IO-Link Wireless Development Toolkits

Get your devices ready for IO-Link Wireless

FUTURE-ORIENTED TECHNOLOGY

KUNBUS Development Toolkits enable device manufacturers to enter the world of IO-Link Wireless quickly and easily. The toolkits are available for both IO-Link Wireless Master and Device development.

Technologically, KUNBUS has chosen the SimpleLink™ CC2650 microcontroller from Texas Instruments for IO-Link Wireless. Compared to other microcontrollers on the market, the CC2650 offers high performance at very low power consumption. This allows potential applications with energy self-sufficient sensors, which are also covered by the IO-Link Wireless standard. The integrated Cortex-M3 of the CC2650 enables a single-chip design without a separate controller. The hardware footprint and costs can be significantly reduced.

Thanks to the exact synchronization of the single radios, the IO-Link Wireless Master stack supports the implementation of 5 tracks with 40 connected Devices (sensors or actuators). Up to 3 Masters shall be able to communicate with up to 120 Devices at the same time within one RF area. The maximum distance between Master and Device is up to 20 meters. For a seamless integration of an IO-Link Wireless Master into the superordinate fieldbus or industrial Ethernet level, KUNBUS also offers various interface solutions for all common industrial network protocols, such as PROFINET, EtherNet/IP and PROFIBUS.

Use cases for IO-Link Wireless

The IO-Link Wireless technology can be integrated in different applications. On the one hand, the aim is to reduce the number of the cables used and, on the other hand, to generally avoid cabling, for example in harsh industrial environments or in areas of a plant which are difficult to access. Three specific examples are as follows:

1.) **Robot applications**
If the different sections of a robot move wirelessly, unforeseen downtimes due to extensive cable stress will be eliminated and give you extra protection in the future.

2.) **Production lines / transport belt**
The immense cabling of multiple sensor solutions or sensor bridges to check the products transported on a belt, can be reduced or avoided. This again leads to less downtime and increased flexibility.

3.) **Hygienic area**
It is important to avoid any potential source of contamination as far as possible. IO-Link Wireless supports these activities by reducing the number of cables.

HIGHLIGHTS

- Performance, functionality and capacity are comparable to cable-bound solutions
- High performance at very low power consumption at the same time
- Seamless integration of the IOLW Master into the superordinate fieldbus/Industrial Ethernet level based on the Sitara™ multi-protocol processor
- Multi-track capability of the Master module which can control up to 5 tracks with a total of 40 devices
- Reduction of installation effort and downtime
- High reliability as well as safe and secure data transmission at critical points
- Fieldbus and manufacturer independent communication standard
- Simplification of work processes
- Raising efficiency, cost reduction, continued competitiveness

Industry 4.0 is no longer just theory or a vision of the future. The idea of the digital factory of the future, in which humans and robots work hand in hand together, machines communicate independently with each other and everything is digitally and intelligently connected – the process from product development to production, logistics and finally to the end consumer – is becoming reality.

In this context it becomes clear, that with the existing cable-based communication networks, especially in the lowest field level, the increased demands and expectations in terms of flexibility, mobility and expandability can no longer be sufficiently fulfilled.
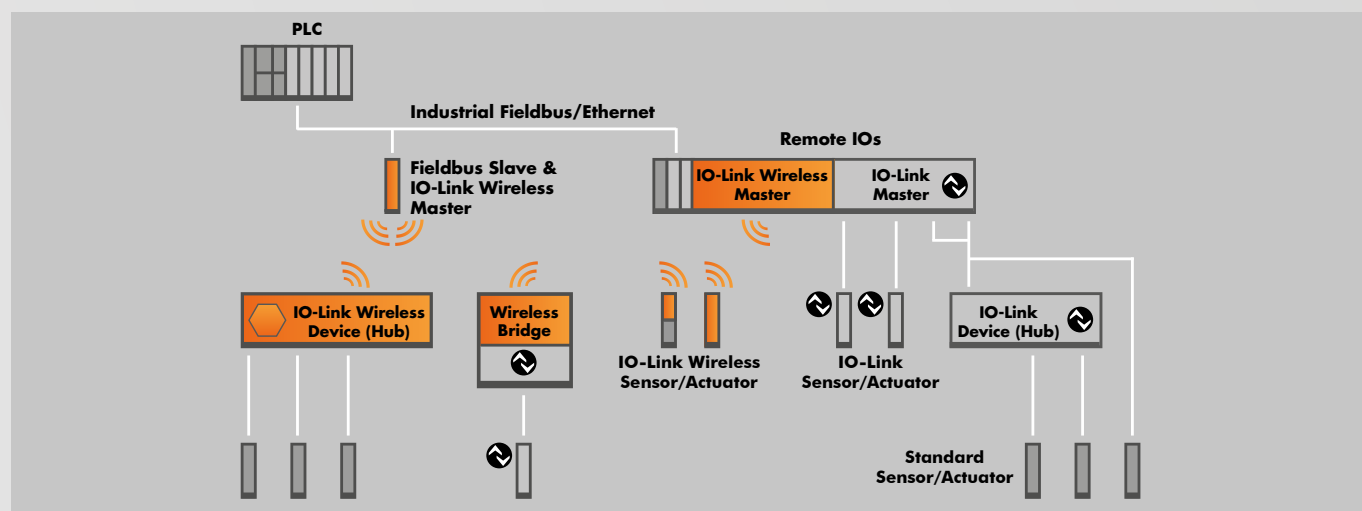
It is therefore just a logical step to expand IO-Link, already known for great simplification and cost reduction, by a wireless communication solution for the wiring of field devices. IO-Link Wireless, for the first time, presents a reliable, real-time and deterministic protocol for industrial factory automation control systems. By omitting cables, IO-Link Wireless offers considerably more flexibility, less wear and better scalability compared to its wired counterpart.
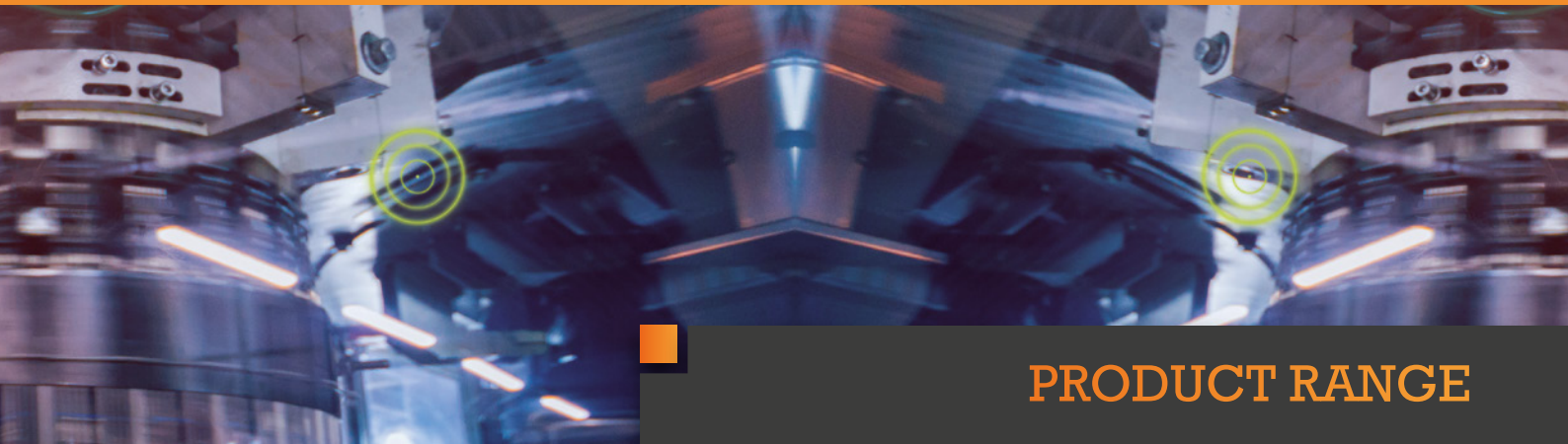
At 10^{-9}, the packet error capability (PEP) of IO-Link Wireless is comparable to the PEP of wired solutions and thus has a significantly lower probability of error than other wireless protocols such as Bluetooth or Zigbee.

With IO-Link Wireless, up to 40 actuators or sensors (so-called Devices) with a maximum latency of 5 ms can be connected to an IO-Link Wireless Master. The 2.4 GHz frequency band is used for communication. The simultaneous operation of WLAN systems is also possible, because this technology blocks out occupied frequency bands.

Thanks to backwards compatibility with the factory and process automation protocols, users do not have to replace their existing IO-Link system when installing IO-Link Wireless, but can integrate IO-Link Wireless seamlessly into their existing, wired system.
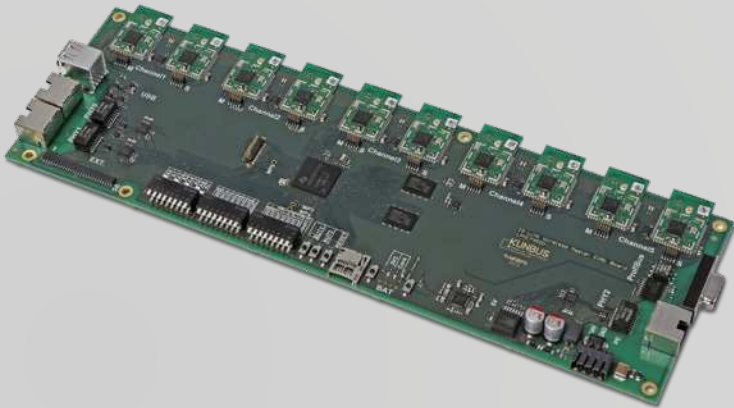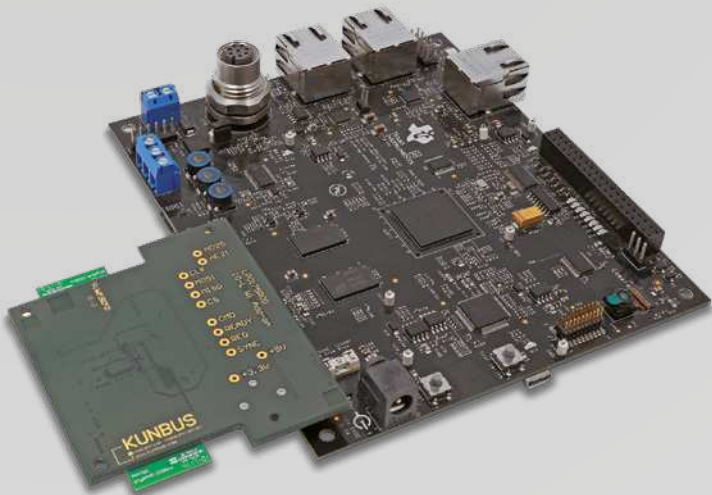
KUNBUS IO-Link Wireless Development Toolkit – 5 Track Master

IO-Link Wireless Master stack as binary, inclusively the lower layers (MAC/PHY) based on the Simple Link™ CC2650	
TI Sitara™ based sample project	
Detailed documentation, inclusively hardware schematics	
Evaluation Board with ten CC2650 PCB modules and one Sitara™ AM4379 processor	
Development support (1/2 year)	
Optional: Feldbus / IE Development Toolkit for Sitara™ processor	

KUNBUS IO-Link Wireless Development Toolkit – Single Track Master

IO-Link Wireless Master stack as binary, inclusively the lower layers (MAC/PHY) based on the Simple Link™ CC2650	
TI Sitara™ based sample project	
Detailed documentation, inclusively hardware schematics	
1 Sitara™ AM4379 Evaluation Board	
1 Radio Extension Board with two CC2650 PCB Modules	
Development support (1/2 year)	
Optional: Feldbus / IE Development Toolkit for Sitara™ processor	

PRODUCT RANGE

KUNBUS IO-Link Wireless Development Toolkit – Device

IO-Link Wireless Device stack as binary, inclusively the lower layers (MAC/PHY) based on the Simple Link™ CC2650	
CC2650 based sample project	
Detailed documentation, inclusively hardware schematics	
1 x IO-Link Wireless Master Board USB	
1 x TI CC2650 Launchpad Evaluation Board	
Development support (1/2 year)	

KUNBUS IO-Link Wireless Configuration Tool

Configuration of the IO-Link Wireless Master and the connected Devices

Windows 10 compatible

Optional: Customer specific versions (brand labelling)

ARTICLE	ARTICLE-NO.
KUNBUS IO-Link Wireless Development Toolkit – 5 Track Master	100288
KUNBUS IO-Link Wireless Development Toolkit – Single Track Master	100295
KUNBUS IO-Link Wireless Development Toolkit – Device	100296

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