Wireless Communication

Interference-free, scalable and reliable

THE KNOW-HOW FACTORY

IO-LINK WIRELESS MODULES
INDUSTRIES

DESIGNED FOR YOUR REQUIREMENTS

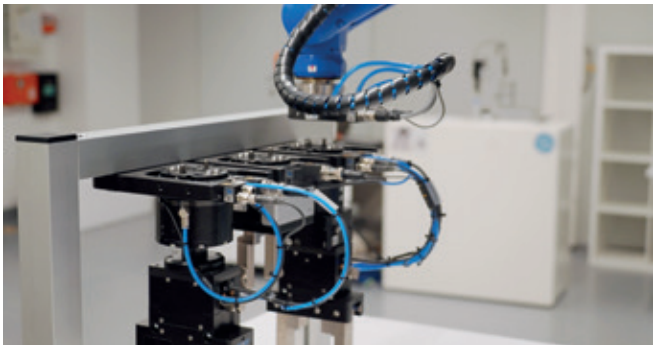
Zimmer group solutions are adressing a variety of industries, such as automotive, food & beverage, metalworks, pharmaceutical, CPG, and more. These solutions are enabling machines and production lines to do more by expanding their flexibility and capacity in a cost-effective manner. Smart ultra-reliable wireless communication in the factory is enabling applications not possible before that are driving operational efficiency, production and machine optimizing, higher availability, sustainablity and greater intelligence to manage the business.

YOUR BENEFITS

- All Zimmer Group IO-Link grippers and MATCH IO-Link components as well as almost any other IO-Link components can be used, regardless of the structure of the existing robot/plant base.
- No complex communication cable routing through the robot or system (slip rings, contact elements etc. not required)
- No source of error due to moving data cable (mechanical obstacle, broken wire) Wearing part eliminated
- Scalable, simple expansion of further grippers by logging on to the master

Food & Beverage, Pharmaceutical, Cosmetics, CPG

- Mass customization – eliminate tradeoff between capacity and flexibility
- Improve hygiene through cable reduction in sterile environments
- Support rapid and cost-effective changeovers for multiple product and package types
- Viable for all packaging stages with a range of solutions for robotics, transport tracks, retrofit and carousels



Robotics

- No more distracting contours caused by unnecessary cables (as shown left): significantly reduced need for communication cables
- Cost-effective and flexible robotics and logistics solutions
- Wireless communication enables mobile applications e.g. AGV, shuttles, circulation systems rotary indexing tables

Automotive Manufacturers and Suppliers

- Optimize the assembly process through wireless control solutions on moving transport/conveying systems such as assembly of car seats or batteries
- Enable simple and cost-efficient condition monitoring and machine retrofit
- Increase flexibility and reduce maintenance witrh wireless and-of-arm robotics assembly, welding and inspection lines

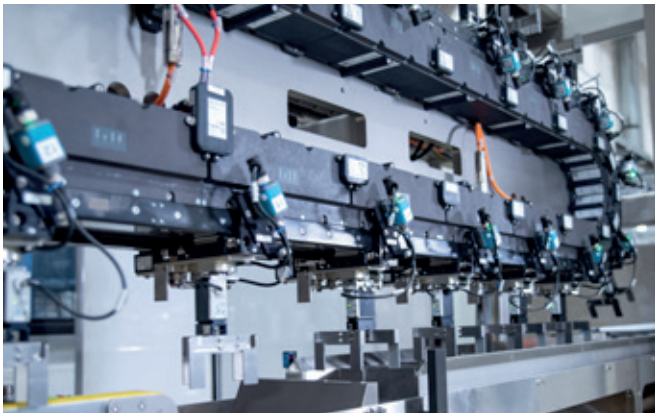
IO-LINK WIRELESS MODULES
APPLICATIONS

HIGH-PERFORMANCE SOLUTIONS

Zimmer Group enables faster and more flexible manufacturing by providing high-performance machine digitalization, wireless connectivity and edge solutions for machine builders, system integrators and industrial equipment manufacturers. Industrial-grade wireless communication is a key pillar of Industry 4.0 applications. It‘s about enabling more sophisticated transport and conveyer systems, real-time control and monitoring of rotating machinery, the ability to place sensors anywhere in the factory for real-time data collection and more. It‘s about a truly intelligent production line that can take flexibility and agility to new levels, and further drive predictive maintenance and operational excellence.

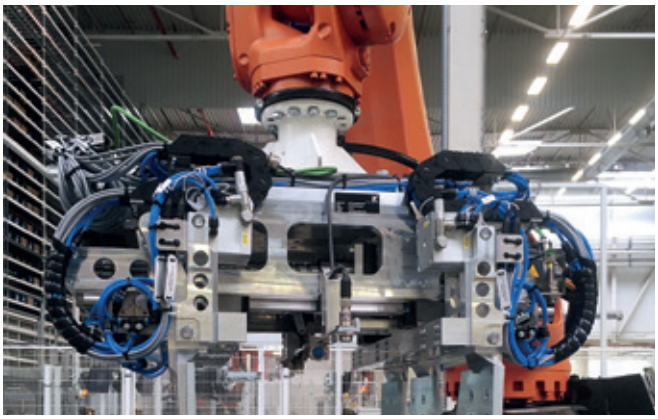
YOUR BENEFITS

- Scalable: One Master connects up to 16 IO-Link devices, up to 3 Masters in one cell brings up to 48 devices per instance
- 2 Tracks with 8 timeslots for sending all data in one cycle
  - IO-Link Wireless provides a deterministic latency of up to 5msec per cycle
  - 16x BCM (Bridge) with single slot
  - 8x BCM (Bridge) or BCM (Hub) if device is used with > 16 bytes (default 32 bytes)
- Determistic protocol: Reliability better than 1 e-9 Packet Error Rate (PER). Example: Wi-Fi, Bluetooth, Zigbee 6 orders of magnitude less reliable at (~1 e-3).
- Coexistence: high reliability and coexist with other wireless networks along with other potential sources of interference. Mechanisms such as blacklisting and adaptive frequency hopping integrated.
- Reliable: One master supports high quantity of actors and sensors which can be located decentral in flexible way. Reducing wiring, contact points, cable guiding reduces source of error and technical barriers.



Transport Tracks & Smart Conveying Systems

- Maximum flexibility – End effectors can be controlled independently, ensuring flexible positioning
- Increased Capacity – Perform actions while movers are in constant dynamic motion
- Mass Customization – Enable automatic changeover and rapid tooling setup for range of products/package types
- Footprint & Cost Reduction – Support multiple designs and materials within a single machine
- Simplified Maintenance – Reduce mechanical components and external automation equipment
- Downtime Reduction – Condition monitoring and predictive maintenance



Robotics

- Increased Flexibility – Full rotation flexibility and agility without cable interference and constraints
- Complexity Reduction – Efficient deployment without cable clusters and mounting accessories, simple tool changeover
- Maintenance Reduction – Reduce downtime and maintenance due to cable wear and tear
- Payload Reduction – Multiple sensors/actuators connected wirelessly on end-of-arm reduce the weight burden on the robot
- Cost Reduction – Significant reduction of expensive high-torsion cables and accessories

Retrofit and Condition Monitoring

- Simple and Fast Deployment – Simplify relocation and upgrades of existing machines and production lines with wireless sensors
- Flexible – Fit for both fixed and fast rotating/moving components.
- Supports analog, digtal and IO-Link devices
- Maintenance & Downtime Reduction – Reduce cable wear and tear and unplanned downtime
- Scalable – Scale to hundreds of wireless units in a single work cell or machine area, coexists with other networks

Rotary Tables & Carousels

- Increased Capacity – Perform actions while in constant rotating motion
- Less Maintenance - Reduce wear and tear on cables, Eliminate cleaning of slip rings
- Mass Customization – Enable automatic changeover and rapid tooling setup for range of product types

Machine Optimization & Data Collection

- Data Collection – Intuitive and rapid setup of high-resolution, vendor agnostic, synchronized and time-stamped data
- Process Tuning – Process optimization tool for continuous output evaluation and machine parameter adaption/tuning
- HMI Integration – Simple custom dashboard integration to HMI for operators and engineering experts
- Treaceability & Visibility – Simple access and sharing of post data, and access to real-time data as it is being generated

In addition to the communication modules, Zimmer Group also supplies the matching end effectors as well as software.

IO-LINK WIRELESS MODULES
SOLUTION ARCHITECTURE

EASY INTEGRATION WITH IO-LINK WIRELESS

The correct electrical interface for intelligent grippers is often missing at the robot flange, as there is not always the appropriate cable inside the robot arm. External cable routing however results in restricted freedom of movement and causes sources of disruption. The answer to this problem: IO-Link Wireless. A wireless transmission of all necessary signals and information for your application. Grippers connected to the Bridge Modules of the BCM series are controlled by an MCM. The Master Communication Module can be integrated in its different variants at fieldbus level. In addition to specific function modules for controlling IO-Link grippers, corresponding instructions are available as well.

AUTOMATION PARTNER BY YOUR SIDE

Hardware, software and know-how - all from a single source. With our many years of experience as a global automation partner, we support you in the successful integration of your IO-Link wireless components. From initial expert consultation, through reliable delivery of hardware and software, to setup and beyond.

SINGLE SOURCE EXPERTISE

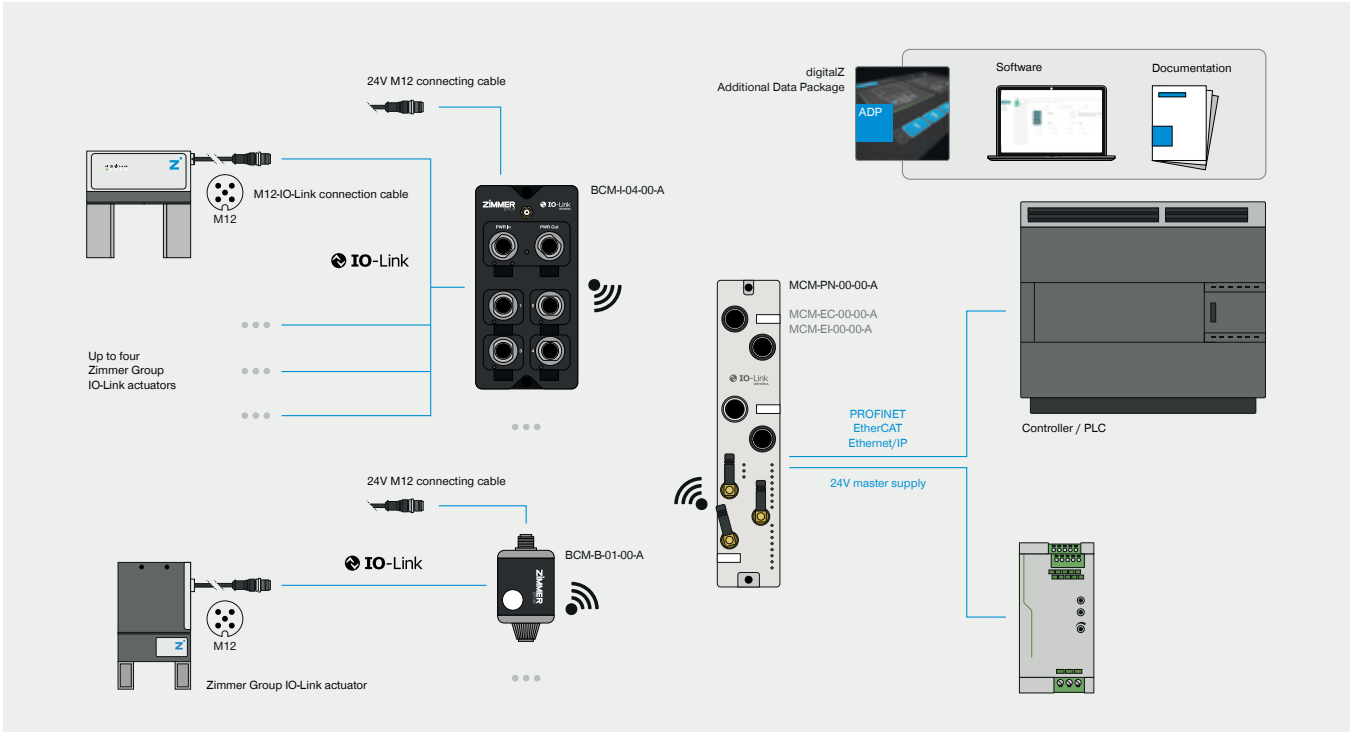
Reliable
Cable-grade reliablility, deterministic, coexists with other networks, immune to industrial environments

Scalable
Supports a large number of devices while maintaining the required low latency and high reliablility

Fast
Low latency of 5 msec with ultra-high synchronization rates

Universal
Part of the IO-Link IEC standard designed for both wireless control and monitoring

Device connectivity



IO-LINK WIRELESS MODULES
PRODUCT OVERVIEW

SOFTWARE FOR SETUP

A software-based engineering tool for efficient setup of IO-Link Wireless Masters and devices. Enables installation, configuration, and monitoring of an IO-Link Wireless system. With an intuitive user interface, the software offers an advanced IODD finding and parsing tool, and an MQTT publisher along with data collection capabilities from multiple Masters for integration with cloud-based and other enterprise/IIOT systems.

IO-Link wireless

IO-Link Wireless is a deterministic, low latency (5 msec), highly reliable, and scalable universal wireless communication protocol. Based on the IO-Link IEC 61131-9 standard, it is designed specifically for factory automation, coexisitng with other networks – both wired and wireless.

MASTER

IO-LINK WIRELESS

MCM
A 2-Track IO-Link Wireless Master with IP67 enclouser. Supports up to 16 IO-Link Wireless Devices simultaneously along with Industrial Ethernet and OPC UA protocols.

MCM-EC-00-00-A
Control: EtherCAT
Mounting options: Screw mounting

MCM-EI-00-00-A
Control: Ethernet/IP
Mounting options: Screw mounting

MCM-PN-00-00-A
Control: Profinet
Mounting options: Screw mounting

MCM (Gateway)
An IP20 IO-Link Wireless Master with Edge Computing functionality. Supports up to 8 IO-Link Wireless Devices simultaneously. Includes a Linux OS Edge Processor for running a variety of advanced applications and edge-computing.

DEVICES

IO-LINK WIRELESS

BCM (Bridge)
BCMs are IO-Link Wireless Class A/B bridges, converting Class A/B IO-Link devices to IO-Link Wireless. The BCM is IP67 rated with an internal custom antenna.

BCM-B-01-00-A
Control: IO-Link Wireless
Number of grippers (max.): 1
Mounting options: Screw mounting

BCM (Hub)
Multiport hub for IO-Link Wireless connectivity of IO-Link, Digital and Analog devices. Connects up to 4 IO-Link devices and up to a combination of 6 IO-Link/DIO devices and converts them to IO-Link Wireless Master.

BCM-I-04-00-A
Control: IO-Link Wireless
Number of grippers (max.): 4
Mounting options: Screw mounting

More Information about Wireless Communication

ZIMMER GROUP – THE KNOW-HOW FACTORY

OUR KNOW-HOW FACTORY WORKS WITH ALL INDUSTRIES AND DELIVERS EVERYTHING FROM A SINGLE SOURCE. OUR PRODUCT RANGE IS FAR REACHING, BOTH IN ITS DEPTH AND ITS BREADTH.

DO YOU HAVE A DEVELOPMENT PROBLEM? WE'LL SOLVE IT! SET US A CHALLENGE IN RESEARCH AND DEVELOPMENT. COUNTLESS INNOVATIONS ORIGINATE FROM OUR COMPANY. WE ARE ENTHUSIASTIC ABOUT NEW PRODUCTS AND PRIDE OURSELVES ON OUR CORPORATE PIONEERING SPIRIT.

CONTACT – WORLDWIDE

With our current 13 global subsidiaries and partners in over 125 countries, we offer the excellent service of a technology leader. We look forward to hearing from you!

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