IO-LINK EDUCATIONAL KIT
DL RF IO-LINK

This image is for reference only

DESCRIPTION

The **Smart Factory,** also referred to as **Industry 4.0,** brings together advanced technologies such as collaborative robots, augmented reality, digital twins, artificial intelligence, and various cloud-based software solutions (SaaS). Many of these technologies rely on insights derived from Big Data.

Among the various technologies used in **Smart Factories**, **IO-LINK** technology plays a key role. This standardized communication system enables intelligent connection between sensors, actuators, and the control system. **IO-LINK** enables bidirectional data exchange, simplifying device configuration, monitoring, and diagnostics. Thanks to its flexibility, it improves operational efficiency and **predictive maintenance**. To properly use and manage **IO-LINK** devices, a **PC** (**not included**) is required, which allows parameter configuration, real-time data viewing, and integration with supervision and control software.

In the context of connected manufacturing systems, digital tools typically enable the flow of information between these systems and external intelligent processors. On a production line, this data exchange is mainly used for monitoring and controlling operations, as well as for maintenance purposes. Information is gathered by smart sensors and transmitted to the programmable logic controller (PLC) to manage the production workflow. It is also sent to configuration and monitoring platforms to observe system performance and oversee the production process.

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The approach to system maintenance has undergone a major shift—from reactive or scheduled interventions to **predictive maintenance**, where data analysis helps determine the most effective time to replace a failing component.

OBJECTIVES OF THE TRAINER

1. **Setup of a full IO-Link network**
   - Supplying power to the IO-Link Master unit.
   - Linking the Master to the industrial PLC system.
   - Connecting IO-Link sensors to the Master for live monitoring. The touchscreen provides guided, step- by-step instructions for each connection and confirms correct wiring (interactive setup).

2. **IO-Link Sensors Setup**
   - After the wiring is completed and functional, the user proceeds to adjust the sensor settings (such as detection range, color identification, etc.) using a Bluetooth transmitter and the **Moneo**|**Blue** app, available for free on Android.
   - The configuration is instantly checked and confirmed on the touchscreen interface.
   - A guided discovery sequence is included to help users understand the specific function of each sensor.

3. **Cycle Configuration**
   - Identifying and defining the various detection zones.

4. **Starting the Automated Cycle**
   - Place a colored block (either a cube or a rectangular prism) on the left-hand side, where it will be detected by a sensor.
   - Press the start button to move the block forward toward another sensor, which identifies its color.
   - One sensor measures the object's height; another one determines the type of material (whether it is magnetic).
   - If a sensor, located on the right side of the conveyor, detects the block, the conveyor stops and the system displays the result of the cycle.

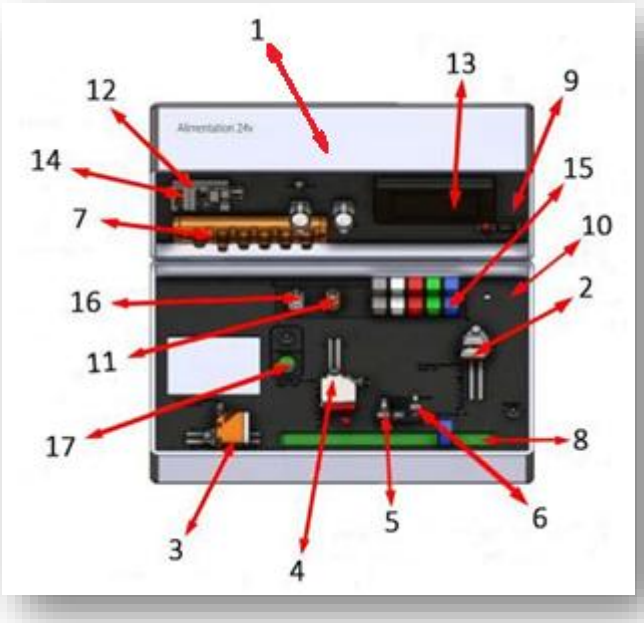
5. **Sensor data is monitored throughout the sorting process**
   - The system connects via a Wi-Fi access point to a PC running either the free **Moneo Configure** software (which allows you to easily configure multiple IO-Link sensors at the same time) or the **Moneo RTM** solution (which is a real-time monitoring system - **R**eal **T**ime **M**onitoring).

THE IO-LINK TRAINER

We have defined a setup that includes the main communication components of a small production line, designed to help get started with IO-Link technology and understand how it works.

A custom setup that brings together the components listed below to create a complete system, including both the operational part (mini conveyor belt) and the control part (PLC, HMI, and sensors):

1. Main unit,
2. IO-LINK Proximity Sensor,
3. IO-LINK Distance Sensor,
4. IO-LINK Color Sensor,
5. IO-LINK Energy Sensor,
6. IO-LINK Inductive Sensor,
7. IO-Link Master AL1326,
8. Mini Conveyor Belt 24V,
9. Wi-Fi Router, Nano, micro USB port,
10. Power Supply Module,
11. Bluetooth Transmitter, IO-Link, **Moneo**|**Blue** (free),
12. Network Card TM4ES4,
13. Touch Screen HMISTU855,
14. PLC,
15. 8 Prismatic Parts of different colors, materials, and dimensions,
16. Relay Module,
17. Capacitive Illuminated Push Button.



Power Supply: 110/230Vac, 24Vdc.