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## Trends of data communication for industrial automation and production control systems

Data communication in the field of industrial manufacturing is subject to a stronger change than ever.

With the increasing grade of reliability and cost efficiency the office communication technologies replace the serial protocols and copper connections of the traditional bus systems by Ethernet, TCP/IP protocol and fiber optic cables.

Therefore a new sphere of action develops for manufacturing control forced by large distances and requirements to high availability and insensitivity of optical medias against electromagnetic influences.

The process progressing steadily for years is still accelerated by the additional possibilities of sourcing power via data cable by Power over Ethernet (PoE).

Cameras, access points, media converters, telephones and many other devices can be energized directly as a PoE end device or by a splitter without an additional power cable. New standards allow to support devices that need more than 16W.

Due to different industrial demands the switches are equipped with special features:

- 2 uplink ports and one or more user ports for end devices, to create a data bus,
- the ability to find backup routes and to connect them in case of error,
- fiber optic ports to avoid electromagnetic interferences,
- extended temperature range, vibration resistance, alarm contact and
- optimal chassis design and DC power input to adapt to the conditions in the control cabinet

are some of the features that distinguish industry switches from office devices.

To connect new machines to a field bus, the electrician can cut a copper cable into length and connect it to the clamp terminal of the field bus device. Analogous to the copper cable there are Fast Ethernet transceivers with connectors or clamps for polymer optical fibers available. These cables shall be shorted by a cutting tool and mounted to the clamp connector without any other operation. In doing so distances up to ca. 70m can be realized in a simple way.

A quantum leap results from the network structure of Ethernet and TCP/IP. The existing infrastructure of the office communication can fully be used and provides extensive possibilities to distribute information of production control to any location in the entire enterprise (local or remote).

SFP modules, adapted to the requirements of industrial operation, allow the connection via diverse fiber optic technologies. WDM (wave division multiplexing) for instance is available as bidirectional transmission technology over one single optical fiber. Also CWDM or DWDM are available in order to share the transmission with other services or protocols over one single fiber.

The high innovation rate of office and WAN communication is also of benefit to the manufacturing control and data logging.



### Description

Industrial Ethernet  
PoE Power over Ethernet  
Data transmission by polymer optical fiber (POF)  
Fiber optic cable and accessories  
Homepage

### Deeplink

<http://www.ubf.de/en/industrie-ethernet.shtml>  
<http://www.ubf.de/en/poe-power-over-ethernet-shop.shtml>  
<http://www.ubf.de/en/lwi-pof-polymer-optical-fiber.shtml>  
<http://www.ubf.de/en/lwi-kabel.shtml>  
<http://www.ubf.de>