# IO-LINK WIRELESS FOR IIOT

DATA COLLECTION & INDUSTRY 4.0

Data and Digitization are key driving factors of the Industry 4.0 revolution. Data needs to be collected throughout the factory – **anywhere and without exceptions.** Access to data from sensors across the factory enables powerful analysis and decision-making in addition to optimization of manufacturing planning and processes. Data-based applications are leading to more intelligent solutions, flexibility, agility in manufacturing, and better planning for efficiency & cost reduction.
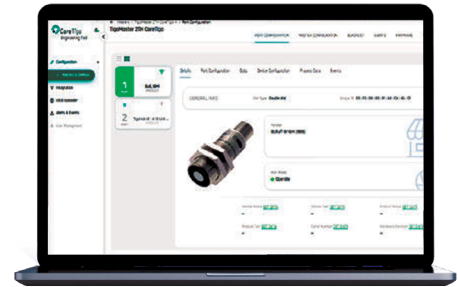
The collected information must be **reliable**, and data access must be **scalable** to thousands of sources, where even a single machine can generate hundreds of parameters. Thus, data collection and connectivity to the sources and sensors becomes a major challenge. The total cost of data collection can end up building into a major expense, taking into consideration cable deployment cost and related machine downtime and wear-and-tear of cables. In the food and drug industry, for example, there is a need for frequent sterilization which is often challenging in the case of large cable braids. As major factories have hundreds of discrete machines, all requiring sensors connectivity, cabling deployment and maintenance often become a major source of cost, requiring many resources and much attention.
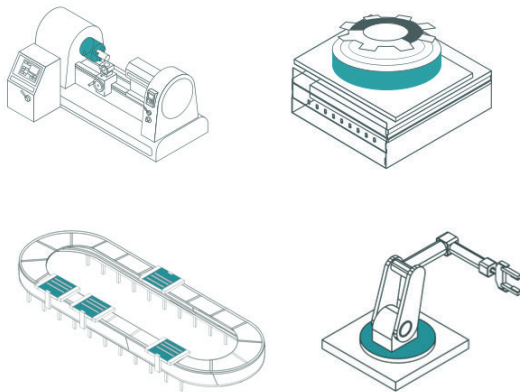
DATA COLLECTION ENABLED BY WIRELESS CONNECTIVITY

Data collection in an industrial environment is often not cost-effective or even not feasible. As sensors must be placed where the data is, this often requires the installation of sensors in challenging and hard-to-reach places. It can be inside machine parts, on fast-moving or rotating platforms, or at remote locations. To overcome these cable-deployment constraints and support the flexibility needs, **OT-grade wireless technology** must be integrated on the factory floor. Such technology needs to be designed and fit for factory automation. True Industrial IoT cannot rely on conventional wireless technologies designed for commercial IoT applications, such as Zigbee, Wi-Fi, or Bluetooth. The noisy environment, low latency demands, and scalability needs, dictate a much higher standard for wireless.

Wireless applications are far beyond cost reduction solutions, flexibility or ease. In modern industries, wireless becomes a must-have. Many machines are impossible to integrate with wired communication due to high-speed moving or rotating components. Such systems include independent mover Transport Track Systems (linear motors), rotating robotic arms, rotary tables, rotating carousels, and the rotating heads of CNC machines. A cable-grade wireless industrial communication technology is required to enable a new generation of smart applications. For example:

- **Transport Tracks** – collect data on vibration, weight, acceleration, etc. on the move where cable connectivity is impossible
- **Carousels and Rotary tables** – measure reliable and real-time weight, pressure, temperature, etc. on the carousel during the actual processing with no slip-ring complications
- **Machine Tooling** - monitor for gripping force at the point of clamping during milling and griding for real-time quality assurance and pressure monitoring and other applications

- Industrial standard: low latency, cable grade reliability
- Fit for fast rotating and moving components
- Can be installed in remote and hard to reach areas
- Immune to RF and environmental noise
- Can scale to hundreds of units in a single work cell or machine area
- Support of advanced configuration and monitoring, compatible with IO-Link

IO-LINK WIRELESS

IO-Link Wireless was created specifically for industrial applications as an extension of the IO-Link standard. It is a **deterministic** wireless protocol, assuring an operational automation of 5ms **low latency**. With a built-in interference and noise immunity, it performs at an extremely low PER (Packet Error Rate) of 1e-9, making it 6 orders of magnitude (one million times) more **reliable** than other common technologies. **CoreTigo's** IO-Link Wireless product line features small form factors and a design to allow easy and seamless retrofit of both IO-Link and non-IO-Link devices. Using an IO-Link Wireless infrastructure allows not only wireless

deployment of data monitoring, but also wireless real-time control. Factories, thus, not only gain knowledge about their machines and processes but can also take action to improve and optimize manufacturing through real-time wireless automation – enjoying the best of both the monitoring and the control worlds.

SAMPLE DEPLOYMENT

CoreTigo's TigoMaster can be linked with up to 16 IO-Link Wireless devices (up to 96 individual sensors connected through 16 TigoHubs). Multiple TigoMasters can be daisy-chained so that all are connected to a single PLC through a single connection.

1 CoreTigo's TigoBridge IO-Link Wireless Bridge
· Connects directly and seamlessly with no integration efforts to any IO-Link Device.
· Converts off the shelf hubs into IO-Link Wireless - converting the attached digital/analog sensors
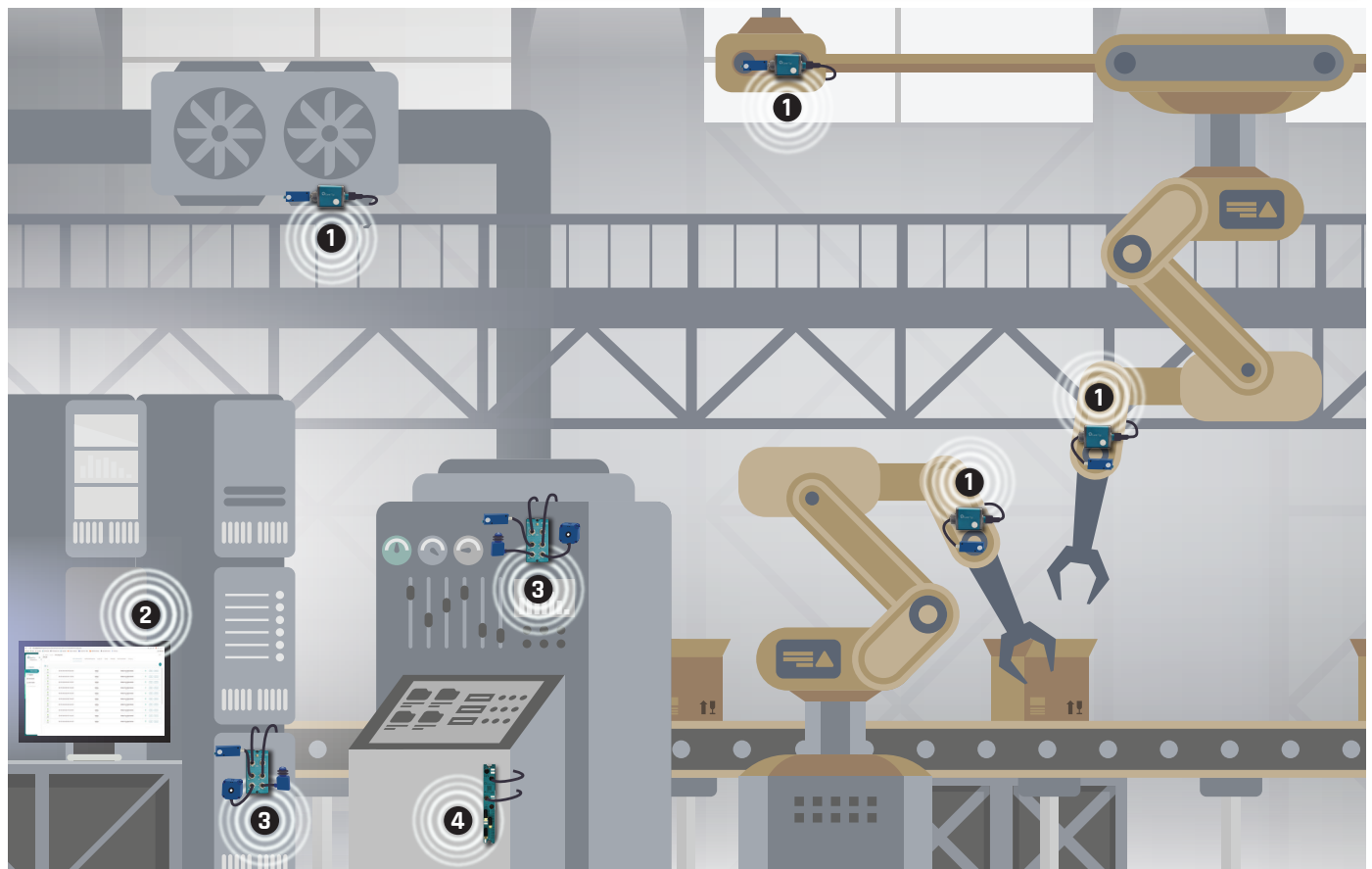
2
The TigoEngine Engineering Tool allows efficient setup of IO-Link Wireless Masters and Devices.
· Enables installation, configuration, and monitoring of an IO-Link Wireless system
· Provides access to monitoring, analysis, visualization, and automation tools.
· Parses Process Data
· Contains an advanced MQTT Publisher

3
Non-IO-Link sensors can be connected to CoreTigo's TigoHub
· Convert up to 6 digital sensors to IO-Link Wireless in parallel
· Allows mixing IO-Link and digital sensors connection
· Supports off-the-shelf devices

4
The TigoMaster:
· Communicates the data and control in real-time to and from the automation PLC
· Supports preferred Industrial Ethernet protocol (such as Ethernet/IP, EtherCAT, Profinet or OPC-UA)
· Can send monitoring data to an IIoT platform and ERP-MES through protocols such as MQTT and OPC-UA

ABOUT **CORETIGO**

CoreTigo is unbinding the industrial space by providing high-performance IO-Link Wireless communication solutions for machine builders, system integrators and industrial equipment manufacturers. CoreTigo's products enable the design and retrofit of machines and production lines that were not possible before. These solutions increase flexibility, adaptivity and modularity, resulting in cost effectiveness, increased productivity and downtime reduction. Embraced by industrial leaders, the IO-Link Wireless global standard, fit for harsh factory environments and motion control applications, provides cable-grade connectivity for millions of sensors, actuators and industrial devices worldwide.

For further information, please contact us at: **info@coretigo.com** I **www.coretigo.com** I **+972-747-69-10-20**

IO-Link wireless