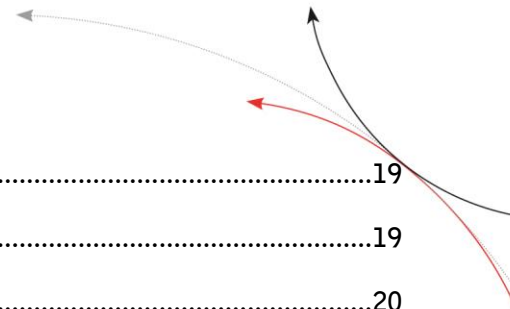


# Operating Instructions

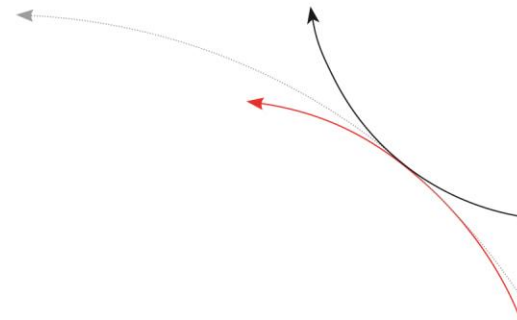
## Hand Held ISO Reader ARE H5

## Table of content

<b>1</b>	<b>INTRODUCTION .....</b>	<b>5</b>
<b>2</b>	<b>OVERVIEW.....</b>	<b>5</b>
2.1	Control elements .....	6
<b>3</b>	<b>SHORT FORM OPERATING INSTRUCTION .....</b>	<b>7</b>
3.1	Installation of the battery .....	7
3.2	Power on / off .....	7
3.3	Reading a transponder.....	7
3.4	Database.....	9
<b>4</b>	<b>DETAILED DESCRIPTION OF THE OPERATING MODES .....</b>	<b>10</b>
4.1	Stand-By mode.....	10
4.2	Standard mode .....	10
4.3	Start reading.....	10
4.4	Data storage .....	10
4.5	Built in memory .....	11
4.6	Display of Accumulator Capacity .....	11
<b>5</b>	<b>FUNCTION OF THE MENUS .....</b>	<b>12</b>
5.1	Menu: "Set Attribute".....	13
5.2	The menu "Operating Mode".....	14
5.2.1	Operating Mode "Online".....	14
5.2.2	Transmission format used for the serial interface. ....	15
5.2.3	Terminating the "Data>Serial" mode.....	15
5.2.4	Online H, Read/Transf. ....	15
5.2.5	The database mode.....	15
5.3	Interface.....	17
5.4	Change Bluetooth Role.....	18
5.5	Change Bluetooth Partner.....	18



5.6	The menu "Lock Up Reader".....	19
5.7	The menu "Clear memory" .....	19
5.8	The menu "Code format" to adjust for the ISO-data format. ....	20
5.8.1	Formats available for representation of the code .....	20
5.9	The menu "Set Date" .....	21
5.10	The menu "Set time" .....	21
5.11	The menu "Language" .....	22
5.12	The menu "timeout" .....	22
5.13	Software Verion .....	23
<b>6</b>	<b>DEVICE ADJUSTMENTS BY AN EXTERNAL PC .....</b>	<b>24</b>
<b>7</b>	<b>ANNEX .....</b>	<b>25</b>
7.1	Specification .....	25
7.2	Type designations, supplied items and accessories.....	26
7.3	Operation with other RF ID Equipment .....	26
7.4	Reading distance .....	26
7.5	Safety Instruction.....	28
7.5.1	Reader .....	28
7.5.2	Safety instructions for rechargeable li-ion batteries.....	28
7.6	Certifications .....	29
7.6.1	By FCC, Federal Communications Commission .....	29
7.7	Driver installation for USB devices.....	30
7.8	Bluetooth Connection Establishment.....	33
7.9	Glossary .....	37
7.10	Control Characters used in the "online mode" .....	37
7.11	Documentation, References .....	38
7.12	Notification of changes .....	38
7.13	Contacts .....	39



© 2001 by AEG Identifikationssysteme GmbH

All rights reserved. All product names are registered trademarks of the corresponding owner.  
Microsoft and Windows are registered trademarks of Microsoft Corp.

## 1 Introduction

The ARE H5 is a hand held, high performance reader especially designed for animal identification. It can read the data content of several transponder systems, store these data in its memory and transfer them into a PC at a later stage.

This multi mode reader is capable to read the following transponder types, according to ISO 11784/11785:

- FDX-B
- HDX
- Destron
- Datamars
- Trovan
- PSK1
- PSK2
- ASK 64bit Manchester coding (e.g. transponder equipped with the EM chip 4102).

The ARE H5 does not synchronize with other HDX readers operating in close vicinity.

Before the initial use of this ARE H5 reader please study this manual carefully. It will explain the different features and modes, in order to make optimum use of all the capabilities of the system.

## 2 Overview

The present manual is structured in the following way:

chapter 2.1	the control elements are described
chapter 3	contains a short form operating instruction for a quick test
chapter 4	describes in detail the features and operating modes of the ARE H5
chapter 5	the different menus are explained
chapter 6	give the interaction of the ARE H5 with an external data base
chapter 7	technical data, specifications and safety instructions

## 2.1 Control elements



Figure 2-1: location of the operating elements

### 3 Short Form Operating Instruction

#### 3.1 Installation of the battery

Slide the battery into its compartment until it clicks ((8) in Figure 2-1). Type of battery: Li-Ion BP608 (AEG ID Order-NR. 70178).



**Caution: Do use batteries Type Li-ion BP 608 only. The reader may be damaged by using batteries which are not suitable. To charge the battery, remove it carefully from its compartment and plug it into the appropriate charger.**



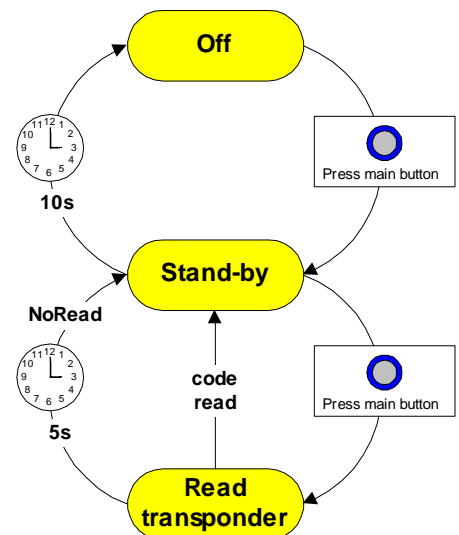
**Respect the dangers and follow the safety instructions about the proper use of rechargeable lithium-ion batteries.**

#### 3.2 Power on / off

The reader is switched on by pressing the main button ((1) in Figure 2-1).

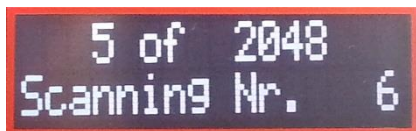
It is now in the Stand-by mode.

It will switch off again automatically, if no other buttons has been pressed within timeout.

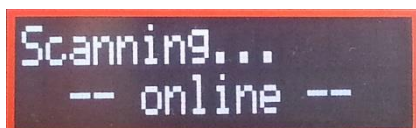


#### 3.3 Reading a transponder

- In the Stand-by mode: press the main button.  
In the power off mode: press the main button twice.
- Now the reader starts the reading mode. The display shows:



in Database mode, or



in Online mode.

- Approach a transponder with the reader<sup>1</sup>. The reader emits a beep when the transponder has been read successfully. The transponder code is shown on the display:



```
0001181BCB
Trovan #
```

In Database mode the transponder a text can be assigned<sup>2</sup>. If the transponder actually read is already in the reader database, and if for its number a text is assigned, it is displayed in the second line on the left side. With reading the transponder is assigned to an attribute that is selected in the reader. The attribute<sup>2</sup> text is displayed in the second line on the right side. In this example the "PPQ-7" (transponder text) is "in stock" (attribute text).



```
04202D1F03
PPQ-7 in stock
```

The same can be done with ISO Animal transponders if the code format is set to "ISO Attributes". In this example the cow "Elsa" (transponder text) is on the "meadow" (attribute text).



```
962 2000000115471
Elsa meadow
```

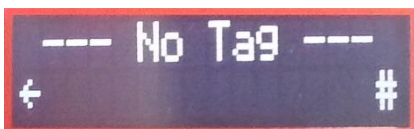
ISO standard is specified with the following display:



```
962 2000000115471
0 00
```

In this case the second display line contains the "Retagging Counter" and the "User Information Field". Additional ISO data saved on the transponder. This display is shown if code format "ISO Animal" is selected.

- If, no transponder has been read within 5 seconds, the reader terminates the reading mode and goes back to stand-by. The display shows:



```
--- No Tag ---
← #
```

<sup>1</sup> Typical reading distances are given in chapter 7.1  
<sup>2</sup> See the data transmission protocol document



- With the left arrow button the last read transponder is shown.

With the right arrow button date and time is shown:



### 3.4 Database

When a reading had been accomplished successfully - i.e. it had been performed within the given time frame - the database will be checked whether this transponder code is already stored.

- If the new code is not found in the database, it will be stored as a new record. This record is composed of the code, the transponder type, time and date, as well as an attribute. The attribute may be selected from the 26 capital letters A to Z.
- If the new code is already stored in the database, it will be stored again only, when the attribute (see chapter 5.1) differs from that of the old record.
- If the new code is already stored in the database with the very same attribute, no new record will be stored. In this case the reader emits 2 successive beeps.

## 4 Detailed description of the operating modes

### 4.1 Stand-By mode

Pressing the main button once puts the reader into the stand-by mode. Starting from this mode, it can be transferred - either into the reading mode - or into the sub menus. These sub menus allow to change the specific settings of the reader. Furthermore, the result of the last reading or the actual date and time can be displayed in the stand-by mode. This is achieved by pressing the buttons "arrow left" and "arrow right".

In order to save battery power, the reader shuts down automatically if no button has been pressed within 10 s. The automatic shutdown is effective in the "Standard mode" and the "Online mode", however not in the "Database mode".

### 4.2 Standard mode

The reader is set to the "Standard mode" when it is shipped from the factory. This mode allows reading of different types of transponders and the code is shown in the display. At the same time the code of each successfully read transponder is stored in the built in memory. This memory may be operated in two different settings, as described in chapter 4.5 in detail. In the "Standard mode" the reader shuts down after a certain period automatically, in order to save battery power.

### 4.3 Start reading

From the Stand-by mode the reading cycle is initiated by pressing the blue main button. After that the display shows in its upper line the number of data records already stored; in its lower line the status message: Scanning.... The reader now tries to read a transponder within the next 5s.

The reader emits a beep, as soon as the transponder code has been read. As a result, the code is shown on the display. If within a time interval of 5s no transponder could be read, the reader switches off the reading cycle and returns to Stand-by. On the display appears: " --- No Tag --- ".

Note: If the battery is low and has not sufficient power the contrast of the display will fail especially during the scan process. It is recommended to have a second battery in reserve.

### 4.4 Data storage

In the initial setting -ex works- the reader stores the data records in the following way:

Whenever a transponder code has been read, the entire memory will be checked whether this data record has been stored already. If this is not the case, the record will be added to the database. The reader emits a single beep.

The record in the database contains the code as well as type of transponder (e.g. FDX, HDX, Datamars, trovan), time and date of the reading and the so called attribute (see chapter 5.1).

If the newly determined code is already stored in the data base a new record will be generated only if the attribute is different.

In case code and attribute are already stored in the data base, no new record is generated or stored and the reader emits 2 successive beeps.

However, in the operating **"database mode"** (see chapter 5.2.5) the following function can be activated as an alternative:

Each successful reading is stored in the database, including transponder type, time and date, as well as the attribute. This is independent whether this record has been stored before or not (see chapter 6).

#### 4.5 Built in memory

The built in memory has a capacity of 2047 data records. As an option the memory can be upgraded for 3967 data records (Option -M).

The stored data will be preserved when the reader is switched off and even when the battery is changed.

If the memory is full completely, the oldest set of 128 data records will be erased and overwritten by the new records.

The memory can be cleared completely by applying the menu **"clear memory"** (see chapter 5.7).

#### 4.6 Display of Accumulator Capacity

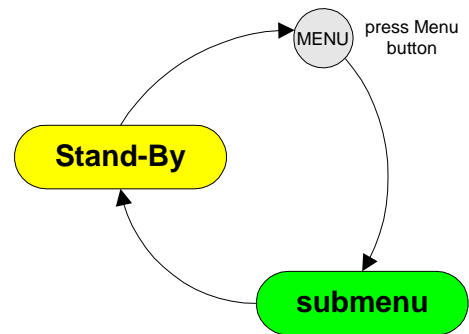
The hand held reader has no direct display function for the accumulator capacity. An insufficient accumulator capacity can be recognized by an obvious decreasing contrast of the display. To this point of time the reading range is reduced to not more than 10% versus a full accumulator.

## 5 Function of the menus

By pressing the menu button during the Stand-by mode the reader branches into the menus. By further pressing the menu button the reader goes from menu to menu.

This operation is always determined by the following steps:

- 1) **Select the menu with the menu button:** Repeated pressing of the Menu button leads to the menu requested. Note: The sequence can be followed in forward direction only.
- 2) **Selection within the menu with the arrow button:** The setting within the menu will be adjusted by pressing the buttons "Arrow left" and "Arrow right".
- 3) **Adopt the new setting:** The new setting is stored by pressing the main button or alternatively **Leave the menu without changing** by pressing the menu button.



The menus appear in the sequence as shown in fig 5-1.

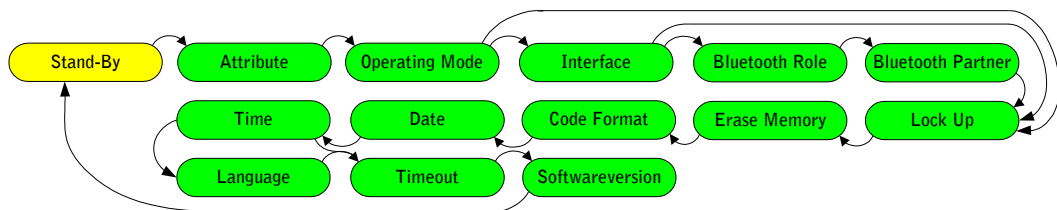
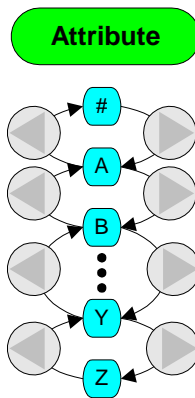


Fig 5-1: sequence of the sub menus

After adopting a new setting, the reader will resume with Stand-by mode.

## 5.1 Menu: "Set Attribute"

The attribute is stored in conjunction with time and date, as well as code and type of the transponder as a record, whenever a reading has been performed successfully. With the aid of the attribute additional information may be stored, such as: Location where the reading took place, condition of the identified object, for containers: capacity, warehouse location, customer assignment etc. Ex works, the default option for the 27 available attributes is set to A to Z (in capital letters) as well as # (which means no attribute is set).

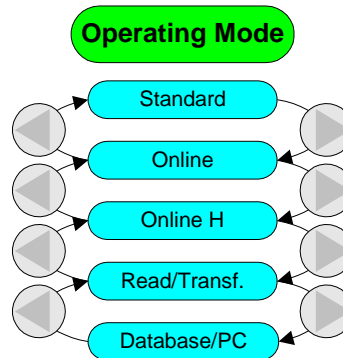


The attribute can be set from A to Z including # by using the sub menu **"Set Attribute"**. The attribute may be formed out of several words within the frame of 14 characters.

Such an assignment is done in the sub menu **"Database Mode"** (see chapter 5.2.5 and chapter 6).

## 5.2 The menu "Operating Mode"

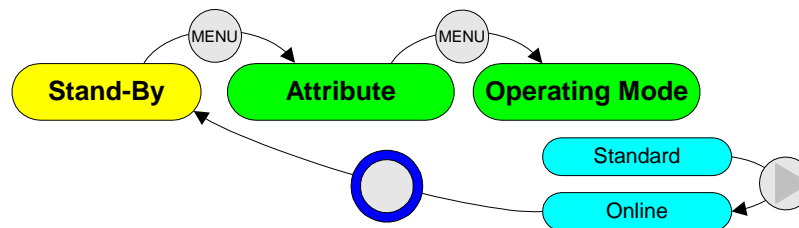
Using the menu "Operating Mode" it can be switched between the standard mode, 3 online modes and the database mode.



### 5.2.1 Operating Mode "Online"

"Online" is basically equivalent to the "Standard" mode of the reader. However in "Online" the reading results are transmitted via the serial interface and not stored in the built in memory. In this way the data records can be processed in a connected PDA, PC or terminal. The display shows in its upper line the code, as usual, and in its lower line the word "-- Online --".

If the reader is in the "Standard mode" you can activate the mode "Online Operation" by using the buttons the following sequence. The first step is to go from "Stand-by" to the menu "Operating mode".



**Important note: Correct function of the operating mode "Online operation" will be achieved only, if the reader is properly connected to a PC or computer terminal. Such connection should be realized by using the special connection cable (AEG ID Order No 70180).**

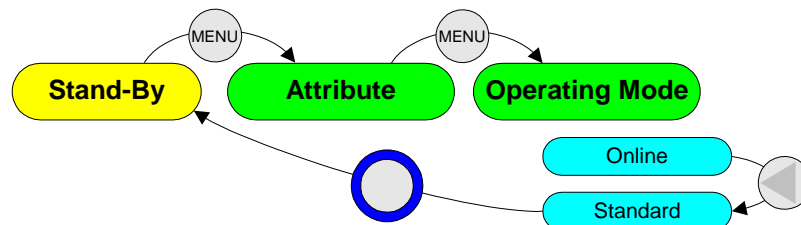
## 5.2.2 Transmission format used for the serial interface.

In the ex works configuration the following format is used: After a successful reading, the ID code is transmitted as ASCII string, complemented by the control character <CR> <LF><sup>3</sup>. Type designations (trovan, Destron, ISO-FDX, ISO-HDX, ...) as well as the message "wrong data format" ( see para 5.8.1 ) will be suppressed. "No Reads" will not be transmitted to the interface.

The "Data>Serial" mode may be adjusted to specific customer requirements by using the database mode (see chapter 5.2.5). However such a new configuration can be installed only by a PC via the "Reader Terminal" program.

## 5.2.3 Terminating the "Data>Serial" mode

The "Data>Serial" can be closed by pressing the buttons in the following sequence:



## 5.2.4 Online H, Read/Transf.

Alike operating mode "Online" in "Online H" and "Read/Transf." the transponder code is sent via the data interface.

If a transponder is read successfully in "Online H" (H like handshake) a "empty" telegram is sent first: <STX> <ETX>. To secure reception of the data the reader expects the answer <STX> <ACK> <ETX>. Until the recipient is sending this acknowledgement the reader shows the text "← wait for host →". As soon as the empty telegram is acknowledged, the transponder data is sent. They are framed with <STX> and <ETX> not ended with <CR> <NL>. As answer to this data telegram a further <STX> <ACK> <ETX> is expected. If no communication partner is active that is supporting this protocol the reader is trying to establish a connection until this is aborted by pressing both arrow buttons. The "Reader Terminal" program is supporting this protocol in its online view.

With "Read/Transf." (read and transfer separately) at first the reader shows the text "Function=Read". Reading the transponder is the first action when the main button is pressed. If reading was successful the text changes to "Function=TxCode". If now the main button is pressed a second time the transponder data is sent. Format is the same as in online mode.

## 5.2.5 The database mode

The operating mode "Database/PC" is not an operating mode intended for reading transponders, but it is dedicated to the communication between the reader and a computer.

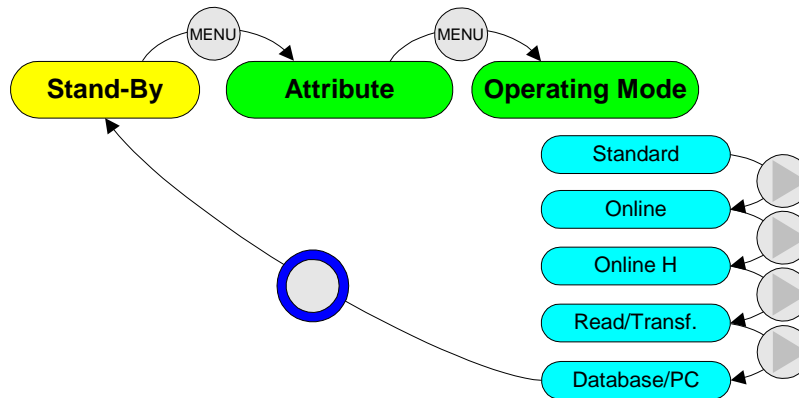
In the database Mode the content of the database in the reader may be transferred to the PC and back

<sup>3</sup> A complete list of all control characters is given in the appendix.

again. This allows to process the data records in the PC, as well as to add further information such as text, for example.

These operations will be performed in an easy way by using the "Reader Terminal" program (for Windows operation systems). It was developed by AEG ID to show the user the range of capabilities provided by the database mode. All the steps necessary to set up communication between the ARE H5 handheld reader and a PC are presented in an "interactive" way. The "Reader Terminal" program allows a simple visualization of the data records, stored in the reader, and how they can be modified. Furthermore it allows to change the setting of certain parameter (see also chapter 6).

The database mode is reached in the menu "Operating mode". Starting from "Stand-by" the buttons have to be pressed in the following sequence:



**Important note: Correct function of the operating modes "Database/PC" or "Data->Serial" will be achieved only, if the reader is connected properly to a computer. Such connection may be realized either by using the special connection cable or via Bluetooth or Infrared link. Make sure that the terminal is set for the specified data format (see ARE H5 Specifications in chapter 7.1 and 7.10 ), especially if it is intended to use with individually made application software.**



**The ARE H5 handheld reader does not switch off automatically, when it is used in the database mode. The user has to take care that the reader is set back to standard mode or online operation after he has completed the configuration changes; otherwise the batteries may be discharged in a destructive way.**

Normally the database mode is terminated from the PC. As an alternative it can be terminated by simultaneously pressing the buttons "arrow right" and "arrow left".

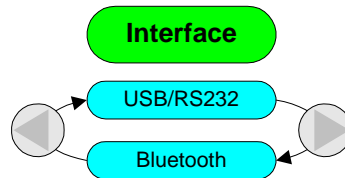
The specification of the transfer protocol used in the database mode is given in chapter 0 as reference [1]. It is intended for those users, who will generate their own specific application software.

As from version 2.8 database mode is only supported with a cable interface. The interface has to be further more one with a serial communication profile ("RS232 COM" or "USB COM") not with a keyboard profile ("USB HID").



### 5.3 Interface

With the menu point "Interface" the hardware can be chosen the data is sent with in online or data-base mode. Depending of the configuration of the reader the cable interface RS232 or USB and the radio interface Bluetooth can be chosen.



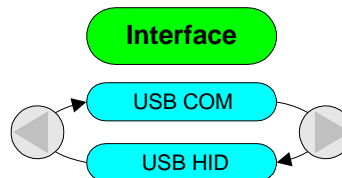
As from version 2.8 the following menu texts are used.

In the menu of a reader with RS232 interface and without Bluetooth the menu point "Interface" is skipped.

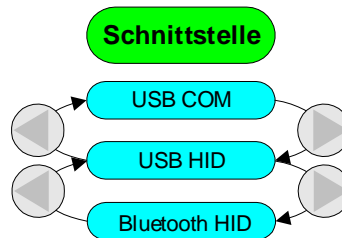
In the menu of a reader with RS232 interface and with Bluetooth the following is to select:



In the menu of a reader with USB interface and without Bluetooth the following is to select:



In the menu of a reader with USB interface and with Bluetooth the following is to select:



With a COM interface a serial communication is selected. With a terminal program of the connected communication partner the corresponding COM port has to be opened. With the terminal data from the

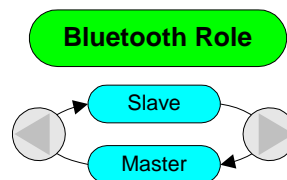
reader can be received and commands to the reader can be sent.  
With a HID interface selected the reader acts like a keyboard.

#### 5.4 Change Bluetooth Role

In Bluetooth communication, there are two possibilities for connection establishment:

- Master; the communication is established by the reader; connection is closed by the ARE H5 before it is switched off.
- Slave; the communication is established by the Bluetooth partner (PC, PDA, ...); before the reader is switched off it transmits <STX>DISCONNECT<ETX> to give the partner the possibility to close connection.

In the menu Bluetooth Role this can be changed.

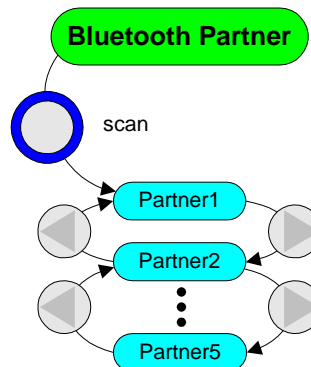


As from version 2.8 a reader with Bluetooth interface acts exclusively as a slave. This menu point is omitted.

#### 5.5 Change Bluetooth Partner

In the menu Bluetooth Partner, in the first step, there is shown the actual Bluetooth Partner.

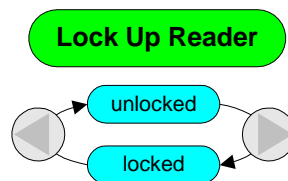
The choice of a new Bluetooth Partner can be started with the "arrow left" button. If the text "scanning" is shown the main button starts a scan of maximal five Bluetooth modules that can be reached by the ARE H5. The name of the found, potential partners, are shown in the menu. With the Arrow Buttons, the favored Partner can be chosen.



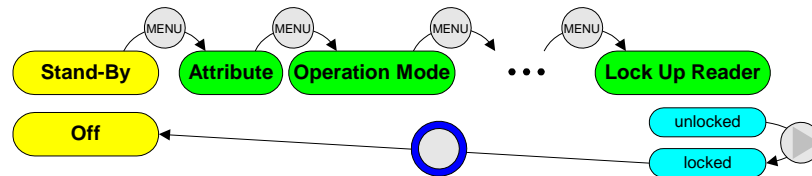
If the Main Button is pressed again the ARE H5 is pairing with the chosen module. Depending on the partner module, there has to be verified the connection code "0000" (4 x zero). If pairing was successful the chosen module is the new Bluetooth partner.

As from version 2.8 a reader with Bluetooth interface acts exclusively as a slave. Searching a Bluetooth partner, pairing, connection establishment is done by the master. This menu point is omitted.

## 5.6 The menu "Lock Up Reader"



Whenever the main button is pressed, the reader goes into "Stand-by". If, within the next 10s, the main button is pressed again, the reader starts a reading process. This process is responsible for the main power consumption. In order to avoid unintended triggering of the reading process, a switch on protection may be activated. This is achieved by pressing the buttons in the following sequence:



When the switch on protection is activated, pressing the main button brings nevertheless the reader into "Stand-by". However, it is not possible to branch from there into the reading process or into the menus, as long as the switch on protection is activated.

The switch on protection is cancelled in the following way:

Press the buttons "arrow left" and "arrow right" simultaneously within the first 3s after the "Stand-by" mode has been activated. After that the reader acts as usual in "Stand-by".

## 5.7 The menu "Clear memory"

This menu is used to erase all the data records from the internal memory. For safety reasons this function is activated only, when the buttons "arrow left" and "arrow right" are pressed simultaneously.

## 5.8 The menu "Code format" to adjust for the ISO-data format.

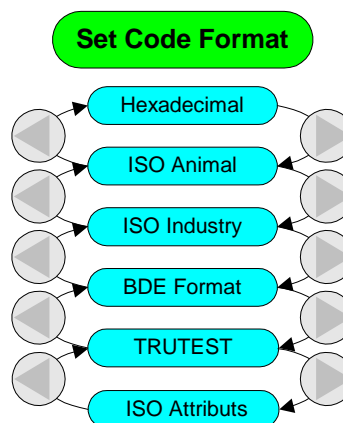
The ISO 11784/11785 Standard specifies the data telegram and the animal code for FDX-B and HDX transponders. The data telegram contains 128 bit, including header, identification code, checksum and trailer. The identification code itself contains 64 bit, out of these 38 bit are defined as ID number (National identification code for the animal) and 10 bit as country code or manufacturer code.

This standard defines two fields of application. They both make use of the 38 bit ID number:

- ISO 11784 animal
- ISO 11784 non-animal

Regionally there are further applications that make use of the ISO standard - as an example waste management in Germany. There, within the 64 bit of the code, 22 bit are assigned to the number of the container and 10 bit to the manufacturer code. This is called BDE<sup>4</sup> format

### 5.8.1 Formats available for representation of the code



There is one common format, that represents the ID code of any application in an unambiguous way: the hexadecimal format. The up to 64 user bits are represented as maximal 16 hex characters.

In the four other formats only a sub set of the 64 user bits is represented: e.g. the manufacturer code (10bit) and the unique animal number (38 bit ID code). These codes are shown in the decimal number format<sup>5</sup>.

Note: only those transponders will be presented, which the format has been selected for in the menu "Set Code Format". For example: if the format is set for "ISO Animal" only those transponders will be presented, where the animal flag is set.

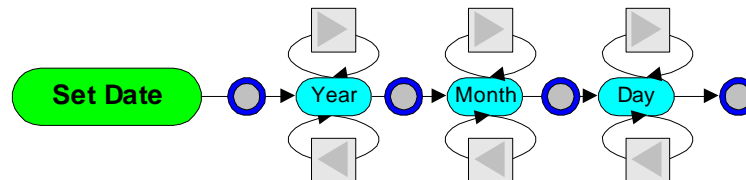
The code format "ISO Animal" is conform to the ISO norm. National code, "National ID", "Retagging Counter" and "User Information field" are shown as decimal values.

The code format "ISO Attributes" is designated for ISO Animal transponders as well. But only national code and "National ID" are displayed. Instead of "Retagging Counter" and "User Information Field" the transponder type, transponder text and attribute text is shown.

<sup>4</sup> BDE stands for Bundesverband der Deutschen Entsorgungswirtschaft e.V.  
<sup>5</sup> this format is also called fragmented representation.

Remark: In the database the ISO transponder are generally stored in hex format.

## 5.9 The menu "Set Date"

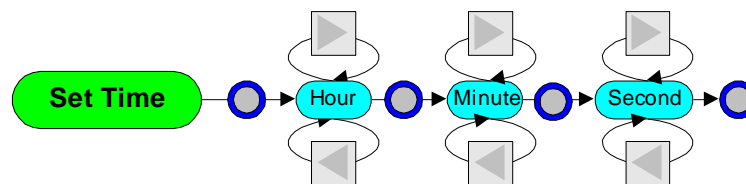


The correct date can be set in the menu "Set Date". This is achieved by the following procedure:

- 1) **Select menu "Set Date"** by pressing the menu button.
- 2) **Enter sub menu:** by pressing the main button once.
- 3) **Set year:** by pressing the buttons "arrow left" and "arrow right" correspondingly.
- 4) **Confirm year:** by pressing the main button once. At the same time the sub menu switches to the next level: month.
- 5) **Continue** the procedure for month and day.

Note: Date and time may be set in the mode "Database/PC" in a more comfortable way, by using a PC and the "Reader Terminal" program. See also chapter 6.

## 5.10 The menu "Set time"



The time of the reader system is set in a corresponding way. This is done in the menu "Set Date" and the steps are the same as in the set date procedure.

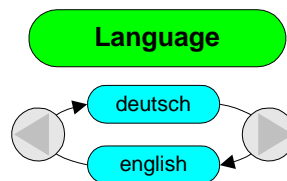
- 1) **Select menu "Set Time"** by pressing the menu button.
- 2) **Enter sub menu:** by pressing the main button once.
- 3) **Set hour:** by pressing the buttons "arrow left" and "arrow right" correspondingly.

4) **Confirm hour:** by pressing the main button once. At the same time the sub menu switches to the next level: minute.

5) **Continue** the procedure for minute and second.

Note: Date and time may be set in the mode "Database" in a more comfortable way, by using a PC and the "Reader Terminal" program. See also chapter 6.

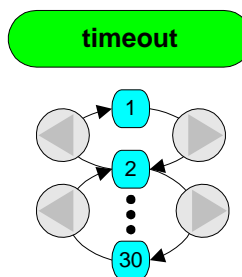
### 5.11 The menu "Language"



With aid of the Menu "Language" the text shown on the display may be switched between English and German.

As from version 2.8 there are reader software versions that are hard compiled with the ordered language. A language selection in the menu is not possible. In this case this menu point is omitted.

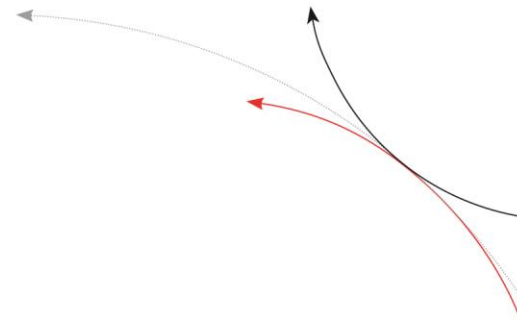
### 5.12 The menu "timeout"



In the menu **timeout** the time can be adjusted, the reader stays switched on, when no user interaction occurs. The parameter is accessible in the menu since Software Version 6.35. The adjustable range is between 1 and 30 seconds. It can be set to bigger values in the database mode with the "Reader Terminal" program.



**Attention: a high timeout value reduces accumulator run-time.**



### 5.13 Software Version

In the last menu point the software version of the reader is displayed.

## 6 Device adjustments by an external PC

In Database Mode (see chapter 5.2.5) all parameters of the reader are accessible. The parameters from the menu and further parameters which can only be changed with the PC:

Interface selection	- suppress Bluetooth interface in the menu
Database memory capacity	
Multiple data sets	- Save the same transponder number in the data base
Type output	- Output the transponder type in front of the transponder code
Noread output	
Show bad frame	- Output wrong transponder format
Buzzer	
Time output	- Output time-stamp in front of the transponder code
Algorithms	- Enable or disable every single algorithm
Timeout Read	- Number of reading attempts

For further information, read „Data exchange Protocol for the ARE H5“ and „Operating instruction for the Reader Terminal program“.



## 7 Annex

### 7.1 Specification

Dimensions	226mm x 140mm x 122mm (L x W x H)
Power supply	7,2 V DC provided by Li-Ion battery Type BP 608
Frequency	134,20 kHz
Antenna	disc antenna incorporated in the housing
Type of readable transponder	<ul style="list-style-type: none"> <li>- FDX-B</li> <li>- HDX</li> <li>- Destron</li> <li>- Datamars</li> <li>- Trovan</li> <li>- PSK1</li> <li>- PSK2</li> <li>- in addition transponder with ASK 64bit Manchester coding ( e.g. Chip 4102 by EM)</li> </ul>
Reading distance (observe remarks on test conditions given in chapter 7.4 !)	<p>Typical reading distance ranges for FDX ear tags of 30mm diameter to about 25 cm; for FDX implantable transponder of 2,2mm diameter to about 15 cm.</p> <p>HDX type transponder of the same dimensions yield about 20% more reading distance.</p> <p>These values are valid only, if there is no electromagnetic interference.</p>
Galvanic interface	serial, half duplex, asynchronous, 19200baud, 8N1 RS232 or USB
Temperature range	<p>storage: -20°C to +70°C</p> <p>operation: 0°C to +50°C</p>
Protection class	IP54
Mass	475g
Permits	CE Conformity declaration, ETS 300330

#### Electromagnetic Compatibility

Immunity against electric fields	IEC 61000-4-3	10V/m
Electrostatic discharge on surface	IEC 61000-4-2	±4kV
Electrostatic discharge in air	IEC 61000-4-2	±8kV
Spurious emissions	EN 55022	Class B (living area)
Other technical standards	ETS 300330	Class 1
	ETS 300 683	Class 1

## 7.2 Type designations, supplied items and accessories

Type	Description / Supplied Items	Order Number
ARE H5 – ISO /<Options>	Hand held ISO Reader with LCD display 2 x 16 characters, serial interface, memory for 2047 data records, hand strap, rechargeable battery, charger and connection cable	
Options:		
/K	in aluminium case	
/E	in styrofoam package	
/i	with international charger with several adapters	
/N	with national charger	
/S	with extension stick	
/D	with external antenna with extension stick	
/U	with USB 2.0	
/B	with Bluetooth 2.0 class 2	
Battery	Li-Ion battery 7,2V / 800mAh ( BP 608 )	70178
Charger national	Charger for Li-Ion battery 7,2V	70179
Charger international	International charger for Li-Ion battery 7,2V	1001753
RS232 connection cable	RS232 connection cable to the computer	70180
USB connection cable	USB connection cable to the computer	1003392
Extension stick	1m extension stick to handle with remote trigger	70228
External antenna with extension stick	1m extension stick with integrated antenna to handle with remote trigger	1002702

## 7.3 Operation with other RF ID Equipment



**Note: As there may be electromagnetic interference between different readers, this reader shall not be operated within a distance of 3m from any other HDX reader.**

## 7.4 Reading distance

Typically the reading distance<sup>6</sup> - measured between the handheld reader and a transponder - ranges from 10 to 40 cm, depending on a number of criteria such as:

### **Position of the transponder relative to the reader:**

To measure the reading distance the transponder has to be placed under the center of the antenna dish (see figure below).

<sup>6</sup> See also Specification in para 7.1



## 7.5 Safety Instruction

### 7.5.1 Reader

The manufacturer cannot be held liable for damages caused by improper use or abuse, lack of reasonable care, or manipulations contrary to the recommendations given in this manual.



**Do not open the reader! There are several spots inside the device, where high voltage is generated during the scanning process.**

The ARE H5 Reader does not contain any parts to be repaired by the user. Any attempt to open the reader may damage the device. Therefore it may be repaired only by authorized personnel.

Environmental conditions, as given in chapter 7.1 specification, have to be observed during storage and operation.

Protect the RS232 or USB interface socket as well as the contacts for the battery against dirt, moisture and dust.

For cleaning of the reader and cable use a moistened towel. Apply only water and household detergents; never use chemical solvents like e.g. acetone.

Do not submerge the reader in water.

### 7.5.2 Safety instructions for rechargeable li-ion batteries

**Danger:**

Rechargeable li-ion batteries can explode or catch fire if used improperly. The ingredients of the li-ion batteries can be dangerous to health.

**Proper use:**

To use the li-ion batteries safely please consider the following points:

- Do not expose to high temperatures, flames or acid fluids
- Do not short circuit
- Do not open, puncture or crush
- Remove rings, watches or objects with metal parts when you handle rechargeable li-ion batteries (high short-circuit current can cause severe burns)
- Keep dry
- Do not use defect, deformed, or bloated rechargeable li-ion batteries
- Only use approved battery charger
- Rechargeable li-ion batteries have a higher voltage than normal AA batteries. Use rechargeable li-ion batteries only in approved devices, unapproved devices can be damaged.

## 7.6 Certifications

### 7.6.1 By FCC, Federal Communications Commission

Name of Grantee	AEG Identifikationssysteme GmbH		
Equipment Class	Part 15 Low Power Transmitter Below 1705 kHz		
Notes	RFID Reader		
FCC Rule Parts	15C		
FCC IDENTIFIER	Frequency Range	Model	ID No.
V7IAREH5-1	0.134 MHz	ARE H5 – FullISO/E/A/i/B/U/D/Le/PT1	1005144
V7IAREH5-2	0.134 MHz	ARE H5 – FullISO/E/A/i/B/U	1003852

#### Federal Communications Commissions (FCC) Statement

##### 15.21

You are cautioned that changes or modifications not expressly approved by the part responsible for compliance could void the user's authority to operate the equipment.

##### 15.105(b)

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

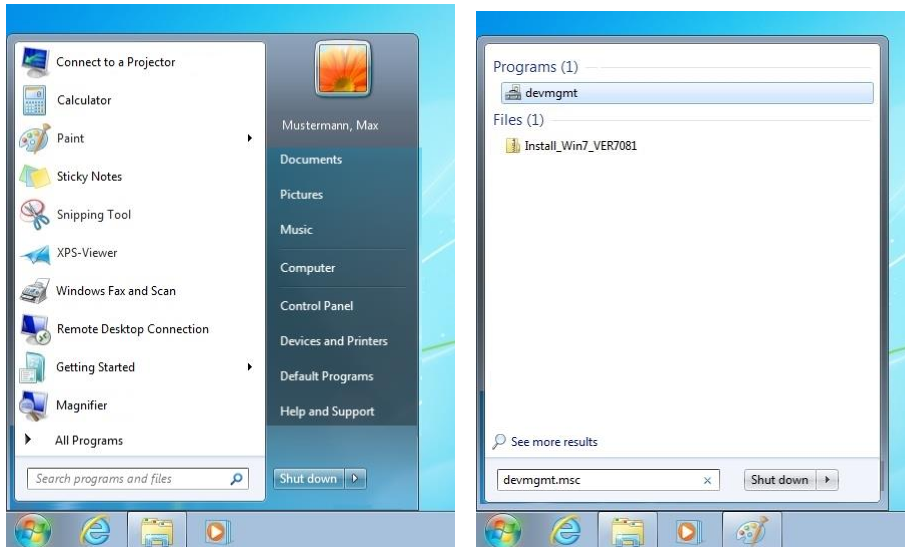
- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

## 7.7 Driver installation for USB devices

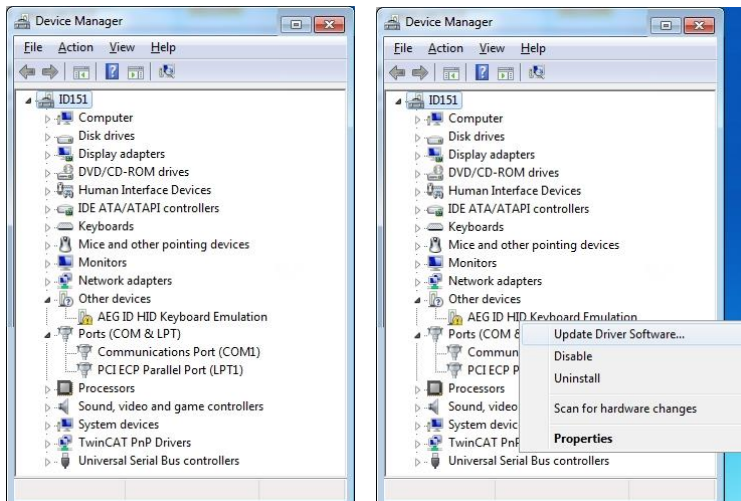
In order to use the database or the online mode of the reader in connection with the PC, a driver has to be installed on the PC to provide it a serial interface (COM port).

Therefore the ARE H5 has to be connected to the PC with the USB cable included.

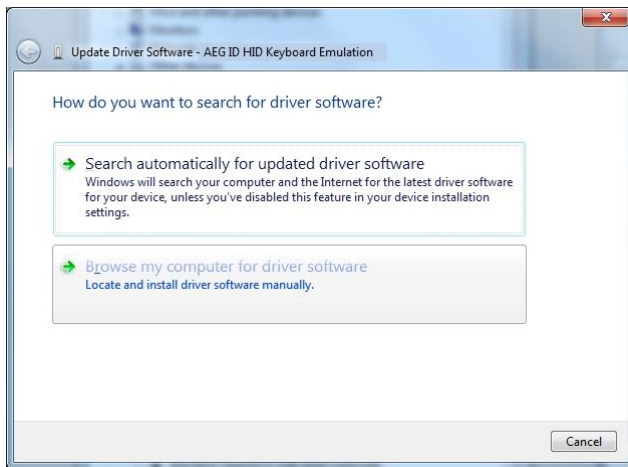
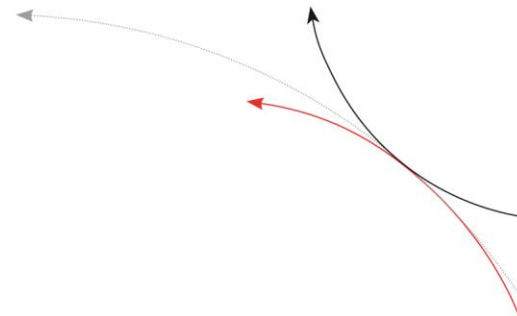
Open the device manager of the PC by typing "devmgmt.msc" to the Windows command line and start it with a mouse click to the program or a carriage return.



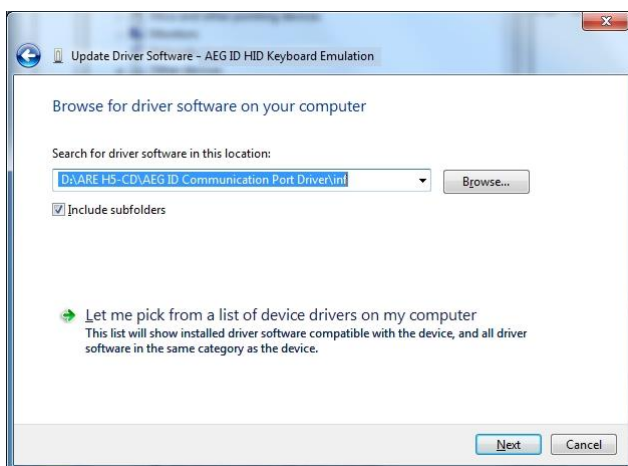
If the driver is not installed yet, the ARE H5 occurs as "AEG ID HID Keyboard Emulation" with an exclamation mark in "Other devices" at first.



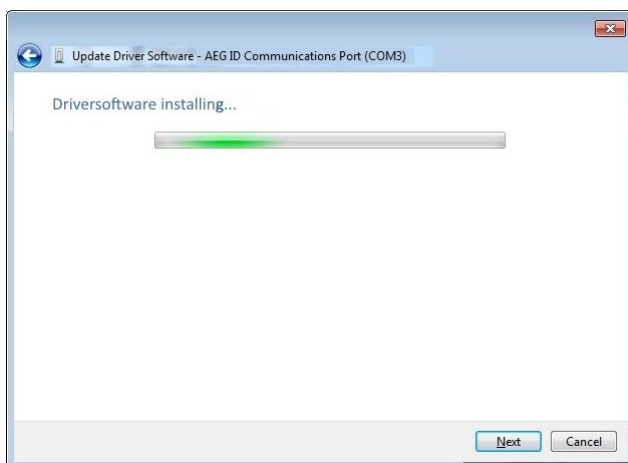
With a click of the right mouse button to the device and with the selection "Update Driver Software..." the following dialog is opened:

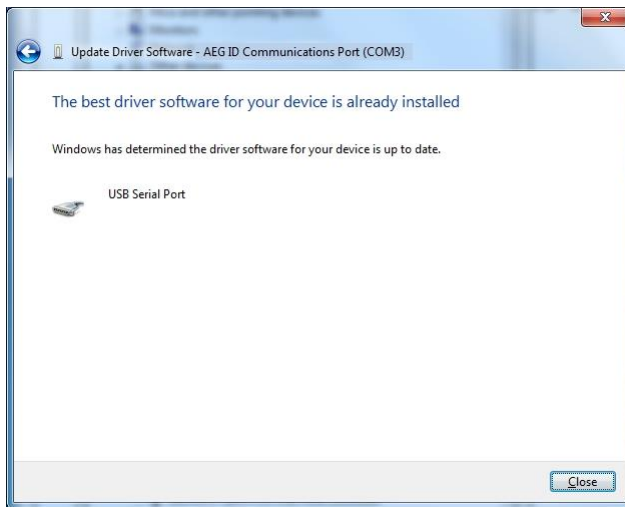
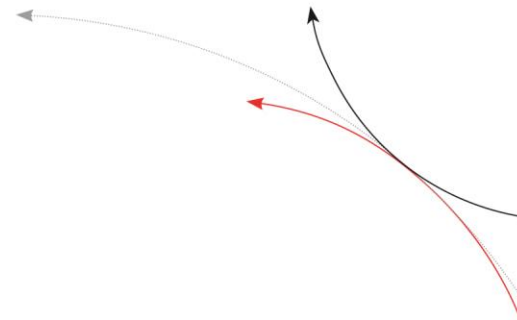


Select "Browse my computer for driver software".  
Insert the with the ARE H5 included CD in your PC drive and select the path  
<CD drive>:\ARE H5-CD\AEG ID Communication Port Driver\inf



Acknowledge the dialog with the "Next" button.





When the driver installation has finished the PC has a new COM port available to communicate with the reader.





## 7.8 Bluetooth Connection Establishment

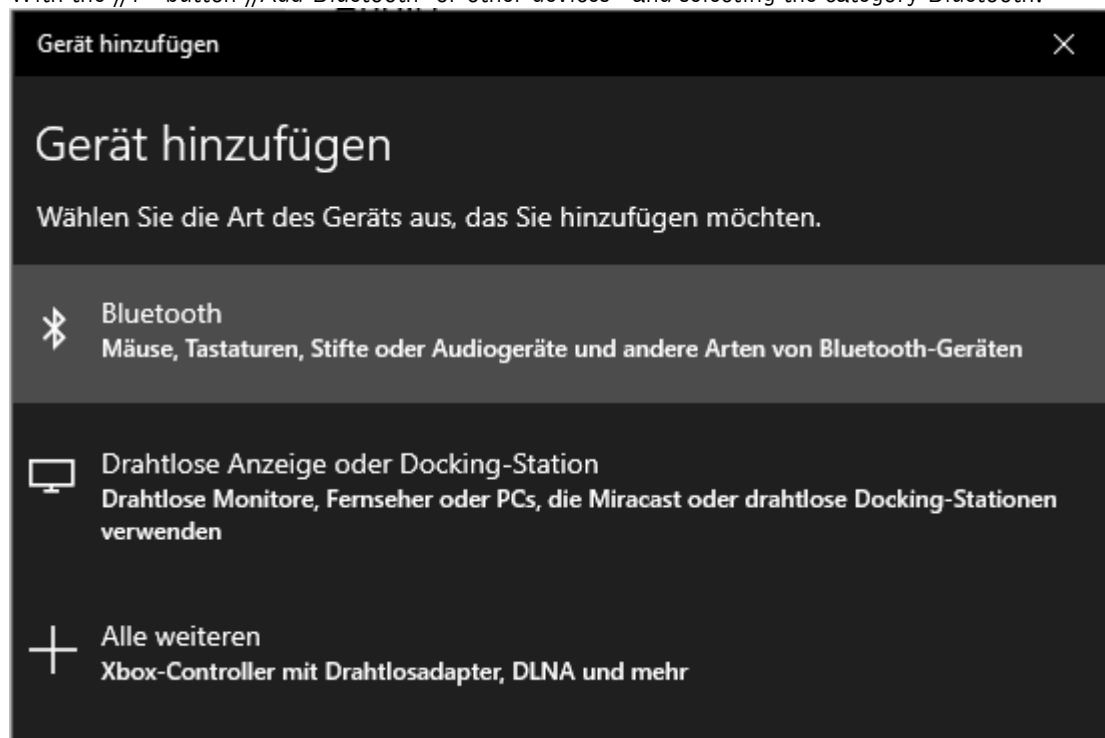
From software version 2.80000 on, the reader is fixed the Bluetooth slave.  
The master is his communication partner.  
The connection establishment, the pairing, is initiated by the master.

For this purpose the reader must stay switched on until the connection is set. The easiest way to ensure this, is to set the H5 in database mode ("Operating Mode" – "Database/PC", only available with "Interface" – "USB COM"). In this case the device does not turn off after timeout, when no user intervention is happening.

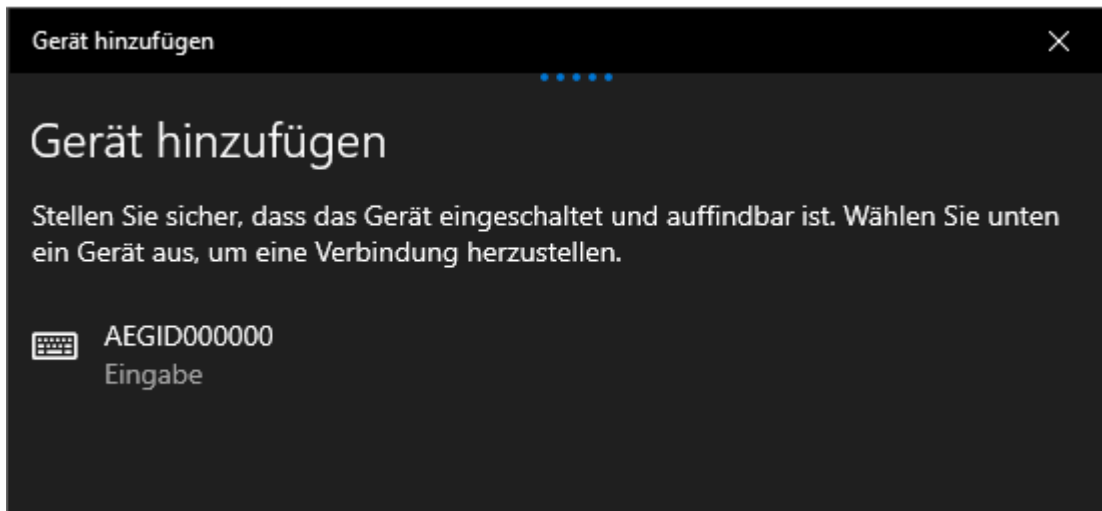
If the master is for example a PC, the Bluetooth interface must be switched on:



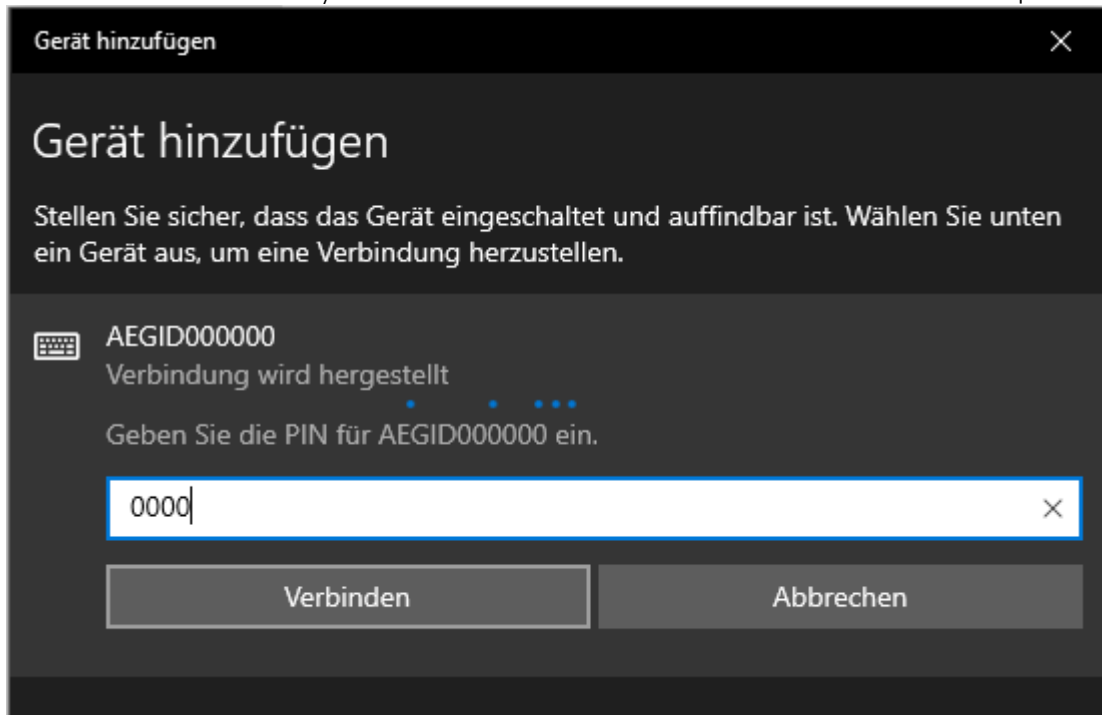
With the „+“ button „Add Bluetooth- or other devices“ and selecting the category Bluetooth:



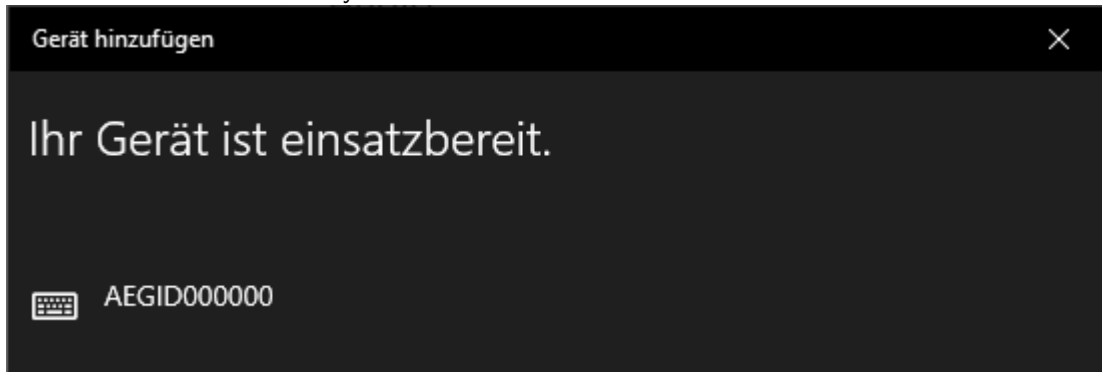
the reader should be found:



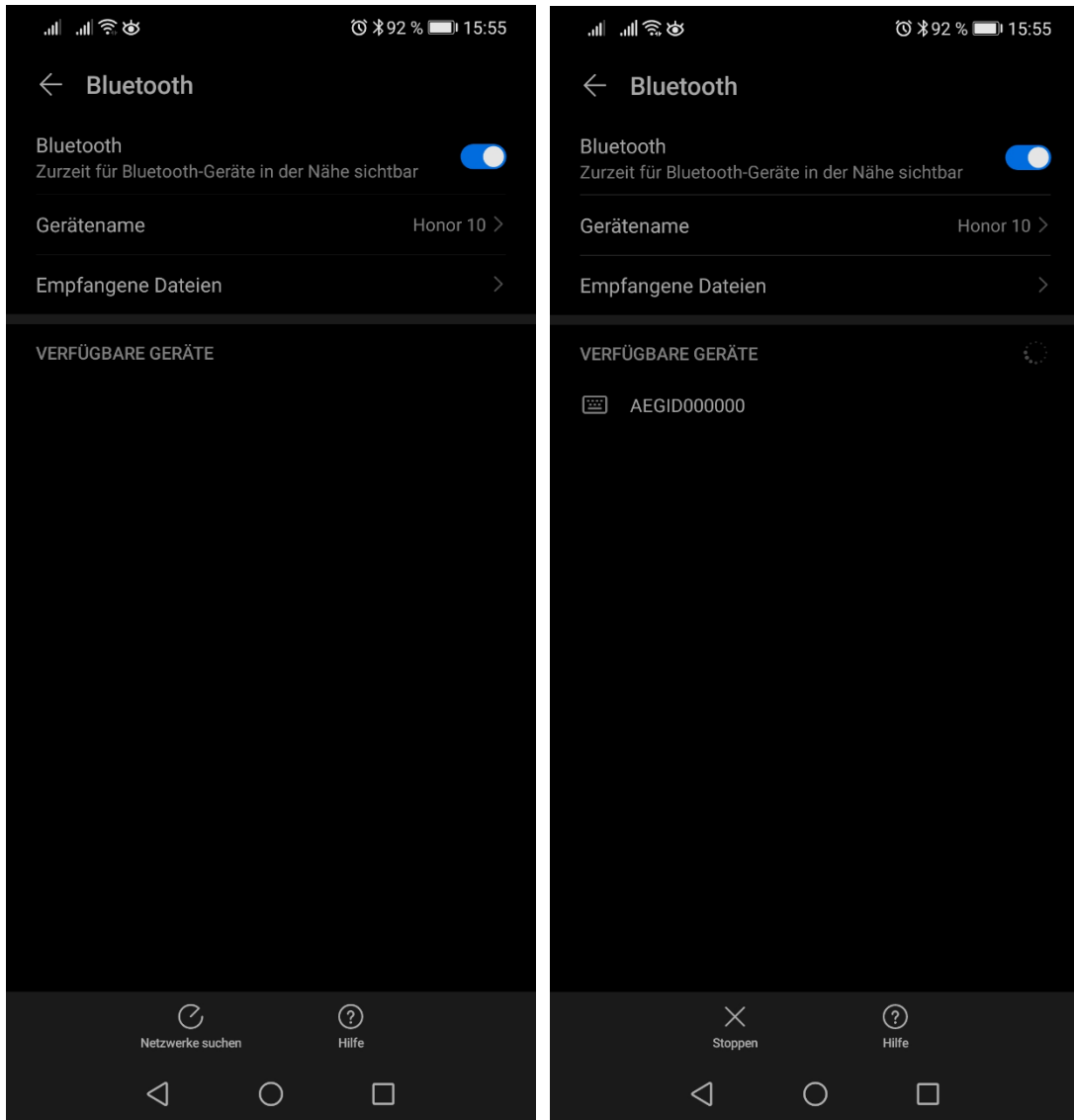
If the found reader is selected, the PIN 0000 has to be edited. Then the connection can take place.



After that the interface is ready for use:

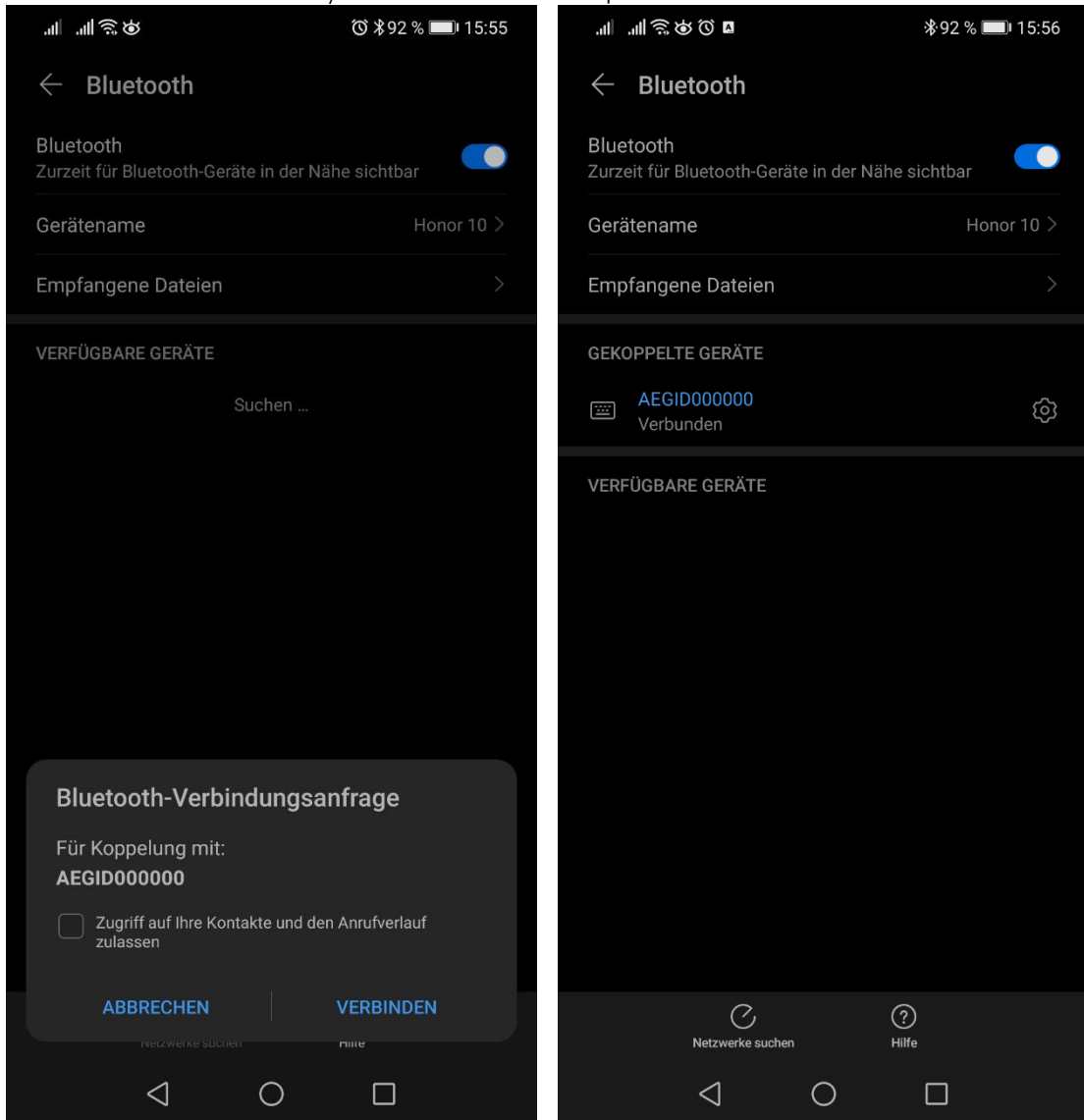


If the master is for example a mobile device with Andorid operation system, the procedure is the same. At first the Bluetooth interface on this device has to switched on:



The search (here the button „searching networks“) could find the reader.

If the found reader is selected, the connection can take place.



After that the interface is ready to use.

Now the reader has to be set the right way.  
The "Operating Mode" has to be "Online".  
The "Interface" has to be "Bluetooth HID".

If the reader is set this way and a transponder is read the transponder code is transmitted to the master and edited there on cursor position.

If the H5 reader is not connected to the master after successfully reading a transponder the transmission is delayed until contact is there. Meanwhile the reader shows:



## 7.9 Glossary

The terms, definitions and abbreviations, used in this Operating Instruction are explained in brief:

- ASCII-character      *American Standard Code of Information Interchange*. A standardized code that assigns a certain character (letter, figure, control character) unambiguously to each binary number. The 256 characters, which can be presented on a monitor screen or a printer, are defined in the CCITT Code table NR. 5. For example, the question mark ? corresponds to the hexadecimal value 3F.
- Hex character      hex = hexadecimal; Representation of numbers on the basis 16. Instead of using binary 0 and 1 (Basis2) , four binary bits are combined and represented by one character 0 to 9 and A to F ( 10 to 15 ).
- ID      unambiguous number for identification of a transponder.
- Ident code      = ID
- ISO-FDX-transponder      transponder characterized by ISO-Standard 11784/11785 , using the "full duplex" method
- ISO-HDX-transponder      transponder characterized by ISO-Standard 11784/11785 , using the "half duplex" method
- PC      Personal Computer
- Transponder      mobile data storage unit used for identification of animals or items. These storage units operate without a separate power supply (battery); they are energized from the reading device by magnetic coupling.
- Transponder code      = ID

## 7.10 Control Characters used in the "online mode"

character	value decimal	value hex	function
<CR>	13	0D	carriage return
<LF>	10	0A	line feed
<STX>	02	02	Start Text
<ACK>	06	06	Acknowledgement
<ETX>	03	03	End Text

## 7.11 Documentation, References

- [1]:** "Data exchange Protocol for the ARE H5" describes all available commands, parameters, format of the transmission protocol, error codes and control characters, which are used in the "Database mode" of the ARE H5.
- [2]:** "Operating instruction for the Reader Terminal program" describes the connection establishment of the ARE H5 with the PC, data transmission of actually read transponder codes, up- and download of reader database and configuration of the ARE H5 with the PC.

## 7.12 Notification of changes

<i>Date</i>	<i>Description of Change</i>	<i>Version</i>	<i>Author</i>
04/23/01	First edition	01	
01/21/04	Change of Protection Class	03	
02/12/07	Alignment with german edition 06	06	
02/12/07	Format, IP protection class	07	
09/27/10	Format, Reader Terminal instead of PC-Link	08	
10/06/10	Replaced residual "PC-Link" with "Reader Terminal"	09	
09/02/11	Serial instead of RS232, No Tag text, remove IRDA, "Type designations, supplied items and accessories" table changes	10	
09/21/11	Battery operating time removed, mass value	11	
11/14/14	New menu navigation since V2.20003 and V2.2000B	12	
12/18/15	Safety instructions for rechargeable li-ion batteries	13	
03/15/15	USB driver installation	14	MK
05/18/16	FCC Information	15	MK
06/21/16	FCC Information correction	16	MK
01/11/17	FCC Information additional changes	17	MK
10/09/17	New menu point "Code Format" "ISO Attributes"	18	MK
11/24/17	Adaption to new software version	19	MK
11/21/18	Adaption to new software version	20	MK
03/05/21	Bluetooth connection establishment	21	MK

### 7.13 Contacts

To improve our products, as well as its documentation is our permanent effort.  
For any questions, feedback or comments please call:

Tel.:                ++49 (0)731-140088-0

Fax:                ++49 (0)731-140088-9000

e-mail:            sales@aegid.de

http:\             [www.aegid.de](http://www.aegid.de)