

BECKHOFF New Automation Technology

Product Overview | 2024



IPC



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New Automation Technology



Beckhoff implements open automation systems using proven PC-based control technology. The main areas that the product range covers are industrial PCs, I/O and fieldbus components, drive technology, automation software, control cabinet-free automation, and hardware for machine vision. Product ranges that can be used as separate components or integrated into a complete and mutually compatible control system are available for all sectors. Our New Automation Technology stands for universal and industry-independent control and automation solutions that are used worldwide in a large variety of different applications, ranging from CNC-controlled machine tools to intelligent building control.

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

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



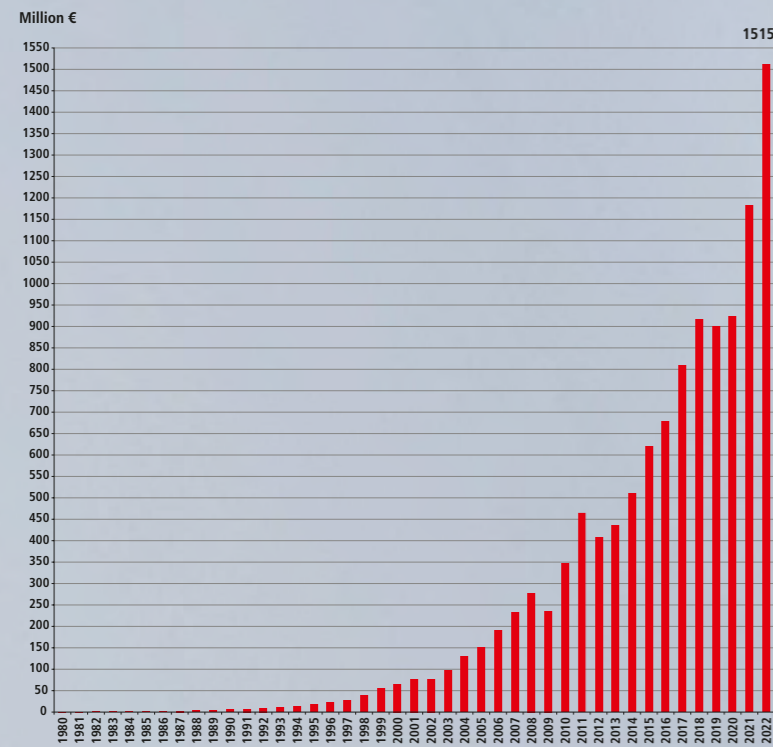
MX-System



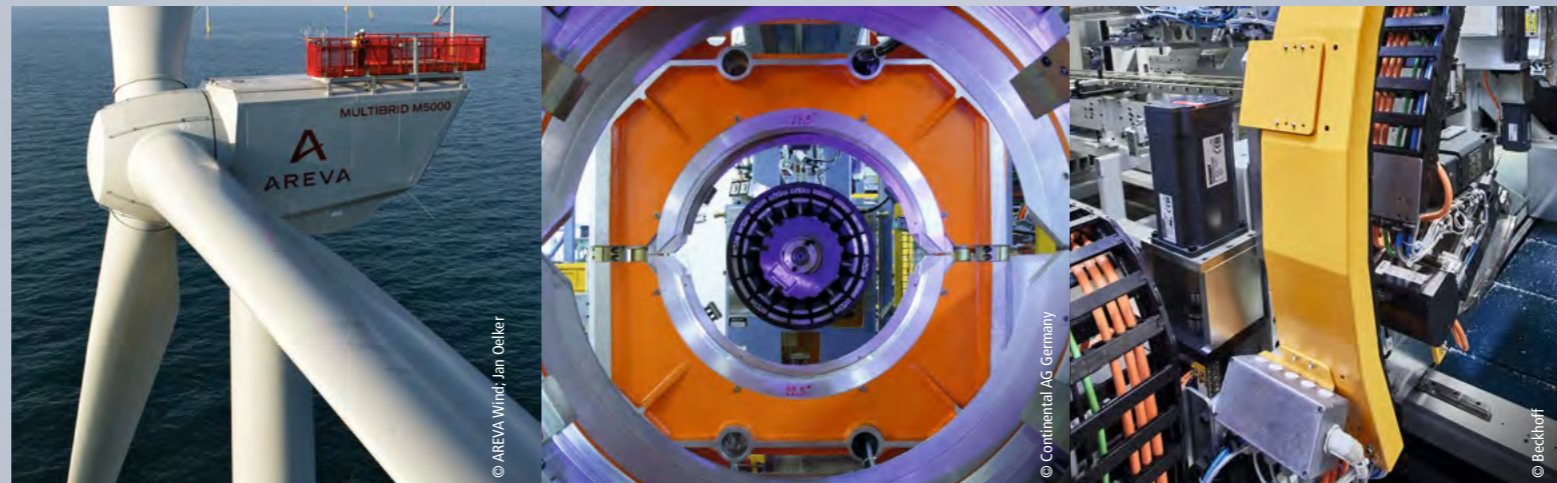
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Global presence

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. Through worldwide co-operation with partners, Beckhoff is represented in more than 75 countries.

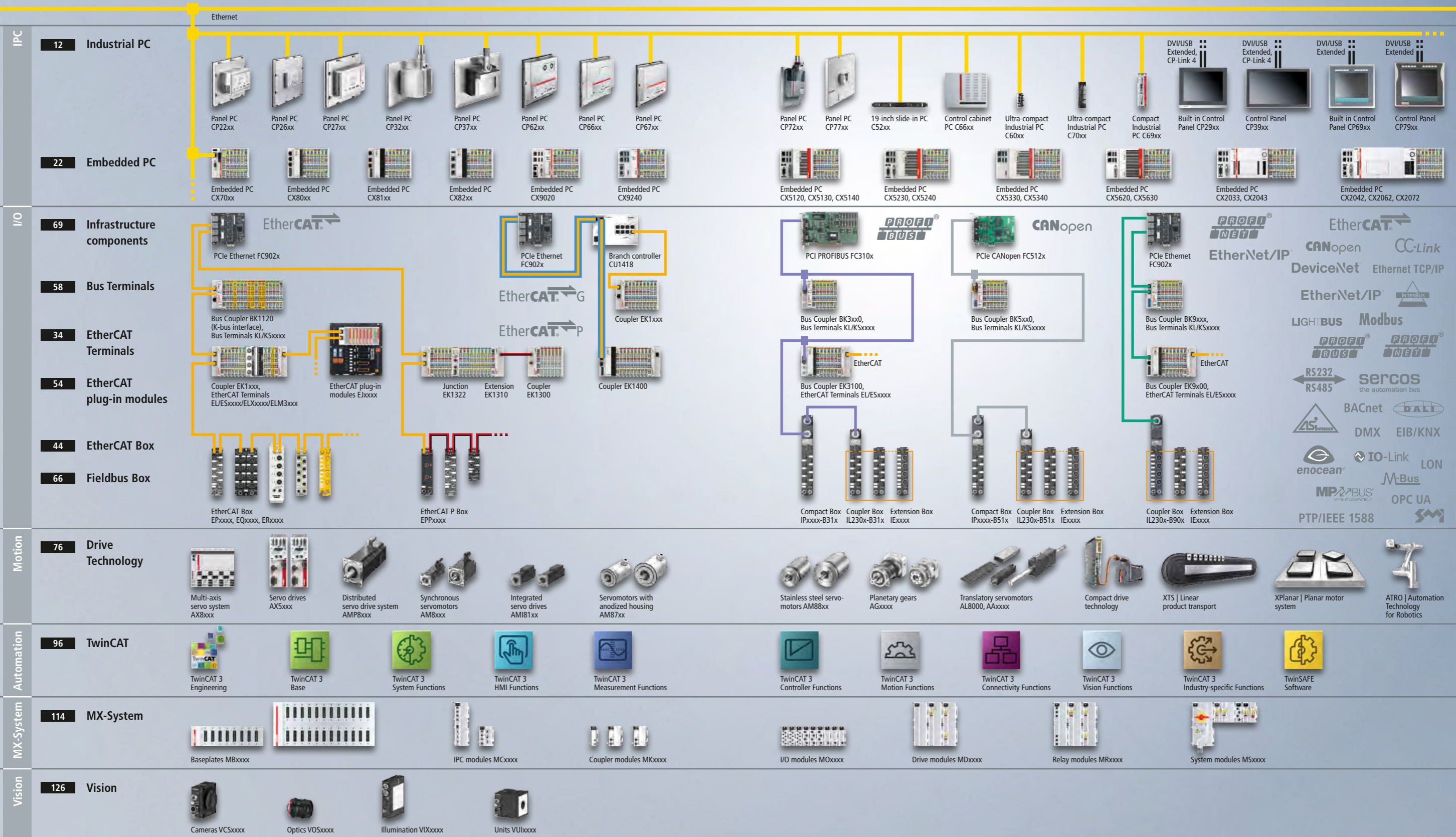


Sales from 1980 through 2022.
Status: March 2023



- Beckhoff Automation at a glance**
- 2022 global sales: €1.515 billion (+28%)
 - Headquarters: Verl, Germany
 - Managing owner: Hans Beckhoff
 - Employees worldwide: 6,000 (September 2023)
 - Engineers: 2,300
 - Subsidiaries/representative offices worldwide: 40
 - Sales offices in Germany: 24
 - Representatives worldwide: > 75

System overview



The IPC Company

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

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

► www.beckhoff.com/ipc



Ultra-compact Industrial PC in IP65

Multi-touch Panel PCs 14

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

► www.beckhoff.com/multi-touch

Multi-touch Control Panels 15

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

► www.beckhoff.com/multi-touch

Single-touch Panels 16

- Control Panels or Panel PCs
- display sizes from 5.7-inch to 19-inch
- easy installation in the front of a control cabinet or on mounting arms
- customer-specific implementations

► www.beckhoff.com/single-touch

Industrial PCs 18

- scalable performance range
- highest computing power
- industrial-strength housing designs
- multiple features
- high flexibility in terms of display connections

► www.beckhoff.com/pc

Embedded PCs 22

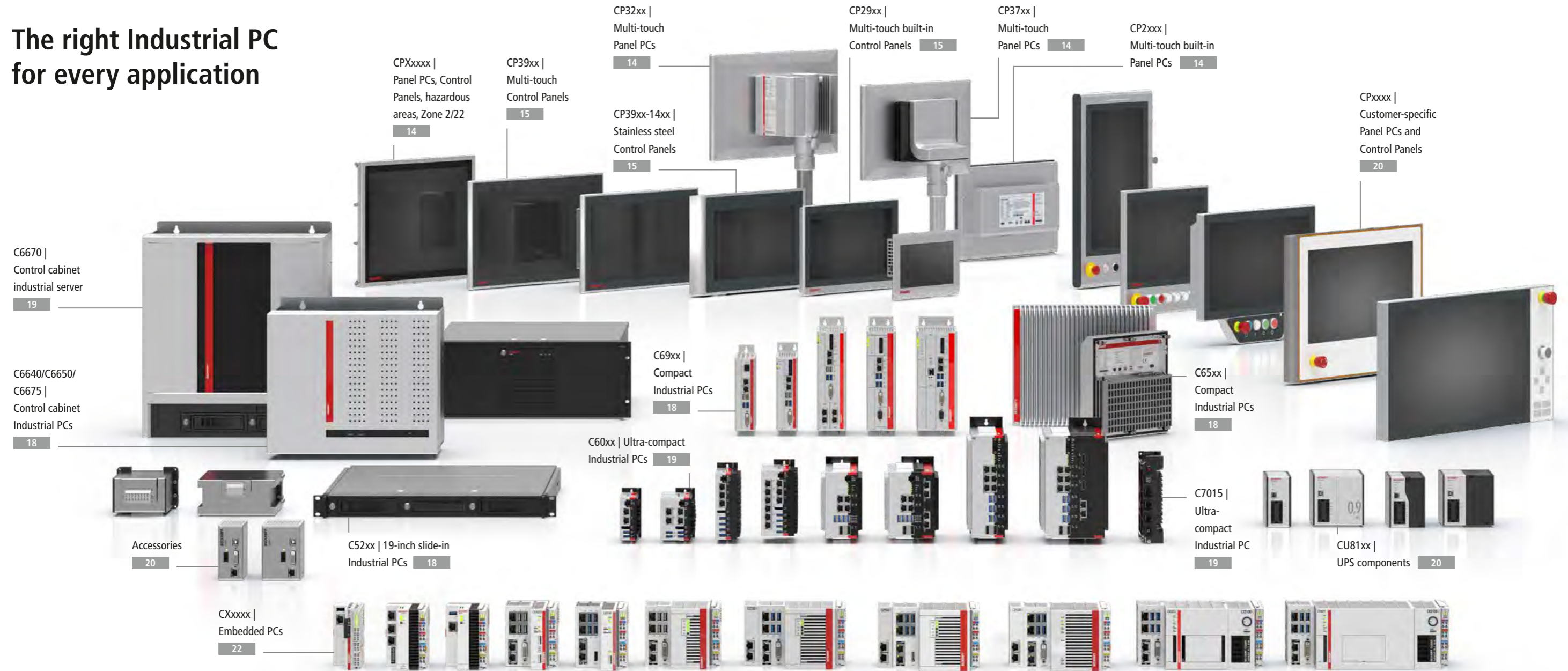
- scalable performance range
- up to 12 cores
- compact design
- direct I/O interface
- modular extension options
- DIN rail mounting

► www.beckhoff.com/embedded-pc



- large model variety of Industrial PCs and Embedded PCs
- high-performance PCs, featuring a wide range of processors, from Intel® Celeron® to top of the line Core™ i9 processors
- long-term availability of all Industrial PCs and Embedded PCs
- As the inventor of PC-based control technology, Beckhoff closely cooperates with global technology partners Intel and Microsoft.

The right Industrial PC for every application



Industrial PCs							
	Compact motherboard Intel® Core™	Compact motherboard Intel Atom®	ATX motherboard Intel® Core™	3½-inch motherboard Intel® Core™	3½-inch motherboard Intel Atom®	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		CP77xx		CP62xx CP72xx	CP67xx	CP66xx	CP69xx CP79xx
19-inch slide-in Industrial PCs			C5240	C5210			
Control cabinet Industrial PCs	C6025 C6027 C6030 C6032 C6040 C6043	C6015 C6017	C6640/C6650 C6675	C6515/C6525 C6920/C6930	C6905/C6915 C6925		
IP65 Industrial PCs		C7015					

Control cabinet industrial server	
SSI EEB motherboard	
2 x Intel® Xeon®	
C6670	

Embedded PCs			
ARM CPU	Intel Atom® CPU	Intel® CPU	AMD CPU
CX70xx	CX51xx	CX20x2	CX56xx
CX80xx	CX52xx		CX20x3
CX81xx	CX53xx		
CX82xx			
CX9020			
CX9240			

Multi-touch Panel PCs

► www.beckhoff.com/multi-touch



Multi-touch built-in Panel PCs, front side IP65										
	Display	7-inch	12-inch	12.1-inch	15-inch	15.6-inch	18.5-inch	19-inch	21.5-inch	24-inch
	Resolution	800 x 480	800 x 600	1280 x 800	1024 x 768	1366 x 768	1366 x 768	1280 x 1024	1920 x 1080	1920 x 1080
	Format	5:3	4:3	16:10	4:3	16:9	16:9	5:4	16:9	16:9
CP22xx – up to Intel® Core™ i3/i5/i7	multi-finger touch screen		CP2212	CP2213	CP2215	CP2216	CP2218	CP2219	CP2221	CP2224
CP26xx – ARM Cortex™-A8	dual-finger touch screen	CP2607	CP2612	CP2613	CP2615	CP2616	CP2618	CP2619	CP2621	CP2624
CP27xx – Intel® Celeron® ULV or Atom®	multi-finger touch screen, only horizontal		CP2712	CP2713	CP2715 CPX2715	CP2716	CP2718	CP2719 CPX2719	CP2721 CPX2721	CP2724

Multi-touch Panel PCs, all sides IP65										
	Display	7-inch	12-inch	12.1-inch	15-inch	15.6-inch	18.5-inch	19-inch	21.5-inch	24-inch
	Resolution	800 x 480	800 x 600	1280 x 800	1024 x 768	1366 x 768	1366 x 768	1280 x 1024	1920 x 1080	1920 x 1080
	Format	5:3	4:3	16:10	4:3	16:9	16:9	5:4	16:9	16:9
CP32xx – up to Intel® Core™ i3/i5/i7	multi-finger touch screen, only horizontal		CP3212		CP3215	CP3216	CP3218	CP3219	CP3221	CP3224
CP32xx-1600 – up to Intel® Core™ i3/i5/i7	multi-finger touch screen, only horizontal, mounting arm adapter selectable				CP3215-1600	CP3216-1600	CP3218-1600	CP3219-1600	CP3221-1600	CP3224-1600
CP37xx – Intel Atom®	multi-finger touch screen, only horizontal		CP3712	CP3713	CP3715 CPX3715	CP3716	CP3718	CP3719 CPX3719	CP3721 CPX3721	CP3724
CP37xx-1600 – Intel Atom®	multi-finger touch screen, only horizontal, fanless without cooling fins				CP3715-1600-0020	CP3716-1600-0020	CP3718-1600-0020	CP3719-1600-0020	CP3721-1600-0020	CP3724-1600-0020

Multi-touch Control Panels

► www.beckhoff.com/multi-touch



Multi-touch built-in Control Panels, front side IP65										
	Display	7-inch	12-inch	12.1-inch	15-inch	15.6-inch	18.5-inch	19-inch	21.5-inch	24-inch
	Resolution	800 x 480	800 x 600	1280 x 800	1024 x 768	1366 x 768	1366 x 768	1280 x 1024	1920 x 1080	1920 x 1080
	Format	5:3	4:3	16:10	4:3	16:9	16:9	5:4	16:9	16:9
CP29xx-0000 – DVI/USB Extended interface*	multi-finger touch screen	CP2907-0000	CP2912-0000	CP2913-0000	CP2915-0000 CPX2915-0000	CP2916-0000	CP2918-0000	CP2919-0000 CPX2919-0000	CP2921-0000 CPX2921-0000	CP2924-0000
CP29xx-0010 – CP-Link 4*	multi-finger touch screen	CP2907-0010	CP2912-0010	CP2913-0010	CP2915-0010	CP2916-0010	CP2918-0010	CP2919-0010	CP2921-0010	CP2924-0010

Multi-touch Control Panels, all sides IP65										
	Display	7-inch	12-inch	12.1-inch	15-inch	15.6-inch	18.5-inch	19-inch	21.5-inch	24-inch
	Resolution	800 x 480	800 x 600	1280 x 800	1024 x 768	1366 x 768	1366 x 768	1280 x 1024	1920 x 1080	1920 x 1080
	Format	5:3	4:3	16:10	4:3	16:9	16:9	5:4	16:9	16:9
CP39xx-0000 – DVI/USB Extended interface*	multi-finger touch screen	CP3907-0000	CP3912-0000	CP3913-0000	CP3915-0000	CP3916-0000	CP3918-0000	CP3919-0000	CP3921-0000	CP3924-0000
CP39xx-0010 – CP-Link 4*	multi-finger touch screen	CP3907-0010	CP3912-0010	CP3913-0010	CP3915-0010 CPX3915-0010	CP3916-0010	CP3918-0010	CP3919-0010 CPX3919-0010	CP3921-0010 CPX3921-0010	CP3924-0010
CP39xx-14xx-0010 – CP-Link 4*	multi-finger touch screen, stainless steel housing			CP3913-14xx-0010		CP3916-14xx-0010	CP3918-14xx-0010			

*For further information on DVI/USB Extended and CP-Link 4 see page 21

Single-touch panels

► www.beckhoff.com/single-touch



CP62xx

CP66xx

CP67xx



Without keys

Function keys

Numeric keyboard

Alphanumeric keyboard

With PLC keys on the sides



CP72xx

CP77xx

CP69xx

CP79xx

CP790x-14xx, stainless steel

Single-touch built-in Panel PCs, front side IP54/65

	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. rating front	IP65	IP65	IP54	IP54	IP65	IP65	IP65
CP62xx – 3½-inch motherboard – up to Intel® Core™ i3/i5/i7	without keys					CP6201	CP6202	CP6203
	function keys					CP6211	CP6212	CP6213
	numerical					CP6221	CP6222	CP6223
	alphanumeric					CP6231	CP6232	CP6233
						CP6242		
CP66xx – 3½-inch motherboard – ARM Cortex™-A8	without keys	CP6607	CP6609			CP6601	CP6602	CP6603
	function keys		CP6619			CP6611	CP6612	CP6613
	numerical		CP6629			CP6621	CP6622	CP6623
	alphanumeric					CP6631	CP6632	CP6633
CP6606, CP6600 – 3½-inch motherboard – ARM Cortex™-A8	without keys			CP6606	CP6600			
CP67xx – 3½-inch motherboard – Intel® Celeron® ULV or Atom®	without keys	CP6707				CP6701	CP6702	CP6703
	function keys					CP6711	CP6712	CP6713
	numerical					CP6721	CP6722	CP6723
	alphanumeric					CP6731	CP6732	CP6733
						CP6742		
CP6706, CP6700 – 3½-inch motherboard – Intel Atom®	without keys			CP6706	CP6700			

Single-touch Panel PCs, all sides IP65

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

Single-touch built-in Control Panels, front side IP54/65

	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. rating front	IP65	IP65	IP54	IP54	IP65	IP65	IP65
CP69xx – DVI/USB Extended interface*	without keys	CP6907	CP6909	CP6906	CP6900	CP6901	CP6902	CP6903
	function keys		CP6919			CP6911	CP6912	CP6913
	numerical		CP6929			CP6921	CP6922	CP6923
	alphanumeric					CP6931	CP6932/42	CP6933

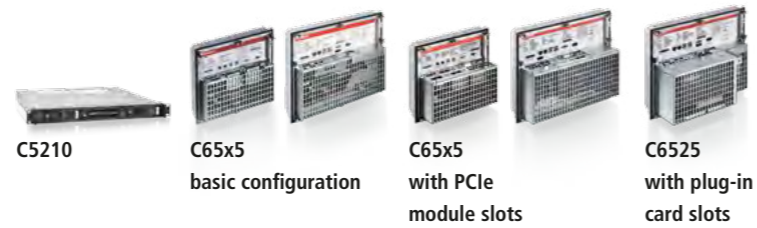
Single-touch Control Panels, all sides IP65

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

*For further information on DVI/USB Extended see page 21

Industrial PCs

► www.beckhoff.com/pc



Control cabinet Industrial PCs with 3½-inch motherboard

	Processor	Intel Atom®	Intel® Celeron®, Intel® Pentium®, Intel® Core™ i3/i5/i7 6 th /7 th generation	Intel® Celeron®, Intel® Pentium®, Intel® Core™ i3/i5/i7 8 th /9 th generation	Intel® Celeron®, Intel® Core™ i3/i5/i7 11 th generation
C5210, 19-inch slide-in Industrial PCs	1 rack unit		C5210-0030	C5210-0040	C5210-0050
C65xx	fanless fanless, RAID		C6515-0060 C6525-0060	C6515-0070 C6525-0070	C6515-0080 C6525-0080
C69xx, compact Industrial PCs, connectors on front	fanless fanless, 1 CFast card slot fanless, 2 PCIe module slots optional plug-in card slots 2 PCIe module slots, optional plug-in card slots	C6905-0010 C6905-0020 C6905-0030 C6915-0010 C6915-0020 C6925-0030 C6925-0040		C6920-0060 C6930-0060	C6920-0070 C6930-0070 C6920-0080 C6930-0080

Control cabinet Industrial PCs with ATX motherboard

	Processor	Intel® Celeron®, Intel® Pentium®, Intel® Core™ i3/i5/i7 6 th /7 th generation	Intel® Celeron®, Intel® Pentium®, Intel® Core™ i3/i5/i7 8 th /9 th generation	Intel® Celeron®, Intel® Pentium®, Intel® Core™ i3/i5/i7/i9 12 th /13 th generation
C5240, 19-inch slide-in Industrial PCs	7 slots, 4 rack units	C5240-0010	C5240-0020	C5240-0030 <i>i</i>
C6640/C6650, connectors on top	7 slots, 2 removable frames	C6640-0050 C6650-0050	C6640-0060 C6650-0060	C6640-0070 C6650-0070 <i>i</i>
C6675, connectors on top	7 slots, 2 removable frames		C6675-0060	C6675-0070 <i>i</i>

Control cabinet Industrial PCs with compact industrial motherboard

	Processor	Intel Atom®	Intel® Celeron®, Intel® Core™ i3/i5/i7 8 th generation, series U	Intel® Celeron®, Intel® Pentium®, Intel® Core™ i3/i5/i7 6 th /7 th generation	Intel® Celeron®, Intel® Pentium®, Intel® Core™ i3/i5/i7 8 th /9 th generation	Intel® Celeron®, Intel® Pentium®, Intel® Core™ i3/i5/i7 11 th generation	Intel® Celeron®, Intel® Pentium®, Intel® Core™ i3/i5/i7/i9 12 th generation
C60xx	fanless, without slots optional interfaces and/or an optional 1-second UPS up to 2 M.2 SSDs and/or 2 PCIe compact module slots up to 2 M.2 SSDs up to 2 M.2 SSDs, 1 PCIe compact module slot, external graphics card ex factory	C6015-0010 C6015-0020 C6015-0030	C6025-0000	C6027-0000	C6030-0060 C6032-0060	C6030-0070 C6032-0070	C6025-0010 C6027-0010 C6030-0080 C6032-0080 C6040-0090 <i>i</i> C6043-0090 <i>i</i>

IP65 Industrial PCs with compact industrial motherboard

	Processor	Intel Atom®
C70xx, IP65	fanless	C7015-0020 C7015-0030 <i>i</i>

Control cabinet industrial server with SSI EEB motherboard

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

Customization options for Panel PCs and Control Panels

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



Built-in panel with individual front laminate

Stainless steel panel

Stainless steel panel with emergency stop



Customer-specific multi-touch Control Panel

Multi-touch Control Panel for machine tools

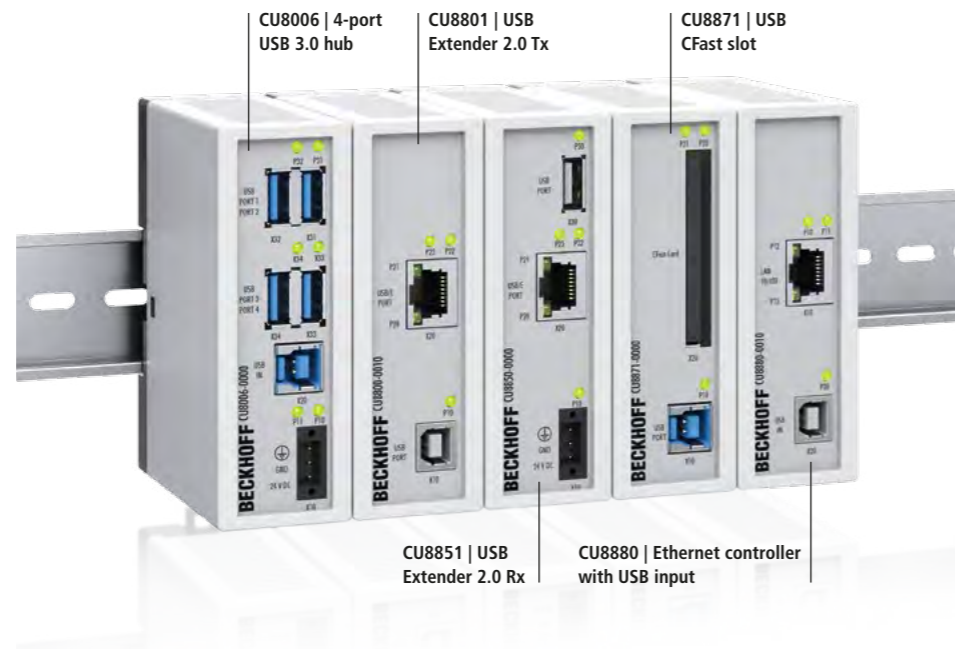
Multi-touch Control Panel with push-button extension

Control Panel with CNC push-button extension

Industrial PC accessories

CU8xxx modules

Different modules enable the use of various technologies in the industrial environment. All modules are intended for DIN rail mounting. In addition, there are a variety of uninterruptible power supplies (UPS).



CU8006 | 4-port USB 3.0 hub

CU8801 | USB Extender 2.0 Tx

CU8871 | USB CFast slot

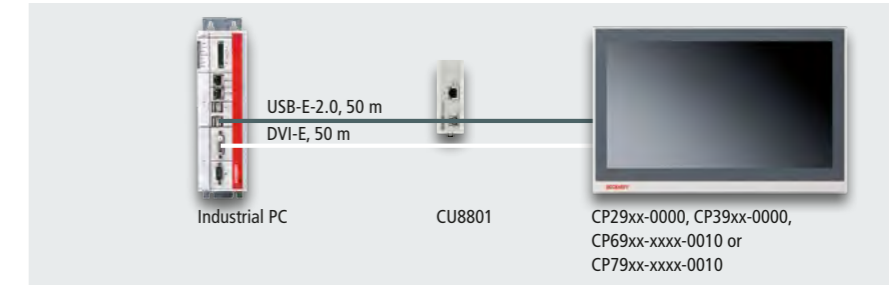
CU8851 | USB Extender 2.0 Rx

CU8880 | Ethernet controller with USB input

DVI/USB Extended

The DVI/USB Extended technology enables remote panel operation at a distance of up to 50 m from the industrial PC. The DVI graphics signal is directly transmitted from the PC via a DVI-E cable. A signal processor in the Control Panel restores the DVI signal after a distance of 50 m. For the CP29xx-0000, CP39xx-0000, CP69xx-xxxx-0010 and CP79xx-xxxx-0010 Control Panels, the USB signal from the PC is converted into USB Extended 2.0 by the CU8801 USB Extender box, transmitted to the Control Panel via a Cat.5 cable over 50 m max. to be reconverted into USB 2.0 with 480 Mbit/s. A 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.

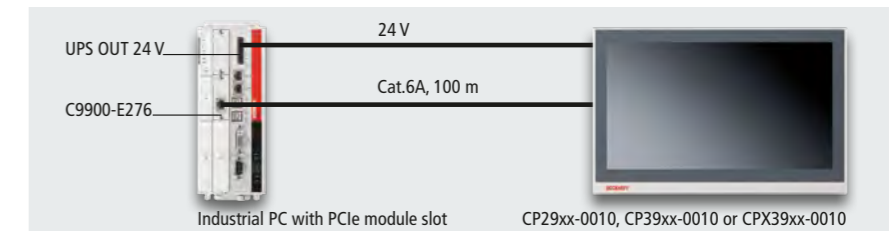
DVI/USB Extended 2.0 for CP29xx-0000, CP39xx-0000, CP69xx-xxxx-0010 or CP79xx-xxxx-0010 via the CU8801 transmitter box



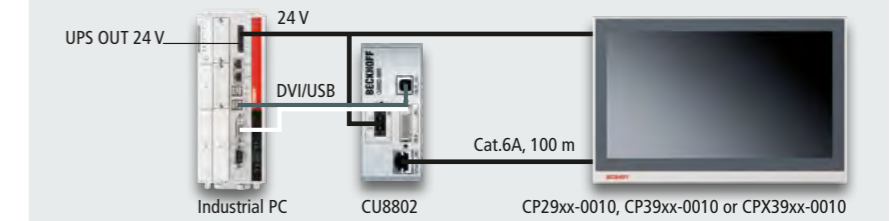
CP-Link 4: The One Cable Display Link

With CP-Link 4 operating panels can be located up to 100 m away from the Industrial PC. The one cable solution can be used to transfer video signals, USB 2.0 and the power supply in a Cat.6A cable, thus reducing cable and installation costs. The CP-Link 4 technology is supported by the Beckhoff multi-touch Control Panel series CP29xx-0010 for installation inside the wall of a control cabinet, CP39xx-0010 for mounting arm installation and CPX39xx-0010 for use in hazardous areas, Zone 2/22.

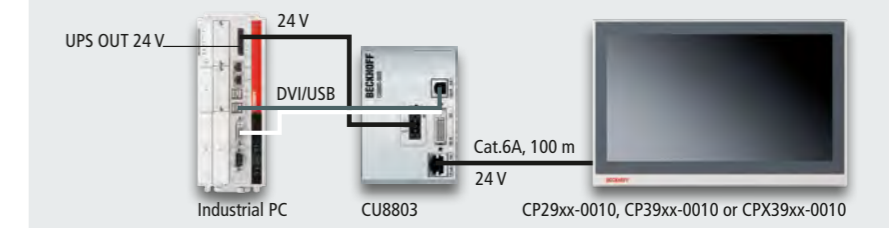
CP-Link 4 – The Two Cable Display Link: via C9900-E276 PCIe module integrated in the PC



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



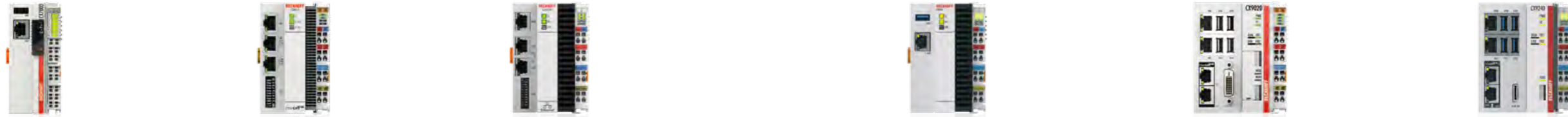
CP-Link 4 – The One Cable Display Link: DVI, USB and 24 V via CU8803 transmitter box



► www.beckhoff.com/cp-link4

Embedded PC

► www.beckhoff.com/embedded-pc



Embedded PC						
Basic CPU	CX70xx	CX80xx	CX81xx	CX82xx	ⁱ CX9020	ⁱ CX9240
Processor	ARM Cortex™-M7, 480 MHz	ARM9, 400 MHz	ARM Cortex™-A9, 800 MHz	ARM Cortex™-A53, 1.2 GHz	ARM Cortex™-A8, 1 GHz	ARM Cortex™-A53, 1.2 GHz
Flash memory	512 MB microSD (optionally 1 GB, 2 GB, 4 GB or 8 GB)	512 MB microSD (optionally expandable)	slot for microSD card, 512 MB included (expandable)	slot for microSD card, card not included	2 x slot for microSD card, 512 MB included (expandable)	slot for microSD card, card not included
Main memory	32 MB SDR (internal, not expandable)	64 MB DDR2 RAM (not expandable)	512 MB DDR3 RAM (not expandable)	1 GB LPDDR4 RAM (not expandable)	1 GB DDR3 RAM (not expandable)	2 GB LPDDR4 RAM (not expandable)
Interfaces	1 x RJ45 10/100 Mbit/s, 1 x USB 2.0, 1 x bus interface	1 x RJ45 10/100 Mbit/s, 1 x USB device (behind the front flap), 1 x bus interface	1 x RJ45 10/100 Mbit/s, 1 x bus interface	1 x RJ45 10/100/1000 Mbit/s, 1 x USB 3.0	2 x RJ45 10/100 Mbit/s (internal switch), 1 x DVI-D, 4 x USB 2.0, 1 x optional interface	2 x RJ45 10/100/1000 Mbit/s, 1 x DisplayPort, 4 x USB 3.0, 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	E-bus or K-bus, automatic recognition	E-bus or K-bus, automatic recognition	E-bus or K-bus, automatic recognition
System interfaces	integrated	integrated	integrated	integrated	integrated	integrated
DVI/USB	–	–	–	–	in the basic CPU	–
RS232	CX7080	CX8080	CX8180	CX8280	CX9020-N030	CX9240-N030
RS422/RS485	CX7080	CX8080	CX8180	CX8280	CX9020-N031	CX9240-N031
Audio	–	–	–	–	CX9020-N020	–
Ethernet	in the basic CPU	in the basic CPU	in the basic CPU	in the basic CPU	in the basic CPU	in the basic CPU
4-port USB hub	–	–	–	–	in the basic CPU	in the basic CPU
Memory medium	in the basic CPU	in the basic CPU	in the basic CPU	in the basic CPU	2 nd microSD slot in the basic CPU	in the basic CPU
Fieldbus interfaces	expandable via EtherCAT Terminals	integrated or expandable via EtherCAT Terminals	integrated or expandable via EtherCAT Terminals	integrated or expandable via EtherCAT Terminals	integrated or expandable via EtherCAT Terminals	integrated or expandable via EtherCAT Terminals
EtherCAT	EL6695 slave	CX8010 slave	CX8110 slave	CX8210 slave	CX9020-B110 slave	CX9240-B110, CX9240-B140 slave
PROFIBUS	EL6731, EL6733 master	CX8030 master	EL6731, EL6733 master	EL6731, EL6733 master	CX9020-M310 master	CX9240-M310 master
	CX7031 slave	CX8031 slave	EL673x-0010 slave	EL673x-0010 slave	CX9020-B310 slave	CX9240-B310 slave
CANopen	CX7050 commander (master)	CX8050 master	EL6751, EL6753 master	EL6751, EL6753 master	CX9020-M510 master	CX9240-M510 master
	CX7051 responder (slave)	CX8051 slave	EL6751-, EL6753-0010 slave	EL6751-, EL6753-0010 slave	CX9020-B510 slave	CX9240-B510 slave
DeviceNet	EL6752, EL6754 master	EL6752, EL6754 master	EL6752, EL6754 master	EL6752, EL6754 master	EL6752, EL6754 master	EL6752, EL6754 master
	EL6752-, EL6754-0010 slave	EL6752-, EL6754-0010 slave	EL6752-, EL6754-0010 slave	EL6752-, EL6754-0010 slave	EL6752-, EL6754-0010 slave	EL6752-, EL6754-0010 slave
PROFINET RT	EL6631, EL6633 controller	CX8093 device	EL6631, EL6633 controller	CX8290 + TF6271 controller	CX9020-M930 controller	TF6271 controller
	EL6631-, EL6633-0010 device		EL6631-, EL6633-0010 device	CX8290 + TF6270 device	CX9020-B930 device	TF6270 device
EtherNet/IP	EL6652, EL6653 scanner	CX8095 adapter	EL6652, EL6653 scanner	CX8290 + TF6281 scanner	EL6652, EL6653 scanner	TF6281 scanner
	EL6652-, EL6653-0010 adapter		EL6652-, EL6653-0010 adapter	CX8290 + TF6280 adapter	EL6652-, EL6653-0010 adapter	TF6280 adapter
UPS options	–	1-second UPS	1-second UPS	1-second UPS	1-second UPS (optional)	1-second UPS



Embedded PC

Basic CPU	CX5120	CX5130	CX5140	CX52xx	CX53xx	CX56xx
Processor	Intel Atom® E3815, 1.46 GHz	Intel Atom® E3827, 1.75 GHz	Intel Atom® E3845, 1.91 GHz	CX5230: Intel Atom® x5-E3930, 1.3 GHz, 2 cores, CX5240: Intel Atom® x5-E3940, 1.6 GHz, 4 cores	CX5330: Intel Atom® x6214RE, 1.4 GHz, 2 cores, CX5340: Intel Atom® x6416RE, 1.7 GHz, 4 cores	CX5620: AMD Ryzen™ R1102G, 1.2 GHz, CX5630: AMD Ryzen™ R1505G, 2.4 GHz
Flash memory	slot for CFast card and microSD card, cards not included	slot for CFast card and microSD card, cards not included	slot for CFast card and microSD card, cards not included	slot for CFast card and microSD card, cards not included	slot for CFast card and microSD card, cards not included	M.2 SSD (SATA) and microSD card (storage media not included)
Main memory	2 GB DDR3 RAM (not expandable)	4 GB DDR3 RAM (not expandable)	4 GB DDR3 RAM (not expandable)	CX5230: 4 GB DDR4 RAM (internal, not expandable), CX5230: 8 GB DDR4 RAM (internal, not expandable)	CX5330: 4 GB LPDDR4 RAM (internal, not expandable), CX5340: 8 GB LPDDR4 RAM (internal, not expandable)	CX5620: 4 GB DDR4 RAM, CX5630: 8 GB DDR4 RAM
Interfaces	2 x RJ45 10/100/1000 Mbit/s, 1 x DVI-I, 4 x USB 2.0, 1 x optional interface	2 x RJ45 10/100/1000 Mbit/s, 1 x DVI-I, 4 x USB 2.0, 1 x optional interface	2 x RJ45 10/100/1000 Mbit/s, 1 x DVI-I, 4 x USB 2.0, 1 x optional interface	2 x RJ45 10/100/1000 Mbit/s, 1 x DVI-D, 4 x USB 3.0, 1 x optional interface	2 x RJ45 10/100/1000 Mbit/s, 1 x DisplayPort, 4 x USB 3.1, 1 x optional interface	2 x RJ45 10/100/1000 Mbit/s, 1 x DVI-D, 4 x USB 3.0, 1 x optional interface
I/O connection	E-bus or K-bus, automatic recognition	E-bus or K-bus, automatic recognition	E-bus or K-bus, automatic recognition	E-bus or K-bus, automatic recognition	E-bus or K-bus, automatic recognition	E-bus or K-bus, automatic recognition
System interfaces	integrated	integrated	integrated	modularly expandable	modularly expandable	modularly expandable
DVI/USB	in the basic CPU	in the basic CPU	in the basic CPU	in the basic CPU, 2 nd DVI port as option CX52x0-N010	in the basic CPU, 2 nd DVI port as option CX53x0-N010	in the basic CPU or CX56x0-N010
DisplayPort	–	CX5130-N011	CX5140-N011	CX52x0-N011	CX53x0-N011	CX56x0-N011
RS232	CX5120-N030	CX5130-N030	CX5140-N030	CX52x0-N030 or CX2500-0030	CX53x0-N030 or CX2500-0030	CX56x0-N030 or CX2500-0030
RS422/RS485	CX5120-N031	CX5130-N031	CX5140-N031	CX52x0-N031 or CX2500-0031	CX53x0-N031 or CX2500-0031	CX56x0-N031 or CX2500-0031
Audio	CX5120-N020	CX5130-N020	CX5140-N020	CX2500-0020	CX2500-0020	CX2500-0020
Ethernet	in the basic CPU	in the basic CPU	in the basic CPU	in the basic CPU or CX2500-1060	in the basic CPU or CX2500-1060	in the basic CPU or CX2500-1060
Power over Ethernet	–	–	–	CX2500-1061	CX2500-1061	CX2500-1061
4-port USB hub	in the basic CPU	in the basic CPU	in the basic CPU	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	in the basic CPU	in the basic CPU	in the basic CPU	in the basic CPU	in the basic CPU
Fieldbus interfaces	integrated or expandable via EtherCAT Terminals	integrated or expandable via EtherCAT Terminals	integrated or expandable via EtherCAT Terminals	integrated or expandable via EtherCAT Terminals	integrated or expandable via EtherCAT Terminals	integrated or expandable via EtherCAT Terminals
EtherCAT	CX5120-M112 2 x master CX5120-B110 slave	CX5130-M112 2 x master CX5130-B110 slave	CX5140-M112 2 x master CX5140-B110 slave	CX52x0-M112 2 x master CX52x0-B110 slave	CX53x0-M112 2 x master CX53x0-B110 slave	CX56x0-M112 2 x master CX56x0-B110 slave
PROFIBUS	CX5120-M310 master CX5120-B310 slave	CX5130-M310 master CX5130-B310 slave	CX5140-M310 master CX5140-B310 slave	CX52x0-M310 or CX2500-M310 master CX52x0-B310 or CX2500-B310 slave	CX53x0-M310 or CX2500-M310 master CX53x0-B310 or CX2500-B310 slave	CX56x0-M310 or CX2500-M310 master CX56x0-B310 or CX2500-B310 slave
CANopen	CX5120-M510 master CX5120-B510 slave	CX5130-M510 master CX5130-B510 slave	CX5140-M510 master CX5140-B510 slave	CX52x0-M510 or CX2500-M510 master CX52x0-B510 or CX2500-B510 slave	CX53x0-M510 or CX2500-M510 master CX53x0-B510 or CX2500-B510 slave	CX56x0-M510 or CX2500-M510 master CX56x0-B510 or CX2500-B510 slave
DeviceNet	EL6752, EL6754 master EL6752-, EL6754-0010 slave	EL6752, EL6754 master EL6752-, EL6754-0010 slave	EL6752, EL6754 master EL6752-, EL6754-0010 slave	EL6752, EL6754 master EL6752-, EL6754-0010 slave	EL6752, EL6754 master EL6752-, EL6754-0010 slave	EL6752, EL6754 master EL6752-, EL6754-0010 slave
PROFINET RT	TF6271 controller TF6270 device	TF6271 controller TF6270 device	TF6271 controller TF6270 device	TF6271 controller TF6270 device	TF6271 controller TF6270 device	TF6271 controller TF6270 device
EtherNet/IP	TF6281 scanner TF6280 adapter	TF6281 scanner TF6280 adapter	TF6281 scanner TF6280 adapter	TF6281 scanner TF6280 adapter	TF6281 scanner TF6280 adapter	TF6281 scanner TF6280 adapter
UPS options	1-second UPS	1-second UPS	1-second UPS	1-second UPS	1-second UPS	1-second UPS



Embedded PC

Basic CPU	CX2033	CX2043	CX2042	CX2062	CX2072
Processor	AMD Ryzen™ V1202B 2.3 GHz	AMD Ryzen™ V1807B 3.35 GHz	Intel® Xeon® D-1527 2.2 GHz	Intel® Xeon® D-1548 2.0 GHz	Intel® Xeon® D-1567 2.1 GHz
Flash memory	slot for CFast card, card not included	slot for CFast card, card not included	slot for CFast card, card not included	slot for CFast card, card not included	slot for CFast card, card not included
Main memory	8 GB DDR4 RAM (expandable ex factory to 16 GB)	8 GB DDR4 RAM (expandable ex factory to 32 GB)	8 GB DDR4 RAM (expandable ex factory to 64 GB)	8 GB DDR4 RAM (expandable ex factory to 64 GB)	8 GB DDR4 RAM (expandable ex factory to 64 GB)
Interfaces	2 x RJ45, 10/100/1000 Mbit/s, 1 x DVI-D, 4 x USB 3.1 Gen. 1, 1 x optional interface	2 x RJ45, 10/100/1000 Mbit/s, 1 x DVI-D, 4 x USB 3.1 Gen. 1, 1 x optional interface	2 x RJ45 10/100/1000 Mbit/s, 1 x DVI-I, 4 x USB 3.0, 1 x optional interface	2 x RJ45 10/100/1000 Mbit/s, 1 x DVI-I, 4 x USB 3.0, 1 x optional interface	2 x RJ45 10/100/1000 Mbit/s, 1 x DVI-I, 4 x USB 3.0, 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)	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	modularly expandable	modularly expandable
DVI/USB	in the basic CPU, 2 nd DVI port as option CX2033-N010	in the basic CPU, 2 nd DVI port as option CX2043-N010	in the basic CPU, 2 nd DVI port as option CX2042-N010	in the basic CPU, 2 nd DVI port as option CX2062-N010	in the basic CPU, 2 nd DVI port as option CX2072-N010
DisplayPort	CX2033-N011	CX2043-N011	CX2042-N011	CX2062-N011	CX2072-N011
RS232	CX2033-N030 or CX2500-0030	CX2043-N030 or CX2500-0030	CX2042-N030 or CX2500-0030	CX2062-N030 or CX2500-0030	CX2072-N030 or CX2500-0030
RS422/RS485	CX2033-N031 or CX2500-0031	CX2043-N031 or CX2500-0031	CX2042-N031 or CX2500-0031	CX2062-N031 or CX2500-0031	CX2072-N031 or CX2500-0031
Audio	CX2500-0020	CX2500-0020	–	–	–
Ethernet	in the basic CPU or CX2500-1060	in the basic CPU or CX2500-1060	in the basic CPU or CX2500-1060	in the basic CPU or CX2500-1060	in the basic CPU or CX2500-1060
10G Ethernet	–	–	CX2042-N067 or CX2042-N167	CX2062-N067 or CX2062-N167	CX2072-N067 or CX2072-N167
Power over Ethernet	CX2500-1061	CX2500-1061	CX2500-1061	CX2500-1061	CX2500-1061
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	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	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)	CX2550-0179 (USB 1.1) or CX2550-0279 (USB 2.0)	CX2550-0179 (USB 1.1) or CX2550-0279 (USB 2.0)
Fieldbus interfaces	integrated or expandable via EtherCAT Terminals	integrated or expandable via EtherCAT Terminals	integrated or expandable via EtherCAT Terminals	integrated or expandable via EtherCAT Terminals	integrated or expandable via EtherCAT Terminals
EtherCAT	CX2033-M112 2 x master CX2033-B110 slave	CX2043-M112 2 x master CX2043-B110 slave	CX2042-M112 2 x master CX2042-B110 slave	CX2062-M112 2 x master CX2062-B110 slave	CX2072-M112 2 x master CX2072-B110 slave
Lightbus	EL6720 master	EL6720 master	EL6720 master	EL6720 master	EL6720 master
PROFIBUS	CX2033-M310 or CX2500-M310 master CX2033-B310 or CX2500-B310 slave	CX2043-M310 or CX2500-M310 master CX2043-B310 or CX2500-B310 slave	CX2042-M310 or CX2500-M310 master CX2042-B310 or CX2500-B310 slave	CX2062-M310 or CX2500-M310 master CX2062-B310 or CX2500-B310 slave	CX2072-M310 or CX2500-M310 master CX2072-B310 or CX2500-B310 slave
CANopen	CX2033-M510 or CX2500-M510 master CX2033-B510 or CX2500-B510 slave	CX2043-M510 or CX2500-M510 master CX2043-B510 or CX2500-B510 slave	CX2042-M510 or CX2500-M510 master CX2042-B510 or CX2500-B510 slave	CX2062-M510 or CX2500-M510 master CX2062-B510 or CX2500-B510 slave	CX2072-M510 or CX2500-M510 master CX2072-B510 or CX2500-B510 slave
DeviceNet	EL6752, EL6754 master EL6752-, EL6754-0010 slave	EL6752, EL6754 master EL6752-, EL6754-0010 slave	EL6752, EL6754 master EL6752-, EL6754-0010 slave	EL6752, EL6754 master EL6752-, EL6754-0010 slave	EL6752, EL6754 master EL6752-, EL6754-0010 slave
PROFINET RT	TF6271 controller TF6270 device	TF6271 controller TF6270 device	TF6271 controller TF6270 device	TF6271 controller TF6270 device	TF6271 controller TF6270 device
EtherNet/IP	TF6281 scanner TF6280 adapter	TF6281 scanner TF6280 adapter	TF6281 scanner TF6280 adapter	TF6281 scanner TF6280 adapter	TF6281 scanner TF6280 adapter
UPS options	CX2100-0914	CX2100-0914	–	–	–

The I/O Company

Beckhoff supplies a complete range of fieldbus components for all common I/O and bus systems. With Bus Terminals offering IP20 protection and Fieldbus Box modules in IP67, a comprehensive range of devices is available for a wide variety of signal types and fieldbus systems. In addition to components for conventional bus systems, Beckhoff offers an integrated product range optimized for EtherCAT. Invented by Beckhoff, this real-time Ethernet solution for industrial automation has global acceptance and is characterized by outstanding performance and simple handling. The result is high-precision machine and plant control and significantly increased production efficiency.

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- ▶ www.beckhoff.com/ethercat

EtherCAT Terminals 34

- IP20 EtherCAT I/O system
- real-time Ethernet performance retained into each terminal
- standard digital and analog signals
- complex automation functions directly in the terminal system
- highly precise measurement technology
- condition monitoring
- drive technology, also in a robust metal housing
- process technology
- electronic overcurrent protection
- gateways for subordinate fieldbus systems
- TwinSAFE PLC and safety I/Os



▶ www.beckhoff.com/ethercat-terminal



EtherCAT Box 44

- IP67 EtherCAT I/O system
- high performance for harsh environments
- compact and robust
- can be mounted directly on machines, outside of control cabinets and terminal boxes
- integrated sensor/actuator supply directly via EtherCAT P

▶ www.beckhoff.com/ethercat-box

EtherCAT plug-in modules 54

- very compact EtherCAT I/O system in IP20 for plug-in into a circuit board (signal distribution board)
- optimized for high-volume production
- application-specific connector interface
- Use of cable harnesses avoids wiring errors.

▶ www.beckhoff.com/ethercat-plug-in-modules

Bus Terminals 58

- open, fieldbus-neutral IP20 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

Fieldbus Box 66

- open, fieldbus-neutral IP67 I/O system
- 8 fieldbus systems, 24 signal types
- compact and robust
- can be mounted directly on machines, outside of control cabinets and terminal boxes while reducing machine footprint
- IO-Link box modules for inexpensive point-to-point connections

▶ www.beckhoff.com/fieldbusbox

Infrastructure Components 69

- PC cards for all common fieldbus systems
- Industrial Ethernet switches
- EtherCAT junctions and media converters in IP20 and IP67 ratings
- EtherCAT G/G10 components

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Current transformers and power supplies 70

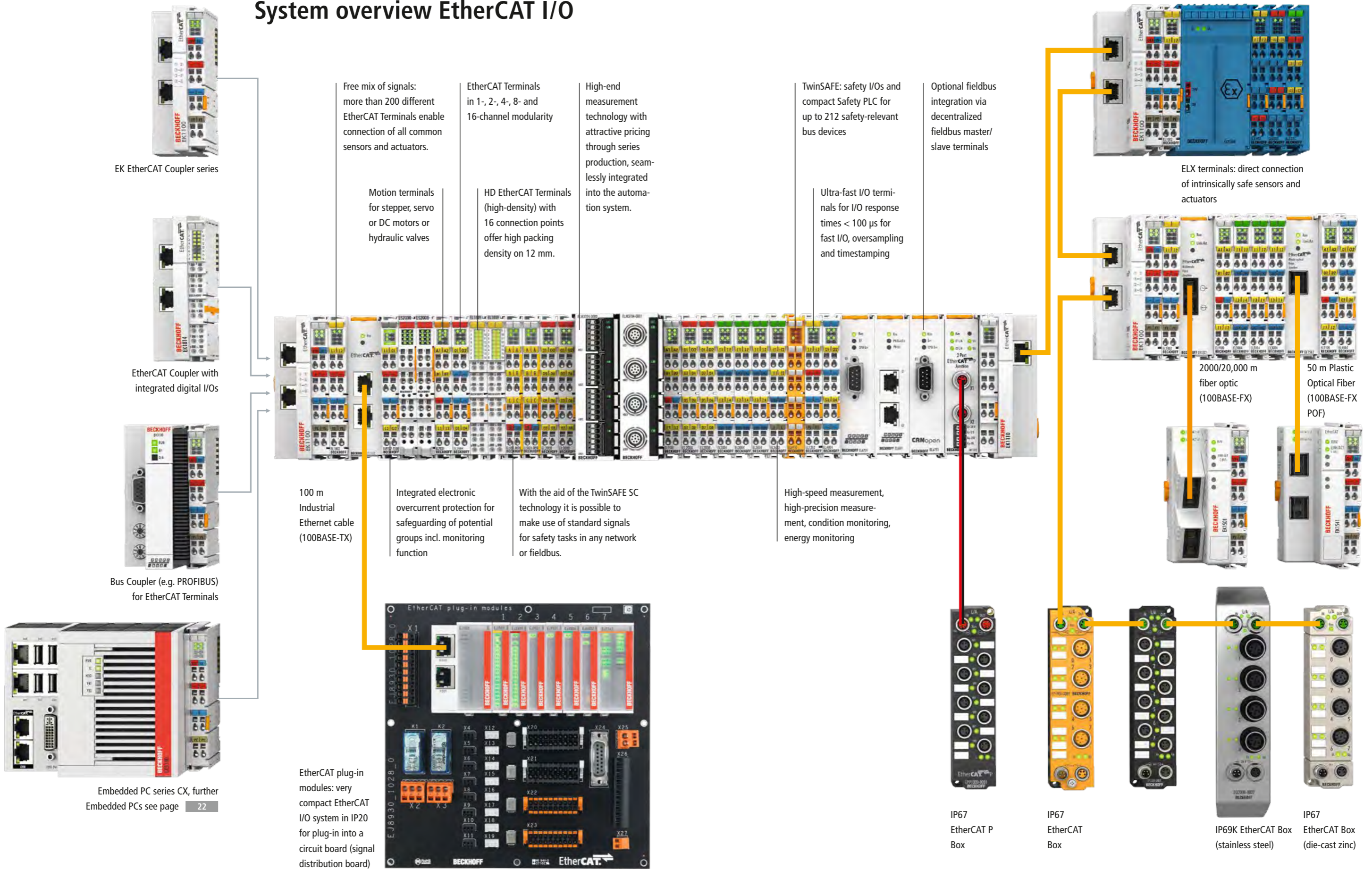
- for new installations and for retrofitting
- different designs and power classes
- high efficiency
- high reliability
- wide range input

▶ www.beckhoff.com/sct
▶ www.beckhoff.com/ps



- comprehensive, modular I/O system for all signal types and fieldbus systems
- universal product range optimized for EtherCAT
- high investment security: mature I/O technology based on more than 25 years of success in the field
- Beckhoff is the I/O pioneer, developing the Bus Terminal concept and EtherCAT.

System overview EtherCAT I/O



Product overview fieldbus systems

► www.beckhoff.com/fieldbus-systems

Fieldbus	EtherCAT Terminals	EtherCAT Box	EtherCAT plug-in modules	Bus Terminals		Fieldbus Box			Fieldbus Modules	Infrastructure components	Embedded PC	Drive Technology
	Couplers/Gateways	Modules		Bus Couplers/ Master terminals	PLC (IEC 61131-3)	Compact Box	Coupler Box	IO-Link box	For thermo- couples/mV	Interfaces	Master/Slave	Servo Drives
EtherCAT	EK1xxx, EKM1xxx	EPxxxx	EJ1xxx	BK1120			IL230x-B110		FM33xx-B110	FC90xx, FC11xx	CXxxxx	AX8000
	EL6695 bridge	ERxxxx		BK1150						CUxxxx	CXxxxx-M112	AX5000
		EQxxxx		BK1250						EP9xxx		AM18100
EtherCAT-P	EK13xx	EPPxxxx										
		EP1312										
LIGHTBUS	EL6720 master			BK2020						FC200x	CX1500-M200	
PROFINET	EK3100			BK3xx0	BC3150	IPxxxx-B31x	IL230x-B31x		FM33xx-B310	FC31xx	CXxxxx	
	EL673x master/slave				BX3100						CX2500-M/B310	
INTERBUS	EL6740-0010 slave			BK40x0								
CANopen	EL675x master/slave			BK51xx	BC5150	IPxxxx-B51x	IL230x-B51x			FC51xx	CXxxxx	
					BX5100						CX2500-M/B510	
DeviceNet	EL675x master/slave			BK52x0	BX5200	IPxxxx-B52x	IL230x-B52x			FC52xx	CX1500-M/B520	
CC-Link	EL6711-0010 slave			BK7150								
Modbus	EK90x0			BK7350							CXxxxx	
sercos				BK75x0						FC75xx	CXxxxx	
	EL1262-0010	i EP600x	EJ2522	BK8000	BC8050						CXxxxx	
RS485	EL6021, EL6022	EPP600x	EJ5112	KL6021	BX8000							
			EJ6002	KL6041								
RS232	EL6001, EL6002	EP600x	EJ6002	BK8100	BC8150						CXxxxx	
		EPP600x		KL6001	BX8000							
				KL6031								
Ethernet TCP/IP	EL6601, EL6614	EP6601		BK9xx0	BC9xxx		IL230x-B90x			FC9xxx	CXxxxx	
	switch port	switch port			BX9000					CU2xxx, CU2508		
PROFINET	EK93x0	EP9300		BK9xx3			IL230x-B903			CU2508	CXxxxx	
	EL663x RT controller/device											
	EL663x IRT controller											
EtherNet/IP	EK95x0			BK9xx5			IL230x-B905			CU2508	CXxxxx	
	EL665x scanner/adapter											
AS-Interface	EL6201			KL62x1								
IO-Link	EL6224	EP622x,	EJ6224	KL6224				EPIxxxx,				
	master	EPP622x	master	master				ERIxxxx				
		master						devices				
KNX/EIB				KL6301								
LON				KL6401								
MP-Bus				KL6771								
M-Bus				KL6781								
DALI/DSI	EL6821 master			KL6811								
DALI-2				KL6821								
IEEE 1588	EL6688											
DMX	EL6851											
EnOcean				KL658x								
SMI				KL6841								
BACnet	EL6861											

EtherCAT Terminals

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EK1xxx, BK1xx0 EtherCAT Couplers							
	EtherCAT				EtherCAT P	EtherCAT G	Ethernet/TSN
EtherCAT Couplers E-bus	EK1100 2 x RJ45	EK1101 ID switch	EK1101-0010 ID switch, Extended Distance	EK1101-0080 ID switch, Fast Hot Connect	EK1300 EtherCAT P	EK1400 EtherCAT G	EK1000 Ethernet/TSN
	EK1100-0008 M8 connection	EK1101-0008 ID switch, M8 connection		EKM1101 ID switch and diagnostics			
	EK1501 ID switch, multi-mode fiber optic	EK1501-0010 ID switch, single-mode fiber optic	EK1501-0100 ID switch, multi-mode fiber optic to RJ45	EK1541 ID switch, POF			
EtherCAT Couplers E-bus with integrated digital I/Os	EK1814 4 inputs + 4 outputs	EK1818 8 inputs + 4 outputs	EK1828 4 inputs + 8 outputs	EK1828-0010 8 outputs			
	EK1914 4 standard inputs, 4 standard outputs, 2 safe inputs, 2 safe outputs	EK1960 TwinSAFE Logic, 20 safe inputs, 24 safe outputs					
EtherCAT Couplers K-bus	BK1120 Bus Coupler (Economy plus)	BK1150 Bus Coupler (Compact)	BK1250 E-bus to K-bus interface				
Extensions	EK1110 extension end terminal	EK1110-0008 extension end terminal, M8	EK1110-0043 EtherCAT EJ coupler, CX and EL terminal connection	EK1110-0044 EtherCAT EJ coupler, CX and EL terminal connection, EtherCAT junction	EK1310 EtherCAT P extension with feed-in		
Junctions	EK1122 2-port junction	EK1122-0008 2-port junction, M8	EK1121-0010 1-port junction, Extended Distance	EK1122-0080 2-port junction, Fast Hot Connect	EK1322 EtherCAT P junction with feed-in		
	EK1521 multi-mode fiber-optic junction	EK1521-0010 single-mode fiber-optic junction		EK1561 POF junction			

EKxxxx Bus Couplers		
Fieldbus	Standard	
	EK9160 IoT (MQTT, OPC UA)	
EtherNet/IP	EK9500 100 Mbit/s	EK9520 100/1000 Mbit/s
Modbus	EK9000 100 Mbit/s	EK9020 100/1000 Mbit/s
	EK3100 12 Mbaud	
	EK9300 100 Mbit/s	EK9320 100/1000 Mbit/s

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

EL1xxx EtherCAT Terminals, digital input					
Signal	2-channel	4-channel	8-channel	16-channel	
5 V DC	EL1252-0050 <i>T_{on}/T_{off}</i> 1 µs, timestamping	EL1124 filter 0.05 µs			
	EL1262-0010 <i>T_{on}/T_{off}</i> 0.1 µs, oversampling				
	EL1262-0050 <i>T_{on}/T_{off}</i> 1 µs, oversampling				
12 V DC		EL1144 filter 10 µs			
24 V DC, filter 3.0 ms	EL1002 type 3	EL1004 type 3	EL1004-0020 functional isolation 2500 V	EL1008 type 3, 1-wire	EL1809 type 3
		EL1104 type 3, with sensor supply	EL1804 type 3, 8 x 24 V, 4 x 0 V	EL1808 type 3, 8 x 24 V DC, 2-wire	EL1852 type 3, 8 inputs, 8 outputs, I _{max} = 0.5 A, flat-ribbon cable
		EL1084 ground switching	EL1024 type 2	EL1088 ground switching	EL1862 type 3, flat-ribbon cable
				EL1862-0010 flat-ribbon cable, ground switching	EL1889 ground switching
24 V DC, filter 10 µs	EL1012 type 3	EL1014 type 3	EL1034 type 1, potential- free inputs	EL1018 type 3	EL1819 type 3
		EL1114 type 3, with sensor supply	EL1814 type 3, 8 x 24 V, 4 x 0 V, 3-wire		EL1872 type 3, flat-ribbon cable
		EL1094 ground switching	EL1098 ground switching	EL1899 ground switching	EL1872-0010 flat-ribbon cable, ground switching
24 V DC, XFC: <i>T_{on}/T_{off}</i> 1 µs	EL1202 type 3				
	EL1252 type 3, timestamping	EL1254 type 3, timestamping		EL1258 multi-timestamping	EL1259 8 inputs, 8 outputs, multi-timestamping, I _{max} = 0.5 A
	EL1262 type 3, oversampling			EL1258-0010 multi-timestamping, ground switching	
24 V DC, counter	EL1502 type 1, 100 kHz, 32 bit				
	EL1512 type 1, 1 kHz, 32 bit				
24 V DC, safe input		EL1904 TwinSAFE, 4 safe inputs	EL2911 TwinSAFE Logic, 4 safe inputs, 1 safe output	EL1918 TwinSAFE Logic, 8 safe inputs	EL1957 TwinSAFE Logic, 8 safe inputs, 4 safe outputs
48 V DC		EL1134 type 1			

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

EL1xxx | EtherCAT Terminals, digital input

Signal	2-channel	4-channel	8-channel	16-channel
120 V AC/DC	EL1712 power contacts			
120 V DC	EL1712-0020 power contacts			
120 ... 230 V AC	EL1702 power contacts EL1722 no power contacts			
220 V DC	EL1702-0020 power contacts			
Thermistor	EL1382			
NAMUR	EL1052	EL1054		
Ex i, NAMUR	ELX1052	ELX1054	ELX1058	

EL2xxx | EtherCAT Terminals, digital output

Signal	1-channel	2-channel	4-channel	8-channel	16-channel
5 V DC			EL2124 $I_{max} = \pm 20$ mA		
12 V DC			EL2024-0010 $I_{max} = 2.0$ A		
24 V DC, $I_{max} = 0.5$ A		EL2002 4-wire	EL2004 2-wire EL2014 with diagnostics	EL2008 1-wire EL2068 with channel diagnostics	EL2809 $I_{max} = 0.5$ A EL2872 flat-ribbon cable EL2872-0010 flat-ribbon cable, ground switching EL2878-0005 flat-ribbon cable, with diagnostics EL2819 with diagnostics EL2808 8 x 0 V EL2869 with channel diagnostics
24 V DC, $I_{max} = 2.0$ A		EL2022 4-wire EL2032 with diagnostics	EL2024 2-wire EL2034 with diagnostics EL2044 with extended diagnostics	EL2828 EL2838 <i>i</i> with channel diagnostics	EM2042 D-sub connection EL1859 type 3, 8 inputs, 8 outputs, $I_{max} = 0.5$ A EL1852 type 3, 8 inputs, 8 outputs, $I_{max} = 0.5$ A, flat-ribbon cable
24 V DC, $I_{max} = 4.0$ A/8.0 A		EL2042 2 x 4.0 A/1 x 8.0 A			
24 V DC, XFC: $T_{ON}/T_{OFF} 1 \mu s$		EL2202 push-pull output EL2202-0100 push-pull outputs, DC preset EL2252 timestamping	EL2212 overexcitation, multi-timestamping EL2262 oversampling	EL2258 multi-timestamping	EL1259 8 inputs, 8 outputs, multi-time- stamping, $I_{max} = 0.5$ A
Ex i, 24 V DC		ELX2002 45 mA	ELX2792 $I_{max} = 0.5$ A AC/1 A DC, change-over contact	ELX2008 30 mA	
24 V DC, safe output	EL2911 TwinSAFE Logic, 4 safe inputs, 1 safe output	EL2912 TwinSAFE Logic, 2 safe outputs	EL2904 TwinSAFE, 4 safe outputs		

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

EL2xxx | EtherCAT Terminals, digital output

Signal	1-channel	2-channel	4-channel	8-channel	16-channel
30 V AC/ 48 V DC solid- state relay, $I_{max} = 2.0$ A			EL2784 EL2794 potential-free	EL2788 EL2798 potential-free	
Relay (up to 250 V AC)		EL2602 $I_{max} = 5.0$ A, make contact, power contacts EL2602-0010 $I_{max} = 5.0$ A, make contact, power contacts, contact- protecting switching	EL2622 $I_{max} = 5.0$ A, make contact, no power contacts EL2622-0010 $I_{max} = 5.0$ A, make contact, no power contacts, con- tact-protecting switching	EL2624 $I_{max} = 2.0$ A, make contact EL2634 $I_{max} = 4.0$ A, make contact, 250 V AC/30 V DC, no power contacts	
		EL2612 $I_{max} = 2.0$ A, change-over, no power contacts	EL2642 $I_{max} = 1.0$ A, change-over, no power contacts, reed relays		
		EL2652 $I_{max} = 1.0$ A, change-over, no power contacts			
Triac (12...230 V AC)		EL2712 $I_{max} = 0.5$ A, power contacts	EL2722 <i>i</i> $I_{max} = 1.0$ A, mutually locked outputs		
		EL2732 <i>i</i> $I_{max} = 0.5$ A, no power contacts			
PWM		EL2502 push-pull output, separate frequency can be set for each channel	EL2502-0005 plastic optical fibre, separate frequency can be set for each channel		
		EL2502-0010 push-pull output, separate frequency can be set for each channel, timestamping			
		EL2535 24 V DC, $I_{max} = \pm 50$ mA, ± 1 A, ± 2 A	EL2535-0005 24 V DC, $I_{max} = \pm 5$ A		
Frequency output	EL2521 1-channel AB, 0... 500 kHz, RS422	EL2522 2-channel AB, 1-channel ABC, 0...4 MHz			
LED control	EL2595 48 V DC, 300...700 mA, current control EL2596 24 V DC, 3 A, pulse > 25 μs , current control EL2596-0010 48 V DC, 3 A, pulse > 25 μs , current control		EL2564 5...48 V DC, 4 A, RGBW, common anode EL2564-0010 8...48 V DC, 3 A, RGBW, common cathode EL2574 pixel LED, 2048 individu- ally addressable LEDs		
Multiplexer		ELM2742-0000 2 x multiplexer, 1 x 4 solid-state relays ELM2642-0000 2 x multiplexer, 1 x 4 reed relays	ELM2744-0000 4 x multiplexer, 1 x 4 solid-state relays ELM2644-0000 4 x multiplexer, 1 x 4 reed relays		

We reserve the right to make technical changes.

EL3xxx | EtherCAT Terminals, analog input

Signal	1-channel		2-/3-channel		4-channel		5-/6-/8-channel
0...10 V, standard signal	EL3061 12 bit	EL3161 16 bit	EL3062 12 bit	EL3162 16 bit	EL3064 12 bit	EL3164 16 bit	EL3068 12 bit
0...±10 V, standard signal	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...±75 mV			EL3602-0010 differential input, 24 bit				
0...±150 mV			EL3702-0015 differential input, 16 bit, oversampling				
0...±200 mV			EL3602-0002 differential input, 24 bit				
0...30 V			EL3062-0030 12 bit				
0...±30 V			ELM3002-0000 24 bit, 20 ksps, push-in		ELM3004-0000 24 bit, 10 ksps, push-in		
0...±1200 V			ELM3002-0205 24 bit, 50 ksps, galv. isolated, 4 mm				
0...20 mA, standard signal	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	EL3012 differential input, 12 bit	EL3142-0010 single-ended, ±10 mA, 16 bit	EL3014 differential input, 12 bit	EL3114 differential input, 16 bit	
			EL3112 differential input, 16 bit	EL3612 differential input, 24 bit			
			EL3742 differential input, 16 bit, oversampling	EL3182 single-ended, 16 bit, HART			
4...20 mA, standard signal	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				EL3124-0090 16 bit, TwinSAFE SC	
0...±20 mA			EL3112-0011 differential input, 16 bit	ELM3102-0000 24 bit, 20 ksps, NAMUR NE43, push-in	ELM3104-0000 24 bit, 10 ksps, NAMUR NE43, push-in		
0...±10 V/±20 mA, standard signal			EL3072 12 bit, NAMUR NE43		EL3074 12 bit, NAMUR NE43		
			EL3172 16 bit, NAMUR NE43		EL3174 16 bit, NAMUR NE43		EL3174-0002 16 bit, electrically isolated, NAMUR NE43
					EL3174-0090 16 bit, NAMUR NE43, TwinSAFE SC		ELM3146-0000 24 bit, 1 ksps, push-in
			ELM3142-0000 24 bit, 1 ksps, push-in		ELM3144-0000 24 bit, 1 ksps, push-in		ELM3148-0000 24 bit, 1 ksps, push-in

The standard EtherCAT Terminals (EL3xxx) can be optionally ordered as E5xxx with pluggable wiring level.

EL3xxx | EtherCAT Terminals, analog input

Signal	1-channel	2-/3-channel	4-channel	5-/6-/8-channel
0...±3 V/0...±20 mA			EL3174-0032 16 bit, electrically isolated, NAMUR NE43, ±3 V	
0...±60 V			EL3174-0042 16 bit, electrically isolated, NAMUR NE43	
0...±60 V/0...±20 mA		ELM3102-0100 24 bit, 20 ksps, push-in, galv. isolated		
Multi-function	EL3751 24 bit, 10 ksps	EL3751-0004 24 bit, 10 ksps	ELM3702-0000 24 bit, 10 ksps, push-in	ELM3702-0101 24 bit, 10 ksps, galvanically isolated, LEMO
Temperature measurement, resistance thermometer RTD	EL3201 16 bit	EL3201-0010 16 bit, high-precision	EL3202 16 bit	EL3202-0010 16 bit, high-precision
			EL3204 2-wire, 16 bit	EL3204 2-wire, 16 bit, 2 x RTD, 2 x ±10 V
			EL3204-0162 2-wire, 16 bit, 2 x RTD, 2 x ±10 V	EL3204-0200 16 bit, universal input for RTD
			EL3208 16 bit	EL3208-0010 Pt1000, Ni1000, NTC 1.8...100 k, potentiom. 1, 5, 10 kΩ
Temperature measurement, thermocouple, mV			EL3214 3-wire, 16 bit	EL3214-0090 16 bit, TwinSAFE SC
				ELM3244-0000 24 bit, high-precision, 1 ksps, push-in
			ELM3246-0000 24 bit, high-precision, 1 ksps, push-in	
			EL3311 16 bit	EL3312 16 bit
Measurement bridge, strain gauge	EL3351 16 bit	EL3356 self-calibration	ELM3502-0000 24 bit, 20 ksps, push-in	ELM3504-0000 24 bit, 10 ksps, push-in
	EL3356-0010 24 bit, 10 ksps	EL3356-0090 TwinSAFE SC	ELM3542-0000 24 bit, 1 ksps, push-in	ELM3544-0000 24 bit, 1 ksps, push-in
Measurement technology	EL3681 digital multimeter terminal, voltage/current, 18 bit		EL3692 resistance measurement, 100 mΩ...10 MΩ	EL3255 potentiometer measurement, 5-channel
Acceleration measurement, position, vibration, condition monitoring, IEPE		EL3632 16 bit, 50 ksps	ELM3602-0000 24 bit, 50 ksps, push-in	ELM3604-0000 24 bit, 20 ksps, push-in
			ELM3602-0002 24 bit, 50 ksps, BNC	ELM3604-0002 24 bit, 20 ksps, BNC
Pressure measuring	EM3701 differential pressure, ±100 hPa		EM3702 relative pressure, 7500 hPa	EM3712 relative pressure, ±1000 hPa
			EL3403 500 V AC, 1 A	EL3423 480 V AC/DC, 1 A, Economy
Power measurement, ≤ 500 V			EL3443 480 V AC/DC, 1 A, extended functionalities	

EL3xxx | EtherCAT Terminals, analog input

Signal	1-channel	2-/3-channel	4-channel	5-/6-/8-channel
Power measurement, ≤ 500 V		EL3443-0010 480 V AC/DC, 5 A, extended functionalities	EL3443-0011 480 V AC/DC, 100 mA, extended functionalities	
		EL3443-0013 480 V AC/DC, 333 mV, extended functionalities	EL3444 ⁱ distributed power measurement, galv. isolated	EL3446 distributed power measurement
Power measurement, > 500 V		EL3453 690 V AC, 5 A, extended functionalities	EL3453-0100 130 V AC, 5 A, extended functionalities	
Mains monitor, ±480 V		EL3483 480 V AC/DC	EL3483-0060 480 V AC/DC, with voltage measurement	
Power monitoring, ≤ 500 V		EL3773 500 V, 1 A AC/DC, 10 ksps		
Power monitoring, > 500 V		EL3783 690 V AC, 5 A AC, 20 ksps	EL3783-0100 130 V AC, 5 A AC, 20 ksps	
Ex i, 0/4...20 mA, standard signal	ELX3181 4...20 mA, single-ended, 16 bit, HART	ELX3152 0/4...20 mA, single-ended, 16 bit	ELX3152-0090 0/4...20 mA, single-ended, 16 bit, TwinSAFE SC	ELX3184 4...20 mA, single-ended, 16 bit, HART
Ex i, temperature measurement, resistance thermometer RTD		ELX3202 RTD, 2-, 3- and 4-wire, 16 bit	ELX3202-0090 RTD, 2-, 3- and 4-wire, 16 bit, TwinSAFE SC	ELX3204 RTD, 2-wire, 16 bit
Ex i, temperature measurement, thermocouple, mV		ELX3312 2-wire, 16 bit	ELX3312-0090 2-wire, 16 bit, TwinSAFE SC	ELX3314 2-wire, 16 bit
Ex i, measurement technology	ELX3351 strain gauge, 24 bit	ELX3351-0090 strain gauge, 24 bit, TwinSAFE SC	ELX3252 potentiometer measurement, 16 bit	ELX3314-0090 2-wire, 16 bit, TwinSAFE SC

EL4xxx | EtherCAT Terminals, analog output

Signal	1-channel	2-channel	4-channel	8-channel
0...10 V	EL4001 12 bit	EL4002 12 bit	EL4102 16 bit	EL4004 12 bit
±10 V	EL4031 12 bit	EL4032 12 bit	EL4132 16 bit	EL4034 12 bit
		EL4732 16 bit, oversampling		EL4104 16 bit
0...20 mA	EL4011 12 bit	EL4012 12 bit	EL4112 16 bit	EL4014 12 bit
		EL4712 16 bit, oversampling		EL4114 16 bit
4...20 mA	EL4021 12 bit	EL4022 12 bit	EL4124 16 bit	EL4028 12 bit
		EL4122 16 bit	EL4124 16 bit	
±10 V/±20 mA			EL4374 16 bit, ⁱ 1 ksps, 2 x input, 2 x output	
Ex i, 0/4...20 mA	ELX4181 single-ended, 16 bit, HART		ELX4154 single-ended, 16 bit	
±10 mA		EL4112-0010 16 bit		

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


EL5xxx | EtherCAT Terminals, position measurement

Signal	1-channel	2-channel
Absolute position measurement	EL5001 SSI encoder interface	EL5001-0011 SSI monitor interface
		EL5001-0090 SSI encoder interface, TwinSAFE SC
		EL5002 SSI encoder interface
	EL5031-0011 ⁱ EnDat-2.2 interface, oversampling	EL5032 EnDat 2.2 interface
		EL5042 BISS C interface
		EL5072 inductive displacement sensor interface, LVDT
Incremental position measurement	EL5021 SinCos encoder interface, 1 V _{PP}	EL5021-0090 SinCos encoder interface, 1 V _{PP} , TwinSAFE SC
	EL5101 incremental encoder interface, RS422, TTL, 1 MHz	EL5101-0010 incremental encoder interface, RS422, 5 MHz
	EL5101-0011 incremental encoder interface, RS422, 5 MHz, oversampling	EL5102 incremental encoder interface, RS422, TTL, open collector, 5 MHz
	EL5101-0090 incremental encoder interface, RS422, TTL, 1 MHz, TwinSAFE SC	EL5112 incremental encoder interface, RS422, TTL, open collector, 5 MHz, 2 x AB/1 x ABC
	EL5131 incremental encoder interface, RS422, TTL, 2 x 24 V DC push-pull outputs	EL5122 incremental encoder interface, TTL, open collector, 1 MHz, 2 x AB
	EL5151 incremental encoder interface, 24 V HTL, 100 kHz	EL5151-0021 incremental encoder interface, 24 V HTL, 100 kHz, 1 x 24 V DC output
	EL5151-0090 incremental encoder interface, 24 V HTL, 100 kHz, TwinSAFE SC	EL5152 incremental encoder interface, 24 V HTL, 100 kHz
		EL5162 ⁱ incremental encoder interface, 24 V HTL, 100 kHz, 2 x ABC
Ex i, incremental position measurement	ELX5151 incremental encoder interface, NAMUR	ELX5151-0090 incremental encoder interface, NAMUR, TwinSAFE SC




EL6xxx | EtherCAT Terminals, communication

Signal	1-channel	2-channel	4-channel
System	EL6070 license key terminal	EL6071 license key terminal	EL6072 ⁱ license key terminal, RTC
	EL6080 memory terminal 128 kbyte	EL6090 display terminal	
Subsystem	EL6821 ⁱ DALI-2 master and power supply terminal		
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	EL6689 ⁱ synchronization via GNSS
	EL6692 EtherCAT bridge	EL6695 EtherCAT bridge, high performance	EL6614 switch port
Master/slave, slave function -0010	EL6201 AS-Interface, master	EL6631 PROFINET RT, controller	EL6631-0010 PROFINET RT, device
	EL6711-0010 CC-Link, slave	EL6720 Lightbus, master	EL6731 PROFIBUS DP, master/slave
	EL6632 ⁱ PROFINET IRT, controller	EL6633 ⁱ PROFINET RT, controller/i-device	EL6224 IO-Link, master
	EL6633-0010 ⁱ PROFINET RT, device	EL6634 ⁱ PROFINET IRT, controller	EL6224-0090 IO-Link, TwinSAFE SC, master
	EL6733 ⁱ PROFIBUS, master/slave	EL6733-0010 ⁱ PROFIBUS, slave	EL6740-0010 Interbus, slave
	EL6751 CANopen, master/slave	EL6753 ⁱ CANopen, master/slave	EL6753-0010 ⁱ CANopen, slave
	EL6752 DeviceNet, master/slave	EL6754 ⁱ DeviceNet, master	EL6754-0010 ⁱ DeviceNet, slave
	EL6761 ⁱ ISO 15118 powerline, charge controller	EL6851 DMX, master/slave	EL6861 BACnet, MS/TP, RS485, master

EL6xxx | EtherCAT Terminals, communication


Signal	1-channel	2-channel	4-channel
Safety	EL6900 TwinSAFE Logic	EL6910 TwinSAFE Logic, PROFIsafe master and slave support	EL6930 TwinSAFE Logic, PROFIsafe slave support
Ex i		ELX6233  communication interface, Ethernet-APL	

EL/ELM7xxx | EtherCAT Terminals, compact drive technology







Motor type	< 3 A	3...5 A	> 5 A	16 A
Servomotor			ELM7211-0010 $I_{ms} = 4.5 \text{ A}$, 48 V DC	
		ELM7211-9016 $I_{ms} = 4.5 \text{ A}$, 48 V DC, TwinSAFE Logic	ELM7211-9018 $I_{ms} = 4.5 \text{ A}$, 48 V DC, Safe Motion, TwinSAFE Logic	
		ELM7212-0010 $I_{ms} = 2 \times 4.5 \text{ A}$, 48 V DC		ELM7222-0010 $I_{ms} = 2 \times 8.0 \text{ A}$, 48 V DC
		ELM7212-9016 $I_{ms} = 2 \times 4.5 \text{ A}$, 48 V DC, TwinSAFE Logic	ELM7212-9018 $I_{ms} = 2 \times 4.5 \text{ A}$, 48 V DC, Safe Motion, TwinSAFE Logic	ELM7222-9016 $I_{ms} = 2 \times 8.0 \text{ A}$, 48 V DC, TwinSAFE Logic
		ELM7222-9018 $I_{ms} = 2 \times 8.0 \text{ A}$, 48 V DC, Safe Motion, TwinSAFE Logic		
	EL7201-0010 $I_{ms} = 2.8 \text{ A}$, 48 V DC, OCT	EL7211-0010 $I_{ms} = 4.5 \text{ A}$, 48 V DC, OCT	ELM7221-0010 $I_{ms} = 8 \text{ A}$, 48 V DC	ELM7231-0010 $I_{ms} = 16 \text{ A}$, 48 V DC
	EL7201 $I_{ms} = 2.8 \text{ A}$, 48 V DC, resolver	EL7211 $I_{ms} = 4.5 \text{ A}$, 48 V DC, resolver	ELM7221-9016 $I_{ms} = 8 \text{ A}$, 48 V DC, TwinSAFE Logic	ELM7221-9018 $I_{ms} = 8 \text{ A}$, 48 V DC, Safe Motion, TwinSAFE Logic
	ELM7231-9016 $I_{ms} = 16 \text{ A}$, 48 V DC, TwinSAFE Logic	ELM7231-9018 $I_{ms} = 16 \text{ A}$, 48 V DC, Safe Motion, TwinSAFE Logic		
	EL7201-9014 $I_{ms} = 2.8 \text{ A}$, 48 V DC, OCT, STO	EL7211-9014 $I_{ms} = 4.5 \text{ A}$, 48 V DC, OCT, STO	EL7221-9014 $I_{ms} = 7...8 \text{ A}$ with ZB8610, 48 V DC, OCT, STO	
Stepper motor	EL7031 $I_{max} = 1.5 \text{ A}$, 24 V DC	EL7041 $I_{max} = 5.0 \text{ A}$, 48 V DC, incr. enc.		
	EL7031-0030 $I_{max} = 2.8 \text{ A}$, 24 V DC	EL7041-0052 $I_{max} = 5.0 \text{ A}$, 48 V DC		
	EL7037 $I_{max} = 1.5 \text{ A}$, 24 V DC, incr. enc., vector control	EL7047 $I_{max} = 5.0 \text{ A}$, 48 V DC, incr. enc., vector control		
		EL7047-9014  $I_{max} = 5.0 \text{ A}$, 48 V DC, incr. enc., vector control, STO		
		EL7062  $I_{max} = 3 \text{ A}$, 5 V DC, incr. enc.		
DC motor output stage	EL7332 $I_{max} = 1.0 \text{ A}$, 24 V DC	EL7342 $I_{max} = 3.5 \text{ A}$, 48 V DC, incr. enc.		
BLDC motor		EL7411 $I_{ms} = 4.5 \text{ A}$, 48 V DC		
		EL7411-9014  $I_{ms} = 4.5 \text{ A}$, 48 V DC, STO		
4-axis interface	EM7004 4 incr. enc., 32 digital I/Os 24 V DC, 4 analog outputs $\pm 10 \text{ V}$			

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

EL8xxx | EtherCAT Terminals, multi-functional

Multi-functional	EL8601-8411  8 x digital input, 1 x counter, 4 x digital output, 2 x PWM, 1 x analog input, 1 x analog output, 1 x encoder
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EL9xxx | EtherCAT Terminals, system

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 ELX, blue	EL9930 PROFIsafe, segment end terminal
	EL9195 shield terminal	EL9070 shield terminal	EL9080 isolation terminal		
Potential distribution	EL9180 2 clamping units per power contact	EL9181 2 x 8 terminal points	EL9182 8 x 2 terminal points	EL9183 1 x 16 terminal points	EL9184 8 x 24 V DC, 8 x 0 V DC
	EL9185 4 clamping units at 2 power contacts	EL9185-0010 4 clamping units at 2 power contacts, potential supply function	EL9186 8 x 24 V DC	EL9187 8 x 0 V DC	EL9188 16 x 24 V DC
	EL9189 16 x 0 V DC				
Potential supply, 24 V DC	EL9100 24 V DC	EL9110 diagnostics	EL9200 with fuse	EL9210 diagnostics, with fuse	EL9520 AS-interface potential supply with filter
Potential supply, 120... 230 V AC	EL9150 with LED	EL9160 diagnostics	EL9190 any voltage up to 230 V	EL9260 diagnostics, with fuse	
	EL9290 with fuse				
Overcurrent protection, 24 V DC	EL9221-xxxx 1-channel	EL9222-xxxx 2-channel	EL9227-xxxx 2-channel, extended functionalities		
Power supply	EL9410 input 24 V DC, output 5 V DC/2 A	ELM9410 input 24 V DC, output 5 V DC/2 A	ELX9410 power supply terminal for E-bus refresh, 1 A	EL9501 input 24 V DC, output 0...20 V/0...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
	EL9561 input 24 V DC, output 0...20 V/0...2 A with electrical isolation	 EL9562 input 24 V DC, output 2 x 24 V DC/0.2 A with electrical isolation	 EL9562-0015 input 24 V DC, output 2 x 15 V DC/0.3 A with electrical isolation	 ELX9560 power supply, 24 V DC, electrically isolated	
Filtering and smoothing	EL9540 surge filter terminal for field supply	EL9540-0010 surge filter terminal for field supply, onshore and offshore areas	EL9550 surge filter terminal for system/field supply	EL9550-0010 surge filter terminal for system/field supply, onshore and offshore areas	EL9550-0012 surge filter terminal for system/field supply with up to 10 A
	EL9570 buffer capacitor terminal, 500 μF , 48 V DC	EL9576 brake chopper terminal, up to 72 V DC, 155 μF			

We reserve the right to make technical changes.

BECKHOFF New Automation Technology

EtherCAT Box

► www.beckhoff.com/ethercat-box



EP1xxx | EtherCAT Box, digital input

Signal	8-channel	16-channel	
24 V DC, filter parameterizable 0...100 ms			EP1839-0022 8 x M12, with diagnostics
			EP1839-0042 8 x M12, with diagnostics, EtherCAT M12
24 V DC, filter 3.0 ms	EP1008-0001 ⁽¹⁾ 8 x M8	EP1008-0002 ^(1,2) 4 x M12	EP1809-0021 ⁽¹⁾ 16 x M8
		EP1008-0022 ⁽¹⁾ 8 x M12	EP1809-0042 8 x M12, EtherCAT M12
24 V DC, filter 10 µs	EP1018-0001 ⁽¹⁾ 8 x M8	EP1018-0002 ⁽¹⁾ 4 x M12	EP1819-0021 ⁽¹⁾ 16 x M8
			EP1819-0005 16 x M8, 4-pin
			EP1816-0003 connector with spring-loaded system
			EP1816-0008 D-sub, 25-pin
			EP1816-3008 D-sub, 25-pin, acceleration sensor
			EP1816-1008 D-sub, 25-pin, changed pin assignment
			EP1859-0042 8 x M12, 8 inputs + 8 outputs, I _{max} = 0.5 A, EtherCAT M12, 3.0 ms
24 V DC, ground switching	EP1098-0001 ⁽¹⁾ 8 x M8		
24 V DC, timestamping	EP1258-0001 ⁽¹⁾ 8 x M8, 2-channel timestamping	EP1258-0002 ⁽¹⁾ 4 x M12, 2-channel timestamping	
24 V DC, counter		EP1518-0002 ⁽¹⁾ 4 x M12, multi-function input	
24 V DC, safe input	EP1908-0002 TwinSAFE, 8 safe inputs	EP1918-0002 TwinSAFE Logic, 8 safe inputs	
Ex i, NAMUR	EPX1058-0022 8 x M12		

EP2xxx | EtherCAT Box, digital output

Signal	4-channel	8-channel	16-channel	24-channel
24 V DC, I _{max} = 0.5 A		EP2008-0001 ⁽¹⁾ 8 x M8	EP2008-0002 ^(1,2) 4 x M12	EP2839-0022 8 x M12, with diagnostics
			EP2008-0022 ⁽¹⁾ 8 x M12	EP2839-0042 8 x M12, with diagnostics, EtherCAT M12
			EP2809-0021 ⁽¹⁾ 16 x M8	EP2809-0022 ^(1,2) 8 x M12
			EP2816-0003 connector with spring-loaded system	EP2816-0004 M16, 19-pin
			EP2816-0008 D-sub, 25-pin	EP2816-0010 2 x D-sub, 9-pin
				EP2817-0008 D-sub, 25-pin
24 V DC, I _{max} = 0.5 A, Σ 16 A				EP2809-0042 8 x M12, EtherCAT M12
24 V DC, I _{max} = 2.0 A		EP2028-0001 ⁽¹⁾ 8 x M8	EP2028-0002 ⁽¹⁾ 4 x M12	
		EP2038-0001 ⁽¹⁾ 8 x M8, with diagnostics	EP2038-0002 ⁽¹⁾ 4 x M12, with diagnostics	
24 V DC, I _{max} > 2.0 A, Σ 16 A			EP2038-0042 8 x M12, with diagnostics, EtherCAT M12	
			EP2028-0032 8 x M12	
			ER2028-1032 8 x M12	
24 V DC, safe output		EP2918-0032 TwinSAFE Logic, 8 safe outputs		
25 V AC / 30 V DC	EP2624-0002 ⁽¹⁾ relay output, 4 x M12			

EPxxxx: industrial housing in IP67, ⁽¹⁾also as ERxxxx: zinc die-cast housing in IP67, ⁽²⁾also as EQxxxx: stainless steel housing in IP69K

EP23xx | EtherCAT Box, digital combi

Signal	8-channel		12-channel	16-channel		
24 V DC, inputs + outputs	EP2308-0001 ⁽¹⁾ 8 x M8, 4 inputs + 4 outputs, I _{max} = 0.5 A, 3.0 ms	EP2308-0002 ⁽¹⁾ 4 x M12, 4 inputs + 4 outputs, I _{max} = 0.5 A, 3.0 ms		EP1859-0042 8 x M12, 8 inputs + 8 outputs, I _{max} = 0.5 A, EtherCAT M12, 3.0 ms		
	EP2318-0001 ⁽¹⁾ 8 x M8, 4 inputs + 4 outputs, I _{max} = 0.5 A, 10 μs	EP2318-0002 ⁽¹⁾ 4 x M12, 4 inputs + 4 outputs, I _{max} = 0.5 A, 10 μs		EP2316-0003 8 inputs + 8 outputs, I _{max} = 0.5 A, connector with spring-loaded system, 10 μs	EP2316-0008 8 inputs + 8 outputs, D-sub, 25-pin, 10 μs	
	EP2328-0001 ⁽¹⁾ 8 x M8, 4 inputs + 4 outputs, I _{max} = 2 A, 3.0 ms	EP2328-0002 ⁽¹⁾ 4 x M12, 4 inputs + 4 outputs, I _{max} = 2 A, 3.0 ms				
24 V DC, in-/outputs	EP2338-0001 ⁽¹⁾ 8 x M8, 8 in-/outputs, I _{max} = 0.5 A, 10 μs	EP2338-0002 ⁽¹⁾ 4 x M12, 8 in-/outputs, I _{max} = 0.5 A, 10 μs		EP2339-0021 ⁽¹⁾ 16 x M8, 16 in-/outputs, I _{max} = 0.5 A, 3.0 ms	EP2339-0022 ^(1,2) 8 x M12, 16 in-/outputs, I _{max} = 0.5 A, 3.0 ms	
	EP2338-1001 ⁽¹⁾ 8 x M8, 8 in-/outputs, I _{max} = 0.5 A, 3.0 ms	EP2338-1002 ⁽¹⁾ 4 x M12, 8 in-/outputs, I _{max} = 0.5 A, 3.0 ms		EP2339-0121 16 x M8, 16 in-/outputs, I _{max} = 0.5 A, 3.0 ms, ground switching	EP2339-0003 16 in-/outputs, I _{max} = 0.5 A, connector with spring-loaded system, 3.0 ms	EP2339-0042 8 x M12, 16 in-/outputs, I _{max} = 0.5 A, ∑ 16 A, EtherCAT M12, 3.0 ms
		EP2338-2002 <i>i</i> 4 x M12, 8 in-/outputs, I _{max} = 0.5 A, 10 μs		EP2349-0021 ⁽¹⁾ 16 x M8, 16 in-/outputs, I _{max} = 0.5 A, 10 μs	EP2349-0022 ⁽¹⁾ 8 x M12, 16 in-/outputs, I _{max} = 0.5 A, 10 μs	
Safety, safe in-/outputs			EP1957-0022 TwinSAFE Logic, 8 safe inputs, 4 safe outputs			

EPxxxx: industrial housing in IP67, ⁽¹⁾also as ERxxxx: zinc die-cast housing in IP67, ⁽²⁾also as EQxxxx: stainless steel housing in IP69K

EP3xxx | EtherCAT Box, analog input

Signal	1-channel	2-channel	4-channel	8-channel
±10 V, ±20 mA		EP3162-0002 parameterizable, electrically isolated, single-ended		
±10 V, 0/4...20 mA			EP3174-0002 ^(1,2) parameterizable, differential inputs	EP3174-0092 parameterizable, differential inputs, TwinSAFE SC
		EP3182-1002 2 analog inputs, parameterizable, single-ended, 2 digital control outputs (sink/source type), 24 V DC, short-circuit proof	EP3184-0002 ⁽¹⁾ parameterizable, single-ended	EP3184-1002 ⁽¹⁾ parameterizable, single-ended, 2 channels per socket
Resistance thermometer (RTD)			EP3204-0002 ^(1,2) Pt100, Pt200, Pt500, Pt1000, Ni100, Ni120, Ni1000	
Thermocouple/mV			EP3314-0002 ^(1,2) type J, K, L, B, E, N, R, S, T, U	
Measurement bridge (SG)	EP3356-0022 24 bit, self-calibration			
Condition monitoring/IEPE		EP3632-0001		
Accelerometers	EP3751-0160 1 x 3 axes	EP3752-0000 2 x 3 axes		
	EP3751-0260 <i>i</i> 1 x 3 axes, acceleration/gyroscope			
Pressure measuring			EP3744-0041 4 pressure inputs -1...1 bar (differential pressure to fifth connection)	EP3744-1041 4 pressure inputs 0...7 bar (differential pressure to fifth connection)
Ex i, 4...20 mA			EPX3184-0022 4 x M12, single-ended, HART	EPX3158-0022 8 x M12, single-ended

EP4xxx | EtherCAT Box, analog output

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

We reserve the right to make technical changes.

EP43xx | EtherCAT Box, analog combi

Signal	4-channel	8-channel
±10 V, 0/4...20 mA	EP4374-0002 ⁽¹⁾ 2 inputs + 2 outputs, parameterizable	EP4378-1022 4 inputs + 4 outputs, U/I parameterizable per channel, 8 digital I/Os, 24 V DC/3.0 ms
±10 V	EP4304-1002 2 inputs + 2 outputs, single-ended, 2 digital inputs, 24 V DC, 10 µs	
±20 mA	EP4314-1002 2 inputs + 2 outputs, single-ended, 2 digital inputs, 24 V DC, 10 µs	

EP5xxx | EtherCAT Box, position measurement

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

EP6xxx | EtherCAT Box, communication

Function	1-channel	2-channel	4-channel	8-channel	Other
System	EP6070-0060 license key module				
	EP6080-0000 memory box 128 kbyte				
Serial interface	EP6001-0002 ⁽¹⁾ RS232, RS422/RS485, 5 V DC/1 A	EP6002-0002 ⁽¹⁾ RS232, RS422/RS485			
EtherCAT/Ethernet	EP6601-0002 switch port				
IO-Link master			EP6224-0002 Class A		
			EP6224-2022 Class A	EP6228-0022 Class A	
			EP6224-0042 Class A, EtherCAT M12	EP6228-0042 Class A, EtherCAT M12	
			EP6224-0092 Class A, TwinSAFE SC		
			EP6224-3002 Class B	EP6228-3032 Class B	
			EP6224-3022 Class B	EP6228-3132 4 x Class A, 4 x Class B	
				EP6228-3142 4 x Class A, 4 x Class B, EtherCAT M12	
2 x 16 character display					EP6090-0000 display box

EPxxxx: industrial housing in IP67, ⁽¹⁾also as ERxxxx: zinc die-cast housing in IP67, ⁽²⁾also as EQxxxx: stainless steel housing in IP69K

EP7xxx | EtherCAT Box, compact drive technology

Motor type	< 3 A	> 3 A	
Servomotor		EP7211-0034 <i>I</i> _{max} = 4.5 A, 48 V DC, OCT, STO suitable EP7211-0035 <i>I</i> _{max} = 4.5 A, 48 V DC, OCT, STO suitable, drive profile CIA DS402	
Stepper motor		EP7047-1032 <i>I</i> _{max} = 5.0 A, 48 V DC	
	EP7041-1002 ⁽¹⁾ <i>I</i> _{max} = 1.5 A, 48 V DC, incremental encoder, 2 digital inputs, 1 digital output	EP7041-0002 ⁽¹⁾ <i>I</i> _{max} = 5 A, 48 V DC, incremental encoder, 2 digital inputs, 1 digital output	EP7041-2002 ⁽¹⁾ <i>I</i> _{max} = 5 A, 48 V DC, incremental encoder, 2 digital inputs, 1 digital output, motor connection via plug
		EP7041-3002 ⁽¹⁾ <i>I</i> _{max} = 5 A, 48 V DC, incremental encoder, for high-speed applications, encoder system (24 V DC encoder)	EP7041-3102 <i>I</i> _{max} = 5 A, 48 V DC, incremental encoder, for high-speed applications, encoder system (5 V DC encoder)
		EP7041-4032 <i>I</i> _{max} = 5.0 A, 48 V DC, BiSS C encoder	
DC motor		EP7342-0002 ⁽¹⁾ <i>I</i> _{max} = 3.5 A, 48 V DC	
BLDC motor		EP7402-0057 for roller conveyor systems, 24 V DC, EtherCAT junction	EP7402-0167 for roller conveyor systems, 48 V DC

EP8xxx | EtherCAT Box, multi-functional

Function	8-channel	12-channel
Multi-functional	EP8309-1022 8 digital inputs/outputs, 2 x tachometer, 2 x 0/4...20 mA input, 1 x 0/4...20 mA output, 1 x 1.2 A PWM output	EP8601-0022 <i>i</i> 8 x digital input, 1 x counter, 4 x digital output, 2 x PWM, 1 x analog input, 1 x analog output, 1 x encoder

EPxxxx | EtherCAT Box, system

Function				
Identification	EP1111-0000 3 decimal ID switches			
Junctions	EP1122-0001 EtherCAT, 2-channel	EP1312-0001 EtherCAT P, 2-channel	EP9128-0021 EtherCAT, 8 x M8	
Power distribution	EP9208-1035 8-channel, M12, L-coded, 7/8"	EP9214-0023 4/4-channel, 7/8"	EP9214-0024 4/4-channel, M12, L-coded	<i>i</i> EP9224-0023 4/4-channel, current measurement and data logging, 7/8"
	EP9224-0024 4/4-channel, current measurement and data logging, M12, L-coded	<i>i</i> EP9221-0057 1-channel, ENP B17, ENP to EtherCAT P	EP9224-0037 4-channel, ENP B17, ENP to EtherCAT P	EP9224-2037 <i>i</i> 4-channel junction, with power supply, ENP B17
PROFINET RT EtherCAT Box	EP9300-0022 EtherCAT Box interface with PROFINET RT	EP9320-0022 <i>i</i> EtherCAT Box interface with PROFINET RT		
EtherCAT media converters fiber optic	EP9521-0020 1-channel, multi-mode			
Brake chopper box	EP9576-1032 up to 72 V DC			

EtherCAT P Box

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EPP1xxx EtherCAT P Box, digital input					
Signal	4-channel	8-channel	16-channel		
24 V DC, filter 3.0 ms	EPP1004-0061 4 x M8	EPP1008-0001 8 x M8	EPP1008-0002 4 x M12	EPP1809-0021 16 x M8	EPP1809-0022 8 x M12
			EPP1008-0022 8 x M12	EPP1839-0022 8 x M12, with diagnostics	EPP1859-0022 8 x M12
24 V DC, filter 10 µs		EPP1018-0001 8 x M8	EPP1018-0002 4 x M12	EPP1819-0021 16 x M8	EPP1819-0022 8 x M12
				EPP1819-0005 16 x M8, 4-pin	
				EPP1816-0008 D-sub, 25-pin	EPP1816-3008 D-sub, 25-pin, acceleration sensor
				EPP1816-0003 connector with spring-loaded system	
24 V DC, timestamping		EPP1258-0001 8 x M8, 2-channel timestamping	EPP1258-0002 4 x M12, 2-channel timestamping		
24 V DC, counter			EPP1518-0002 4 x M12, multi-function input		

EPP2xxx EtherCAT P Box, digital output					
Signal	1-channel	4-channel	8-channel	16-channel	24-channel
24 V DC, $I_{max} = 0.5 A$			EPP2008-0001 8 x M8	EPP2008-0002 4 x M12	
				EPP2008-0022 8 x M12	
				EPP2809-0021 16 x M8	
				EPP2809-0022 8 x M12	
				EPP2839-0022 8 x M12, with diagnostics	
				EPP2816-0008 D-sub, 25-pin	EPP2817-0008 D-sub, 25-pin
				EPP2816-0010 2 x D-sub, 9-pin	
				EPP2816-0003 connector with spring-loaded system	
				EPP2816-0004 M16, 19-pin	
24 V DC, $I_{max} = 2.0 A$			EPP2028-0001 8 x M8	EPP2028-0002 4 x M12	
			EPP2038-0001 8 x M8, with diagnostics	EPP2038-0002 4 x M12, with diagnostics	

EPP2xxx EtherCAT P Box, digital output					
Signal	1-channel	4-channel	8-channel	16-channel	24-channel
25 V AC/ 30 V DC		EPP2624-0002 relay output, 4 x M12			
Current control, LED control	EPP2596-0002 24 V DC				

EPP23xx EtherCAT P Box, digital combi					
Signal	4-channel	8-channel	16-channel		
24 V DC, inputs + outputs		EPP2308-0001 8 x M8, 4 inputs + 4 outputs, $I_{max} = 0.5 A, 3.0 ms$	EPP2308-0002 4 x M12, 4 inputs + 4 outputs, $I_{max} = 0.5 A, 3.0 ms$	EPP2316-0003 8 inputs + 8 outputs, $I_{max} = 0.5 A$, connector with spring-loaded system, 10 µs	EPP2316-0008 8 inputs + 8 outputs, $I_{max} = 0.5 A$, D-sub, 25-pin, 10 µs
		EPP2318-0001 8 x M8, 4 inputs + 4 outputs, $I_{max} = 0.5 A, 10 µs$	EPP2318-0002 4 x M12, 4 inputs + 4 outputs, $I_{max} = 0.5 A, 10 µs$		
		EPP2328-0001 8 x M8, 4 inputs + 4 outputs, $I_{max} = 2 A, 3.0 ms$	EPP2328-0002 4 x M12, 4 inputs + 4 outputs, $I_{max} = 2 A, 3.0 ms$		
24 V DC, in-/outputs		EPP2338-0001 8 x M8, 8 in-/outputs, $I_{max} = 0.5 A, 10 µs$	EPP2338-0002 4 x M12, 8 in-/outputs, $I_{max} = 0.5 A, 10 µs$	EPP2339-0021 16 x M8, 16 in-/outputs, $I_{max} = 0.5 A, 3.0 ms$	EPP2339-0022 8 x M12, 16 in-/outputs, $I_{max} = 0.5 A, 3.0 ms$
			EPP2338-2002 4 x M12, 8 in-/outputs, $I_{max} = 0.5 A, 10 µs$	EPP2349-0021 16 x M8, 16 in-/outputs, $I_{max} = 0.5 A, 10 µs$	EPP2349-0022 8 x M12, 16 in-/outputs, $I_{max} = 0.5 A, 10 µs$
	EPP2334-0061 4 x M8, 4 inputs/outputs, $I_{max} = 0.5 A, 10 µs$	EPP2338-1001 8 x M8, 8 in-/outputs, $I_{max} = 0.5 A, 3.0 ms$	EPP2338-1002 4 x M12, 8 in-/outputs, $I_{max} = 0.5 A, 3.0 ms$	EPP2339-0003 16 inputs/outputs, $I_{max} = 0.5 A$, connector with spring-loaded system, 3.0 ms	

EPP3xxx | EtherCAT P Box, analog input

Signal	1-channel	2-channel	4-channel
±10 V, 0/4...20 mA, standard signal			EPP3174-0002 parameterizable, differential inputs
			EPP3184-0002 parameterizable, single-ended
4...20 mA, standard signal			EPP3184-0802 <i>i</i> single-ended, HART
Temperature measurement, resistance thermometer RTD			EPP3204-0002 Pt100, Pt200, Pt500, Pt1000, Ni100, Ni120, Ni1000
Temperature measurement, thermocouple, mV			EPP3314-0002 type J, K, L, B, E, N, R, S, T, U
Measuring bridge, strain gauge	EPP3356-0022 24 bit, self-calibration		EPP3504-0023 24 bit, 10 ksp, push-in
			ERP3504-0022 <i>i</i> 24 bit, 10 ksp, M12, zinc die-cast
Acceleration measurement, position, vibra- tion, condition monitoring, IEPE		EPP3632-0001 16 bit, 50 ksp, 2 x M8	
		EPP3752-0000 2 x 3 axes	
Pressure measuring			EPP3744-0041 4 pressure inputs -1...1 bar (differential pressure to fifth connection)
			EPP3744-1041 4 pressure inputs 0...7 bar (differential pressure to fifth connection)

EPP4xxx | EtherCAT P Box, analog output

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

EPP43xx | EtherCAT P Box, analog combi

Signal	4-channel
±10 V, 0/4...20 mA	EPP4374-0002 2 inputs + 2 outputs, parameterizable
±10 V	EPP4304-1002 2 inputs + 2 outputs, single-ended, 2 digital inputs, 24 V DC, 10 µs
±20 mA	EPP4314-1002 2 inputs + 2 outputs, single-ended, 2 digital inputs, 24 V DC, 10 µs

EPP5xxx | EtherCAT P Box, position measurement

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

EPP6xxx | EtherCAT P Box, communication

Function	1-channel	2-channel	4-channel	8-channel	Other
Serial interface	EPP6001-0002 RS232, RS422/RS485, 5 V DC/1 A	EPP6002-0002 RS232, RS422/RS485			
IO-Link master			EPP6224-0522 <i>i</i> Class A, 4 ports, timestamping	EPP6228-0022 Class A, 8 ports	
2 x 16 charac- ter display					EPP6090-0000 display box

EPP7xxx | EtherCAT P Box, compact drive technology

Motor type	< 3 A	> 3 A
Stepper motor	EPP7041-1002 <i>I</i> _{max} = 1.5 A, 48 V DC, incremental encoder	EPP7041-3002 <i>I</i> _{max} = 5.0 A, 48 V DC, incremental encoder
DC motor output stage		EPP7342-0002 <i>I</i> _{max} = 3.5 A, 48 V DC

EPPxxxx | EtherCAT P Box, system

Function	
Identification	EPP1111-0000 with ID switch
EtherCAT P diagnostics	EPP9022-0060 4 x diagnostics (U _s , U _r , I _s , I _r)
Converter EtherCAT P to EtherCAT	EPP9001-0060 EtherCAT P/EtherCAT connector with power transmission
Junctions	EPP1322-0001 3 ports, with feed-in
	EPP1332-0001 3 ports, with refresh
	EPP1342-0001 3 ports
Supply module EtherCAT to EtherCAT P	EPP1321-0060
Power distri- bution ENP to EtherCAT P	EP9224-0037 4-channel, ENP B17
TwinSAFE SC	EPP9022-9060 4 x diagnostics (U _s , U _r , I _s , I _r), TwinSAFE SC

EtherCAT plug-in modules



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EJ11xx | EtherCAT Couplers

EtherCAT Couplers E-bus	EJ1100 EtherCAT Coupler, 2 x RJ45	EJ1101-0022 EtherCAT Coupler, external: connectors, power supply module and optional ID switches
Extension system and junctions	EK1110-0043 EtherCAT EJ coupler, CX and EL terminal connection	EK1110-0044 EtherCAT EJ coupler, CX and EL terminal connection, EtherCAT junction
	EJ1122 2-port junction, external: connectors	

EJ1xxx | EtherCAT plug-in modules, digital input

Signal	4-channel	8-channel	16-channel
3.3 V DC/5 V DC		EJ1128 filter 0.05 µs	
24 V DC, filter 3.0 ms		EJ1008 type 3	EJ1809 type 3
			EJ1859 type 3, 8 inputs, 8 outputs, I _{max} = 0.5 A
			EJ1889 ground switching
24 V DC, filter 10 µs			EJ1819 type 3
24 V DC, filter 1 µs	EJ1254 type 3, timestamping		
24 V DC, safe input	EJ1914 TwinSAFE Logic, 4 safe inputs	EJ1918 TwinSAFE Logic, 8 safe inputs	
		EJ1957 TwinSAFE Logic, 8 safe inputs, 4 safe outputs	

EJ2xxx | EtherCAT plug-in modules, digital output

Signal	1-channel	2-channel	4-channel	8-channel	16-channel
3.3 V DC/5 V DC				EJ2128 I _{max} = ±20 mA	
24 V DC, I _{max} = 0.5 A		EJ2262 oversampling		EJ2008	EJ2809
					EJ2889 ground switching
					EJ1859 type 3, 8 inputs, 8 outputs, I _{max} = 0.5 A
24 V DC, safe output			EJ2914 TwinSAFE Logic, 4 safe outputs	EJ2918 TwinSAFE Logic, 8 safe outputs	
			EJ1957 TwinSAFE Logic, 8 safe inputs, 4 safe outputs		
PWM		EJ2502 24 V DC, 0.5 A	EJ2564 5...48 V DC, 3 A, RGBW, common anode		
Frequency output	EJ2521-0224 24 V DC, 1 A	EJ2522 24 V DC, 50 mA			

EJ3xxx | EtherCAT plug-in modules, analog input

Signal	2-channel	4-channel	5-channel	8-channel
±10 V		EJ3004 single-ended, 12 bit		
		EJ3104 differential input, 16 bit		EJ3108 6 x differential inputs, 2 x single-ended, 16 bit
0...10 V				EJ3068 single-ended, 12 bit
0...20 mA				EJ3048 single-ended, 12 bit
4...20 mA				EJ3058 single-ended, 12 bit

EJ3xxx | EtherCAT plug-in modules, analog input

Signal	2-channel	4-channel	5-channel	8-channel
Thermo-couple/mV				EJ3318 type J, K, L...U, 16 bit
Potentiometer			EJ3255 16 bit	
Resistance thermometer (RTD)	EJ3202 16 bit	EJ3214 16 bit		

EJ4xxx | EtherCAT plug-in modules, analog output

Signal	2-channel	4-channel	8-channel
0...10 V	EJ4002 12 bit	EJ4004 12 bit	EJ4008 12 bit
±10 V	EJ4132 16 bit	EJ4134 16 bit	
0...20 mA			EJ4018 12 bit
4...20 mA		EJ4024 12 bit	

EJ5xxx | EtherCAT plug-in modules, position measurement

Signal	1-channel	2-channel
Absolute position measurement		EJ5002 SSI encoder interface EJ5042-0010 BiSS-C interface
Incremental position measurement	EJ5021 SinCos encoder interface, 1 V _r	EJ5101 incremental encoder interface, RS422, TTL, 1 MHz EJ5101-0090 incremental encoder interface, RS422, TTL, 1 MHz, TwinSAFE SC EJ5151 incremental encoder interface, 24 V HTL, 100 kHz EJ5112 incremental encoder interface, RS422, TTL, open collector, 5 MHz, 2 x AB/1 x ABC

EJ6xxx | EtherCAT plug-in modules, communication

Signal	1-channel	2-channel	4-channel
System	EJ6070 license key module EJ6080 memory module 128 kbyte		
Master		EJ6002 serial interface RS232, RS485 or RS422	EJ6224 IO-Link EJ6224-0090 IO-Link, TwinSAFE SC
Safety	EJ6910 TwinSAFE Logic		

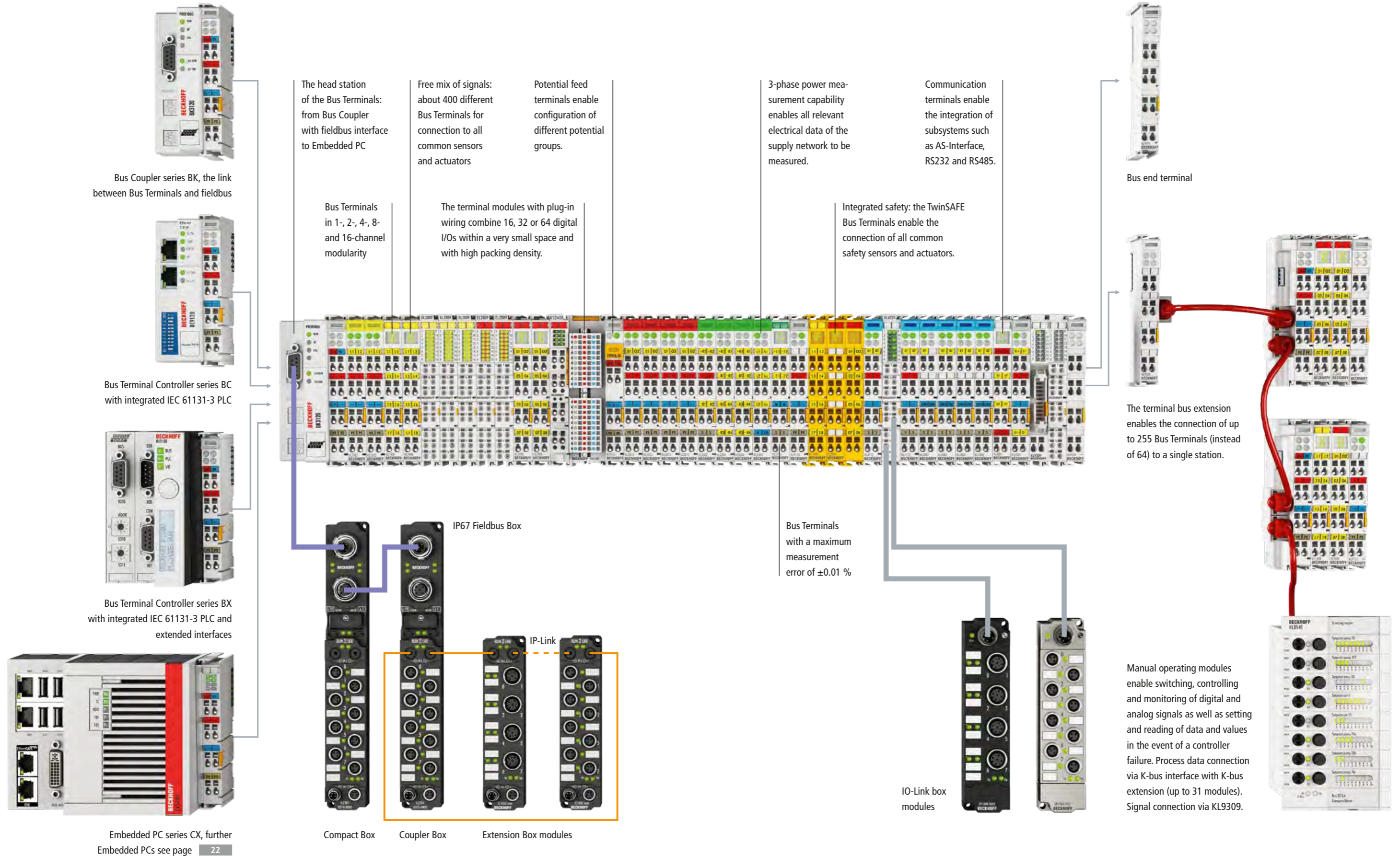
EJ7xxx | EtherCAT plug-in modules, compact drive technology

Motor type	< 3 A	3...5 A
Servomotor		EJ7211-0010 I _{ms} = 4.5 A, 48 V DC, OCT EJ7211-9414 I _{ms} = 4.5 A, 48 V DC, OCT, STO, TwinSAFE SC
Stepper motor	EJ7031 I _{max} = 1.5 A, 24 V DC	EJ7037 I _{max} = 1.5 A, 24 V DC, incremental encoder, vector control EJ7041-0052 I _{max} = 5.0 A, 48 V DC EJ7047 I _{max} = 5.0 A, 48 V DC, incremental encoder, vector control
DC motor output stage		EJ7334-0008 I _{max} = 3.0 A, 24 V DC, incremental encoder EJ7342 I _{max} = 3.5 A, 48 V DC, incremental encoder
BLDC		EJ7411 I _{ms} = 4.5 A, 48 V DC

EJ9xxx | EtherCAT plug-in modules, system

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

System overview fieldbus I/O



Bus Terminals

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BKxxxx Bus Couplers			
Fieldbus	Standard	Economy plus	Compact
EtherCAT		BK1120	BK1150 BK1250 E-bus to K-bus interface
Ethernet TCP/IP	BK9000 BK9100 2-channel switch		BK9050
EtherNet/IP	BK9105 2-channel switch		BK9055
CANopen		BK5120	BK5150 BK5151
CC-Link			BK7150
DeviceNet	BK5200 BK4000	BK5220 BK4020	BK5250
LIGHTBUS	BK2000	BK2020	
Modbus			BK7350
PROFIBUS	BK3100 12 Mbaud	BK3120 12 Mbaud BK3520 12 Mbaud, fiber optic	BK3150 12 Mbaud
PROFINET	BK9103 2-channel switch		BK9053
RS485	BK8000		
RS232	BK8100		
SERCOS the automation bus	BK7500	BK7520	

BCxxxx, BXxxxx Bus Terminal Controllers					
Fieldbus	Programm storage				
	32/96 kbyte	48 kbyte	64/96 kbyte	128 kbyte	256 kbyte
Ethernet TCP/IP		BC9050	BC9000 BC9100 2-channel switch	BC9020 BC9120 2-channel switch	BX9000
		BC9191 room controller		BC9191-0100 room controller, RS485 interface	
CANopen		BC5150			BX5100
DeviceNet		BC5250			BX5200
Modbus	BC7300				
PROFIBUS	BC3100 12 Mbaud	BC3150 12 Mbaud			BX3100 12 Mbaud
RS485		BC8050			BX8000
RS232		BC8150			

KL1xxx Bus Terminals, digital input						
Signal	2-channel	4-channel	8-channel	16-channel	KM1xxx	
5 V DC		KL1124 filter 0.2 ms				
24 V DC, filter 3.0 ms	KL1002 type 3	KL1104 type 3	KL1804 type 3, 8 x 24 V, 4 x 0 V	KL1808 type 3, 8 x 24 V DC	KL1809 type 3	KM1002 16-channel, type 1
	KL1402 type 3	KL1302 type 2	KL1404 type 3, 4 x 2-wire connection	KL1304 type 2	KL1408 type 3	KM1004 32-channel, type 1
	KL1052 positive/ground switching	KL1154 positive/ground switching	KL1184 ground switching	KL1488 ground switching	KL1889 ground switching	KM1008 64-channel, type 1
	KL1212 type 1, short-circuit protected sensor supply	KL1362 break-in alarm			KL1859 type 3, 8 inputs, 8 outputs, I _{max} = 0.5 A	
					KL1862 type 3, flat-ribbon cable	
					KL1862-0010 type 3, flat-ribbon cable, ground switching	
24 V DC, filter 0.2 ms	KL1012 type 3	KL1412 type 3	KL1114 type 3	KL1814 type 3, 8 x 24 V, 4 x 0 V	KL1418 type 3	KM1012 16-channel, type 1
		KL1312 type 2		KL1314 type 2		KM1014 32-channel, type 1
			KL1414 type 3, 4 x 2-wire connection	KL1434 type 2, 4 x 2-wire connection		KM1018 64-channel, type 1
			KL1164 positive/ground switching	KL1194 ground switching	KL1498 ground switching	
					KL1872 type 3, flat-ribbon cable	
24 V DC	KL1232 pulse expansion	KL1382 thermistor	KL1904 TwinSAFE, 4 safe inputs			KM1644 4-channel, manual operation
24 V DC, counter	KL1501 type 1, 100 kHz, 32 bit	KL1512 type 1, 1 kHz, 16 bit				
≥ 48 V DC	KL1032 48 V DC, filter 3.0 ms	KL1712-0060 60 V DC				
120 V AC/DC	KL1712					
230 V AC	KL1702	KL1722 no power contacts	KL1704			
NAMUR	KL1352					

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

KL2xxx | Bus Terminals, digital output

Signal	1-channel	2-channel	4-channel	8-channel	16-channel	KM2xxx
5 V DC			KL2124 <i>I</i> _{max} = ±20 mA			
24 V DC, <i>I</i> _{max} = 0.5 A		KL2012 short-circuit proof	KL2114 short-circuit proof	KL2808 8 x 0 V	KL2809 reverse voltage protection	KM2002 16-channel
		KL2032 reverse voltage protection	KL2134 reverse voltage protection			KM2004 32-channel
			KL2404 4 x 2-wire	KL2408 reverse voltage protection		KM2008 64-channel
		KL2212 diagnostics, protected sensor supply			KL2819 with diagnostics	KM2042 16-channel, D-sub connection
			KL2184 ground switching	KL2488 ground switching	KL2889 ground switching	
					KL1859 type 3, 8 inputs, 8 outputs, <i>I</i> _{max} = 0.5 A	
					KL2872 flat-ribbon cable	
					KL2872-0010 flat-ribbon cable, ground switching	
24 V DC, <i>I</i> _{max} = 2.0 A		KL2022	KL2424 4 x 2-wire	KL2828 8 x 2-wire		
24 V DC, <i>I</i> _{max} = 4.0 A/8.0 A		KL2442 2 x 4 A/1 x 8 A				
24 V DC, safe output			KL2904 TwinSAFE, 4 safe outputs			
30 V AC/ 48 V DC solid-state relay, <i>I</i> _{max} = 2.0 A			KL2784			
			KL2794 potential-free	KL2798 potential-free		
230 V AC solid-state relay	KL2701 <i>I</i> _{max} = 3 A	KL2702 <i>I</i> _{max} = 0.3 A				
Relay (up to 400 V AC)	KL2641 make contact, manual operation, <i>I</i> _{max} = 16 A	KL2602 make contact, <i>I</i> _{max} = 5 A	KL2622 make contact, no power contacts, <i>I</i> _{max} = 5 A	KL2634 make contact, 250 V AC/30 V DC		KM2604 <i>I</i> _{max} = 16 A, 4-channel
		KL2602-0010 make contact, <i>I</i> _{max} = 5 A, contact- protecting switching	KL2622-0010 make contact, no power contacts, <i>I</i> _{max} = 5 A, contact- protecting switching			KM2614 <i>I</i> _{max} = 16 A, 4-channel, manual operation
		KL2652 change-over, <i>I</i> _{max} = 5 A				KM2642 <i>I</i> _{max} = 6 A, manual/ automatic operation, relay state readable
	KL2631 400 V AC, make contact	KL2612 125 V AC, change-over	KL2692 cycle monitoring (watchdog)			KM2652 <i>I</i> _{max} = 6 A, manual/ automatic operation, switch and relay state readable

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

KL2xxx | Bus Terminals, digital output

Signal	1-channel	2-channel	4-channel	8-channel	16-channel	KM2xxx
Triac (12...230 V AC)		KL2712	KL2722 mutually locked outputs			KM2774 <i>I</i> _{max} = 1.5 A
		KL2732 mutually locked outputs, no power contacts				
PWM		KL2502 24 V DC, <i>I</i> _{max} = 0.1 A	KL2512 24 V DC, <i>I</i> _{max} = 1.5 A, ground switching			
		KL2535 <i>I</i> _{max} = ±1 A, 24 V DC, current-controlled	KL2545 <i>I</i> _{max} = ±3.5 A, 50 V DC, current-controlled			
Frequency output	KL2521 1-channel AB, 0...500 kHz, RS422					
Current con- trol, dimmer control	KL2751 universal dimmer, 300 W					
	KL2761 universal dimmer, 600 W					

KL2xxx | Bus Terminals, compact drive technology

Motor type	< 3 A	3...5 A
Stepper motor	KL2531 <i>I</i> _{max} = 1.5 A, 24 V DC	KL2541 <i>I</i> _{max} = 5.0 A, 48 V DC, incremental encoder
DC motor output stage	KL2532 <i>I</i> _{max} = 1.0 A, 24 V DC	KL2284 reverse switching, <i>I</i> _{max} = 2.0 A, 0...24 V DC
		KL2552 <i>I</i> _{max} = 5.0 A, 48 V DC, incremental encoder
AC motor speed controller	KL2791 230 V AC, 200 VA, 1-phase AC motor	

We reserve the right to make technical changes.

KL3xxx | Bus Terminals, analog input

Signal	1-channel	2-/3-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 with sensor supply, single-ended, 12 bit
±10 V	KL3001 differential input, 12 bit	KL3002 differential input, 12 bit	KL3102 differential input, 16 bit KL3132 16 bit, 0.05 %	KL3404 single-ended, 12 bit KL3408 single-ended, 12 bit
0...20 mA	KL3011 differential input, 12 bit KL3041 with sensor supply, 12 bit	KL3012 differential input, 12 bit KL3042 with sensor supply, 12 bit	KL3112 differential input, 16 bit KL3142 16 bit, 0.05 %	KL3044 single-ended, 12 bit KL3444 with sensor supply, single-ended, 12 bit
4...20 mA	KL3021 differential input, 12 bit KL3051 with sensor supply, 12 bit	KL3022 differential input, 12 bit KL3052 with sensor supply, 12 bit	KL3122 differential input, 16 bit KL3152 16 bit, 0.05 %	KL3054 single-ended, 12 bit KL3454 with sensor supply, 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 KL3204-0030 NTC (10 kΩ) KL3214 Pt100...1000, Ni100...1000, KTY, 3-wire connection
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	KL3208-0010 Pt1000, Ni1000, NTC 1.8...100 k, potentiom. 1, 5, 10 kΩ KL3228 Pt1000, Ni1000
Measurement bridge (SG)	KL3351 16 bit KL3356 16 bit, self-calibration			
Oscilloscope	KL3361 ±16 mV	KL3362 ±10 V		
Measurement technology	KL3681 digital multimeter, 18 bit			
Pressure measuring	KM3701 differential pressure, -100...+100 hPa	KM3702 relative pressure, 7500 hPa	KM3712 relative pressure, -1000...+1000 hPa	
Power measurement		KL3403 power measurement, 3-phase, 1 A KL3453 690 V AC, 5 A, extended functionalities	KL3403-0010 power measurement, 3-phase, 5 A	

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

KL4xxx | Bus Terminals, analog output

Signal	1-channel	2-channel	4-channel	8-channel	KM4xxx
0...10 V	KL4001 12 bit, potential-free output	KL4002 12 bit	KL4004 12 bit, no power contacts KL4404 12 bit	KL4408 12 bit	KM4602 12-bit manual/automatic operation
±10 V	KL4031 12 bit, potential-free output	KL4032 12 bit	KL4034 12 bit, no power contacts		
0...20 mA	KL4011 12 bit	KL4012 12 bit KL4112 16 bit	KL4414 12 bit	KL4418 12 bit	
4...20 mA	KL4021 12 bit	KL4022 12 bit	KL4424 12 bit	KL4428 12 bit	

KL5xxx | Bus Terminals, position measurement

Signal	1-channel	2-channel
Absolute position measurement	KL5001 SSI encoder interface KL5051 SSI encoder interface, bidirectional	
Incremental position measurement	KL5101 incremental encoder interface, RS422, TTL, 1 MHz KL5111 incremental encoder interface, 24 V HTL, 250 kHz, 16 bit counter KL5151 incremental encoder interface, 24 V HTL, 100 kHz, 32 bit counter KL5121 incremental encoder interface, 24 V HTL, path control, 250 kHz	KL5152 incremental encoder interface, 24 V HTL, 100 kHz, 32 bit counter

KL6xxx | Bus Terminals, communication

Signal			
Serial interfaces	KL6001 RS232, 19.2 kbaud	KL6031 RS232, 115.2 kbaud	KL6011 TTY, 20 mA current loop
	KL6051 data exchange terminal, 32 bit	KL6021 RS422/RS485, 19.2 kbaud	KL6041 RS422/RS485, 115.2 kbaud
Subsystems	KL6201 AS-Interface master terminal	KL6211 AS-Interface master terminal with power contacts	KL6224 IO-Link master
	KL6301 KNX/EIB 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	
	KL6904 TwinSAFE Logic, 4 safe outputs		

KL85xx | Bus Terminals, manual operation modules

Technology	4-channel	8-channel	16-channel	Other
Manual operation modules	KL8524 4 x 2-channel digital output, 24 V DC, 0.5 A	KL8528 digital output, 24 V DC, 0.5 A	KL8519 digital input signal module	KL8500 placeholder module
		KL8548 analog output, 0...10 V		
System				KL9309 adapter terminal for manual operating modules

KL9xxx | Bus Terminals, system

Signal	System	Potential supply	Power supply and accessories
System	KL9010 bus end terminal	KL9070 shield terminal	
	KL9020 terminal bus extension end terminal	KL9050 terminal bus extension coupler terminal	
	KL9309 adapter terminal for manual operating modules	KL9080 isolation terminal	
	KL9195 shield terminal		

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

KL9xxx | Bus Terminals, system

Signal	System	Potential supply	Power supply and accessories
Potential distribution terminals	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		
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 arrays	KL9300 4 diodes, potential-free		
	KL9301 7 diodes, common cathode	KL9302 7 diodes, common anode	
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
			KL9570 buffer capacitor terminal, 500 µF
50 V DC		KL9150	
		KL9160 diagnostics	
		KL9250 with fuse	
		KL9260 diagnostics, with fuse	
		KL9190 any voltage up to 230 V AC	
120... 230 V AC		KL9290 with fuse	

We reserve the right to make technical changes.

Fieldbus Box and IO-Link box

► www.beckhoff.com/fieldbusbox



Fieldbus Box	Compact Box	Coupler Box	
Fieldbus	Fieldbus Box without IP-Link interface	Fieldbus Box with IP-Link interface	
EtherCAT		IL230x-B110	
PROFINET	IPxxxx-B310	IPxxxx-B318 with integrated tee-connector	IL230x-B310 IL230x-B318 with integrated tee-connector
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
Ethernet TCP/IP		IL230x-B900	IL230x-B901
PROFINET		IL230x-B903	
EtherNet/IP		IL230x-B905	

IP1xxx-Bxxx Fieldbus Box, digital input		
Signal	2-channel	8-channel
24 V DC, filter 3.0 ms		IP1001-Bxxx ⁽¹⁾ 8 x M8 IP1002-Bxxx ⁽¹⁾ 4 x M12
24 V DC, filter 0.2 ms		IP1011-Bxxx ⁽¹⁾ 8 x M8 IP1012-Bxxx ⁽¹⁾ 4 x M12
Counter	IP1502-Bxxx ⁽¹⁾ up/down counter 24 V DC, 100 kHz	

IP2xxx-Bxxx Fieldbus Box, digital output			
Signal	2-channel	8-channel	16-channel
24 V DC, I _{max} = 0.5 A		IP2001-Bxxx ⁽¹⁾ 8 x M8 IP2002-Bxxx ⁽¹⁾ 4 x M12	
24 V DC, I _{max} = 0.5 A, ∑ 4 A			IE2808 D-sub
24 V DC, I _{max} = 2 A, ∑ 4 A		IP2021-Bxxx ⁽¹⁾ 8 x M8 IP2022-Bxxx ⁽¹⁾ 4 x M12	
24 V DC, I _{max} = 2 A, ∑ 12 A		IP2041-Bxxx ⁽¹⁾ 8 x M8 IP2042-Bxxx ⁽¹⁾ 4 x M12	
PWM, I _{max} = 2.5 A	IP2512-Bxxx ⁽¹⁾ 4 x M12		

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

IP23/24xx-Bxxx Fieldbus Box, digital combi				
Signal	8-channel		16-channel	
24 V DC, filter 3.0 ms, I _{max} = 0.5 A	IP2301-Bxxx ^(1, 2) 8 x M8, 4 inputs + 4 outputs	IP2302-Bxxx ^(1, 2) 4 x M12, 4 inputs + 4 outputs	IP2401-Bxxx ⁽¹⁾ 8 x M8, 8 inputs/outputs	IE2403 IP20 plug
24 V DC, filter 0.2 ms, I _{max} = 0.5 A	IP2311-Bxxx ⁽¹⁾ 8 x M8, 4 inputs + 4 outputs	IP2312-Bxxx ⁽¹⁾ 4 x M12, 4 inputs + 4 outputs		
24 V DC, filter 3.0 ms, I _{max} = 2 A, ∑ 4 A	IP2321-Bxxx ⁽¹⁾ 8 x M8, 4 inputs + 4 outputs	IP2322-Bxxx ⁽¹⁾ 4 x M12, 4 inputs + 4 outputs		
24 V DC, filter 0.2 ms, I _{max} = 2 A, ∑ 4 A	IP2331-Bxxx ⁽¹⁾ 8 x M8, 4 inputs + 4 outputs	IP2332-Bxxx ⁽¹⁾ 4 x M12, 4 inputs + 4 outputs		

IP3xxx-Bxxx Fieldbus Box, analog input	
Signal	4-channel
±10 V	IP3102-Bxxx ⁽¹⁾ differential inputs, 16 bit
0/4...20 mA	IP3112-Bxxx ⁽¹⁾ differential inputs, 16 bit
Resistance thermometer	IP3202-Bxxx ⁽¹⁾ Pt100, Pt200, Pt500, Pt1000, Ni100, 16 bit
Thermo-couple/mV	IP3312-Bxxx ⁽¹⁾ type J, K, L, B, E, N, R, S, T, U, 16 bit

IP4xxx-Bxxx Fieldbus Box, analog output	
Signal	4-channel
0/4...20 mA	IP4112-Bxxx ⁽¹⁾ 16 bit
±10 V	IP4132-Bxxx ⁽¹⁾ 16 bit

IP5xxx-Bxxx Fieldbus Box, position measurement	
Function	M12
SSI encoder interface	IP5009-Bxxx ⁽¹⁾
Incremental encoder interface RS422	IP5109-Bxxx ⁽¹⁾ 1 MHz
SinCos encoder interface	IP5209-Bxxx 12-pin IP5209-Bxxx-1000 9-pin

IP6xxx-Bxxx Fieldbus Box, communication		
Function		
Serial interfaces	IP6002-Bxxx ⁽¹⁾ RS232	IP6012-Bxxx ⁽¹⁾ 0...20 mA (TTY)
		IP6022-Bxxx ⁽¹⁾ RS422/RS485

We reserve the right to make technical changes.

Infrastructure components

► www.beckhoff.com/infrastructure-components



EPI1xxx | Fieldbus Box, IO-Link box, digital input

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

EPI2xxx | Fieldbus Box, IO-Link box, digital output

Signal	8-channel	16-channel
24 V DC, I _{max} = 0.5 A	EPI2008-0001 ⁽¹⁾ 8 x M8	EPI2008-0002 ⁽¹⁾ 4 x M12
24 V DC, I _{max} = 0.5 A, ∑ 4 A		EPI2809-0021 ⁽¹⁾ 16 x M8
		EPI2809-0022 ⁽¹⁾ 8 x M12

EPI23xx | Fieldbus Box, IO-Link box, digital combi

Signal	8-channel	16-channel
24 V DC, filter 3.0 ms, I _{max} = 0.5 A	EPI2338-0001 ⁽¹⁾ 8 x M8	EPI2338-0002 ⁽¹⁾ 4 x M12
24 V DC, filter 3.0 ms, I _{max} = 0.5 A, ∑ 4 A		EPI2339-0021 ⁽¹⁾ 16 x M8
		EPI2339-0022 ⁽¹⁾ 8 x M12

EPI3xxx | Fieldbus Box, IO-Link box, analog input

Signal	4-channel	8-channel
±10 V, 0/4...20 mA	EPI3174-0002 ⁽¹⁾ parameterizable, differential input, 16 bit	EPI3188-0022 parameterizable, single-ended, 16 bit

EPI4xxx | Fieldbus Box, IO-Link box, analog output

Signal	4-channel
±10 V, 0/4...20 mA	EPI4374-0002 ⁽¹⁾ 2 inputs + 2 outputs, parameterizable, 16 bit

EPIxxxx: industrial housing in IP67, ⁽¹⁾also as ERxxxx: zinc die-cast housing in IP67



CUxxxx, EPxxxx | EtherCAT components

	100 Mbit/s, IP20	100 Mbit/s, IP67	1 Gbit/s, IP20
Junctions	CU1123 junction, 3 x RJ45	CU1123-0010 junction, 3 x RJ45, Extended Distance	CU1423 ⁱ junction, 3 x RJ45
	CU1124 junction, 4 x RJ45	CU1128 junction, 8 x RJ45	EP9128-0021 EtherCAT, 8 x M8
Media converters	CU1521 1-channel, multi-mode/single-mode	CU1521-0020 1-channel, SFP slot	EP9521-0020 1-channel, multi-mode
	CU1561 1-channel, POF		CU1411 ⁱ branch controller, 1 port
			CU1418 ⁱ branch controller, 8 ports

CUxxxx, EPxxxx | Ethernet switches/components

	100 Mbit/s, IP20	100 Mbit/s, IP67	1 Gbit/s, IP20
Switches	CU2005 5-port, RJ45	CU2008 8-port, RJ45	CU2016 16-port, RJ45
			CU2608 8-port, M12 (D-coded)
Media converters	CU1521 1-channel, multi-mode/single-mode	CU1561 1-channel, POF	EP9521-0020 1-channel, multi-mode

CUxxxx | Ethernet port multiplier

	1 Gbit/s
Multiplier	CU2508 ⁱ 1 x RJ45 (+ 8 x RJ45: 100 Mbit/s)
	CU2508-0022 ⁱ 1 x M12 (+ 8 x M12: 100 Mbit/s)

We reserve the right to make technical changes.

BECKHOFF New Automation Technology

Current transformers

► www.beckhoff.com/sct



SCT1111



SCT21xx



SCT32xx



SCT5564



SCT61xx



SCT72xx



SCT01xx

SCT1xxx | Mini ring-type current transformers

Primary current Max. diameter round conductor
7.6 mm

0...32 to
0...64 A AC SCT1111
accuracy class 1

SCT2xxx | Ring-type current transformers

Primary current Max. diameter round conductor
25.7 mm | 31.8 mm | 43.7 mm | 54.7 mm | 70 mm

0...60 to
0...500 A AC SCT2111
accuracy class 1

0...125 to
0...600 A AC SCT2121
accuracy class 0.5

0...600/
0...750 A AC SCT2211
accuracy class 1

SCT2221
accuracy class 0.5

0...800/
0...1000 A AC SCT2311 SCT2321
accuracy class 1 accuracy class 0.5

0...1250/
0...1500 A AC SCT2411 SCT2421
accuracy class 1 accuracy class 0.5

0...2000 A AC SCT2515
accuracy class 1

SCT2525
accuracy class 0.5

0...2500 A AC SCT2615 SCT2625
accuracy class 1 accuracy class 0.5

SCT3xxx | 3-phase ring-type current transformers

Primary current Max. diameter round conductor
13.5 mm | 18 mm | 22 mm

0...50 to
0...150 A AC SCT3111
accuracy class 1

0...125/
0...150 A AC SCT3121
accuracy class 0.5

0...100 to
0...250 A AC SCT3215
accuracy class 1

0...250 to
0...600 A AC SCT3315
accuracy class 1

SCT5xxx | Differential current transformers

Primary current Diameter transformer opening 70 mm

0...100 and
0...300 A SCT5564
residual current measuring range 0.4 A or 2 A

SCT6xxx | Split-core current transformers

Primary current Max. diameter round conductor
18.5 mm | 27.9 mm | 42.4 mm | 2 x 42.4 mm

0...60 to
0...150 A AC SCT6101
accuracy class 3

0...200/
0...250 A AC SCT6311
accuracy class 1

SCT6321
accuracy class 0.5

0...300 to
0...500 A AC SCT6411
accuracy class 1

0...400/
0...500 A AC SCT6421
accuracy class 0.5

0...600/
0...750 A AC SCT6615 SCT6625
accuracy class 1 accuracy class 0.5

0...800/
0...1000 A AC SCT6715 SCT6725
accuracy class 1 accuracy class 0.5

SCT7xxx | Busbar split-core current transformers

Primary current Max. diameter round conductor
20 mm | 50 mm | 80 mm

0...100/
0...200 A AC SCT7105
accuracy class 3

0...250/
0...400 A AC SCT7115
accuracy class 1

0...400 A AC SCT7125
accuracy class 2

0...500/
0...600 A AC SCT7215 SCT7225
accuracy class 1 accuracy class 2

0...750 to
0...1500 A AC SCT7315 SCT7325
accuracy class 1 accuracy class 2

0...1500/
0...5000 A AC SCT7415 SCT7425
accuracy class 1 accuracy class 2

SCT0xxx | Coil current transformers

Primary current Primary conductor for connection

0...1 to
0...30 A AC SCT0111 SCT0121
accuracy class 1 accuracy class 0.5

Power supplies

► www.beckhoff.com/ps



PS1000 | Power supplies

Output current	Output voltage			
	24 V DC (1-phase)	48 V DC (1-phase)	24 V DC (3-phase)	48 V DC (3-phase)
2.5 A	PS1111-2402-0002 24 V DC, 2.5 A DC, 1-phase			
3.8 A	PS1111-2403-0000 24 V DC, 3.8 A DC, 1-phase, NEC			
	PS1111-2403-0002 24 V DC, 3.8 A DC, 1-phase			
5 A	PS1061-2405-0000 24 V DC, 5 A DC, 1-phase, AC 200...240 V			
	PS1021-2405-0000 24 V DC, 5 A DC, 1-phase			
10 A	PS1061-2410-0000 24 V DC, 10 A DC, 1-phase, AC 200...240 V			
	PS1011-2410-0000 24 V DC, 10 A DC, 1-phase			
20 A	PS1061-2420-0000 24 V DC, 20 A DC, 1-phase, AC 200...240 V			
	PS1011-2420-0000 24 V DC, 20 A DC, 1-phase			

PS2000 | Power supplies

Output current	Output voltage			
	24 V DC (1-phase)	48 V DC (1-phase)	24 V DC (3-phase)	48 V DC (3-phase)
5 A	PS2001-2405-0000 24 V DC, 5 A DC, 1-phase			
10 A	PS2001-2410-0000 24 V DC, 10 A DC, 1-phase	PS2001-4810-0000 48 V DC, 10 A DC, 1-phase	PS2031-2410-0000 24 V DC, 10 A DC, 3-phase	
	PS2001-2420-0000 24 V DC, 20 A DC, 1-phase			

PS2000 | Power supplies with EtherCAT

Output current	Output voltage			
	24 V DC (1-phase)	48 V DC (1-phase)	24 V DC (3-phase)	48 V DC (3-phase)
10 A	PS2001-2410-1001 24 V DC, 10 A DC, 1-phase, EtherCAT	PS2001-4810-1001 48 V DC, 10 A DC, 1-phase, EtherCAT		
	PS2001-2420-1001 24 V DC, 20 A DC, 1-phase, EtherCAT			

PS3000 | Power supplies

Output current	Output voltage			
	24 V DC (1-phase)	48 V DC (1-phase)	24 V DC (3-phase)	48 V DC (3-phase)
10 A	PS3001-2410-0001 24 V DC, 10 A DC, 1-phase			PS3031-4810-0001 48 V DC, 10 A DC, 3-phase
	PS3001-2420-0001 24 V DC, 20 A DC, 1-phase	PS3011-4820-0000 48 V DC, 20 A DC, 1-phase	PS3031-2420-0001 24 V DC, 20 A DC, 3-phase	PS3031-4820-0000 48 V DC, 20 A DC, 3-phase
40 A	PS3011-2440-0000 24 V DC, 40 A DC, 1-phase		PS3031-2440-0000 24 V DC, 40 A DC, 3-phase	

PS9000 | Buffer modules

Output current	Input voltage	
	24 V DC	48 V DC
20 A	PS9011-2420-0001 24 V DC, 20 A, 200 ms	PS9031-4820-0001 48 V DC, 20 A, 100 ms
40 A	PS9011-2440-0000 24 V DC, 40 A, 160 ms	

PS9400 | Redundancy modules

Output current	Input voltage	
	12...28 V DC	24...56 V DC
20 A	PS9401-2420-0000 In: 2 x 10 A	
40 A	PS9401-2440-0000 In: 2 x 20 A	PS9421-4840-0000 In: 2 x 20 A

PS9700 | DC/DC converter

Output current	Input voltage		
	18...36 V DC	36...60 V DC	475...750 V DC
10 A	PS9711-2410-0000 24 V DC, 10 A	PS9731-2410-0000 24 V DC, 10 A	
	PS9711-2420-0000 24 V DC, 20 A		PS9771-2440-0000 24 V DC, 40 A

The Motion Company

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

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

► www.beckhoff.com/motion

Linear product transport 92

- 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



XTS®



XPlanar®

Planar motor system 91

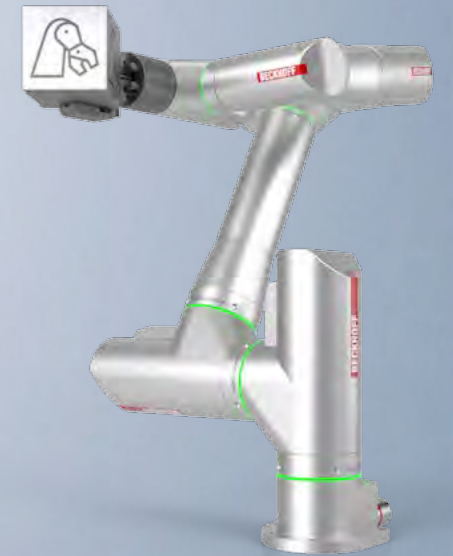
- free-floating movers for non-contact movement
- 6 degrees of freedom
- integrated position feedback
- individual machine layout
- ideal for all application areas

► www.beckhoff.com/xplanar

ATRO: Automation Technology for Robotics

- modular industrial robot system
- limitless combinations due to easily pluggable motor and link modules
- endlessly rotating axes due to internal media feed
- complete integration into the control platform
- standardized interfaces

► www.beckhoff.com/atro



ATRO

Servo drives 76

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

► www.beckhoff.com/servo-drives

Distributed drive systems 78

- servo drives directly integrated into the motor
- STO/SS1 safety function or Safe Motion available
- minimal derating
- no changes in machine design required

► www.beckhoff.com/distributed-drive-systems

Rotary servomotors 80

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

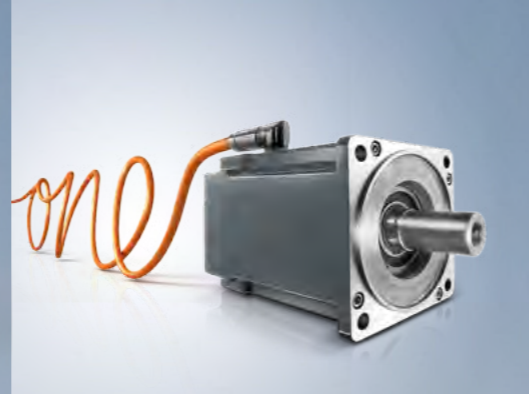
► www.beckhoff.com/rotary-servomotors

Translatory servomotors 84

- direct drives for highly dynamic and maximum accurate positioning applications
 - maximum speed up to 12 m/s
 - compact product design with peak forces up to 12,500 N
 - versatile and modular product concepts
- www.beckhoff.com/translatory-servomotors

Compact drive technology 86

- high performance in small design
 - motors and output stages for the < 48 V DC low voltage range
 - servo, BLDC, stepper and DC motor output stages in IP20 or IP67
 - servo and stepper motor drive with integrated output stage
- www.beckhoff.com/compact-drive-technology



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

Servo drives

► www.beckhoff.com/servo-drives



AX8000

AX8000 | Multi-axis servo system

Function				
Power supply modules	AX8620 20 A DC	AX8640 40 A DC		
Power supply module DC	AX8600 50 A DC, for supply voltage 24...680 V DC			
Axis modules	AX8108 single-axis module 8 A, feedback: OCT, multi-feedback interface, TwinSAFE Logic, TwinSAFE: STO/SS1, Safe Motion	AX8118 single-axis module 18 A, feedback: OCT, multi-feedback interface, TwinSAFE Logic, TwinSAFE: STO/SS1, Safe Motion	AX8128 single-axis module 28 A, feedback: OCT, multi-feedback interface, TwinSAFE Logic, TwinSAFE: STO/SS1, Safe Motion	AX8206 dual-axis module 2 x 6 A, feedback: OCT, multi-feedback interface, TwinSAFE Logic, TwinSAFE: STO/SS1, Safe Motion
Combined power supply and axis modules	AX8525 combined power supply and axis module 25 A, feedback: OCT, multi-feedback interface, TwinSAFE Logic, TwinSAFE: STO/SS1, Safe Motion	AX8540 combined power supply and axis module 40 A, feedback: OCT, multi-feedback interface, TwinSAFE Logic, TwinSAFE: STO/SS1, Safe Motion		
Option modules	AX8810 capacitor module	AX8820 universal regenerative unit	AX8831 coupling module, 1-channel	AX8832 coupling module with two outputs



AX5000

AX5000 | Digital compact servo drives

Function	1-channel				2-channel		
Servo drives	AX5101 100...480 V AC, 1.5 A	AX5103 100...480 V AC, 3 A	AX5106 100...480 V AC, 6 A	AX5112 100...480 V AC, 12 A	AX5201 100...480 V AC, 2 x 1.5 A	AX5203 100...480 V AC, 2 x 3 A	AX5206 100...480 V AC, 2 x 6 A
	AX5118 100...480 V AC, 18 A	AX5125 100...480 V AC, 25 A	AX5140 100...480 V AC, 40 A				
	AX5160 3 x 400... 480 V AC, 60 A	AX5172 3 x 400... 480 V AC, 72 A	AX5190 3 x 400... 480 V AC, 90 A	AX5191 3 x 400... 480 V AC, 110 A	AX5192 3 x 400... 480 V AC, 143 A	AX5193 3 x 400... 480 V AC, 170 A	
Encoder option cards	AX5701 EnDat 2.1, Hiperface, BiSS B, SinCos 1 V _r , resolver	AX5721 1 x EnDat 2.2, BiSS C				AX5702 EnDat 2.1, Hiperface, BiSS B, SinCos 1 V _r , resolver	AX5722 2 x EnDat 2.2, BiSS C
TwinSAFE safe drive technology	AX5801 drive-integrated safety functions: STO, SS1	AX5805 drive-integrated safety functions: Safe Motion, for AX5x01 to AX5140	AX5806 drive-integrated safety functions: Safe Motion, for AX5160 to AX5193				
Option module	AX8820 universal regenerative unit						

Distributed drive systems

► www.beckhoff.com/distributed-drive-systems



AMI8100,
rear view



ASI8100,
rear view

AMP8000 | Distributed servo drives (400 V AC)

Flange code	Motor length 1	Motor length 2	Motor length 3	Motor length 4
F3 (72 mm)	AMP8031 M ₀ = 1.36...1.38 Nm, nn = 3000...9000 min ⁻¹ , TwinSAFE Logic, TwinSAFE: STO/SS1, Safe Motion	AMP8032 M ₀ = 2.35...2.37 Nm, nn = 3000...9000 min ⁻¹ , TwinSAFE Logic, TwinSAFE: STO/SS1, Safe Motion	AMP8033 M ₀ = 3.10...3.15 Nm, nn = 3000...8000 min ⁻¹ , TwinSAFE Logic, TwinSAFE: STO/SS1, Safe Motion	
F4 (87 mm)	AMP8041 M ₀ = 2.35...2.40 Nm, nn = 3000...8000 min ⁻¹ , TwinSAFE Logic, TwinSAFE: STO/SS1, Safe Motion	AMP8042 M ₀ = 3.84...4.10 Nm, nn = 2500...7000 min ⁻¹ , TwinSAFE Logic, TwinSAFE: STO/SS1, Safe Motion	AMP8043 M ₀ = 4.70...5.40 Nm, nn = 2500...7000 min ⁻¹ , TwinSAFE Logic, TwinSAFE: STO/SS1, Safe Motion	
F5 (104 mm)	AMP8051 M ₀ = 4.40...4.60 Nm, nn = 2500...8000 min ⁻¹ , TwinSAFE Logic, TwinSAFE: STO/SS1, Safe Motion	AMP8052 M ₀ = 5.60...7.60 Nm, nn = 2000...7300 min ⁻¹ , TwinSAFE Logic, TwinSAFE: STO/SS1, Safe Motion	AMP8053 M ₀ = 9.60...10.20 Nm, nn = 2000...4000 min ⁻¹ , TwinSAFE Logic, TwinSAFE: STO/SS1, Safe Motion	AMP8054 M ₀ = 11.8 Nm, nn = 2000 min ⁻¹ , TwinSAFE Logic, TwinSAFE: STO/SS1, Safe Motion

AMP8500 | Distributed servo drives with increased rotor moment of inertia (400 V AC)

Flange code	Motor length 1	Motor length 2	Motor length 3
F3 (72 mm)	AMP8531 M ₀ = 1.36...1.38 Nm, nn = 3000...9000 min ⁻¹ , TwinSAFE Logic, TwinSAFE: STO/SS1, Safe Motion	AMP8532 M ₀ = 2.35...2.37 Nm, nn = 3000...9000 min ⁻¹ , TwinSAFE Logic, TwinSAFE: STO/SS1, Safe Motion	AMP8533 M ₀ = 3.10...3.15 Nm, nn = 3000...8000 min ⁻¹ , TwinSAFE Logic, TwinSAFE: STO/SS1, Safe Motion
F4 (87 mm)	AMP8541 M ₀ = 2.35...2.40 Nm, nn = 3000...8000 min ⁻¹ , TwinSAFE Logic, TwinSAFE: STO/SS1, Safe Motion	AMP8542 M ₀ = 3.84...4.10 Nm, nn = 2500...7000 min ⁻¹ , TwinSAFE Logic, TwinSAFE: STO/SS1, Safe Motion	AMP8543 M ₀ = 4.70...5.40 Nm, nn = 2500...7000 min ⁻¹ , TwinSAFE Logic, TwinSAFE: STO/SS1, Safe Motion
F5 (104 mm)	AMP8551 M ₀ = 4.40...4.60 Nm, nn = 2500...8000 min ⁻¹ , TwinSAFE Logic, TwinSAFE: STO/SS1, Safe Motion	AMP8552 M ₀ = 5.60...7.60 Nm, nn = 2000...7300 min ⁻¹ , TwinSAFE Logic, TwinSAFE: STO/SS1, Safe Motion	AMP8553 M ₀ = 9.60...10.20 Nm, nn = 2000...4000 min ⁻¹ , TwinSAFE Logic, TwinSAFE: STO/SS1, Safe Motion

AMP8600 | Distributed power supply modules

Function			
Supply modules	AMP8620-2005-0000 20 A DC for 400...480 V AC supply voltage, 5-channel, 24 V DC power supply	AMP8620-2005-0100 20 A DC for 400...480 V AC supply voltage, 5-channel, 24 V DC power supply, with regen resistor	AMP8620-2005-0200 20 A DC for 400...480 V AC supply voltage, 5-channel, 24 V DC power supply, with connector for external regen resistor
	AMP8620-2005-0010 20 A DC for 1 x 230 V AC, 3 x 208...480 V AC supply voltage, 5-channel, 24 V DC power supply	AMP8620-2005-0110 20 A DC for 1 x 230 V AC, 3 x 208...480 V AC supply voltage, 5-channel, 24 V DC power supply, with regen resistor	AMP8620-2005-0210 20 A DC for 1 x 230 V AC, 3 x 208...480 V AC supply voltage, 5-channel, 24 V DC power supply, with connector for external regen resistor

AMP8800 | Decentralized distribution modules

Function		
Distribution modules	AMP8805-1000-0000 5-channel, 24 V DC power supply, 430...848 V DC	AMP8805-1010-0000 5-channel, 24 V DC power supply, 165...848 V DC

AX8800 | Coupling modules

Function	1-channel	2-channel
Coupling modules	AX8831	AX8832

AMI8100 | Compact integrated servo drives (48 V DC)

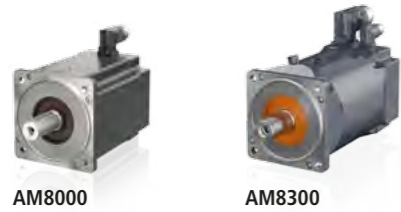
Flange code	Motor length 1	Motor length 2	Motor length 3
F2 (58 mm)	AMI8121 M ₀ = 0.48 Nm, nn = 3000 min ⁻¹	AMI8122 M ₀ = 0.78 Nm, nn = 2000...4500 min ⁻¹	AMI8123 M ₀ = 1.00 Nm, nn = 3000 min ⁻¹
F3 (72 mm)	AMI8131 M ₀ = 1.20 Nm, nn = 1800 min ⁻¹	AMI8132 M ₀ = 2.18 Nm, nn = 1000 min ⁻¹	AMI8133 M ₀ = 2.85 Nm, nn = 800 min ⁻¹

ASI8100 | Compact integrated stepper motor drives (48 V DC)

Flange code	Motor length 1	Motor length 2	Motor length 3	Motor length 4
N1 (42 mm)	ASI8111 M _H = 0.29 Nm	ASI8114 M _H = 0.80 Nm		
N2 (56 mm)	ASI8121 M _H = 0.75 Nm	ASI8122 M _H = 1.40 Nm	ASI8123 M _H = 2.35 Nm	ASI8124 M _H = 2.50 Nm

Rotary servomotors

► www.beckhoff.com/rotary-servomotors

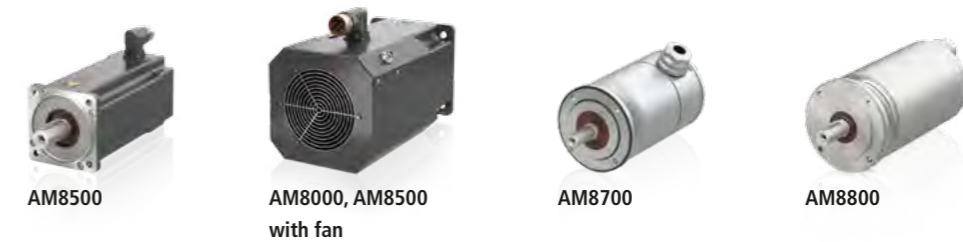


AM8000

AM8300

AM8000 Servomotors				
Flange code	Motor length 1	Motor length 2	Motor length 3	Motor length 4
F1 (40 mm)	AM8011 $M_0 = 0.20 \text{ Nm}$, $nn = 8000 \text{ min}^{-1}$	AM8012 $M_0 = 0.38 \text{ Nm}$, $nn = 8000 \text{ min}^{-1}$	AM8013 $M_0 = 0.52 \text{ Nm}$, $nn = 8000 \text{ min}^{-1}$	
F2 (58 mm)	AM8021 $M_0 = 0.50 \text{ Nm}$, $nn = 8000 \dots 9000 \text{ min}^{-1}$	AM8022 $M_0 = 0.80 \text{ Nm}$, $nn = 8000 \dots 9000 \text{ min}^{-1}$	AM8023 $M_0 = 1.20 \text{ Nm}$, $nn = 8000 \dots 9000 \text{ min}^{-1}$	
F3 (72 mm)	AM8031 $M_0 = 1.37 \dots 1.40 \text{ Nm}$, $nn = 3000 \dots 9000 \text{ min}^{-1}$	AM8032 $M_0 = 2.37 \dots 2.38 \text{ Nm}$, $nn = 3000 \dots 9000 \text{ min}^{-1}$	AM8033 $M_0 = 3.20 \dots 3.22 \text{ Nm}$, $nn = 3000 \dots 9000 \text{ min}^{-1}$	
F4 (87 mm)	AM8041 $M_0 = 2.37 \dots 2.45 \text{ Nm}$, $nn = 3000 \dots 8000 \text{ min}^{-1}$	AM8042 $M_0 = 4.10 \text{ Nm}$, $nn = 2500 \dots 8000 \text{ min}^{-1}$	AM8043 $M_0 = 5.60 \dots 5.65 \text{ Nm}$, $nn = 2500 \dots 8000 \text{ min}^{-1}$	AM8044 $M_0 = 7.10 \text{ Nm}$, $nn = 2500 \dots 5000 \text{ min}^{-1}$
F5 (104 mm)	AM8051 $M_0 = 4.80 \dots 6.30 \text{ Nm}$, $nn = 2500 \dots 8000 \text{ min}^{-1}$	AM8052 $M_0 = 8.20 \dots 10.7 \text{ Nm}$, $nn = 2000 \dots 7300 \text{ min}^{-1}$	AM8053 $M_0 = 11.4 \dots 15.4 \text{ Nm}$, $nn = 2000 \dots 7000 \text{ min}^{-1}$	AM8054 $M_0 = 13.8 \dots 17.2 \text{ Nm}$, $nn = 2000 \dots 4000 \text{ min}^{-1}$
F6 (142 mm)	AM8061 $M_0 = 12.8 \dots 17.1 \text{ Nm}$, $nn = 1400 \dots 5000 \text{ min}^{-1}$	AM8062 $M_0 = 21.1 \dots 29.9 \text{ Nm}$, $nn = 1400 \dots 5000 \text{ min}^{-1}$	AM8063 $M_0 = 29.0 \dots 41.4 \text{ Nm}$, $nn = 1400 \dots 4000 \text{ min}^{-1}$	AM8064 $M_0 = 35.0 \dots 49.0 \text{ Nm}$, $nn = 1500 \dots 4000 \text{ min}^{-1}$
F7 (197 mm)	AM8071 $M_0 = 31.8 \dots 42.8 \text{ Nm}$, $nn = 1500 \dots 4000 \text{ min}^{-1}$	AM8072 $M_0 = 54.6 \dots 80.7 \text{ Nm}$, $nn = 1000 \dots 3000 \text{ min}^{-1}$	AM8073 $M_0 = 70.0 \dots 104 \text{ Nm}$, $nn = 1000 \dots 3000 \text{ min}^{-1}$	AM8074 $M_0 = 92.0 \dots 129 \text{ Nm}$, $nn = 1000 \dots 3000 \text{ min}^{-1}$

AM8300 Servomotors with water cooling			
Flange code	Motor length 2	Motor length 3	Motor length 4
F3 (72 mm)	AM8332 $M_0 = 5.11 \text{ Nm}$, $nn = 3000 \dots 9000 \text{ min}^{-1}$	AM8333 $M_0 = 7.90 \text{ Nm}$, $nn = 3000 \dots 9000 \text{ min}^{-1}$	
F4 (87 mm)	AM8342 $M_0 = 9.76 \text{ Nm}$, $nn = 2500 \dots 8000 \text{ min}^{-1}$	AM8343 $M_0 = 15.5 \text{ Nm}$, $nn = 2500 \dots 8000 \text{ min}^{-1}$	AM8344 $M_0 = 22.6 \text{ Nm}$, $nn = 2500 \dots 5000 \text{ min}^{-1}$
F5 (104 mm)	AM8352 $M_0 = 17.0 \text{ Nm}$, $nn = 2000 \dots 7300 \text{ min}^{-1}$	AM8353 $M_0 = 28.3 \text{ Nm}$, $nn = 2000 \dots 7000 \text{ min}^{-1}$	AM8354 $M_0 = 31.8 \text{ Nm}$, $nn = 2000 \dots 4000 \text{ min}^{-1}$
F6 (142 mm)	AM8362 $M_0 = 50.8 \text{ Nm}$, $nn = 1400 \dots 5000 \text{ min}^{-1}$	AM8363 $M_0 = 79.4 \text{ Nm}$, $nn = 1400 \dots 4000 \text{ min}^{-1}$	AM8364 $M_0 = 98.2 \text{ Nm}$, $nn = 1500 \dots 4000 \text{ min}^{-1}$
F7 (197 mm)	AM8372 $M_0 = 129 \text{ Nm}$, $nn = 1000 \dots 3000 \text{ min}^{-1}$	AM8373 $M_0 = 193 \text{ Nm}$, $nn = 1000 \dots 3000 \text{ min}^{-1}$	AM8374 $M_0 = 274 \text{ Nm}$, $nn = 1000 \dots 3000 \text{ min}^{-1}$



AM8500

AM8000, AM8500
with fan

AM8700

AM8800

AM8500 Servomotors with increased rotor moment of inertia			
Flange code	Motor length 1	Motor length 2	Motor length 3
F3 (72 mm)	AM8531 $M_0 = 1.37 \dots 1.40 \text{ Nm}$, $nn = 3000 \dots 9000 \text{ min}^{-1}$	AM8532 $M_0 = 2.37 \dots 2.38 \text{ Nm}$, $nn = 3000 \dots 9000 \text{ min}^{-1}$	AM8533 $M_0 = 3.20 \dots 3.22 \text{ Nm}$, $nn = 3000 \dots 9000 \text{ min}^{-1}$
F4 (87 mm)	AM8541 $M_0 = 2.37 \dots 2.45 \text{ Nm}$, $nn = 3000 \dots 8000 \text{ min}^{-1}$	AM8542 $M_0 = 4.10 \text{ Nm}$, $nn = 2500 \dots 8000 \text{ min}^{-1}$	AM8543 $M_0 = 5.60 \dots 5.65 \text{ Nm}$, $nn = 2500 \dots 8000 \text{ min}^{-1}$
F5 (104 mm)	AM8551 $M_0 = 4.80 \dots 6.30 \text{ Nm}$, $nn = 2500 \dots 8000 \text{ min}^{-1}$	AM8552 $M_0 = 8.20 \dots 10.7 \text{ Nm}$, $nn = 2000 \dots 7300 \text{ min}^{-1}$	AM8553 $M_0 = 11.4 \dots 15.4 \text{ Nm}$, $nn = 2000 \dots 7000 \text{ min}^{-1}$
F6 (142 mm)	AM8561 $M_0 = 12.8 \dots 17.1 \text{ Nm}$, $nn = 1400 \dots 5000 \text{ min}^{-1}$	AM8562 $M_0 = 21.1 \dots 29.9 \text{ Nm}$, $nn = 1400 \dots 5000 \text{ min}^{-1}$	AM8563 $M_0 = 29.0 \dots 41.1 \text{ Nm}$, $nn = 1400 \dots 4000 \text{ min}^{-1}$

AM8700 Servomotors with anodized housing			
Flange code	Motor length 1	Motor length 2	Motor length 3
R2 (77 mm)	AM8721 $M_0 = 0.5 \text{ Nm}$, $nn = 8000 \text{ min}^{-1}$	AM8722 $M_0 = 0.8 \text{ Nm}$, $nn = 8000 \text{ min}^{-1}$	AM8723 $M_0 = 1.2 \text{ Nm}$, $nn = 8000 \text{ min}^{-1}$
R3 (89 mm)	AM8731 $M_0 = 1.38 \text{ Nm}$, $nn = 6000 \text{ min}^{-1}$	AM8732 $M_0 = 2.37 \text{ Nm}$, $nn = 6000 \text{ min}^{-1}$	AM8733 $M_0 = 3.22 \text{ Nm}$, $nn = 6000 \text{ min}^{-1}$
R4 (114 mm)	AM8741 $M_0 = 2.45 \text{ Nm}$, $nn = 6000 \text{ min}^{-1}$	AM8742 $M_0 = 4.10 \text{ Nm}$, $nn = 5000 \text{ min}^{-1}$	AM8743 $M_0 = 5.65 \text{ Nm}$, $nn = 5000 \text{ min}^{-1}$
R5 (134 mm)	AM8751 $M_0 = 4.90 \text{ Nm}$, $nn = 5000 \text{ min}^{-1}$	AM8752 $M_0 = 8.20 \text{ Nm}$, $nn = 4000 \text{ min}^{-1}$	AM8753 $M_0 = 11.40 \text{ Nm}$, $nn = 4000 \text{ min}^{-1}$
R6 (189 mm)	AM8761 $M_0 = 12.80 \text{ Nm}$, $nn = 3000 \text{ min}^{-1}$	AM8762 $M_0 = 21.10 \text{ Nm}$, $nn = 3000 \text{ min}^{-1}$	AM8763 $M_0 = 29.00 \text{ Nm}$, $nn = 3000 \text{ min}^{-1}$

AM8800 Stainless steel servomotors in hygienic design			
Flange code	Motor length 1	Motor length 2	Motor length 3
R3 (89 mm)	AM8831 $M_0 = 0.85 \text{ Nm}$, $nn = 3000 \text{ min}^{-1}$	AM8832 $M_0 = 1.40 \text{ Nm}$, $nn = 3000 \text{ min}^{-1}$	AM8833 $M_0 = 1.85 \text{ Nm}$, $nn = 3000 \text{ min}^{-1}$
R4 (114 mm)	AM8841 $M_0 = 1.60 \text{ Nm}$, $nn = 3000 \text{ min}^{-1}$	AM8842 $M_0 = 2.60 \text{ Nm}$, $nn = 2500 \text{ min}^{-1}$	AM8843 $M_0 = 3.50 \text{ Nm}$, $nn = 2500 \text{ min}^{-1}$
R5 (134 mm)	AM8851 $M_0 = 3.10 \text{ Nm}$, $nn = 2500 \text{ min}^{-1}$	AM8852 $M_0 = 4.80 \text{ Nm}$, $nn = 2000 \text{ min}^{-1}$	AM8853 $M_0 = 6.40 \text{ Nm}$, $nn = 2000 \text{ min}^{-1}$
R6 (189 mm)	AM8861 $M_0 = 7.75 \text{ Nm}$, $nn = 1500 \text{ min}^{-1}$	AM8862 $M_0 = 13.1 \text{ Nm}$, $nn = 1500 \text{ min}^{-1}$	AM8863 $M_0 = 16.7 \text{ Nm}$, $nn = 1500 \text{ min}^{-1}$

Planetary gear units

► www.beckhoff.com/planetary-gears



AG2300



AG2400



AG2800



AG3210



AG3300



AG3400

AG2300 | High-end planetary gear units with output shaft

Sizes	Straight design
SP060	AG2300-+SP060S nominal output torque 21...40 Nm
SP075	AG2300-+SP075S nominal output torque 41...106 Nm
SP100	AG2300-+SP100S nominal output torque 76...277 Nm
SP140	AG2300-+SP140S nominal output torque 127...581 Nm
SP180	AG2300-+SP180S nominal output torque 289...1162 Nm
SP210	AG2300-+SP210S nominal output torque 728...2200 Nm
SP240	AG2300-+SP240S nominal output torque 1344...3784 Nm

AG2400 | High-end planetary gear units with output flange

Sizes	Straight design
TP004	AG2400-+TP004S nominal output torque 26...48 Nm
TP010	AG2400-+TP010S nominal output torque 77...126 Nm
TP025	AG2400-+TP025S nominal output torque 169...304 Nm
TP050	AG2400-+TP050S nominal output torque 316...607 Nm
TP110	AG2400-+TP110S nominal output torque 861...1408 Nm
TP300	AG2400-+TP300S nominal output torque 1354...2353 Nm
TP500	AG2400-+TP500S nominal output torque 2800...4400 Nm

AG2800 | Planetary gear units in hygienic design

Sizes	Straight design
HDV015	AG2800-+HDV015S nominal output torque 15...16 Nm
HDV025	AG2800-+HDV025S nominal output torque 35...40 Nm
HDV035	AG2800-+HDV035S nominal output torque 90...100 Nm

AG3210 | Economy planetary gear units

Sizes	Straight design
NP005	AG3210-+NP005S nominal output torque 5.1...6.5 Nm
NP015	AG3210-+NP015S nominal output torque 17...21 Nm
NP025	AG3210-+NP025S nominal output torque 40...50 Nm
NP035	AG3210-+NP035S nominal output torque 100...130 Nm
NP045	AG3210-+NP045S nominal output torque 200...350 Nm

AG3300 | Economy planetary gear units

Sizes	Straight design
NPS015	AG3300-+NPS015S nominal output torque 17...21 Nm
NPS025	AG3300-+NPS025S nominal output torque 40...50 Nm
NPS035	AG3300-+NPS035S nominal output torque 100...130 Nm
NPS045	AG3300-+NPS045S nominal output torque 200...350 Nm

AG3400 | Economy planetary gear units with output flange

Sizes	Straight design
NPT005	AG3400-+NPT005S nominal output torque 5.1...6.5 Nm
NPT015	AG3400-+NPT015S nominal output torque 17...21 Nm
NPT025	AG3400-+NPT025S nominal output torque 40...50 Nm
NPT035	AG3400-+NPT035S nominal output torque 100...130 Nm
NPT045	AG3400-+NPT045S nominal output torque 200...350 Nm

Translatory servomotors

► www.beckhoff.com/translatory-servomotors



AL8000

AL8000 Highly dynamic linear servomotors			
Peak force	Overall width W2 (50 mm)	Overall width W4 (80 mm)	Overall width W6 (130 mm)
≤ 500 N	AL8021 $F_{max} = 120\text{ N}$, $I_{max} = 7.3\text{ A}$, $v_{max} = 12\text{ m/s}$	AL8041 $F_{max} = 230\text{ N}$, $I_{max} = 7.2\text{ A}$, $v_{max} = 7\text{ m/s}$	
	AL8022 $F_{max} = 240\text{ N}$, $I_{max} = 7.3\text{ A}$, $v_{max} = 12\text{ m/s}$	AL8042 $F_{max} = 460\text{ N}$, $I_{max} = 7.2\text{ A}$, $v_{max} = 7\text{ m/s}$	
	AL8024 $F_{max} = 480\text{ N}$, $I_{max} = 12\text{ A}$, $v_{max} = 12\text{ m/s}$		
> 500... 1500 N	AL8026 $F_{max} = 720\text{ N}$, $I_{max} = 12\text{ A}$, $v_{max} = 10\text{ m/s}$	AL8043 $F_{max} = 690\text{ N}$, $I_{max} = 7.2/12\text{ A}$, $v_{max} = 3.5/7\text{ m/s}$	
		AL8044 $F_{max} = 920\text{ N}$, $I_{max} = 7.2/15\text{ A}$, $v_{max} = 3.5/7\text{ m/s}$	
		AL8045 $F_{max} = 1150\text{ N}$, $I_{max} = 12/24\text{ A}$, $v_{max} = 3.5/7\text{ m/s}$	
		AL8046 $F_{max} = 1380\text{ N}$, $I_{max} = 12/24\text{ A}$, $v_{max} = 3.5/7\text{ m/s}$	
> 1500 N		AL8048 $F_{max} = 1840\text{ N}$, $I_{max} = 15/29\text{ A}$, $v_{max} = 3.5/7\text{ m/s}$	AL8064 $F_{max} = 1800\text{ N}$, $I_{max} = 12/24\text{ A}$, $v_{max} = 3/6\text{ m/s}$
			AL8065 $F_{max} = 2250\text{ N}$, $I_{max} = 15/24\text{ A}$, $v_{max} = 3/6\text{ m/s}$
			AL8066 $F_{max} = 2700\text{ N}$, $I_{max} = 18/42\text{ A}$, $v_{max} = 3/6\text{ m/s}$
			AL806A $F_{max} = 4500\text{ N}$, $I_{max} = 24/72\text{ A}$, $v_{max} = 3/6\text{ m/s}$
			AL806B $F_{max} = 4950\text{ N}$, $I_{max} = 29\text{ A}$, $v_{max} = 3\text{ m/s}$
			AL806F $F_{max} = 6750\text{ N}$, $I_{max} = 42/100\text{ A}$, $v_{max} = 3/6\text{ m/s}$



AA3000



AA2518

AA3000 Electric cylinders (400 V AC)			
Peak force	Flange code 58 mm	Flange code 75 mm	Flange code 110 mm
3125... 6250 N	AA3023 $F_c = 700/1400\text{ N}$		
6250... 12,500 N		AA3033 $F_c = 1850/3700\text{ N}$	
12,500... 25,000 N			AA3053 $F_c = 3200/6400\text{ N}$

AA2500 Tubular motors (400 V AC)	
Peak force	Continuous force ≥ 300 N
> 500... 1500 N	AA2518 $F_p = 1050\text{ N}$, $I_p = 15\text{ A}$, $F_c = 300\text{ N}$

Compact drive technology

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



AM8100 | Servomotors for compact drive technology

Flange code	Motor length 1	Motor length 2	Motor length 3
F1 (40 mm)	AM8111 $M_0 = 0.20 \text{ Nm}$	AM8112 $M_0 = 0.38 \text{ Nm}$	AM8113 $M_0 = 0.52 \text{ Nm}$
F2 (58 mm)	AM8121 $M_0 = 0.50 \text{ Nm}$	AM8122 $M_0 = 0.80 \text{ Nm}$	AM8123 $M_0 = 1.20 \text{ Nm}$
F3 (72 mm)	AM8131 $M_0 = 1.30 \dots 1.35 \text{ Nm}$	AM8132 $M_0 = 2.37 \dots 2.40 \text{ Nm}$	AM8133 $M_0 = 3.2 \text{ Nm}$
F4 (87 mm)	AM8141 $M_0 = 2.40 \text{ Nm}$	AM8142 $M_0 = 3.9 \text{ Nm}$	

AG2250 | Planetary gear units for servo and stepper motors

Sizes	Straight design	Angled design
PLE40	AG2250-+PLE40 nominal output torque 5...20 Nm	
PLE60	AG2250-+PLE60 nominal output torque 15...64 Nm	
PLE80	AG2250-+PLE80 nominal output torque 38...120 Nm	
WPLE40		AG2250-+WPLE40 nominal output torque 4.5...20 Nm
WPLE60		AG2250-+WPLE60 nominal output torque 14...64 Nm
WPLE80		AG2250-+WPLE80 nominal output torque 38...120 Nm

AL8100 | Highly dynamic linear servomotors for compact drive technology

Peak force	Overall width W2 (50 mm)		
≤ 500 N	AL8121 $F_{max} = 100 \text{ N}, I_{max} = 5.6 \dots 9.0 \text{ A}, v_{max} = 2.5 \dots 4.5 \text{ m/s}$	AL8122 $F_{max} = 170 \dots 220 \text{ N}, I_{max} = 5.6 \dots 32 \text{ A}, v_{max} = 1.3 \dots 6 \text{ m/s}$	AL8124 $F_{max} = 440 \text{ N}, I_{max} = 16 \dots 32 \text{ A}, v_{max} = 1.7 \dots 3.5 \text{ m/s}$
> 500... 1500 N	AL8126 $F_{max} = 650 \text{ N}, I_{max} = 32 \text{ A}, v_{max} = 2.3 \text{ m/s}$		

ASxxxx | Stepper motors

Flange code	Rated current (per phase)						
	1.00 A	1.50 A	2.00 A	5.00 A	5.60 A	6.50 A	5.60 A 6.40 A
N1 (NEMA17/ 42 mm)	AS1010 0.40 Nm						
	AS1020 0.5 Nm						
N2 (NEMA23/ 56 mm)		AS1030 0.6 Nm	AS2021 0.8 Nm		AS2022 1.50 Nm		AS2023 1.8 Nm 2.3 Nm
N3 (NEMA34/ 86 mm)				AS1050 1.2 Nm	AS2041 3.3 Nm	AS2043 8.0 Nm	
				AS1060 5.0 Nm	AS2042 6.4 Nm		

AG1000 | Planetary gear units for AS1000 stepper motors

Sizes	Straight design
PM52	AG1000-+PM52.i nominal output torque 4 Nm
PM81	AG1000-+PM81.i nominal output torque 20 Nm

AA3100 | Electric cylinders (48 V DC)

Peak force	Flange code 58 mm	Flange code 75 mm
2650... 5300 N	AA3123 $F_c = 650/1300 \text{ N}$	
6000... 12,000 N	AA3133 $F_c = 1400/2800 \text{ N}$	



EtherCAT Terminals

EL/ELM7xxx | EtherCAT Terminals, compact drive technology

Motor type	< 3 A	3...5 A	> 5 A	16 A		
Servomotor			ELM7211-0010 <i>I_{ms}</i> = 4.5 A, 48 V DC			
			ELM7211-9016 <i>I_{ms}</i> = 4.5 A, 48 V DC, TwinSAFE Logic	ELM7211-9018 <i>I_{ms}</i> = 4.5 A, 48 V DC, Safe Motion, TwinSAFE Logic		
			ELM7212-0010 <i>I_{ms}</i> = 2 x 4.5 A, 48 V DC	ELM7222-0010 <i>I_{ms}</i> = 2 x 8.0 A, 48 V DC		
			ELM7212-9016 <i>I_{ms}</i> = 2 x 4.5 A, 48 V DC, TwinSAFE Logic	ELM7212-9018 <i>I_{ms}</i> = 2 x 4.5 A, 48 V DC, Safe Motion, TwinSAFE Logic	ELM7222-9016 <i>I_{ms}</i> = 2 x 8.0 A, 48 V DC, TwinSAFE Logic	ELM7222-9018 <i>I_{ms}</i> = 2 x 8.0 A, 48 V DC, Safe Motion, TwinSAFE Logic
	EL7201-0010 <i>I_{ms}</i> = 2.8 A, 48 V DC, OCT	EL7211-0010 <i>I_{ms}</i> = 4.5 A, 48 V DC, OCT	ELM7221-0010 <i>I_{ms}</i> = 8 A, 48 V DC	ELM7231-0010 <i>I_{ms}</i> = 16 A, 48 V DC		
	EL7201 <i>I_{ms}</i> = 2.8 A, 48 V DC, resolver	EL7211 <i>I_{ms}</i> = 4.5 A, 48 V DC, resolver	ELM7221-9016 <i>I_{ms}</i> = 8 A, 48 V DC, TwinSAFE Logic	ELM7221-9018 <i>I_{ms}</i> = 8 A, 48 V DC, Safe Motion, TwinSAFE Logic	ELM7231-9016 <i>I_{ms}</i> = 16 A, 48 V DC, TwinSAFE Logic	ELM7231-9018 <i>I_{ms}</i> = 16 A, 48 V DC, Safe Motion, TwinSAFE Logic
EL7201-9014 <i>I_{ms}</i> = 2.8 A, 48 V DC, OCT, STO	EL7211-9014 <i>I_{ms}</i> = 4.5 A, 48 V DC, OCT, STO	EL7221-9014 <i>I_{ms}</i> = 7...8 A with ZB8610, 48 V DC, OCT, STO				
Stepper motor	EL7031 <i>I_{max}</i> = 1.5 A, 24 V DC	EL7041 <i>I_{max}</i> = 5.0 A, 48 V DC, incr. enc.				
	EL7031-0030 <i>I_{max}</i> = 2.8 A, 24 V DC	EL7041-0052 <i>I_{max}</i> = 5.0 A, 48 V DC				
	EL7037 <i>I_{max}</i> = 1.5 A, 24 V DC, incr. enc., vector control	EL7047 <i>I_{max}</i> = 5.0 A, 48 V DC, incr. enc., vector control				
		EL7047-9014 <i>I_{max}</i> = 5.0 A, 48 V DC, incr. enc., vector control, STO				
		EL7062 <i>I_{max}</i> = 3 A, 5 V DC, incr. enc.				
DC motor output stage	EL7332 <i>I_{max}</i> = 1.0 A, 24 V DC	EL7342 <i>I_{max}</i> = 3.5 A, 48 V DC, incr. enc.				

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



EtherCAT Box modules

EL/ELM7xxx | EtherCAT Terminals, compact drive technology

Motor type	< 3 A	3...5 A	> 5 A	16 A
BLDC motor		EL7411 <i>I_{ms}</i> = 4.5 A, 48 V DC		
		EL7411-9014 <i>I_{ms}</i> = 4.5 A, 48 V DC, STO		
4-axis interface	EM7004 4 incr. enc., 32 digital I/Os 24 V DC, 4 analog outputs ±10 V			

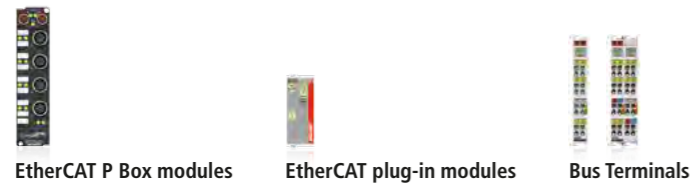
EP7xxx | EtherCAT Box, compact drive technology

Motor type	< 3 A	> 3 A	
Servomotor		EP7211-0034 <i>I_{ms}</i> = 4.5 A, 48 V DC, OCT, STO suitable	EP7211-0035 <i>I_{ms}</i> = 4.5 A, 48 V DC, OCT, STO suitable, drive profile C1A DS402
	Stepper motor	EP7047-1032 <i>I_{max}</i> = 5.0 A, 48 V DC	
EP7041-1002 ⁽¹⁾ <i>I_{max}</i> = 1.5 A, 48 V DC, incremental encoder, 2 digital inputs, 1 digital output		EP7041-0002 ⁽¹⁾ <i>I_{max}</i> = 5 A, 48 V DC, incremental encoder, 2 digital inputs, 1 digital output	EP7041-2002 ⁽¹⁾ <i>I_{max}</i> = 5 A, 48 V DC, incremental encoder, 2 digital inputs, 1 digital output, motor connection via plug
		EP7041-3002 ⁽¹⁾ <i>I_{max}</i> = 5 A, 48 V DC, incremental encoder, for high-speed applications, encoder system (24 V DC encoder)	EP7041-3102 <i>I_{max}</i> = 5 A, 48 V DC, incremental encoder, for high-speed applications, encoder system (5 V DC encoder)
		EP7041-4032 <i>I_{max}</i> = 5.0 A, 48 V DC, BiSS C encoder	
DC motor		EP7342-0002 ⁽¹⁾ <i>I_{max}</i> = 3.5 A, 48 V DC	
BLDC motor		EP7402-0057 for roller conveyor systems, 24 V DC, EtherCAT junction	EP7402-0167 for roller conveyor systems, 48 V DC

EPxxxx: industrial housing in IP67, ⁽¹⁾also as ERxxxx: zinc die-cast housing in IP67, ⁽²⁾also as EQxxxx: stainless steel housing in IP69K

XPlanar | Planar motor system

► www.beckhoff.com/xplanar



EPP7xxx EtherCAT P Box, compact drive technology		
Motor type	< 3 A	> 3 A
Stepper motor	EPP7041-1002 <small>I_{max} = 1.5 A, 48 V DC, incremental encoder</small>	EPP7041-3002 <small>I_{max} = 5.0 A, 48 V DC, incremental encoder</small>
DC motor output stage		EPP7342-0002 <small>I_{max} = 3.5 A, 48 V DC</small>

EJ7xxx EtherCAT plug-in modules, compact drive technology			
Motor type	< 3 A	3...5 A	
Servomotor		EJ7211-0010 <small>I_{ms} = 4.5 A, 48 V DC, OCT</small>	EJ7211-9414 <small>I_{ms} = 4.5 A, 48 V DC, OCT, STO, TwinSAFE SC</small>
Stepper motor	EJ7031 <small>I_{max} = 1.5 A, 24 V DC</small>	EJ7037 <small>I_{max} = 1.5 A, 24 V DC, incremental encoder, vector control</small>	EJ7041-0052 <small>I_{max} = 5.0 A, 48 V DC</small>
DC motor output stage		EJ7334-0008 <small>I_{max} = 3.0 A, 24 V DC, incremental encoder</small>	EJ7342 <small>I_{max} = 3.5 A, 48 V DC, incremental encoder</small>
BLDC		EJ7411 <small>I_{ms} = 4.5 A, 48 V DC</small>	

KL2xxx Bus Terminals, compact drive technology		
Motor type	< 3 A	3...5 A
Stepper motor	KL2531 <small>I_{max} = 1.5 A, 24 V DC</small>	KL2541 <small>I_{max} = 5.0 A, 48 V DC, incremental encoder</small>
DC motor output stage	KL2532 <small>I_{max} = 1.0 A, 24 V DC</small>	KL2284 <small>reverse switching, I_{max} = 2.0 A, 0...24 V DC</small>
AC motor speed controller	KL2791 <small>230 V AC, 200 VA, 1-phase AC motor</small>	KL2552 <small>I_{max} = 5.0 A, 48 V DC, incremental encoder</small>

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



XPlanar Planar motor system				
Movers	APM4220-0000-0000 <small>0.4 kg payload, 113 mm x 113 mm x 12 mm</small>	APM4221-0000-0000 <small>1.0 kg payload, 127 mm x 127 mm x 12 mm</small>	<i>i</i> APM4330-0000-0000 <small>1.5 kg payload, 155 mm x 155 mm x 12 mm</small>	APM4330-0001-0000 <small>1.0 kg payload, 155 mm x 155 mm x 12 mm, stainless steel</small>
	APM4550-0000-0000 <small>4.2 kg payload, 235 mm x 235 mm x 12 mm</small>	APM4230-0000-0000 <small>0.8 kg payload, 115 mm x 155 mm x 12 mm</small>	<i>i</i> APM4350-0000-0000 <small>3.0 kg payload, 155 mm x 235 mm x 12 mm</small>	<i>i</i>
Tile	APS4322-0000-0000 <small>240 mm x 240 mm</small>	APS4244-1x00-0000 <small>320 mm x 320 mm</small>	<i>i</i> APS4242-1x00-0000 <small>320 mm x 160 mm</small>	<i>i</i>
Accessories	APM9001-0000-4xxx <small>ID bumper, 90-degree mover rotation</small>			
Starter kits	APS9000 <small>6 (2 x 3) APS4322 planar motor tiles, 2 APM4330 movers, Industrial PC, software, pre-installed, ready for operation</small>	APS9001 <small>12 (4 x 3) APS4322 planar motor tiles, 4 APM4330 movers, Industrial PC, software, pre-installed, ready for operation</small>	APS9002-0000-0001 <small>2 APS4322 planar motor tiles, 2 APM4220 movers, Industrial PC, software, with plexiglass cover and transport case</small>	

We reserve the right to make technical changes.

BECKHOFF New Automation Technology

XTS | Linear product transport

► www.beckhoff.com/xts



XTS Motor modules		
Design form	XTS Standard	XTS Hygienic
Straight	AT2000 straight, without infeed	ATH2000 straight, without infeed
	AT2001 straight, with connection cables for infeed	ATH2001 straight, with infeed
	AT2002 straight, with plug connector for infeed	ATH2002 straight, with angled infeed
	AT2100 straight, without infeed, with integrated NCT functionality	i
	AT2102 straight, with plug connector for infeed, with integrated NCT functionality	i
22.5° curved segment (Ø 1273 mm)	AT2020 22.5° curved segment, without infeed	
	AT2021 22.5° curved segment, with connection cables for infeed	
-22.5° curved segment (Ø 1273 mm)	AT2025 -22.5° curved segment, without infeed	
	AT2026 -22.5° curved segment, with connection cables for infeed	
45° curved segment (Ø 637 mm)	AT2040 45° curved segment, without infeed	ATH2040 45° curved segment, without infeed
	AT2041 45° curved segment, with connection cables for infeed	ATH2041 45° curved segment, with straight infeed
		ATH2042 45° curved segment, with angled infeed
180° curved segment (clothoid)	AT2050 180° curved segment, without infeed	ATH2050 180° curved segment, without infeed
		ATH2051 180° curved segment, with straight infeed

XTS Guide rails		
Design form	XTS Standard	XTS Hygienic
Straight	AT9000 straight, without lock	ATH9000 straight, without lock
	AT9100 straight, with lock	ATH9100 straight, with lock
45° curved segment (Ø 637 mm)	AT9040 45° curved segment, without lock	
		ATH9200 straight, connector
180° curved segment (clothoid)	AT9050 180° curved segment, without lock	ATH9050 180° curved segment

XTS Movers		
Material	XTS Standard	XTS Hygienic
Aluminum	AT9011 mover, length 70 mm	AT9014 mover, length 55 mm or 70 mm, spring-loaded
	AT9001 magnetic plate sets	
Stainless steel		ATH9011 mover, length 75 mm
		ATH9001 magnetic plate sets

XTS NCT electronics				
	Version			
Basic electronics	AT8200-1000-0100 with housing, without mover	AT8200-2000-0100 with housing, without mover, suitable for external movers	AT8300-1100-0100 with housing, mounted on AT9014-1070-0550 mover	AT8300-1200-0100 with housing, mounted on AT9014-1070-1550 mover (mover 1)

XTS Starter kits			
	Mover 55 mm length	Mover 70 mm length	With NCT functionality
Small	AT2000-0500-0055	AT2000-0500-0170	AT2100-0011-0001
Medium	AT2000-1000-0055	AT2000-1000-0170	AT2100-0012-0001
Large	AT2000-1500-0055	AT2000-1500-0170	AT2100-0032-0001

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



TwinCAT 3 96

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

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/twincat

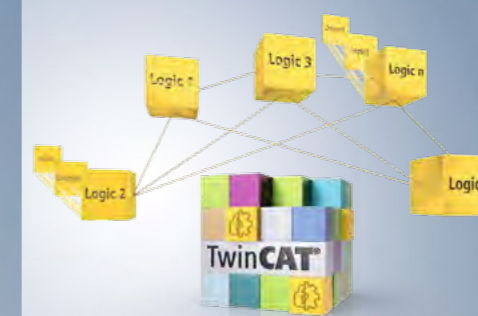
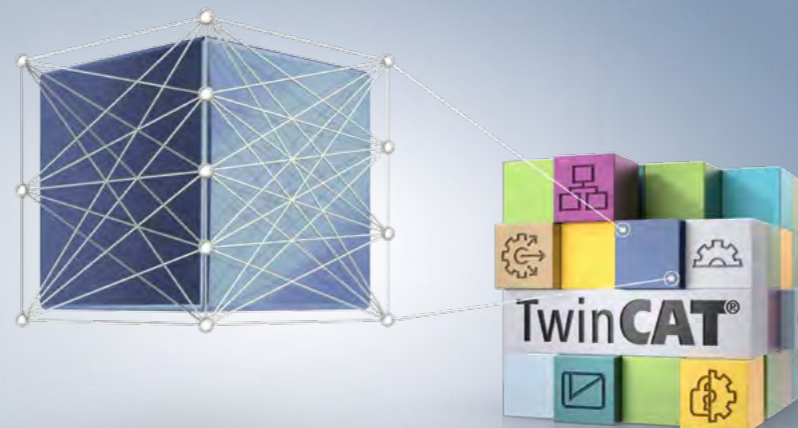
TwinCAT 2 106

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

TwinSAFE 110

- 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



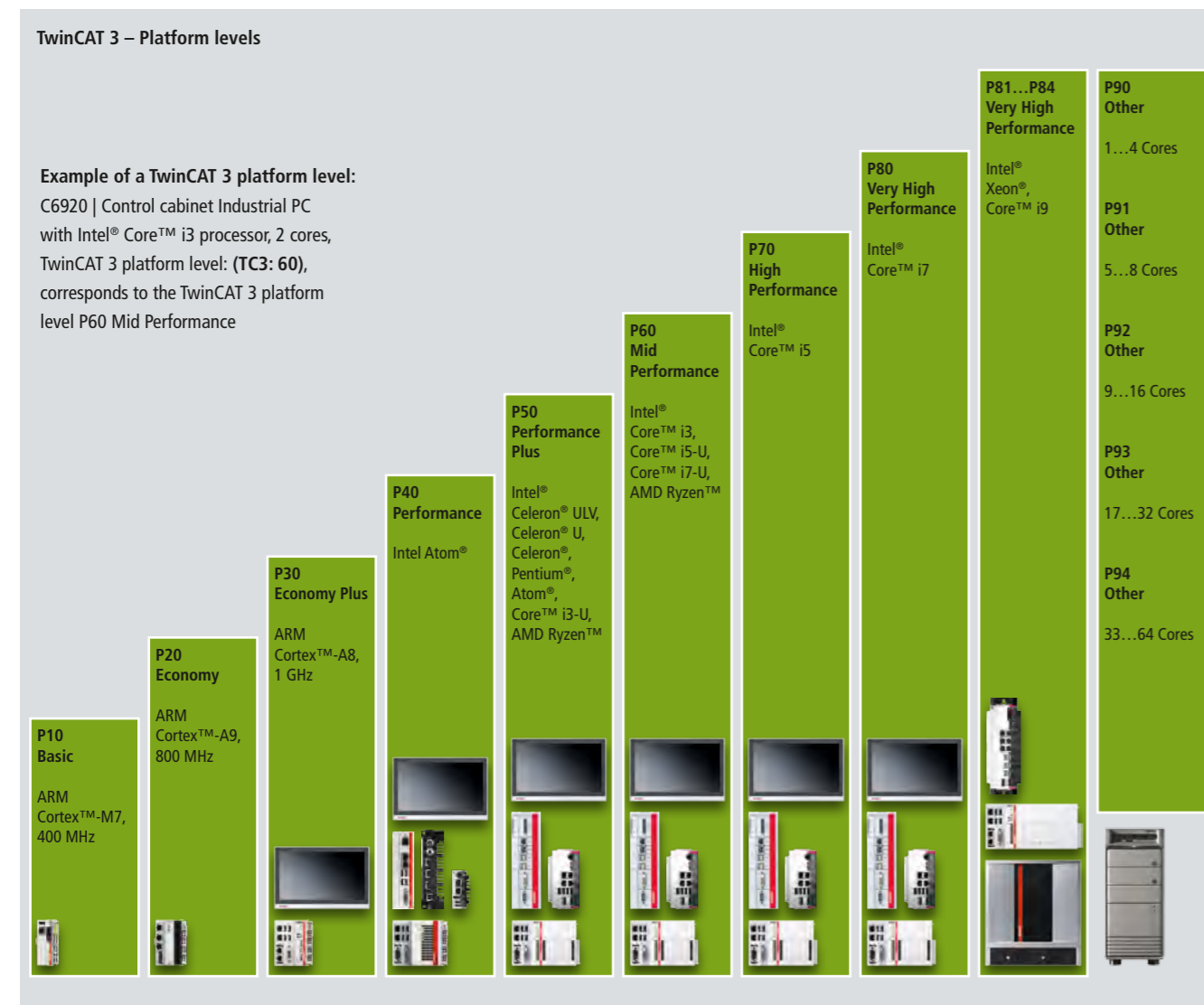
- efficient, universal engineering
- programming in different languages
- Open, hardware-independent control system gives freedom of choice in terms of automation and control components.
- scalable control platform from single- to multi-core CPUs
- all control functions on a single, centralized platform: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

TwinCAT 3

► www.beckhoff.com/twincat

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

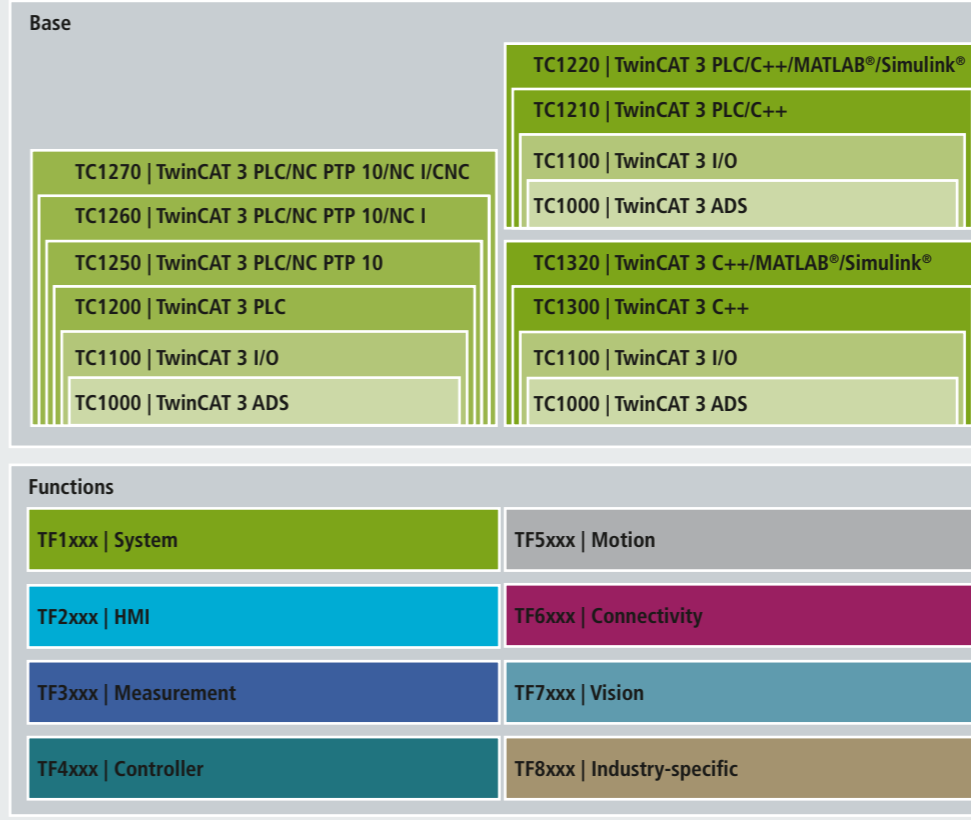
The overview shows the various TwinCAT 3 platform levels. The controllers integrated in the platform levels represent sample configurations. The TwinCAT 3 platform level required for a TwinCAT 3 Runtime component can be found in the product description of the respective Beckhoff PC.



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

TwinCAT 3 – eXtended Automation Engineering (XAE)

TwinCAT 3 – eXtended Automation Runtime (XAR)



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.

TExxx | TwinCAT 3, Engineering

TwinCAT 3 Engineering	TE1000	TwinCAT 3 engineering environment	
TwinCAT 3 Realtime Monitor	TE1010	tool for precise diagnostics and optimization of the runtime behavior of tasks in the TwinCAT 3 runtime	
TwinCAT 3 Documentation Generation	TE1030	tool for simplified creation of documentation from the current PLC code of the machine via specific markups	<u>i</u>
TwinCAT 3 EtherCAT Simulation	TE1111	easy configurations of simulation environments with several EtherCAT slaves	
TwinCAT 3 XCAD Interface	TE1120	interface between ECAD tools and TwinCAT 3	
TwinCAT 3 CAD Simulation Interface	TE1130	link between TwinCAT and a 3D CAD system for SiL simulation	<u>i</u>
TwinCAT 3 CAD Simulation Interface Maintenance	TE1131	optional annual expansion of functions for TwinCAT 3 CAD Simulation Interface	<u>i</u>
TwinCAT 3 PLC Static Analysis	TE1200	analysis tool that tests PLC software on the basis of coding rules	
TwinCAT 3 PLC Profiler	TE1210	analyzes the runtime characteristics of a PLC project and identifies time-intensive call-ups and program sections	<u>i</u>
TwinCAT 3 Scope View Professional	TE1300	software oscilloscope for the graphical display of data captured from several target systems	
TwinCAT 3 Filter Designer	TE1310	graphical engineering tool for determining coefficients of digital filters	
TwinCAT 3 Target for Simulink®	TE1400	TwinCAT target for Simulink® for generating TwinCAT 3 modules	
TwinCAT 3 Target for MATLAB®	TE1401	TwinCAT target for MATLAB® for generating TwinCAT 3 modules	
TwinCAT 3 Interface for MATLAB®/Simulink®	TE1410	communication interface between MATLAB®/Simulink® and the TwinCAT 3 runtime	
TwinCAT 3 Target for FMI	TE1420	interface for simulation tools that support the Functional Mockup Interface (FMI)	
TwinCAT 3 Simulation Runtime for FMI	TE1421	Co-Simulation interface for tools that support the Functional Mockup Interface (FMI)	<u>i</u>
TwinCAT 3 Valve Diagram Editor	TE1500	graphical tool for designing the characteristic curve of a hydraulic valve	
TwinCAT 3 Cam Design Tool	TE1510	graphic design tool for electronic cam plates	
TwinCAT 3 EAP Configurator	TE1610	tool for visualizing and configuring communication networks, in which data exchange based on the EtherCAT Automation Protocol (EAP) takes place	
TwinCAT 3 HMI Engineering	TE2000	tool for developing platform-independent user interfaces	
TwinCAT 3 Analytics Workbench	TE3500	engineering tool for creating continuous data analysis of machines and plants with automatic code and dashboard generation	
TwinCAT 3 Analytics Workbench Maintenance	TE3501	optional annual expansion of functions for TwinCAT 3 Analytics Workbench	
TwinCAT 3 Analytics Service Tool	TE3520	tool for process data analysis, ideal for commissioning and service technicians	
TwinCAT 3 Analytics Service Tool Maintenance	TE3521	optional annual expansion of functions for TwinCAT 3 Analytics Service Tool	
TwinCAT 3 Motion Designer	TE5910	TwinCAT 3 Motion Designer for drive dimensioning	
TwinCAT 3 Cogging Compensation for linear motors	TE5920	engineering environment for AL8000 linear motors, to reduce cogging forces	<u>i</u>
TwinCAT 3 Drive Manager 2	TE5950	TwinCAT 3 Drive Manager 2 for commissioning the AX8000 multi-axis servo system, AX5000 digital compact servo drive, AMP8000 distributed servo drive system, AMI8100 integrated servo drives or the I/O components EL72xx, EL74xx, EL70x7, ELM72xx, EP72xx and EJ72xx	
TwinCAT 3 Autotuning	TE5960	TwinCAT 3 Autotuning to simplify the commissioning of servo axes by automatically identifying the mechanics and determining the load inertia, controller parameters and filter settings	<u>i</u>
TwinCAT 3 OPC UA Nodeset Editor	TE6100	Engineering tool for creating and editing OPC UA nodeset files, which are used in particular for companion specifications. With the help of the editor, existing companion specifications or also own information models can be mapped on a Beckhoff controller and linked with data points from the PLC.	<u>i</u>

TC1xxx | TwinCAT 3, Base

TwinCAT 3 ADS	TC1000	The Automation Device Specification (ADS) is the communication protocol of TwinCAT. It enables the data exchange and the control of TwinCAT systems. ADS is media-independent and can communicate via serial or network connections.
TwinCAT 3 I/O	TC1100	Using TwinCAT I/O, cyclic data can be collected by different fieldbuses in process images. Cyclic tasks drive the corresponding fieldbuses. Various fieldbuses can be operated with different cycle times on one CPU. Applications can directly access the process image. The fieldbuses and the process images are configured in TwinCAT Engineering.
TwinCAT 3 PLC	TC1200	TwinCAT PLC realizes one or more PLCs on an Industrial PC. The international standard IEC 61131-3 3 rd is used to program the PLC; all programming languages described in this standard are supported. Various convenient debugging options facilitate troubleshooting and commissioning. Program modifications can be carried out at any times and in any size on-line, i.e. when the PLC is running.
TwinCAT 3 PLC/C++	TC1210	Based on the TwinCAT PLC TC1200, TC1210 offers the additional option of using C++ modules in the runtime parallel to the PLC through TC1300 TwinCAT 3 C++.
TwinCAT 3 PLC/C++/MATLAB®/Simulink®	TC1220	MATLAB® and Simulink® are established development environments in science and industry. Using the TE140x products from Beckhoff and the MATLAB Coder™ or the Simulink Coder™ from MathWorks, TwinCAT 3 runtime modules (TcCOM objects and PLC function blocks) can be created from MATLAB® and Simulink®. TC1220 is an extension of TC1210 with the possibility to execute these modules.
TwinCAT 3 PLC/NC PTP 10	TC1250	Extension of the TwinCAT PLC TC1200 by the possibility to realize point-to-point movements in software (TwinCAT Motion Control PTP 10). The axes are represented by axis objects and provide a cyclic interface, e.g. for the PLC. This axis object is then linked to a corresponding physical axis.
TwinCAT 3 PLC/NC PTP 10/NC I	TC1260	Extension of the TwinCAT PLC/NC PTP 10 by the possibility to interpolate movements with up to three path axes and up to five auxiliary axes. Various axis types with various fieldbus interfaces are supported. The movement is usually programmed in DIN 66025, but it can also alternatively be carried out via PLC function blocks.
TwinCAT 3 PLC/NC PTP 10/NC I/CNC	TC1270	Extension of the TwinCAT PLC/NC PTP 10/NC I by the possibility to realize an interpolation with up to 32 simultaneously interpolating axes. The number of axes and/or the number of channels can be adapted to the requirements of the application via the option packages. Various transformations can be supplemented via option packages.
TwinCAT 3 PLC/NC PTP 10/NC I/CNC E	TC1275	TwinCAT CNC export version (E version) is an extension of the TwinCAT PLC/NC PTP 10 by the possibility to realize an interpolation with up to 4 simultaneously interpolating axes. The number of axes and/or the number of channels can be adapted to the requirements of the application via the option packages. Various transformations can be supplemented via option packages.
TwinCAT 3 C++	TC1300	TwinCAT C++ implements a real-time execution of C++ code on an Industrial PC. For programming, the widely used programming language C++ is supported, which is connected to the real-time via the TwinCAT SDK and CRT. Extensive debugging interfaces are supported by Visual Studio® and also supplemented by representations typical of real-time.
TwinCAT 3 C++/MATLAB®/Simulink®	TC1320	MATLAB® and Simulink® are established development environments in science and industry. Using the TE140x products from Beckhoff and the MATLAB Coder™ or the Simulink Coder™ from MathWorks, TwinCAT 3 runtime modules (TcCOM objects and PLC function blocks) can be created from MATLAB® and Simulink®. TC1320 is an extension of TC1300 with the possibility to execute these modules.

TC1xxx | TwinCAT 3, Base

TwinCAT 3 Usermode Runtime	TC1700	The TwinCAT 3 Usermode Runtime provides a way to run the applications programmed in TwinCAT without real-time properties in the user mode of the operating system. The TwinCAT 3 Usermode Runtime can be used free of license costs purely for engineering purposes and only requires (trial) licenses of the TwinCAT products used.	i
TwinCAT 3 Usermode Runtime: External Control	TC1701	The TwinCAT Usermode runtime provides a way to run the applications programmed in TwinCAT without real-time properties in the user mode of the operating system. The "External Control" option provides an interface that runs the application, clocked by an external application. Synchronization with other programs can be achieved with this option.	i
TwinCAT 3 Usermode Runtime: Fast As Possible	TC1702	The TwinCAT Usermode runtime provides a way to run the applications programmed in TwinCAT without real-time properties in the user mode of the operating system. The "Fast As Possible" option provides an interface that runs the application as fast as the hardware allows. A simulation of calculated results of an application can be realized with this option.	i

TF1xxx | TwinCAT 3, Functions, System

TwinCAT 3 Controller Redundancy	TF1100	provides an extension to enable redundant processing of TwinCAT 3 PLC programs in two run-time environments and increases the availability of the entire system in the process execution of runtime modules in TwinCAT 3 generated from MATLAB®/Simulink®	i
TwinCAT 3 Runtime for MATLAB®/Simulink®	TF1400		i
TwinCAT 3 Runtime for FMI	TF1420	enables the execution of TwinCAT 3 runtime modules generated via the TE1420 simulation tools interface	
TwinCAT 3 PLC HMI	TF1800	stand-alone tool for displaying visualizations from the PLC development environment	
TwinCAT 3 PLC HMI Web	TF1810	display of visualizations from the PLC development environment in a web browser	
TwinCAT 3 UML	TF1910	UML (Unified Modeling Language) for modeling of PLC software	

TF2xxx | TwinCAT 3, Functions, HMI

TwinCAT 3 HMI Server	TF2000	modular web server, includes a client connection and a target connection	
TwinCAT 3 HMI Clients Packs	TF20x0	optional extension of the TwinCAT 3 HMI Server to increase the number of client connections	
TwinCAT 3 HMI Targets Packs	TF20xx	optional extension of the TwinCAT 3 HMI Server to increase the number of connections to target systems	
TwinCAT 3 HMI OPC UA	TF2110	server extension for access to TwinCAT target systems or other controllers via OPC UA	
TwinCAT 3 HMI Extension SDK	TF2200	software development kit (.NET) for programming application-specific solutions	
TwinCAT 3 HMI Scope	TF2300	software oscilloscope for graphic display of time sequences	
TwinCAT 3 HMI Audit Trail	TF2400	server extension for logging operator changes and events that have occurred in the HMI server	i
TwinCAT 3 HMI Audit Trail Symbols Pack	TF24x0	optional extension of TwinCAT 3 HMI Audit Trail to increase the number of Audit Trail symbols	i

TF3xxx | TwinCAT 3, Functions, Measurement

TwinCAT 3 Scope Server	TF3300	data recording and preparation for visual display in TwinCAT 3 Scope View	
TwinCAT 3 Analytics Logger	TF3500	analytics logger for cycle-synchronous data recording, storage and sending via MQTT to a message broker	
TwinCAT 3 Analytics Library	TF3510	PLC library with analysis algorithms from simple edge counters and extreme value calculations to more complex correlation methods and unsupervised clustering algorithms	
TwinCAT 3 Analytics Storage Provider	TF3520	IoT client as part of the Analytics workflow: Raw and analytic data can be received and stored in a storage; access for all Analytics tools.	
TwinCAT 3 Analytics Runtime	TF3550	container running the Analytics application configured and developed in Analytics Workbench; including HMI server and client pack for Analytics dashboards	
TwinCAT 3 Analytics Runtime Base	TF3551	container running the Analytics application configured and developed in Analytics Workbench; without HMI; ideal for headless applications or existing visualizations	
TwinCAT 3 Analytics Controller Packs	TF356x	extension of the TwinCAT 3 Analytics Workbench for the analysis of up to 128 additional controllers	
TwinCAT 3 Condition Monitoring	TF3600	PLC library for the realization of a condition monitoring for a machine with algorithms like magnitude spectrum, envelope, kurtosis, order analysis or zoom FFT	
TwinCAT 3 Power Monitoring	TF3650	PLC library for realization of power monitoring applications; algorithms for calculation of RMS values of current, voltage and power as well as THD fit to EL3773 and EL3783	
TwinCAT 3 Filter	TF3680	PLC library for implementing digital filters	
TwinCAT 3 Weighing Library	TF3685	PLC library for mapping a weighing scale in TwinCAT controllers based on Beckhoff load cell I/Os. The main focus is on dynamically weighing industrial goods.	i
TwinCAT 3 Interface for LabVIEW™	TF3710	enables the exchange of data between LabVIEW™ and the TwinCAT runtime	
TwinCAT 3 Machine Learning Inference Engine	TF3800	execution module of trained classical machine learning algorithms	
TwinCAT 3 Neural Network Inference Engine	TF3810	execution module of trained neural networks	
TwinCAT 3 Machine Learning Server	TF3820	inference engine for trained machine learning and deep learning models with support for hardware accelerators	i
TwinCAT 3 Machine Learning Server Client	TF3830	client license for remote connections to a TF3820 TwinCAT 3 Machine Learning Server	i
TwinCAT 3 Solar Position Algorithm	TF3900	precise calculation of the sun's position	

TF4xxx | TwinCAT 3, Functions, Controller

TwinCAT 3 Controller Toolbox	TF4100	basic controllers (P, I, D), complex controllers (PI, PID), pulse width modulation, ramps, signal generators and filters	
TwinCAT 3 Temperature Controller	TF4110	temperature control for monitoring and controlling different temperature ranges	
TwinCAT 3 Speech	TF4500	TwinCAT 3 Speech enables multilingual input and output of queries and information implemented in an industrially compatible way	

TF5xxx | TwinCAT 3, Functions, Motion

TwinCAT 3 NC PTP 10 Axes	TF5000	TwinCAT 3 NC PTP enables point-to-point movements to be implemented in software; the axes are represented by axis objects and provide a cyclic interface for e.g. the PLC, the axis object is then linked to a corresponding physical axis
TwinCAT 3 NC PTP Axes Pack 25	TF5010	extension of TwinCAT 3 NC PTP to a maximum of 25 axes
TwinCAT 3 NC PTP Axes Pack unlimited	TF5020	extension of TwinCAT 3 NC PTP to 255 axes
TwinCAT 3 NC Camming	TF5050	TwinCAT 3 NC Camming (cam plates) enables the modeling of a non-linear relationship between master and slave axes
TwinCAT 3 NC Flying Saw	TF5055	TwinCAT 3 NC Flying Saw enables the coupling of a slave axis to a master axis in a specific synchronous position (flying saw)
TwinCAT 3 NC FIFO Axes	TF5060	TwinCAT 3 NC FIFO Axes enables the output of externally generated position setpoints to an axis group
TwinCAT 3 Motion Control XFC	TF5065	TwinCAT 3 Motion Control XFC enables time-accurate acquisition and switching of digital signals related to axis positions in conjunction with EtherCAT XFC terminals
TwinCAT 3 NC I	TF5100	TwinCAT 3 NC I enables interpolating path movements with three path axes and up to five auxiliary axes, whereby master/slave couplings can also be formed
TwinCAT 3 Kinematic Transformation L1	TF5110	TwinCAT 3 Kinematic Transformation L1 enables the control of various robot kinematics at level 1
TwinCAT 3 Kinematic Transformation L2	TF5111	TwinCAT 3 Kinematic Transformation L2 enables the control of various robot kinematics at level 2
TwinCAT 3 Kinematic Transformation L3	TF5112	TwinCAT 3 Kinematic Transformation L3 enables the control of various robot kinematics at level 3
TwinCAT 3 Kinematic Transformation L4	TF5113	TwinCAT 3 Kinematic Transformation L4 enables the control of various robot kinematics at level 4
TwinCAT 3 Robotics mxAutomation	TF5120	TwinCAT 3 Robotics mxAutomation allows direct communication between the PLC and a KUKA robot control via a common interface
TwinCAT 3 Robotics uniVAL PLC	TF5130	TwinCAT 3 Robotics uniVAL PLC allows direct communication between the PLC and a Stäubli robot control via a common interface
TwinCAT 3 CNC	TF5200	CNC path control software
TwinCAT 3 CNC E	TF5210	CNC path control software export version
TwinCAT 3 CNC Axes Pack 64	TF5220	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
TwinCAT 3 CNC Axes Pack unlimited	TF5221	extension to up to a total of 128 axes/controlled spindles, of which a maximum of 32 can be path axes and a maximum of 12 can be controlled spindles
TwinCAT 3 CNC Measurement	TF5225	optional package of CNC cycles that supports the measurement of tools or workpieces directly on the machine
TwinCAT 3 CNC Channel Pack	TF5230	further CNC channel, extension to a maximum of 12 channels, channel synchronization, axis transfer between channels
TwinCAT 3 CNC Transformation	TF5240	transformation functionality (5-axis functionality)
TwinCAT 3 CNC Kinematic Optimization	TF5245	optional CNC package that optimizes the determination of kinematic parameters for rotary axes in 5-axis kinematics
TwinCAT 3 CNC HSC Pack	TF5250	extending the CNC with HSC technology (high-speed cutting)
TwinCAT 3 CNC Spline Interpolation	TF5260	path programming via splines with programmable spline type, Akima-spline, B-spline
TwinCAT 3 CNC Realtime Cycles	TF5261	allows concurrent execution of G code in the interpolation cycle of the TwinCAT CNC

TF5xxx | TwinCAT 3, Functions, Motion

TwinCAT 3 CNC Virtual NCK Basis	TF5270	virtual TwinCAT CNC for simulation in a Windows environment
TwinCAT 3 CNC Virtual NCK Options	TF5271	virtual TwinCAT CNC for simulation in a Windows environment
TwinCAT 3 CNC Volumetric Compensation	TF5280	allows compensation of geometric machine errors according to DIN ISO 230 or ISO/TR 16907
TwinCAT 3 CNC Cutting Plus	TF5290	technology package for extending the CNC functionality for cutting operations
TwinCAT 3 CNC Milling Base	TF5293	CNC cycle package for triple-axis milling and drilling
TwinCAT 3 Motion Collision Avoidance	TF5410	TwinCAT 3 Motion Collision Avoidance enables collision avoidance when operating multiple axes with TwinCAT 3 NC PTP in linear and/or translational dependency
TwinCAT 3 Motion Pick-and-Place	TF5420	TwinCAT 3 Motion Pick-and-Place enables the implementation of handling tasks by gantry robots or other kinematics
TwinCAT 3 Hydraulic Positioning	TF5810	manufacturer-independent control of hydraulic axes and replacement of external controllers; support of a wide variety of applications and different axis control concepts; number of axes depends only on the performance of the PC
TwinCAT 3 XTS Extension	TF5850	TwinCAT 3 XTS Extension enables the individual movement of XTS movers along a specific path; basic software package for the use and integration of XTS into the TwinCAT 3 environment; further use of the extensive possibilities of TwinCAT and XTS
TwinCAT 3 XPlanar	TF5890	TwinCAT 3 XPlanar enables free movement of XPlanar movers on freely arranged XPlanar tiles; basic software package for integration of the XPlanar system into the TwinCAT 3 environment; access to further extensive TwinCAT functions
TwinCAT 3 Planar Motion	TF5430	TwinCAT 3 Planar Motion enables efficient and intelligent implementation of individual XPlanar applications and is a component of TF5890 TwinCAT 3 XPlanar
TwinCAT 3 Cogging Compensation Runtime	TF5920	runtime for AL8000 linear motors, to reduce cogging forces

TF6xxx | TwinCAT 3, Functions, Connectivity

TwinCAT 3 ADS Monitor	TF6010	recording and diagnostics functions for the communication of TwinCAT systems
TwinCAT 3 JSON Data Interface	TF6020	interface for the exchange of data in JSON format between the TwinCAT system and custom applications
TwinCAT 3 OPC UA	TF6100	access to TwinCAT in accordance with OPC UA with UA server (DA/HA/AC) and UA client (DA)
TwinCAT 3 OPC UA Pub/Sub	TF6105	protocol implementation for OPC UA Pub/Sub (UDP and MQTT)
TwinCAT 3 EtherCAT Redundancy 250	TF6220	extension of the TwinCAT EtherCAT master with cable redundancy capability for up to 250 slaves
TwinCAT 3 EtherCAT Redundancy 250+	TF6221	extension of the TwinCAT EtherCAT master with cable redundancy capability for more than 250 slaves
TwinCAT 3 EtherCAT External Sync	TF6225	extension of the TwinCAT EtherCAT master with an option to synchronize the Beckhoff real-time communication with external signals
TwinCAT 3 Parallel Redundancy Protocol (PRP)	TF6230	TwinCAT Parallel Redundancy Protocol (PRP) provides a redundant network communication according to IEC 62439-3. It offers a transparent Ethernet connection via two separate networks. The diagnostics information is provided in TwinCAT.
TwinCAT 3 Modbus TCP	TF6250	communication with Modbus TCP devices (server and client functionality)
TwinCAT 3 Modbus RTU	TF6255	serial communication with Modbus end devices

TF6xxx | TwinCAT 3, Functions, Connectivity

TwinCAT 3 PROFINET RT Device	TF6270	communication via PROFINET (PROFINET slave)	
TwinCAT 3 PROFINET RT Controller	TF6271	communication via PROFINET (PROFINET master)	
TwinCAT 3 EtherNet/IP Adapter	TF6280	communication via EtherNet/IP (EtherNet/IP adapter)	
TwinCAT 3 EtherNet/IP Scanner	TF6281	communication via EtherNet/IP (EtherNet/IP scanner)	
TwinCAT 3 FTP Client	TF6300	easy access from TwinCAT PLC to FTP server	
TwinCAT 3 TCP/IP	TF6310	communication via generic TCP/IP server	
TwinCAT 3 TCP/UDP Realtime	TF6311	TwinCAT 3 TCP/UDP Realtime enables fast and convenient access from real-time to an Ethernet network	
TwinCAT 3 Serial Communication	TF6340	communication via serial Bus Terminals or PC COM ports with the 3964R and RK512 protocol	
TwinCAT 3 SMS/SMTP	TF6350	sending SMS and e-mails from the PLC	
TwinCAT 3 Virtual Serial COM	TF6360	virtual serial COM driver for Windows platforms	
TwinCAT 3 Database Server	TF6420	interface for communication with various database systems from Microsoft SQL to MySQL and SQLite to MongoDB or InfluxDB	
TwinCAT 3 XML Server	TF6421	read and write access to XML files from the PLC	
TwinCAT 3 IEC 60870-5-10x	TF6500	communication according to IEC 60870-101 (master and slave), -102 (master), -103 (master), -104 (master and slave)	
TwinCAT 3 IEC 61850/IEC 61400-25	TF6510	communication according to IEC 61850 and IEC 61400-25 in the versions client and server, as well as via GOOSE as publisher and subscriber	
TwinCAT 3 RFID Reader Communication	TF6600	connection of RFID readers to the TwinCAT PLC	
TwinCAT 3 S7 Communication	TF6620	enables TCP/IP based communication with variables of a Siemens S7 controller	
TwinCAT 3 DBC File Import for CAN	TF6650	reading of DBC file formats	
TwinCAT 3 FDT ComDTM	TF6680	With the TwinCAT 3 FDT ComDTM, the FDT/DTM technology can be used with Beckhoff components in third-party systems. For this purpose, the ComDTM establishes the connection between the FDT frame application and the target system, e.g. a TwinCAT-based controller. This allows the configuration of the connected field devices via their device-specific DTMs.	
TwinCAT 3 IoT Communication (MQTT)	TF6701	provides basic publisher/subscriber-based data connectivity via MQTT	
TwinCAT 3 IoT Functions	TF6710	provides connectivity for cloud-based communication services	
TwinCAT 3 IoT Data Agent	TF6720	gateway application for data connectivity between TwinCAT runtime and IoT services	
TwinCAT 3 IoT Communicator	TF6730	sends process data and notifications from TwinCAT to smartphones and tablets through a messaging service	
TwinCAT 3 IoT Communicator App	TF6735	smartphone and tablet app to receive and visualize live data and push notifications sent from TwinCAT	
TwinCAT 3 IoT HTTPS/REST	TF6760	basic functions for HTTP/HTTPS communication in the form of a PLC library providing the ability to address REST APIs as a client	<u>i</u>
TwinCAT 3 IoT WebSockets	TF6770	basic functions for WebSockets communication as server and client	<u>i</u>
TwinCAT 3 IoT OCPP	TF6771	basic functions for communication with charging stations for electric vehicles and higher-level management systems	<u>i</u>

TF7xxx | TwinCAT 3, Functions, Vision

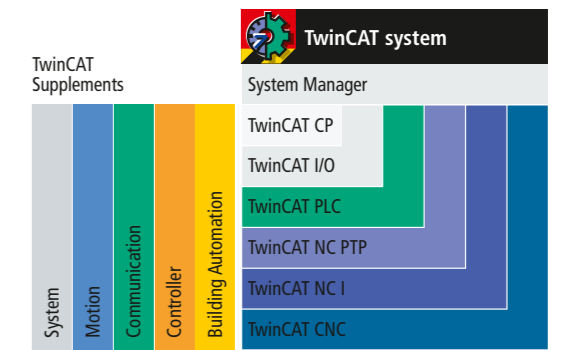
TwinCAT 3 GigE Vision Connector	TF700x	interface for the configuration and integration of GigE Vision cameras directly into TwinCAT	
TwinCAT 3 Vision Beckhoff Camera Connector	TF7020	interface for configuring and using Beckhoff cameras directly in TwinCAT	<u>i</u>
TwinCAT 3 Vision Base	TF7100	extensive PLC library with a large number of different functions and algorithms for solving image processing tasks in TwinCAT real-time	
TwinCAT 3 Vision Matching 2D	TF7200	extension of the basic package with the possibility to find and compare objects based on taught-in references, contours, feature points or other properties	
TwinCAT 3 Vision Code Reading	TF7250	extension of the basic package with functions for reading various 1D and 2D codes	
TwinCAT 3 Vision Code Quality	TF7255	extension of the basic package with functions for quality assessment of various 1D and 2D codes	<u>i</u>
TwinCAT 3 Vision OCR	TF7260	extension of the basic package with an option for optical character recognition	<u>i</u>
TwinCAT 3 Vision Metrology 2D	TF7300	extension of the basic package with a variety of functions: calibration, subpixel-accurate detection of edges, holes and circular arcs, determination of lengths, distances, diameters, angles and coordinates	
TwinCAT 3 Vision Machine Learning	TF7800	extension of the basic package with the possibility to use classic machine learning algorithms for data analysis	<u>i</u>
TwinCAT 3 Vision Neural Network	TF7810	extension of the basic package to include an option for using neural networks for data analysis	<u>i</u>

TF8xxx | TwinCAT 3, Functions, Industry-specific

TwinCAT 3 HVAC	TF8000	library covering all technical systems in building automation	
TwinCAT 3 Building Automation Basic	TF8010	software library with basic functions for room automation: lighting (constant light control, touch dimmer, sequencer,...), facade control, scaling functions, filter modules (PT1 and PT2 filters), timer functions, maximum guard for energy optimization	
TwinCAT 3 BACnet	TF8020	communication with data networks of building automation and building control systems	
TwinCAT 3 Building Automation	TF8040	PLC library for the automation of heating, ventilation and air conditioning technology, as well as the automation of rooms with the functions of sun protection and lighting	
TwinCAT 3 Lighting Solution	TF8050	TwinCAT 3 Lighting Solution: software package for easy commissioning of DALI-2 lighting controllers	
TwinCAT 3 Wind Framework	TF8310	framework for the development of operational management software for wind turbines	
TwinCAT 3 MTP Runtime	TF8400	implementation of directive-compliant MTP interfaces in plant modules	<u>i</u>
TwinCAT 3 MTP Engineering	TF8401	engineering environment for specifying properties and services of a software-based plant module and for defining the dependencies	<u>i</u>
TwinCAT 3 Plastic Processing Framework	TF8540	software library with temperature controller especially for plastics machines	
TwinCAT 3 Plastic HMI Framework	TF8550	assembly of HMI elements for plastics machinery in NuGet packages	
TwinCAT 3 Plastic Technology Functions	TF8560	technology package including abstracting motion control level for plastics machinery based on PLCopen standard	
TwinCAT 3 AES70 (OCA)	TF8810	communication library for operating a system as an OCA (Open Control Architecture) controller in an OCA network	

TwinCAT 2

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TX1000 | TwinCAT 2, TwinCAT CP

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

Windows driver for Beckhoff Control Panels

TX1100 | TwinCAT 2, TwinCAT I/O

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

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

TX1200 | TwinCAT 2, TwinCAT PLC

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

TX1250 | TwinCAT 2, TwinCAT NC PTP

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

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

TX1260 | TwinCAT 2, TwinCAT NC I

TwinCAT PLC	inclusive
TwinCAT NC PTP	inclusive
PC hardware	standard PC/IPC hardware, no extras
Operating systems	Windows 7/10, Windows CE*
Real-time	Beckhoff real-time kernel
I/O system	EtherCAT, Lightbus, PROFIBUS DP/MC, Interbus, CANopen, DeviceNet, SERCOS, Ethernet
Programming	DIN 66025 programs for NC interpolation, access via function blocks from TwinCAT PLC according to IEC 61131-3
Runtime system	NC interpolation, including TwinCAT NC PTP and PLC
Number of axes	max. 3 axes and up to 5 auxiliary axes per group, 1 group per channel, max. 31 channels
Axis types	electrical servo axes, stepper motor drives
Interpreter functions	subroutines and jumps, programmable loops, zeroshifts, tool compensations, M and H functions
Geometries	straight lines and circular paths in 3D space, circular paths in all main planes, helices with base circles in all main planes linear, circular, helical interpolation in the main lanes and freely definable planes, Bezier splines, look-ahead function
Axis functions	online reconfiguration of axes in groups, path override, slave coupling to path axes, auxiliary axes, axis error and sag compensation, measuring functions
Operation	automatic operation, manual operation (jog/inching), single block operation, referencing, handwheel operation (motion/superposition)
Options	TS511x TwinCAT Kinematic Transformation

TX1270 | TwinCAT 2, TwinCAT CNC

TwinCAT PLC	inclusive												
TwinCAT NC PTP	inclusive												
TwinCAT NC I	inclusive												
PC hardware	standard PC/IPC hardware, no extras												
Operating systems	Windows 7/10*												
Real-time	Beckhoff real-time kernel												
I/O system	EtherCAT, Lightbus, PROFIBUS DP/MC, CANopen, DeviceNet, SERCOS, Ethernet												
Programming	DIN 66025 programming language with high-level language extensions, access via function blocks from TwinCAT PLC according to IEC 61131-3												
Runtime system	CNC, including TwinCAT NC I, NC PTP, PLC												
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)												
Options	<table border="0"> <tr> <td>TS5220</td> <td>TwinCAT CNC Axes Pack</td> <td>TS5250</td> <td>TwinCAT CNC HSC Pack</td> </tr> <tr> <td>TS5230</td> <td>TwinCAT CNC Channel Pack</td> <td>TS5260</td> <td>TwinCAT CNC Spline Interpolation</td> </tr> <tr> <td>TS5240</td> <td>TwinCAT CNC Transformation</td> <td></td> <td></td> </tr> </table>	TS5220	TwinCAT CNC Axes Pack	TS5250	TwinCAT CNC HSC Pack	TS5230	TwinCAT CNC Channel Pack	TS5260	TwinCAT CNC Spline Interpolation	TS5240	TwinCAT CNC Transformation		
TS5220	TwinCAT CNC Axes Pack	TS5250	TwinCAT CNC HSC Pack										
TS5230	TwinCAT CNC Channel Pack	TS5260	TwinCAT CNC Spline Interpolation										
TS5240	TwinCAT CNC Transformation												

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

TSxxxx | TwinCAT 2, Supplements, System

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

TS4xxx | TwinCAT 2, Supplements, Controller

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

TSxxxx | TwinCAT 2, Supplements, Motion

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

TS6xxx | TwinCAT 2, Supplements, Communication

TwinCAT OPC UA Server	TS6100	access to TwinCAT in accordance with OPC UA with UA server (DA/HA/AC) and UA client (DA)
TwinCAT Modbus TCP Server	TS6250	communication with Modbus TCP devices (server and client functionality)
TwinCAT PLC Modbus RTU	TS6255	serial communication with Modbus end devices
TwinCAT PROFINET RT Device	TS6270	license for using the TwinCAT PROFINET RT Device
TwinCAT PROFINET RT Controller	TS6271	license for using the TwinCAT PROFINET RT Controller
TwinCAT EtherNet/IP Adapter	TS6280	TwinCAT EtherNet/IP Adapter turns every PC-based controller into an EtherNet/IP adapter.
TwinCAT FTP Client	TS6300	basic access from TwinCAT PLC to FTP server
TwinCAT TCP/IP Server	TS6310	communication via generic TCP servers
TwinCAT PLC Serial Communication	TS6340	communication via serial Bus Terminals or PC COM ports
TwinCAT PLC Serial Communication 3964R/RK512	TS6341	communication via serial Bus Terminals or PC COM ports with the 3964R and RK512 protocol
TwinCAT SMS/SMTP Server	TS6350	sending SMS and e-mails from the PLC
TwinCAT Virtual Serial COM Driver	TS6360	virtual serial COM driver for Windows and Windows CE platforms
TwinCAT DriveTop Server	TS6371	configuring Indramat SERCOS drives with DriveTop software on TwinCAT systems
TwinCAT PLC IEC 60870-5-101, -102, -103, -104 Master	TS650x	license for using a PLC library for the implementation of IEC 60870-5-10x masters
TwinCAT PLC IEC 60870-5-101, -104 Slave	TS650x	license for using a PLC library for the implementation of IEC 60870-5-10x slaves
TwinCAT PLC IEC 61400-25 Server	TS6509	IEC 61400-25 communication
TwinCAT PLC IEC 61850 Server	TS6511	IEC 61850 communication
TwinCAT PLC RFID Reader Communication	TS6600	connection of RFID readers to the TwinCAT PLC

TS8xxx | TwinCAT 2, Supplements, Building Automation

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

TwinSAFE

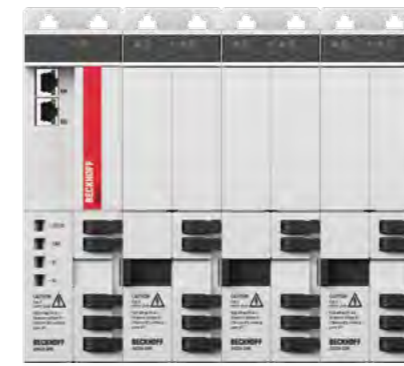
► www.beckhoff.com/twinsafe



EK1960



EJ1914



AX8000



AMI8000



AMP8x00



Software

TwinSAFE hardware, I/O

	Input	Dedicated Logic	Output	Input and Logic	Logic and Output	Input, Logic and Output
EtherCAT Terminals	EK1914 4 standard inputs, 4 standard outputs, 2 safe inputs, 2 safe outputs	EL6900 TwinSAFE Logic	EK1914 4 standard inputs, 4 standard outputs, 2 safe inputs, 2 safe outputs	EL1918 TwinSAFE Logic, 8 safe inputs	EL2912 TwinSAFE Logic, 2 safe outputs	EK1960 TwinSAFE Logic, 20 safe inputs, 24 safe outputs
	EL1904 TwinSAFE, 4 safe inputs	EL6910 TwinSAFE Logic, PROFIsafe master and slave support	EL2904 TwinSAFE, 4 safe outputs			EL1957 TwinSAFE Logic, 8 safe inputs, 4 safe outputs
		EL6930 TwinSAFE Logic, PROFIsafe slave support			ELM72xx-9016 $I_{ms} = 4.5 \text{ A}$, 48 V DC, TwinSAFE Logic, TwinSAFE: STO/SS1	EL2911 TwinSAFE Logic, 4 safe inputs, 1 safe output
					ELM72xx-9018 $I_{ms} = 4.5 \text{ A}$, 48 V DC, Safe Motion, TwinSAFE Logic	
EtherCAT Box	EP1908-0002 TwinSAFE, 8 safe inputs			EP1918-0002 TwinSAFE Logic, 8 safe inputs	EP2918-0032 TwinSAFE Logic, 8 safe outputs	EP1957-0022 TwinSAFE Logic, 8 safe inputs, 4 safe outputs
EtherCAT plug-in modules		EJ6910 TwinSAFE Logic		EJ1914 TwinSAFE Logic, 4 safe inputs	EJ2914 TwinSAFE Logic, 4 safe outputs	EJ1957 TwinSAFE Logic, 8 safe inputs, 4 safe outputs
				EJ1918 TwinSAFE Logic, 8 safe inputs	EJ2918 TwinSAFE Logic, 8 safe outputs	
Bus Terminals	KL1904 TwinSAFE, 4 safe inputs		KL2904 TwinSAFE, 4 safe outputs		KL6904 TwinSAFE Logic, 4 safe outputs	

TwinSAFE hardware, Drive Technology

	Output		
AX5000, TwinSAFE drive option card	AX5801 drive-integrated safety functions: STO, SS1	AX5805 drive-integrated safety functions: Safe Motion, for AX5x01 to AX5140	AX5806 drive-integrated safety functions: Safe Motion, for AX5160 to AX5193

TwinSAFE hardware, Drive Technology

	Input, Logic and Output			
AX8000, multi-axis servo drives	AX8108 single-axis module 8 A, feedback: OCT, multi-feedback interface, TwinSAFE Logic, TwinSAFE: STO/SS1, Safe Motion	AX8118 single-axis module 18 A, feedback: OCT, multi-feedback interface, TwinSAFE Logic, TwinSAFE: STO/SS1, Safe Motion	AX8128 single-axis module 28 A, feedback: OCT, multi-feedback interface, TwinSAFE Logic, TwinSAFE: STO/SS1, Safe Motion	AX8206 dual-axis module 2 x 6 A, feedback: OCT, multi-feedback interface, TwinSAFE Logic, TwinSAFE: STO/SS1, Safe Motion
	AX8525 combined power supply and axis module 25 A, feedback: OCT, multi-feedback interface, TwinSAFE Logic, TwinSAFE: STO/SS1, Safe Motion	AX8540 combined power supply and axis module 40 A, feedback: OCT, multi-feedback interface, TwinSAFE Logic, TwinSAFE: STO/SS1, Safe Motion		
AMI8000, compact integrated servo drives	AMI8121 $M_0 = 0.48 \text{ Nm}$, TwinSAFE Logic, TwinSAFE: STO/SS1	AMI8122 $M_0 = 0.78 \text{ Nm}$, TwinSAFE Logic, TwinSAFE: STO/SS1	AMI8123 $M_0 = 1.00 \text{ Nm}$, TwinSAFE Logic, TwinSAFE: STO/SS1	
	AMI8131 $M_0 = 1.20 \text{ Nm}$, TwinSAFE Logic, TwinSAFE: STO/SS1	AMI8132 $M_0 = 2.18 \text{ Nm}$, TwinSAFE Logic, TwinSAFE: STO/SS1	AMI8133 $M_0 = 2.85 \text{ Nm}$, TwinSAFE Logic, TwinSAFE: STO/SS1	
AMP8000, distributed servo drives	AMP8031 $M_0 = 1.36 \dots 1.38 \text{ Nm}$, $nn = 3000 \dots 9000 \text{ min}^{-1}$, TwinSAFE Logic, TwinSAFE: STO/SS1, Safe Motion	AMP8032 $M_0 = 2.35 \dots 2.37 \text{ Nm}$, $nn = 3000 \dots 9000 \text{ min}^{-1}$, TwinSAFE Logic, TwinSAFE: STO/SS1, Safe Motion	AMP8033 $M_0 = 3.10 \dots 3.15 \text{ Nm}$, $nn = 3000 \dots 8000 \text{ min}^{-1}$, TwinSAFE Logic, TwinSAFE: STO/SS1, Safe Motion	
	AMP8041 $M_0 = 2.35 \dots 2.40 \text{ Nm}$, $nn = 3000 \dots 8000 \text{ min}^{-1}$, TwinSAFE Logic, TwinSAFE: STO/SS1, Safe Motion	AMP8042 $M_0 = 3.84 \dots 4.10 \text{ Nm}$, $nn = 2500 \dots 7000 \text{ min}^{-1}$, TwinSAFE Logic, TwinSAFE: STO/SS1, Safe Motion	AMP8043 $M_0 = 5.30 \dots 5.40 \text{ Nm}$, $nn = 2500 \dots 5000 \text{ min}^{-1}$, TwinSAFE Logic, TwinSAFE: STO/SS1, Safe Motion	
	AMP8051 $M_0 = 4.40 \dots 4.60 \text{ Nm}$, $nn = 2500 \dots 8000 \text{ min}^{-1}$, TwinSAFE Logic, TwinSAFE: STO/SS1, Safe Motion	AMP8052 $M_0 = 7.60 \text{ Nm}$, $nn = 2000 \dots 4000 \text{ min}^{-1}$, TwinSAFE Logic, TwinSAFE: STO/SS1, Safe Motion	AMP8053 $M_0 = 9.60 \dots 10.20 \text{ Nm}$, $nn = 2000 \dots 4000 \text{ min}^{-1}$, TwinSAFE Logic, TwinSAFE: STO/SS1, Safe Motion	AMP8054 $M_0 = 11.8 \text{ Nm}$, $nn = 2000 \text{ min}^{-1}$, TwinSAFE Logic, TwinSAFE: STO/SS1, Safe Motion
AMP8500, distributed servo drives, higher rotor inertia	AMP8531 $M_0 = 1.36 \dots 1.38 \text{ Nm}$, $nn = 3000 \dots 9000 \text{ min}^{-1}$, TwinSAFE Logic, TwinSAFE: STO/SS1, Safe Motion	AMP8532 $M_0 = 2.35 \dots 2.37 \text{ Nm}$, $nn = 3000 \dots 9000 \text{ min}^{-1}$, TwinSAFE Logic, TwinSAFE: STO/SS1, Safe Motion	AMP8533 $M_0 = 3.10 \dots 3.15 \text{ Nm}$, $nn = 3000 \dots 8000 \text{ min}^{-1}$, TwinSAFE Logic, TwinSAFE: STO/SS1, Safe Motion	
	AMP8541 $M_0 = 2.35 \dots 2.40 \text{ Nm}$, $nn = 3000 \dots 8000 \text{ min}^{-1}$, TwinSAFE Logic, TwinSAFE: STO/SS1, Safe Motion	AMP8542 $M_0 = 3.84 \dots 4.10 \text{ Nm}$, $nn = 2500 \dots 7000 \text{ min}^{-1}$, TwinSAFE Logic, TwinSAFE: STO/SS1, Safe Motion	AMP8543 $M_0 = 4.70 \dots 5.40 \text{ Nm}$, $nn = 2500 \dots 7000 \text{ min}^{-1}$, TwinSAFE Logic, TwinSAFE: STO/SS1, Safe Motion	
	AMP8551 $M_0 = 4.40 \dots 4.60 \text{ Nm}$, $nn = 2500 \dots 8000 \text{ min}^{-1}$, TwinSAFE Logic, TwinSAFE: STO/SS1, Safe Motion	AMP8552 $M_0 = 5.60 \dots 7.60 \text{ Nm}$, $nn = 2000 \dots 7300 \text{ min}^{-1}$, TwinSAFE Logic, TwinSAFE: STO/SS1, Safe Motion	AMP8553 $M_0 = 9.60 \dots 10.20 \text{ Nm}$, $nn = 2000 \dots 4000 \text{ min}^{-1}$, TwinSAFE Logic, TwinSAFE: STO/SS1, Safe Motion	

TwinSAFE software

TwinCAT 3 Safety Editor	TE9000	implementing of safety applications in graphical environment
TwinSAFE Loader/User	TE9200	TwinSAFE command line tools: Loader for downloading/customizing safety projects at runtime; User for handling user management of TwinSAFE logic components
TwinSAFE Logic Simulator	TE9100	virtual commissioning of a safety application based on TE1111 TwinCAT 3 EtherCAT Simulation

The System Company

For the first time in machine and system engineering, the MX-System enables completely control cabinet-free automation solutions. By consistently combining, applying and further developing Beckhoff's expertise, a holistic, modular pluggable system has been created. The combination of MX-System baseplate and MX-System function modules resulting from the modular construction kit combines all tasks and features of a control cabinet: energy supply, fuse protection and distribution, generation and monitoring of auxiliary voltages, sequence control with the inputs and outputs, control of motors and actuators as well as the connection level for the field devices. The full system integration of all machine functionalities is achieved via freely selectable IPC, coupler, I/O, drive, relay and system modules, which can be configured and combined suitable for the specific application.

► www.beckhoff.com/mx-system

IPC modules 115

- robust industrial PCs of various performance classes
- control of the function modules
- fanless design
- Microsoft Windows or TwinCAT/BSO

► www.beckhoff.com/mcxxxx

Coupler modules 115

- connection to external control architectures
- EtherCAT, PROFINET RT or EtherNet/IP
- The MX-System can be used as a sub-station.

► www.beckhoff.com/mkxxxx

I/O modules 116

- modules for all signal types and directions
- integrated electronic fuse
- diagnostic functions as well as diverse setting options

► www.beckhoff.com/moxxxx

Baseplates 114

- basis of the MX-System
- real-time Ethernet performance retained into each module
- standardized interfaces
- integrated housekeeping functions

► www.beckhoff.com/mbxxxx

Drive modules 119

- compact multi-axis systems for drives of all kinds
- frequency inverter for controlling three-phase asynchronous motors
- servo drives for controlling synchronous servomotors
- DC link power supplies and capacitors

► www.beckhoff.com/mdxxxx

Relay modules 120

- direct switching of high outputs
- relay modules for direct switching of lighting or fans
- direct motor starters and reversing starters for operating three-phase asynchronous motors
- solid-state relay

► www.beckhoff.com/mrxxxx

System modules 121

- power distribution and fieldbus connection
- modules for power infeed and power output
- power supplies, switches and UPS

► www.beckhoff.com/msxxxx



- designed for the greatest possible resistance over a long period of time
- distribution of voltage and EtherCAT via standardized connectors
- assembly and wiring in the shortest possible time thanks to the modular design principle
- flexible and precisely adaptable to production requirements
- advantages throughout the entire machine life cycle with the MX-System

Baseplates

► www.beckhoff.com/mbxxxx



MBxxxx Baseplates			
	8 slots	12 slots	18 slots
1-row	MB1008-0000-0000 data slots	MB1012-0000-0000 data slots	
2-row		MB2012-0000-0000 combined data/power slots	MB2018-0000-0000 combined data/power slots
3-row		MB3112-0000-0000 combined data/power slots	

IPC modules

► www.beckhoff.com/mcxxxx



MCxxxx IPC modules			
	Type Intel Atom®	Intel® Celeron®/Core™	ARM Cortex™-A53
IPC module	MC6015-0030-1217 2 or 4 cores	MC6030-0080-2217 2, 4, 6 or 8 cores	MC9240-0000-1217 4 cores

Coupler modules

► www.beckhoff.com/mkxxxx



MKxxxx Coupler modules			
	Type EtherCAT	PROFINET RT	EtherNet/IP
Coupler module	MK1100-0002-1111 100 Mbit/s	MK9300-0002-1212 100 Mbit/s	MK9500-0002-1212 100 Mbit/s

I/O modules

► www.beckhoff.com/moxxxx



MO1xxx | I/O modules, digital input

Input voltage	2-channel	4-channel	8-channel
24 V DC	MO1512-0000-1112 <i>i</i> counter, 1 kHz, M12	MO1034-0000-1112 <i>i</i> potential-free, M12	MO1008-0000-1111 <i>i</i> M8 MO1008-0000-1112 <i>i</i> M12
		MO1254-0000-1112 <i>i</i> 1 µs, M12, timestamping	MO1088-0000-1111 <i>i</i> ground switching, M8

MO2xxx | I/O modules, digital output

Output voltage, type	1-channel	2-channel	4-channel	8-channel
24 V DC		MO2252-0000-1112 <i>i</i> 0.5 A, M12, timestamping	MO2024-0000-1112 <i>i</i> 2.0 A, M12	MO2008-0000-1111 <i>i</i> 0.5 A, M8 MO2008-0000-1112 <i>i</i> 0.5 A, M12
		MO2262-0000-1112 <i>i</i> 0.5 A, M12, oversampling		MO2088-0000-1111 <i>i</i> 0.5 A, M8, ground switching
Relay (mechanical), up to 250 V AC			MO2624-0000-1112 <i>i</i> 0.5 A AC, 2 A DC, M12	
PWM		MO2502-0000-1112 <i>i</i> 0.5 A, M12		
Pulse train	MO2521-0124-1112 <i>i</i> 1 A, M12			
LED control	MO2596-0000-1112 <i>i</i> 3 A, M12			
Pneumatics			MO2414-0000-1110 <i>i</i> 0.5 A, Festo	
			MO2424-0000-1110 <i>i</i> 0.5 A, SMC	

MO3xxx | I/O modules, analog input

Type	1-channel	4-channel
Multi-function, 12 bit, ±10 V, ±20 mA		MO3004-2255-1112 <i>i</i> single-ended, 1 ksps, M12
Multi-function, 16 bit, ±200 mV... ±30 V, ±20 mA, ±50 mA		MO3114-2233-1112 <i>i</i> single-ended, 10 ksps, galv. isolated, M12
Temperature (RTD/TC)		MO3204-6666-1112 <i>i</i> 16 bit, 1 ksps, M12
Measuring bridge (strain gauge)	MO3501-0008-1112 <i>i</i> 24 bit, 20 ksps, M12	
Acceleration (IEPE)	MO3601-0007-1112 <i>i</i> 24 bit, 50 ksps, M12	

MO4xxx | I/O modules, analog output

	4-channel
Universal input/output	MO4004-1122-1112 <i>i</i> 12 bit, single-ended, 1 ksps, M12

MO5xxx | I/O modules, position measurement

Type	1-channel	2-channel
Absolute	MO5001-0000-1112 <i>i</i> SSI, M12	
Incremental	MO5021-0000-1112 <i>i</i> Sin/Cos 1 V _r , M12	MO5112-0000-1112 <i>i</i> RS422, TTL, open collector, 5 MHz, M12 MO5162-0000-1112 <i>i</i> HTL, 100 kHz, M12

Drive modules

► www.beckhoff.com/mdxxxx



MO6xxx I/O modules, communication			
Type	1-channel	2-channel	4-channel
PROFINET		MO6631-0000-1112 PROFINET RT, controller, M12, D-coded	i
EtherNet/IP		MO6652-0000-1112 EtherNet/IP, scanner, M12, D-coded	i
IO-Link			MO6224-0020-1112 IO-Link, master, Class A, M12
			MO6224-0039-1112 IO-Link, master, Class B, M12
RS485/RS422		MO6022-0000-1112 RS422/RS485, M12, B-coded	i
EtherCAT	MO6695-0000-1112 EtherCAT bridge, M12, D-coded	i	

MO7xxx I/O modules, compact drive technology			
Type	1-channel	2-channel	
Servomotor	MO7221-9016-1114 24 V DC, 7 A, B17, STO/SS1	i	MO7221-9016-1124 48 V DC, 7 A, B17, STO/SS1
	MO7221-9018-1114 24 V DC, 7 A, B17, Safe Motion	i	MO7221-9018-1124 48 V DC, 7 A, B17, Safe Motion
Stepper motor		MO7062-9016-1112 24 V DC, 3 A, M12, STO	i MO7062-9016-1122 48 V DC, 3 A, M12, STO
DC motor		MO7342-0000-1112 24 V DC, 3.5 A, M12	i MO7342-0000-1122 48 V DC, 3.5 A, M12

MOx9xx I/O modules, TwinSAFE				
I/O module	—	2-channel	4-channel	8-channel
communication	MO6910-0000-1110	i MO2962-0000-1112 relay output	i MO2904-0000-1112 digital output, 0.5 A	i MO1918-0000-1112 digital input
			i MO2934-0000-1112 digital output, 2 A	

MD3xxx Drive modules, frequency inverters		
Output current	1-channel	2-channel
1.5 A	MD3101-0100-2254 1.5 A per channel, STO/SS1	i MD3201-0100-2254 1.5 A per channel, STO/SS1
3 A	MD3103-0100-2254 3 A per channel, STO/SS1	i MD3203-0100-2254 3 A per channel, STO/SS1
6 A	MD3106-0100-2254 6 A per channel, STO/SS1	i MD3206-0100-2254 6 A per channel, STO/SS1
12 A	MD3112-0100-2254 12 A per channel, STO/SS1	i

MD6xxx Drive modules, DC link power supplies	
Output current	
15 A	MD6015-0003-2345 15 A
40 A	MD6040-0003-3445 40 A

MD8xxx Drive modules, servo drives					
Output current	1-channel		2-channel		
3 A	MD8103-0100-2254 3 A per channel, STO/SS1	i MD8103-0200-2254 3 A per channel, Safe Motion	i MD8203-0100-2254 3 A per channel, STO/SS1	i MD8203-0200-2254 3 A per channel, Safe Motion	i
6 A	MD8106-0100-2254 6 A per channel, STO/SS1	i MD8106-0200-2254 6 A per channel, Safe Motion	i MD8206-0100-2254 6 A per channel, STO/SS1	i MD8206-0200-2254 6 A per channel, Safe Motion	i
12 A	MD8112-0100-2254 12 A per channel, STO/SS1	i MD8112-0200-2254 12 A per channel, Safe Motion	i		
28 A	MD8128-0100-3255 28 A per channel, STO/SS1	i			

MD9xxx Drive modules, capacitors	
Capacity	
2025 µF	MD9000-2025-2250 2025 µF

Relay modules

► www.beckhoff.com/mrxxxx



MRxxxx Relay modules			
Category/ Version	1-channel	2-channel	3-channel
Relay output			MR1307-0011-2242 7 A <i>i</i>
Motor starter	MR3107-2001-2245 7 A <i>i</i>	MR3203-1001-2244 2.8 A <i>i</i>	
		MR3203-1901-2244 2.8 A, safe shutdown <i>i</i>	
	MR3107-2901-2245 7 A, safe shutdown <i>i</i>	MR3207-2901-3245 7 A, safe shutdown <i>i</i>	
Solid-state relay			MR4307-1011-2242 7 A <i>i</i>

System modules

► www.beckhoff.com/msxxxx



MS1xxx System modules, power infeed				
External supply voltage	Output voltage			
	24 V DC	24/48 V DC	400...480 V AC	400 V AC/600 V DC
24/48 V DC		MS1010-0021-1114 infeed <i>i</i>		
		MS1010-0022-1214 infeed + forwarding <i>i</i>		
230 V AC	MS1410-1001-1334 infeed + main switch, black <i>i</i>			
	MS1010-1001-1334 infeed <i>i</i>			
	MS1010-1002-1334 infeed + forwarding <i>i</i>			
400 V... 480 V AC			MS1432-1101-2349 infeed + main switch, black <i>i</i>	
			MS1132-2201-2349 infeed + main switch, red, 32 A <i>i</i>	
			MS1163-2201-3449 infeed + main switch, red, 63 A <i>i</i>	
400 V... 480 V AC/ 600 V DC				MS1020-0051-1145 infeed <i>i</i>
				MS1020-0052-1245 infeed + forwarding <i>i</i>

MS2xxx | System modules, EtherCAT power infeed

External supply voltage	Output voltage	
24 V DC	24 V DC	24/48 V DC
24 V DC	MS2204-0002-1112 infeed + forwarding	i
	MS2306-0002-1111 infeed + forwarding, EtherCAT P	i
24/48 V DC		MS2210-0021-1114 infeed i
		MS2210-0022-1214 infeed + forwarding i
230 V AC	MS2610-1002-1334 infeed + forwarding	i

MS3xxx | System modules, power output

Supply voltage from backplane	Output voltage	
24/48 V DC	forwarding 24/48 V DC	
24/48 V DC	MS3010-1023-1114 output	i

MS4xxx | System modules, EtherCAT power output

Supply voltage from backplane	Output voltage	
24 V DC	forwarding 24 V DC	24/48 V DC
24 V DC	MS4306-1903-1111 output, 1-port EtherCAT P	i
	MS4306-2903-1111 output, 2-port EtherCAT P	i
24/48 V DC	MS4208-2003-1112 output, EtherCAT	i
		MS4210-1023-1114 output, EtherCAT i

MS6xxx | System modules, power supplies

Output current	Output voltage	
	24 V DC	48 V DC
10 A		MS6010-2100-2240 400...480 V AC i
		MS6010-2100-2250 600 V DC i
18 A	MS6018-1100-2240 400...480 V AC i	MS6018-1100-2250 600 V DC i
20 A		MS6020-2100-2240 400...480 V AC i
		MS6020-2100-2250 600 V DC i

MS7xxx | System modules, Ethernet switches

	4-port	
Ethernet switch	MS7204-0000-1112 2.5 Gbit/s	i

MS8xxx | System modules, UPS

	2-channel	
UPS	MS8132-0120-1212 0.12 kW	i

MS9xxx | System modules, extensions

Baseplate extension	MS9230-1011-2109 24/48 V DC, 400 V AC/600 V DC	i
Module extension	MS9100-2020-2209 24 V DC	i

The Vision Company

As a specialist for PC-based control technology, Beckhoff consistently aims to integrate all machine functionalities into one control platform. With TwinCAT Vision, this has included image processing within software since 2017. The machine vision product spectrum is now complete thanks to the introduction of the comprehensive hardware range. Machine builders and end users thus have a complete image processing system at their disposal that covers all the necessary components from software to illumination which, integrated into the system, provides users with significant competitive advantages.

► www.beckhoff.com/vision



Full scalability of the vision system

All components are optimally matched to each other and can be combined according to the modular principle to suit the vision application.

Cameras 126

- 2.5 Gbit/s area scan cameras
- robust IP65/67 anodized aluminum housing with flexible mounting options
- color or monochrome image sensors with a resolution of 1.6 to 24 MP
- full synchronization with all EtherCAT-based machine processes via distributed clocks

► www.beckhoff.com/cameras

Lenses 127

- robust and universal thanks to C-mount connection
- vibration/shock resistant up to 10 g
- for up to 2.0 µm pixel size and image circle diameters of 11 and 19.3 mm
- broadband anti-reflection coating for the visible spectrum (VIS) and near infrared region (NIR)

► www.beckhoff.com/lenses

Illumination 128

- multicolor LED panel, ring illumination or bar light in IP65/67
- spectrally complete white light
- spectrally adjustable pulse mode
- simple wiring and full EtherCAT integration
- precisely synchronized through distributed clocks

► www.beckhoff.com/illumination

Units 129

- unit consisting of camera, ring illumination and focusable optics in IP65/67 aluminum anodized housing
- color or monochrome image sensors with a resolution of 1.6 to 5 MP
- directly integrated into the PC-based control technology
- focus adjustment during runtime

► www.beckhoff.com/units

TwinCAT Vision 105

- program and configure vision applications directly in TwinCAT Engineering
- superior real-time applications: PLC, motion control, robotics, high-end measurement technology and vision on one platform
- hardware-independent and open

► www.beckhoff.com/twincat-vision



- complete hardware portfolio for industrial image processing
- ultra-fast EtherCAT performance and robust design
- perfect synchronization with any process
- simple, direct integration into the control
- open and scalable machine vision system

Cameras

► www.beckhoff.com/cameras



VCS2000 | Area scan cameras, 2.5 Gbit/s

Number of pixels	Spectral sensitivity			
	monochrome	color	polarization/monochrome	polarization/color
1.6...3.1 MP		VCS2001-0100 1.6 MP, 60 fps, Δpx = 3.45 μm	i	
	VCS2000-0200 2.3 MP, 167 fps, Δpx = 3.45 μm	i VCS2001-0200 2.3 MP, 167 fps, Δpx = 3.45 μm	i	
	VCS2000-0300 3.1 MP, 55 fps, Δpx = 3.45 μm	i VCS2001-0300 3.1 MP, 55 fps, Δpx = 3.45 μm	i	
5.0...8.1 MP	VCS2000-0500 5.0 MP, 35 fps, Δpx = 3.45 μm	i VCS2001-0500 5.0 MP, 35 fps, Δpx = 3.45 μm	i VCS2002-0500 5.0 MP, 35 fps, Δpx = 3.45 μm	i VCS2003-0500 5.0 MP, 35 fps, Δpx = 3.45 μm
	VCS2020-0500 5.1 MP, 56 fps, Δpx = 2.74 μm	i VCS2021-0500 5.1 MP, 56 fps, Δpx = 2.74 μm	i	
	VCS2020-0800 8.1 MP, 35 fps, Δpx = 2.74 μm	i VCS2021-0800 8.1 MP, 35 fps, Δpx = 2.74 μm	i	
12.4...16.2 MP	VCS2020-1200 12.4 MP, 23 fps, Δpx = 2.74 μm	i VCS2021-1200 12.4 MP, 23 fps, Δpx = 2.74 μm	i	
	VCS2030-1600 16.2 MP, 17 fps, Δpx = 2.74 μm	i VCS2031-1600 16.2 MP, 17 fps, Δpx = 2.74 μm	i	
20.4...24.6 MP	VCS2030-2000 20.4 MP, 14 fps, Δpx = 2.74 μm	i VCS2031-2000 20.4 MP, 14 fps, Δpx = 2.74 μm	i	
	VCS2030-2400 24.6 MP, 11 fps, Δpx = 2.74 μm	i VCS2031-2400 24.6 MP, 11 fps, Δpx = 2.74 μm	i	

Specified values for the product: number of pixels, max. frame rate, pixel size

Lenses

► www.beckhoff.com/lenses



VOS2000



VOS3000

VOS2000 | Lenses

Focal length	Image circle Ø 11 mm
6 mm	VOS2000-0625 2.0 μm, f = 6 mm, f/2.5
8 mm	VOS2000-0822 2.0 μm, f = 8 mm, f/2.2
12 mm	VOS2000-1218 2.0 μm, f = 12 mm, f/1.8
16 mm	VOS2000-1616 2.0 μm, f = 16 mm, f/1.6
25 mm	VOS2000-2516 2.0 μm, f = 25 mm, f/1.6
35 mm	VOS2000-3522 2.0 μm, f = 35 mm, f/2.2
50 mm	VOS2000-5028 2.0 μm, f = 50 mm, f/2.8

VOS3000 | Lenses

Focal length	Image circle Ø 19.3 mm
16 mm	VOS3000-1632 2.0 μm, f = 16 mm, f/3.2
25 mm	VOS3000-2532 2.0 μm, f = 25 mm, f/3.2
35 mm	VOS3000-3528 2.0 μm, f = 35 mm, f/2.8

Specified values for the product: pixel size, focal length, starting aperture

Illumination

► www.beckhoff.com/illumination



VIP2000 Panel illumination			
Light emitting surface (W x H)	Light color		
	OGB-IR850		
100 x 100 mm	VIP2000-1010 wide beam, 90°	i	VIP2001-1010 narrow beam, 50° i
150 x 150 mm	VIP2000-1515 wide beam, 90°	i	VIP2001-1515 narrow beam, 50° i
200 x 200 mm	VIP2000-2020 wide beam, 90°	i	VIP2001-2020 narrow beam, 50° i
250 x 250 mm	VIP2000-2525 wide beam, 90°	i	VIP2001-2525 narrow beam, 50° i
300 x 300 mm	VIP2000-3030 wide beam, 90°	i	VIP2001-3030 narrow beam, 50° i

VIR2000 Ring illumination			
Light emitting surface (W x H)	Light color		
	OGB-IR850		
100 x 100 mm	VIR2000-1010 wide beam, 90°	i	VIR2001-1010 narrow beam, 50° i
150 x 150 mm	VIR2000-1515 wide beam, 90°	i	VIR2001-1515 narrow beam, 50° i
200 x 200 mm	VIR2000-2020 wide beam, 90°	i	VIR2001-2020 narrow beam, 50° i
250 x 250 mm	VIR2000-2525 wide beam, 90°	i	VIR2001-2525 narrow beam, 50° i
300 x 300 mm	VIR2000-3030 wide beam, 90°	i	VIR2001-3030 narrow beam, 50° i

VIB2000 Bar light			
Light emitting surface (W x H)	Light color		
	OGB-IR850		
150 x 50 mm	VIB2000-0155 wide beam, 90°	i	VIB2001-0155 narrow beam, 50° i
200 x 50 mm	VIB2000-0205 wide beam, 90°	i	VIB2001-0205 narrow beam, 50° i
250 x 50 mm	VIB2000-0255 wide beam, 90°	i	VIB2010-0255 narrow beam, 50° i
300 x 50 mm	VIB2000-0305 wide beam, 90°	i	VIB2010-0305 narrow beam, 50° i
400 x 50 mm	VIB2000-0405 wide beam, 90°	i	VIB2010-0405 narrow beam, 50° i
500 x 50 mm	VIB2000-0505 wide beam, 90°	i	VIB2010-0505 narrow beam, 50° i
600 x 50 mm	VIB2000-0605 wide beam, 90°	i	VIB2010-0605 narrow beam, 50° i
800 x 50 mm	VIB2000-0805 wide beam, 90°	i	VIB2010-0805 narrow beam, 50° i
1000 x 50 mm	VIB2000-1005 wide beam, 90°	i	VIB2010-1005 narrow beam, 50° i

Specified values for the product: light distribution, beam angle

Units

► www.beckhoff.com/units



VUI2000 Units			
Number of pixels	Spectral sensitivity monochrome	color	
1.6 MP	VUI2000-0108 1.6 MP, f = 8 mm, 60 fps, Δpx = 3.45 μm	i VUI2001-0108 1.6 MP, f = 8 mm, 60 fps, Δpx = 3.45 μm	i
	VUI2000-0208 2.3 MP, f = 8 mm, 167 fps, Δpx = 3.45 μm	i VUI2001-0208 2.3 MP, f = 8 mm, 167 fps, Δpx = 3.45 μm	i
	VUI2000-0212 2.3 MP, f = 12 mm, 167 fps, Δpx = 3.45 μm	i VUI2001-0212 2.3 MP, f = 12 mm, 167 fps, Δpx = 3.45 μm	i
2.3 MP	VUI2000-0216 2.3 MP, f = 16 mm, 167 fps, Δpx = 3.45 μm	i VUI2001-0216 2.3 MP, f = 16 mm, 167 fps, Δpx = 3.45 μm	i
	VUI2000-0308 3.1 MP, f = 8 mm, 55 fps, Δpx = 3.45 μm	i VUI2001-0308 3.1 MP, f = 8 mm, 55 fps, Δpx = 3.45 μm	i
	VUI2000-0312 3.1 MP, f = 12 mm, 55 fps, Δpx = 3.45 μm	i VUI2001-0312 3.1 MP, f = 12 mm, 55 fps, Δpx = 3.45 μm	i
3.1 MP	VUI2000-0316 3.1 MP, f = 16 mm, 55 fps, Δpx = 3.45 μm	i VUI2001-0316 3.1 MP, f = 16 mm, 55 fps, Δpx = 3.45 μm	i
	VUI2000-0512 5.0 MP, f = 12 mm, 35 fps, Δpx = 3.45 μm	i VUI2001-0512 5.0 MP, f = 12 mm, 35 fps, Δpx = 3.45 μm	i
	VUI2000-0516 5.0 MP, f = 16 mm, 35 fps, Δpx = 3.45 μm	i VUI2001-0516 5.0 MP, f = 16 mm, 35 fps, Δpx = 3.45 μm	i

Specified values for the product: number of pixels, focal length, max. frame rate, pixel size



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