



## PRODUCT OVERVIEW

## RFID IDENTIFICATION WITH SYSTEM



## Robust RFID systems in LF, HF, and UHF frequency ranges for all automation solutions.

### READING AND WRITING DATA

#### IN DEMANDING ENVIRONMENTS WITH RFID

Automatic object identification is now indispensable in industrial production. It provides information about goods, commodities and people, and enables the correlation between data and material flow. Electromagnetic identification systems (RFID = radio frequency identification) are predominantly used in harsh industrial environments due to the availability of robust and chemically resistant transponders. Compared to barcodes or 2D-codes, RFID provides the unbeatable advantage that data can also be written.

Typically, an RFID system consists of a control interface with connection to a fieldbus, R/W heads and transponders.

### CUSTOMER BENEFITS FROM RFID-SYSTEMS

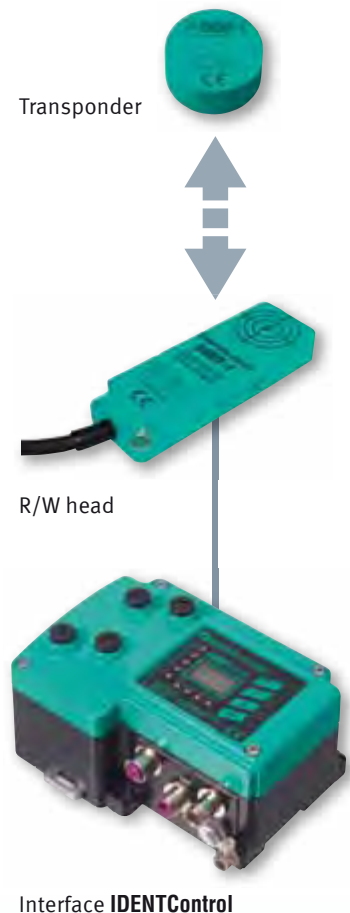
- Large data volumes can be stored and overwritten as often as required.
- RFID transponders are robust and have a very long service life.
- RFID systems work without direct visual contact and are completely maintenance free.
- Simple connection to common fieldbus systems.

### RFID COMPETENCE FROM PEPPERL+FUCHS

With over 20 years of RFID experience, Pepperl+Fuchs offers all system components from a single source as well as comprehensive application expertise, and stands for the highest level of functionality and safety.

The wide product range offers all the options:

- Transponders range from laminated ISO cards to cast designs for installation in metal
- Various housings for R/W heads enable optimum integration in the plant
- **IDENTControl** interfaces support all common RFID frequencies and offer maximum flexibility



## APPLICATION EXAMPLES FOR RFID SYSTEMS

- Simple control of variations in the manufacturing process
- Control of material logistics
- Prevention of damage to tools
- Optimization of production sequence
- Enabling tracking
- Enhancing quality



### LF-SYSTEM ON A MACHINE TOOL

In machine tools, RFID ensures that the correct tools are used for the relevant processing part. In addition, wear of the processing tool can be documented. Quality is assured, waste avoided and damage due to incorrect assignment prevented. Transponders can be installed flush in metal.



### HF-SYSTEM CONTROLS A ROLLER CONVEYOR

In material handling, the reliable identification of pallets or trays can be used to control automated logistic processes.



### UHF-SYSTEM IN FINAL ASSEMBLY

Transponders can be attached to vehicle bodies and parts, skids, or overhead conveyor elements. Thanks to data exchange with the R/W heads, they control variations in the manufacturing process or material delivery.



		LF (Low Frequency)	
		125 kHz	250 kHz
SPECIFIC FEATURES		<ul style="list-style-type: none"> <li>Standardized frequency with large choice of various transponder types</li> <li>Wound coils over a ferrite core in the transponder enable installation in metal</li> </ul>	<ul style="list-style-type: none"> <li>Special frequency band from Pepperl+Fuchs with enhanced reading-speed</li> <li>Wound coils over a ferrite core in the transponder enable installation in metal</li> </ul>
			
UNIVERSAL CONTROL INTERFACES			
		<b>IDENControl</b>	
FEATURES		Yes, with special transponders	Yes, with special transponders
		Yes, with special transponders	Yes, with special transponders
		40 ms	7 ms
		N x 30 ms + 100 ms	N x 20 ms
		up to 15 cm	up to 10 cm
		64 kBit	1 kBit

## HF (High Frequency)

13.56 MHz

- Frequency range for rapid transfer of larger data volumes
- Low-cost transponder labels for use in non-metallic environments



## UHF (Ultra High Frequency)

868 MHz

- European standardized frequency with up to 6 m sensing range
- Passive transponders are available in an inexpensive label form and in a housing for installation in metal or in high temperatures



**IDENTControl**  
Compact

### WHY ARE THERE DIFFERENT RFID FREQUENCIES?

The requirement of the relevant application determines the choice of RFID frequency, as this has different physical features.

Thanks to a wide range of transponders and R/W heads and to its many years of experience, Pepperl+Fuchs offers the opportunity for individual and optimum plant design.

The basic frequency characteristics are an important aid in selecting the right RFID system.

The choice of a suitable control interface is not dependent on the selected frequency range. — All R/W heads can be connected to the various **IDENTControl** or **IDENTControl Compact** models.

The choice of version depends upon the number of heads to be connected as well as the bus system used.

Yes, with special transponders

No

20 ms

N x 5 ms + 10 ms

up to 25 cm

16 kBit

Yes, with special transponders

No

30 ms

N x 4 ms + 20 ms

Typically up to 3 m; maximum up to 6 m in free field

2 kBit

Surface-mounting on metal

Installation in metal

Reading speed for read only code

Reading speed for data  
(N = Number of 4 byte blocks)

Read range

Maximum memory volume

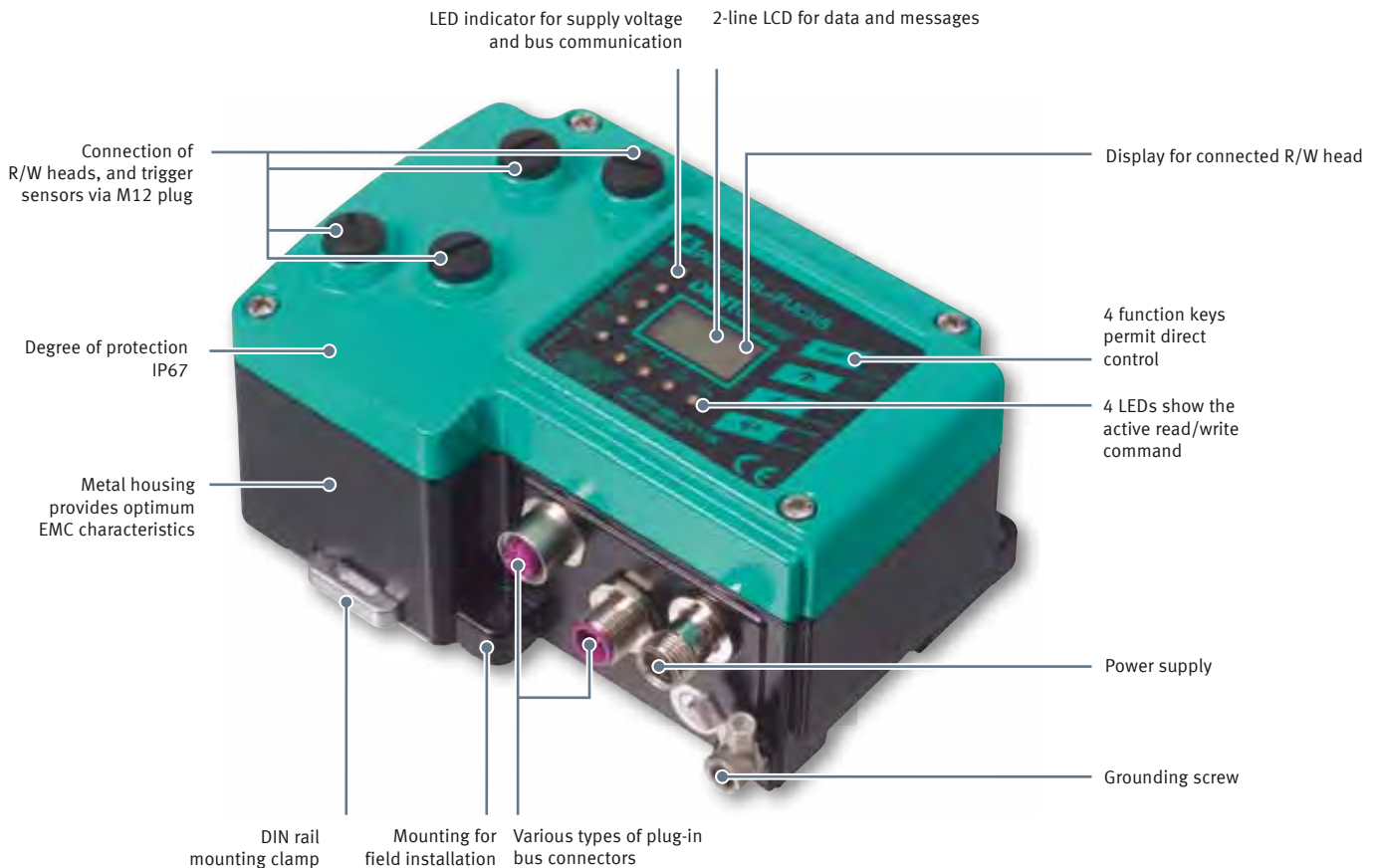
# CONTROL INTERFACES IDENTControl AND IDENTControl COMPACT

## THE IDENTControl SYSTEM IS UNIVERSAL AND FLEXIBLE

All R/W heads can be connected to the **IDENTControl** and **IDENTControl Compact** control interfaces. The controller can be connected to PROFIBUS, Ethernet (Profinet IO, Ethernet IP, TCP/IP, Modbus), Interbus, DeviceNet and serial interfaces (RS232/RS485)

The system is easy to customize with the wide range of device versions. The almost identical command structure for all frequencies

enables simple software integration in the controller. The system is extremely resistant to external electromagnetic interference.

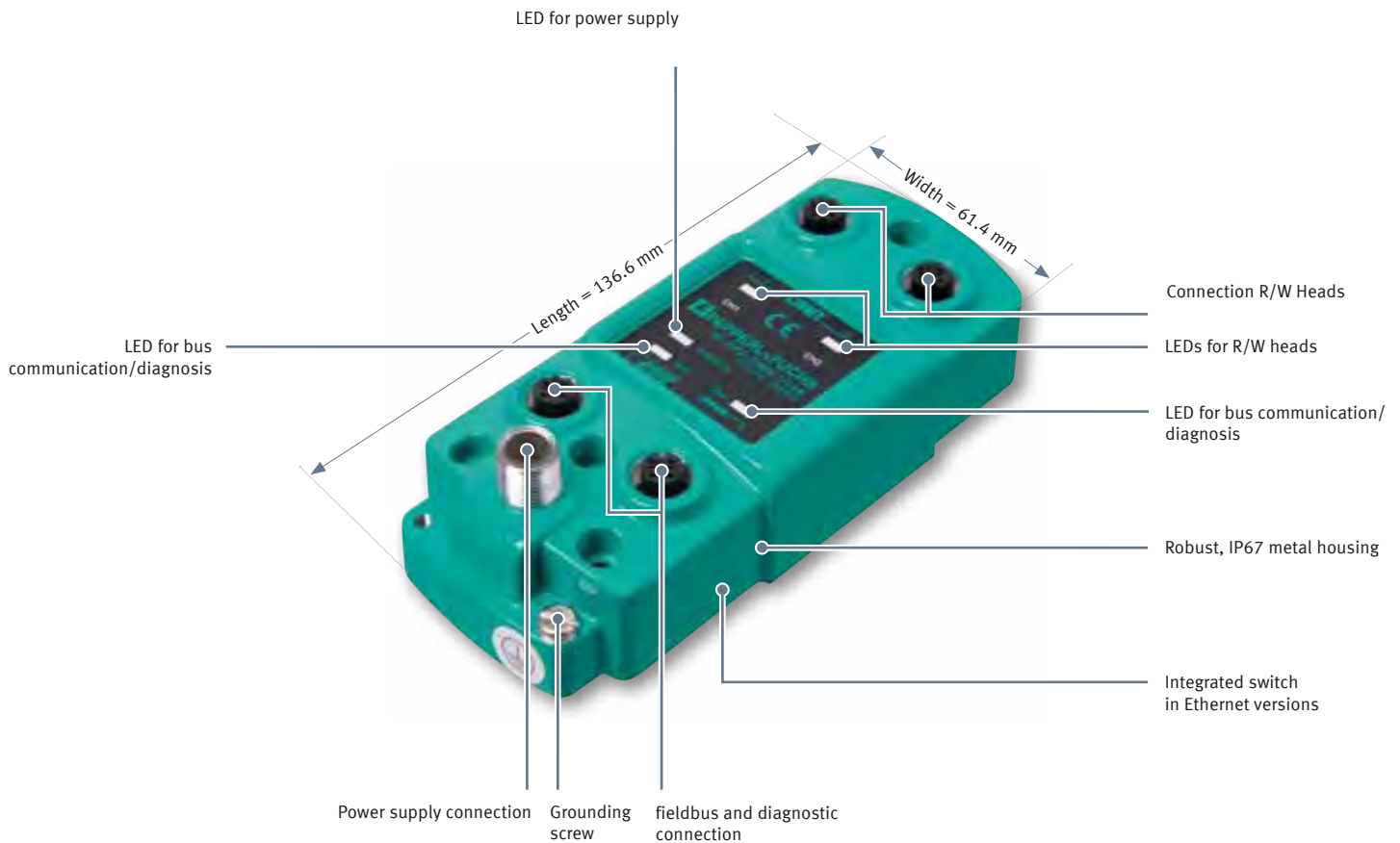


MODEL NUMBER	DESCRIPTION OF IDENTControl	MODEL NUMBER	DESCRIPTION OF IDENTControl
IC-KP-2HB17-AIDA1	Ethernet connection with AIDA plug (max. 2 heads connectable), integrated switch	IC-KP-B6-SUBD	PROFIBUS connection via one SUB-D plug
IC-KP-B17-AIDA1	Ethernet connection with AIDA plug, integrated switch	IC-KP-B6-V15B	PROFIBUS connection via one M12 plug
IC-KP-B12-V45	Ethernet interface with connection via RJ45 plug	IC-KP-B7-V95	DeviceNet connection via two 7/8" plugs
IC-KP-B5-V23	INTERBUS connection via two M23 plugs	IC-KP-R2-SUBD	Serial connection made via a SUB-D plug
IC-KP-B6-2V15B	PROFIBUS connection via two M12 plugs in/out	IC-KP-R2-V1	Serial connection made via two M12 plugs

## WHAT DO IDENTControl AND IDENTControl Compact OFFER YOU?

- Control cabinet and field mounted with IP67 degree of protection
- Direct operation with plain text display for simple commissioning\*
- Supports all RFID frequencies, even in mixed operation
- Direct connection of trigger sensors
- Perfect EMC protection
- All connections are completely pluggable
- Arbitrary cable length to the R/W heads
- Web server function with Ethernet devices

\*only with **IDENTControl**



MODEL NUMBER	DESCRIPTION IDENTControl Compact
IC-KP2-1HRX-2V1	Serial interfaces RS232 and RS485, one R/W head connectable
IC-KP2-2HRX-2V1	Serial interfaces RS232 and RS485, max. 2 R/W heads connectable
IC-KP2-1HB6-V15B	PROFIBUS interface via M12 connector, 1 R/W head connectable
IC-KP2-2HB6-V15B	PROFIBUS interface via M12 connector, max.2 R/W heads connectable
IC-KP2-1HB17-2V1D	Ethernet interface (TCP/IP, Ethernet/IP, Modbus, PROFINET IO) via M12 plug, 1 R/W head connectable
IC-KP2-2HB17-2V1D	Ethernet interface (TCP/IP, Ethernet/IP, Modbus, PROFINET IO) via M12 plug, max. 2 R/W heads connectable

# 125 KHZ R/W HEADS AND TRANSPONDERS

## MANY TRANSPONDER TYPES INCLUDING THOSE FOR INSTALLATION IN METAL

The 125 kHz system is optimally suited for production control.

A large selection of low-cost transponders with different features is available. Products from various suppliers are mutually compatible.

Special transponders for flush installation in metal are frequently used in work piece carriers.



IPH-18GM-V1



IPH-30GM-V1



IPH-F61-V1



IPH-L2-V1



IPH-FP-V1

### R/W HEADS

MODEL NUMBER	DIMENSIONS IN MM	MAXIMUM READ RANGE IN MM
IPH-18GM-V1	66 x Ø 18	50
IPH-30GM-V1	66 x Ø 30	65
IPH-F61-V1	80 x 28 x 12	45
IPH-L2-V1	67 x 40 x 40	75
IPH-FP-V1	80 x 80 x 40	100
IPH-F15-V1	180 x 140 x 40	155



IPH-F15-V1

### TRANSPONDERS

MODEL NUMBER	STORAGE FEATURES
IPC02-....	40 bit read only code, ROM
IPC03-....	40 bit read only code, 116 byte useable data, EEPROM
IPC11-....	40 bit programmable read only code, EEPROM
IPC12-58-64K	64 kBit, unlimited writability, FRAM



IPC03-50P



IPC03-30P



IPC03-20P



IPC03-30GK



IPC03-24



IPC03-16GK



# 250 KHZ R/W HEADS AND TRANSPONDERS

## HIGH READ SPEEDS DESPITE INSTALLATION IN METAL

The 250 kHz system from Pepperl+Fuchs is much faster than the 125 kHz system.

Thanks to frequency-modulated data communication, it also has better noise immunity to narrowband interference sources. With this system, transponders can also be flush installed in metal. The system is frequently used in high-speed material handling

applications. The particularly rapid data transfer of a predefined 3-byte block is supported in the "Special Read Mode," which only requires 5 ms for reading.



ISH-18GM-V1



ISH-F61-V1



ISH-FP-V1

### R/W HEADS

MODEL NUMBER	DIMENSIONS IN MM	MAXIMUM READ DISTANCE IN MM
ISH-18GM-V1	66 x Ø 18	42
ISH-F61-V1	88 x 28 x 12	66
ISH-FP-V1	80 x 80 x 40	100



### TRANSPONDERS

MODEL NUMBER	STORAGE FEATURES
IDC-8-1K	32 bit read only code 1 kBit useable data Number of write cycles > 500,000 EEPROM
IDC-10-1K	
IDC-12-1K	
IDC-15-1K	
IDC-16-1K	
IDC-24-1K	
IDC-30F-1K	
IDC-30GK-1K	
IDC-50F-1K	
IDC-50-1K	
IDC-58-1K	

# 13.56 MHZ R/W HEADS AND TRANSPONDERS

## LOW-COST TRANSPONDERS IN MANY SHAPES WITH RAPID DATA TRANSFER

The read only code is standardized for the 13.56 MHz frequency. Due to the higher carrier frequency, especially large data volumes can be transferred faster.

These systems are typically used for container identification on roller conveyors or in production as a substitute for the traditional

route card. The products meet standards ISO 15693 and also, in the future, ISO 14443.



IQH1-18GM-V1



IQH1-F61-V1



IQH1-FP-V1



IQH1-F15-V1

### R/W HEADS

MODEL NUMBER	DIMENSIONS IN MM	MAXIMUM READ RANGE IN MM
IQH1-18GM-V1	66 x Ø 18	55
IQH1-F61-V1	80 x 28 x 12	50
IQH1-FP-V1	80 x 80 x 40	130
IQH1-F15-V1	180 x 140 x 40	250

### TRANSPONDER

MODEL NUMBER	STORAGE FEATURES
IQC21-....	64 bit read only code, 112 byte useable memory, EEPROM
IQC22-....	64 bit read only code, 256 byte useable memory, EEPROM
IQC33-....	64 bit read only code, 2 kBit useable memory, FRAM



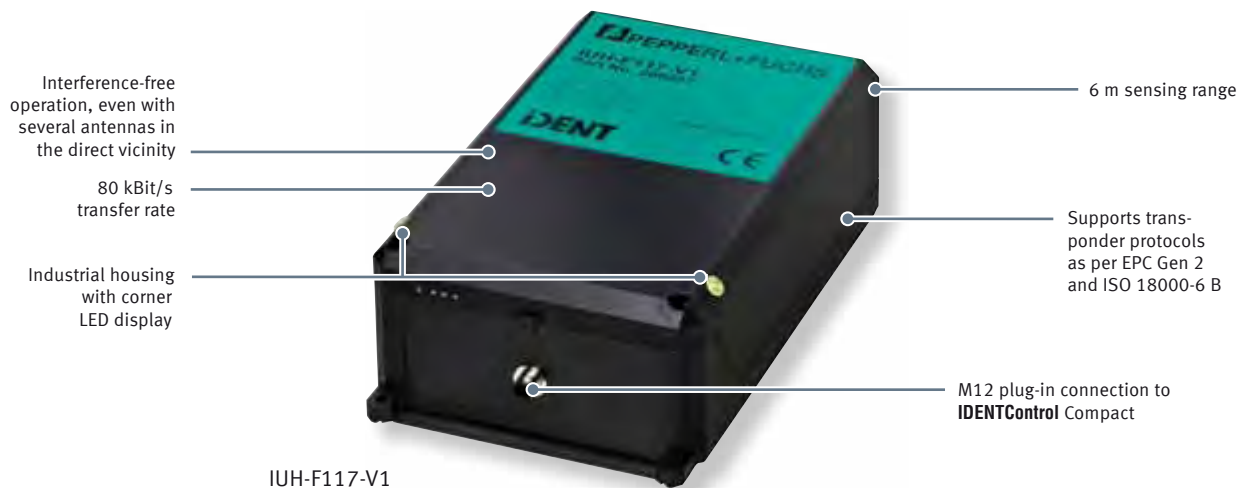
# 868 MHz R/W HEADS AND TRANSPONDERS

## LOW-COST PASSIVE UHF TRANSPONDERS WITH LARGE SENSING RANGE

868 MHz and UHF (ultra high frequency) are standard for RFID systems in Europe. Different frequency ranges are used in the USA and Asia.

The transponders have an integrated rod-shaped antenna that is powered via the R/W heads. These transponders achieve a sensing range of up to 6 m even without a built-in battery. The performance of the UHF system from Pepperl+Fuchs can be adapted to suit the

application. This enables optimum adjustment of the read range. The operation of several R/W heads in the direct vicinity is possible with the Multichannel Mode. Protocols as per ISO 18000-6B, and EPC Gen 2 are supported.



### R/W HEADS

MODEL NUMBER	DESCRIPTION
IUH-F117-V1	UHF R/W head with M12 connecting plug

### TRANSPONDERS

MODEL NUMBER	STORAGE FEATURES
IUC71-F150-T11	ISO 18000-6B, 216 byte EEPROM, 64 bit read only code, up to 220°C, mounting on metal
IUC71-50	ISO 18000-6B, 216 byte EEPROM, 64 bit read only code, mounting on metal
IUC72-C6-T10	EPC Class 1 Gen 2, ISO 18000-6C, 240 bit EPC, 512 bit expanded memory, read only code (UID) available
IUC72-F151	EPC Class 1 Gen 2, ISO 18000-6C, 240 bit EPC, 512 bit expanded memory, read only code (UID) available
IUC72-F152	EPC Class 1 Gen 2, ISO 18000-6C, 240 bit EPC, 512 bit expanded memory, read only code (UID) available
IUC73-F153	EPC Class 1 Gen 2, ISO 18000-6C, 96 Bit
IUC74-F154	EPC Class 1 Gen 2, ISO 18000-6C, 96 bit EPC, 512 bit expanded memory, read only code (UID) available

# 125 KHZ RFID STATIONS WITH INTEGRATED INTERFACE

## R/W HEAD WITH CONTROL INTERFACE FOR DECENTRALIZED INSTALLATION

The IP system should be used if individual IDENT read points are spread over long distances in the plant.

Together with the R/W head, this contains the control interface and fieldbus interface in one device and is designated as an R/W system. Connections to PROFIBUS (up to 12 MBaud), Interbus (500 kHz und 2 MHz) as well as to serial interfaces are available.

These devices are designed for harsh industrial use and have an IP67 degree of protection. These R/W systems are frequently used in material handling. They offer installation advantages. A single 80 x 80 mm read head will communicate with all IPC... type tags.



IPT1-FP with U-P6-B6



IPT1-FP with U-P3-RX

MODEL NUMBER	DESCRIPTION OF THE TOP OF THE R/W SYSTEM
IPT1-FP	R/W head for P3, P6 and P7 bases

MODEL NUMBER	DESCRIPTION OF THE BASE OF THE R/W SYSTEM
U-P3-RX	RS 232/RS 485 connection
U-P3V4A-RX	RS 232/RS 485 connection, stainless steel version
U-P7V4A-R4	RS 485 with 2 connections, stainless steel version
U-P6-B5	Interbus connection via cable glands
U-P6-B5-V	Interbus connection via M23 connecting plug
U-P6-B6	PROFIBUS connection via cable glands
U-P6-B6-V15B	PROFIBUS connection via M12 connector
U-P6V4A-B6	PROFIBUS connection via cable glands, stainless steel version



## HANDHELDS WITH DISPLAY AND KEYBOARD

For mobile use, intuitive handhelds with full graphic display and keyboard are available. The product range includes versions for 125 kHz, 250 kHz und 13.56 MHz frequencies.

The data can simply be displayed in plain text, cached in the device or directly transferred by Bluetooth to a PC. The RFID handhelds offer a cell phone type keypad and have two freely programmable keys. Frequently repeated actions can, therefore, be performed at the simple touch of a button. Customer specific applications such

as inventory, quality assurance, process control and maintenance can be easily implemented via a JavaScript platform. The devices have a real-time clock with battery backup and can be plugged into an ergonomic industrial grip with integrated battery.



MODEL NUMBER	RFID FREQUENCY
IPT-HH20	125 kHz
IST-HH20	250 kHz
IQT1-HH20	13.56 MHz



## ACCESSORIES FOR CONNECTION AND OPERATION

MODEL NUMBER	DESCRIPTION
ODZ-MAH-GRIP2	Grip, industrial version with 1950 mAh battery
ODZ-MAH-BAT	Lithium ion battery, capacitance 1950 mAh
ODZ-MAH200-Supply	Plug-in power supply with battery charger
ODZ-MAH-CAB-Charge	Cable for charger
ODZ-MAH-Charger	Charging station for handheld with grip
ODZ-MAH-B15-M3	Bluetooth modem pluggable, connection via RS232, USB or PS/2



## RFID ACCESSORIES – FOR SIMPLE CONNECTION



### IDENTControl is universally connected.

You can find a selection of the most-used connectors in the table, listed according to read head connector and fieldbus connector. You can find additional connectors in our catalog connectors and splitters.

The DIN rail mounting plate, ICZ-MH05-SACB-8, is used with all **IDENTControl** Compact controllers.

### CONNECTION LINES FOR RFID R/W HEADS, SERIAL INTERFACE OR TRIGGER SENSORS

MODEL NUMBER	DESCRIPTION
V1-G-*M-PUR ABG V1-W	M12 connection cable, 4-pin, shielded, straight socket, angled plug, PUR cover 250 kHz
V1S-G-ABG	M12 plug, shielded, field attachable
V1-G-ABG	M12 socket, shielded, field attachable
V1S-G-0,15M-PUR-SUBD	Adapter for SUB-D plug on M12 plug

\*: 2/5/10 (length in m)

### CONNECTION CABLES FOR THE PROFIBUS INTERFACE (B-CODED)

MODEL NUMBER	DESCRIPTION
V15B-G-*M-PUR ABG-V15B-G	M12 connection cable, 4-pin, shielded, straight socket, angled plug, PUR cover
V15B-W-ABG-PG9	M12 socket, field attachable, angled
V15SB-W-ABG-PG9	M12 plug, field attachable, angled
V15B-G-ABG-PG9	M12 socket, field attachable, straight
V15SB-G-ABG-PG9	M12 connector, field attachable, straight
ICZ-3T-0,2M-PUR ABG-V15B-G	Y connecting cable for further connection
VAZ-PB-DB9-W	9-pin SUB-D plug, field attachable for 2 PROFIBUS cables (terminator switchable)
ICZ-TR	Terminator at end of PROFIBUS cable

\*: 2/5/10 (length in m)

### CONNECTION LINE FOR ETHERNET INTERFACE WITH CONNECTION VIA M12 PLUG (D-CODED)

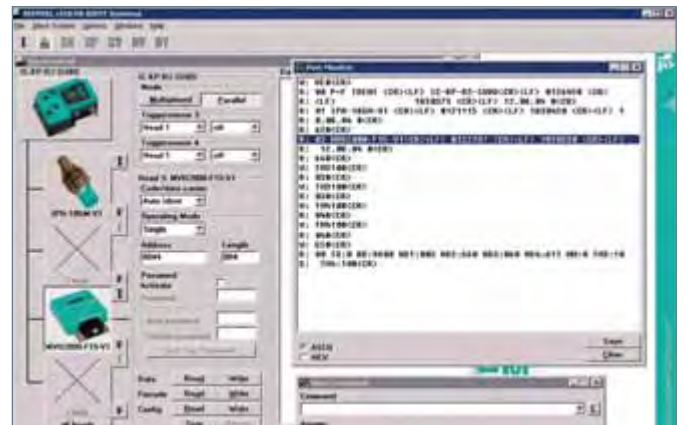
MODEL NUMBER	DESCRIPTION
V1SD-G-2M-PUR-ABG-V1SD-G	M12 connection cable, straight both ends, 100 MHz/cat 5, PUR cover
V1D-G-ABG-PG9	M12 socket, field attachable, D-coded, straight
V1SD-G-ABG-PG9	M12 plug, field attachable, D-coded, straight

\*: 2/5/10 (length in m)

## RFID CONTROL SOFTWARE

### IDENTControl interface easy to operate.

All **IDENTControl** interfaces that can be connected to a PC with a serial interface can be controlled with the RFIDControl software. The parameters can be changed, R/W commands sent, and read data displayed via a clear selection screen. With the help of the integrated port monitor, all communications can be controlled and the installation is easily set up. You can download the software from the [www.pepperl-fuchs.com](http://www.pepperl-fuchs.com) website free of charge. Select your country, and simply enter "RFID-Control" in the search field to access the detail page with the download link.



## WEB SERVER INTERFACE

### All **IDENTControl** interfaces with Ethernet interface can be activated directly by a web interface.

No software installation required. Network access enables remote diagnosis and parameterization. In the web browser, a selection screen is displayed where the parameters can be changed, R/W commands sent, and read data displayed.



## BARCODE AND DATA MATRIX

### Pepperl+Fuchs – the full-range supplier for sensor systems – also provides optical identification systems.

What if RFID identification is not the right solution for your application? Pepperl+Fuchs also offers a comprehensive product range in the barcode and Data Matrix fields. Ask for the complete catalog of identification systems, browse online at [www.pepperl-fuchs.com/ident](http://www.pepperl-fuchs.com/ident) or call us.



Data Matrix reader



Barcode imager



# FACTORY AUTOMATION – SENSING YOUR NEEDS



Pepperl+Fuchs sets the standard in quality and innovative technology for the world of automation. Our expertise, dedication, and heritage of innovation have driven us to develop the largest and most versatile line of industrial sensor technologies and interface components in the world. With our global presence, reliable service, and flexible production facilities, Pepperl+Fuchs delivers complete solutions for your automation requirements – wherever you need us.

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