SIEMENS
Ingenuity for life

Data transparency in intralogistics and small assembly lines

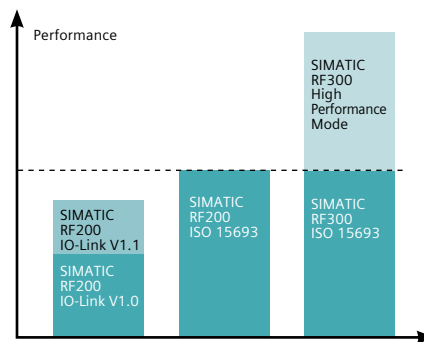**SIMATIC RF200: the compact RFID system in the HF range**

siemens.com/rfid

SIMATIC RF200: the compact solution for the mid performance range

As automation advances at a rapid pace, the demands placed on industrial identification are steadily growing. Siemens' response to these needs is SIMATIC Ident, a uniquely comprehensive and scalable portfolio of radio-frequency identification (RFID) and optical identification systems for the flexible implementation of efficient, economical identification solutions in manufacturing and logistics. SIMATIC Ident is the top choice for meeting today's requirements and providing a key technology on the road to digitalization.

Data transparency ensures greater productivity and efficiency

Being able to access all the relevant information at any time gives you a clear advantage. Data transparency is increasingly becoming a key success factor, especially in industrial environments. One element making this happen is the SIMATIC RF200, the compact RFID system in the HF range. The product series includes cost-efficient readers that are ideally suited for applications in intralogistics or in small assembly lines. Readers with an IO-Link interface are available for particularly simple and open identification solutions.

SIMATIC RFID systems in the HF range

Performance

SIMATIC RF200 IO-Link V1.1

SIMATIC RF200 IO-Link V1.0

SIMATIC RF200 ISO 15693

SIMATIC RF300 ISO 15693

SIMATIC RF300 High Performance Mode

SIMATIC RF200 technical data

Read/write range:	up to 650 mm
Frequency:	13.56 MHz
Standards:	• ISO 15693 • ISO 18000-3

Information on SIMATIC RF300:
siemens.com/rf300

System benefits

- **Flexible and economic solutions thanks to a complete and scalable portfolio**
  - Price-optimized, compact components
  - Readers and transponders for a wide variety of requirements

- **Integration in Totally Integrated Automation (TIA) provides greater efficiency for engineering, commissioning, diagnostics and maintenance**
  - Communication modules for uniform PROFIBUS or PROFINET connections to the automation system
  - Simple S7 software integration via ready-to-use function blocks
  - Integrated diagnostic functionality
  - Easy implementation via IO-Link with no need for programming

- **High degree of investment protection**
  - Open ISO 15693 standard
  - Software compatibility between Siemens RFID systems
  - Standardized communications interfaces

- **Openness assured by a range of connection options using communication modules, RS232 or IO-Link**

- **Extended product portfolio for quick and effective tool identification**

Benefits for the entire value chain

Market dynamics of a kind never before experienced, with growing demands in terms of transparency, traceability, etc., mean companies must continuously optimize their efficiency at every point along the value chain. The use of innovative identification systems like SIMATIC RF200 can make a vital contribution here, as the following specific examples drawn from practice will show.

Workpiece carrier identification

Task

- Controlling workpiece carriers in production
- Centrally storing key production and quality data directly on the workpiece carrier
- Dynamic reading and writing
- Compact assembly

Solution

- Workpiece carrier fitted with ISO transponders e.g. MDS D424 with 2 KB memory size
- Installation of RF200 readers (e.g. RF210R) along the production line
- Directing the workpiece to the correct processing center prior to every processing step
- Verification of correctness of the assembly after every processing step – results of each process are written on the transponder

Benefits

- Improved quality, since every processing step is individually checked
- Reliable documentation of quality data and full traceability at a component level
- Possibility of decentralized and/or central data management
- Compact designs enable flexible reader assembly options in various scenarios

Identification in the automotive industry

Task

- Unique identification of bodywork via skid for order-based manufacturing
- Dynamic reading and writing processes (at low speeds)
- Long reading distances with non-precise positioning
- Silicone-free and chemical-resistant components
- Heat-resistant up to 220°C
- Secure data transmission, even in difficult environments (e.g. proximity to welding robots)

Solution

- SIMATIC RF280R with MDS D126 or MDS D139/D339
- Reader generally assembled below skid
- Transponder assembled on a crossbar

Benefits

- Transponders have a long service life, are robust, and maintenance-free
- High level of data security even in difficult reflective radio environments
- Transponders are scalable – different memory sizes, dimensions and variants
- Globally proven conception

Tool identification

Task

- Complete transparency for inventory and tool location while systems are in operation
- Fast and error-free tool data management
- Maximum productivity and quality by ensuring rapid and error-free tool changes
- Ideal use of downtimes

Solution

- SIMATIC RF210R or RF250R with ANT 12 and MDS D117/D127/D421/D521 transponders
- Tool passes by the RFID antenna
- Tool data stored on transponder automatically recorded and transmitted to CNC control
- Mobile handheld terminal is used to ensure correct loading of tool trolley

Benefits

- Rapid and reliable automatic tool identification
- Flexible installation possible even in tight installation spaces
- Possible sources of error can be eliminated in tool management by using clear tool labeling
- Best possible use of tool stocks thanks to transparent and efficient tool store administration
- ISO transponders (ISO 15693) provide maximum flexibility and investment protection
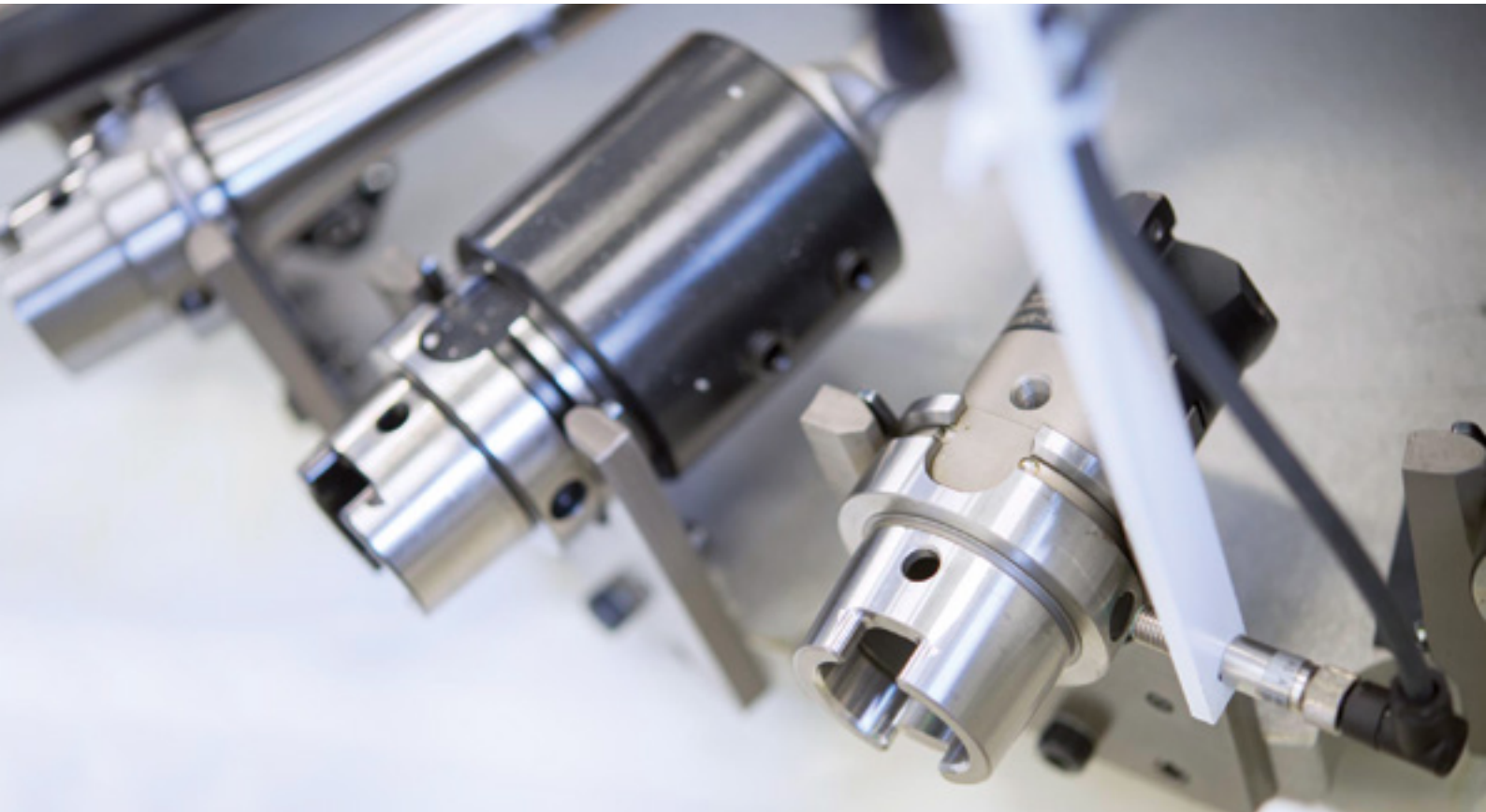
IO-Link reader and heat-resistant transponders in assembly

Task

- Completed work steps imported into databases
- Track & Trace data gathered, documented, and archived
- Necessary work steps are controlled using the identi-fication number (UID)
- Cost-efficient integration of a large number of read points
- High demands in terms of heat resistance

Solution

- SIMATIC RF200 IO-Link reader with MDS D160 transponder
- Read points with SIMATIC RF210R to supply the identification number (UID) to control working steps
- Production data (OK/not OK, screw parameters, etc.) is immediately written into database
- High-temperature transponders (molding at 100°C)
- Transponders assembled on the side of or below the workpiece carriers

Benefits

- Simple integration using IO-Link standard
- No need for RFID-specific programming
- Application can be duplicated quickly since components are easy to configure

Reader on automated guided vehicles (AGV) – box-mounted transponder

Task

- Controlling AGV in combination with other sensor technologies (defined road ways)
- Storing position data on the transponder: reviewing further behavior of the AGV (continue, left/right, stop, etc.) at key points
- Speed control, reviewing final position, specifying path based on RFID

Solution

- Assembling the SIMATIC RF260R on the underside of the AGV
- Transponders recessed in the base at various key points
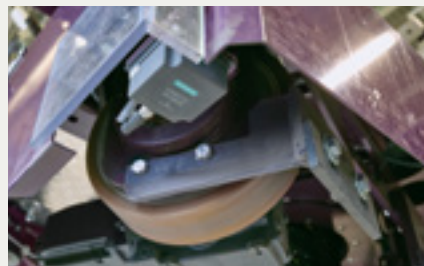
Benefits

- Robust industrial products for use in harsh industrial environments
- Possibility of precise positioning at key points
- Different readers for different read distances with large lateral tolerances
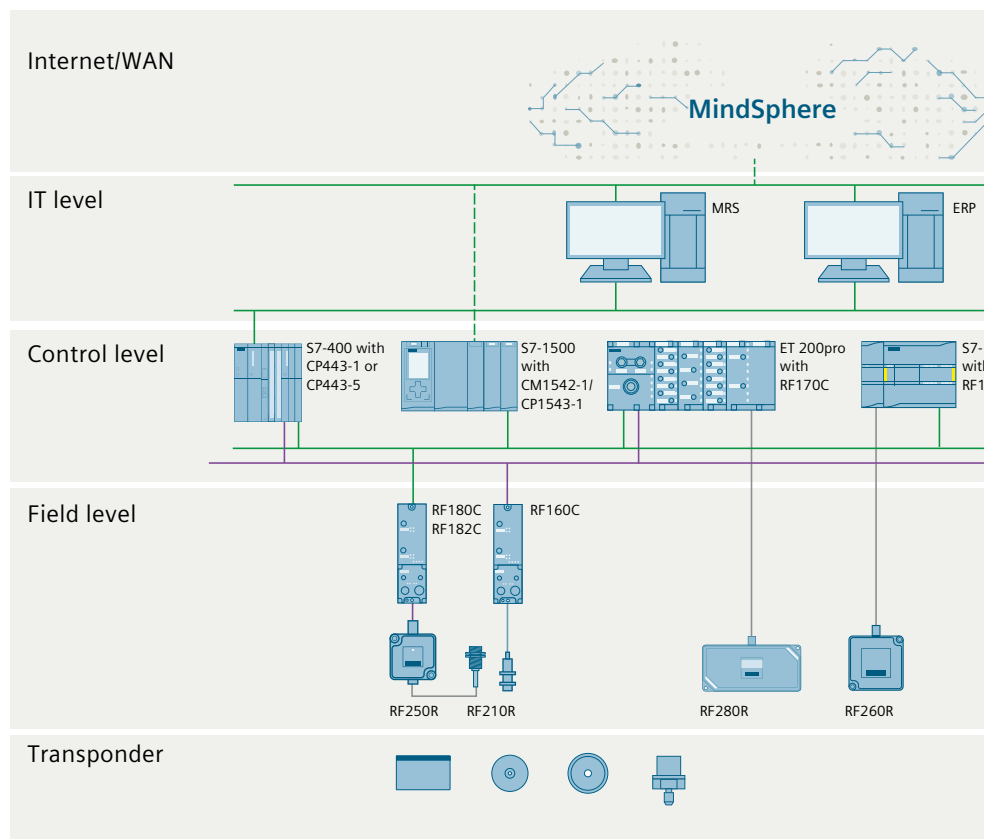- Readers with good EMC characteristics

Maximum integration efficiency

The comprehensive integration concept enables SIMATIC RF200 readers to be connected quickly and efficiently to the control and communications level. Commissioning and error diagnostics could not be any easier as a result. The same applies to integration into communication networks like PROFIBUS, PROFINET, Ethernet, Ethernet/IP, TCP/IP, and in PC environments or IO-Link.

As a part of Totally Integrated Automation (TIA), SIMATIC RF200 can be efficiently integrated into the SIMATIC world. This offers many benefits: for example, using the "Ident" technology object integrated in the TIA Portal (from TIA Portal V14 SP1 onward), it is especially easy to parameterize the RFID system, with quick and fail-safe configuration. The function blocks of the Ident profile are also integrated in the TIA Portal, and can be used to operate the readers for all RFID systems and optical identification systems on a uniform basis. That means Ident applications can be put into use directly, without having to be re-written with each change of reader.

Highlights

- Different connector designs (M12, RJ45, Push Pull or ECOFAST) enable flexible connection to different applications
- Comprehensive diagnostic functions – for rapid error detection
- Ident profile support ensures easy connection (PNO)
- Modular system integration with standard function blocks
- Access to configuration, commissioning and diagnostic tools via TIA Portal using the "Ident" technology object
- Consistency from field level through to the cloud-based, open IoT operating system MindSphere

Internet/WAN	MindSphere
IT level	MRS, ERP
Control level	S7-400 with CP443-1 or CP443-5; S7-1500 with CM1542-1/ CP1543-1; ET 200pro with RF170C; S7- with RF1
Field level	RF180C RF182C; RF160C; RF250R; RF210R; RF280R; RF260R
Transponder	

IO-Link: transparency down to the lowest field level

The top priority in industry is to reduce costs, increase machine and plant availability, and ensure maximum quality. One key factor: uninterrupted transparency, down to the last meter. This is precisely what IO-Link is for, an open communication standard that can be integrated in all common fieldbus and automation systems.

Much more than just another interface

IO-Link connects actuators, sensors and other field devices practically and uniformly with the control level, using a simple point-to-point connection. This substantially reduces the need for wiring, and creates the conditions for centralized error diagnosis and location down to field level. Another benefit is that IO-Link enables parameter data to be dynamically modified directly from the application, and so devices can be adjusted to the prevailing production requirements during operation.

SIMATIC RF200 with IO-Link

Standardized identification tasks (e.g. reading an ID number or reading/writing user-defined data) can be assumed by the RF210R, RF220R, RF240R, RF250R and RF260R readers, which are available in an interface version for IO-Link. IO-Link makes it possible to incorporate the data read by the reader into the automation level, easily and cost-efficiently. The SIMATIC RF200 readers can be integrated not only with SIMATIC S7 controllers, but also with automation solutions from many well-known manufacturers via an

appropriate IO-Link master module. A key feature of the readers is their compact and rugged design, with a high degree of protection. They are particularly suited for use in harsh industrial environments and for integration in applications with tight installation spaces.

New readers process data ten times faster

We have expanded our SIMATIC RF200 product family with IO-Link interface to include readers meeting IO-Link standard V1.1. Their write/read speed is more than ten times faster than the series based on IO-Link standard V1.0.

Diagram labels

1200
h
20C

ET 200SP with
IO-Link Master

RFID
Middleware

ET 200eco PN

ANT D5

RF240R   RF220R   RF290R

Highlights

- No need for programming
- Ideal for first-time users of RFID
- Low channel costs for each read point
- RFID interfacing to controllers and bus systems of many well-known manufacturers
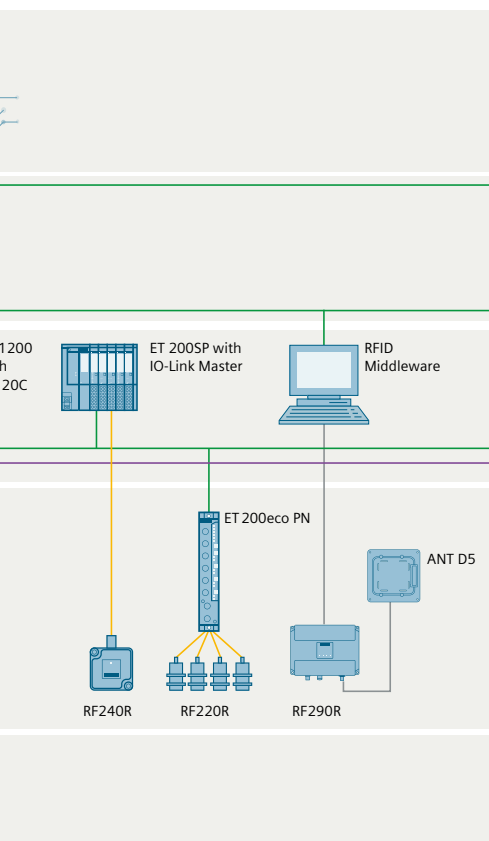
Components for the SIMATIC RF200 RFID system

As part of our portfolio for SIMATIC RF200, we offer you a comprehensive range of components for almost all identification tasks. Regardless of power range, design or degree of protection: we always have the right device for your needs.

Readers
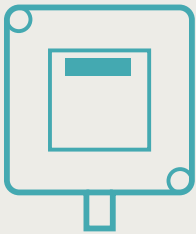
- Compact readers in various robust designs and power classes
- A choice of integrated or external antennae
- Mobile handheld terminal with integrated or external antenna

External antennae

- Powerful antennae in various designs
- Also available with a high degree of protection

Transponders

- Cost-efficient, maintenance-free and passive ISO 15693 transponders
- Available in various designs and storage capacities
- Also suitable for harsh industrial environments

Communication modules

- Communication modules for seamless integration to the automation system
- Direct connection to S7-1200
- Direct connection to PROFINET/IO/ Ethernet and Ethernet/IP
- Direct connection to distributed I/O devices

IO-Link master modules

- IO-Link master modules for integration to the automation system
- Up to four IO-Link ports according to IO-Link specification V1.1 or V1.0

Security information
Siemens provides products and solutions with industrial security functions that support the secure operation of plants, systems, machines and networks.
In order to protect plants, systems, machines and networks against cyber threats, it is necessary to implement – and continuously maintain – a holistic, state-of-the-art industrial security concept. Siemens' products and solutions only form one element of such a concept.

Customer is responsible to prevent unauthorized access to its plants, systems, machines and networks. Systems, machines and components should only be connected to the enterprise network or the Internet if and to the extent necessary and with appropriate security measures (e.g. use of firewalls and network segmentation) in place.

Additionally, Siemens' guidance on appropriate security measures should be taken into account. For more information about industrial security, please visit
siemens.com/industrialsecurity.

Siemens' products and solutions undergo continuous development to make them more secure. Siemens strongly recommends to apply product updates as soon as available and to always use the latest product versions. Use of product versions that are no longer supported, and failure to apply latest updates may increase customer's exposure to cyber threats.

To stay informed about product updates, subscribe to the Siemens Industrial Security RSS Feed under
siemens.com/industrialsecurity.

Additional information
SIMATIC RF RFID systems:
siemens.com/rfid

Industrial identification with SIMATIC Ident:
siemens.com/ident

Industry Mall for electronic ordering:
siemens.com/industrymall

Your personal contact – in your vicinity:
siemens.com/automation/partner

Service and support offerings:
support.industry.siemens.com

Training:
siemens.com/sitrain

Totally Integrated Automation newsletter:
industry.siemens.com/newsletter

Information material for download:
siemens.com/automation/infocenter

Partners for automation solutions
Siemens automation solution partners:
siemens.com/automation/solutionpartner

**See the ordering overview
"RFID Systems for the HF range"
for precise type descriptions and
technical data**