Kuhnke FIO

Modular CODESYS PLC
Modular EtherCAT I/O

Your machine is…

…fast

Increase your customer's productivity by means of top-performance systems. EtherCAT®, the fastest Ethernet fieldbus, transfers all Kuhnke FIO data right through to the terminals.

…available 24/7

Increase your output by having your machines available at all times. The FIO system's excellent reliability, electromagnetic compatibility and resistance to environmental influences minimise machine downtimes. When necessary, our system enables rapid troubleshooting of your machines by Remote Service and convenient on-site diagnostics.

…simple, easy to operate and versatile

Everything is in place, easy to operate and available for customised use in various applications. Software in modern machines should be able to meet the on-site system requirements. To enable a flexible response to modifications and machine configurations, a single software package should contain everything needed for programming: PLC programming, fieldbus and I/O configuration, visualisation and motion control.

…all-purpose equipment

Whether you wish to extend your existing CODESYS control unit or run Kuhnke FIO as a small and stand-alone system, Kuhnke's flexible FIO system will help you to accomplish all automation tasks.

…sustainable

Industry is increasingly challenged by stricter ecological constraints and higher energy costs. Our designs allow you to successfully face this challenge and retain a green and healthy environment.

### …safe without additional expense

Of course you expect all legal requirements such as the Machinery Directive and the Industrial Safety Ordinance to be complied with for your machines or facilities, without having to incur additional expenses. The system should also be reliable in the future and flexible enough to adapt to your own requirements.
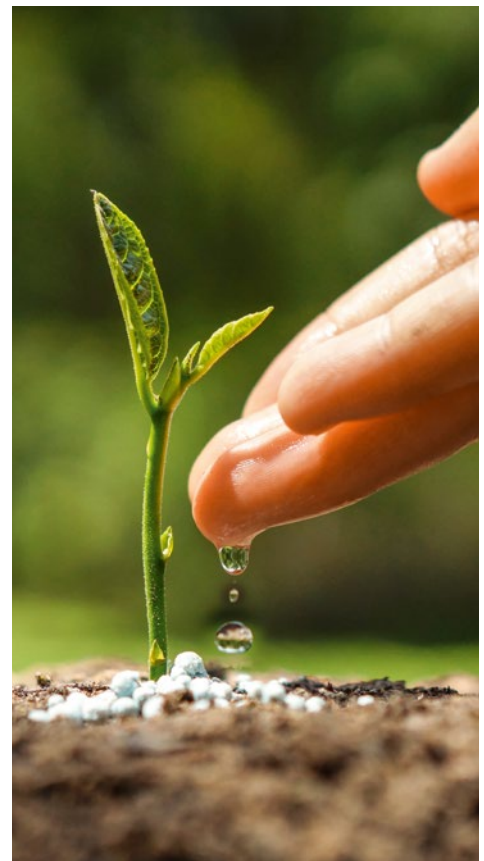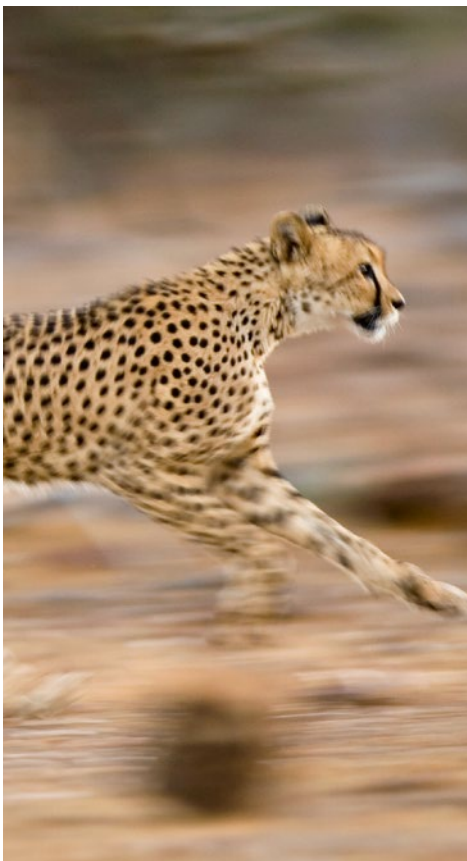
PLC with FIO Expansion Modules

EtherCAT I/O with FIO Expansion Modules

EtherCAT®

Controller

Expansion Modules

Coupler
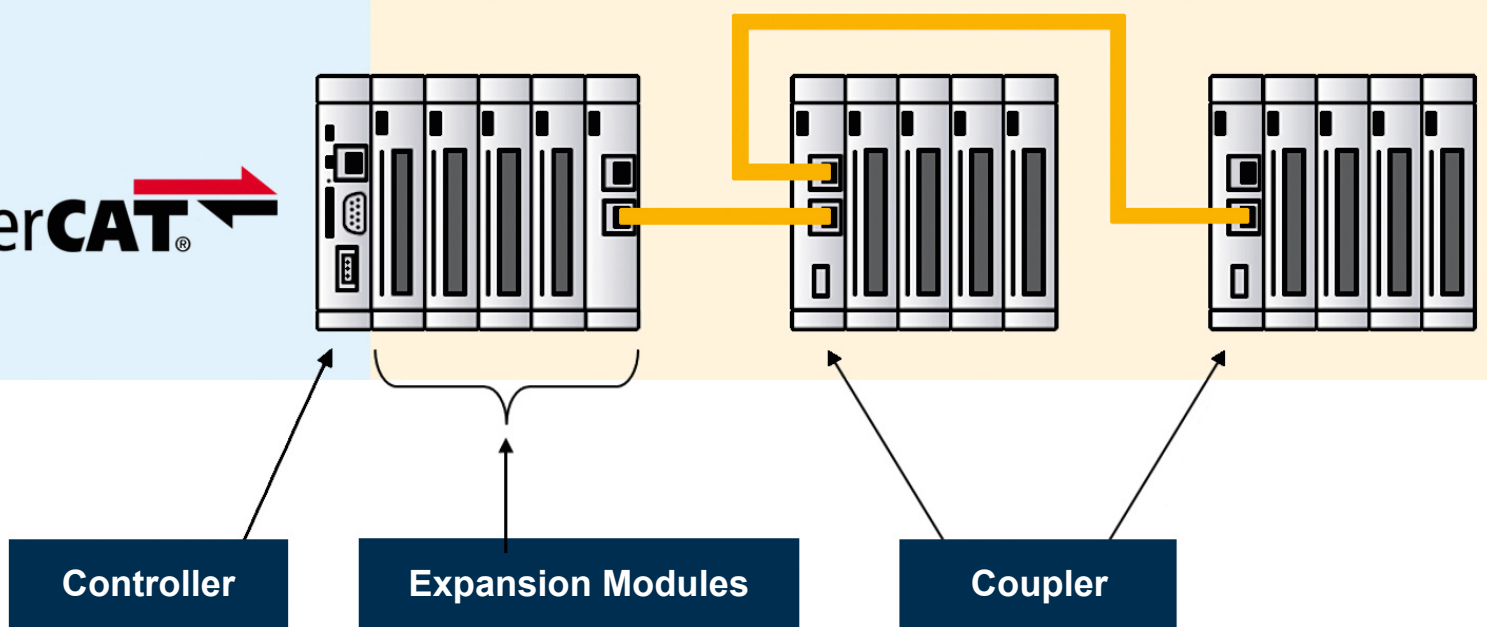
Product Information

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Discover our product variety at:

http://productfinder.kuhnke.kendrion.com

Kuhnke FIO system description
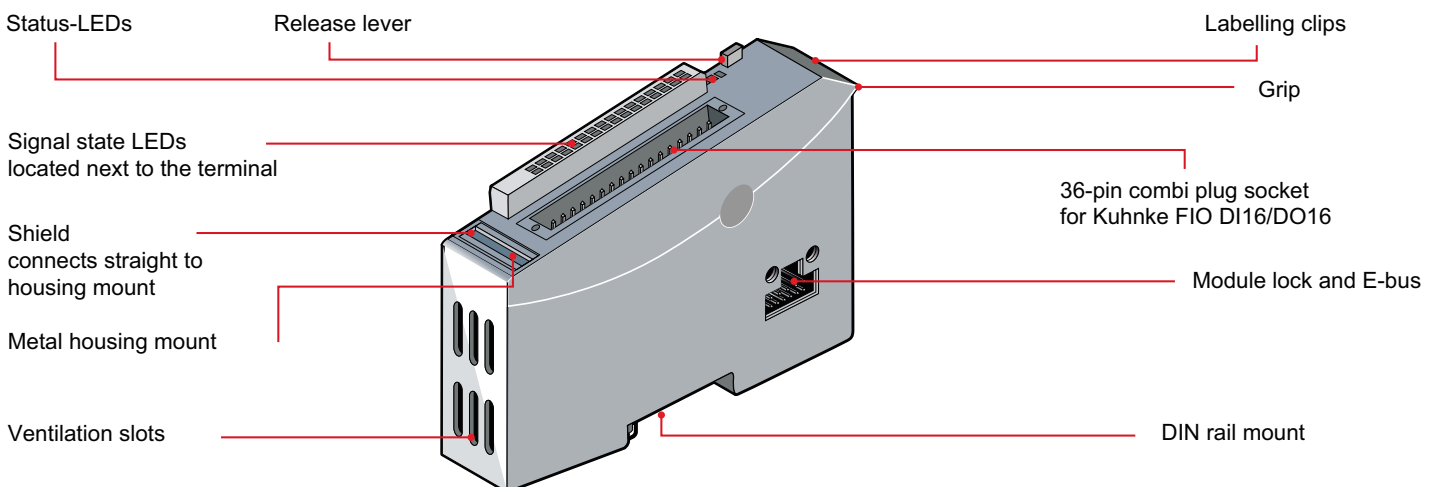
EtherCAT® –
Down to the last terminal

EtherCAT is the most powerful Ethernet-based fieldbus system currently available on the market. It puts up the top speed mark, and its flexible topology and simple configuration make it the perfect means of controlling extremely fast processes. To give you a clue: 1000 I/Os can be addressed in 30 µs. Because of its high performance, the simple wiring and its open protocol support, EtherCAT is often used as a fast motion control and I/O bus driven by an industrial PC or in conjunction with control technology on a smaller scale. EtherCAT moves beyond the limits of conventional fieldbus systems. Its interconnections between the controller at one end and both the I/O modules and drives at the other are as fast as those of a backplane bus. Distributed EtherCAT control systems thus offer a speed advantage because the limiting factor of bus transfer times is eliminated. In contrast, conventional fieldbus systems require the use of a central control unit.

Kuhnke FIO –
A fast I/O system

The Kuhnke FIO system was developed specifically for machine-related operation. As EtherCAT masters, Kuhnke industrial PCs are equipped with hard real-time behavior and a CODESYS PLC. Kuhnke FIO is a system of I/O modules to link the process signals within an EtherCAT network. A Kuhnke FIO block consists of the Kuhnke FIO bus coupler and various I/O modules. The Kuhnke FIO bus coupler converts the transmission physics and generates the system supply for the I/O modules. The standard network lines are connected on the one side and the I/O modules for the process signals in sequence on the other side, whereby the EtherCAT protocol is retained right down to the last I/O module. The connection of the inbound and return lines is automatically closed at the end of the module block, so that the next EtherCAT device can be connected to the second port of the bus coupler.

Kuhnke FIO Controller –
Modular CODESYS PLC

If the system runs as a PLC, a FIO controller module acts as the control head which supplies the Kuhnke FIO I/O modules with the required operating voltage and drives the internal bus. As an EtherCAT master, it sends EtherCAT telegrams for writing the output data and reading the input data. In combination with an extender module, additional EtherCAT slaves, such as latest-generation drives, can be connected, greatly facilitating the wiring up of different topologies such as a star topology. CODESYS V3 is used to program the control heads to meet the needs of every application. Various standard interfaces such as the Ethernet port (LAN) turn the system into a field control unit that easily integrates in modern environments. Other interface protocols including CANopen, Profinet or Modbus TCP are available as needed. By adding safety modules, a complete CODESYS safety control system can be created.

Status-LEDs

Release lever

Labelling clips

Grip

Signal state LEDs located next to the terminal

36-pin combi plug socket for Kuhnke FIO DI16/DO16

Shield connects straight to housing mount

Module lock and E-bus

Metal housing mount

Ventilation slots

DIN rail mount

Our solutions benefit users with...

...easy programming

Everything is based on CODESYS, the IEC 61131-3 programming system. It supports all editors of the IEC standard (FD, LD, IL, ST, SFC) as well as EtherCAT and CANopen fieldbus configurators.
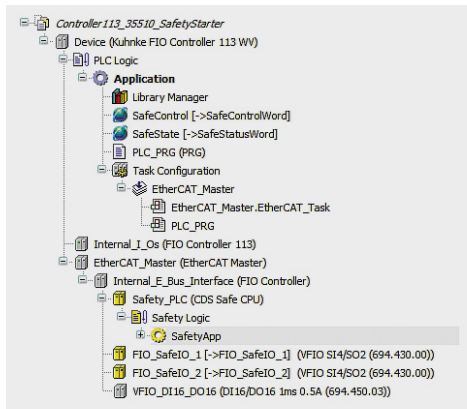
Programming is made easy by extensive debugging and online functions and a wealth of program libraries. The integrated system is completed by a visualisation editor plus remote maintenance and servicing.

One tool for everything.

...perfect module variety

Building upon nearly 40 years of experience, Kendrion Kuhnke has designed a large number of modules which can be easily combined into customised modular configurations to meet all your requirements.

Try them to set up a solution in perfect harmony with your application.

...included safety

The FIO system provides all safety features in its EtherCAT and CODESYS environment. The certified FSoE safety protocol supports routing via „grey" channels. The safety FD editor provided by CODESYS manages the cross communication between the PLC and the safety PLC as well as the online monitoring of safe and unsafe data.

Safety is an integrated solution.

...EtherCAT down to the last terminal

Without any other bus in between, the I/O data of the FIO modules are sent straight to the EtherCAT master for further processing. The master provides highest data access performance and perfectly synchronises the cyclic PLC task: Every module is an immediate EtherCAT station with a data transfer rate of up to 100 Mbps; distributed clocks are supported.

No more unnecessary delays.

...pro-active maintenance

Several tools and functions of our PLC and I/Os assist your on-site or remote maintenance and teleservicing in order to minimise your downtimes.
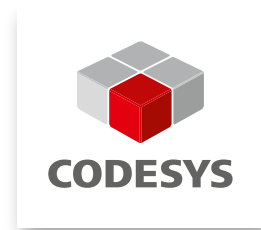
Pinpointing information for fast response time.

...a customised complete solution

Pick up distributed process signals and output them where they are needed by means of customised modules – This enables you to design and configure a perfect machine control system.

Automation must adapt to the machine not the machine to the components.

KENDRION | INDUSTRIAL

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