



1. **MX-System news**
2. IPC news
3. I/O news
4. Motion news

MX-System Award-winning design

BECKHOFF



red**dot** winner 2023
best of the best



DESIGN
AWARD
2023



MX-System

48 V, 40 A power supply units for large loads

BECKHOFF

NEW

MS6140-2202-2345

- 40 A for ATRO base module

MS6040-2202-2342

- 48 V/40 A for MX-System backplane

MS6240-2205-2345

- 2 x 20 A for 2 XTS motor modules

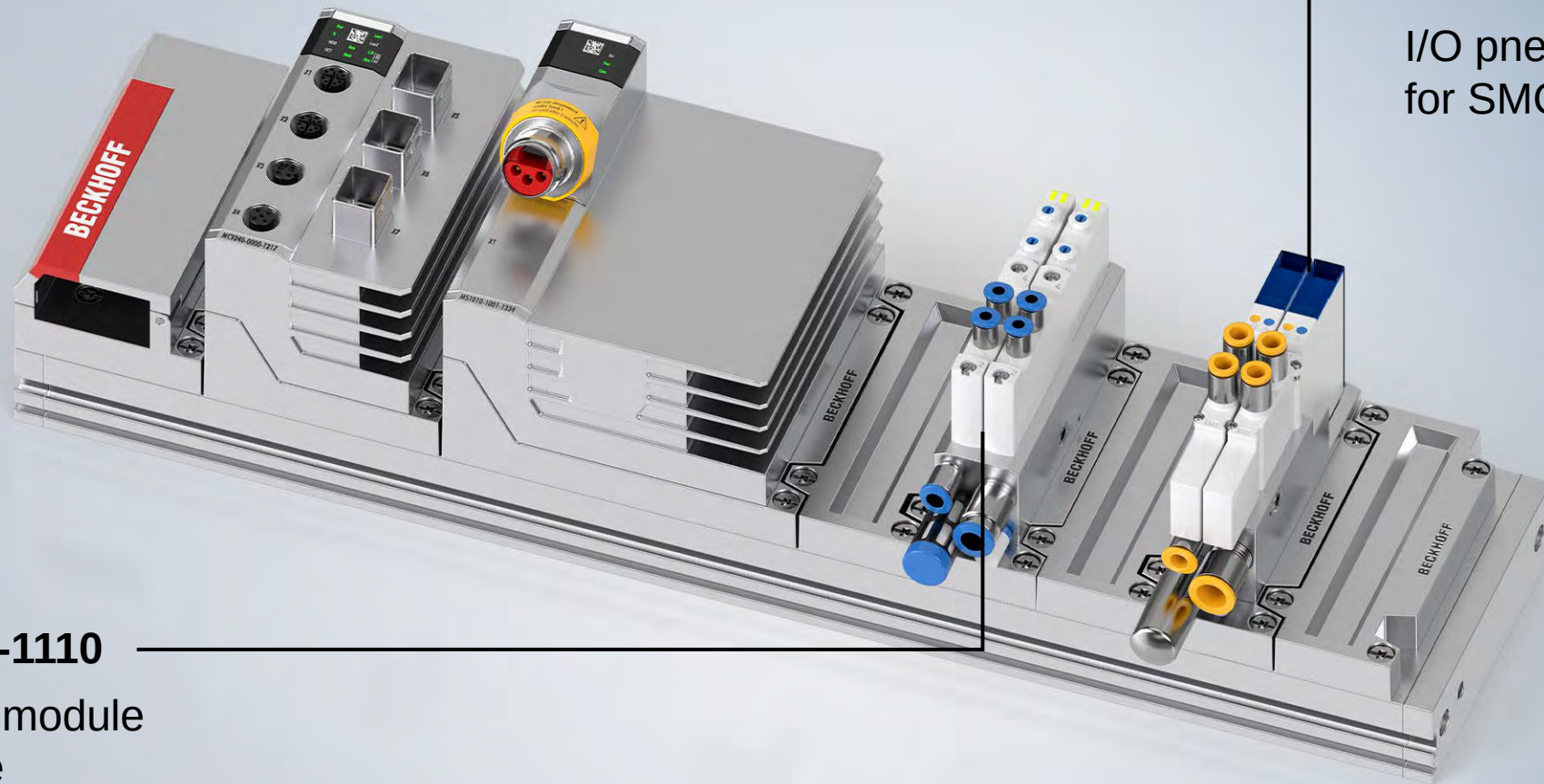
MS6640-2202-2342

- connection of max. 6 AMI
- 2 x EtherCAT ports



MO2124-0000-1110
I/O pneumatic module
for Festo valve

MO2424-0000-1110
I/O pneumatic module
for SMC valve



MS1163-2201-3449

- power infeed with main switch
- 63 A max.



MD8128-0100-3255

- 28 A servo drive
- STO/SS1

MD6040-0002-3445

- DC link power supply
- 40 A

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Intel x6000E Atom® processors

BECKHOFF

- 10 nm technology node → significant leap in performance and efficiency
- 2-core and 4-core variants:
 - Intel Atom® x6214RE, 1.4 GHz, 2 cores
 - Intel Atom® x6416RE, 1.7 GHz, 4 cores
- TDP: 6 W to 12 W
- more powerful iGPU
- higher memory bandwidth
- 2.5 Gbit/s Ethernet onboard
- DDR4 RAM
- USB 3.1 Gen2

NEW



C601x-0030 with Intel Atom® x6000E

BECKHOFF

NEW

- next generation of C601x
- W x H x D 82 x 82 x 40 mm
- Intel Atom® x6214RE, 1.4 GHz, 2 cores with 4 GB RAM or
Intel Atom® x6416RE, 1.7 GHz, 4 cores with 8 GB RAM
- Intel Atom® x6000E
- 2 x 2.5 Gbit/s Ethernet onboard
- operating temperature:
0...50°C
- 2 x USB 3.1 Gen2



Intel® Core™ i processors of the 11th generation

BECKHOFF

- 10 nm technology node → significant improvement in performance and efficiency
- Celeron® to i7, up to 8 cores
- up to 2.6 GHz + 24 MB last level cache
- TwinCAT Core Boost
- 35/45 W class for 3.5 inch motherboard and C603x, 15 W “U” class for C602x
- 2.5 Gbit/s Ethernet onboard
- PCIe Gen4, DDR4 RAM
- USB 3.2 Gen2



C602x-0010 | Ultra-compact Industrial PC with 11th generation Intel® Core™ i U

BECKHOFF

- next generation of C602x
- W x H x D 82 x 127 x 47 mm
- 2 or 4 cores with 8 or 16 GB RAM
- Intel® Iris® XE Graphics
- 11th generation Intel® Core™ i U
- 2 x 2.5 Gbit/s Ethernet and
1 x 1 Gbit/s Ethernet onboard
- operating temperature range: 0...50°C
- 4 x USB 3.2 Gen2



C603x-0080 | Ultra-compact Industrial PC with Intel® Speed Shift Technology

BECKHOFF

- next generation C603x
- W x H x D 132 x 133 x 76 mm
- up to 8 cores, up to 64 GB RAM
- TwinCAT Core Boost
- 2 x NVMe SSDs in RAID configuration
- 3 x 2.5 Gbit/s Ethernet onboard plus internal MAC with 1 Gbit/s
- operating temperature range: 0...55°C
- 2 x USB 3.2 Gen2
2 x USB 3.2 Gen1



12th/13th generation Intel® Core™ i processors

BECKHOFF

- TDP → Processor Base Power 65 W performance class for ATX
- Celeron® up to i9:
up to 16 cores, up to 30 MB LLC
- hybrid architecture with "Performance" and "Efficiency" cores
- TwinCAT Core Boost
- 2 x NVMe SSDs in RAID configuration
- 2.5 Gbit/s Ethernet onboard
- DDR5 RAM
- USB 3.2 Gen2



C6040-0090 | Ultra-compact Industrial PC with 12th/13th generation Intel® Core™ i

BECKHOFF

NEW

- even more powerful than C6030-00x0
- W x H x D 132 x 202 x 76 mm
- Celeron® up to i9:
up to 24 cores, up to 30 MB LLC
- hybrid architecture and TwinCAT Core Boost
- BeaCon and PEG16 designed for future expansions
- 5 x 2.5 Gbit/s Ethernet onboard plus internal MAC with 1 Gbit/s
- operating temperature range: 0...55°C
- 6 x USB 3.2 Gen2, 2 x DP
- mounting in “book format” or flat



C6043-0090 with MXM slot for graphic cards

BECKHOFF

NEW

- first expansion for C6040
- W x H x D 132 x 202 x 127 mm
- Celeron® up to Core™ i9
- 250 W total power supply, graphics cards up to 125 W
- C6042-0090 possible in the future
- 3 x optional DisplayPorts
- AI | Vision | XPlanar | HMI
- 1 x additional PCIe compact module
- installation in book format or flat on the wall



Embedded PC Modular DIN rail IPCs

BECKHOFF



CX53x0 | New Embedded PC with Intel Atom® CPU

BECKHOFF

NEW



CX53x0 | New Embedded PC with Intel Atom® CPU

BECKHOFF

NEW

- **CX5330:** Intel Atom® x6214RE CPU, 1.4 GHz, dual-core, 4 GB LPDDR4 RAM
- **CX5340:** Intel Atom® x6416RE CPU, 1.7 GHz, quad-core, 8 GB LPDDR4 RAM
- galvanically isolated power supply
- 2 x RJ45 Ethernet, 4 x USB 3.1, 1 x DisplayPort
- modular extension: max. one of the CX2500 modules can be plugged in
- Windows 10 IoT Enterprise 2021 LTSC or TwinCAT/BSD
- TwinCAT 3



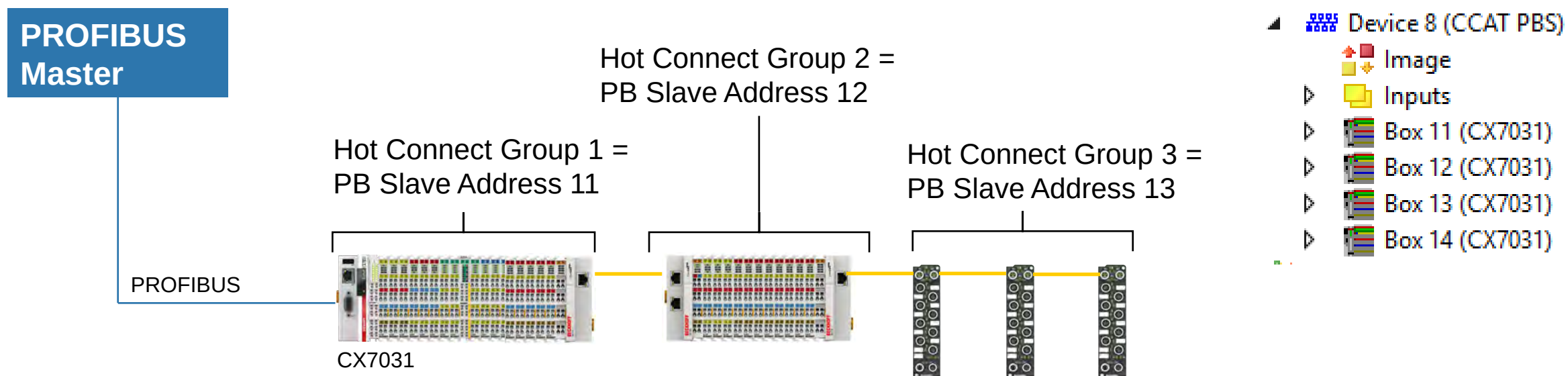
CX7031, CX7050, CX7051

Small controllers with integrated multifunctional I/Os

BECKHOFF



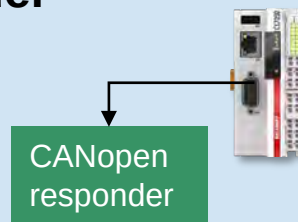
- multi-slave
 - 4 x slaves on one CX7031
 - 4 x 244 byte in-/output
 - hot connect group for variable configuration
- emulation of GSD files to replace old PROFIBUS devices that are no longer available.



Application 1:

Low-cost PLC for CANopen responder

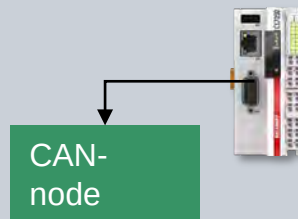
- CANopen commander
- add and use CANopen responder
- combination of EtherCAT I/Os



Application 2:

Low-cost PLC for CAN networks

- layer 2 communication open for all special protocols
- 11-bit identifier
- 29-bit identifier



TwinCAT

The screenshot shows the TwinCAT software interface with the 'CAN Monitor' tab selected. It includes buttons for 'Update CAN Messages', 'Start Monitoring', 'Stop Monitoring', 'Save to file...', and 'Set CAN-ID filter...'. A status bar indicates 'Monitor is RUNNING'. Below is a table of CAN messages.

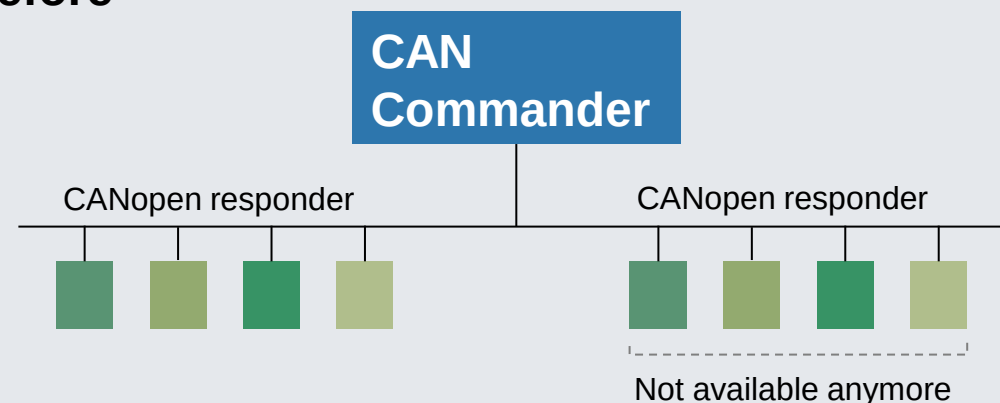
Timestamp	S	R	Ext ...	CAN-ID	CAN-Data
14:19:39 690 ms				301	E2 00 00 00 00 00 00 00
14:19:39 690 ms				201	D3 C2 0A 00 00 00 00 00
14:19:39 689 ms				316	1D 00 00 00 00 00 00 00
14:19:39 689 ms				216	1D 00 00 00 00 00 00 00
14:19:39 685 ms		S		181	00 00 00 00 00 00 00 00
14:19:39 685 ms				301	D1 00 00 00 00 00 00 00
14:19:39 685 ms				201	C2 C1 0A 00 00 00 00 00
14:19:39 685 ms				301	C0 00 00 00 00 00 00 00
14:19:39 684 ms				201	R1 C0 0A 00 00 00 00 00

- integrated CAN Monitor
- diagnosis info of CAN status

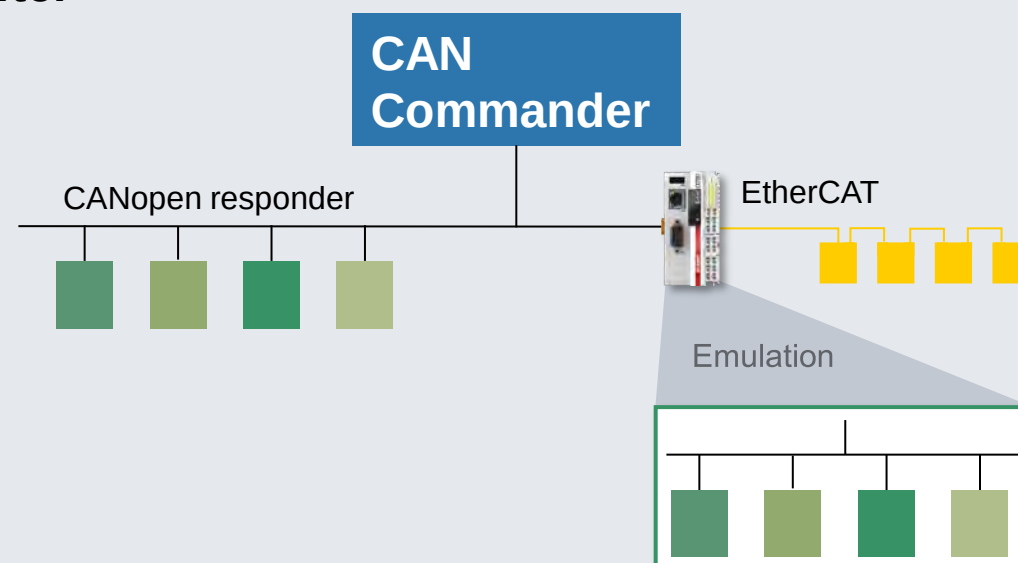
Example: CX7051 emulation of a CANopen responder

- emulation of other CAN nodes
- PLC for special software functions
- mapping to standard I/Os with EtherCAT
- Multi-responder mode enables use of different CAN responders with only one CX7051.

Before



After



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Years of Ether**CAT**® 

Portfolio extension

TwinSAFE SC technology in different designs

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NEW



EL2068 | 8-channel digital output, 24 V DC, 0.5 A, with channel diagnostics

BECKHOFF

- connection of different types of loads possible (resistive, inductive, lamp load)
- max. output current of 0.5 A per channel
- short circuit-proof outputs and reverse polarity protection
- integrated diagnostics: overload
- parameterizable output behavior in the event of bus error (Safe State)



EL4374 | 2-channel analog input + 2-channel analog output, multi-functional, ± 10 V, ± 20 mA, 16 bit, 1 ksps

BECKHOFF

NEW

- combined analog input/output terminal
- ± 10 V, ± 20 mA
- 107% measuring range/output range
- high output power at 20 mA
 - burden of up to 750 ohm possible
- 1 ksps conversion rate per channel for standard automation tasks



- TwinCAT license management
- functions like EL6071 but with battery-supported RTC (RealTimeClock) for time-based licensing functions
- battery test button, replaceable battery (button cell)
- stationary use:
 - EL6072, EL6072-0033
- mobile use (USB stick):
 - C9900-L102, C9900-L102-0033
- supported in upcoming TwinCAT 3.1 builds 4024 and 4026



-0033:
preinstalled
licenses

EL6821 | 1-channel communication interface, DALI-2, master/power supply

BECKHOFF

- DALI-2 master terminal/power supply
- 2 digital inputs for simplified installation
- DALI + DALI-2
- max. 64 slaves and 63 input devices
- TwinCAT library: TwinCAT PLC DALI



DALI-2

EL9562 | Power supply, 24 V DC, 2 x output 24 V DC, 0.2 A, electrically isolated

BECKHOFF

- power supply for two EL6821 DALI-2 masters
- short circuit-proof output voltage
- output voltages can be switched via process image
- diagnostic information in the process image
- can be used as symmetrical ± 24 V DC power supply



- adjustable voltage supply
- output voltages adjustable via process image
- short circuit-proof output voltage
- diagnostic information in the process image
- measurement of load current and output voltage
- electrical isolation between input and output voltage



EL9562-0015 | Power supply, 24 V DC, 2 x output 15 V DC, 0.3 A, electrically isolated

BECKHOFF

NEW

- 2-channel power supply terminal, fixed voltage
- output voltages short circuit-proof and switchable via process image
- diagnostic information in the process image
- can be used as symmetrical ± 15 V DC power supply through electrical isolation
 - e.g. for precision current transformers.

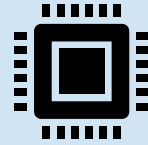


Ethernet Advanced Physical Layer

Beckhoff concept

BECKHOFF

ELXxxxx



10BASE-T1L PHY



PROFI[®]
NET



Power supply

ELX6233

2-channel communication
interface, Ethernet-APL, Ex i





EP3751-0260 | 1-channel, 1 x 3-axis accelerometers, 1 x 3-axis gyroscope

BECKHOFF

NEW

- extension of EP3751-0160 with 3-axis gyroscope
- 20-bit ultra-low noise 3-axis accelerometer, 4 kHz
- additional evaluation of rotational movement
- measurement of vibrations for e.g. condition monitoring
- enables evaluation of the alignment of machine components



EP6224-0092 | 4-channel communication interface + 4-channel digital input, IO-Link, master, Class A, M12, TwinSAFE SC

BECKHOFF

NEW

- TwinSAFE SC
- 4-channel digital input
- 4-channel IO-Link master, V1.1, class A
 - can be used as input or output
- power supply 1.4 A per IO-Link port
- reduced engineering costs through easy parameterization via TwinCAT plugin
- Sensor parameters are automatically saved in box and PLC, making it easy for even untrained personnel to replace sensors.



EP92x4 | 4/4-channel power distribution for EtherCAT Box modules

BECKHOFF

NEW



CU2508-0022 | 8-port port multiplier, Ethernet, 24 V DC, M12

BECKHOFF

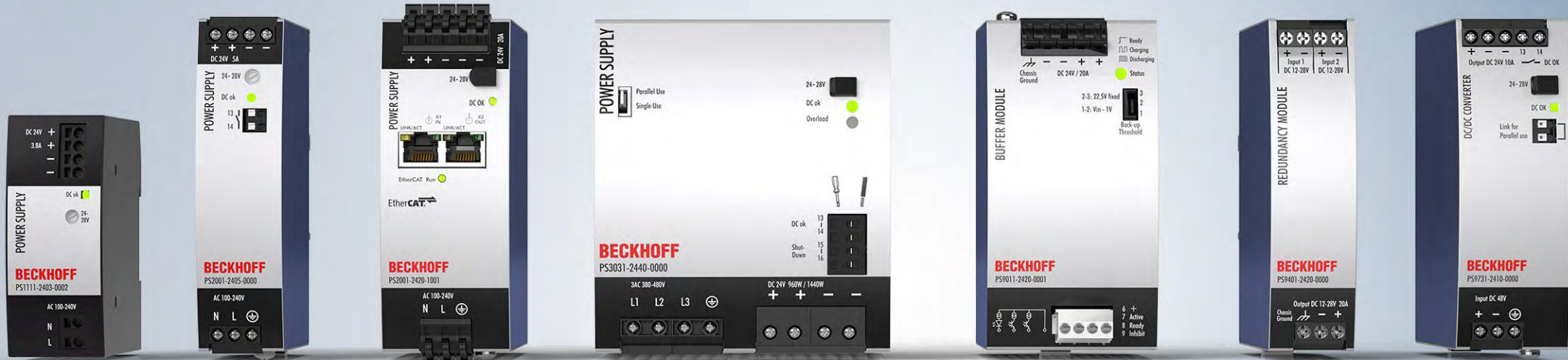
- identical to CU2508
- 8-port Ethernet port multiplier
- 8 x M12, d-coded, 4-pin, 100 Mbit/s
- 1 x M12, x-coded, 8-pin, 1 Gbit/s
- Ethernet TCP/IP
- real-time protocols: EtherCAT, PROFINET and others (depending on the driver)
- IP67 protection class



Power supplies

BECKHOFF

NEW



Standard PS

PS with EtherCAT

Buffer modules

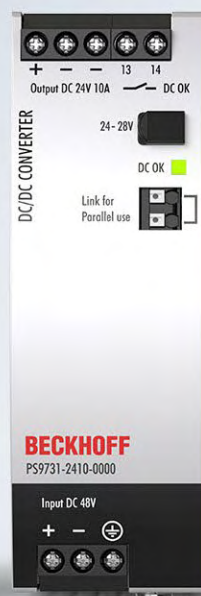
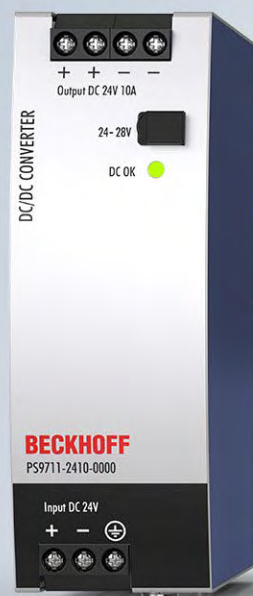
Redundancy modules

DC/DC converters

Power supplies DC/DC converters

BECKHOFF

NEW



PS9711-2410-0000 | PS9700 DC/DC converter; output: 24 V DC / 10 A; input: 18-35 V DC

BECKHOFF

NEW

- ungrounded, isolated, stabilized, and electronically isolated SELV/PELV voltage
- 18–35 V DC input voltage
- 24 V DC output voltage
- 10 A output current
- 120% output current up to 45°C
- soft-start function
- minimal inrush current peaks
- reverse polarity protection at the input
- 94.2% efficiency



PS9731-2410-0000 | PS9700 DC/DC converter; output: 24 V DC/10 A; input: 36-60 V DC

BECKHOFF

NEW

- ungrounded, isolated, stabilized, and electrically isolated SELV/PELV voltage
- 36–60 V DC input voltage
- 24 V DC output voltage
- 10 A output current
- 120% output current up to 45°C
- soft-start function
- minimal inrush current peaks
- reverse polarity protection at the input
- 94% efficiency
- DC-OK relay contact
- current sharing function for parallel operation

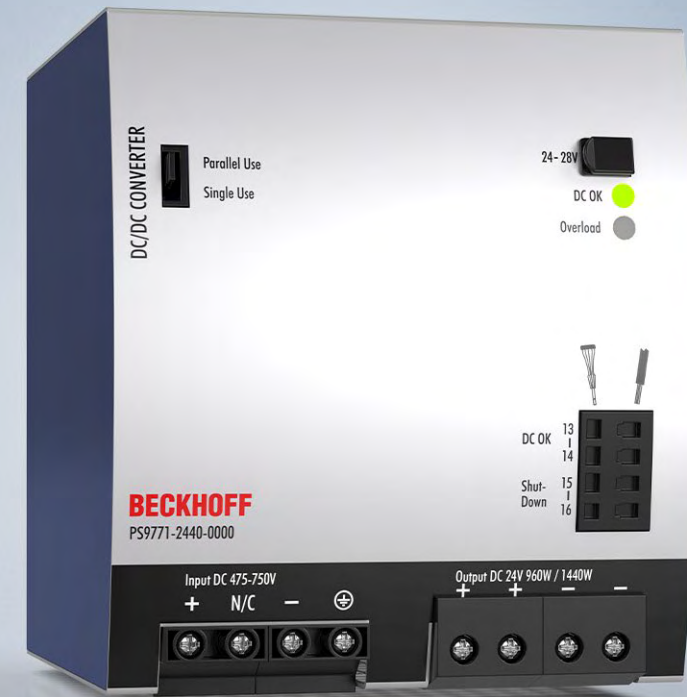


PS9771-2440-0000 | PS9700 DC/DC converter; output: 24 V DC/40 A; input: 475-750 V DC

BECKHOFF

NEW

- ungrounded, isolated, stabilized, and galvanically isolated SELV/PELV voltage
- 475–750 V DC input voltage
- 24 V DC output voltage
- 40 A output current
- 150% output current for 4 s
- 95.2% efficiency
- input voltage up to 480 V DC permanently allowed against PE
- DC-OK relay contact
- current sharing function for parallel operation
- shut-down contact



DC/DC converters

Applications

BECKHOFF



24 V DC → 24 V DC

- compensate voltage drop
- filter out disturbances
- stable battery voltage

48 V DC → 24 V DC

- convert battery voltage

750 V DC → 24 V DC

- convert battery voltage
- DC industry

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AM8300 | Water-cooled high-performance servomotors

BECKHOFF

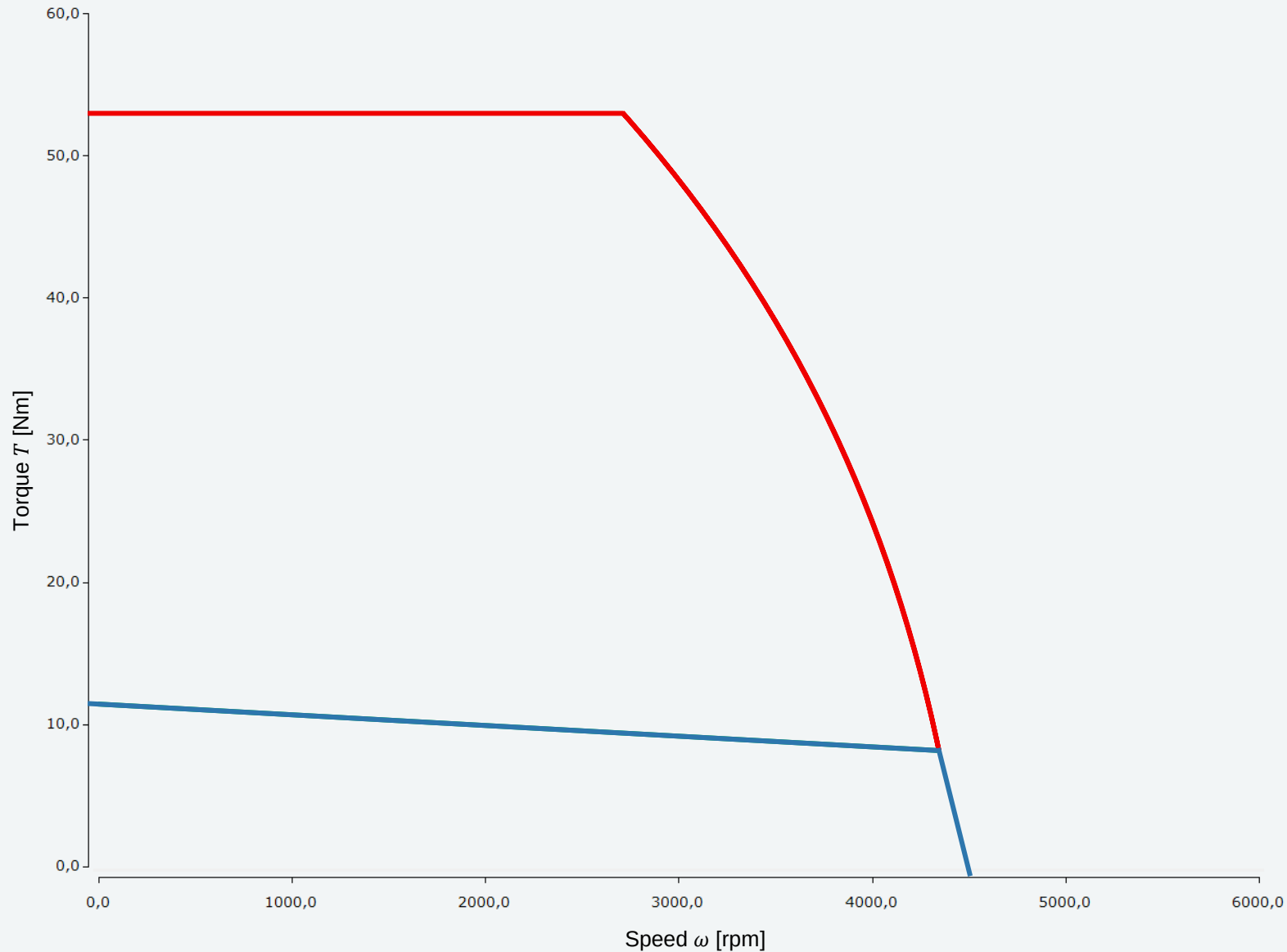
NEW



AM8300 | Performance boost in comparison to convection cooling

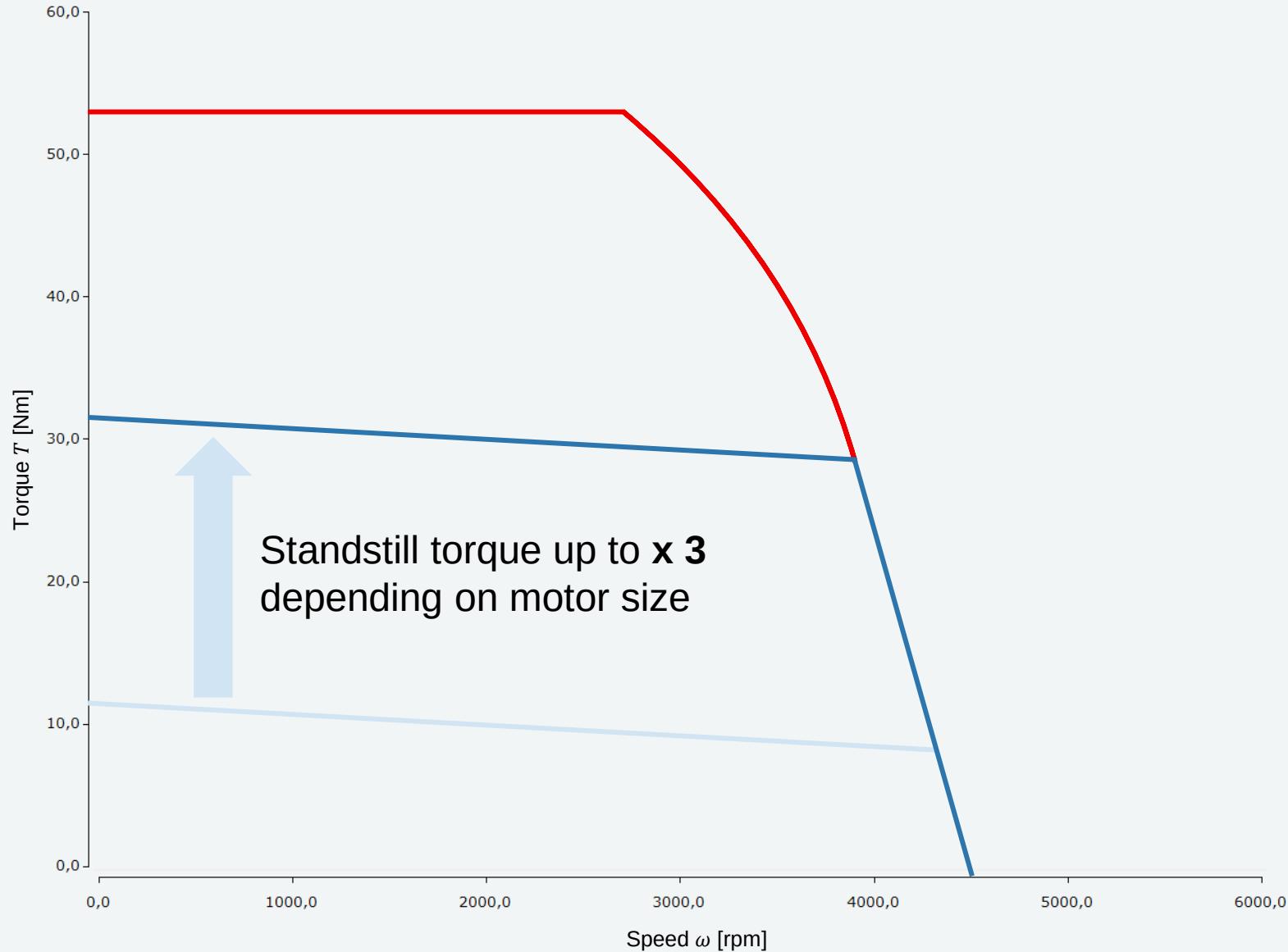
BECKHOFF

NEW

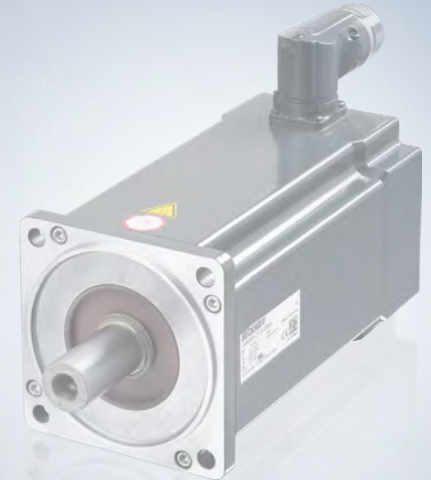


AM8300 | Performance increase in comparison to convection cooling

BECKHOFF



NEW



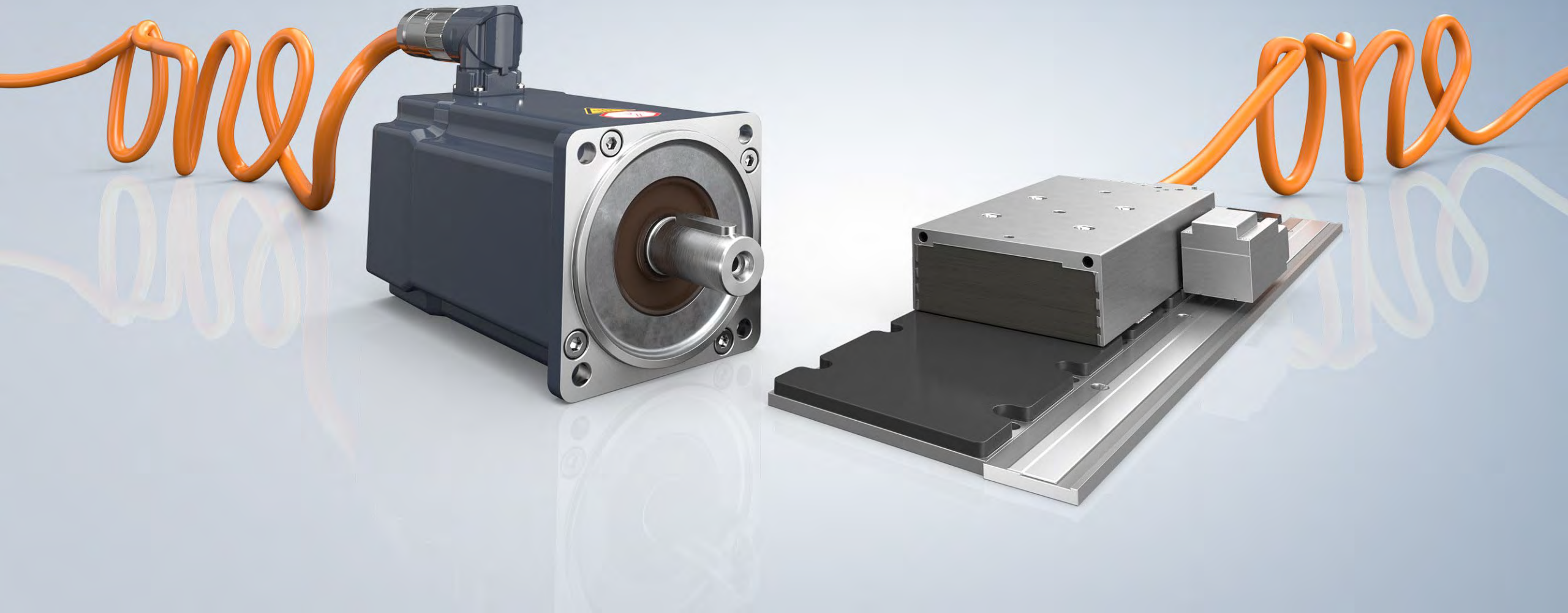
NEW

			Installation length		
			2	3	4
					
Flange size	AM833x		5.1 Nm	7.9 Nm	
	AM834x		9.7 Nm	15.5 Nm	22.5 Nm
	AM835x		17 Nm	28.3 Nm	34.8 Nm
	AM836x		50.8 Nm	79.4 Nm	98.2 Nm
	AM837x		129 Nm	193 Nm	$M_0 = 274 \text{ Nm}$

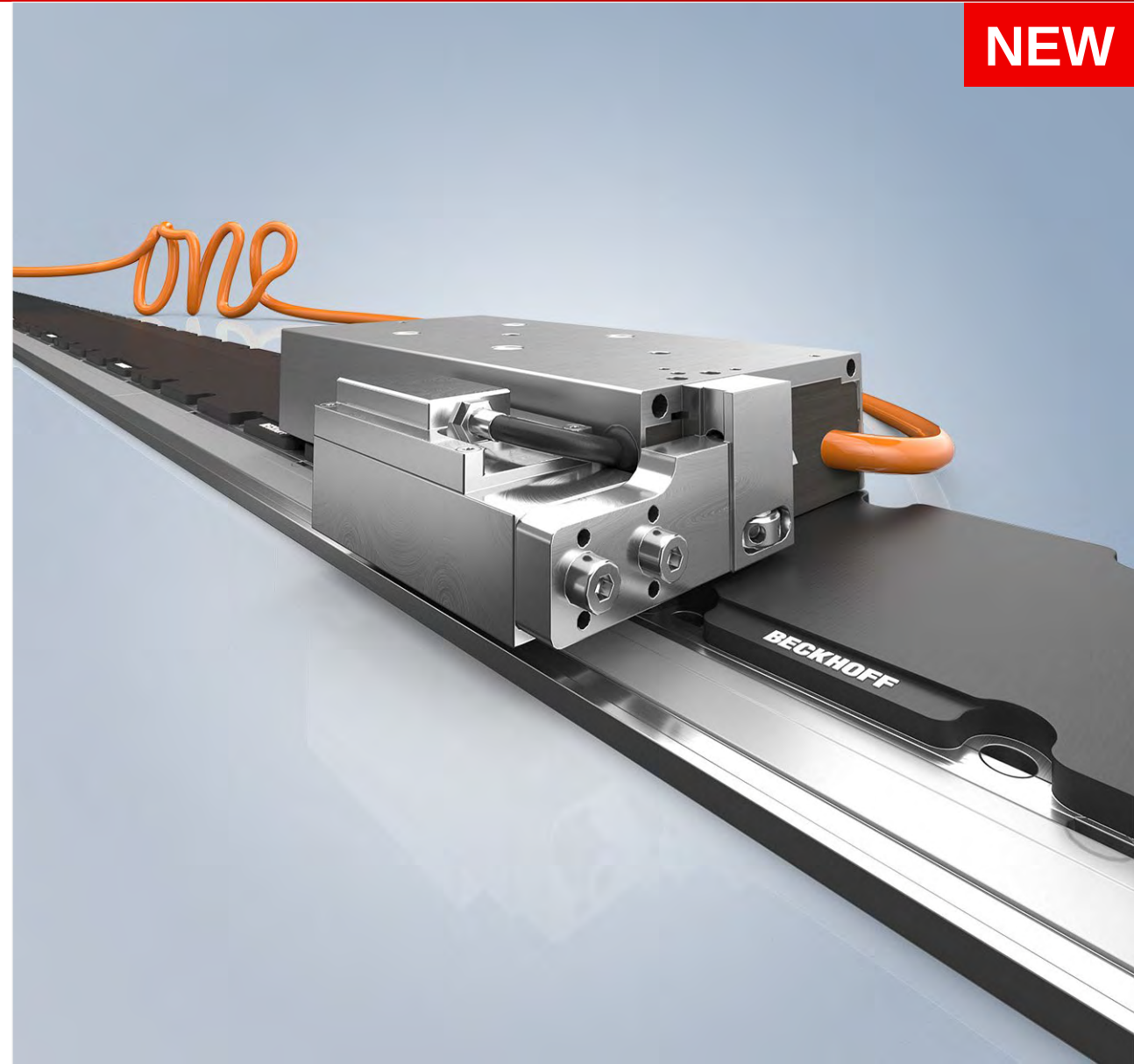
AL8000/AL8100 with One Cable Technology

BECKHOFF

NEW



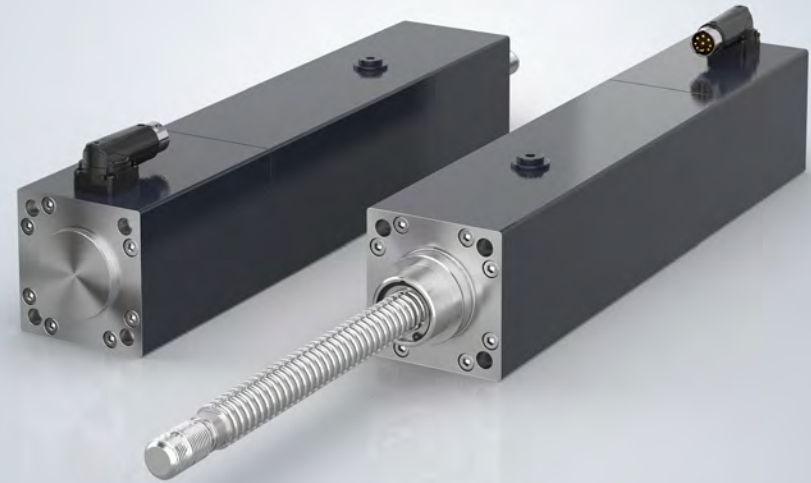
- mechanics
 - scanning head mechanically pre-adjusted ex works
 - final alignment after assembly via screw
- encoder
 - inductive absolute feedback system
 - 0.1 μm resolution
 - evaluation number based on signal quality of the encoder for simplified alignment



AA3100 | Series release for 48 V DC version of the electric cylinder

BECKHOFF

- two installation sizes: AA31**23** and AA31**33**
- matched to the ELM7xxx Terminals
- 650 ... 2,800 N constant force at 8 A
→ ELM7221 and ELM7222
- 2650...12,000 N peak force at 32 A
→ ELM7231
- 0.12...0.56 m/s max. speed



AMl813x | Compact integrated servo drives

BECKHOFF



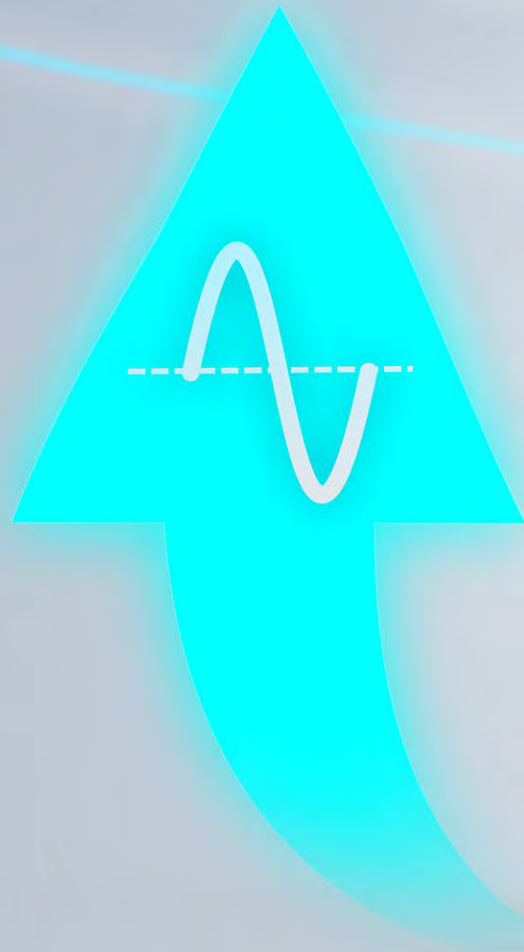
- NEMA 17/42 mm
 - extremely compact
 - two stack lengths at 0.3 and 0.8 Nm
 - integrated power amplifiers
- The DS402 profile allows connection to external EtherCAT masters.
- It can be placed directly on the machine without a control cabinet or upstream I/O level.
- further expansion of the series planned
 - NEMA 23/56 mm
 - four stack lengths at up to 2.5 Nm



AX8820 | Universal regenerative unit, 7 kW

BECKHOFF

NEW



AX8820 | Universal regenerative unit, 7 kW

BECKHOFF

NEW



EtherCAT in/out

24 V DC

DC link
max. 848 V DC

mains connection
3 x 400...480 V AC



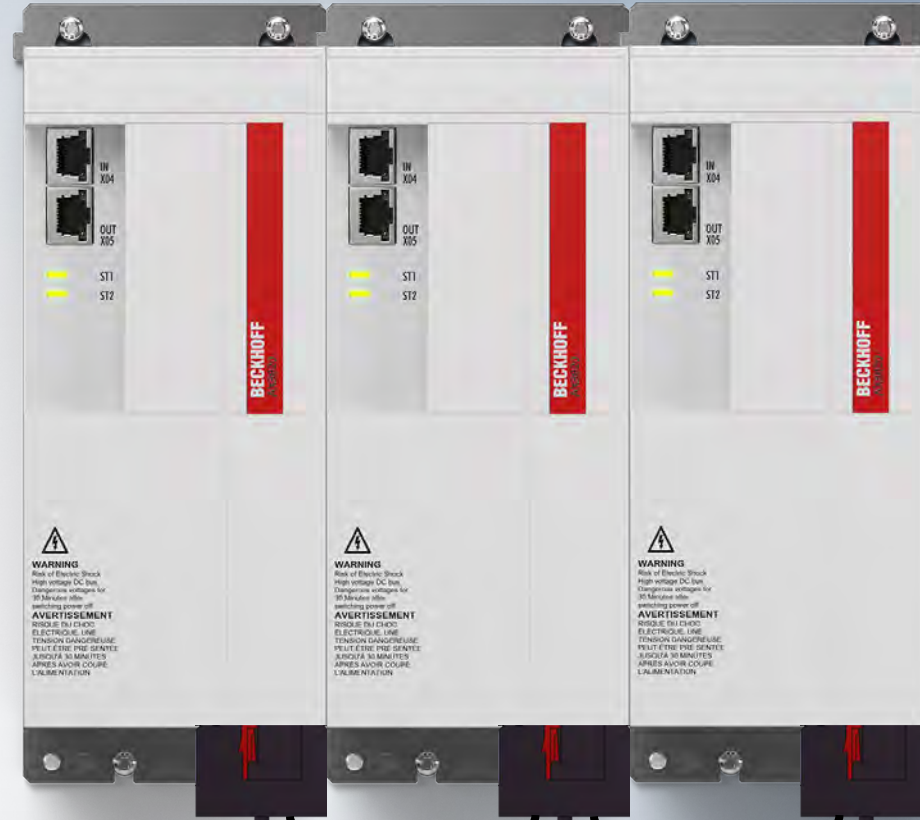
AX8820 | Parallel use

BECKHOFF

NEW



7 kW



7 kW

+ 7 kW

+ 7 kW

= 21 kW

AX8128 | Axis modules for extending services

BECKHOFF

NEW



8 A



2 x 6 A



18 A



28 A rated current
50 A peak current

AX8128

- same housing as AX8118
- 55% more power
- energy saving thanks to silicon carbide