	LC5100		BC5150	
				BK5151				
DeviceNet	BK5200	BK5210	BK5220	BK5250	LC5200		BC5250	
ControlNet	BK7000							
CC-Link				BK7150				
Modbus	BK7300			BK7350		BC7300	BC8050	
							BC8150	
sercos the automation bus			BK7520					
RS485	BK8000						BC8050	
RS232	BK8100						BC8150	
Ethernet TCP/IP	BK9000			BK9050		BC9000	BC9050	BC9020
	BK9100 2-channel switch					BC9100 2-channel switch	BC9191 Room Controller	BC9191-0100 Room Controller
								BC9120 2-channel switch
PROFINET	BK9103 2-channel switch			BK9053				
EtherNet/IP	BK9105 2-channel switch			BK9055				

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

Embedded PC

Program memory 256 kbyte	CX80xx	CX900x, CX9010	CX9020	CX1010	CX50xx	CX51xx	CX1020, CX1030	CX20xx
	CX8010		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]
BX3100 12 Mbaud	**CX8031** slave		optional[2]	optional[1]	optional[2]	optional[2]	optional[1]	optional[2]
BX5100	**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]
BX5200								
		optional[3]	optional[3]	optional[3]	optional[3]	optional[3]	optional[3]	optional[3]
BX8000	**CX8080**	optional[2]	optional[2]	optional[2]	optional[2]	optional[2]	optional[2]	optional[2]
BX8000	**CX8080**	optional[2]	optional[2]	optional[2]	optional[2]	optional[2]	optional[2]	optional[2]
BX9000	**CX8090**	**CX9000**	**CX9020**	**CX1010**	**CX5010**	**CX5120**	**CX1020**	**CX2020**
	CX8190	**CX9010**			**CX5020**	**CX5130**	**CX1030**	**CX2030**
						CX5140		**CX2040**
								CX2042
								CX2062
								CX2072
	CX8093	optional[3]	optional[2]	optional[3]	optional[2, 3]	optional[2, 3]	optional[3]	optional[2, 3]
	CX8095	optional[3]	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 Terminal | 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/negative switching	**KL1184** negative switching	**KL1488** negative switching	**KL1862** flat-ribbon cable, type 3	**KM1002** 16-channel, type 1
	KL1052 positive/negative switching	**KL1352** NAMUR	**KL1404** 4 x 2-wire connection, type 3	**KL1804** 8 x 24 V, 4 x 0 V, type 3	**KL1808** 8 x 24 V DC, type 3	**KL1889** negative switching	**KM1004** 32-channel, type 1
	KL1212 short-circuit-protected sensor supply, type 1	**KL1362** break-in alarm			**KL1859** 8 inputs, 8 outputs, type 3, I_{max} = 0.5 A	**KL1862-0010** flat-ribbon cable, type 3, negative switching	**KM1008** 64-channel, type 1
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/negative switching	**KL1194** negative switching	**KL1498** negative switching	**KL1872** flat-ribbon cable, type 3	**KM1012** 16-channel, type 1
			KL1414 4 x 2-wire connection, type 3	**KL1434** 4 x 2-wire connection, type 2			**KM1014** 32-channel, type 1
			KL1814 8 x 24 V, 4 x 0 V, type 3				**KM1018** 64-channel, type 1
24 V DC	**KL1232** pulse expansion	**KL1382** thermistor	**KL1904** TwinSAFE, 4 safe inputs				**KM1644** manual operation, 4-channel
≥ 48 V DC	**KL1032** filter 3.0 ms	**KL1712-0060**					
120 V AC/DC	**KL1712**						
230 V AC	**KL1702**	**KL1722** no power contacts	**KL1704**				
Counter (24 V DC)	**KL1501** up/down, 100 kHz	**KL1512** up/down, 1 kHz, 16 bit					

Bus Terminal | Digital output: KL2xxx/KS2xxx					KM2xxx
Signal	**2-channel**	**4-channel**	**8-channel**	**16-channel**	**2-/4-/16-/32-/64-channel**
5 V DC		**KL2124**			
24 V DC (I_{max} = 0.5 A)	**KL2012**	**KL2114**	**KL2408**	**KL2809**	
				KL2819 with diagnostics	**KM2002** 16-channel
	KL2032 reverse voltage protection	**KL2184** negative switching	**KL2488** negative switching	**KL2889** negative switching	**KM2004** 32-channel
		KL2134 reverse voltage protection	**KL2808** 8 x 0 V	**KL2872** flat-ribbon cable	**KM2008** 64-channel
	KL2212 diagnostics, protected sensor supply	**KL2404** 4 x 2-wire	**KL1859** 8 inputs, 8 outputs, filter 3.0 ms, type 3	**KL2872-0010** flat-ribbon cable, negative switching	**KM2042** 16-channel, D-sub connection

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 Terminal | Digital output: KL2xxx/KS2xxx						KM2xxx
Signal	1-channel	2-channel		4-channel	8-channel	2-/4-/16-/32-/64-ch.
24 V DC (I_{max} = 2.0 A)		KL2022		KL2424 4 x 2-wire	KL2828 8 x 2-wire	
30 V AC/DC (I_{max} = 2.0 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 125/400 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 A	KL2602 relay, make contact, I_{max} = 5 A	KL2622 relay, make contact, no power contacts, I_{max} = 5 A			KM2604 relay, I_{max} = 16 A, 4-channel
	KL2751 universal dimmer, 300 W	KL2602-0010 relay, make contact, I_{max} = 5 A, contact-protecting switching	KL2622-0010 relay, make contact, no power contacts, I_{max} = 5 A, contact-protecting switching			KM2614 relay, I_{max} = 16 A, 4-channel, manual operation
	KL2761 universal dimmer, 600 W	KL2652 relay, change-over, I_{max} = 5 A	KL2702 solid state relay, I_{max} = 0.3 A			KM2774 triac outputs, I_{max} = 1.5 A
	KL2701 solid state relay, I_{max} = 3 A	KL2712 triac	KL2722 triac, mutually locked outputs			KM2642 relay, I_{max} = 6 A, manual/automatic operation, relay state readable
		KL2732 triac, mutually locked outputs, no power contacts	KL2692 cycle monitoring (watchdog)			KM2652 relay, I_{max} = 6 A, manual/automatic operation, switch and relay state readable
PWM		KL2502 24 V DC, I_{max} = 0.1 A	KL2512 24 V DC, I_{max} = 1 A, negative switching			
		KL2535 I_{max} = ±1 A, 24 V DC, current-controlled	KL2545 I_{max} = ±3.5 A, 50 V DC, current-controlled			
Frequency output	KL2521					

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

Bus Terminal | 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 Terminal | Analog output: KL4xxx/KS4xxx

Signal	1-channel	2-channel	4-channel	8-channel	KM4xxx 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.

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

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

Signal			
Position measurement	**KL5001** SSI encoder interface	**KL5051** SSI encoder interface, bidirectional	**KL5121** incremental encoder interface with programmable outputs
	KL5101 incremental encoder interface RS422	**KL5151** incremental encoder interface 24 V DC, 1-channel, 32 bit	**KL5152** incremental encoder interface 24 V DC, 2-channel, 32 bit
	KL5111 incremental encoder interface 24 V DC		
Communication	**KL6001** serial interface RS232, 19.2 kbaud	**KL6031** serial interface RS232, 115.2 kbaud	**KL6011** serial interface TTY, 20 mA current loop
	KL6051 data exchange terminal, 32 bit	**KL6021** serial interface RS422/RS485, 19.2 kbaud	**KL6041** serial interface RS422/RS485, 115.2 kbaud
	KL6023 wireless adapter for EnOcean radio technology	**KL6021-0023** RS485 interface for EnOcean signals	**KL6201** AS-Interface master terminal
	KL6211 AS-Interface master terminal with power contacts	**KL6224** IO-Link master	**KL6301** EIB/KNX Bus Terminal
	KL6401 LON Bus Terminal	**KL6581** EnOcean master	**KL6583** EnOcean transmitter/receiver
	KL6771 MP-Bus master terminal	**KL6781** M-Bus master terminal	**KL6811** DALI/DSI master and power supply terminal
	KL6821 DALI 2 multi-master and power supply terminal	**KL6831** SMI terminal, LoVo	**KL6841** SMI terminal, 230 V AC

Signal	
Safety	**KL6904** TwinSAFE Logic Bus Terminal, 4 safe outputs
Manual operation	**KL8519** 16-channel digital input signal module
	KL8524 4 x 2-channel digital output, 24 V DC, 0.5 A
	KL8528 8-channel digital output, 24 V DC, 0.5 A
	KL8548 8-channel analog output, 0…10 V
Power terminals	**KL8001** switching capacity 5.5 kW, nominal current 0.9 to 9.9 A, connection mechanism for Siemens contactors (Sirius 3R series)

Bus Terminal | System terminals: KL9xxx/KS9xxx

Signal	System	
System	**KL9010** bus end terminal	**KL9070** shield terminal
	KL9020 terminal bus extension end terminal	**KL9050** terminal bus extension coupler terminal
	KL9060 adapter terminal for power terminal KL8xxx	**KL9309** adapter terminal for KL85xx manual operating modules
	KL9080 isolation terminal	**KL9195** shield terminal
Potential distribution terminal	**KL9180** 2 terminal points per power contact	**KL9181** 2 x 8 terminal points
	KL9182 8 x 2 terminal points	**KL9183** 1 x 16 terminal points
	KL9184 8 x 24 V DC, 8 x 0 V DC	**KL9185** only 2 power contacts
	KL9186 8 x 24 V DC	**KL9187** 8 x 0 V DC
	KL9188 16 x 24 V DC	**KL9189** 16 x 0 V DC
	KL9380 mains filter, approx. 1 µF	
Filter	**KL9540** surge filter terminal for field supply	
	KL9540-0010 surge filter field supply for analog terminals	**KL9550** surge filter terminal for system/field supply
Diode array	**KL9300** 4 diodes, potential-free	
	KL9301 7 diodes, common cathode	**KL9302** 7 diodes, common anode

Signal	Potential supply	Power supply and accessories
24 V DC	**KL9100**	**KL9400** K-bus power supply, 2 A
	KL9110 diagnostics	**KL9505** output 5 V DC, 0.5 A
	KL9200 with fuse	**KL9508** output 8 V DC, 0.5 A
	KL9210 diagnostics, with fuse	**KL9510** output 10 V DC, 0.5 A
		KL9512 output 12 V DC, 0.5 A
		KL9515 output 15 V DC, 0.5 A
	KL9520 AS-Interface potential supply	**KL9528** AS-Interface power supply terminal
		KL9560 output 24 V DC, 0.1 A
50 V DC		**KL9570** buffer capacitor terminal, 500 µF
120… 230 V AC	**KL9150**	
	KL9160 diagnostics	
	KL9250 with fuse	
	KL9260 diagnostics, with fuse	
Up to 400 V AC	**KL9190**	
	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 IEC 61131-3 with IP-Link interface	
EtherCAT			IL230x-B110			
LIGHTBUS	IPxxxx-B200		IL230x-B200			
PROFIBUS	IPxxxx-B310	IPxxxx-B318 with integrated tee-connector	IL230x-B310	IL230x-B318 with integrated tee-connector	IL230x-C310	IL230x-C318 with integrated tee-connector
INTERBUS	IPxxxx-B400		IL230x-B400			
CANopen	IPxxxx-B510	IPxxxx-B518 with integrated tee-connector	IL230x-B510	IL230x-B518 with integrated tee-connector		
DeviceNet	IPxxxx-B520	IPxxxx-B528 with integrated tee-connector	IL230x-B520	IL230x-B528 with integrated tee-connector		
Modbus	IPxxxx-B730		IL230x-B730			
RS485	IPxxxx-B800		IL230x-B800			
RS232	IPxxxx-B810		IL230x-B810		IL230x-C810	
Ethernet TCP/IP			IL230x-B900	IL230x-B901	IL230x-C900	
PROFINET			IL230x-B903			
EtherNet/IP			IL230x-B905			

Fieldbus Box | Compact Box and Extension Box: Digital I/O

Input		8 mm	M8	M12
24 V DC	8-channel filter 3.0 ms	IP1000-Bxxx, IE1000	IP1001-Bxxx, IE1001	IP1002-Bxxx, IE1002
	8-channel filter 0.2 ms	IP1010-Bxxx, IE1010	IP1011-Bxxx, IE1011	IP1012-Bxxx, IE1012
Counter	2-channel up/down counter 24 V DC, 100 kHz			IP1502-Bxxx, IE1502
Output		**8 mm**	**M8**	**M12**
24 V DC	8-channel I_{max} = 0.5 A	IP2000-Bxxx, IE2000	IP2001-Bxxx, IE2001	IP2002-Bxxx, IE2002
	8-channel I_{max} = 2 A, ∑ 4 A	IP2020-Bxxx, IE2020	IP2021-Bxxx, IE2021	IP2022-Bxxx, IE2022
	8-channel I_{max} = 2 A, ∑ 12 A	IP2040-Bxxx, IE2040	IP2041-Bxxx, IE2041	IP2042-Bxxx, IE2042
	16-channel I_{max} = 0.5 A, ∑ 4 A, D-sub			IE2808 IE2808-0001
PWM	2-channel PWM, 24 V DC, I_{max} = 2.5 A			IP2512-Bxxx, IE2512

Fieldbus Box | Compact Box, Coupler Box, PLC Box and Extension Box: Digital I/O

Combi		8 mm	M8	M12	Other
24 V DC	**8-channel** 4 inputs + 4 outputs, filter 3.0 ms, I_{max} = 0.5 A	IL2300-Bxxx IL2300-Cxxx IP2300-Bxxx IE2300	IL2301-Bxxx IL2301-Cxxx IP2301-Bxxx IE2301	IL2302-Bxxx IL2302-Cxxx IP2302-Bxxx IE2302	
	8-channel 4 inputs + 4 outputs, filter 0.2 ms, I_{max} = 0.5 A	IP2310-Bxxx IE2310	IP2311-Bxxx IE2311	IP2312-Bxxx IE2312	
	8-channel 4 inputs + 4 outputs, filter 3.0 ms, I_{max} = 2 A, ∑ 4 A	IP2320-Bxxx IE2320	IP2321-Bxxx IE2321	IP2322-Bxxx IE2322	
	8-channel 4 inputs + 4 outputs, filter 0.2 ms, I_{max} = 2 A, ∑ 4 A	IP2330-Bxxx IE2330	IP2331-Bxxx IE2331	IP2332-Bxxx IE2332	
	16-channel combi inputs/outputs, filter 3.0 ms, I_{max} = 0.5 A	IP2400-Bxxx IE2400	IP2401-Bxxx IE2401		IE2403 IP 20 plug

Fieldbus Box | Compact Box and Extension Box: Analog I/O

Input		M12
±10 V	**4-channel** differential inputs, 16 bit	IP3102-Bxxx, IE3102
0/4…20 mA	**4-channel** differential inputs, 16 bit	IP3112-Bxxx, IE3112
Resistance thermometer	**4-channel** PT100, PT200, PT500, PT1000, Ni100, 16 bit	IP3202-Bxxx, IE3202
Thermocouple/mV	**4-channel** type J, K, L, B, E, N, R, S, T, U, 16 bit	IP3312-Bxxx, IE3312

Output		M12
±10 V	**4-channel** 16 bit	IP4132-Bxxx, IE4132
0/4…20 mA	**4-channel** 16 bit	IP4112-Bxxx, IE4112

Fieldbus Box | Compact Box and Extension Box: Special functions

Function		M12	M23
Position measurement	**1-channel** SSI encoder interface		IP5009-Bxxx, IE5009
	1-channel incremental encoder interface, 1 MHz		IP5109-Bxxx, IE5109
	1-channel SinCos encoder interface		IP5209-Bxxx (1 V_{PP}) IP5209-Bxxx-1000 (11 μA_{PP})
Communication	**1-channel** serial interface, RS232	IP6002-Bxxx, IE6002	
	1-channel serial interface, 0…20 mA (TTY)	IP6012-Bxxx, IE6012	
	1-channel serial interface, RS422/RS485	IP6022-Bxxx, IE6022	

EPIxxxx

ERIxxxx

Fieldbus Box | IO-Link box: Digital I/O

Input		8 x M8	16 x M8	4 x M12	8 x M12
24 V DC	8-channel filter 3.0 ms	EPI1008-0001 ERI1008-0001		EPI1008-0002 ERI1008-0002	
	16-channel filter 3.0 ms		EPI1809-0021 ERI1809-0021		EPI1809-0022 ERI1809-0022
Output		**8 x M8**	**16 x M8**	**4 x M12**	**8 x M12**
24 V DC	8-channel I_{max} = 0.5 A	EPI2008-0001 ERI2008-0001		EPI2008-0002 ERI2008-0002	
	16-channel I_{max} = 0.5 A, ∑ 4 A		EPI2809-0021 ERI2809-0021		EPI2809-0022 ERI2809-0022
Combi		**8 x M8**	**16 x M8**	**4 x M12**	**8 x M12**
24 V DC	8-channel 8 inputs/outputs, filter 3.0 ms, I_{max} = 0.5 A	EPI2338-0001 ERI2338-0001		EPI2338-0002 ERI2338-0002	
	16-channel 16 inputs/outputs, filter 3.0 ms, I_{max} = 0.5 A, ∑ 4 A		EPI2339-0021 ERI2339-0021		EPI2339-0022 ERI2339-0022

Fieldbus Box | IO-Link box: Analog I/O

Input		M12
±10 V, 0/4…20 mA	4-channel parameterisable, differential input, 16 bit	EPI3174-0002 ERI3174-0002
Output		**M12**
±10 V, 0/4…20 mA	4-channel 2 inputs + 2 outputs, parameterisable, 16 bit	EPI4374-0002 ERI4374-0002

EPIxxxx: industrial housing in IP 67, ERIxxxx: zinc die-cast housing in IP 67

Product announcement for availability status see www.beckhoff.com

Infrastructure Components

▶ **www.beckhoff.com/Infrastructure-components**

Infrastructure Components

Ethernet

Ethernet Switches	**CU2005** 5 ports, 10/100 Mbit/s, IP 20	
	CU2008 8 ports, 10/100 Mbit/s, IP 20	
	CU2016 16 ports, 10/100 Mbit/s, IP 20	
	CU2208 8 Gbit ports, 10/100/1000 Mbit/s, IP 20	
	CU2608 8 ports, M12, D-coded, 10/100 Mbit/s, IP 67	
Port multiplier	**CU2508** real-time Ethernet port multiplier, 10/100/1000 Mbit/s, IP 20	

EtherCAT

EtherCAT junctions	**CU1123** 3-port, RJ45, IP 20	
	CU1124 4-port, RJ45, IP 20	
	CU1128 8-channel, RJ45, IP 20	
	EP9128 8-channel, M8, IP 67	
EtherCAT media converters fibre optic	**CU1521-0000** multimode, IP 20	
	CU1521-0010 singlemode, IP 20	
	CU1561 POF, IP 20	
	EP9521 multimode, IP 67	

PC Fieldbus Cards

Fieldbus	PCI	Mini-PCI	PCIe
EtherCAT	**FC1100** 1-channel, slave		**FC1121** 1-channel, slave
LIGHTBUS	**FC2001-0000** 1-channel		
	FC2002-0000 2-channel		
PROFIBUS	**FC3101-0000** 1-channel	**FC3151-0000** 1-channel	**FC3121** 1-channel
	FC3101-0002 1-channel, 32 kbytes NOVRAM	**FC3151-0002** 1-channel, 128 kbytes NOVRAM	
	FC3102-0000 2-channel		**FC3122** 2-channel
	FC3102-0002 2-channel, 32 kbytes NOVRAM		
CANopen	**FC5101-0000** 1-channel	**FC5151-0000** 1-channel	**FC5121** 1-channel
	FC5101-0002 1-channel, 32 kbytes NOVRAM	**FC5151-0002** 1-channel, 128 kbytes NOVRAM	
	FC5102-0000 2-channel		**FC5122** 2-channel
	FC5102-0002 2-channel, 32 kbytes NOVRAM		
DeviceNet	**FC5201-0000** 1-channel	**FC5251-0000** 1-channel	
	FC5201-0002 1-channel, 32 kbytes NOVRAM	**FC5251-0002** 1-channel, 128 kbytes NOVRAM	
	FC5202-0000 2-channel		
	FC5202-0002 2-channel, 32 kbytes NOVRAM		
sercos the automation bus	**FC7501-0000** 1-channel	**FC7551-0000** 1-channel	
	FC7502-0000 2-channel	**FC7551-0002** 1-channel, 128 kbytes NOVRAM	
Ethernet	**FC9001-0010** 1-channel, 10/100 Mbit/s	**FC9051-0000** 1-channel, 10/100 Mbit/s	
	FC9011-0000 1-channel, 10/100/1000 Mbit/s	**FC9151-0000** 1-channel, 10/100/1000 Mbit/s	
	FC9002-0000 2-channel, 10/100 Mbit/s		**FC9022-0000** 2-channel, 10/100/1000 Mbit/s
	FC9004-0000 4-channel, 10/100 Mbit/s		**FC9024-0000** 4-channel, 10/100/1000 Mbit/s
PROFINET			**FC9321-0010** 1-channel, IRT device
			FC9361-0010 1-channel, IRT device, compact

The Motion Company

AX8000 multi-axis EtherCAT drive

Servo Drives 64

- Available as multi-axis system or stand-alone version (1-/2-channel)
- High-speed EtherCAT communication
- Wide range of nominal current types, up to 170 A
- Flexible motor type selection
- Optimised for multi-axis applications

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Distributed Servo Drive system 66

- 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 67

- For demanding positioning tasks
- Highly dynamic behaviour
- Brushless three-phase motors
- Permanent magnet in the rotor

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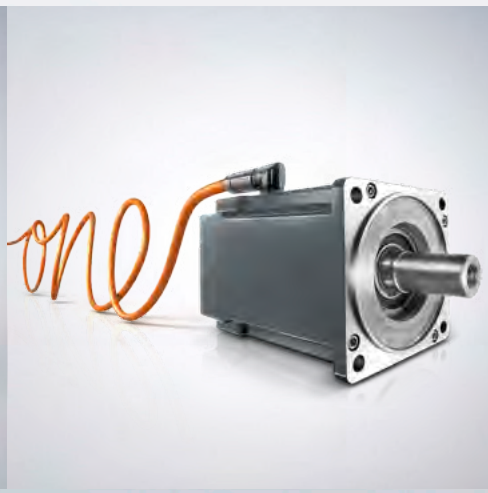

In combination with the motion control solutions offered by the company's TwinCAT automation software, Beckhoff Drive Technology provides an advanced, all-inclusive drive system. PC-based control technology from Beckhoff is ideally suited for single- and multi-axis positioning tasks with high dynamic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

Compact Drive Technology 70

- Solutions for up to 8 A in the space-saving I/O system
- Simple connection of stepper, servo, DC or AC motors
- IP 20 or IP 67 connection options
- Matching motors and gearboxes

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eXtended Transport System XTS 72

- 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**

- **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 specialises in manufacturing efficient, space-saving motion solutions.**

Servo Drives

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AX8000

AX8000 | Multi-axis servo system: power supply modules

	AX8620-0000	AX8620-1000	AX8640-0000
Rated output current	20 A DC	20 A DC	40 A DC
Supply voltage	3 x 200…480 V AC	1 x 100…240 V AC	3 x 400…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	AX8118	AX8206
Rated current	1 x 8 A	1 x 18 A	2 x 6 A
Number of axes	1	1	2
Motor feedback	OCT	OCT	OCT
TwinSAFE/safe drive technology	**AX8108-0000** without TwinSAFE	**AX8118-0000** without TwinSAFE	**AX8206-0000** without TwinSAFE
	AX8108-0100 STO/SS1	**AX8118-0100** STO/SS1	**AX8206-0100** STO/SS1
	AX8108-0200 Safe Motion	**AX8118-0200** Safe Motion	**AX8206-0200** Safe Motion

AX8000 | Multi-axis servo system: option modules

	1-channel	2-channel
Coupling module for AMP8000	**AX8831**	**AX8832**
	for AX86xx-1000	**for AX86xx-0000**
Capacitor module	**AX8810-1000**	**AX8810-0000**

AX5000

AX5000 | Digital Compact Servo Drives

	AX5101…AX5112	AX5201…AX5206	AX5118…AX5140	AX5160…AX5193
Number of axes	1	2	1	1
Rated current	1.5…12 A	2 x 1.5…6 A	18…40 A	60…170 A
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
Motor feedback	OCT, multi-feedback	OCT, multi-feedback	OCT, multi-feedback	multi-feedback

AX5000 | Digital Compact Servo Drives: options

	1-channel		2-channel	
Coupling module for AMP8000	**AX5031**		**AX5032**	
Encoder option cards	**AX5701** 1 V_{PP}, BiSS B, Hiperface, EnDat	**AX5721** EnDat 2.2, BiSS C	**AX5702** 1 V_{PP}, BiSS B, Hiperface, EnDat	**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-wDyz	AMP8041-wEyz	AMP8042-wEyz	AMP8043-wEyz
Standstill torque	2.01 Nm	2.01 Nm	3.48 Nm	4.80 Nm
Rated speed	3000 min^{-1}	6000 min^{-1}	2500 min^{-1}	2500 min^{-1}
Rated power	0.61 kW	1.23 kW	0.87 kW	1.18 kW
Standstill current	1.65 A	3.00 A	2.15 A	2.90 A
Connection technology	ECP B23 plug	ECP B23 plug	ECP B23 plug	ECP B23 plug
One Cable Technology (OCT)	yes	yes	yes	yes

AMP805x | Distributed Servo Drive, flange code F5

Data for 560 V DC	AMP8051-wEyz	AMP8051-wGyz	AMP8052-wFyz	AMP8053-wGyz
Standstill torque	4.08 Nm	4.08 Nm	6.97 Nm	9.70 Nm
Rated speed	2500 min^{-1}	5000 min^{-1}	2000 min^{-1}	2000 min^{-1}
Rated power	1.02 kW	1.02 kW	1.34 kW	1.78 kW
Standstill current	2.70 A	4.75 A	3.30 A	4.70 A
Connection technology	ECP B23 plug	ECP B23 plug	ECP B23 plug	ECP B23 plug
One Cable Technology (OCT)	yes	yes	yes	yes

AX503x, AX883x | Coupling modules for AMP8000

	AX5031	AX5032	AX8831	AX8832
Function	coupling module with feed	coupling module with feed	coupling module	coupling module
Number of channels	1	2	1	2
Rated output current DC link	20 A DC	∑ 20 A DC	20 A DC	2 x 20 A DC
Rated output current 24 V	16 A DC	∑ 20 A DC	16 A DC	∑ 20 A DC
DC-Link voltage	565…680 V DC	565…680 V DC	565…680 V DC	565…680 V DC

AMP8805 | Distribution module for AMP8000

	AMP8805
Function	distribution module
Number of channels	1 x Power IN, 5 x Power OUT, 1 x EtherCAT P OUT
Rated input current 24 V	16 A DC
DC-Link voltage	565…680 V DC
DC-Link capacitance	1120 µF
Protection class	IP 65

Product announcement for availability status see www.beckhoff.com

Synchronous Servomotors

▶ **www.beckhoff.com/Servomotors**

AM8000, AM8500

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…1.20 Nm	**AM803x** M_0 = 1.37…3.22 Nm	**AM804x** M_0 = 2.37…5.65 Nm	**AM805x** M_0 = 4.80…11.4 Nm, up to 15.4 Nm with fan	**AM806x** M_0 = 12.8…29.0 Nm, up to 41.4 Nm with fan	**AM807x** M_0 = 29.0…92.0 Nm, up to 129 Nm with fan
Standard 230 V AC	**AM801x** M_0 = 0.20…0.52 Nm						
Standard 48 V DC	**AM811x** M_0 = 0.20…0.52 Nm	**AM812x** M_0 = 0.50…0.80 Nm	**AM813x** M_0 = 1.35…2.37 Nm	**AM8141** M_0 = 2.40 Nm			
Increased inertia 400 V AC			**AM853x** M_0 = 1.37…3.22 Nm	**AM854x** M_0 = 2.37…5.65 Nm	**AM855x** M_0 = 4.80…11.4 Nm, up to 15.4 Nm with fan	**AM856x** M_0 = 12.8…29.0 Nm, up to 41.4 Nm with fan	
Stainl. steel 400 V AC			**AM883x*** M_0 = 0.85…1.85 Nm	**AM884x*** M_0 = 1.60…3.50 Nm	**AM885x*** M_0 = 3.10…6.40 Nm	**AM886x*** M_0 = 7.75…16.7 Nm	

*Please note the different flange size.

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…1.20 Nm	**AM803x** M_0 = 1.37…3.22 Nm	**AM804x** M_0 = 2.37…5.65 Nm	**AM805x** M_0 = 4.80…11.4 Nm, up to 15.4 Nm with fan	**AM806x** M_0 = 12.8…29.0 Nm, up to 41.4 Nm with fan	**AM807x** M_0 = 29.0…92.0 Nm, up to 129 Nm with fan	
		AM302x M_0 = 0.87…1.41 Nm	**AM303x*** M_0 = 1.15…2.79 Nm	**AM304x*** M_0 = 1.95…6.00 Nm	**AM305x*** M_0 = 4.70…14.9 Nm	**AM306x*** M_0 = 11.9…25.0 Nm	**AM307x*** M_0 = 29.7…53.0 Nm	**AM308x** M_0 = 75.0…180 Nm
Standard 230 V AC	**AM301x** M_0 = 0.18…0.41 Nm	**AM302x** M_0 = 0.48…0.87 Nm	**AM3031** M_0 = 1.20 Nm					
Standard 48 V DC	**AM311x*** M_0 = 0.21…0.34 Nm	**AM812x** M_0 = 0.50…0.80 Nm	**AM813x** M_0 = 1.35…2.37 Nm	**AM8141** M_0 = 2.40 Nm				
		AM3121* M_0 = 0.69 Nm						
Increased inertia 400 V AC			**AM853x** M_0 = 1.37…3.22 Nm	**AM854x** M_0 = 2.37…5.65 Nm	**AM855x** M_0 = 4.80…11.4 Nm, up to 15.4 Nm with fan	**AM856x** M_0 = 12.8…29.0 Nm, up to 41.4 Nm with fan		
				AM354x* M_0 = 1.90…4.20 Nm	**AM355x*** M_0 = 4.10…8.60 Nm	**AM356x*** M_0 = 11.6…14.9 Nm		
Stainl. steel 400 V AC			**AM883x*** M_0 = 0.85…1.85 Nm	**AM884x*** M_0 = 1.60…3.50 Nm	**AM885x*** M_0 = 3.10…6.40 Nm	**AM886x*** M_0 = 7.75…16.7 Nm		

*Please note the different flange size.

Linear Servomotors, stepper motors

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

Linear Servomotors

	AL2000	AL2400	AL2800
Especially suitable for	maximum power density	confined spaces	highest demands on force
Magnetic path width	80 mm	50 mm	130 mm
Cooling	air	air	air, partly water
Max. speed	7 m/s	12 m/s	6 m/s
Max. force	225…1800 N	120…480 N	1800…6750 N
Protection class	IP 64	IP 64	IP 64

Linear actuators

	AA1121
Rated force	150 N
Peak force	800 N
Max. movement	10 mm
Max. acceleration	7 m/s²
Protection class	IP 54

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

Product announcement for availability status see www.beckhoff.com

Planetary gear units

▶ **www.beckhoff.com/Planetary-gears**

AG2800

AG2250

AG1000

AG2210

AG3210

AG2300

AG3300

AG2400

AG3400

Planetary gear units for AM8000/AM8500

	AG2210	AG3210	AG2300	AG3300	AG2400	AG3400
Variant	standard (MF)	standard (MF)	standard (MF), high-speed (MC)	standard (MF)	standard (MF)	standard (MF)
Output type	shaft	shaft	shaft	shaft	flange	flange
Gear ratios	1-stage i = 3…10, 2-stage i = 9…100	1-stage i = 4…10, 2-stage i = 16…100	1-stage i = 3…10, 2-stage i = 16…100	1-stage i = 3…10, 2-stage i = 9…100	1-stage i = 4…10, 2-stage i = 16…100	1-stage i = 3…10, 2-stage i = 9…100
Protection class	IP 64	IP 64	IP 65	IP 64	IP 65	IP 64

Planetary gear units for other motor series

	AG2800	AG2250	AG1000
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…10, 2-stage i = 9…100	1-stage i = 3…10, 2-stage i = 12…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

EtherCAT Box Modules

EtherCAT P Box Modules

	Product group	DC motor output stage			Stepper motor
		< 3 A	3…5 A	> 5 A	< 3 A
I/O	EtherCAT Terminals IP 20	**EL7332** I_{max} = 1.0 A, 24 V DC	**EL7332 + ZB8610** I_{max} = 3.0 A, 24 V DC		**EL7037** I_{max} = 1.5 A, 24 V DC, incremental encoder, vector control
			EL7342 I_{max} = 3.5 A, 50 V DC, incremental encoder	**EL7342 + ZB8610** I_{max} = 6.5 A, 50 V DC, incremental encoder	**EL7031** I_{max} = 1.5 A, 24 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		**KL2531** I_{max} = 1.5 A, 24 V DC
	EtherCAT Box Modules IP 67		**EP/ER7342-0002** I_{max} = 3.5 A, 50 V DC		**EP/ER7041-1002** I_{max} = 1.5 A, 50 V DC, incremental encoder
	EtherCAT P Box Modules IP 67		**EPP7342-0002** I_{max} = 3.5 A, 50 V DC		**EPP7041-1002** I_{max} = 1.5 A, 50 V DC, incremental encoder
Motion	Flange code F1 (40 mm), N1 (NEMA17)				**AS1010** 1.0 A, 48 V DC, 0.38 Nm
					AS1020 1.0 A, 48 V DC, 0.50 Nm
	Flange code F2 (58 mm), N2 (NEMA23)				**AS1030** 1.5 A, 48 V DC, 0.60 Nm
					AS2021-0Dy0 2.0 A, 48 V DC, 0.80 Nm
	Flange code F3 (72 mm), N3 (NEMA34)				
	Flange code F4 (87 mm)				

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

Flange code F1 | Flange code N1 | Flange code F2 | Flange code N2 | Flange code F3 | Flange code N3 | Flange code F4

Servomotor					
3…5 A	> 5 A	< 3 A	3…5 A	> 5 A	
EL7037 + ZB8610 I_{max} = 3.0 A, 24 V DC, incremental encoder, vector control		**EL7201-9014** I_{rms} = 2.8 A, 50 V DC, OCT, STO	**EL7201-9014 + ZB8610** I_{rms} = 4.5 A, 50 V DC, OCT, STO	**EL7221-9014** i I_{rms} = 7…8 A with ZB8610, 50 V DC, OCT, STO	
EL7047 I_{max} = 5.0 A, 50 V DC, incremental encoder, vector control	**EL7047 + ZB8610** I_{max} = 6.5 A, 50 V DC, incremental encoder, vector control	**EL7201-0010** I_{rms} = 2.8 A, 50 V DC, OCT	**EL7201-0010 + ZB8610** I_{rms} = 4.5 A, 50 V DC, OCT		
EL7041 I_{max} = 5.0 A, 50 V DC, incremental encoder		**EL7201** I_{rms} = 2.8 A, 50 V DC, resolver	**EL7201 + ZB8610** I_{rms} = 4.5 A, 50 V DC, resolver		
			EL7211-9014 I_{rms} = 4.5 A, 50 V DC, OCT, STO		
			EL7211-0010 I_{rms} = 4.5 A, 50 V DC, OCT		
			EL7211 I_{rms} = 4.5 A, 50 V DC, resolver		
EJ7047 I_{max} = 5.0 A, 50 V DC, incremental encoder, vector control			**EJ7211-0010** I_{rms} = 4.5 A, 50 V DC, OCT		
KL2541 I_{max} = 5.0 A, 50 V DC, incremental encoder					
EP/ER7041-3002 I_{max} = 5.0 A, 50 V DC, incremental encoder			**EP7211-9034** I_{rms} = 4.5 A, 50 V DC, OCT, STO		
EPP7041-3002 I_{max} = 5.0 A, 50 V DC, incremental encoder					
		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}		
AS1050 5.0 A, 48 V DC, 1.20 Nm	**AS2022-0Hy0** i 5.6 A, 48 V DC, 1.50 Nm		**AM8121-wFyz** 4.0 A, 48 V DC, 0.50 Nm, 3000 min^{-1}		
	AS2023-0Hy0 i 5.6 A, 48 V DC, 1.80 Nm		**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}	
AS1060 5.0 A, 48 V DC, 5.00 Nm	**AS2041-1Hy0** i 5.6 A, 48 V DC, 3.30 Nm		**AM8131-wFyz** 5.0 A, 48 V DC, 1.35 Nm, 1000 min^{-1}	**AM8131-wJyz** 8.0 A, 48 V DC, 1.37 Nm, 1800 min^{-1}	
	AS2042-1Hy0 i 5.6 A, 48 V DC, 6.40 Nm			**AM8132-wJyz** 8.0 A, 48 V DC, 2.35 Nm, 1000 min^{-1}	
	AS2043-1Jy0 i 6.5 A, 48 V DC, 8.00 Nm				
				AM8141-wJyz 8.0 A, 48 V DC, 2.40 Nm, 1000 min^{-1}	

XTS | eXtended Transport System

▶ **www.beckhoff.com/XTS**

Standard
motor module

Black Line
motor module

Hygienic
motor module

Motor module | Standard

	straight	curved, 180°	curved, 45°	curved, 22.5°
	AT2000-0250			
	AT2001-0250 with feed			
Clothoid		AT2050-0500		
Positive curve (convex)			AT2040-0250	AT2020-0250
			AT2041-0250 with feed	AT2021-0250 with feed
Negative curve (concave)				AT2025-0250
				AT2026-0250 with feed

Motor module | Black Line

	straight	curved, 180°	curved, 45°	curved, 22.5°
	AT2000-0250-0002			
	AT2001-0250-0002 with feed			
Clothoid		AT2050-0500-0002		
Positive curve (convex)			AT2040-0250-0002	AT2020-0250-0002
			AT2041-0250-0002 with feed	AT2021-0250-0002 with feed
Negative curve (concave)				AT2025-0250-0002

Motor module | Hygienic

	straight	curved, 180°	curved, 45°	curved, 22.5°
	ATH2000-0250 i			
	ATH2001-0250 i with feed			
Clothoid		ATH2050-0500 i		

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

Standard guide rail

Hygienic guide rail

Standard mover

Hygienic mover

Standard starter kit

Guide rail | Standard

	straight	curved, 180°	curved, 45°	curved, 22.5°
	AT9000-xxxx without lock			
	AT9100-xxxx with lock			
Clothoid		AT9050-0500		
Positive curve (convex)		AT9040-1250	AT9040-xxxx	AT9020-0500
			AT9142-2000 full circle	
Negative curve (concave)				AT9025-xxxx

Guide rail | Hygienic

	straight	curved, 180°	curved, 45°	curved, 22.5°
	ATH9000-xxxx without lock i			
	ATH9100-xxxx with lock i			
Clothoid		ATH9050-0500-0075 i		

Mover | Standard

	straight*	curved, 180° *	curved, 45° *	curved, 22.5° *
6 rollers, 50 mm	AT9011-0050-0550	AT9011-0050-0550	AT9011-0050-0550	AT9011-0050-0550
12 rollers, 50 mm	AT9012-0050-0550	AT9012-0050-0550		
6 rollers, 70 mm	AT9011-0070-0550	AT9011-0070-0550	AT9011-0070-0550	AT9011-0070-0550

* Movers can be used with specified motor module types.

Mover | Hygienic

	straight*	curved, 180° *	curved, 45° *	curved, 22.5° *
6 rollers, 75 mm	ATH9011-0075-0550 i	ATH9011-0075-0550 i		

* Movers can be used with specified motor module types.

Starter kit | Standard

small	medium	large
AT2000-0500	AT2000-1000	AT2000-1500

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 76

- 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

TwinCAT 2 82

- Open, compatible PC hardware
- Embedded IEC 61131-3 software PLC, software NC and software CNC
- Connection to all common fieldbuses

▶ **www.beckhoff.com/TwinCAT2**

TwinSAFE 86

- 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/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, centralised platform: PLC, motion control, robotics, measurement technology, a.o.**

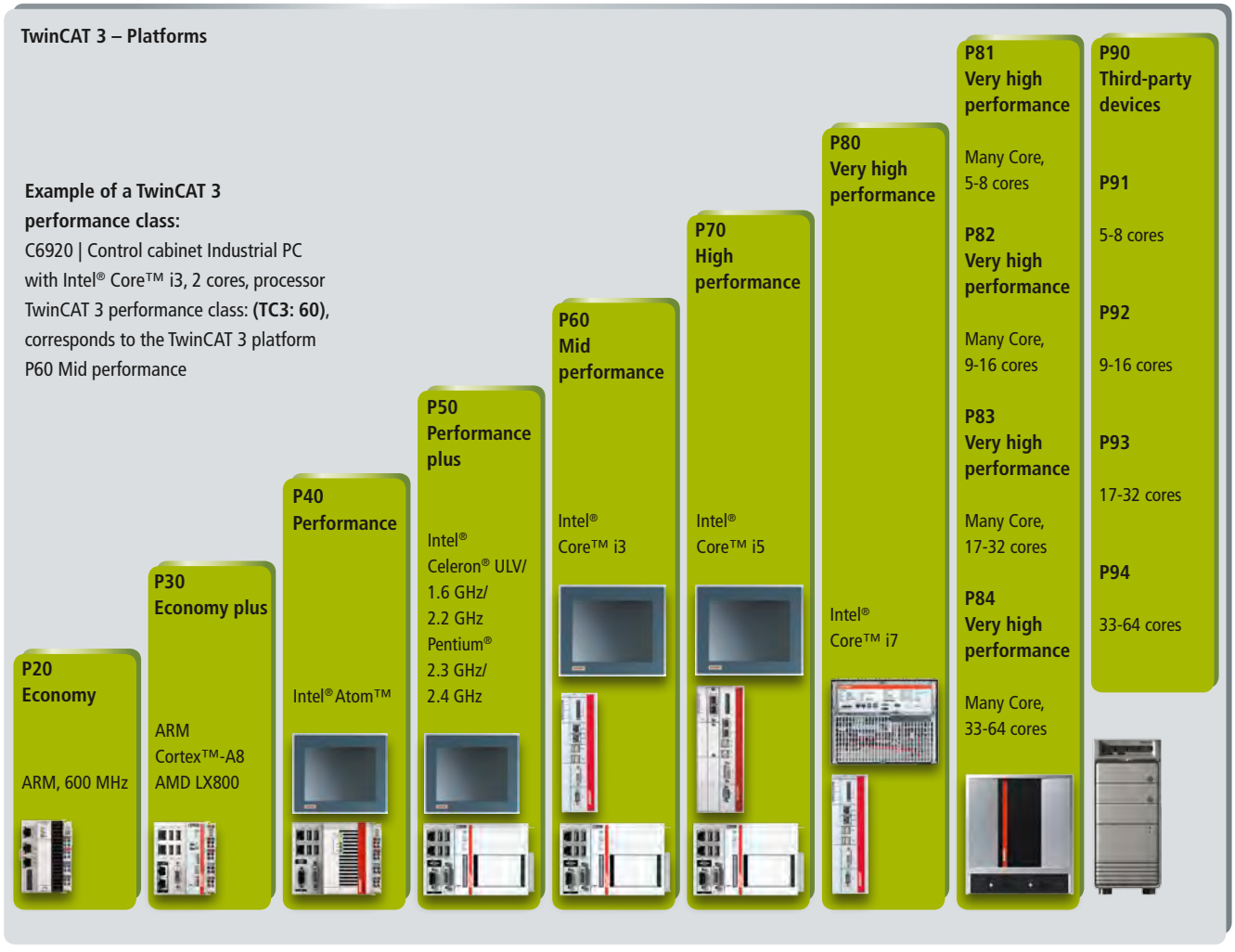
TwinCAT 3

▶ **www.beckhoff.com/TwinCAT3**

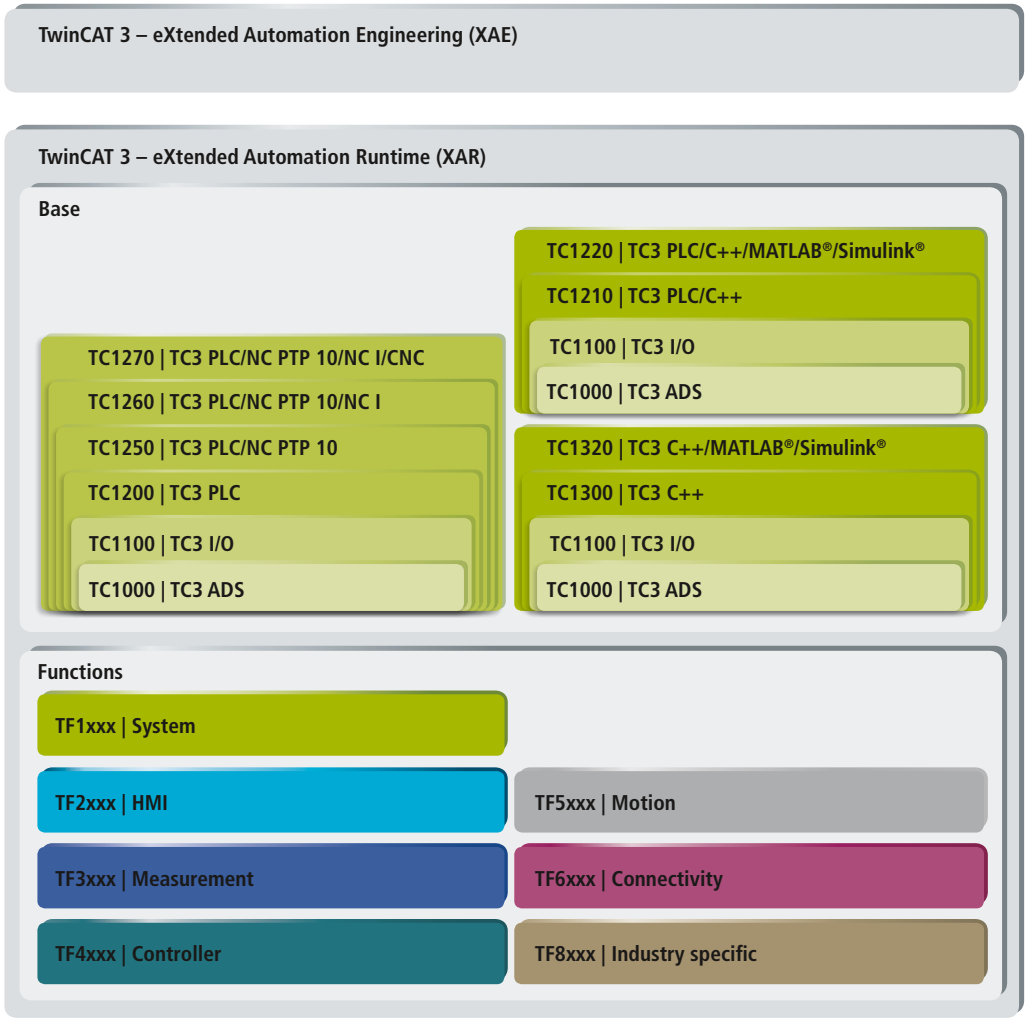
TwinCAT 3 realises a new approach for the engineering and extends the runtime by many features. The engineering is embedded completely in the Microsoft Visual Studio® framework. This way, C/C++ or MATLAB®/Simulink® are available in a single environment with programming and debugging in addition to the configuration of system, motion, I/O and the IEC 61131 PLC programming languages.

With these programming languages it is possible to create modules that can be executed in the TwinCAT 3 runtime. The number of modules that can be executed is almost unlimited. The number of tasks in TwinCAT 3 has also been significantly extended. The TwinCAT 3 runtime environment allows modules to be loaded to different cores of a multi-core CPU.

The TwinCAT 3 runtime components are available for different platforms.



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



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
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
TE1200 | **TC3 PLC Static Analysis**	analysis tool that tests PLC software on the basis of coding rules
TE1210 | **TC3 PLC Profiler**	analyses the runtime characteristics of a PLC application and identifies time-intensive callups and program sections
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 MATLAB®/Simulink® Target**	TwinCAT target for MATLAB®/Simulink® for generating TwinCAT 3 modules
TE1410 | **TC3 Interface for MATLAB®/Simulink®**	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)
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 visualising 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**	tool for developing platform-independent user interfaces
TE3500 | **TC3 Analytics Workbench**	complete solution for 24/7 monitoring of machines and systems incl. visualisation on analysis dashboards
TE3501 | **TC3 Analytics Controller Pack 10**	extension of the TC3 Analytics Workbench for the analysis of 10 additional controllers
TE3502 | **TC3 Analytics Controller Pack 20**	extension of the TC3 Analytics Workbench for the analysis of 20 additional controllers
TE3503 | **TC3 Analytics Controller Pack 50**	extension of the TC3 Analytics Workbench for the analysis of 50 additional controllers
TE3504 | **TC3 Analytics Controller Pack 100**	extension of the TC3 Analytics Workbench for the analysis of 100 additional controllers
TE3505 | **TC3 Analytics Controller Pack Unlimited**	extension of the TC3 Analytics Workbench for the analysis of an unlimited number of additional controllers, limited only by potential performance restrictions of the user
TE3510 | **TC3 Analytics Service Tool**	process data analysis tool for commissioning and service technicians

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®

Product announcement for availability status see www.beckhoff.com

TwinCAT 3 | Functions		
System		
TF1800 | **TC3 PLC HMI**	stand-alone tool for displaying visualisations from the PLC development environment	
TF1810 | **TC3 PLC HMI Web**	display of visualisations from the PLC development environment in a web browser	
TF1910 | **TC3 UML**	UML (Unified Modeling Language) for modelling of PLC software	
HMI		
TF2000 | **TC3 HMI Server**	modular web server, includes a client connection and a target connection	i
TF2010 | **TC3 HMI Clients Pack 1**	extension of TC3 HMI server for one additional client connection	i
TF2020 | **TC3 HMI Clients Pack 3**	extension of TC3 HMI server for 3 additional client connections	i
TF2030 | **TC3 HMI Clients Pack 10**	extension of TC3 HMI server for 10 additional client connections	i
TF2040 | **TC3 HMI Clients Pack 25**	extension of TC3 HMI server for 25 additional client connections	i
TF2050 | **TC3 HMI Targets Pack 1**	extension of TC3 HMI server for one additional control system	i
TF2060 | **TC3 HMI Targets Pack 3**	extension of TC3 HMI server for 3 additional control systems	i
TF2070 | **TC3 HMI Targets Pack 10**	extension of TC3 HMI server for 10 additional control systems	i
TF2080 | **TC3 HMI Targets Pack 25**	extension of TC3 HMI server for 25 additional control systems	i
TF2090 | **TC3 HMI Targets Pack 100**	extension of TC3 HMI server for 100 additional control systems	i
TF2100 | **TC3 HMI ADS**	server extension for access to TwinCAT target systems via ADS	i
TF2110 | **TC3 HMI OPC UA**	server extension for access to TwinCAT target systems or other controllers via OPC UA	i
TF2200 | **TC3 HMI Extension SDK**	software development kit (C++/.NET) for programming application-specific solutions	i
TF2210 | **TC3 HMI Recipe Management**	server extension for recipe management	i
TF2300 | **TC3 HMI Scope**	software oscilloscope for graphic display of time sequences	i
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.	i
TF3510 | **TC3 Analytics Library**	PLC library used for online or offline analysis in the PLC runtime of the TwinCAT Analytics Workbench	i
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	i
TF3650 | **TC3 Power Monitoring**	TwinCAT Power Monitoring PLC library	
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	

TwinCAT 3 | Functions

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
TF5100 | **TC3 NC I**	NC I with 3 interpolating axes and 5 additional axes
TF5110 | **TC3 Kinematic Transformation L1**	realisation of different kinematic transformations Level 1
TF5111 | **TC3 Kinematic Transformation L2**	realisation of different kinematic transformations Level 2
TF5112 | **TC3 Kinematic Transformation L3**	realisation of different kinematic transformations Level 3
TF5113 | **TC3 Kinematic Transformation L4**	realisation 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
TF5230 | **TC3 CNC Channel Pack**	further CNC channel, extension to a maximum of 12 channels, channel synchronisation, axis transfer between channels
TF5240 | **TC3 CNC Transformation**	transformation functionality (5-axis functionality)
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-standardised 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

TwinCAT 3 | Functions

Connectivity

TF6000 | **TC3 ADS Communication Library**	ADS communication components
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 synchronise 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)
TF6300 | **TC3 FTP**	easy access from TwinCAT PLC to FTP server
TF6310 | **TC3 TCP/IP**	communication via generic TCP 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 61850/400-25**	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
TF6721 | **TC3 IoT Data Agent Pack 4**	extension of TC3 IoT Data Agent for 4 additional ADS target runtimes or OPC UA namespaces
TF6722 | **TC3 IoT Data Agent Pack 16**	extension of TC3 IoT Data Agent for 16 additional ADS target runtimes or OPC UA namespaces
TF6723 | **TC3 IoT Data Agent Pack 64**	extension of TC3 IoT Data Agent for 64 additional ADS target runtimes or OPC UA namespaces
TF6724 | **TC3 IoT Data Agent Pack 256**	extension of TC3 IoT Data Agent for 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 visualise live data and push notifications sent from TwinCAT

Industry specific

TF8000 | **TC3 BA Connectivity Library**	libraries for programming of Bus Terminals for building automation (DALI, EnOcean, SMI, EIB, LON, M-Bus, GENIbus, MP-Bus, DMX and manual operating modules)
TF8010 | **TC3 Building Automation Basic**	executing basic room automation functions
TF8020 | **TC3 BACnet/IP**	communication with data networks of building automation and building control systems
TF8040 | **TC3 Building Automation**	software package covering all technical building automation services
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 NT/2000/XP/Vista, 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

TX1250 | TwinCAT NC PTP

TwinCAT PLC	inclusive
PC hardware	standard PC/IPC hardware, no extras
Operating systems	Windows NT/2000/XP/Vista, 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 (standardised 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, speed override, special functions: master/slave cascading, cam plates, electronic gearings, online distance compensation of segments, flying saw

TX1100 | TwinCAT I/O

PC hardware	standard PC/IPC hardware, no extras
Operating systems	Windows NT/2000/XP/Vista, Windows 7, NT/XP/Windows 7 Embedded, CE (only runtime)*
Real-time	Beckhoff real-time kernel

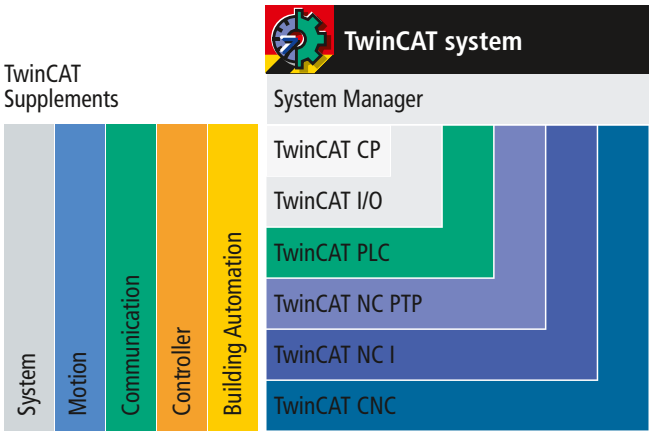
Multi-purpose I/O interface for all common fieldbus systems, PC Fieldbus Cards and interfaces with integrated real-time driver

TX1000 | TwinCAT CP

PC hardware	standard PC/IPC hardware, no extras
Operating systems	Windows NT/2000/XP/Vista, Windows 7, NT/XP/Windows 7 Embedded*
Real-time	Beckhoff real-time kernel

Windows driver for Beckhoff Control Panel

* version-dependent



TX1260 | TwinCAT NC I

TwinCAT PLC	inclusive
TwinCAT NC PTP	inclusive
PC hardware	standard PC/IPC hardware, no extras
Operating systems	Windows NT/2000/XP/Vista, 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, zeroshifts, tool compensations, M and H functions
Geometries	straight lines and circular paths in 3-D space, circular paths in all main planes, helixes 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 NT/2000/XP/Vista, Windows 7, Windows NT/XP Embedded*
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 visualisations created in PLC Control
TS1800 | **TwinCAT PLC HMI CE** -0030	displaying visualisations created in PLC Control on Windows CE platforms
TS1810 | **TwinCAT PLC HMI Web**	displaying visualisations 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 | **TwinCAT Database Server CE** -0030	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 | **TwinCAT XML Data Server CE** -0030	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 Synchronisation**	remote synchronisation
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 | **TwinCAT OPC UA Server CE** -0030	access to TwinCAT in accordance with OPC UA with UA server (DA/HA/AC) and UA client (DA) for Windows CE platforms

TwinCAT 2 Supplements | Communication

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 | **TwinCAT Modbus TCP Server CE** -0030	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 | **TwinCAT TCP/IP Server CE** -0030	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 | **TwinCAT SMS/SMTP Server CE** -0030	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 | **TwinCAT PLC IEC 60870-5-104** -0030 **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 | **TwinCAT PLC IEC 60870-5-104** -0030 **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

▶ **www.beckhoff.com/TwinSAFE**

EK1960

EJ1914

AX8000

TwinSAFE

Controller

EtherCAT Terminal	**EK1960**	TwinSAFE Compact Controller, 20 safe digital inputs, 10 safe digital outputs
	EL6900	TwinSAFE Logic
	EL6910	TwinSAFE Logic
	EL6930	TwinSAFE/PROFIsafe logic and gateway terminal
Bus Terminal	**KL6904**	TwinSAFE Logic Bus Terminal, 4 safe outputs

I/O

EtherCAT Terminal	**EK1914**	EtherCAT Coupler with integrated digital I/Os: 4 inputs + 4 outputs, 2 safe inputs + 2 safe outputs
	EL1904	TwinSAFE, 4 safe inputs
	EL2901	TwinSAFE, 1 safe output
	EL2902	TwinSAFE, 2 safe outputs
	EL2904	TwinSAFE, 4 safe outputs
EtherCAT Box	**EP1908-0002**	TwinSAFE, 8 safe inputs
EtherCAT Plug-in Modules	**EJ1914**	TwinSAFE, 4 safe inputs
	EJ1918	TwinSAFE, 8 safe inputs
	EJ1957	TwinSAFE, 8 safe inputs, 4 safe outputs
	EJ2914	TwinSAFE, 4 safe outputs
	EJ2918	TwinSAFE, 8 safe outputs
	EJ6910	TwinSAFE Logic
Bus Terminal	**KL1904**	TwinSAFE, 4 safe inputs
	KL2904	TwinSAFE, 4 safe outputs

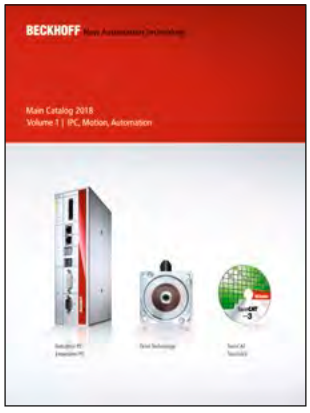
Drive Technology

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**	feedback: OCT, TwinSAFE: STO/SS1, TwinSAFE Logic integrated
	AX81xx-0200, AX82xx-0200	feedback: OCT, TwinSAFE: Safe Motion, TwinSAFE Logic integrated
Servo-motor terminals	**EL7201-9014**	I_{rms} = 2.8 A, 50 V DC, OCT, STO
	EL7211-9014	I_{rms} = 4.5 A, 50 V DC, OCT, STO
	EL7221-9014	I_{rms} = 7…8 A with ZB8610, 50 V DC, OCT, STO
Servo-motor modules	**EP7211-9034**	I_{rms} = 4.5 A, 50 V DC, OCT, STO

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

Print media

▶ **www.beckhoff.com/media**



Order no. DK111x

Main Catalog 2018 Volume 1 | IPC, Motion, Automation

Order no. DK112x

Main Catalog 2018 Volume 2 | I/O

Order no. DK130x

News Catalog

Order no. DK131x

News Overview

DK1402-0218

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