IO-Link for transparency down to the lowest field level

Simple wiring, fast fault diagnostics, efficient engineering

siemens.com/io-link
Uninterrupted communication down to the last meter: the point-to-point connection IO-Link

Consistent cost reductions, high plant availability, and transparency require an open, standardized and low-cost system for connecting actuators, sensors, and other field devices to the automation system. IO-Link meets these requirements and additionally offers systematic diagnostics concepts and efficient handling of parameter data at all levels of automation engineering.

IO-Link – more than just another interface
IO-Link is the smart concept for standardized linking of switching devices and sensors to the control level by means of an economical point-to-point connection. The IO-Link communication standard at the fieldbus level enables centralized fault diagnostics and localization down to the sensor/actuator level. Because parameter data can be modified dynamically direct from the application, the devices can be adjusted to the prevailing production requirements during operation.

IO-Link-enabled products
The requirements for integrated communication are increasing. At the same time, sensors and actuators are becoming more and more intelligent. This is where the IO-Link solution from Siemens goes that extra distance in the process, with data transparency from the field level to the highest automation level, and with an increasing number of IO-Link-enabled products. As an open interface, the IO-Link can be integrated into all common fieldbus and automation systems. Thanks to data access right down to the lowest field level, plant availability is increased and the engineering overhead is reduced. Consistent interoperability ensures maximum protection of investment. This also applies in the context of existing machine concepts for continued use of sensors without an IO-Link interface. IO-Link enables automatic integration of measured values for energy data management systems without additional installation costs. This makes it easy to determine and subsequently analyze energy consumption and fluctuations right down to the field level.

Together for uniform quality
The communication standard was developed by the IO-Link Consortium – a group of leading providers of automation products that have come together to support the new concept in all areas of control, sensor, and actuator technology.

The task
The furnace of this steel production plant in Duisburg, Germany requires above all a reliable supply of well-prepared coal. In a modernization project at Emscher Aufbereitung GmbH, the conveyor belts, along with all auxiliary equipment – from the underground hopper to the three run-of-mine coal silos – were fitted with new electrical engineering and automation systems under the auspices of the automation specialist EAS GmbH.

Our solution
Skillful grouping of SIRIUS motor starters with IO-Link and parallel wiring enables a considerable reduction in wiring overhead. The motor starters combine the circuit breaker, contactor and electronic overload relay functions in a single compact enclosure. SIRIUS current monitoring relays help to improve data acquisition and also communicate with the controller via IO-Link. Measuring the active current also allows conclusions to be drawn about how efficiently the drives are working.

The benefits
• Motor starter with IO-Link results in considerable savings in wiring overhead
• Multiple diagnostic options optimize plant operation
• Rapid detection of faults in the control room and targeted troubleshooting

Current monitoring relays in the conveyor system ensure targeted monitoring of the drives.

Food processing industry

Conveyor application for agricultural products
The task
Tolsma-Grisnich, specialists for automation solutions for agricultural products, has implemented a series of processing lines for foodstuffs for the Wild company in Eppingen in Baden-Württemberg.

Our solution
We use SIRIUS 3RA6 motor feeders with IO-Link communication to significantly reduce the wiring – as well as minimizing the risk of errors. SIRIUS current monitoring relays are used for transferring current measured values. They monitor the process for overcurrent and undercurrent, cable breaks or phase failure.

The benefits
• Simple wiring, efficient engineering and rapid diagnostics using IO-Link technology
• Valuable diagnostics information about processes, operation and potential faults

Substantial savings in control circuit wiring, fewer downtimes, accelerated engineering, and transparent diagnostics were the decisive arguments in favor of IO-Link.

References

Steel industry

Modern industrial controls as the basis for efficient plant operation when preparing hard coal products

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More efficiency at all levels: Thanks to IO-Link, Totally Integrated Automation is possible right down to the process.

### Requirement

#### Solution

1. **Lower parameterization overhead with the Port Configuration Tool from Siemens**
   - Easier access to IO-Link devices
   - Library with device-specific function blocks

2. **Flexible device setting**
   - Rapid replacement of worn or defective components
   - Manufacture of different product versions
   - Fast re-configuration of the master after replacement or fault removal

3. **Efficient engineering**
   - SIMATIC S7-PCT configuration tool integrated into engineering tools
   - A wide range of manufacturers
   - Storage of the device parameters in the IO-Link master or IOL_DEVICE function block
   - Parameterization of the new master using the IOL_MASTER function block or the CPU with the IOL_DEVICE function block

4. **Simplified replacement of components**
   - Fewer terminals thanks to the use of Siemens IO-Link devices equipped with enhanced functionality
   - Standardized point-to-point connection technology
   - Fewer wiring errors
   - Reduced control cabinet requirement

### Benefit

- Minimization of downtimes and simplified replacement
- Avoidance of costly load peaks
- Optimization of energy requirements
- Targeted maintenance planning
- Maximization of plant availability and extension of product portfolio

### The IO-Link product portfolio from Siemens

1. **SIMATIC S7-PCT configuration tool**
   - Eases device configuration
   - Centralized IO-Link master
   - Supports different device manufacturers
   - Enhanced functionality

2. **SIMATIC ET 200eco PN**
   - Centralized IO-Link master
   - Supports different device manufacturers
   - Enhanced functionality

3. **SIMATIC RF220R**
   - Commanding and signaling devices

4. **SIMATIC RF260R**
   - Modern automation technology

5. **SIMATIC RF210R**
   - Software for automation technology

6. **SIMATIC ET 200SP**
   - Integrated energy management

7. **SIMATIC ET 200S**
   - Predictive maintenance

8. **SIMATIC ET 200AL**
   - Quick diagnostics

### Further development ensured by wide device manufacturer base
Find out everything about IO-Link:

› Animations about the benefits of IO-Link
› Product and reference films
› Detailed information about IO-Link and the IO-Link products

Siemens IO-Link – at a glance!

Find out more:
www.siemens.com/io-link

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