



Fact sheet

One Cable Automation (OCA)

Fewer cables, more automation

Data is the key to more efficient processes. Industry is therefore continuously equipping its machines and systems with new sensors and actuators to collect, supply, and process data in the form of electrical signals. Countless cables and plugs are required to transmit this data and supply the devices with the necessary power. The issue here is that this increases the complexity of the wiring, costs money, and makes automation more difficult.

Beckhoff Automation picked up on this trend early on and developed technologies that reduce the number of cables and connectors to a minimum. The philosophy behind this strategy is termed One Cable Automation, or OCA for short. OCA bundles the power supply along with the signal and data communication into a single cable, thus saving valuable resources, reducing cabling work, and advancing automation.

OCA solutions for the entire field level

Beckhoff achieved a noteworthy milestone when it launched the first one cable solution back in 2011. Fast-forward to today and we now offer a modular OCA product system for almost 100% of

all applications. Our product range extends from one cable solutions for motion applications to ultra-fast EtherCAT P connections for control cabinet-free automation, and even CP-Link 4 solutions for connecting operating units.

“ Our OCA technologies reduce cabling work and cable lengths by up to 50% by using control cabinet-free solutions rather than conventional systems with a central control cabinet.”

Florian Vogel

Product Management I/O
Beckhoff Automation



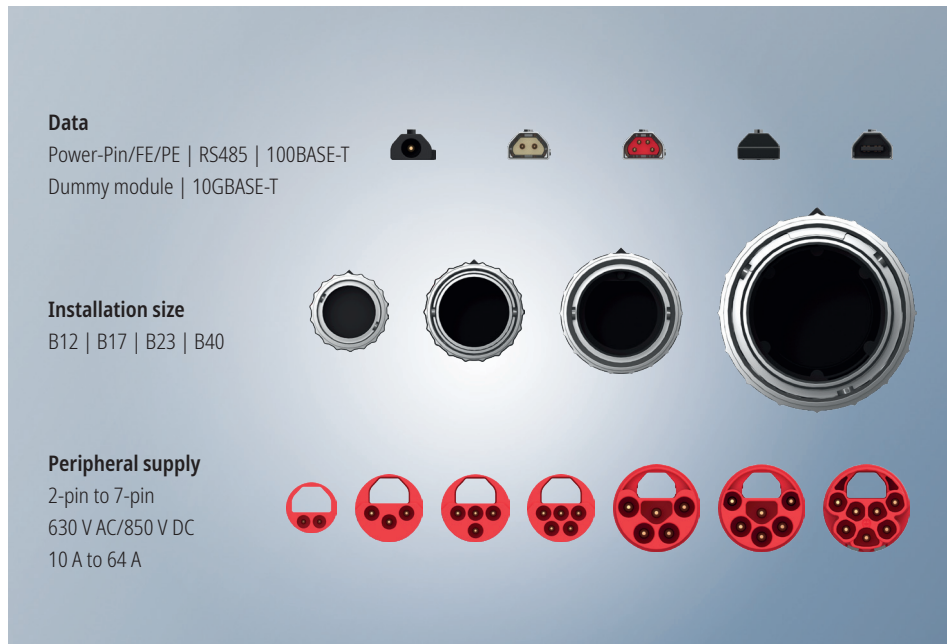
OCA: Efficient and environmentally friendly

In machines and systems with conventional wiring, all cables are routed to a central control cabinet. The problem here is that there are often huge distances between the control cabinet and the connected sensors and actuators. Cables with large cross-sections are required to bridge these distances and offset any voltage losses, which drives up not only material costs, but also resource consumption. A further issue is that this creates

large bundles of cables both around and inside the control cabinet. These take up space, increase installation work, and pose a considerable risk in terms of errors.

With one cable solutions from Beckhoff, wiring is both compact and environmentally friendly. What's more, One Cable Automation is bringing in a new trend: away from control cabinet-based automation

and towards a decentralized model. Sensors and actuators are controlled directly in the devices themselves, which are connected and integrated into the system using hybrid cables and connectors. This approach is smart, space-saving, neat, and exceptionally easy to maintain.



Proven 1000 times over: A future IEC standard

One Cable Automation and hybrid connectors from Beckhoff have proven themselves 1000 times over in practice. The consistent modularity with a uniform data core is now becoming the global market standard and is set down by the new IEC 61076-2-118 standard. This is expected to apply from 2025, which will further ensure the long-term viability of Beckhoff's OCA portfolio.

Our modular hybrid connectors are the new standard

Hybrid cables that handle data and power transmission in one require compatible hybrid connectors. This is why we have developed a modular connector system that covers almost 100% of the market-wide demand. It comprises three basic modules: the housing with bayonet connector, a trapezoidal data module, and the power module.

The basic modules are available in the following versions and can be freely combined:

- housing with bayonet connector (B) in sizes B12, B17, B23, and B40
- data unit options of 1-pin or 2-pin for Hiperface DSL, 4-pin for EtherCAT P or EtherCAT, dummy module, and up to 10 GB for gigabit transmission
- 2- to 7-pin power connection options for voltages up to 630 V AC or 850 V DC and currents from 10 A to 64 A

OCA advantages at a glance

- + **simplified cabling:** fewer connections, better overview
- + **space savings:** fewer cables, smaller cable ducts, no control cabinet
- + **lower costs:** simple installation and maintenance
- + **less susceptibility to faults:** fewer sources of error thanks to reduced complexity
- + **flexibility and scalability:** modular wiring, decentralized automation
- + **future-proof:** hybrid connectors in accordance with the future IEC standard
- + **environmentally friendly:** lower resource requirements

Scan for more:



► www.beckhoff.com/oca