



*On request it can be supplied with an interface software for real time visualization of manipulator data (web application).

An INDEVA® Manipulator equipped with an INDEVA® Gateway can exchange data with Customer's IT System, through the Company wi-fi network.

Technical specifications:

- > data transmission protocol. Standard Modbus TCP/IP
- > connection to Wi-Fi network: 802.11.2.4 Gh
- > manipulator configuration: server

INDEVA® GATEWAY allows OUTPUT and INPUT data exchange in real time.

OUTPUT

Machine Data, e.g.:

- > digital inputs status
- > digital outputs status
- > machine alarms

Performance Data, e.g.:

- > gripping tool cycle
- > number of kilometers covered by the cable*
- > consumption (kw/h)*
- > machine working temperature*
- > approximate weight of lifted load*

Maintenance management Data:

- > preventive and ordinary maintenance management and scheduling, with warning when imminent maintenance is required.

INPUT

Working Data, e.g.:

- > load picking/release position control
- > load picking/release height control
- > bar code recognition
- > part picking sequence control

VISION AND ADVANTAGES OF PRODUCTION IN INDUSTRY 4.0

- ◆ **Consistent availability of data**
- ◆ **Increased production flexibility**
- ◆ **Optimized decision processes**
- ◆ **Enhanced Planning tanks to production data availability in real time**
- ◆ **Enhanced Productivity and more efficient use of human resources**

DATA COMMUNICATION capability is a feature required for machines in industry 4.0

APPLICATIONS WITH INDEVA MANIPULATORS INTERCONNECTED

Product identification

Identification of the handled product (according to its model and/or serial number), allows to **plan production process** as per the following paradigms:

◆ Product Registration

Product recognition can be achieved in different ways: by product model according to its shape; by serial number through bar code or RFID tag reading. Product recognition allows **material traceability** and registration in the management system.

◆ Adaptive cycle

Machine cycle can be adapted according to product model and/or serial number, and/ or the working sequence. The manipulator can be programmed to act differently according to the part to handle, e.g.:

- ◇ if **a model does not have to be picked** the manipulator will not carry out load gripping and/or will produce a warning for the operator.
- ◇ **different release positions** can be planned according to product model or serial number; the manipulator will display the correct release position for each picked load and will prevent release in the wrong position.
- ◇ it is possible to allow picking only of certain models in order, for example, to **fill a pallet according to specific requirements**.

◆ Poka-yoke

Any process that requires the flexibility of a human operator is subject to suffer from human error as well. Thanks to INDEVA® Gateway, **a process carried out by an INDEVA® manipulator is not subject to human error.**

Enhanced production flexibility

Flexibility in production process planning makes it possible to produce **more product types in less time at lower costs**. Mixing different products in one production chain is achievable only if intelligently controlled by a production management system that can interact with operator and machines, including manipulators.

Supervision of manipulator

INDEVA® Gateway allows to monitor manipulator status both from inside and outside the Company network.

Supervision allows, e.g.:

- ◇ prompt maintenance actions in case immediately required thanks to real time warning;
- ◇ storing of manipulator performance data;
- ◇ manipulator status monitoring in order to prevent improper use (lifting weight above max capacity, working at environment temperatures beyond the allowed limit, etc.);
- ◇ scheduling maintenance on the basis of actual work conditions.

Monitoring worker's effort and optimization of ergonomics

INDEVA® Gateway allows to monitor and control the operator's effort and to plan a proper use in order to satisfy the request for both **more productivity and more ergonomics for the operator**.