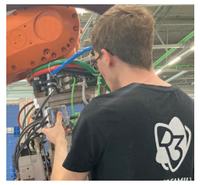
Products & Services

Bridge E

The Bridge E is a communications module and allows ultra-reliable real-time transmission of Ethernet-based data traffic. Its IP65 housing protects it from external influences. It draws its power either directly or via „Power over Ethernet“ (PoE). An M12 connector connects the Bridge E to the application. Bridge E is configured and set up using the intuitive Configuration Server software.



Application Services

Wireless communication on the shop floor requires a holistic overview of the existing or planned data network solution. The experts at R3 Solutions help with planning, installation, operation and maintenance - from frequency engineering on site to acceptance of the finished solution.

Bridge E Starter Kit

The Bridge E Starter Kit contains all components for the quick implementation of an EchoRing network in production applications and for setting up and monitoring the EchoRing network. The kit consists of Bridge E and the necessary accessories such as a cable kit and is delivered in a robust case.

Robot Emergency Kit

The Robot Emergency Kit contains all hardware components required for immediate bridging of defective cable routes. The Bridge E together with the corresponding antennas and installation cables, a device-specific adapter kit (e.g. for PROFINET communication) as well as individual accessories for mounting the Bridge E are ready to hand in the robust case for quick deployment.

You need more information or a personal consultation?

- **Technical information**
  Downloads on www.r3.group
- **Sales:**
  sales@r3.group
- **Tech Support:**
  support@r3.group

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R3 Solutions

EchoRing & Bridge E

Industrial Wireless: Technology • Products • Services

Ultra-Reliable
Low Latency
Communication
(URLLC)

Powered by EchoRing™

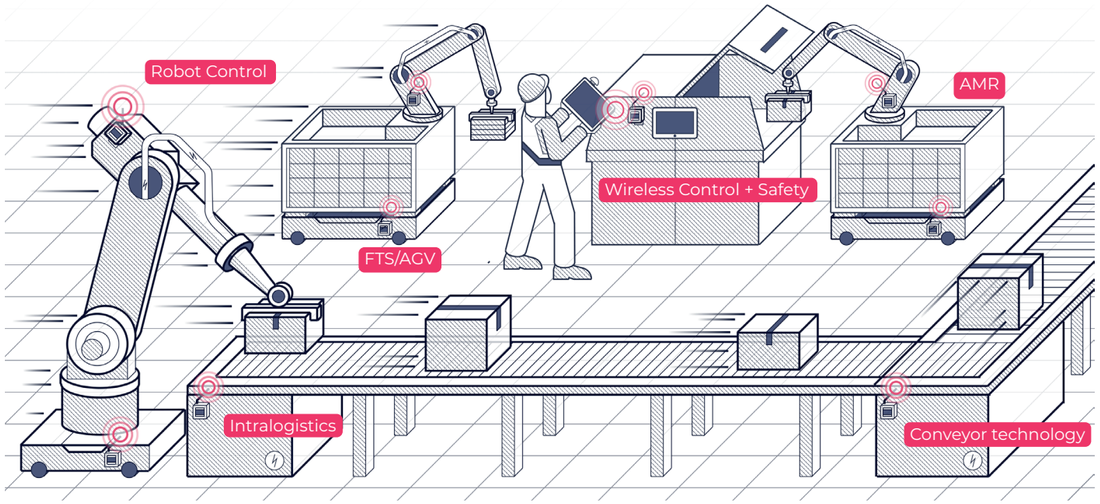
Solutions

EchoRing™

Why EchoRing and Bridge E?

Real-time capability, reliability and availability: Until now, these high requirements in industry could only be met by wired connections. With EchoRing, industrial equipment manufacturers and plant engineers can now rely on highly reliable and real-time capable wireless technology, replacing cables wherever they need more freedom of movement and wear-free operation.

EchoRing offers performance comparable to wired solutions in terms of reliability. Based on EchoRing technology, the Bridge E can wirelessly network almost any industrial installation – existing or new – without major setup effort and supports numerous common industrial communication protocols.



Robot Control

Wear-free, low-latency networking of robot assemblies and connection to control infrastructure

Wireless Control & Safety

Wireless implementation of safety applications such as emergency stop switches or safety light curtains

Intralogistics

Fleet control of almost any number of AGVs in communication with the infrastructure and with each other, including safety aspects, fully synchronized fleet control (platooning)

Autonomous Mobile Robots (AMR)

Enables connection to infrastructure and other AMR for highly-flexible and customized tasks while ensuring functional safety

Automated Guided Vehicles (FTS/AGV)

Realization of vehicle-to-vehicle communication for the transmission of e.g. high-precision location data for concepts such as virtual tow bars

Conveyor Technology

Wear-free communication and data transmission for rail-bound vehicles (e.g. monorail conveyors)

EchoRing in a nutshell

EchoRing is a wireless communication technology developed for highly available and time-critical industrial applications.

EchoRing-based applications are characterized by their deterministic latency and reliability, which means that the technology meets all the requirements of ultra-reliable real-time communication (URLLC). EchoRing is transparent to the application layer and enables use in safety-critical applications by guaranteeing the so-called black channel. Since EchoRing devices such as the Bridge E are built on standard Wi-Fi chipsets, the technology enables cost-effective and very flexible upgrades of existing installations. Thanks to the support of numerous communication protocols commonly used in the industry, such as PROFINET, Ethernet/IP or SafetyNET p, EchoRing can be used in a variety of ways and easily integrated into existing applications.

Performance parameters for industrial applications

- Minimal latency up to 5 ms (deterministic)
- 5 priority queues for prioritizing network traffic by class
- External Runtime Control Interface (ERCI) for script-based data acquisition and network control

Highest network stability

- Quality-of-service prediction for the application layer
- Reliability in terms of packet loss during data transport (packet loss rate) at less than 10^{-7}
- Range of up to 80 m per network node (depending on antennas and TX power)

Cost-effective implementation

- Supports existing communication protocols such as PROFINET, Ethernet/IP, PowerLink, SafetyNet p
- More than 200 MHz frequency spectrum available free of charge worldwide (depending of region)
- Implementation based on standard Wi-Fi chipsets

How does EchoRing work?

EchoRing technology is primarily based on a combination of two approaches, the proven token ring method and massive cooperation between the radio nodes. The “ring” guarantees collision-free and time-predictable (deterministic) data transmission. If a message nevertheless fails to reach its recipient due to interference such as other radio systems, one of the neighboring EchoRing radio nodes transmits the signal, virtually an “echo”. So the reception of the original message can be guaranteed within the defined latency period. All network nodes connected within a system permanently exchange information about the respective channel states and in this way automatically ensure the optimal and delay-free flow of all data streams.