RFID Supervisor
Configuration software for IDENTControl interfaces and UHF read / write heads
With regard to the supply of products, the current issue of the following document is applicable: The General Terms of Delivery for Products and Services of the Electrical Industry, published by the Central Association of the Electrical Industry (Zentralverband Elektrotechnik und Elektroindustrie (ZVEI) e.V.) in its most recent version as well as the supplementary clause: "Expanded reservation of proprietorship"
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1 Installation

To install the program, execute the file "RFID Supervisor.exe". Follow the installation instructions. Once the program has been successfully installed, you can start it with Start/Programs/Pepperl+Fuchs/RFID Supervisor. After you have started the program, the start window appears for selecting the program version.

Select the "Standard Version" to parameterize the control interface IDENT Control. → see image on page 4

Select the "Extended UHF Version" to parameterize the control interface IDENT Control and the UHF read/write head connected to it. → see Figure 3.1 on page 16
2 Standard Version

After selecting the program version "Standard Version", the start window appears.

![Start window](image)

Before you can parameterize the connected read/write head, you must make various entries under "Network" on the start page.

Establishing a Connection

**Note!**

If you want to create a TCP/IP connection to the control interface IDENTControl, make sure that no other participants (e.g., PLC) access this control interface at the same time. This also applies to participants that communicate with the control interface with another Ethernet protocol.

To establish a connection to the control interface IDENTControl, you must enter the IP address of the control interface.

1. Enter the IP address of the control interface in the "IP Address" input field. Enter the port that you want to address in the "Port Number" input field.
   - IP address: 169.254.10.12 (= default setting)
   - Port number: 10000 (standard port)
2. Press the "Connect" button.

The software tries to create a connection to the control interface. Communication between the PC and the control interface IDENTControl exists if the display indicator next to the "Connect" button is lit green.

**Note!**

If no connection can be established between the PC and the control interface, check the IP addresses of the control interface IDENTControl and your PC. Both addresses must be within the same subnet.

If still no connection can be established, switch off the DHCP function of the PC.

On the right-hand side of the "Network" area are the "Show Website" and "Show Network connections" links. Once connection to the IDENTControl has been established, you can use the "Show Website" link to call up the website integrated into the IDENTControl. Access to the device website is protected by a user name and password. The default settings for the user name and password are:

**User name:** identcontrol  
**Password:** identcontrol

You can use the device website to read the current device software of the control interface and the connected read/write heads.
2.1 Parameterization

Once the connection to IDENTControl has been successfully established, the "Send Data" area is activated. Within the "Send data" area, you can parameterize commands and send them to the control interface or to connected read/write heads.
In the “Choose Operation:” drop-down lists, you can select commands.

1. From the top drop-down list, select the command class, e.g., System Commands.
2. From the lower drop-down list, select a command from this command class.

You can select the following command classes and commands:

### Command Class System Commands

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Command</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CT</td>
<td>Change Tag</td>
<td>Sets the tag type.</td>
</tr>
<tr>
<td>QU</td>
<td>Quit</td>
<td>Cancels an active &quot;Enhanced&quot; command.</td>
</tr>
<tr>
<td>CS</td>
<td>Configuration Store</td>
<td>Stores the last command sent in the nonvolatile memory.</td>
</tr>
<tr>
<td>RS</td>
<td>Reset</td>
<td>Cancels all current commands and reloads the device settings.</td>
</tr>
<tr>
<td>MM</td>
<td>Set Multiplex Mode</td>
<td>Switches multiplex mode on or off.</td>
</tr>
<tr>
<td>TM</td>
<td>Set Trigger Mode</td>
<td>Activates and parameterizes trigger mode.</td>
</tr>
<tr>
<td>CL</td>
<td>Command List</td>
<td>Parameterizes the command list.</td>
</tr>
</tbody>
</table>

### Command class Read/Write Commands

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Command</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>SF</td>
<td>Single Read Read-Only Code</td>
<td>Reads the read-only code once.</td>
</tr>
<tr>
<td>EF</td>
<td>Enhanced Read Read-Only Code</td>
<td>Reads the read-only code continuously.</td>
</tr>
<tr>
<td>SR</td>
<td>Single Read Words</td>
<td>Reads the user data once.</td>
</tr>
<tr>
<td>ER</td>
<td>Enhanced Read Words</td>
<td>Reads the user data continuously.</td>
</tr>
<tr>
<td>SW</td>
<td>Single Write Words</td>
<td>Writes the user data once.</td>
</tr>
<tr>
<td>EW</td>
<td>Enhanced Write Words</td>
<td>Writes the user data continuously.</td>
</tr>
</tbody>
</table>

### Command class IPC03 Commands

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Command</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>PM</td>
<td>Set Password Mode</td>
<td>Activates password mode.</td>
</tr>
<tr>
<td>PC</td>
<td>Change Password</td>
<td>Changes the password.</td>
</tr>
<tr>
<td>PS</td>
<td>Set Password</td>
<td>Activates the password.</td>
</tr>
<tr>
<td>SG</td>
<td>Single Get Configuration</td>
<td>Reads the read/write tag configuration once.</td>
</tr>
</tbody>
</table>
### Command class IPC11 / IDC-...-1K Read-Only Code Commands

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Command</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>EG</td>
<td>Enhanced Get Configuration</td>
<td>Reads the read/write tag configuration continuously.</td>
</tr>
<tr>
<td>SC</td>
<td>Single Write Configuration</td>
<td>Writes the read/write tag configuration once.</td>
</tr>
<tr>
<td>EC</td>
<td>Enhanced Write Configuration</td>
<td>Writes the read/write tag configuration continuously.</td>
</tr>
</tbody>
</table>

### Command class IDC-...-1K Commands

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Command</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>SX</td>
<td>Single Write Read-Only Code</td>
<td>Writes the read-only code once.</td>
</tr>
<tr>
<td>EX</td>
<td>Enhanced Write Read-Only Code</td>
<td>Writes the read-only code continuously.</td>
</tr>
<tr>
<td>S#</td>
<td>Fill Data Carrier</td>
<td>Formats read/write tag with selectable characters.</td>
</tr>
</tbody>
</table>

### Command class IQC Commands

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Command</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>SS</td>
<td>Single Read Special Read-Only Code</td>
<td>Reads the special read-only code once.</td>
</tr>
<tr>
<td>ES</td>
<td>Enhanced Read Special Read-Only Code</td>
<td>Reads the special read-only code continuously.</td>
</tr>
<tr>
<td>SP</td>
<td>Single Program Special Read-Only Code</td>
<td>Writes the special read-only code once.</td>
</tr>
<tr>
<td>EP</td>
<td>Enhanced Program Special Read-Only Code</td>
<td>Writes the special read-only code continuously.</td>
</tr>
<tr>
<td>SI</td>
<td>Initialize Data Carrier</td>
<td>Unlocks read/write tag.</td>
</tr>
</tbody>
</table>

The input fields and their names change depending on the selected command. This means that the parameters that are required for executing the desired command are uniquely identified.

### 2.2 Examples

#### Example 1: Changing Tag Type

You want to change the tag type at the read/write head at identity channel 1 on IPC03- ... (= "03").

1. From the top drop-down list "Choose Operation:", select the command class "System Command".
2. From the lower drop-down list "Choose Operation:", select the command "Change tag (CT)".

3. From the drop-down list "Channel IC", select identity channel "1".

4. From the drop-down list "Select tag", select tag type "03".

5. To send the command, press the "Send Telegram" button.
   To cancel the operation, press the "Quit Operation" button.

Example 2: Reading Read-Only Code Once

You want to read the read-only code once for a read/write tag in the detection range of the read/write head at identity channel 1.

1. From the top drop-down list "Choose Operation:", select the command class "Standard Read/Write Commands".

2. From the lower drop-down list "Choose Operation:", select the command "single read read-only code (SF)".

3. From the drop-down list "Channel IC", select identity channel "1".

4. To send the command, press the "Send Telegram" button.
   To cancel the operation, press the "Quit Operation" button.

Example 3: Reading User Data Continuously

You want to continuously read 15 data blocks from memory address 0 of a read/write tag in the detection range of the read/write head at identity channel 1.

1. From the top drop-down list "Choose Operation:", select the command class "Standard Read/Write Commands".

2. From the lower drop-down list "Choose Operation:", select the command "enhanced read words (ER)".

3. From the drop-down list "Channel IC", select identity channel "1".

4. From the drop-down list "Number of Words", select the number of data blocks to be read "15". 1 data block corresponds to 4 bytes.

5. From the drop-down list "Word address", select the memory address on the read/write tag from which you want to read the user data.
Figure 2.9 enhanced read words (ER)

6. To send the command, press the “Send Telegram” button. To cancel the operation, press the “Quit Operation” button.

Example 4: Writing User Data Once

You want to write 3 data blocks once from memory address 0 of a read/write tag in the detection range of the read/write head at identity channel 1.

1. From the top drop-down list “Choose Operation:”, select the command class “Standard Read/Write Commands”.
2. From the lower drop-down list “Choose Operation:”, select the command “single write words (SW)”.
3. From the drop-down list “Channel IC”, select identity channel “1”.
4. From the drop-down list “Number of Words”, select the number of data blocks to be written “3”. 1 data block corresponds to 4 bytes.
5. From the drop-down list “Word address”, select the memory address on the read/write tag from which you want to write the user data.
6. Select the option “ASCII” for user data in ASCII data format or the option “Hex” for user data in hexadecimal format.
7. Write the user data to the “Data” field.

Figure 2.10 single write words (SW)

8. To send the command, press the “Send Telegram” button. To cancel the operation, press the “Quit Operation” button.

Example 5: Writing Read-Only Code Once

You want to write a 5-byte read-only code once to an IPC11-... read/write tag in the detection range of the read/write head at identity channel 1.

1. Set the tag type of the read/write at identity channel 1 to IPC11 (= "11")
2. From the top drop-down list “Choose Operation:”, select the command class “IPC11/IDC-... 1K Read-Only Code Commands”.
3. From the lower drop-down list “Choose Operation:”, select the command “single write read-only code (SX)”.
4. From the drop-down list “Channel IC”, select identity channel "1".
5. From the drop-down list "Read-Only Tagtype", select the type of read-only code to be programmed. With selection "11" the read-only code can be overwritten; with selection "02" the read-only code is write-protected.

6. Select the option "ASCII" for a read-only code in ASCII data format or the option "Hex" for a read-only code in hexadecimal format.

7. Write the read-only code to the "Data (Read-Only Code 5 bytes)" field.

8. To send the command, press the "Send Telegram" button. To cancel the operation, press the "Quit Operation" button.

**Note!**
Enter data in the "Data" field in ASCII data format. If the data contains control characters (= non-representable characters), enter the data in hexadecimal format.
The syntax for the input of data in hexadecimal data format is: .01.02.03.04
Example:
ASCII "1111" corresponds to hex: ".31.31.31.31"
See chapter 4.2.

2.3 Recording Sent and Received Data

**Received Data**
The response telegrams of the control interface IDENTControl are shown in two output windows under "Received data". The user data is displayed in ASCII or hexadecimal format.

A response telegram is divided into its various parameters and displayed in several fields. The meanings of the individual fields are:
The response telegram is displayed in the ASCII data format in the top line, and in hexadecimal format in the lower line.

**Example**

How the read user data is presented when executing a Single Read Word (SR):

![Figure 2.13 Received data](image)

**Monitor**

The data exchange between PC and IDENTControl is displayed for the amount of time that a communication link exists with a monitor.

The sent commands ("Sending") and the response telegrams ("Received") are displayed under "Monitor". To track the timed sequence, each entry is given a time stamp.

**Example**

![Figure 2.14 Commands and responses on the monitor](image)

Command sent: Single Read Words (SR) with a block length of 2 from address 0

Representation on the Monitor
Command:
21.03.2012 14:10:41 : Sending: .00.06.10.22.00.00

21.03.2012 14:10:41 = Time stamp
Sending = PC sends to IDENTControl
.00.06 = Length of the complete telegram (= 2 bytes)
.10 = Command code (= 1 byte)
.22 = Number of blocks (= high nibble) and channel number (= low nibble)
.00.00 = Block address

Command confirmation:
21.03.2012 14:10:41 : Received: .00.06.10.22.FF.2B

21.03.2012 14:10:41 = Time stamp
Received = IDENTControl sends to PC
.00.06 = Length of the complete response telegram (= 2 bytes)
.10 = Mirrored command code (= 1 byte)
.22 = Number of blocks (= high nibble) and channel number (= low nibble)
.FF = Status value of the response telegram
.2B = Telegram counter

Command response:
21.03.2012 14:10:41 : Received: .00.06.10.22.00.2C.31.32.33.34.41.42.43.44

21.03.2012 14:10:41 = Time stamp
Received = IDENTControl sends to PC
.00.06 = Length of the complete response telegram (= 2 bytes)
.10 = Mirrored command code (= 1 byte)
.22 = Number of blocks (= high nibble) and channel number (= low nibble)
.00 = Status value of the response telegram
.2C = Telegram counter
.31.32.33.34.41.42.43.44 = User data in hexadecimal format; length is dependent on the number of blocks set

Useful

The following buttons can be found under "Useful" on the start page:

![Figure 2.15 Useful]
<table>
<thead>
<tr>
<th>Button</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Check lobe</strong></td>
<td>Lets you check the antenna alignment.</td>
</tr>
<tr>
<td></td>
<td>1. Press the &quot;Check lobe&quot; button</td>
</tr>
<tr>
<td></td>
<td>2. A window displays the status value of the response in graphical form:</td>
</tr>
<tr>
<td></td>
<td>The window is green when the status value is 0x00 (i.e., read/write tag in the field).</td>
</tr>
<tr>
<td></td>
<td>The window is red if the status value is 0x05 (i.e., no read/write tag in the field).</td>
</tr>
<tr>
<td><strong>Write Log File</strong></td>
<td>Reads the data recorded by the monitor and stores it in a text file.</td>
</tr>
<tr>
<td><strong>Clear Monitor</strong></td>
<td>Deletes the contents of the monitor window.</td>
</tr>
</tbody>
</table>
Extended UHF Version

After selecting the program version "Extended UHF Version", the start window appears.

![Start window](image)

Before you can parameterize the connected read/write head, you must make various entries under "Network+Initialization" on the start page.

Establishing a Connection

**Note!**

If you want to create a TCP/IP connection to the control interface IDENTControl, make sure that no other participants (e.g., PLC) access this control interface at the same time. This also applies to participants that communicate with the control interface with another Ethernet protocol.

To establish a connection to the control interface IDENTControl, you must enter the IP address of the control interface.

1. Enter the IP address of the control interface in the "IP Address" input field. Enter the port that you want to address in the "Port Number" input field.
   - IP address: 169.254.10.12 (= default setting)
   - Port number: 10000 (= standard port)
2. Select the desired operating mode "Single Frame" or "Multi-Frame".

- **Single-Frame** detects a maximum of one read/write tag in the detection range. Where there are multiple tags in the detection range, an error message appears in the monitor window.
- **Multi-Frame** enables the simultaneous reading of multiple tags in the detection range.

3. Press the "Connect" button.

The software tries to create a connection to the control interface. Communication between the PC and the control interface IDENTControl exists if the display indicator next to the "Connect" button is lit green.

**Note!**

If no connection can be established between the PC and the control interface, check the IP addresses of the control interface IDENTControl and your PC. Both addresses must be within the same subnet.

If still no connection can be established, switch off the DHCP function of the PC.
2013-11

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Note!
When logging in, the selected operating mode is used only for the read/write head that is connected to the selected channel (Channel IC). If you want to operate multiple read/write heads in the same operating mode, you must set this separately via the parameter settings and the selection of the IDENT channel.

 IDENT Channel and System Code

Before you can set the read/write head parameters, you must enter the system code and channel to which the read/write head is connected.

1. From the drop-down list "Channel IC", select the channel to which the read/write head is connected. You can select channels 0 to 4. 1)

2. From the drop-down list "System code", select the system code of the read/write head. 2)

Note!
In the selection window "Channel IC", specify the channel to which the parameterization telegrams will be sent. Channels 1 to 4 are for the identity channels of the control interface, and channel 0 for the control interface IDENTControl itself. If you select channel 0, the parameterization telegram is sent to IDENTControl. This is required for executing system commands.

After a successful login, the memory bank activated at the time of the connection—and accessed by both read and write commands—appears in the monitor window. It is possible for the program to change the memory bank at any time (see: Memory Bank).
1) 0 = channel 0; command is sent to the control interface and not forwarded to the read/write heads
   1 = channel 1
   2 = channel 2; (IC-KP2-2HB17-2V1D and IC-KP-B17-AIDA1 only)
   3 = channel 3; (IC-KP-B17-AIDA1 only)
   4 = channel 4; (IC-KP-B17-AIDA1 only)

2) The connected antenna is verified by the system code. For a connected UHF read/write head, select system code "U".
   If you need a system code that does not appear in the drop-down list, you can enter it in the field manually.
   The system code for the IUH-F117-V1 read/write head is U0.

3.2 Version Query

Under "Network + Initialization", you can query all important properties of the used hardware components by pressing the "Check Version" button:

- Model name
- Model number
- Firmware version
- Tag type
- ...

![Image of the version query screen]

Figure 3.6

3.3 "Home" Tab

![Image of the "Home" tab]

Figure 3.7
You can send commands directly to the control interface IDENTControl.

Sending Commands Directly

1. Under "Direct send", enter the desired command in the "Enter telegram:" field

2. Press the "Send telegram" button.

   The command is sent to the control interface via TCP/IP. In this way, you can send commands to the control interface that are not available in the program.

   **Note!**

   Always begin the command with a ".".

   Example: `.00.04.01.02`

   The command syntax for entering a command directly can be found in Appendix (see chapter 4.1). For a list of executable commands and their meaning, see the manual for your control interface.

You can store the complete configuration of the connected read/write head externally.

Exporting a Configuration

Press the "Write config-file" button under "IUH".
The parameters for the connected read/write head are stored in an Excel file (*.xls). This enables you to administer the parameter data for various read/write heads.

**You can import a stored configuration for a read/write head.**

**Importing a Configuration**

1. Press the "Import config-file" button under "IUH".

![Figure 3.10](image)

2. Select the folder and the Excel file that you want to import.

Using the "Import config-file" function, you can import into the program an Excel file (*.xls) with parameters in one step and then transfer it automatically to the read/write head. This means that when replacing a device, you can guarantee that the parameter setting for the read/write head is consistent.

**You can reset the connected read/write head to the factory default setting.**

**Resetting to the Factory Default Setting**

Under "IUH", press the "Reset to default" button.

![Figure 3.11](image)

The parameters in the connected read/write head are reset to the factory default settings. The resetting process can take some time.
Factory default setting IUH-F190-V1-EU

<table>
<thead>
<tr>
<th>Parameters</th>
<th>Setting</th>
<th>Default Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Protocol Mode</td>
<td>Multiframe</td>
<td>0x4D</td>
</tr>
<tr>
<td>Power Transmit</td>
<td>50 mW</td>
<td>0x32</td>
</tr>
<tr>
<td>DRM</td>
<td>Set channels</td>
<td>0x040A0470D</td>
</tr>
<tr>
<td>Tries allowed</td>
<td>Number of repeats</td>
<td>0x02</td>
</tr>
<tr>
<td>Enhanced Status 5</td>
<td>Number of attempts</td>
<td>0x05</td>
</tr>
<tr>
<td>Number of Tags</td>
<td>Off</td>
<td>0xFF</td>
</tr>
<tr>
<td>Antenna Polarization</td>
<td>R</td>
<td>0x52</td>
</tr>
<tr>
<td>Q Value</td>
<td>Standard</td>
<td>0x02</td>
</tr>
<tr>
<td>Memory Bank</td>
<td>User memory</td>
<td>0x03</td>
</tr>
<tr>
<td>Sensing Mode</td>
<td>Off</td>
<td>0x00</td>
</tr>
</tbody>
</table>

You can switch the "Tool-Tips" function on or off

With the "Tool-Tip on/off" option, you can switch the tool tips for the various commands on or off.

Figure 3.12
3.4 "Tag" Tab

You can set the tag type.

**Figure 3.13**

**Selecting the Tag Type**

1. Under "Select operation:", activate the "Change tag" option.
2. Select the tag type you are using from the drop-down list "Select tag:" under "Change tag".
3. Press the "Transmit" button.

→ The control interface and the connected read/write head are set to the existing tag type.

**Note!**
The default tag type is 80. This value corresponds to the tag type that is compatible with the read/write heads IUH-F1**-V1-*.

**Entering the Tag Type Manually**

1. Under "Select operation:", activate the "Change tag" option.
2. Under "Change tag", activate the "Enter tag type manually:" check box.
3. Enter your tag type with 2 ASCII characters in the field (see chapter 4.2).
4. Press the "Transmit" button.

→ The control interface and the connected read/write head are set to the entered tag type.

You can control the multi-tag mode.
Reading the Q Value

1. Under "Select operation", activate the "Q-Value - QW" option.
2. Under "Q-Value", activate the "Read" option.
3. Press the "Transmit" button.

   ➔ The read Q value is displayed in hexadecimal format within the monitor window "Data". If you operate an antenna in Singletag mode, the Q value is set permanently to 0.

Parameterizing the Q Value

1. Under "Select operation", activate the "Q-Value - QW" option.
2. Under "Q-Value", activate the "Write" option.
3. From the drop-down list "Q-Value", select the appropriate value.
   - Value range: 0 ... 7
   - Default value: 2
4. Press the "Transmit" button.

   You can define the memory area of the read/write tag accessed by read and write commands.

Reading the Memory Bank

1. Under "Select operation", activate the "Memory Bank - MB" option.
2. Under "Memory Bank", activate the "Read" option.
3. Press the "Transmit" button.

   The read value of the memory bank is displayed in hexadecimal format within the monitor window "Data".

Parameterizing the Memory Bank

1. Under "Select operation", activate the "Memory Bank - MB" option.
2. Under "Memory Bank", activate the "Write" option.
3. From the drop-down list "Memory Bank", select the appropriate value.
   Value range: 1 = UII, 2 = TID, 3 = User Memory
   Default value: 3
4. Press the "Transmit" button.

You can set the number of read/write tags that are looked for by the read/write head in the detection range.

Reading Number of Tags

1. Under "Select operation", activate the "Number Tags - NT" option.
2. Under "Number of Tags", activate the "Read" option.
3. Press the "Transmit" button.

   The read value of the number of tags is displayed in hexadecimal format within the monitor window "Data".
Parameterizing Number of Tags

1. Under "Select operation", activate the "Number Tags - NT" option.
2. Under "Number of Tags", activate the "Write" option.
3. From the drop-down list "Number of Tags", select the appropriate value.
   Value range: 0 ... 255, 255 = off
4. Press the "Transmit" button.

You can call up various details in Singleframe mode

You can activate the "More Information - MD" option if you selected "Single-Frame" mode when logging in.

After a successful read or write access, information on the transmission channel used and the associated transmission power, the channel number, the information type, and the RSSI that was used during the read or write access is output.
3.5 "Read/Write data" Tab

You can read data from the read/write tag or write data to it. The following are available:

- Read-Only Code (TID)
- EPC (Special Read-Only Code)
- User Memory (Words)

You can read the read-only code

Single/Enhanced Read for Read-Only Code

With this operation, you can read the UII or TID of the read/write tag as a unique read-only code.

1. Under "Select operation:", activate the "Read-Only Code (TID)" option.
2. From the drop-down list "Choose operation:", select the desired mode. You can choose between:
   - a one-off read operation "single read read-only code"
   - a continuous read operation "enhanced read read-only code"
3. To start the read operation, press the "Transmit" button.
   - The read read-only code for the read/write tag appears in the field to the right. The read-only code for UHF read/write tags has a length of 8 bytes.
4. To cancel the continuous read operation "enhanced read read-only code", press the "Quit operation" button.

You can read the Special Read-Only Code

Single/Enhanced Read for Special Read-Only Code

This operation allows you to read an EPC or MITL code.
EPC = Electronic Product Code = unique identification with a defined structure.
MITL = Multi Industry Transport Label) = unique numbering according to ISO.

1. Under "Select operation:", activate the "EPC Bank" option.
2. From the drop-down list "Choose operation:", select the desired mode. You can choose between:
   a one-off read operation "single read special read-only code" 
   a continuous read operation "enhanced read special read-only code"

3. To start a read operation, press the "Transmit" button.

   → Read special read-only codes are added to the list. If a tag is detected again in "single"
   mode, it is displayed under "Monitor" and appears again in the list. The "Clear/Refresh"
   button deletes all entries in the list. If a tag leaves the detection range during continuous
   reading, the list entry for the tag is highlighted in red. If the tag returns to the detection range,
   a new entry appears in the list.
   The protocol control bits (PC) are displayed in the list separately after Gen2 (ISO/IEC 18000-
   63). The length and various indicators can be derived from the protocol control bits.

4. To cancel the continuous read operation "enhanced read special read-only code", press the
   "Quit operation" button.

You can write the special read-only code

![Figure 3.22](image)

**Single/Enhanced Write for Special Read-Only Code**

This operation allows you to program an EPC or MITL code.

1. Under "Select operation:", press the "Special Read-Only Code" option.

2. From the drop-down list "Choose operation:", select the desired mode. You can choose between:
   a one-time write operation "single write special read-only code" 
   a continuous write operation "enhanced write special read-only code"

3. Under "Write Data", enter the information to be programmed in the "Data:" field.

4. If you want to enter the information to be programmed in ASCII format, activate the "ASCII"
   check box (see chapter 4.2).

5. If you have entered the information to be programmed in hexadecimal format, activate the
   "Hex" check box.

6. To start a write operation, press the "Transmit" button.

   → The information to be programmed is written to the read/write tag as a special read-only
   code.

7. To cancel the continuous write operation (Enhanced Write Mode), press the "Quit
   operation" button.
You can read user data.

![Image](image1)

**Figure 3.23**

**Single/Enhanced Read for Words**

This operation allows you to read user data.

1. Under "Select operation:“, activate the "Words" option.
2. From the drop-down list "Choose operation:“, select the desired mode. You can choose between:
   a. a one-off read operation "single read words"
   b. a continuous read operation "enhanced read words"
3. From the drop-down list "Number of double-words (4-byte)" under "Write Data", select the number of 4-byte user data blocks to be read.
4. Enter in the "Word address" field the address for memory access to the read/write tag. This value addresses the data blocks.
   Default = 00
5. To start a read operation, press the "Transmit" button.
   The read user data for the read/write tag is displayed under "Monitor".
6. To cancel the continuous read operation (Enhanced Read Mode), press the "Quit operation" button.

You can write user data.

![Image](image2)

**Figure 3.24**

---

**Note!**

The input data consists of the EPC code without the 2 protocol control bits. (See: Gen2 ISO/IEC 18000-63)

The required protocol control bits (PC) are created automatically by the RFID Supervisor and added to the telegram.
Single/Enhanced Write for Words

This operation allows you to program user data.

1. Under "Select operation:" activate the "Words" option.
2. From the drop-down list "Choose operation:" select the desired mode. You can choose between:
   - A one-off write operation "single write"
   - A continuous write operation "enhanced write"
3. From the drop-down list "Number of words" under "Write Data", select the number of 4-byte user data blocks to be written.
4. Enter in the "Word address" field the address for memory access to the read/write tag. This value addresses the data blocks.
   Default = 00
5. If you want to enter the information to be programmed in ASCII format, activate the "ASCII" check box (see chapter 4.2).
6. If you have entered the information to be programmed in hexadecimal format, activate the "Hex" check box.
7. Under "Write Data", enter the information to be programmed in the "Data:" field.
8. To start a write operation, press the "Transmit" button.
   → The information to be programmed is written to the read/write tag as user data.
9. To cancel the continuous write operation (Enhanced Write Mode), press the "Quit operation" button.

You can determine the signal strength between the tag and the read/write head.

Figure 3.25

See chapter 3.8
3.6 "Parameter -1-" Tab

You can read or set the read/write head power output.

You can read or set the read/write head polarization.

---

**Reading the Power Output**

1. Under "Select operation:“, activate the "Power Transmit - PT" option.
2. Under "Power Transmit - PT", activate the "Read" check box.
3. To start the read operation, activate the "Transmit" button.
   
   ➡️ The read power output for the read/write head is displayed in hexadecimal format in the field under "Data".

**Setting the Power Output**

1. Under "Select operation:“, activate the "Power Transmit - PT" option.
2. Under "Power Transmit - PT", activate the "Change" check box.
3. Enter the desired power output in the "Enter value:" field. You can enter a power output between 0 mW and 2000 mW ERP with a granularity of 100 mW.
   
   **Value range:**
   
   IUH-F190-*: 0 mW ... 200 mW
   IUH-F117-*: 300 mW ... 2000 mW
4. Press the "Transmit" button.
   
   ➡️ The read/write head power output is set.

---

**You can read or set the read/write head polarization.**
Reading the Polarization

1. Activate the "Antenna Polarization" option under "Select operation:"
2. Activate the "Read" check box under "Antenna Polarization - AP"
3. To start the read operation, press the "Transmit" button.
   ➔ The read polarization for the read/write head is displayed in the field under "Monitor".

Setting the Polarization

1. Activate the "Antenna Polarization" option under "Select operation:"
2. Activate the "Change" check box under "Antenna Polarization - AP"
3. Select the desired polarization in the drop-down list "Select polarization:". You can choose between:
   L - Linear polarization
   C - Circular polarization
   A - Automatic polarization
   1) In automatic mode, the polarization switches dynamically between linear and circular polarization. This reduces gaps in the readings.
4. Press the "Transmit" button.
   ➔ The read/write head polarization is set.

You can measure the reflected transmission power.

![Figure 3.28](image)

Reading the Power Output

1. Activate the "Measure Reflect - MF" option under "Select operation:"
2. To start the read operation, press the "Transmit" button.
   ➔ The read power output for the read/write head is displayed in the field under "Measured Reflection"
For the IUH-F190-V1-EU read/write head, the information is output to channels 4, 7, 10, and 13.
RFID Supervisor converts the received transmission powers to dBm and displays them.
You can read or set the number of possible read/write attempts in the event of an error.

**Reading Tries Allowed**

1. Activate the "Tries allowed - TA" option under "Select operation:"
2. Activate the "Read" check box under "Tries Allowed - TA".
3. To start the read operation, press the "Transmit" button.
   - The read polarization of the read/write head is displayed in the field under "Data".

**Setting Tries Allowed**

1. Activate the "Tries allowed - TA" option under "Select operation:"
2. Activate the "Change" check box under "Tries Allowed - TA".
3. Enter the desired number in the "Enter a value:" field.
   - Value range: 000 ... 255
   - Default = 003
4. Press the "Transmit" button.
   - The number of possible read/write attempts is set in the event of an error.

You can read or set the number of read repeats when executing enhanced read commands.
Reading Enhanced Status 5

1. Activate the "Enhanced Status - E5" option under "Select operation:".
2. Activate the "Read" check box under "Enhanced Status 5".
3. To start the read operation, press the "Transmit" button.

→ The read number of read repeats for the read/write head is displayed in the field under "Data".

Setting Enhanced Status 5

1. Activate the "Enhanced Status - E5" option under "Select operation:".
2. Activate the "Change" check box under "Enhanced Status 5".
3. Enter the desired number in the field "Enter a value:".
   - Value range: 000 ... 255
   - Default = 005
4. Press the "Transmit" button.

→ The number of read repeats is set.

You can read or set the pause time for enhanced commands.

Reading Sensing Mode

1. Activate the "Sensing Mode - SM" option under "Select operation:".
2. Activate the "Read" check box under "Sensing Mode".
3. To start the read operation, press the "Transmit" button.

→ The pause time reading is displayed in milliseconds in the field under "Data".

Setting Sensing Mode

1. Activate the "Sensing Mode - SM" option under "Select operation:".
2. Activate the "Change" check box under "Sensing Mode".
3. Enter the desired pause time in milliseconds in the "Enter idle time:" field.
4. Press the "Transmit" button.

→ The pause time for enhanced commands is set.
You can read or set the sequence of the channels permitted in dense reader mode.

**Reading Channel DRM**
1. Activate the "Channel DRM - CD" option under "Select operation:"
2. Activate the "Read" check box under "Channel Dense Reader Mode - CD"
3. To start the read operation, press the "Transmit" button.
   - The read sequence of the channels permitted in dense reader mode is displayed in hexadecimal format in the field under "Data".

**Setting Channel DRM**
1. Activate the "Channel DRM - CD" option under "Select operation:"
2. Activate the "Change" check box under "Channel Dense Reader Mode - CD"
3. Enter the desired sequence of the channels permitted in dense reader mode in the "Sequence of channel:" field.
   - Value range:
     - 0x04 = channel 4
     - 0x07 = channel 7
     - 0x0A = channel 10
     - 0x0D = channel 13
   - default sequence = .07.0A.04.0D
4. Press the "Transmit" button.
   - The sequence of the channels permitted in dense reader mode is set.
3.7 "Parameter -2-" Tab

You can read the current configuration of the filter masks.

**Figure 3.33**

**Reading the FL Parameter**

1. Under "Select Operation:", activate the "Filter List - FL" option.
2. Under "Filter List - FL", activate the "Read" check box.
3. From the drop-down list "Filter Number", select the desired filter.
4. To start the read operation, press the "Transmit" button.

  → The read power output for the read/write head is displayed in hexadecimal format in the field under "Data".

You can define up to 3 filter masks for accessing tags in the detection range.

**Figure 3.34**

**Parameterizing Set Filter FI**

1. Under "Select Operation:", activate the "Set Filter - FI" option.
2. Under "Set Filter - FI", select the desired filter number from the drop-down list "Filter:".
3. Under "Set Filter - FI", select from the drop-down list "Bank:" the memory segment to which the filter is to be applied.
4. Under "Set Filter - FI", select the desired options for "Negation", "Logic", and "Truncation".
5. Press the "Transmit" button.

  → The set filter mask is transmitted to the read/write head.
You can switch the filter masks on or off.

Figure 3.35

Switching Filter Mode MF On/Off
1. Under "Select Operation:", activate the "Filter Mode - MF" option.
2. Under "Filter Mode - MF", activate the "Activate" option to switch the filter masks on.
3. Under "Filter Mode - MF", activate the "Disable" option to switch the filter masks off.

You can switch the output protocol between Singleframe and Multiframe.

Figure 3.36

Reading Protocol Mode QV
1. Under "Select Operation:", activate the "Protocol Mode - QV" option.
2. Under "Protocol Mode - QV", activate the "Read" check box.
3. To start the read operation, press the "Transmit" button.

The read power output for the read/write head is displayed in hexadecimal format in the field under "Data".

Note!
A detailed description of the filter masks can be found in the chapter "Operation/Filter Commands" in the manual "IUH-F190-V1-*" at www.pepperl-fuchs.com. see chapter 4.3.
Setting Protocol Mode QV

2. Under "Protocol Mode - QV", activate the "Write" check box.
3. From the drop-down list "Choose Protocol Mode: ", select the desired output protocol. You can choose between:
   - 4D - Multiframe
   - 53 - Singleframe
4. Press the "Transmit" button.
   ➔ The output protocol for the read/write head is set.

**On successful reading of a tag, you can output additional information.**

The IF parameter enables you to output additional information provided that the reading operation was successful and the multiframe protocol is set. The additional information is:

- the RSSI value of the reading
- the transmission channel used
- the transmission power of the reading

---

Reading IF Information

1. Under "Select Operation: ", activate the "Information - IF" option.
2. Under "Additional Information - IF", activate the "Read" check box.
3. To start the read operation, press the "Transmit" button.
   ➔ The read information mode for the read/write head is displayed in hexadecimal data format in the field under "Data".

Setting IF Information

1. Under "Select Operation: ", activate the "Information - IF" option.
2. Under "Additional Information - IF", activate the "Write" check box.
3. From the drop-down list "Information: ", select the desired mode. You can choose between:
   - 00 - off = information output switched off
   - 01 - on = information output switched on
4. Press the "Transmit" button.
   ➔ The information mode for the read/write head is set.
3.8 "RSSI" Tab

The RSSI (Received Signal Strength Indication) value represents the signal strength between the tag and the read/write head. You can use the RSSI value to optimally position the tag and the read/write head. The RSSI value is between 0 and 30.

The RSSI value is read once per second and displayed in a diagram.

You can read and display the RSSI value.

Reading the RSSI Value

1. Under "Select operation:", activate the "EPC Bank" option.
2. From the drop-down list "Choose operation:“, select the desired mode. You can choose between:
   a. one-off read operation "single read special read-only code"
   b. a continuous read operation "enhanced read special read-only code"
3. To start a read operation, press the "Transmit" button.
   ➞ The read "Special Read-Only Code" is added to the list.
4. Click on the desired read/write tag in the list and press "Initialize RSSI".
   ➞ A diagram is displayed.
5. To display the read RSSI values in the diagram, press the "Start" button.
6. To stop reading the RSSI values, press the "Stop" button.
7. To delete the display in the diagram, press the "Clear Chart" button.
8. To store the displayed diagram, press the "Save Chart" button.

Note!
You can read an RSSI value only if you have activated the IF parameter.
3.9 "Data Logging" Tab

You can read the bus communication via data logging. Data logging enables error diagnostics and analyses.

You can start reading the bus communication.

![Start Data Logging](image)

**Figure 3.40**

**Starting Data Logging**

Under "Login", enter the user name in the "Username" field and the password for the connected control interface IDENTControl in the "Password" field.

- The recorded data is displayed in the data window.
  - With the "Refresh List" button, you can manually update the displayed list.
  - You can carry out an auto-refresh at adjustable time intervals. To do this, enter the desired time interval in milliseconds in the "Timer-Interval in ms" field.
  - With the "Save Log" button, you can save the list to a text file with a time stamp after the last refresh.
  - Using the activated check box "Create/Write Auto-LogFile", you can automatically save the list with a time stamp to the text file "Autolog.txt" on the desktop.

3.10 "Application" Tab

On this tab, you will find useful applications.

You can transfer user data from one tag to another.

![Copy Data](image)

**Figure 3.41**
With this function, you can copy user data from one tag to another. The user data to be copied is read at channel 1 and then written to a tag at channel 2. Finally, the system checks if the copied data has been transmitted correctly.

**Copy Data**

1. Enter the tag types used at the read/write heads in fields "Head1 TagType" and "Head1 TagType".
2. Press the "Init Tags" button.
3. From the drop-down list "Number of double words (4-byte)" select the number of double words to be copied.
4. Press the "Copy Data" button.

→ A successful copy operation is displayed in green in the "Status:" field.

**Note!**

Please note: When copying the user data with a UHF system, the read/write heads must be operated in single-frame mode.
4 Appendix

4.1 Command execution

Commands are shown in the hexadecimal data format. The individual bytes are separated by a "."

**Standard command and response structure**

<table>
<thead>
<tr>
<th>Byte</th>
<th>Command message</th>
<th>Response message</th>
</tr>
</thead>
<tbody>
<tr>
<td>Byte 0</td>
<td>Message length High Byte</td>
<td>Message length High Byte</td>
</tr>
<tr>
<td>Byte 1</td>
<td>Message length Low Byte</td>
<td>Message length Low Byte</td>
</tr>
<tr>
<td>Byte 2</td>
<td>Command code</td>
<td>Command code</td>
</tr>
<tr>
<td>Byte 3</td>
<td>WordNum/Channel/Togglebit</td>
<td>WordNum/Channel/Togglebit</td>
</tr>
<tr>
<td>Byte 4</td>
<td>Data</td>
<td>Status</td>
</tr>
<tr>
<td>Byte 5</td>
<td>Data</td>
<td>Execution counter</td>
</tr>
<tr>
<td>Byte 6</td>
<td>Data</td>
<td>Data</td>
</tr>
</tbody>
</table>

**Command and response structure read and write parameters**

<table>
<thead>
<tr>
<th>Byte</th>
<th>Read Param message</th>
<th>Write Param message</th>
</tr>
</thead>
<tbody>
<tr>
<td>Byte 0</td>
<td>Message length High Byte</td>
<td>Message length High Byte</td>
</tr>
<tr>
<td>Byte 1</td>
<td>Message length Low Byte</td>
<td>Message length Low Byte</td>
</tr>
<tr>
<td>Byte 2</td>
<td>Command code</td>
<td>Command code</td>
</tr>
<tr>
<td>Byte 3</td>
<td>Channel/Togglebit</td>
<td>Channel/Togglebit</td>
</tr>
<tr>
<td>Byte 4</td>
<td>System code High Byte</td>
<td>System code High Byte</td>
</tr>
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<td>Byte 5</td>
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<td>System code Low Byte</td>
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<tr>
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<td>Parameter type High Byte</td>
</tr>
<tr>
<td>Byte 7</td>
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<tr>
<td>Byte 8</td>
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<td>Byte 9</td>
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**4.2 ASCII table**

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4.3 Product documentation on the internet

You can view all the relevant documentation and additional information on your product at http://www.pepperl-fuchs.com. Simply enter the product name or model number in the Product/Key word search box and click Search.

Select your product from the list of search results. Click on the information you require in the product information list, e.g., Technical documents.

A list of all available documents is displayed.