

# Ethernet-APL: Smart, fast, digital

## The 2-wire data highway for endless possibilities



### Standards and guidelines:

- IEEE 802.3cg:  
Communication with 10Mbit/s  
over a single twisted pair cable  
for long reach (10BASE-T1L)
- IEC TS 60079-47:  
2-Wire Intrinsically Safe Ethernet  
(2-WISE)
- Engineering guideline:  
Support for planning, installation  
and commissioning of APL  
networks
- Conformance testing:  
Interoperability of APL  
components – performed by the  
standard organizations to  
integrate it in the certification  
process of Industrial Ethernet  
protocols (e.g. PROFINET,  
EtherNet/IP, Modbus TCP)

More information on Ethernet-APL:



[www.endress.com/apl](http://www.endress.com/apl)



**Business situation** Process plants strive for efficient engineering and plant design. It is important to achieve a fast start-up and commissioning and to produce products with higher efficiency and quality. Trends like digitalization and Industry 4.0 reinforce these objectives by using the valuable data from the field level for optimization of processes.

Field level connectivity and data access are crucial to support these trends. Even if this is already possible with established technologies, there are limitations such as low speed, limited bandwidth and complexity by required protocol conversions.

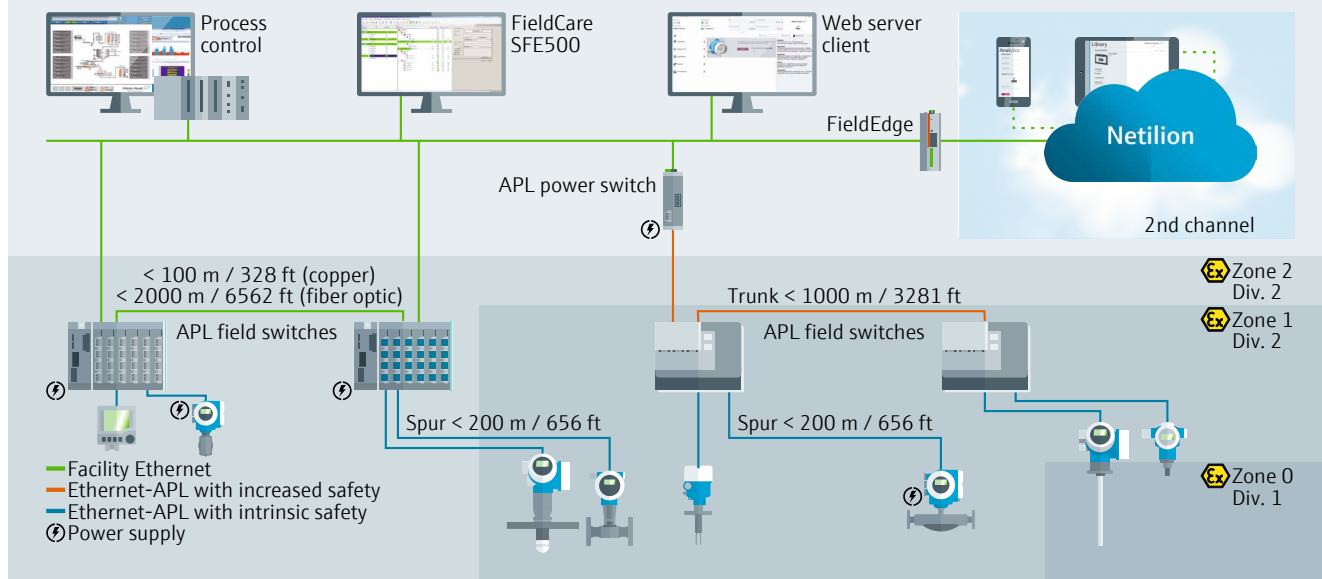
An Ethernet technology which meets the requirements of process plants would be beneficial.

**Ethernet-APL** The leading standards organizations worked together with major industry partners like Endress+Hauser to specify an advanced physical layer for Ethernet which meets the requirements of process industries.

Ethernet-APL is designed to be open, future-proof and ready for the Industrial Internet of Things (IIoT).

Ethernet-APL flattens the traditional automation pyramid, opening up new business potential for process plants. Data from the smart instruments in the field level can be accessed easily for any kind of further processing in upper layer applications.

## Ethernet-APL topologies



### Benefits over all life cycle phases

- Designed for process and hybrid industries
- State-of-the-art technology supporting digitalization concepts
- Flexible and scalable network topology design
- No need for hazardous area calculations (2-WISE)
- High plant availability with a variety of redundancy mechanisms
- Seamless data access by homogeneous network technology and IP-based communication
- Increased performance by accurate digital process values, high-speed data transfer and simple remote device access
- Optimized reliability by continuous diagnostics, monitoring and remote verification
- Straightforward 2<sup>nd</sup> channel and IIoT integration

**Ethernet-APL combines benefits of simple and robust 2-wire technology with benefits of Ethernet, enabling top-performance and seamless data access in the field of process plants.**

### Key characteristics

- Power and data via 2-wire cable
- Ethernet speed with 10 Mbit/s full-duplex
- Hazardous area protection for all zones and divisions, including intrinsic safety
- Terminal clamps including polarity independence or M12 connectors
- Open for any kind of Industrial Ethernet Protocol (e.g. PROFINET, EtherNet/IP, Modbus TCP)

### Endress+Hauser Ethernet-APL portfolio

- Broad Ethernet-APL portfolio across all relevant measuring principles: Flow, level, pressure, temperature
- Industrial Ethernet Protocol: PROFINET (more will follow in near future)
- Visit [www.endress.com/apl](http://www.endress.com/apl) for detailed insights

[www.addresses.endress.com](http://www.addresses.endress.com)