



Functional description





Please note the following

Target group

This description is intended for the use of trained specialists in electrical installation and control and automation engineering, who are familiar with the applicable national standards.

Safety requirements

The responsible staff must ensure that the application or use of the products described satisfy all the requirements for safety, including all the relevant laws, regulations, guidelines and standards.

Liability

The documentation has been prepared with care. The products described are, however, constantly under development. For that reason the documentation is not in every case checked for consistency with performance data, standards or other characteristics, and does not represent an assurance of characteristics in the sense of § 459, Para. 2 of the German Civil Code. In the event that it contains technical or editorial errors, we retain the right to make alterations at any time and without warning.

No claims for the modification of products that have already been supplied may be made on the basis of the data, diagrams and descriptions in this documentation.

© This manual is copyrighted. Any reproduction or third party use of this protected publication, whether in whole or in part, without the written permission of ABB STOTZ-KONTAKT GmbH, is forbidden.



WSIF.../ WSIN...



WSIX100



WSP100



WIOP100

WISA – Wireless Interface for Sensors and Actuators

WISA is the technologie especially made for the requirements of factory automation by ABB for the wireless connection of field devices like sensors and actuators.

WISA comprises both

- wireless communication (WISA-COM) and
- wireless power supply (WISA-POWER)

WISA-field devices for the wireless automation

• Wireless proximity switches

are inductive sensors, which are transmitting their information via radio and get powered via a magnetic field. These completely wireless sensors consist of an inductive sensor head (WSIF..., WSIN...) and a communication module (WSIX100). This communication module has the built-in WISA radio technology as well as the power receiver. It collects energy from the surrounding weak magnetic field for the wireless proximity switch. The WISA-sensor heads are optimized with respect to energy consumption minimization and work with a lower voltage of 3 V compared to conventional position sensors.

• New: Wireles Sensor pads (WSP100)

are a further development of the communication module for up to eight WISA-sensor heads (WSIF..., WSIN...) or potential free contacts, which can be connected via short wires. Like conventional wireless proximity switches this sensor distribution box communicates per WISA –COM radio technology and is supplied with energy in a fully wireless way via the magnetic field.

• New: Wireless Sensor-/Actuator pads (WIOP100)

are especially designed for the integration of conventional sensors and actuators in a WISA-System: Like wireless proximity switches and sensor pads they communicate via radio (WISA-COM), but they are supplied conventionally with 24 V DC.

Advantages of WISA-field devices (overview):

- Unknown flexibility and limit free movements through wire independent installations
- Short commissioning times
- Increased availability of machines and plants
- Fast and cost effective adaptations and retrofit
- Suited for applications not possible with conventional wired sensors



WAT100



WDIO100



WPU100-24



WPC100-N

WISA-COM: Industrial real-time communication

The WISA-field-devices communicate wireless (WISA-COM) to a wireless input-/output module (WDIO100), which receives and transmits the signals via a pair of antennas (WAT100). The communication takes place according to ETS300328 and IEEE 802.15.1 (physical layer) in the 2,4 GHz Band. Up to 120 wireless proximity switches or 13 WISA-pads or a mixed configuration of all WISA field devices can be operated with one input-/output module. Regular function signals of all WISA field devices enable the continuous presence check and error detection.

Up to three WDIO100 can be operated in one machine or cell without noticeable loss of performance.

The connection of a WDIO100 and a control system (PLC) is done via field busses. For this the WDIO100 has a neutral interface for the ABB FieldBusPlug (FBP). In dependence of the chosen type of FieldBusPlug the data exchange can be done via PROFIBUS DP, DeviceNet, Modbus, ...etc. .

Advantages of WISA-COM (overview):

- real-time ability via the 2 ms cycle time for the wireless communication and typ. 20 ms delay until the signals are available on the connected fieldbus, independent of the number of connected WISA-devices.
- Highest Reliability
- High node density (360 WISA-devices in one machine without loss of Performance, practically unlimited number in a plant due to the cellular structure.

WISA-POWER: Wireless power supply via a magnetic field

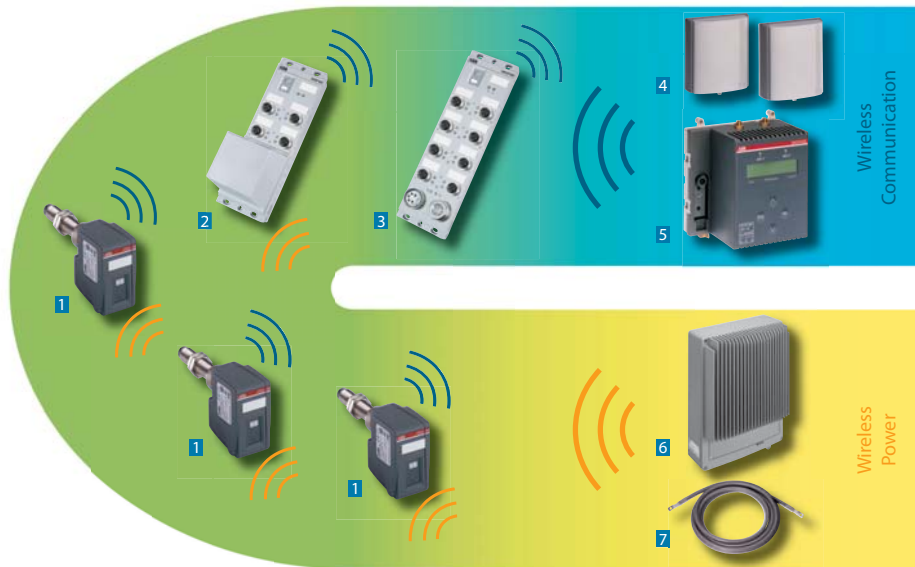
The power supply WPU100 creates a sinusoidal signal of 120 kHz, to which the energy receivers in the WISA-field-devices are tuned to. So called primary loops, which's ends are connected to this power supply, are simply installed around a machine or part of a plant (may be pictured like a cord around a package).

Two WPU100 with one pair of primary loops each typically supplies a volume of up to 3 x 3 x 3 m³. By adding further power supplies and primary loops this setup can be expanded up to 6 x 6 x 3 m³. Several of these cells can be modularly put next to each other.

With WISA-POWER also ring-, line- and point type wireless energy supply concepts can be realized.



Wireless automation with the WISA* concept



WISA-field-devices

- 1 Drahtfreie Näherungsschalter
- 2 Wireless sensor pad
- 3 Wireless I/O pad

Infrastructure components

- 4 Antennas
- 5 Input/output module
- 6 Power supply
- 7 Primary loop conductor

*WISA= Wireless Interface for Sensors and Actuators



Manual No. 2CDC 171 017 K0201

ABB STOTZ-KONTAKT GmbH

Eppelheimer Straße 82 Postfach 101680
69123 Heidelberg 69006 Heidelberg
Germany Germany

Telephone +49 (0) 6221 701- 0
Telefax +49 (0) 6221 701- 240
E-mail desst.help@de.abb.com
Internet <http://www.abb.de/stotz-kontakt>