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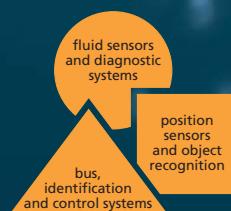


IO-Link – point-to-point communication.



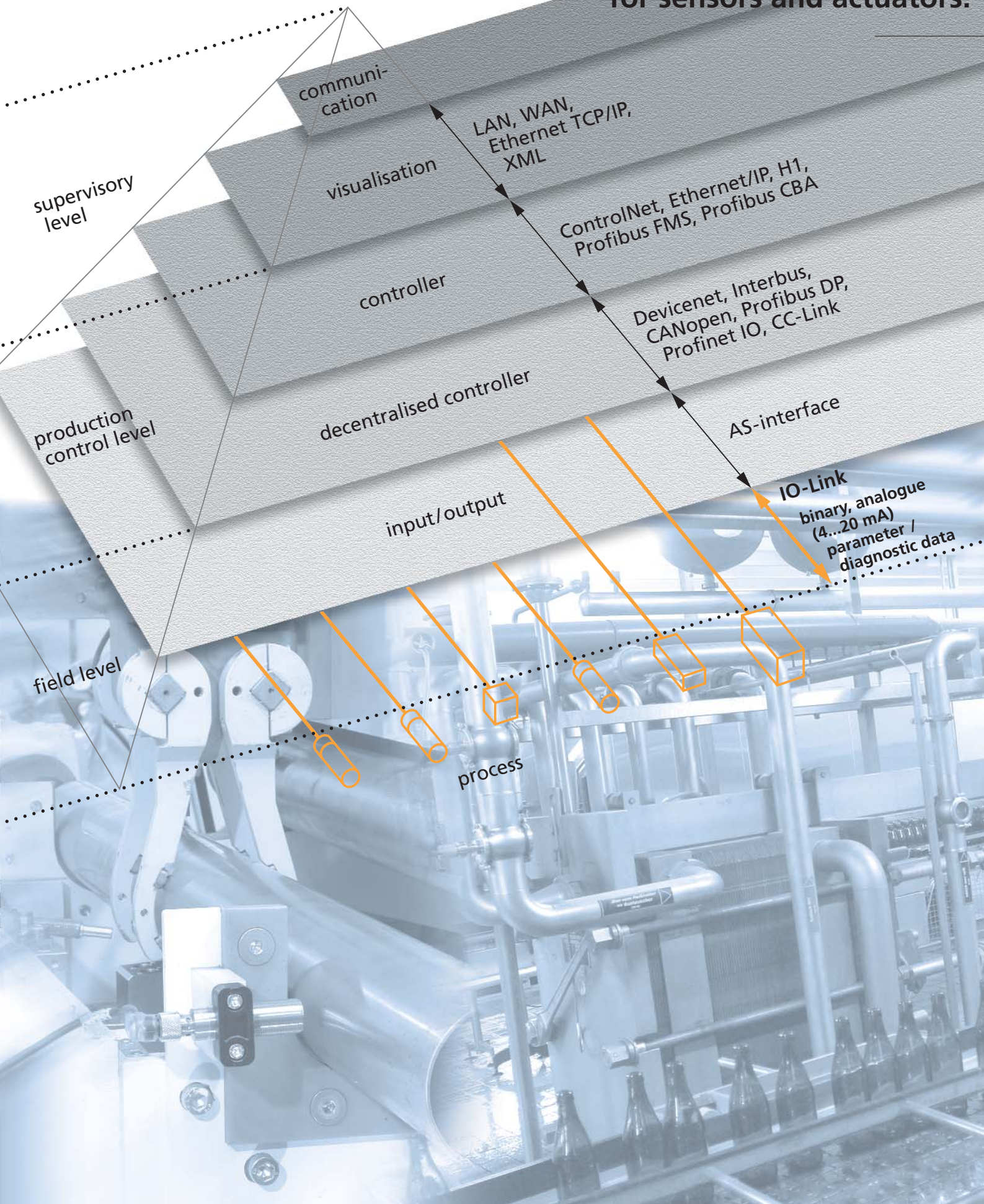
 **IO-Link**

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ifm electronic – close to you!

The point-to-point interface for sensors and actuators.





IO-Link

Use also for older installations, downward-compatible by using the standard sensor signal.

Easy replacement of the IO-Link units without additional software changes or operating panels, reduction of the set-up times.

Only one manufacturer and fieldbus independent system that will replace all proprietary systems in the medium term.

Additional diagnostic information can be requested if needed, meaning easier fault location and so reduced downtime.

Central diagnosis of the complete plant, e.g. via the FDT software.

Restoring the sensor / actuator parameters in case of replacement and servicing.

Interface for the last metre

IO-link is a point-to-point interface for the connection of any sensors and actuators to a control system. As opposed to conventional fieldbus systems this is not a bus wiring system but parallel wiring, for the "last metre" to the sensor. IO-Link is suitable for binary and analogue sensors and actuators.

The difference between IO-Link sensors and standard sensors lies in the combination of the standard output channel with an additional data channel.

So all existing connection cables can also be used for IO-Link units.

Communication

IO-Link sensors command three types of communication:

- switching status (binary, like conventional sensors)
- cyclical process data (e.g. digital transmission of measured values)
- transfer of device parameters and diagnostic data

Any combination of the three variants is possible.

So an optical distance sensor, for example, is first supplied with parameter data and in the process then only transmits a

switching signal when detecting an object in the defined zone. As an option, the sensor can also transmit an analogue signal, which is proportional to the distance.

Connection

Two procedures are possible to transfer this data to the controller:

- PLC with integrated IO-Link ports or
- decentralised modules with integrated IO-Link ports.

Compatibility

IO-Link units can be used without any problems on digital I/O without IO-Link port. IO-Link sensors then only work in the standard I/O mode with a binary switching signal.

When using an IO-Link module the parameter data can be read from the sensor, stored and in case of a replacement loaded to a new sensor of the same type.

This can even be done with on-going process. To do so, no special knowledge is required.



For industrial applications

IO-Link

IO-Link – data that convinces:

Open interface analogue / digital.

Serial point-to-point connection – no bus wiring.

Standard I/O connection technology.

Maximum cable length 20 m.

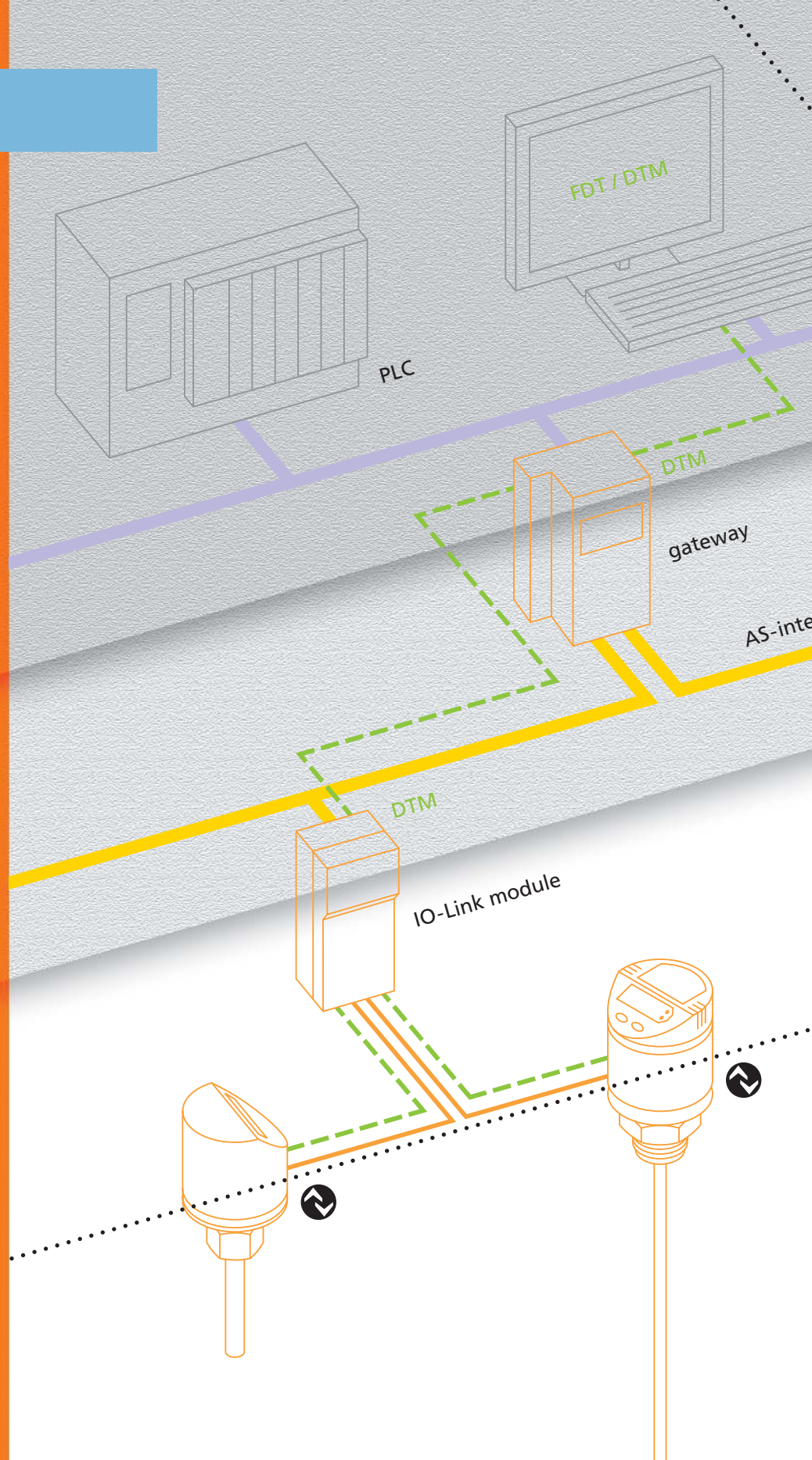
Signal transmission by means of 24 V pulse modulation and standard UART protocol.

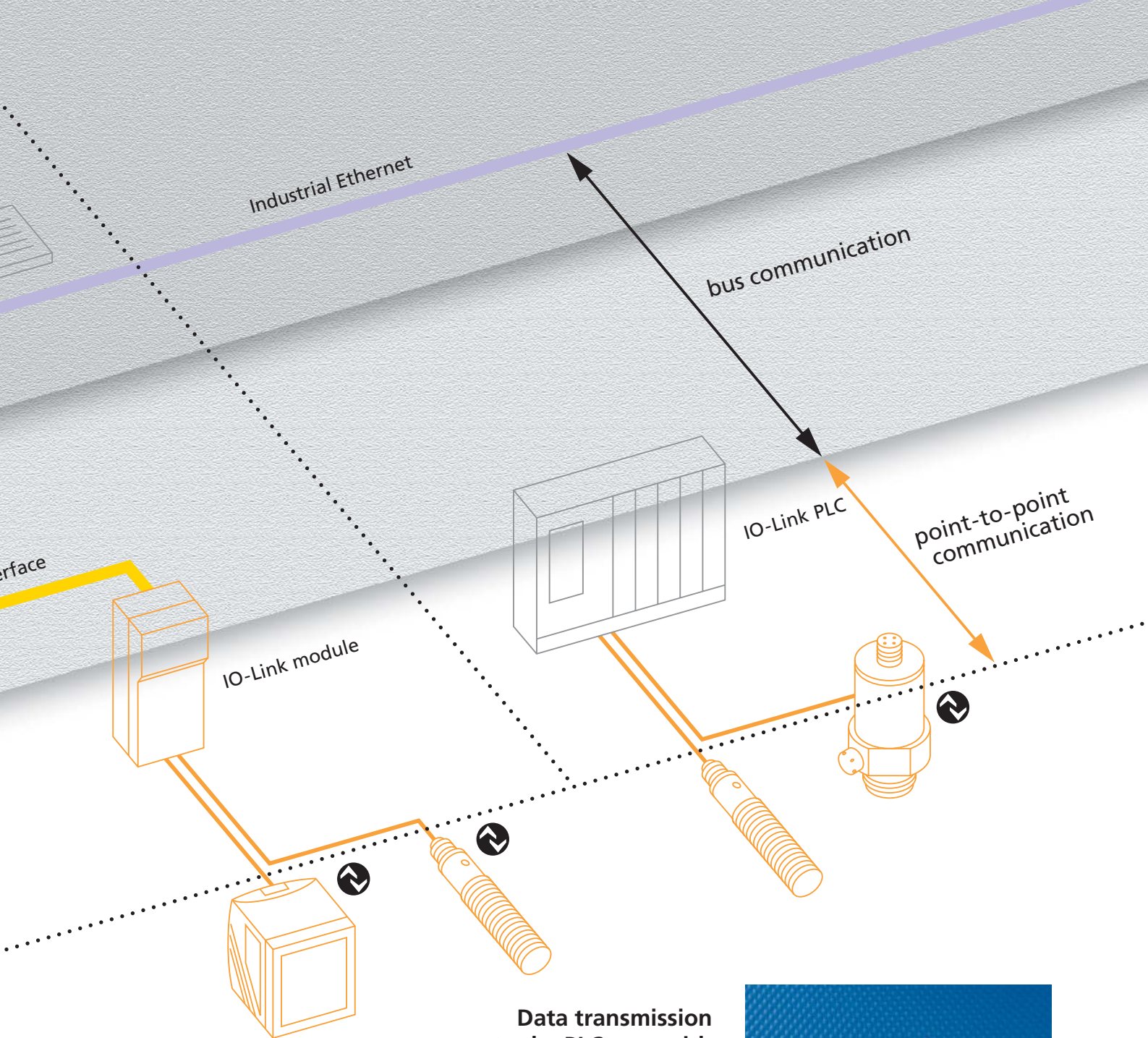
Standardisation to IEC in preparation.

“Mixed operation” possible (binary switching signal or serial data transmission).

Cyclical process data transmission with a cycle time of 2 ms.

Integrated, differentiated diagnostic messages.





Data transmission to the PLC: e.g. with the IO-Link module.

Flow of information over the last metre.

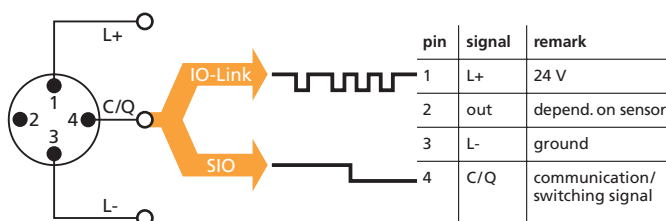
Process data

Binary signals are transmitted by continuous communication or, as done so far, in switching operation.

Analogue values are digitalised and transmitted by continuous communication.

Requested data

- configuration data
- setting data
- device identification
- messages
- fault analysis
- fault location



IO-Link module

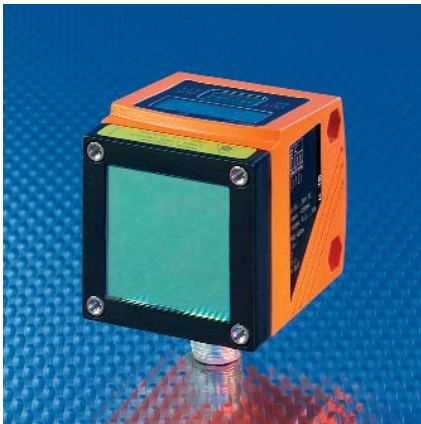
The point-to-point communication interface takes the physical signals of IO-Link and standard sensors and transfers them to the next higher bus level (AS-interface). The module combines the advantages of reduced bus wiring with the possibility of transmitting diagnostic, parameter and process data of intelligent IO-Link units. Conventional sensors and actuators can also be connected.

IO-Link



Capacitive sensors
Non-contact detection of any objects.
In contrast to inductive sensors
capacitive sensors can also detect non
metallic materials.

Process data via IO-Link:
binary switching signal
Parameter data via IO-Link:
adjustment parameters
Diagnosis via IO-Link:
uncertain sensing range



Optical distance detection
The efector pmd laser sensor is used
for distance detection to within a
millimetre for ranges up to 10 m.
It operates by the time-of-flight
principle.

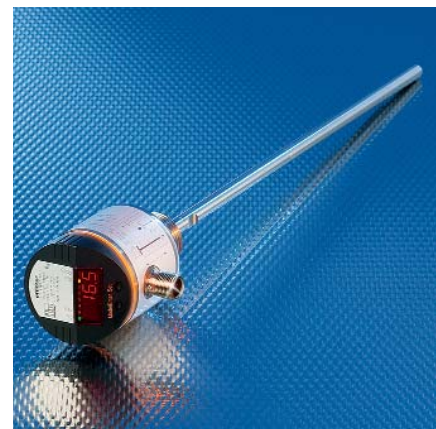
Process data via IO-Link:
continuously measured distances
Parameter data via IO-Link:
setting of the sampling rate
Diagnosis via IO-Link:
object outside the measuring range



Flow sensors
Sensors operating to the calorimetric
principle are an excellent choice to
monitor gases and liquids.

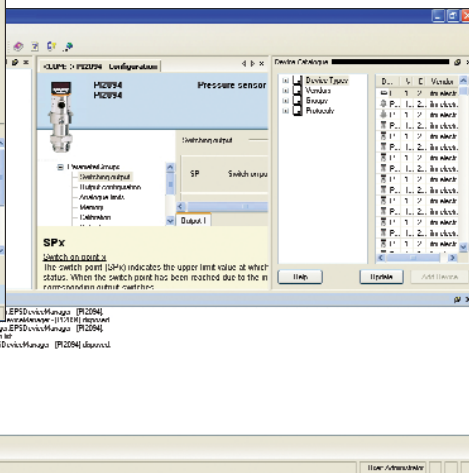
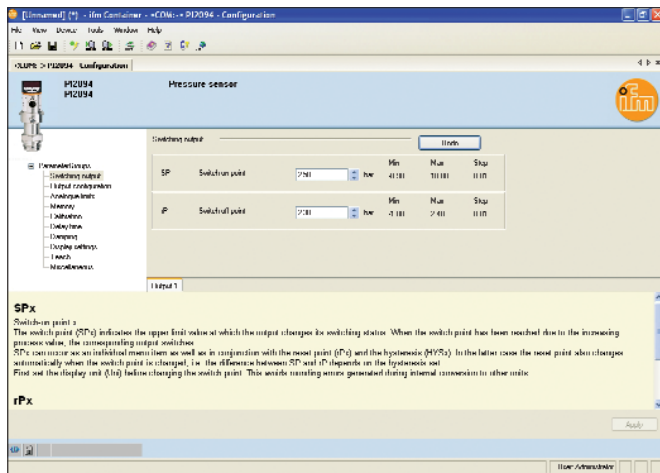
Process data via IO-Link:
binary switching signal
Parameter data via IO-Link:
switch points and NC/NO function
Diagnosis via IO-Link:
incorrect parameter setting

Intelligent IO-Link sensors



Level sensors
efector gwr level sensors operate
on the basis of guided wave radar.
Applications are water-based media,
e.g. coolants and cleaning liquids.
Due to its compact design the sensor
is also suitable for small tanks and
aggregates.

Process data via IO-Link:
continuous level
Parameter data via IO-Link:
set switching hysteresis
Diagnosis via IO-Link:
uncertain zone



The FDT container software allows access to all sensor parameters.

Looking into the sensor – with the FDT container software.

The FDT technology standardises the communication interface between field devices and the system environment (host). The special feature of this technology is that it is independent

of the communication protocol used and of the respective software environment. The user is also free to choose the unit to be used and the control system used. In brief: with FDT it is

possible to address any unit via any system using any protocol. With IO-Link the FDT technology is complemented and supported in the best possible way.



Pressure sensors

The compact pressure sensors are extremely robust against mechanical influence and work completely without wear and fatigue. The resulting long-term stability ensures reliable measurement results over 100 million pressure cycles.

Process data via IO-Link:

binary switching signal

Parameter data via IO-Link:

switch point setting

Diagnosis via IO-Link:

incorrect parameter setting, overpressure and self-diagnosis of the measuring system.

Hand in hand: IO-Link and AS-interface

AS-interface and IO-Link complement each other in the best possible way. AS-i is a serial bus system with a master and up to 62 slaves on a common communication cable. IO-Link is a connection between only one unit and exactly one counterpart (port). These IO-Link ports can be integrated directly into controllers or

in decentralised bus modules. The use of IO-Link compatible bus modules combines the advantages of wiring saving with the diagnostic options of intelligent IO-Link sensors. For the definition of IO-Link special emphasis was placed on the compatibility with conventional units with a simple

binary output stage. In the standard I/O mode IO-link sensors can also be operated on conventional input modules. Conversely, sensors with switching output also work on IO-Link input ports. This enables a step-by-step changeover of existing installations depending on the required information.

Mixed variants consisting of bus modules and sensors in conventional and IO-Link version can also be used for new installations. Bottom line: IO-Link is an excellent choice for use with the fieldbus system AS-interface. Advantages: less wiring, simple "plug & play" and additional diagnosis.



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