

BECKHOFF

Hannoverin messukuulumiset
& tuoteuutuudet

Ville Hopponen
Myyntipäällikkö
Beckhoff Automation Oy



1. **MX-System news**
2. ATRO news
3. Vision news
4. IPC news
5. I/O news
6. Motion news

MX-System

Pluggable system solution for automation without control cabinet

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MX-System

1. MX-System news
- 2. ATRO news**
3. Vision news
4. IPC news
5. I/O news
6. Motion news

ATRO: Automation Technology for Robotics – the modular industrial robot system

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ATRO

1. MX-System news
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3. **Vision news**
4. IPC news
5. I/O news
6. Motion news

Vision
Award-winning design

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reddot winner 2023



GOLD
AWARD
2023





Cameras



Optics



Illumination



Units

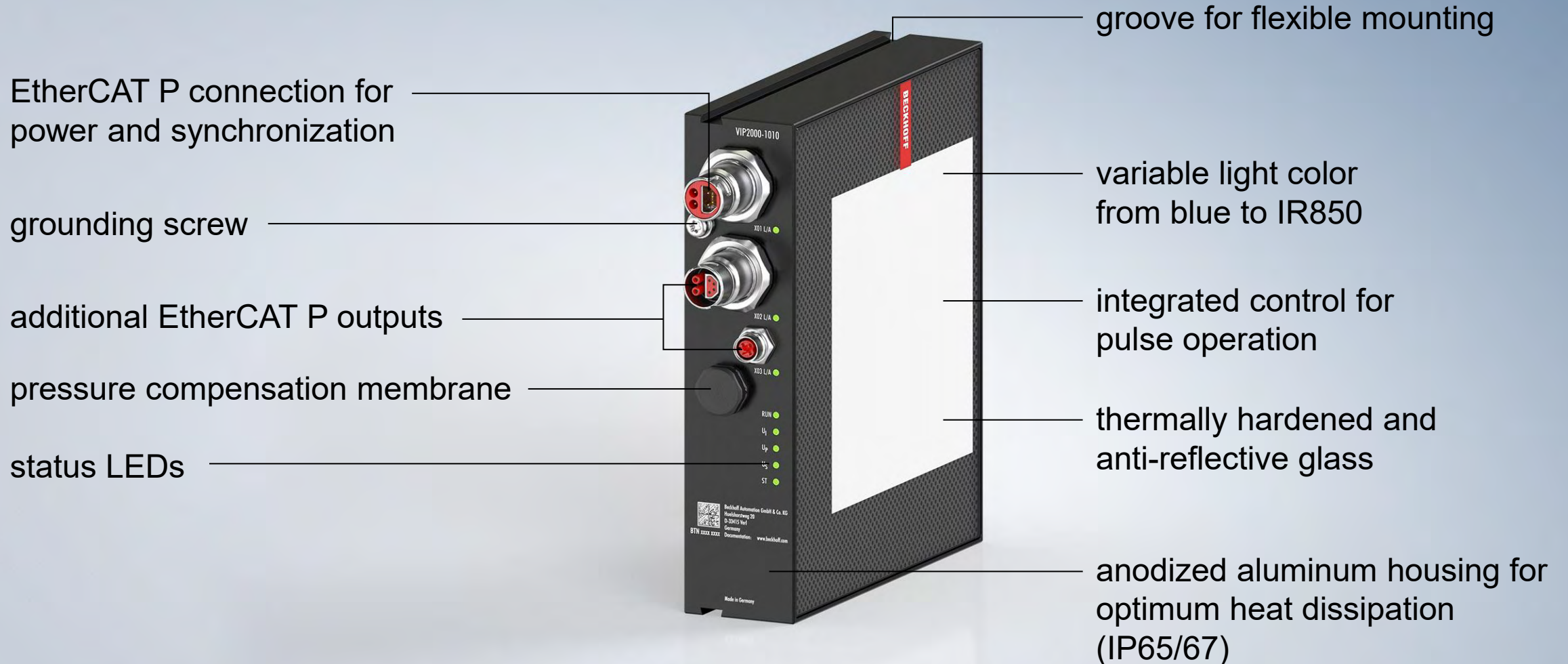


TwinCAT Vision











VIP2000 | Panel illumination

multicolor LED panels, especially optimized for backlight applications



VIR2000 | Ring illumination

multicolor LED ring, also suitable for dark-field setups



VIB2000 | Bar light

universally applicable multicolor LED bar light with homogenous illumination for backlight applications

anodized aluminum housing (IP65/67)
for optimum heat dissipation

six threads for
flexible and robust mounting

EtherCAT P connection for
power and synchronization

grounding screw

2.5 Gbit LAN connection

status LEDs



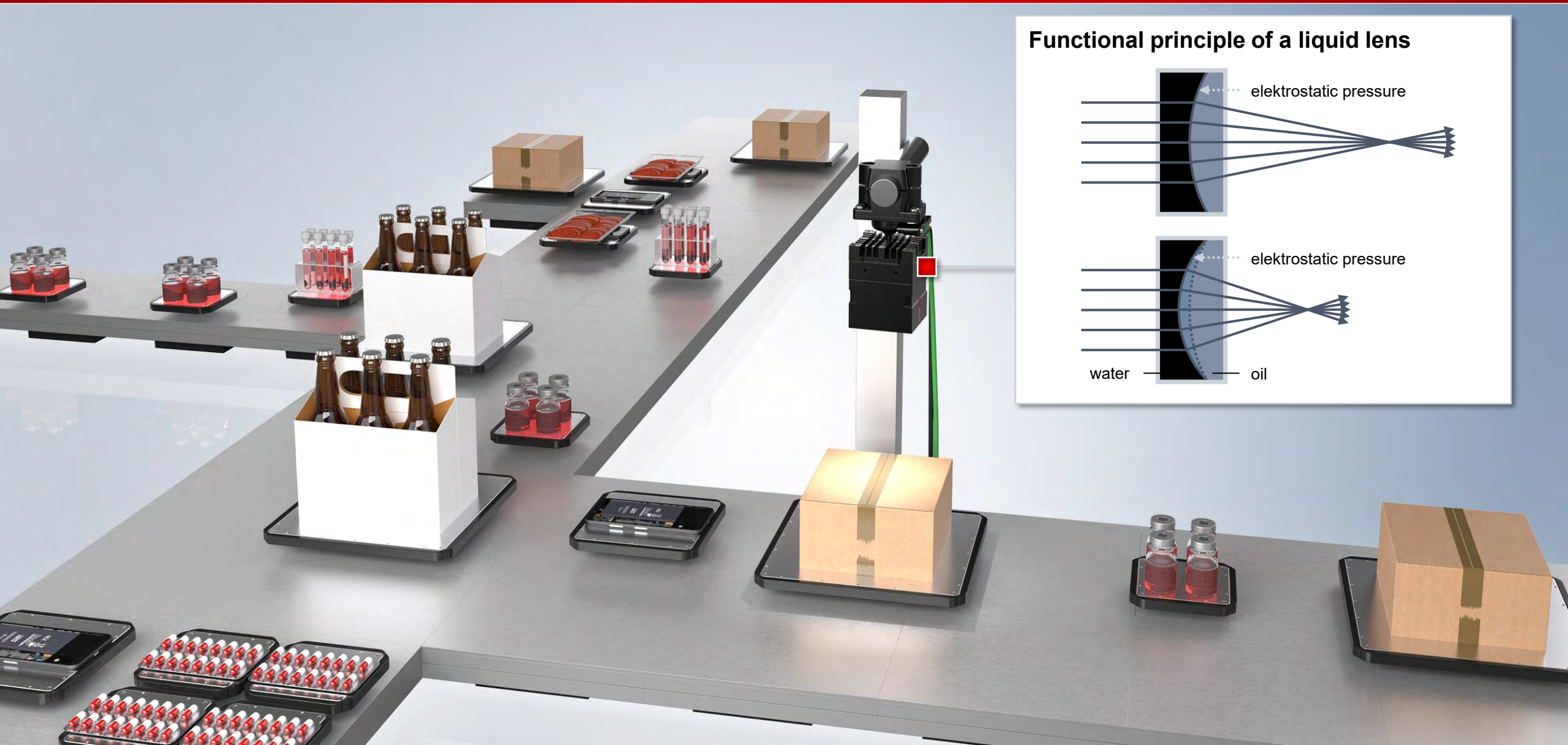
variable light color
from blue to IR850

optics with integrated
liquid lens focusing

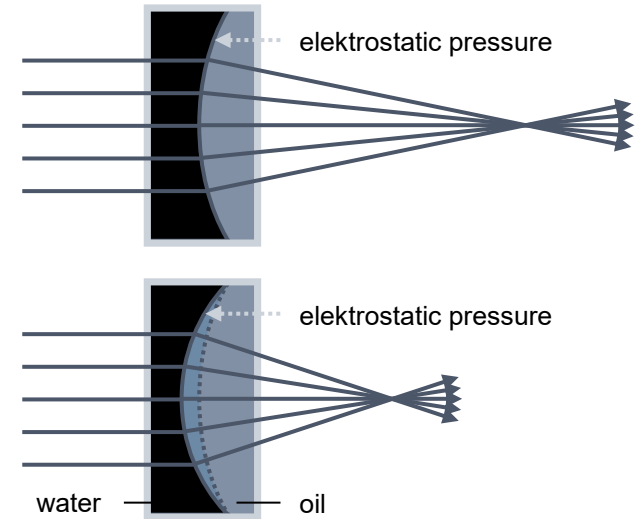
thermally hardened and
anti-reflective glass

VUI200x | Focus adjustment during runtime

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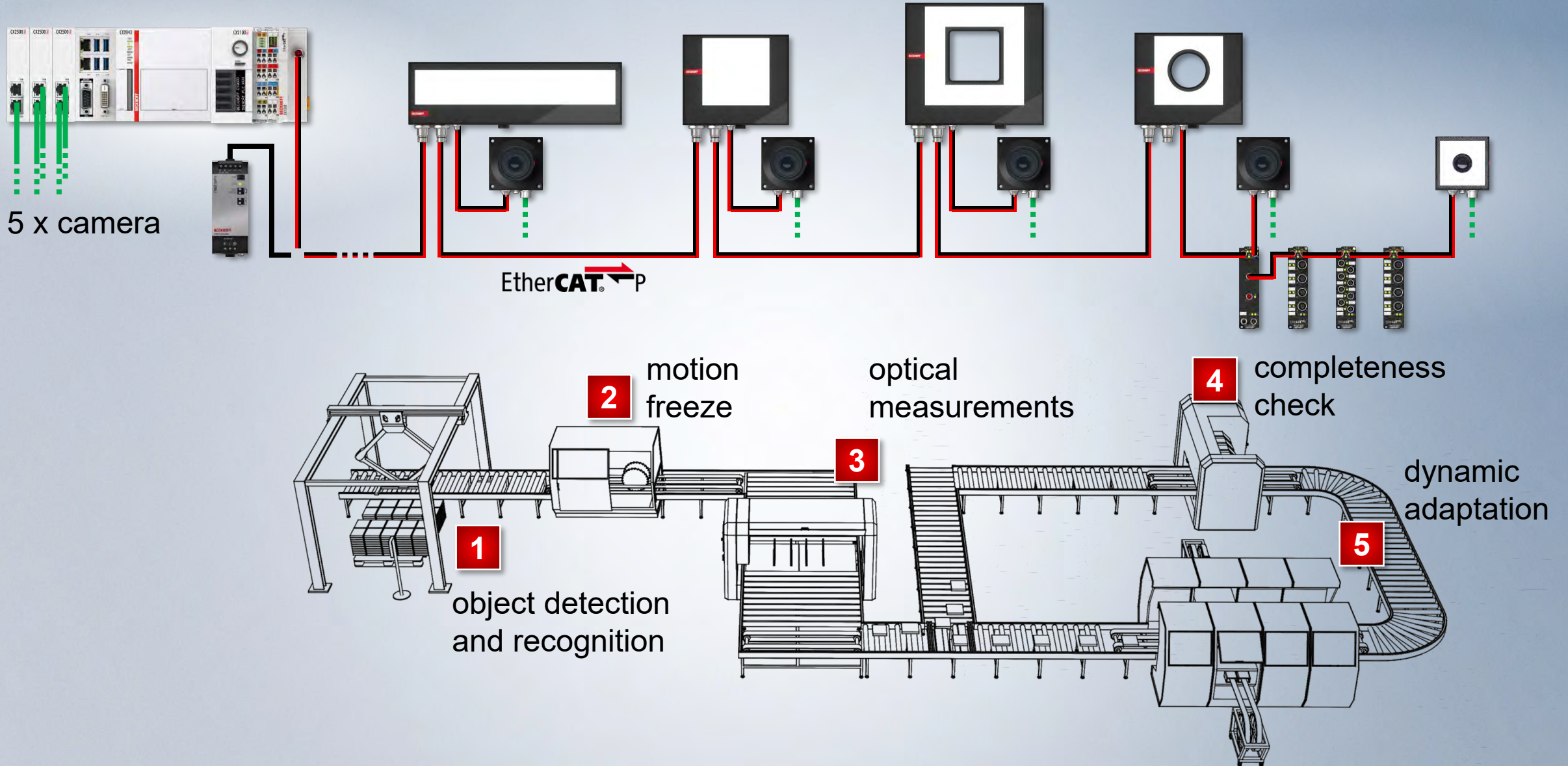
Functional principle of a liquid lens





Vision hardware | System connection

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Complete, tried and tested range of accessories

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**One-stop shopping for
industrial image processing**

accessories for
optics and cameras

mounting accessories

connection cables



Beckhoff Vision Highlights

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complete hardware portfolio for
industrial image processing

ultra-fast EtherCAT performance and
robust design

perfect synchronization with all
processes

easy, direct integration into the
control system



EtherCAT® 

1. MX-System news
2. ATRO news
3. Vision news
4. **IPC news**
 - **Industrial PC**
 - Embedded PC
5. I/O news
6. Motion news



- 10 nm size → significant leap in performance and efficiency
- 2-core and 4-core variants
- 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



Next generation of C601x

Dimensions: 82 x 82 x 40 mm
(W x H x D)

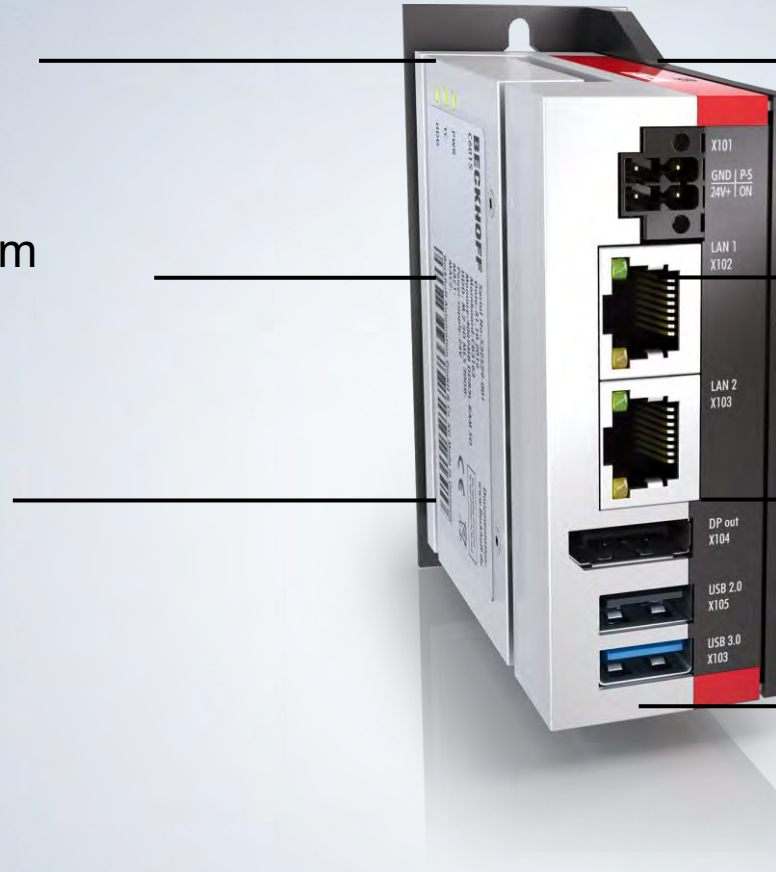
2 or 4 cores
with 4 or 8 GB RAM

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

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- 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
- Intel® Speed Shift Technology
- 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



NEW



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

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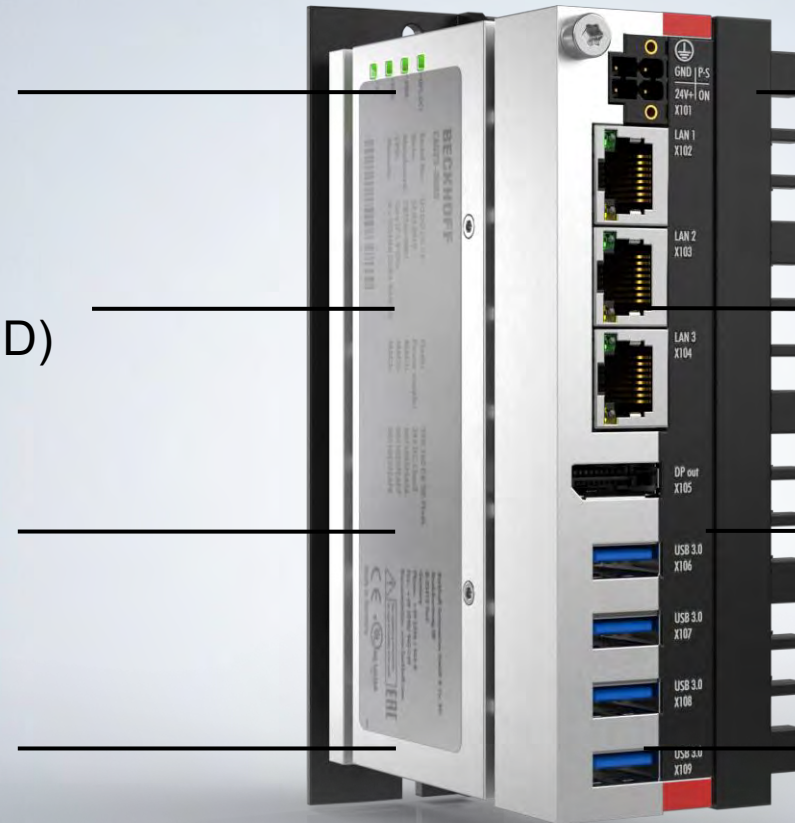
NEW

Next generation of C602x

dimensions:
82 x 127 x 47 mm (W x H x D)

2 or 4 cores
with 8 or 16 GB RAM

Intel® Iris® XE Graphics



11th Generation Intel® Core™ i U

3 x 1 Gbit/s Ethernet onboard,
possible upgrade to 2 x 2.5 Gbit/s

Operating temperature range:
0...50 °C

4 x USB 3.2 Gen2

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

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NEW

- next generation C603x
- dimensions: 132 x 133 x 76 mm (W x H x D)
- up to 8 cores, up to 64 GB RAM
- 11th Generation Intel® Core™ i
- 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

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- 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
- Intel® Speed Shift Technology
- 2 x NVMe SSDs in RAID configuration
- 2.5 Gbit/s Ethernet onboard
- DDR5 RAM
- USB 3.2 Gen2

NEW

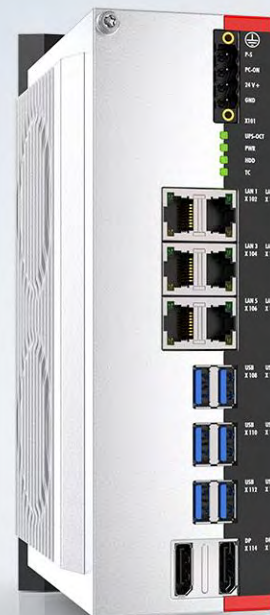


C6040-0090 | Ultra-compact Industrial PC with 12th/13th generation Intel® Core™ i

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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 Intel® Speed Shift Technology
- 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



- **FC9282**, for C6032
 - PCIe compact module
 - 2 x RJ45
- **FC9224**, for IPCs with ATX motherboard (example: C6640)
 - PCIe-x4 plug-in card
 - 4 x RJ45
- **CX2500-0062**, for CX20xx, CX52x0, CX56x0
 - CX system module
 - 2 x RJ45



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4. **IPC news**
 - Industrial PC
 - **Embedded PC**
5. I/O news
6. Motion news

Embedded PC Modular DIN rail IPCs

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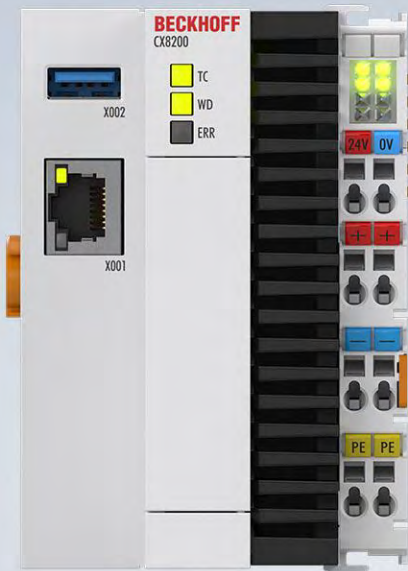
CX82xx | A modern CPU architecture and more computing power for compact controls

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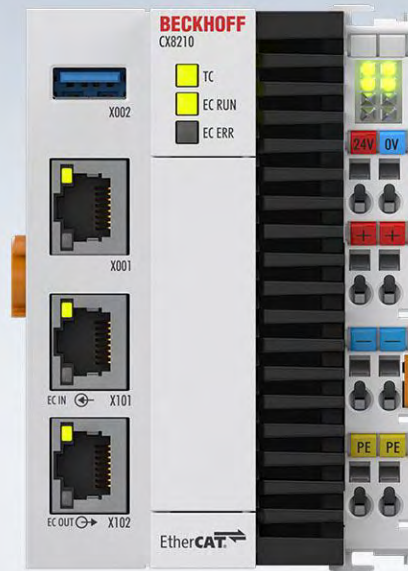


CX82xx | A modern CPU architecture and more computing power for compact controls

BECKHOFF



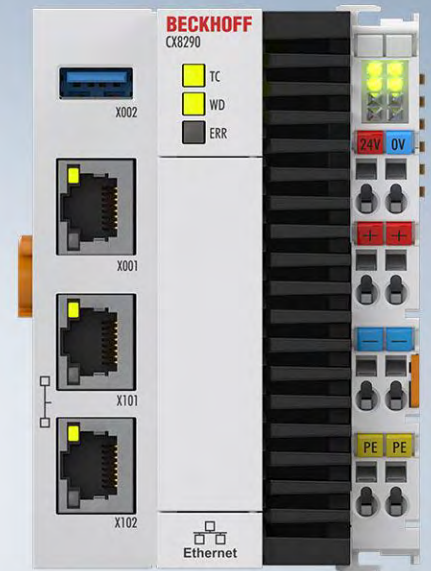
CX8200



CX8210
EtherCAT



CX8280
RS232/RS485



CX8290
Ethernet (switched)
Profinet
EtherNet/IP
BACnet/IP



**CX82xx will support
TwinCAT NC-PTP**



CX8200 | Embedded PC with ARM Cortex™-A53 processor

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- 64 bit, 2 cores, 1.2 GHz ARM SoC CPU, 1 GB LPDDR4 RAM
- USB 3.0, 5 Gbit/s
- 1 Gbit/s Ethernet port
- 1-second UPS (capacitive)
- CCAT (FPGA) interface
- operating temperature range: -25...60°C
- microSD slot behind lid
- TwinCAT/BSD

TC/BSD®



CX9240 | New Embedded PC with 4-core ARM Cortex-A53

BECKHOFF



CX9240 | Compact PC control for a wide range of applications

BECKHOFF

- 64 bit, 4 cores, 1.2 GHz ARM SoC CPU, 2 GB LPDDR4 RAM
- USB 3.0, 5 Gbit/s
- 2 x independent 1 Gbit/s Ethernet ports
- 1-second UPS (capacitive)
- CCAT (FPGA) interface
- display port
- power supply with UPS OCT (galvanically isolated)
- TwinCAT/BSD
- microSD slot
- operating temperature range: -25...60°C

TC/BSD®



CCAT (FPGA) interface for:

- EtherCAT and EtherCAT G
- Profinet
- Ethernet/IP
- Profibus
- CAN
- RS232 /RS485
- ...



CX7031, CX7050, CX7051

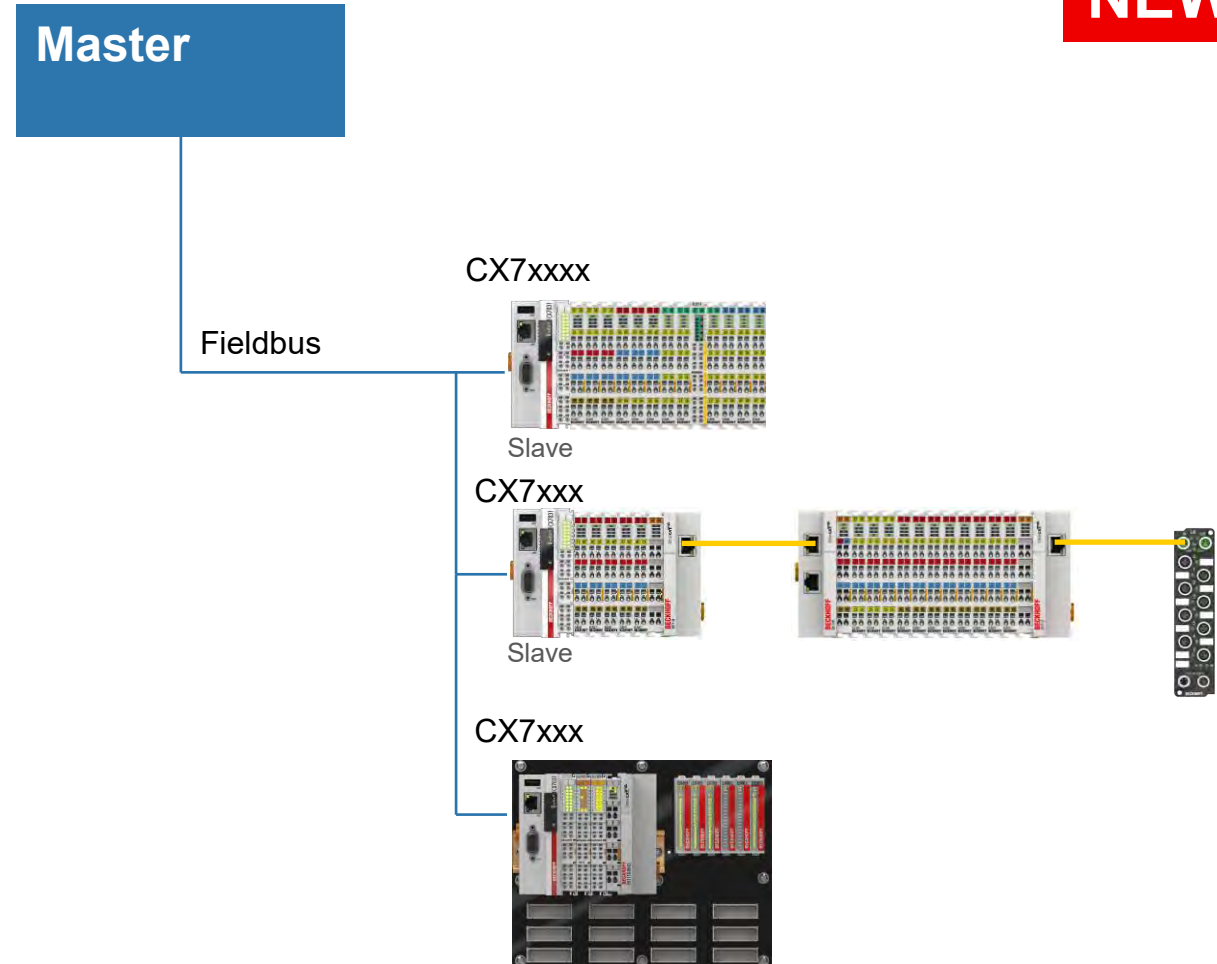
Small controllers with integrated multifunctional I/Os

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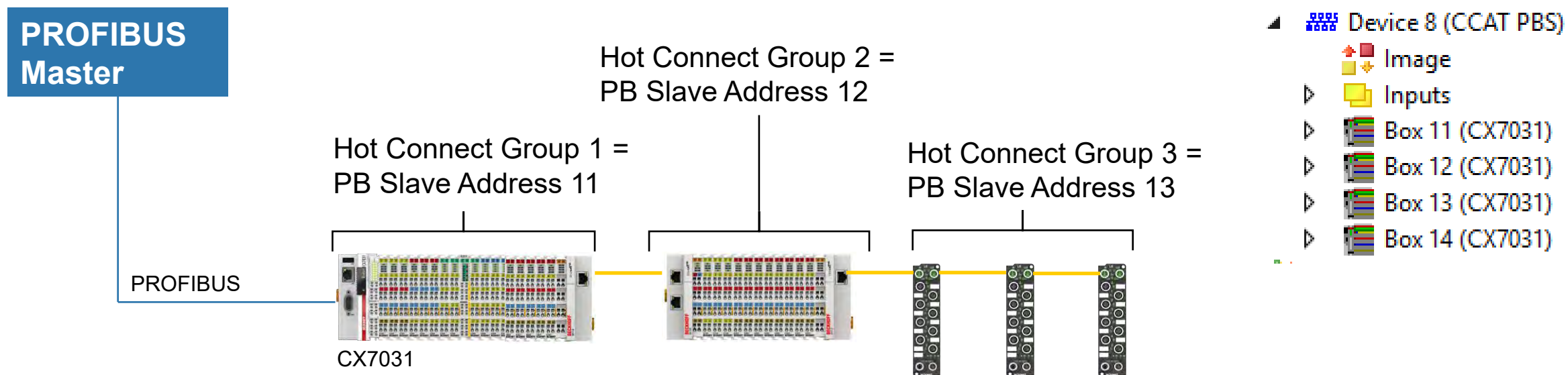
NEW



- all EtherCAT I/O products can be integrated
 - EL, ELX, Safety, EP, EPP
- EtherCAT devices from third party suppliers
- can be combined with the EJ system for big customers

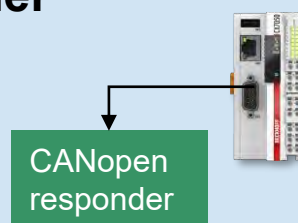


- multi-slave
 - 4 x slaves on one CX7031
 - 4 x 244 byte in-/output
 - hot connect group for variable configuration
- emulation of GSD files to replace old PROFIBUS devices that are no longer available.



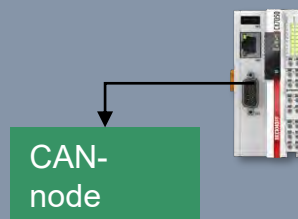
Application 1: Low-cost PLC for CANopen responder

- 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



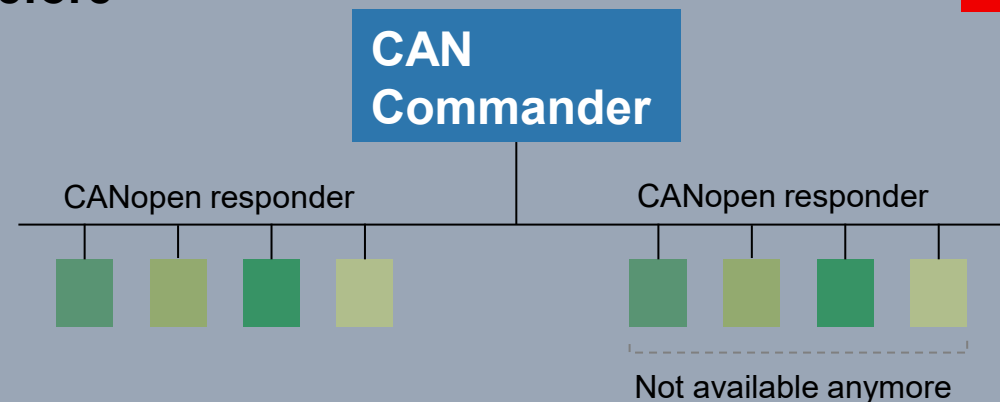
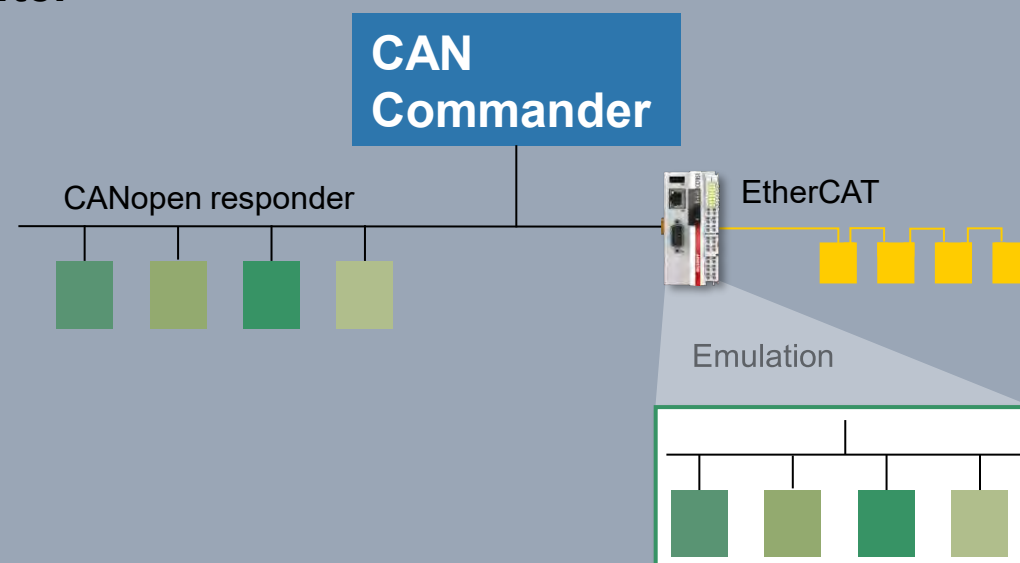
TwinCAT

General CCAT CNS ADS ADS-Server Diag History CAN Monitor DPRAM (Online)					
Update CAN Messages Start Monitoring Stop Monitoring Save to file... Set CAN-ID filter...					
Monitor is RUNNING					
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.

NEW**Before****After**

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EK9020 | ModbusTCP/UDP Bus Coupler

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- successor to the EK9000
- couples standard digital and analog EtherCAT Terminals and EtherCAT Box modules to Ethernet networks
- Modbus TCP, Modbus UDP protocol
- 2 x RJ45 (switched)
- 100/1000 Mbit/s data transfer rates



EK9320 | PROFINET RT Bus Coupler

BECKHOFF

- successor to the EK9300
- couples standard digital and analog EtherCAT Terminals and EtherCAT Box modules to PROFINET RT networks
- PROFINET RT protocol
- 2 x RJ45 (switched)
- 100/1000 Mbit/s data transfer rates



EK9520 | EtherNet/IP Bus Coupler

BECKHOFF

- successor to the EK9500
- couples standard digital and analog EtherCAT Terminals and EtherCAT Box modules to EtherNet/IP networks
- EtherNet/IP protocol
- 2 x RJ45 (switched)
- 100/1000 Mbit/s data transfer rates



- for controlling individually addressable LEDs
- 5...24 V DC LED voltage with external power supply
- 2048 pixels per terminal
- 36 LED protocols
 - WS2812, WS2812B, WS2813, WS2815, APA-101 and many more

Applications:

- pick-by-light
- machine status display
- position marking
- stage and show



Digital Output, 24 V DC

Standard*

EL2008 | 8-channel, 0.5 A
EL2809 | 16-channel, 0.5 A
EL2022 | 2-channel, 2 A
EL2828 | 8-channel, 2 A

Diagnostics

General: overload/open circuit

EL2032 | 2-channel, 2 A
EL2034 | 4-channel, 2 A

Channel diagnostics

More precise threshold values:
overload

EL2068 | 8-channel, 0.5 A
EL2869 | 16-channel, 0.5 A
EL2838 | 8-channel, 2 A

NEW

Extended diagnostics

Extended: overload, open circuit,
device diagnostics, safe state

EL2014 | 4-channel, 0.5 A
EL2819 | 16-channel, 0.5 A
EL2044 | 4-channel, 2 A



EL3174-0042 | 4-channel analog input, multi-functional, ± 60 V, ± 30 V, 16 bit, differential

BECKHOFF

- ± 60 V measuring range, ± 30 V can be processed via each channel
- channels are electrically isolated: 2500 V functional isolation
 - differential input
 - test voltage channel/channel and channel/fieldbus, production test

Applications:

- battery stack
- fuel cell measurements
- 48 V vehicle power systems



- supported GNSS (Global Navigation Satellite System): NAVSTAR, GPS, GLONASS, Galileo, BeiDou
- precision of timestamp in the terminal
 - <100 ns (clear sky)
 - <1 μ s (indoor)
- temperature-compensated crystal oscillator (TCXO) and additional RealTimeClock (RTC)
- further measured values: signal quality, position, speed, direction
- SMA antenna connection



EL6761 | 1-channel communication interface, ISO 15118 powerline, charge controller

BECKHOFF

- Powerline communication in accordance with ISO 15118
 - high-level communication
- PWM communication in accordance with IEC 61851
 - currently the most widespread communication
 - stock compatibility
- charging network capable
 - optional zero crossing detection



EL6761 | 1-channel communication interface, ISO 15118 powerline, charge controller

BECKHOFF

In combination with OCPP (TF6771) as communication to higher-level controllers, the terminal provides a complete communication system for charging infrastructure applications.



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

NEW



DALI-2

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

BECKHOFF

NEW

- 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



EL8601-8411 | 12-channel multi interface, 8 x DI, 1 x CNT, 4 x DO, 2 x PWM, 1 x AI, 1 x AO, 1 x ENC AB

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- up to twelve signal interfaces (8 x DI, 2 x DO, 1 x AI, 1 x AO)
- up to nine different signal types
- compact 12 mm housing
- various configurations of digital and analog inputs and outputs
- analog inputs and outputs for current or voltage
- automatic adjustment of parameters according to the selected configuration: PDOs, CoE, PinOut
- encoder, counter and PWM outputs are configurable



EtherCAT Terminals

Ethernet advanced physical layer

BECKHOFF



Current communication:

- HART protocol
- Profibus PA
- Foundation Fieldbus

➔ **Transmission rate too low**, e.g. for web server, downloading documents, measurement data, image transmission etc.



- 2 x Ethernet-APL ports
- supports SPAA (TS10186) port profile
- allows direct connection of intrinsically safe field devices located in zones 0/20 and 1/21
- communication via PROFINET
- integration into the EtherCAT Terminal network possible
 - parallel integration of Ethernet-APL, HART and other signal types



ATEX and IECEx certification for EPX

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EPX1058

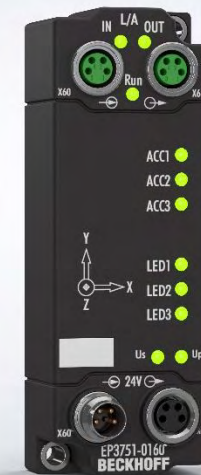


EPX3158





- internal 3-axis MEMS accelerometer sensor
- 20-bit resolution
- selectable resolution: ± 2 g, ± 4 g und ± 8 g
- 4 kHz sampling frequency
- almost delay-free evaluation in the measurement system
 - TwinCAT Analytics
- suitable for monitoring low frequencies with ultra low noise



EP8601-0022 | 12-channel multi interface, 8 x DI, 1 x CNT, 4 x DO, 2 x PWM, 1 x AI, 1 x AO, 1 x ENC AB

BECKHOFF

- functionally identical to EL8601-8411
- IP67 protection rating
- up to twelve signal interfaces (8 x DI, 2 x DO, 1 x AI, 1 x AO)
- up to nine different signal types
- various configurations of digital and analog inputs and outputs
- inputs and outputs for current or voltage
- encoder, counter and PWM outputs are configurable



Cables, connectors and accessories

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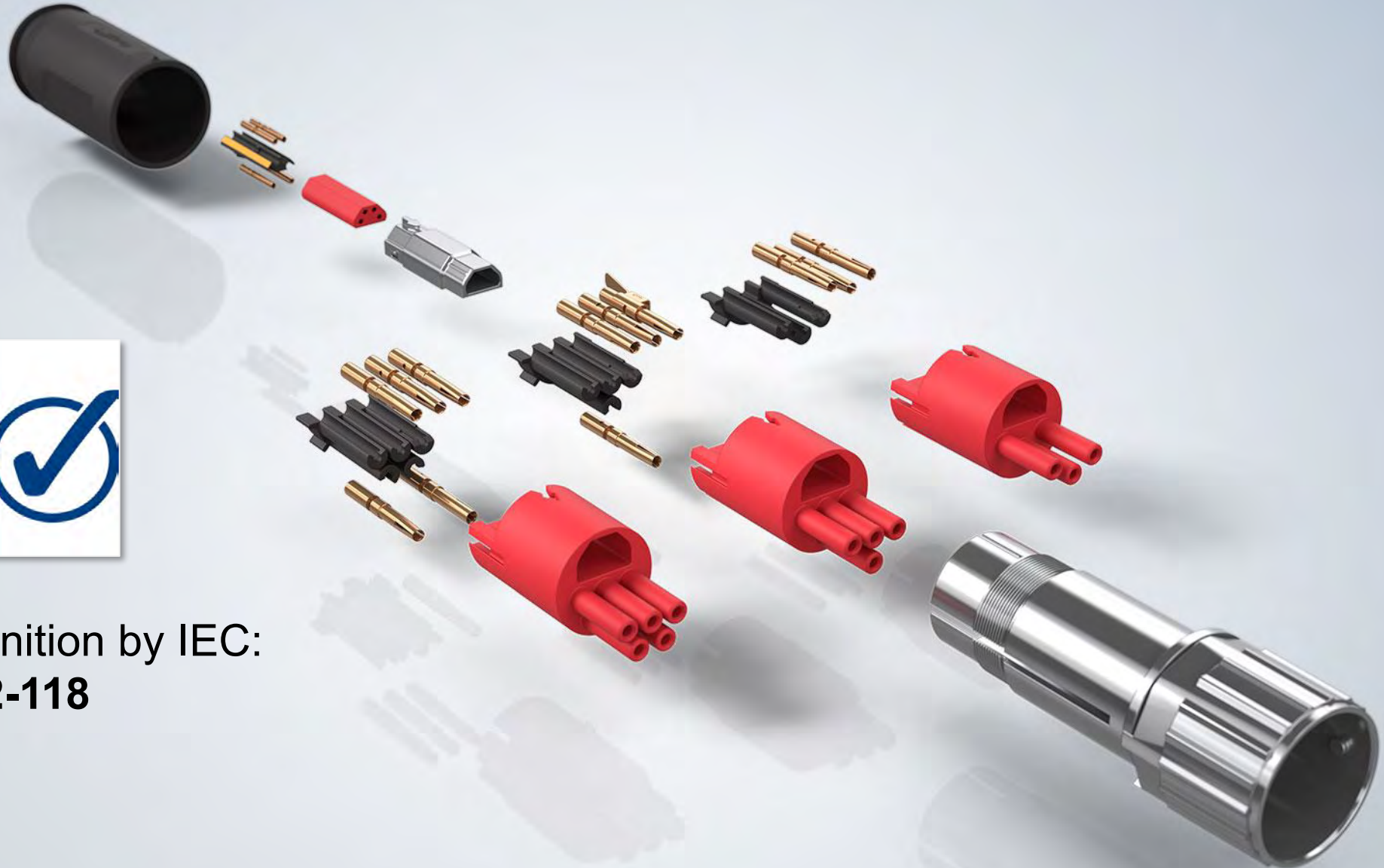
Update status Standardization of hybrid connectors

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NEW



Public recognition by IEC:
IEC 61076-2-118



Update status

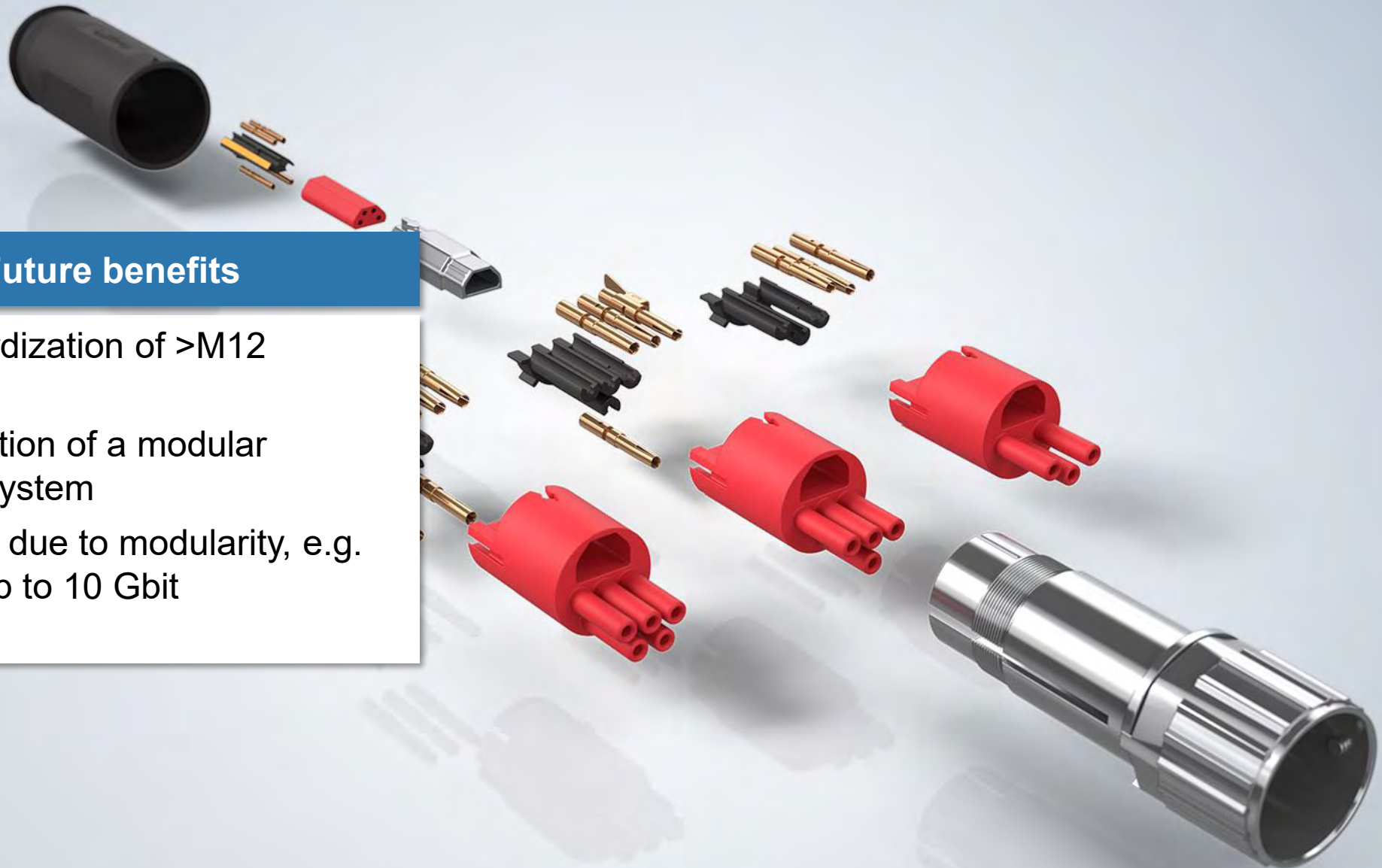
Standardization of hybrid connectors

BECKHOFF

NEW

Technology/Future benefits

- first standardization of >M12 connectors
- standardization of a modular connector system
- future-proof due to modularity, e.g. data core up to 10 Gbit

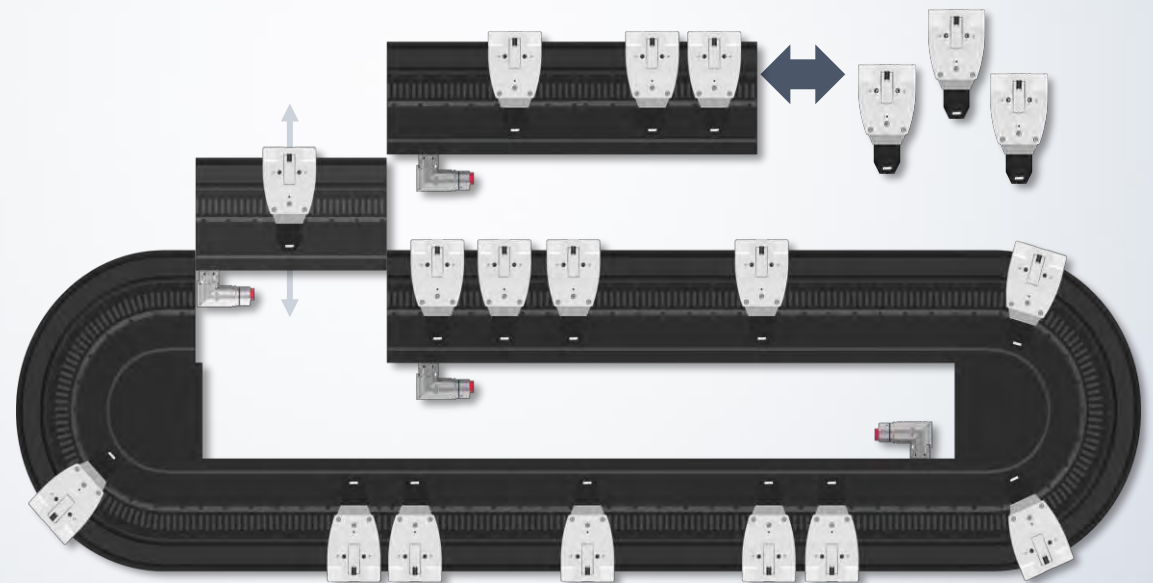


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6. **Motion news**
 - **XTS**
 - XPlanar

XTS news

No Cable Technology (NCT) and software functions

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XTS®

NCT turns XTS movers into process platforms

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No Cable Technology (NCT) turns XTS movers into process platforms

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Contactless energy transfer
**Process steps directly
on the mover**

Data communication in real time
**Synchronization with
external processes**

Open interfaces
**Connection of
standardized devices**

Fully compatible with existing XTS modular system

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System properties
are retained

TwinCAT as
central control element

Use independently from
guide rail system

Energy transfer:
35 W rated power on the mover

Energy transfer:
75 W peak power on the mover

Data transfer:
**designed for typical fieldbus
I/Os in bus terminal style**

Data transfer:
**precise position event control
< 100 μm**





XTS with NCT:
Performing several process steps
during product transport

NCT products

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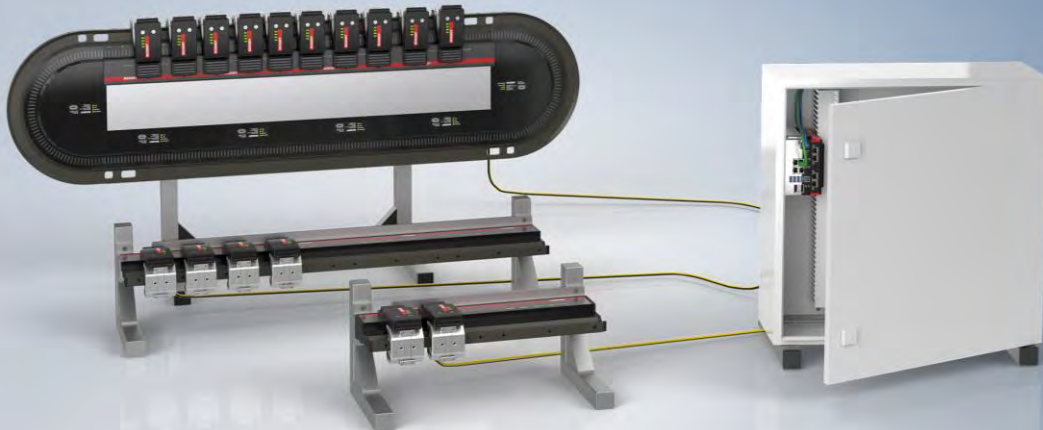
Motor modules with NCT



NCT electronics



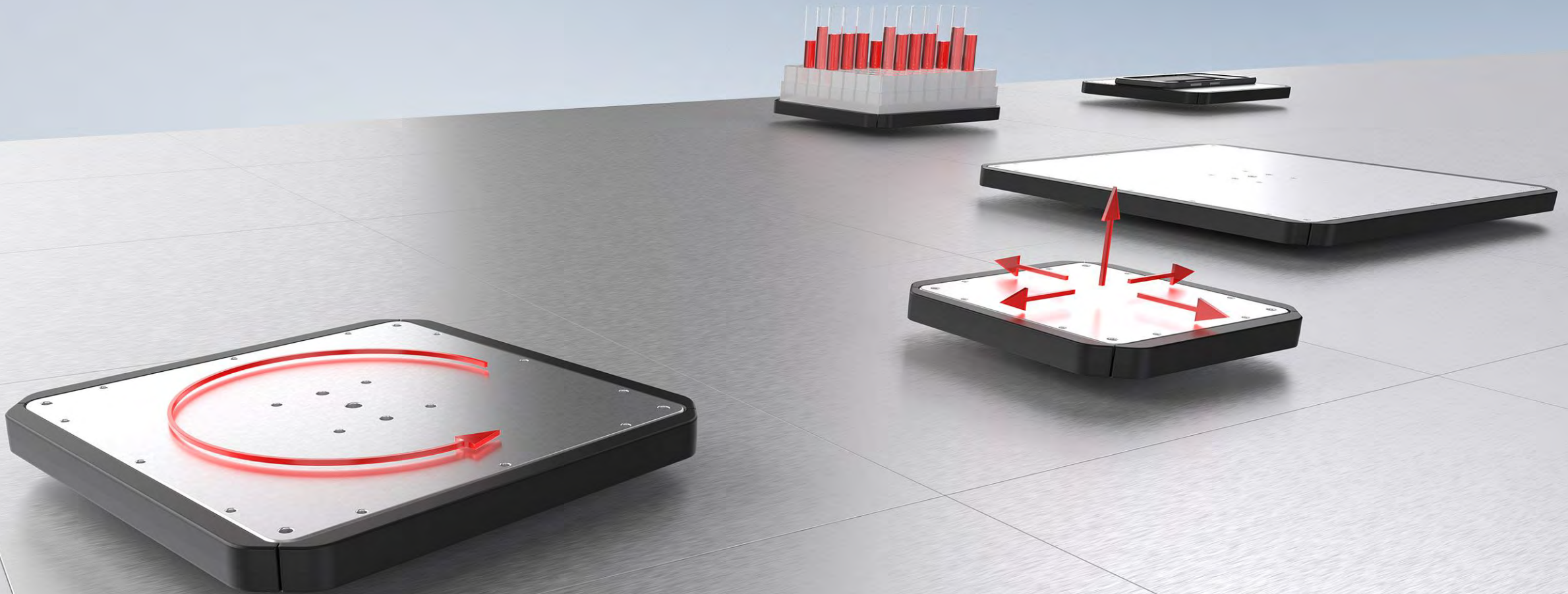
Starter kits



Software



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6. **Motion news**
 - XTS
 - **XPlanar**



XPlanar®

APM4230-0000-0000

- 115 x 155 mm²
- payload approx. 0.8 kg
- 2-way operation on APS4322-0000-0000



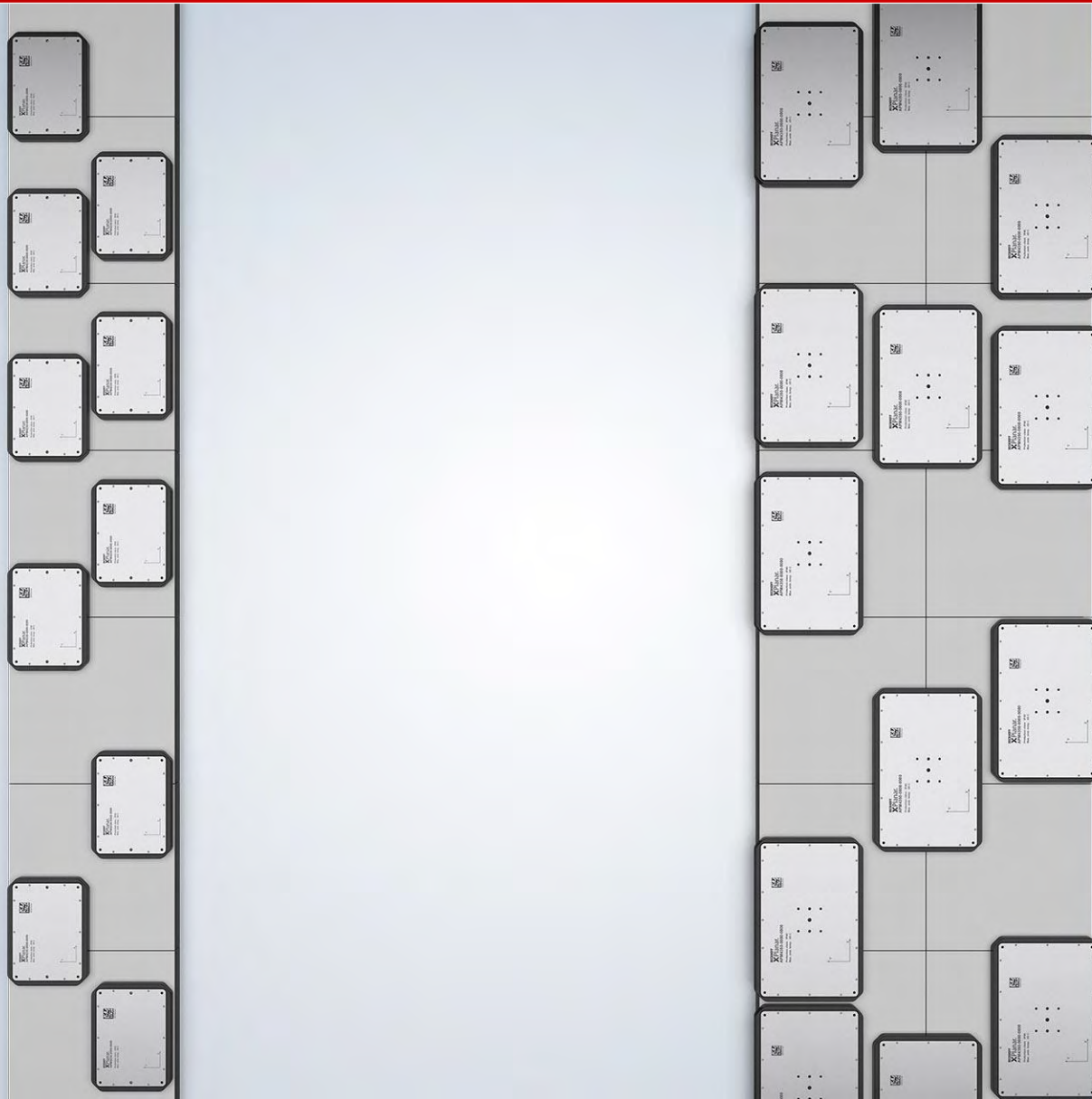
APM4350-0000-0000

- 155 x 235 mm²
- payload approx. 3.0 kg



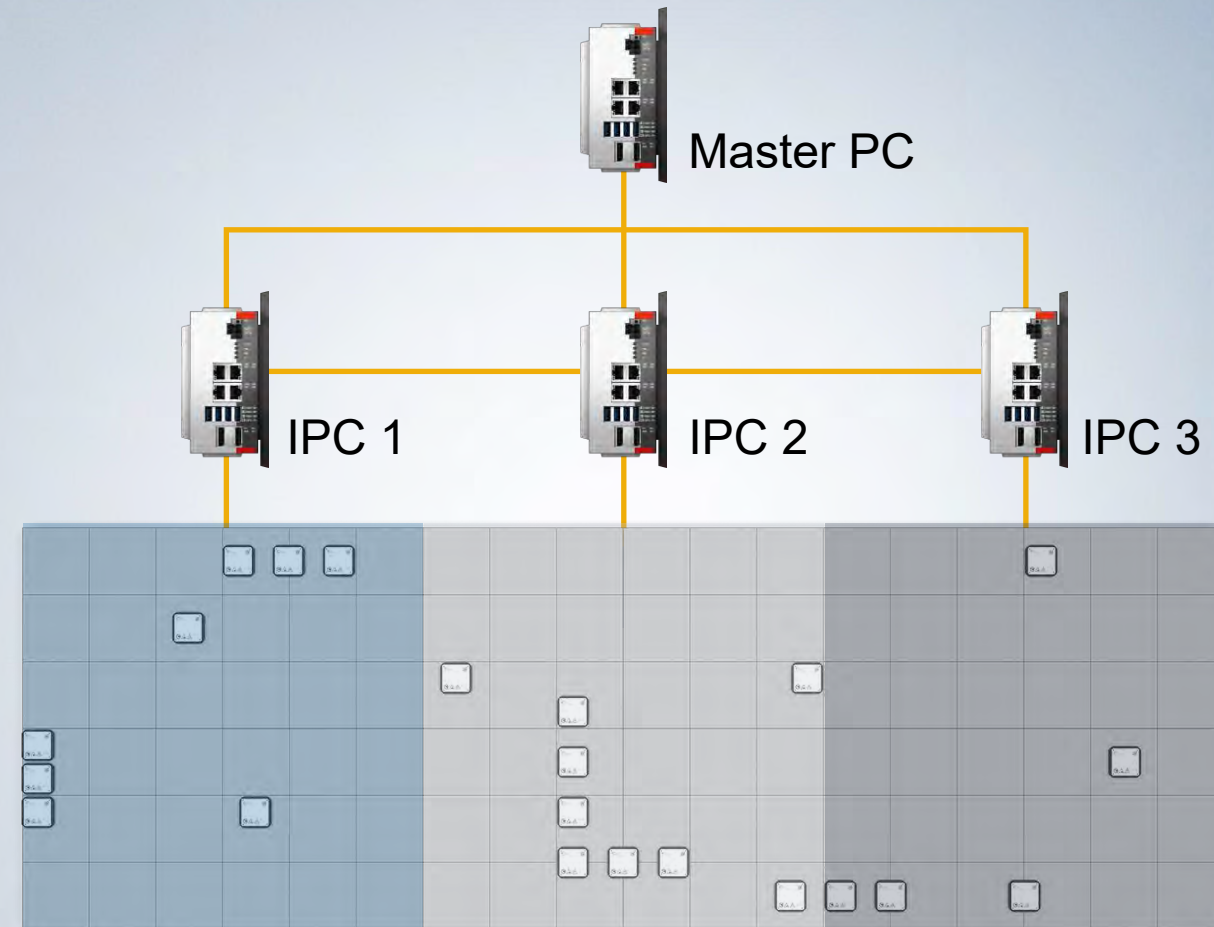
XPlanar mover | APM4230-0000-0000 and APM4350-0000-0000

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Central master executing PLC and NC

- XPlanar driver distributed to several IPCs
- cross communication in transition areas
- central programming



- small XPlanar starter kit
 - 2 x APS4322
 - 2 x APM4220
 - C6030
- ideal for small-scale tests and training



BECKHOFF New Automation Technology

Suomi

Olet kirjautunut sisään myBeckhoff

Yritys
 Tuotteet
 Toimialat
 Tuki
 myBeckhoff

> Tuki > Lataukset
 Tuoteuutuudet
 Tuotehaku
 Beckhoff Information System
 Lataukset

Lataukset

Lataukset sisältävät kaikki saatavissa olevat tiedostot. Tämä sisältää esimerkiksi käyttöraportit, tekniset dokumentit ja kokoonpanotiedostot.

Latauksia on saatavilla eri muodoissa.

Voimme pyydettäessä toimittaa sinulle luettelomme ja esitteemme myös painetussa muodossa. Täytä sitä varten [verkkotilauslomake](#).

Ota yhteyttä

Sovellusesimerkit

Sovellusesimerkit sisältävät esimerkkejä miten tuotteitamme on käytetty eri sovelluksissa.

[Lue lisää →](#)

Datalehdet

Tarjoamme lisätarvikkeisiin kuten kaapeleihin, johtoihin, pistoliittimiin jne. liittyviä PDF-erittelylehtiä.

[Lue lisää →](#)

Esitteet

Beckhoffin esitteet ovat ladattavissa PDF-tiedostoina.

[Lue lisää →](#)

Kokoonpanotiedostot

Täältä löytyy eri väyläjärjestelmille sopivia kokoonpanotiedostoja eri tiedostomuodoissa, esim. EDS- tai GSE-tiedostoina.

[Lue lisää →](#)

