Wireless Technology in the Industrial Environment

Wireless technology can support wired applications or enable completely new applications.
In mobile or movable systems, wireless technology is the first choice when greater distances or obstacles must be overcome. It is an alternative for applications in which wired solutions are not economical or technically feasible.

Various wireless technologies can be used depending on the application.

Bluetooth® – Robust, Flexible, High-Performance

Well-known in consumer electronics, *Bluetooth*® technology is also well-suited to industrial use with its internationally approved frequency range, a very robust transmission technology (frequency hopping), real-time response and a range of up to 400 m. It makes wireless process data communication between two stations possible (point-to-point communication), and also enables the setup of a piconet in which a *Bluetooth*® master can communicate with up to seven slaves, e.g., decentralized mobile sensors. In addition, *Bluetooth*® can be used as the radio system for commissioning.
Features:
- Secure transmission (encrypted)
- AFH (Adaptive Frequency Hopping)
- Adaptive transmission power
- Uses the license-free
  2.4 GHz frequency band

WLAN – Full IT Integration

WLAN makes it easy to setup a wireless transmission link for ETHERNET protocols. This can be standard ETHERNET protocols, e.g., for communication between a smartphone and automation components. Industrial fieldbus protocols such as PROFINET, Modbus TCP or Ethernet/IP can also be used to link mobile equipment with stationary equipment. Ranges up to 400 m are possible depending on the transmission technology used.
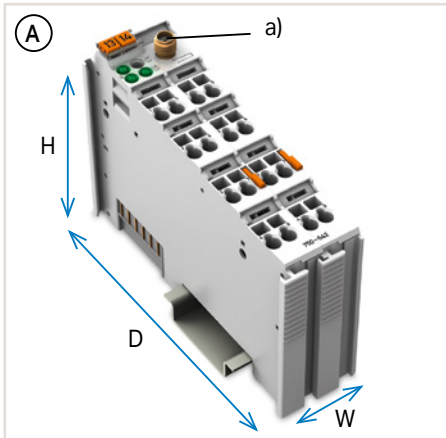
EnOcean® – The Radio Standard in Building Automation

Wireless switches and sensors based on EnOcean® technology harvest available energy to power themselves, e.g., kinetic energy from actuating a switch or sensors powered by ambient light. This energy harvesting completely eliminates maintenance of the radio transmitter at a range of up to 300 m in open air (30 m in buildings).

Advantages:

- Branch and application-specific – always the right radio system
- Industrial design: high-performance, rugged and safe
- Tightly integrated into WAGO automation technology
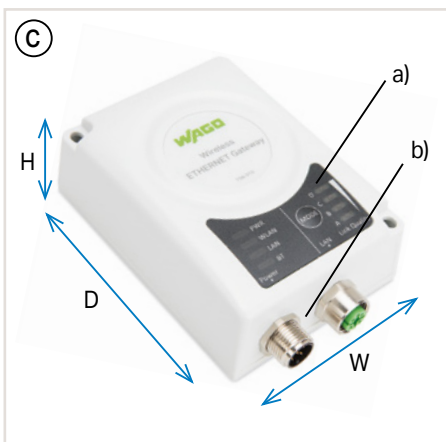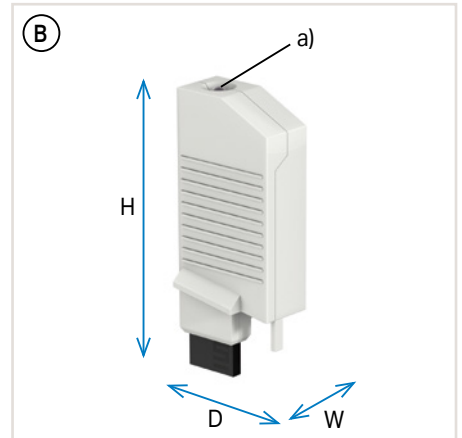
Radio Technology
Interfaces and Types

Communication Module for I/O System (A)

- For use with:
  - Controller (PFC)
  - Fieldbus coupler (FC), 750 Series I/O System
- Antenna connection (a)
- W x H x D (mm) 24 x 72 x 100, plus approx. 6.5 mm of excess length with antenna socket

Radio Adapter (B)

- For use with:
  - PFC, 750 XTR Series PFC, FC, 750 XTR Series FC
  - Signal Conditioners, 2857 and 857 Series
- Integrated antenna
- Diagnostic LED (a)
- W x H x D (mm) 15 x 50 x 19

ETHERNET Gateway (C)

- Integrated converter from ETHERNET protocols to radio technology
- Integrated antenna
- Diagnostic LEDs (a)
- Connections with M12 connectors (b)
- Protection class: IP65
- W x H x D (mm) 66 x 36.2 x 91

Switch Inserts (D)

- Universal switch inserts for standard switch series in building automation
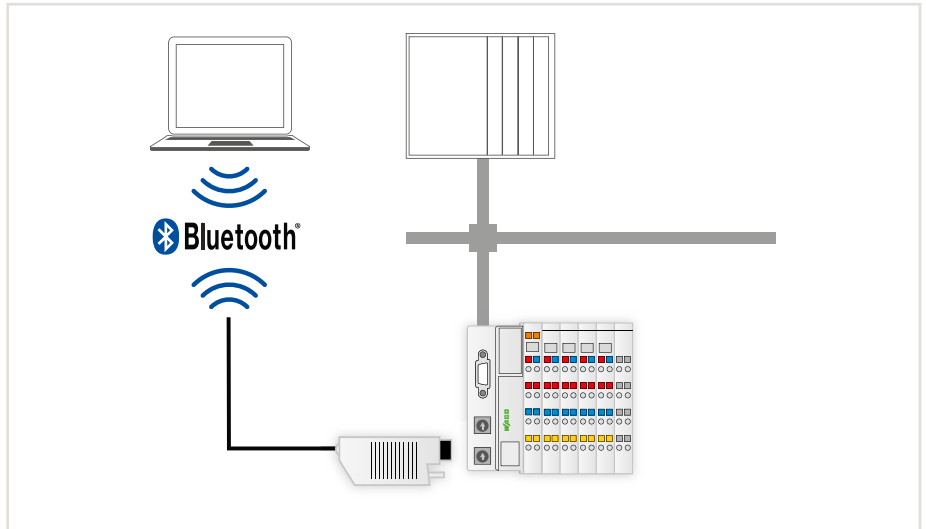- Compatible with manufacturer programs from BERKER, GIRA, JUNG, MERTEN

Radio Technology
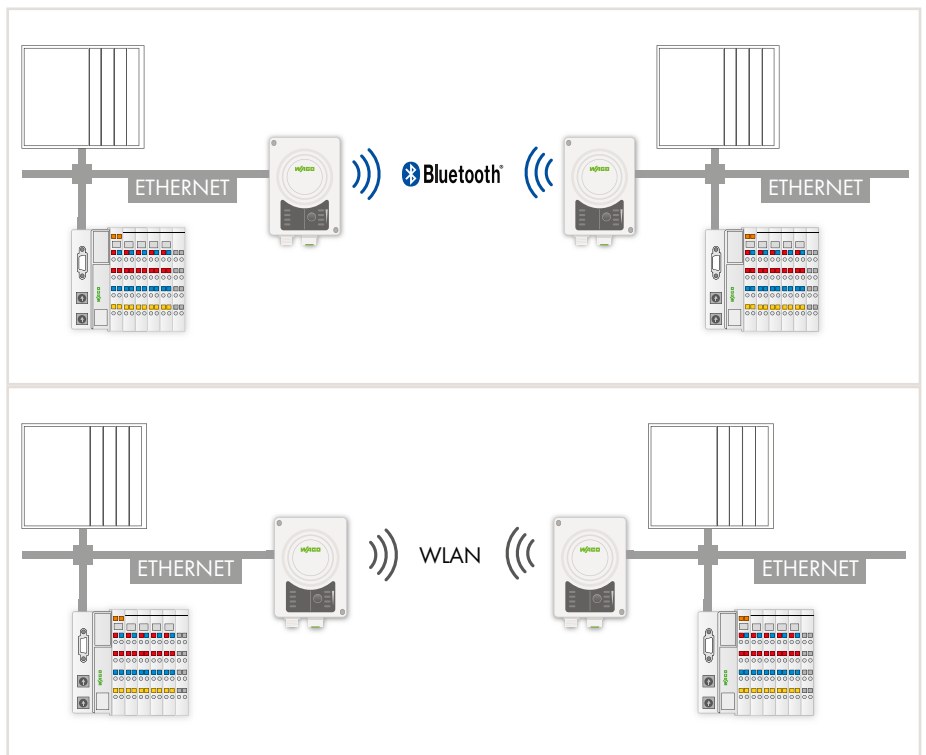## Application and Installation Instructions

Wireless Engineering

- Commissioning, maintenance
- Connect WAGO software on a PC/notebook to a product's service interface
- Controllers
- Controllers XTR
- Fieldbus couplers, I/O System 750
- Fieldbus couplers, I/O System 750 XTR
- Temporary install via compact *Bluetooth*® Adapter

Tunneling ETHERNET Fieldbuses

- Point-to-point connection (between two nodes), e.g., for connecting mobile units to a central controller or for connecting stationary stations
- Tunneling PROFINET, Modbus TCP, Ethernet/IP, etc., via *Bluetooth*® wireless technology or WLAN
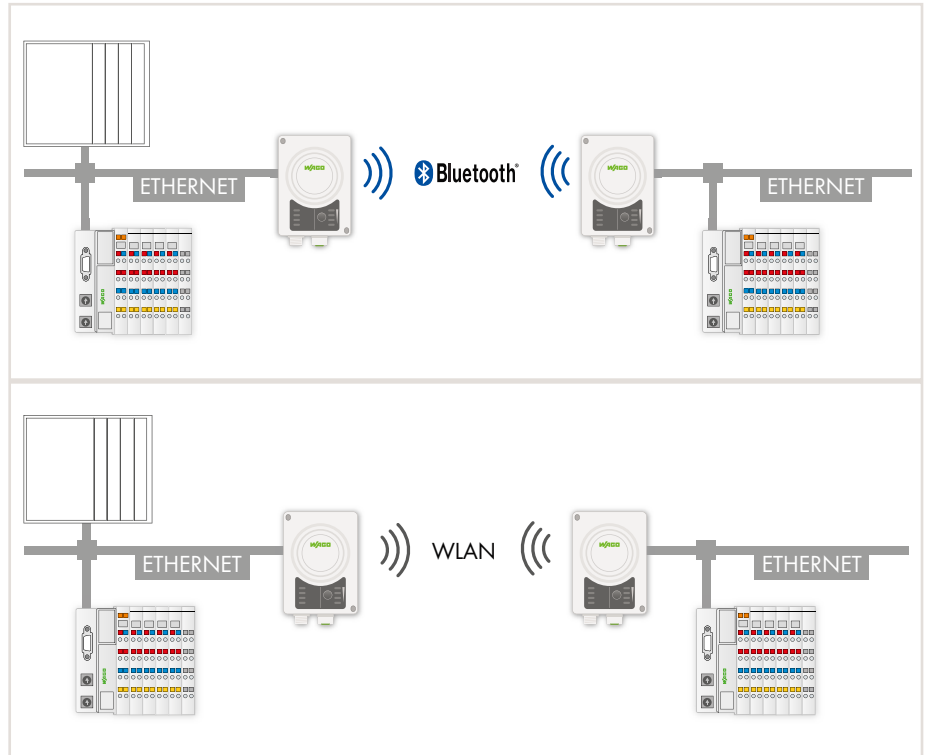- Process data coupling
- Range: up to 400 m in open air

Radio Technology
Application and Installation Instructions

Connecting Mobile Systems

- Tunneling ETHERNET telegrams via *Bluetooth®* radio technology or WLAN
- Point-to-point connection (between two nodes), e.g., for coupling a mobile unit with a stationary basic system
- Process data coupling
- Range: up to 400 m in open air

Integration into the WAGO-I/O-SYSTEM via EnOcean Radio Technology

- Radio receiver in the I/O module
- Operation on:
  - Controllers
  - Fieldbus couplers
- Range: Up to 300 m in open air, approx. 30 m in buildings