Manual

ARE H3.0

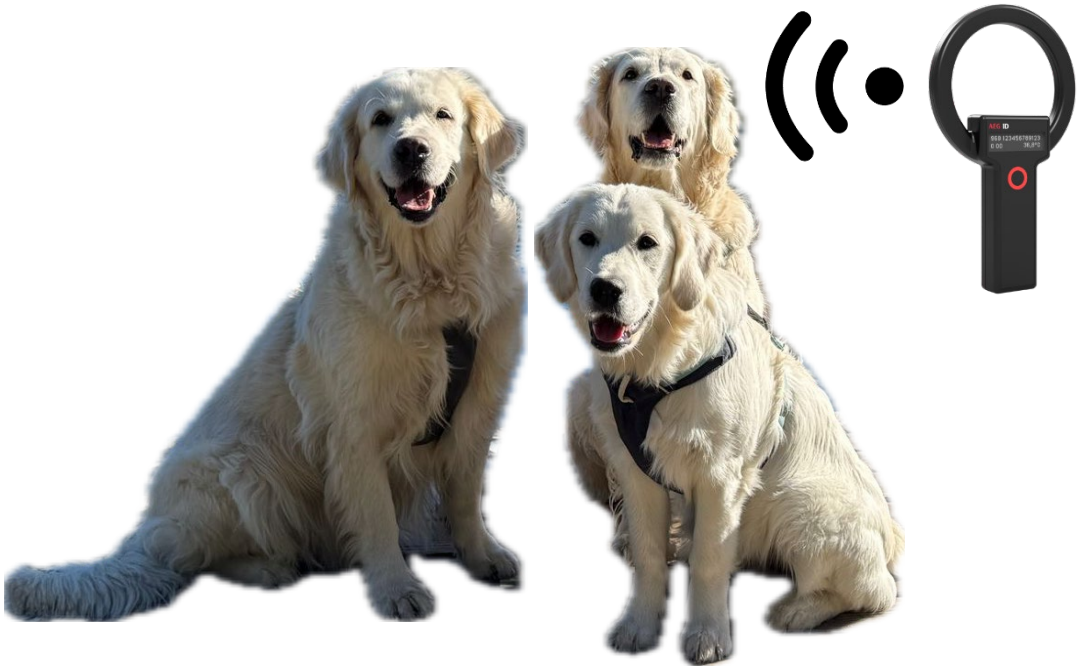
1. Introduction

ARE H3.0 is a compact handheld ISO 11784/85 reader. It reads ISO 11784/85 compatible transponders as well as ASK 64 bit transponders. In addition, the reader displays temperature if a temperature sensor is present in the transponder. Optionally programmed data are also displayed.

2. Use Case

ARE H3.0 is used to read ISO transponders in animals. Typically, this is done in a veterinary environment or in animal shelters.
ARE H3.0 is not meant for any other use case.

Typical use case is identifying companion animals in a vet or shelter environment.



3. Functionality

3.1 General usage

Reading a transponder

Pressing the red button switches on the reader. The reader may display the last number read before switch off for convenience reasons. If no number was read before switch off, it displays name and firmware version.
Each subsequent press of the button triggers a read. The reader searches for a transponder for a preset time. Once the transponder is read, the ISO number together with retagging counter and user information field and temperature if present, is displayed.

If the reader does not detect a transponder, the message “no tag” is displayed.

Antenna:

Hold ring shaped antenna towards injection site of transponder in animal

For companion animals this is the left side of the head towards the shoulder (see ISO15639 for details)

Display:

2x16 characters LCD screen
Displays ISO number, optional data and temperature

Red-Black button:

Press to switch on and press again to read

3.2 Power supply & charging

ARE H3.0 runs off an internal, rechargeable Li- Po battery. This battery cannot be exchanged. Opening the housing voids any warrantee or guarantee.
Use a standard USB-C to USB-C or a USB-C to USB-A cable and a standard 5V USB power supply to recharge the internal battery. Any smartphone power supply will work here fine. Do not use any other means of charging. The device may be damaged. ARE H3.0 indicates the status of the battery at each startup. Whenever a USB-C cable is plugged in, the reader displays its charging status also.

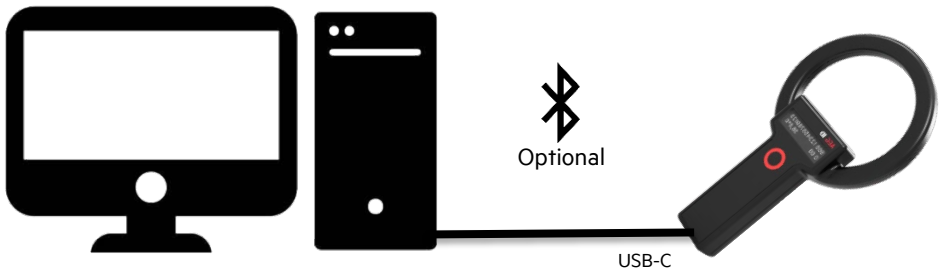
Start display

```
ARE H3.0 fdx-b
v1.1.7.6        100%
```

Charging display

```
ARE H3.0 fdx-b
Charging...     80%
```

3.3 Interface



3.3.1 USB-C

ARE H3.0 offers a USB-C type interface for communication and charging. When plugged in, the reader installs itself as serial interface or as HID keyboard depending on its setting. Pressing the button for more than 5 seconds switches the interface from serial to keyboard and back.

Pressing button for ~5 seconds

```
Output:
HID keyboard
```

Pressing button again for ~5 seconds

```
Output:
serial
```

Serial interface:
ARE H3.0 sends the read data out of its serial interface. The format can be influenced. Please see section 2.2.5 for details. AEG ID PC program “ARE H3.0 setup tool” can be used to communicate to and setup ARE H3.0 reader. Please see section 2.2.5 for details.

USB-HID keyboard:
ARE H3.0 can operate as a regular keyboard. ARE H3.0 sends the read data out to the input focus of the PC operating system, just as a regular keyboard would. The format can be influenced. Please see section 2.2.5 for details.

3.3.2 Bluetooth:

Some models of ARE H3.0 offer a Bluetooth functionality (Bluetooth HID keyboard or Bluetooth serial port). See section 3.5.11 for details on how to configure bluetooth. If present, search for Bluetooth device AEGIDxxxxxx (xxxxxx represent the serial number of the reader). Once connected, the reader sends read transponder data via Bluetooth HID keyboard or Bluetooth serial port to the connected device. The format can be influenced. Please see section 2.2.5 for details. In Bluetooth mode the reader vibrates with a long signal, if Bluetooth transfer failed. Please note, first connection may take up to a few seconds depending on system setup. Standard PIN is 0000.

Connection status can be seen on reader display.

968 123456789123
0 00 BH*

	unpaired	paired, not connected	Paired, connected
Bluetooth Keyboard	BH-	BH+	BH*
Bluetooth Serial	BS-	BS+	BS*

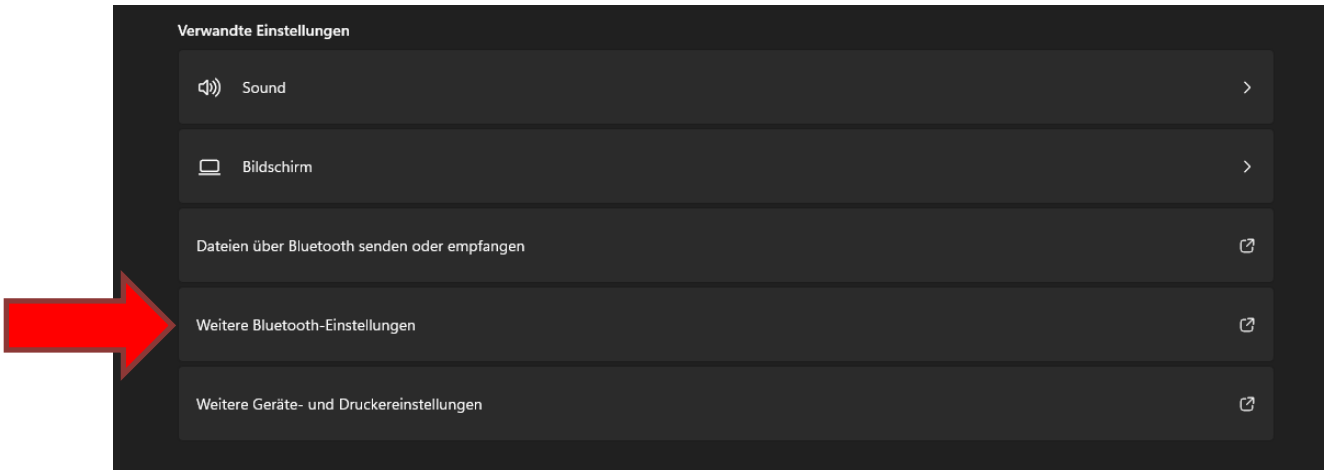
Bluetooth Keyboard

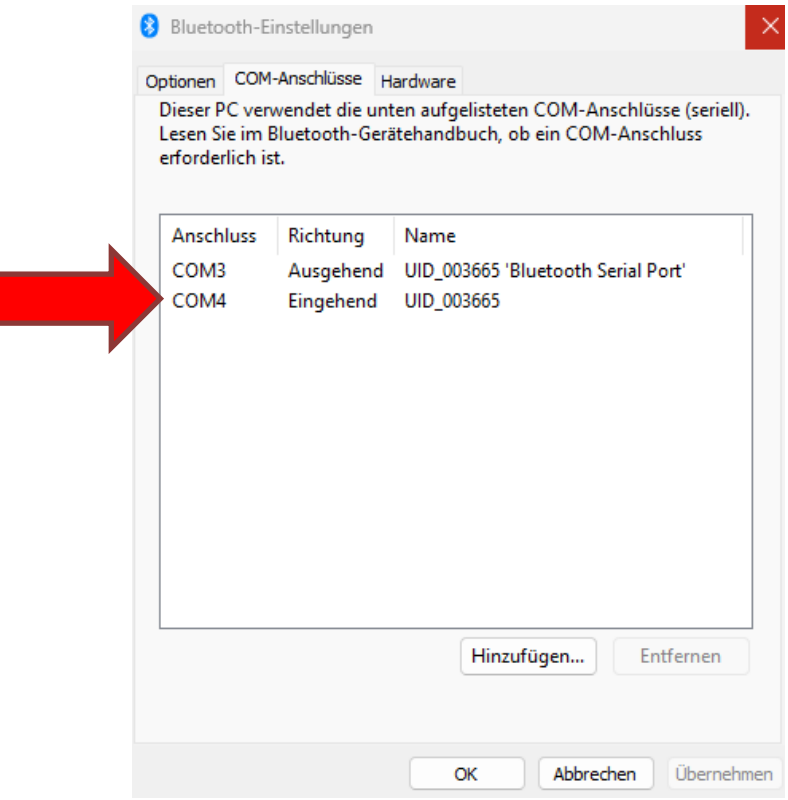
Bluetooth keyboard works on all platforms (Windows, Apple, iOS, Android,...), basically any system that connects to a Bluetooth keyboard.

Bluetooth Serial

After connecting ARE H3.0 to a Windows PC, Windows installs two COM ports. Make sure to check for the incoming Bluetooth port. You find this setting in additional Bluetooth settings. In this example case it is COM 4. This ensures that ARE H3.0 is able to reconnect Bluetooth automatically after the reader has switched off and on again (or travels out an in the Bluetooth range).

DO NOT CHOOSE THE OUTGOING COM PORT AS THIS DOES NOT ALLOW FOR AUTOMATIC RECONNECT.


Verwandte Einstellungen
Sound
Bildschirm
Dateien über Bluetooth senden oder empfangen
Weitere Bluetooth-Einstellungen
Weitere Geräte- und Druckereinstellungen


Bluetooth-Einstellungen
Optionen
COM-Anschlüsse
Hardware
Dieser PC verwendet die unten aufgelisteten COM-Anschlüsse (seriell).
Lesen Sie im Bluetooth-Gerätehandbuch, ob ein COM-Anschluss
erforderlich ist.
Anschluss
Richtung
Name
COM3
Ausgehend
UID_003665 'Bluetooth Serial Port'
COM4
Eingehend
UID_003665
Hinzufügen...
Entfernen
OK
Abbrechen
Übernehmen

Manual Unpair

Bluetooth being Bluetooth, you may want to unpair the Bluetooth connection manually from URH-2, use btup (Bluetooth unpair).

When using keyboard mode, URH-2 bluetooth connection is automatically deinstalled in keyboard mode by Windows. If in serial mode, you need to manually deinstall URH-2 in Bluetooth context menu in Windows, in order to start fresh connection.

3.4 Options

ARE H3.0 is a LF 134.2kHz reader. The following chip technologies can be read:

3.4.1 Transponder types

ISO 11784/85 fdx-b
ISO 11784/85 hdx (model depending)
ISO BDE (waste management standard)
ASK 64 Bit read only

Some ISO 11784/85 transponders support temperature measurement. ARE H3.0 supports those transponders.

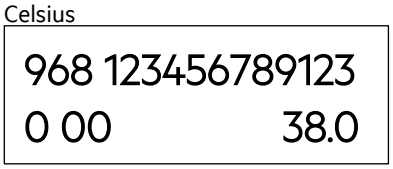
Temperature transponder types

EM 4115
Excelio EL9265 – model depending

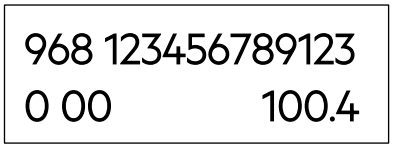
Temperature unit

Temperature can be displayed in Celsius or Fahrenheit.

Celsius



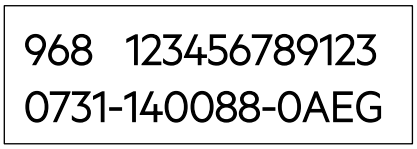
Fahrenheit

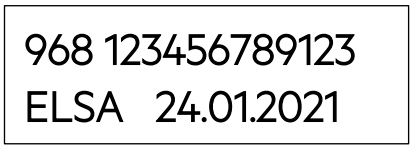


3.4.2 Data function

Some AEG ID ISO 11784/85 transponders support 16 characters of ASCII data to be programmed into the chip. This data function can be used to write the telephone number of the pet owner into the chip. Alternatively the name of the animal or any other relevant data (e.g. birth date) for that animal can be written into the chip. ARE H3.0 displays these 16 characters in the second line of the display.

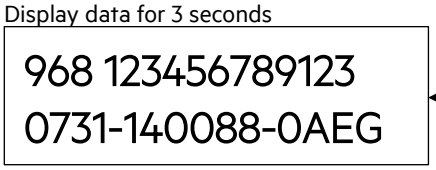
Examples:



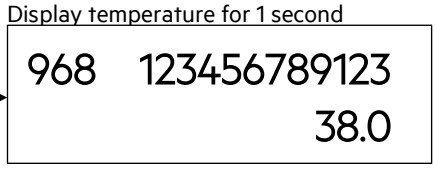


Please note, if the transponder also measures temperature, the temperature is displayed in the second line of the display in exchange with data

Display data for 3 seconds



Display temperature for 1 second



Serial output string

Serial output string can be set acc. IS 24631-6 or can be customized. Please see section 2.2.5 for details.

Display of last number read after power up

The reader displays the last number successfully read before shut off after being switched on again. This is helpful in a vet situation, where the animal only needs to be read once without regard about the switch off time of the reader.
In case there was no number read before shut off, the reader displays its name and software version.

3.4.3 Database function

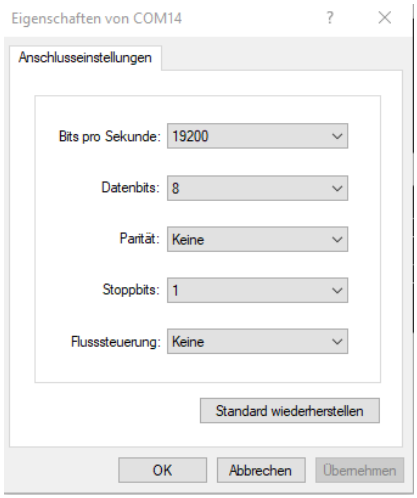
Some ARE H3.0 versions do contain a database functionality. This saves 2000 read transponder numbers including data, temperature, date and time where applicable.

3.5 Setup tool

AEG ID PC program “AEG ID ARE H3.0 terminal” can be used to determine optional settings for the reader.
Start the program by clicking on its icon. The program opens up.

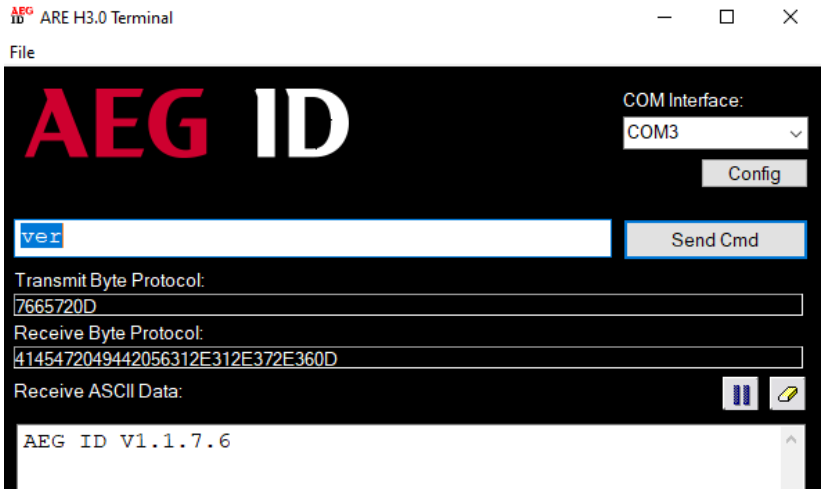
3.5.1 COM Interface:

Open the correct interface. Check in system settings which is the correct port.
Serial parameters are 19.200 baud, 8 bits, 1 stop bit, no parity, no hardware control. Use config button to open serial settings.



3.5.2 Terminal function:

Once the correct COM port is successfully opened, type ver in the edit field and press “SendCmd”.
The reader answers with its name and serial number.



When you see a similar output, communication with ARE H3.0 is established.

The terminal function can be used to communicate directly with ARE H3.0. Instructions are typed in the edit field and then are sent by pressing the button “SendCmd”.

It is recommended to use the setup function of this program to configure the reader (see next section).

Keyboard language

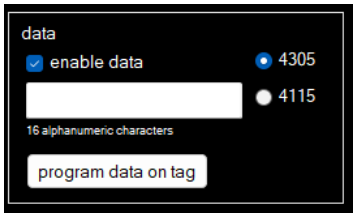
ARE H3.0 keyboard language default is set to English (USA). Country specific adaption can be set by using below instruction. Use kl (keyboard language) for this.

kl xx<CR>

07	German (Germany)
09	English (United States)
89	English (United Kingdom)
0A	Spanish (Spain)
0C	French (France)
10	Italian (Italy)
13	Dutch (Dutch international)
16	Portuguese (Portugal)
4B	French (Canada)

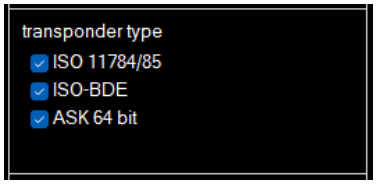
Example::
Type Kl 0C in edit line and press SendCmd..
Answer: 0C
Type vsave in edit line, press SendCmd to permanently save this parameter.

3.5.3 Data settings



Checkbox “enable data” switches on data display capabilities of ARE H3.0 to display data in the second line of the display. Only valid data with correct checksum are displayed.
Type in any combination of up to 16 alphanumeric characters in the edit field. If you enter less than 16 characters, the program automatically adds 0x20 for each missing character starting from left to right. First choose the right chip type.
Put the transponder in the reading field of ARE H3.0 (around 5cm distance perpendicular in the middle of the round antenna).
Press button “program data on tag” and wait for the reader to acknowledge the programming by a success message box. If anything went wrong, the fail message box appears.

3.5.4 Transponder type settings



You can set any combination of the available transponder types to be read by checking the corresponding check boxes.

3.5.5 Data format settings

Data format for various transponder types can be set here. Please note, this only affects ISO 11784 and ISO BDE type transponders. ASK - 64bit transponders are not affected.

hex:
This will display any ISO 11784 transponder and ISO BDE transponder (ISO 11784 animal, ISO 11784 industry and ISO BDE) in its hexadecimal form.

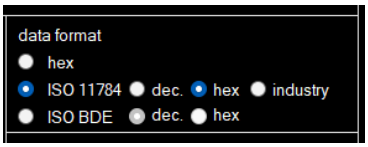
Examples:

ISO 11784 animal:	8000F9C000000009
ISO 11784 industry:	00600000010B4FEE
ISO 11784 BDE:	0040000001091321

ISO 11784:
dec:
This setting displays ISO 11784 transponders in its decimal form.

Examples:
ISO 11784 animal: 999 000000000009
ISO 11784 industry: 000 000017518574

hex:
This setting translates the decimal form of country code/manufacturer code and national ID in its individual hexadecimal form. Please note, this is not the hexadecimal of the former section.

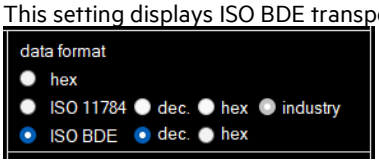


Examples:
ISO 11784 animal: 3E7 0000000009
ISO 11784 industry: 000 00010B4FEE

industry:
This setting displays ISO 11784 transponders in its decimal form without checking the animal bit.

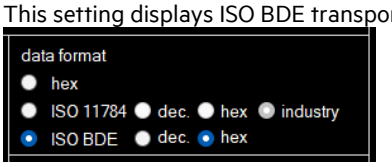
Examples:
ISO 11784 animal: 999 000000000009
ISO 11784 industry: 000 000017518574

ISO BDE:
dec:
This setting displays ISO BDE transponders (used in waste management applications) in its decimal form.



Examples:
ISO BDE: 004 0594721

hex:
This setting displays ISO BDE transponders (used in waste management applications) in its hexadecimal form.



Examples:
ISO BDE: 0040000001091321

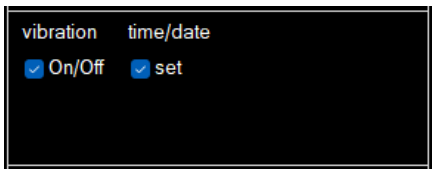
3.5.6 Switch off time setting

Here you can determine the switch off time from 10 seconds (1) to 200 seconds (20). The edit field only accepts values from 1 to 20.

3.5.7 Reading Time settings

Here you can determine the reading time from 1 second to 25 seconds. The reader searches for transponders automatically during this reading time.

3.5.8 Vibration signal setting

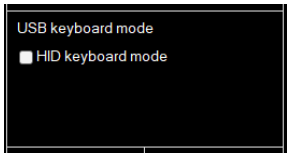


Some animals are scared by sound, so vibrating signal can be disabled.

3.5.9 Date/Time

Some versions of ARE H3.0 do have a real time clock.. Date and time can be set using system time of host PC.

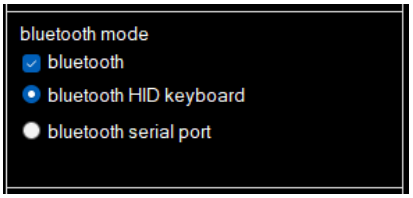
3.5.10 USB- Keyboard settings



Check HID keyboard mode if you want to use the wired keyboard functionality. Please note, switching back from HID keyboard to serial mode can only be done by pressing the main button for more than 5 seconds.

3.5.11 Bluetooth mode

Some models of ARE H3.0 offer a Bluetooth interface.

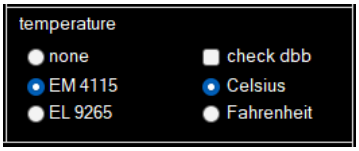


Check Bluetooth to enable Bluetooth functionality. Then select either bluetooth HID keyboard or bluetooth serial port.

bluetooth HID keyboard:
This setting allows ARE H3.0 to be used as a wireless keyboard. Connect ARE H3.0 like any other Bluetooth device to your computing device. ARE H3.0 is compatible to Windows, Macintosh, iOS and Android devices.
After successful connection, ARE H3.0 sends the serial data string via Bluetooth keyboard to the host device.

bluetooth serial port:
This setting allows ARE H3.0 to be used as a wireless serial port (COM port). Connect ARE H3.0 like any other Bluetooth device to your computing device. ARE H3.0 is compatible to Windows and Macintosh in this setting.
After successful connection, select the appropriate COM port in your terminal application. ARE H3.0 sends the serial data string via Bluetooth serial port to the host device.

3.5.12 Temperature settings



Select the temperature transponder you want to read (either none, EM4115 or EL9265). Only one can be selected at any time.
Select the temperature unit you want to be displayed. Only one can be selected at any time.

Temperature None:
No temperature information will be displayed or sent.

Temperature EM 4115:
Select this setting for EM 4115 based transponders. Here the temperature information is automatically put into the sector trailer of the ISO 11784/85 message when reading a transponder. Read range is comparable to regular ISO transponders.

Temperature EL9265:
Select this setting for EL9265 based transponders. Here the transponder requires an additional get temperature instruction to send its temperature. This reduces the read range considerably compared to regular ISO transponders. Reading time is also increased. This is due to the nature of the chip and can't be prevented. EL09265 has different configuration options to retrieve temperature. This device supports the most common setup. ATTENTION: In this setting only EL9265 transponders can be read, regular ISO transponders require Temperature Type setting of none.

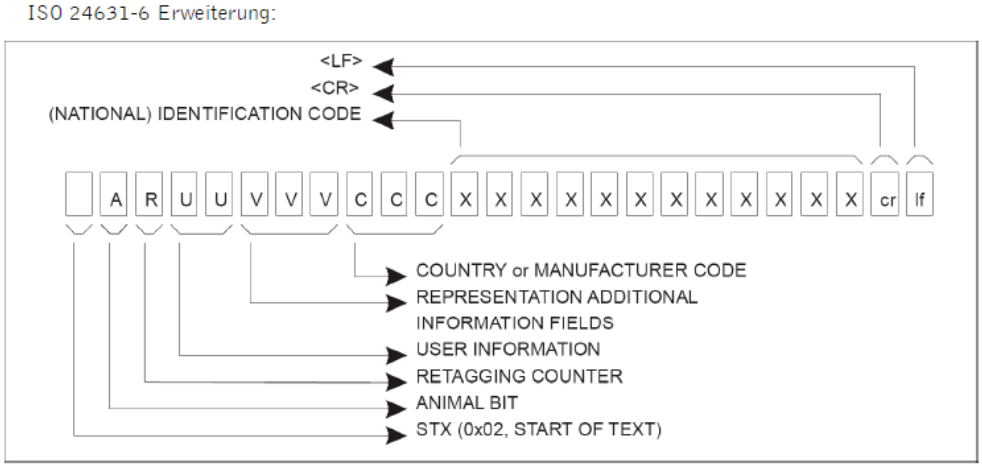
Check dbb:
Some temperature transponders on the market are not programmed correctly (data block bit (dbb) is not set, despite temperature data being added into the sector trailer. ARE H3.0 normally checks for data block bit to be set with

temperature transponders. If it is not set, temperature is not displayed. In order to be able to read wrongly programmed transponders nonetheless, this check can be disabled.

3.5.13 Serial output string settings

Select if you want to have the serial output according to ISO 24631-6 or if you want to customize the output by setting the corresponding radio button.

Serial output string according to ISO 24631-6:



Typical serial output according to ISO 24631-6:

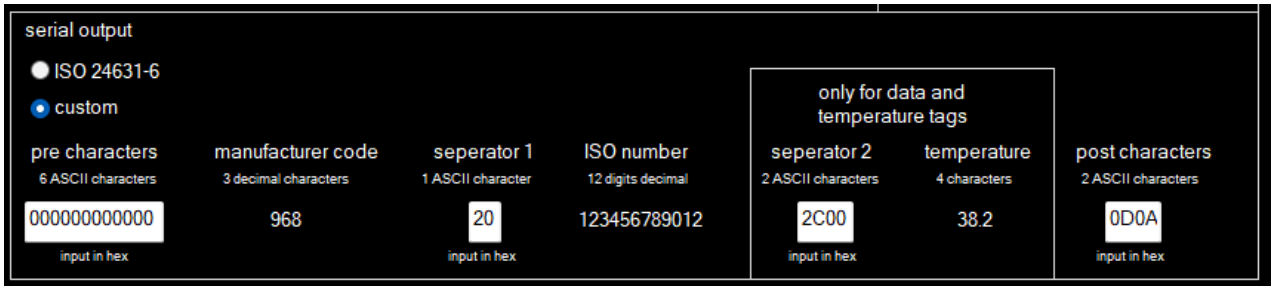
<STX>100000096800000 3954907<CR><LF>

ASCII control characters are in given in angle brackets, printable ASCII characters are given in their printable form.

Actual string on interface:

02313030303030303936383030303030333935343930370D0A

Custom serial output string:



You can influence the serial output string. Please note you have to input the characters in hex format.

pre characters
You can add up to 6 ASCII characters in front of the string. Hex 00 will not be sent. Default is 0x000000000000. In this case nothing will be sent before the ISO number. If you enter less than 6 ASCII characters, the remaining characters will be set to 0x00 starting from left to right.

separator 1
You can add 1 ASCII character between the manufacturer/country code and the individual transponder number. Default is a space character (0x20). 0x00 will eliminate the separation of country/manufacturer code and individual number.
separator 2
You can determine up to 2 ASCII characters as separator between the ISO number and the temperature if applicable. Default is one comma (2C00). If you enter only one character, the other character will be set to 0x00 from left to right.

post characters
You can determine up to 2 post characters after the ISO number and temperature. Default is carriage return, line feed (0x0D0A). If you enter only one character, the other character will be set to 0x00 from left to right.

The settings are valid for both serial and keyboard interface.

Serial output with above parameters:

968 123456789012,38.2<CR><LF>

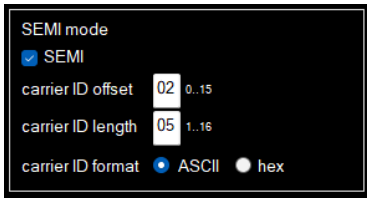
Actual string on interface:

3936382031323334353637383930313 22C33382E320D0A

Data transmission via keyboard functionality (USB and Bluetooth)
Above settings are also valid for keyboard functionality. Please note, not all serial ASCII control characters are available as keystrokes. Here the equivalent will be transmitted.

3.5.14 SEMI mode:

SEMI mode is a dedicated mode to read SEMI E99 / E144-0312 compatible transponders.
To enable SEMI mode check SEMI.



SEMI E99 defines carrier ID offset and carrier ID length to determine the valid data within the chip memory of a multipage E144-0312 transponder. In below example, data in memory address 02 to 06 is to be read and interpreted in ASCII. Carrier ID offset is 02 (2 bytes) and carrier ID length is 05 (5 bytes). The carrier ID displayed by the reader is ABCDE.
Carrier ID format can be switched between ASCII and hex. Below example would display 4141434445 in hex setting.

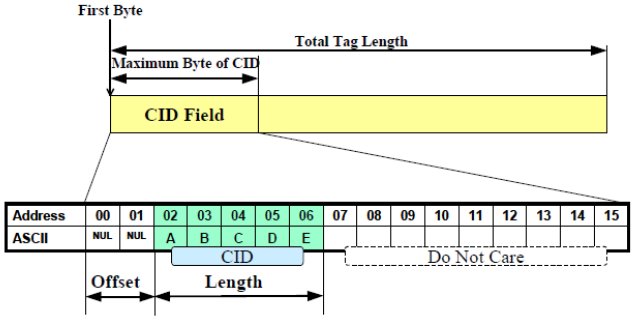
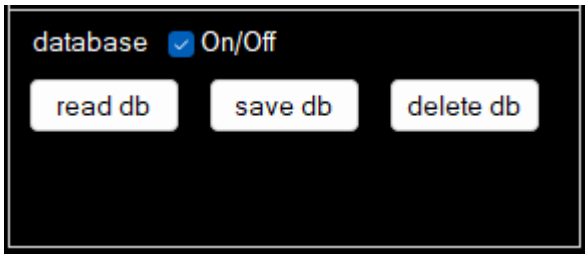


Figure R4-1
Example of Carrier ID in Tag ('CID = ABCDE')

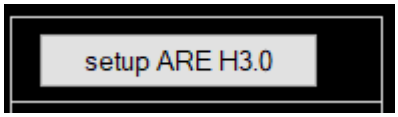
3.5.15 Database mode



Some ARE H3.0 versions do contain a database functionality. This saves 2000 read transponder numbers including data, temperature, date and time where applicable.
Activating checkbox database enables database function. ARE H3.0 version needs to support this function.

read db reads database and dumps content in Edit field of Setup program.
save db saves database as .xml file to make use of it on a host PC.
delete db deletes database on ARE H3.0.

3.5.16 Setup of ARE H3.0



Press button “setup ARE H3.0” to transmit all of above settings to the reader. Please note, all settings will be automatically saved in EEPROM memory of ARE H3.0. A Message box appears to confirm successful setup.

After setup, ARE H3.0 can be used as intended.

4. FCC Statement

4.1 ARE H3.0

Valid for ARE H3.0

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 Information to the user.

Note: 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.

5. CE statement

ARE H3.0 is meant to be used in a veterinary environment for occasional reading of ISO transponders embedded in animals. It is expressly not meant to read transponders embedded in or on humans. This use case is not allowed.

6. Release, Change Protocol

Revision:	Date:	Changes:	Author:
01	08.10.2024	Release first edition	NK
02	23.10.2024	Details added	NK
03	04.12.2024	Details added	NK
04	03.03.2025	Details added	NK
05	21.05.2025	Details added	NK
06	07.05.2025	Details added	NK
07	30.10.2025	Details added	NK

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