

RFID

RFID – MORE THAN IDENTIFICATION

RFID PRODUCT OVERVIEW



Automation Is Our World. A Perfect Application Solution Is

A willingness to take entrepreneurial risks, a pioneering spirit, and a firm belief in their own inventive powers – these were the assets that Walter Pepperl and Ludwig Fuchs started out with when they opened their Mannheim radio repair shop in 1945. Their invention of the proximity switch a few years later proved their strength. It was also the starting point in a successful history defined by close customer relationships as well as innovative automation technologies and procedures.

Then as now, our focus is directed squarely on the individual requirements of each customer. Whether as a pioneer in electrical explosion protection or as a leading innovator of highly efficient sensors, close communication with our customers is what allowed us to become the leader in automation technology. Our main objective is combining state-of-the-art technologies and comprehensive services to optimize our customers' processes and applications.

For more information, please visit our website: www.pepperl-fuchs.com





Our Goal.

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RFID – Setting New Standards

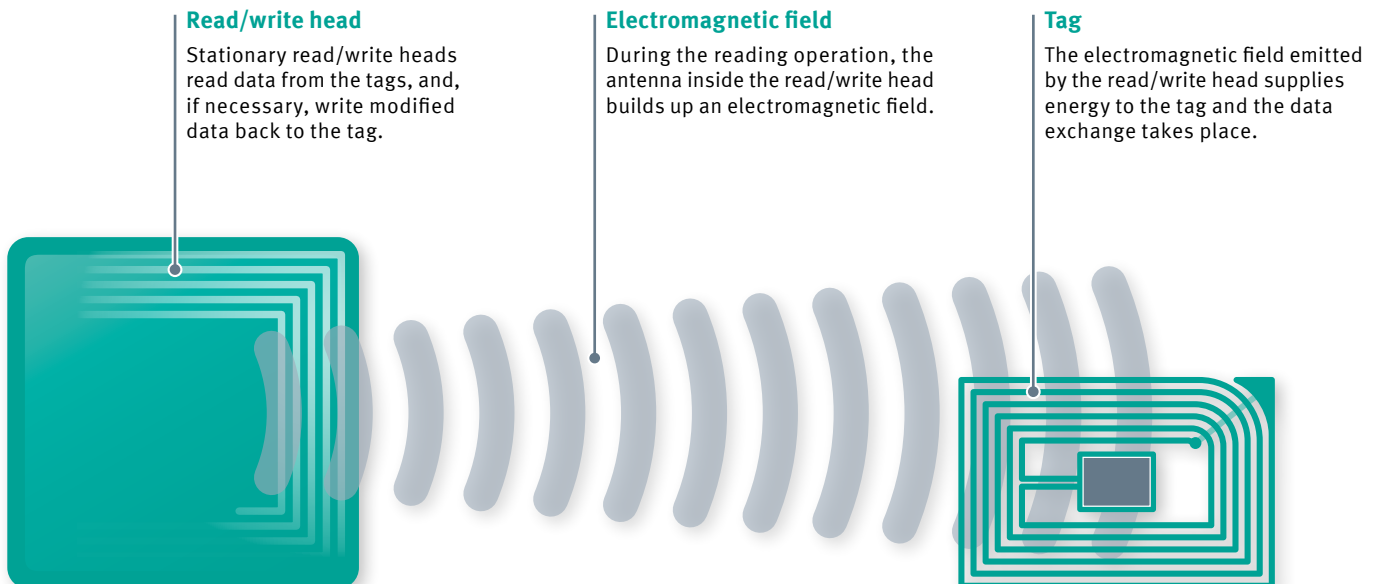
Technology precisely tailored to your specific application is what gives you that all-important competitive edge. Completely reliable and transparent processes regardless of ambient conditions move you toward this goal. Decades of experience and expertise in this area provide the foundation that allows Pepperl+Fuchs to continuously develop new solutions for customer applications.

More Efficiency with RFID

Transparent processes, optimized production, cost reduction, and quality assurance are just some of the benefits of RFID. The integration of RFID in production and logistics processes ensures maximum efficiency for each application. RFID stands for “radio frequency identification,” a wireless, noncontact technology that transfers information from a tag

to a read/write head and all the way through to the PLC. The tags serve as data storage units.

They provide information about products, goods, or even people and ensure a link between data and material flow. This enables more transparent and rapid processes.



Generally, an RFID system consists of a control interface with connection to a fieldbus, read/write heads, and tags.

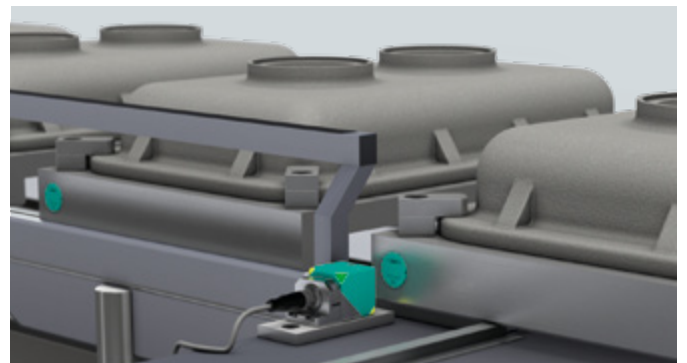
Three Systems – Versatile Solutions

To provide you with the best solution, Pepperl+Fuchs offers three different RFID systems in the LF, HF, and UHF frequency ranges, so you can select the most suitable frequency for every application – from LF readers for short detection ranges to UHF readers for long distances.

LF System for Short Read Range

LF systems (125 kHz) are well suited for use in production lines, parts assembly, and on conveyors. Specially designed tags can be flush-mounted in metal and are exceptionally robust.

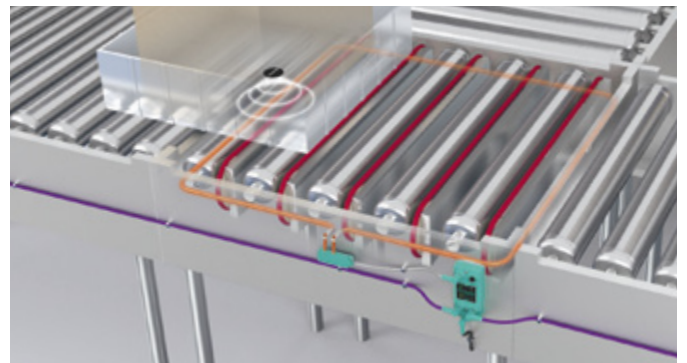
RFID tags embedded in fixtures allow the processing of different products and product variants on one assembly line. Information for each fixture is stored in the tag and can easily be tracked.



HF System for Large Data Capacity and High Speed

HF systems* (13.56 MHz) are used especially when transferring large amounts of data on the fly or with applications requiring a large number of low-cost tags. The reliable identification of pallets or trays in conveyor systems is often used in automated logistics applications.

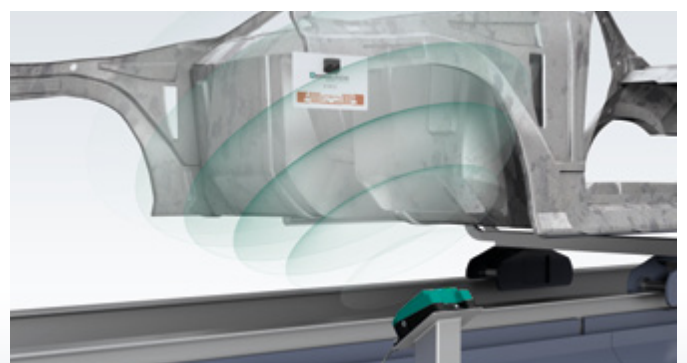
* Available in ISO 15693 and 14443.



UHF System for Long Read Range

UHF systems (865–928 MHz) are ideal for applications that cover a wide area. Tags can be read very quickly over several meters.

Tags are mounted on the car body, skids, or hangers. By exchanging data with the read/write heads, the tags make it possible to manage production variations and ensure the delivery of the proper materials to the correct locations.



Reliable Identification for Every In

Competitive pressure, error-free processes, outstanding quality – the challenges of modern factory automation are enormous and always growing. To guarantee our customers maximum availability and the highest possible levels of process reliability, we are developing sophisticated solutions for a variety of industries.



MACHINE BUILDERS

Parts fixtures, piracy protection, machine tool verification, or machine access



AUTOMOTIVE

Identification of skids, part tracking, sequence verification



PRINTING AND PAPER

Verify inks and other expendables, tracking and tracing applications



FOOD AND BEVERAGE

Product traceability enables efficient recall, introduction of the right material, or tool insert protection

dustry



MOBILE EQUIPMENT

Ensures the correct tool is installed, limits vehicle speed, or identifies drivers



MATERIAL HANDLING

Control high-bay storage racks, AGV systems, or overhead conveyors



PROCESS EQUIPMENT

Assignment of process medium, or process control in hazardous areas up to Zone 1



PACKAGING

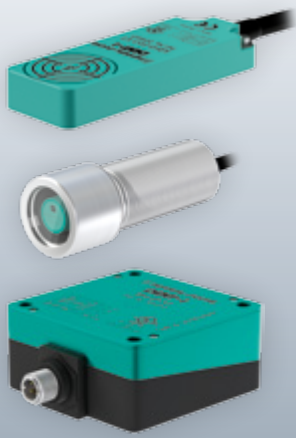
Monitor tool inserts or pallet identification

High-Performance Components Of

A high-performance RFID system requires perfectly matched products. The *IDENTControl* components from Pepperl+Fuchs guarantee the highest possible levels of flexibility. The *IDENTControl* interfaces are compatible with nearly all of the dominant PLCs on the market and can be combined with a wide range of read/write heads and tags.

FIELDBUS	
CONTROL INTERFACES	 <p data-bbox="1013 952 1380 1019">IDENTControl</p> <ul data-bbox="1013 1097 1524 1243" style="list-style-type: none">■ Up to 4 read/write heads can be connected■ Graphical display and configuration keys for easy setup

READ/WRITE HEADS AND TAGS	 <p data-bbox="478 2049 829 2105">LF (Low Frequency)</p>
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 <p data-bbox="1428 2049 1588 2105">HF (High)</p>

for Maximum Flexibility

EtherCAT

ETHERNET

Modbus

PROFINET

EtherNet/IP

CC-Link V2

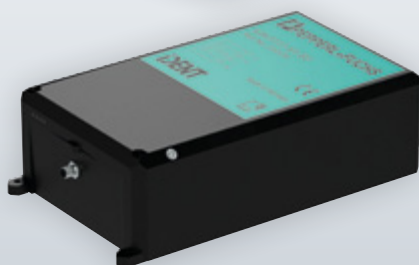
PROFIBUS

Serial



iDENT Control Compact

- Up to 2 read/write heads can be connected
- Ideal for decentralized installations



Frequency)

UHF (Ultra High Frequency)

IDENTControl Makes Complex Pro

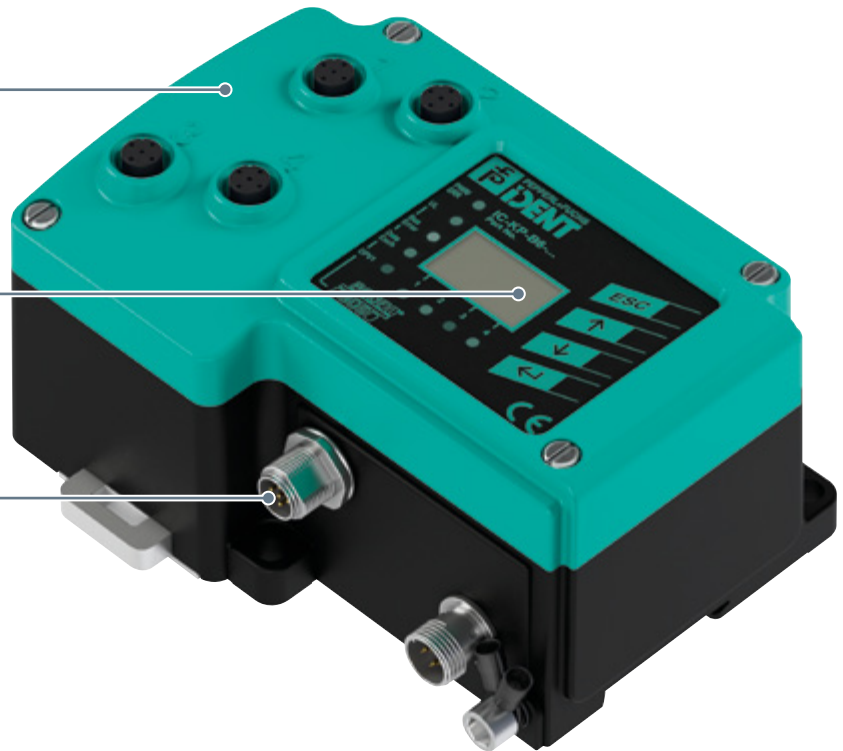
The modularity of the IDENTControl system means that different RFID frequencies can operate simultaneously on the same control interface. A long-range UHF read/write head connects to the same interface as a 125 kHz short-range system, providing the best solution for different applications. This offers users maximum flexibility in system expansion.

IDENTControl

Connect up to 4 read/write heads simultaneously

Graphical display and configuration keys for easy setup and operation

M12 connection in various designs



IDENTControl – Highlights

- Graphical display and configuration keys for easy setup and operation
- Connection to all fieldbus types ensures worldwide usability
- Excellent EMC protection in robust metal housing
- Enables the combination of different RFID technologies (such as LF, HF, UHF) on the same IDENTControl
- High-visibility LED status indication

Model Number	Interfaces	Channels
IC-KP-B6-SUBD	PROFIBUS, Sub-D connection	4
IC-KP-B6-V15B	PROFIBUS, M12 bus connection	4
IC-KP-B6-2V15B	PROFIBUS, 2x M12 bus connection	4
IC-KP-B5-V23	INTERBUS, M23 connection	4
IC-KP-B7-V95	DeviceNet, 7/8" connection	4
IC-KP-B17-AIDA1	Ethernet (PROFINET, EtherNet/IP, MODBUS/TCP and TCP/IP)	4
IC-KP-R2-V1	Serial RS232, M12 connection	4

ccesses User-Friendly

IDENTControl Compact

Simultaneous connection of
2 read/write heads

Easy pluggable bus connection

Compact design – ideal for
field installation



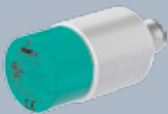
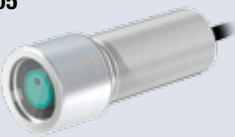
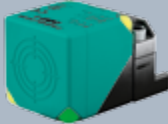
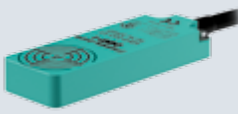
IDENTControl Compact – Highlights

- Compact design – ideal for field installation
- Worldwide usability due to connection of many fieldbus types
- Excellent EMC protection in a compact, robust metal housing
- Enables the combination of different RFID technologies (such as LF, HF, UHF) on the same IDENTControl
- Pluggable connectors simplify installation


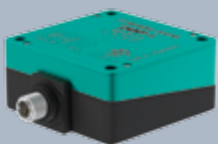

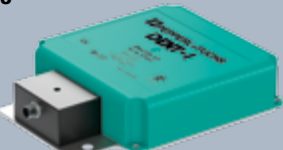


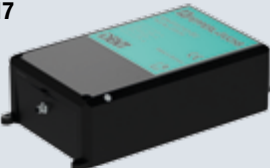
Model Number	Interfaces	Channels
IC-KP2-1HB6-2V15B	PROFIBUS	1
IC-KP2-2HB6-V15B	PROFIBUS	2
IC-KP2-1HB17-2V1D	Ethernet (PROFINET, EtherNet/IP, Modbus/TCP und TCP/IP)	1
IC-KP2-2HB17-2V1D	Ethernet (PROFINET, EtherNet/IP, Modbus/TCP und TCP/IP)	2
IC-KP2-1HRX-2V1	Serial RS232/RS485	1
IC-KP2-2HRX-2V1	Serial RS232/RS485	2
IC-KP2-2HB18-2V1	CC-Link	2
IC-KP2-2HB21-2V1D	EtherCAT	2

Read/Write Heads for Reliable Id

RFID technology can be used in various applications. In logistics, parts fixtures, or skid identification – each application requires a certain read/write head design. Choose from our portfolio of cylindrical and cube-style housings in LF, HF, and UHF frequency ranges. Special designs for the food or process industries are also available. *IDENTControl* enables you to achieve complete transparency and control of your processes.

Housing Style	Frequency	Typical Read Distance ¹⁾	Dimensions	Model Number	Typically Used Tags ²⁾
18GM 	LF HF (ISO 15693) HF (ISO 14443)	0–30 mm 0–30 mm 0–18 mm	∅ 18x66 mm	IPH-18GM-V1 IQH1-18GM-V1 IQH2-18GM-V1	IPC02-16 IQC21-16 IQC43-30
30GM 	LF	0–40 mm	∅ 30x66 mm	IPH-30GM-V1	IPC03-30P
30GM105  	LF HF (ISO 15693)	0–10 mm 0–10 mm	∅ 38x105 mm	IPH-30GM105-EXD IQH1-30GM105-EXD	IPC03-20P IQC21-30-EX
L2 	LF HF (ISO 14443)	0–80 mm 0–34 mm	67 x 40 x 40 mm	IPH-L2-V1 IQH2-L2-V1	IPC03-50P IQC43-50
F61 	LF HF (ISO 15693) HF (ISO 14443)	0–40 mm 0–50 mm 0–26 mm	80 x 28 x 12 mm	IPH-F61-V1 IQH1-F61-V1 IQH2-F61-V1	IPC03-30P IQC21-30P IQC43-30

entification

Housing Style	Frequency	Typical Read Distance ¹⁾	Dimensions	Model Number	Typically Used Tags ²⁾
F90A 	LF	0–120 mm	144x43x20 mm	IPH-F90A-V1	IPC03-50P
FP 	LF HF (ISO 15693) HF (ISO 14443)	0–110 mm 0–95 mm 0–42 mm	113x80x40 mm	IPH-FP-V1 IQH1-FP-V1 IQH2-FP-V1	IPC03-50P IQC21-50P IQC43-50
FP7V4A 	LF	0–110 mm	103x80x40 mm	IPH-FP7V4A	IPC03-50P
F15 	LF HF (ISO 15693)	0–135 mm 0–135 mm	190x140x40 mm	IPH-F15-V1 IQH1-F15-V1	IPC03-50P IQC21-50P
F97 	LF	0–95 mm	540x50x34 mm	IPH-F97-V1	IPC03-50P
F190 	UHF (865–868 MHz) UHF (902–928 MHz) UHF (902–928 MHz)	0.2–1.5 m 0.2–1.5 m 0.2–1.5 m	114x112x50 mm 114x112x63 mm 114x112x63 mm	IUH-F190-V1-EU ³⁾ IUH-F190-V1-FR2 ⁴⁾ IUH-F190-V1-FR2-02 ⁵⁾	IUC76-F157-M-FR1 IUC76-F157-M-FR2 IUC77-F151-M-GBL
F117 	UHF (865–868 MHz) UHF (902–928 MHz) UHF (920–925 MHz)	0.5–3.0 m 0.5–3.0 m 0.5–3.0 m	180x320x116 mm	IUH-F117-V1-EU IUH-F117-V1-US IUH-F117-V1-CN	IUC76-F203-M-FR1 IUC76-50-FR2 IUC76-F157-M-FR2

1) Additional information about read distances are available in the manual read/write ranges and passing speeds RFID.

2) Use as a search term on the internet the above designations, such as IPC02.

3) EU, India

4) China, Brazil

5) USA, Canada, Mexico

Other countries on request.

Tags for Any Application – Robust

To ensure that data is always available, robust and flexible tags that function reliably in all circumstances are required. Pepperl+Fuchs offers tags that are suitable for all applications in the LF, HF, and UHF frequency ranges.

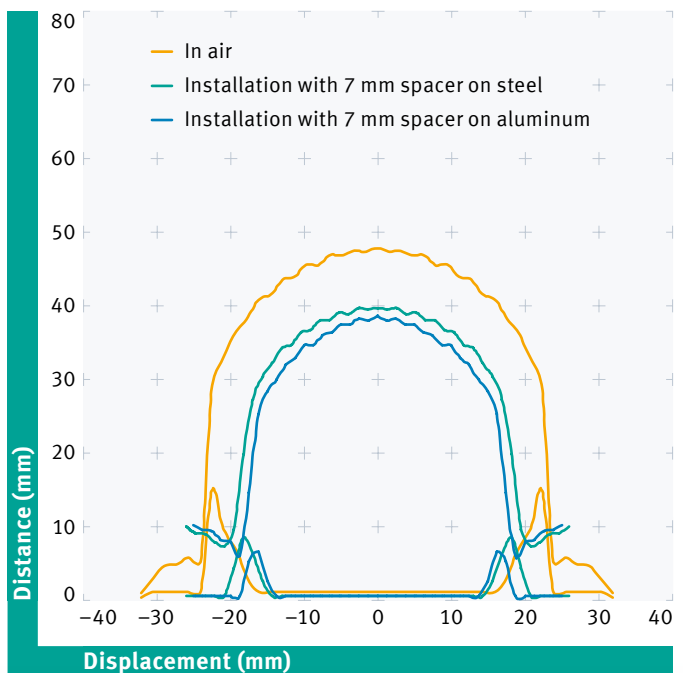


Flexible Use

Tags accompany goods along supply chains. They carry data for reliable object identification and ensure safe processes. Industrial tags are designed for tough and abusive environments: very high or low temperatures, excessive wear and tear, and mounting in or on metal.

If tags are mounted on or near metal, the maximum attainable ranges decrease, depending on the metal:

Information about the read curves from different combinations of tags and read heads can be found on the data sheet of the respective tag on www.pepperl-fuchs.com.



Example: read curve of the IPH-L2-V1 read/write head with the IPC03-20P tag

and Flexible

RFID Monitors Hose Connections

In chemical, pharmaceutical, and aseptic plants, process components and liquids are transported from their storage tanks to a process reactor.

In order to reliably protect such processes, the hose couplings are equipped with RFID technology. A hose connection with an incorrect process medium for the current process can be securely identified. RFID verifies the proper supply and ensures a safe process.



Identification in Large-Area Installa

Our versatile IDENT system IP solution is designed for read points that must be spaced over long distances in the plant. This system is frequently used in material handling applications, controlling material transfer, data collection, or identification of different storage containers.

125 kHz Read/Write System (IP-System)

This read/write system combines the necessary fieldbus interface and actual read/write head in one unit. The appropriate interface can be flexibly chosen by selecting the appropriate base and thus enables a customized, easy system setup. The direct connection to a superior control system increases flexibility.

In addition, the IP rating is very robust and ideal for rugged industrial use. Bases in stainless steel for the food and beverage industry are also available.



IPT1-FP read/write head with a U-P6-B5 INTERBUS base

Highlights

- Adaptable – bases are available for a wide variety of interface connections
- Long distances – read distance up to 100 mm, write distance up to 80 mm
- Special designs – stainless steel versions for food and beverage applications

Model Number	Top of Read/Write Station
IPT1-FP	Read/write head for all P3, P6, and P7 bases

Model Number	Base of Read/Write Station
U-P3-RX/U-P4-RX	RS232/RS485 connection
U-P3V4A-RX	RS232/RS485 connection, stainless steel version
U-P3-R4/U-P4-R4	RS485 (multidrop) connection with screw terminals
U-P3-R4-V15	RS485 (multidrop) with 2 M12 connectors
U-P7V4A-R4	RS485 (multidrop) with screw terminals, stainless steel version
U-P6-B5	INTERBUS connection with screw terminals
U-P6-B5-V	INTERBUS connection via M23
U-P6-B6	PROFIBUS connection with screw terminals
U-P6-B6-V15B	PROFIBUS connection via M12
U-P6V4A-B6	PROFIBUS connection with screw terminals, stainless steel version



2.45 GHz Read/Write Station (MT-System)

A typical application area for this system is access control or the identification of very fast-moving objects. IDENT system MT consists of a read/write device and a read-only or read/write tag. Data on the read/write tags can be changed by the user, while the read-only code is guaranteed to be unique.

The read/write device performs data transfers with the read-only and read/write tags and can be connected directly to a higher-level control system, such as a PC or PLC, via Ethernet or serial interface.

Highlights

- Increased efficiency – the system allows a read range up to 6 m
- Universal use – stand-alone mode for automatic opening of access controls
- Multitag capability – simultaneous reading of several tags

Model Number	Description
MTT3000-F180-B12-V45-MON	Read device
MTT6000-F120-B12-V45	Read/write device
MT0-C1	Read only tag
MT0-C2	Read only tag, industrial design
MTM-C1	Read/write tag
MTM-C2	Read/write tag, industrial design

Handheld Devices

RFID handhelds from Pepperl+Fuchs help to identify tags independently of the permanently installed read/write stations, enabling a whole range of application options, such as manually controlling quality or documenting maintenance.

The convenient design and an optional handgrip enables intuitive operation. In addition, two function keys can be used to assign frequently repeated actions, or JavaScript applications can be carried out, to fit customers' needs.

Connectors

Pepperl+Fuchs offers a wide range of high-quality connectors, allowing users to install and replace components quickly. Modern production technologies, high-quality materials, and rigorous operational testing ensure zero tolerance for defects and the highest possible levels of functional safety.

Visit www.pepperl-fuchs.com for further information on RFID accessories.

Model Number	Description
IPT-HH20	LF handheld
IQT1-HH20	HF handheld
IC-HH20-V1	LF, HF handheld (via external read/write heads)
ODZ-MAH-GRIP	Handgrip (optional with battery available)
ODZ-MAH-CHARGER	Charging tray

Staying in Touch. The World Over.

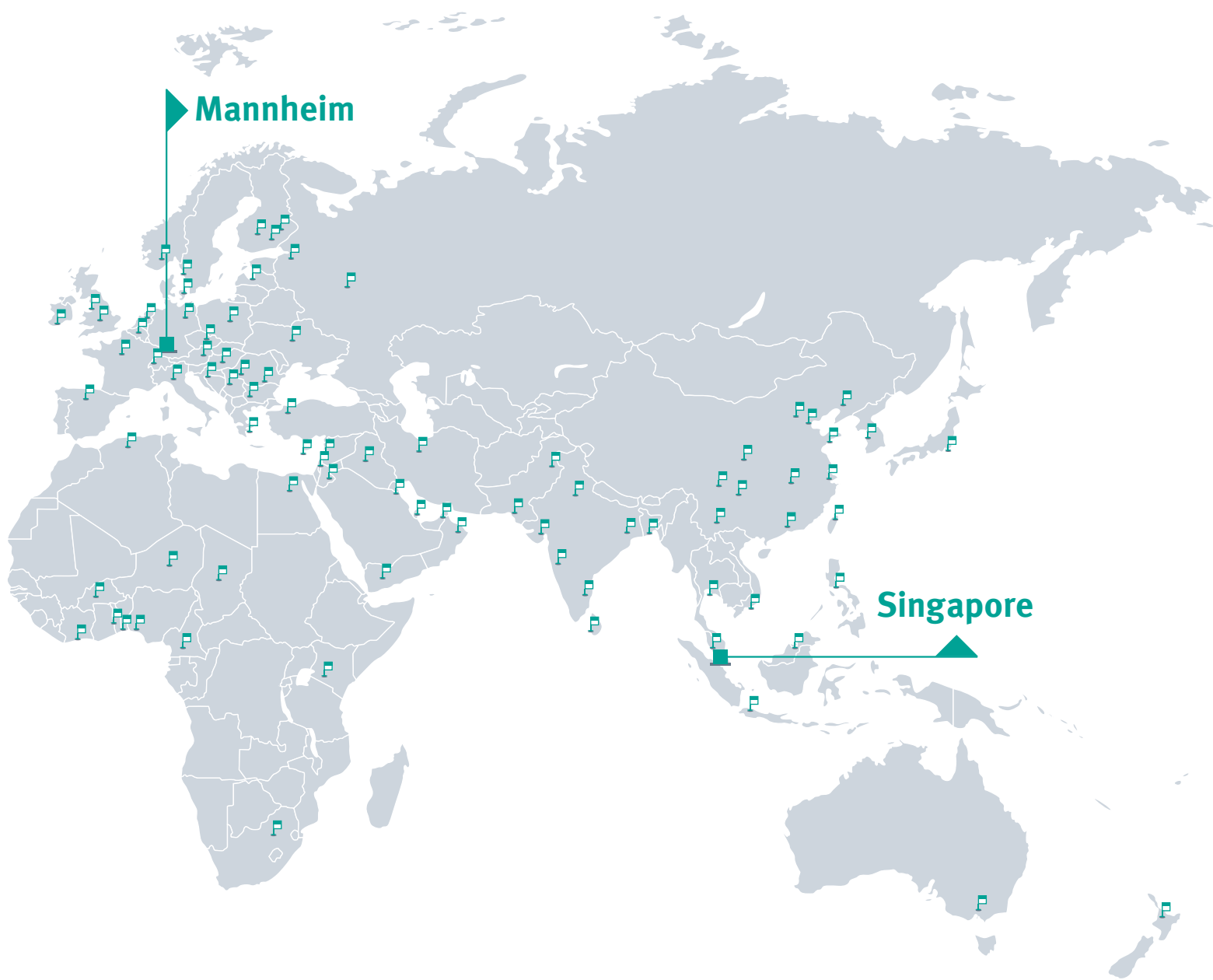
Good customer relationships need care and attention. They are an indication of genuine interest, trust, and a cooperative spirit: the foundation of Pepperl+Fuchs' strengths. No matter where you might be, we are always nearby. And we speak your language – in more than 140 countries the world over.



At Home on All Continents

Our customers are at the center of all our activities. Our worldwide network ensures that we provide them with the best possible service and support. Our world headquarters in Mannheim services Europe through a network of more than 40 affiliates. Asia is handled by our office in Singapore, with more than 1,000 employees in manufacturing, service, and sales. And our North American headquarters in Twinsburg, Ohio, is responsible for a comprehensive network of offices and sales partners in the USA, Canada, and Mexico.

No matter where in the world you may be, Pepperl+Fuchs is right nearby – and always there for you.



Mannheim

Singapore

YOUR APPLICATION. OUR CHALLENGE.

PROCESS INTERFACES

- Intrinsically safe barriers
- Signal conditioners
- Fieldbus infrastructure
- Remote I/O systems
- HART interface solutions
- Wireless solutions
- Level measurement
- Purge and pressurization systems
- Industrial monitors and HMI solutions
- Explosion protection equipment
- Solutions with process interfaces

INDUSTRIAL SENSORS

- Proximity sensors
- Photoelectric sensors
- Industrial vision
- Ultrasonic sensors
- Rotary encoders
- Positioning systems
- Inclination and acceleration sensors
- AS-Interface
- Identification systems
- Logic control units

