Allflex®
Livestock Intelligence™
MSD Animal Health Intelligence

Allflex AWR300 User Guide

Firmware v1.11 and higher

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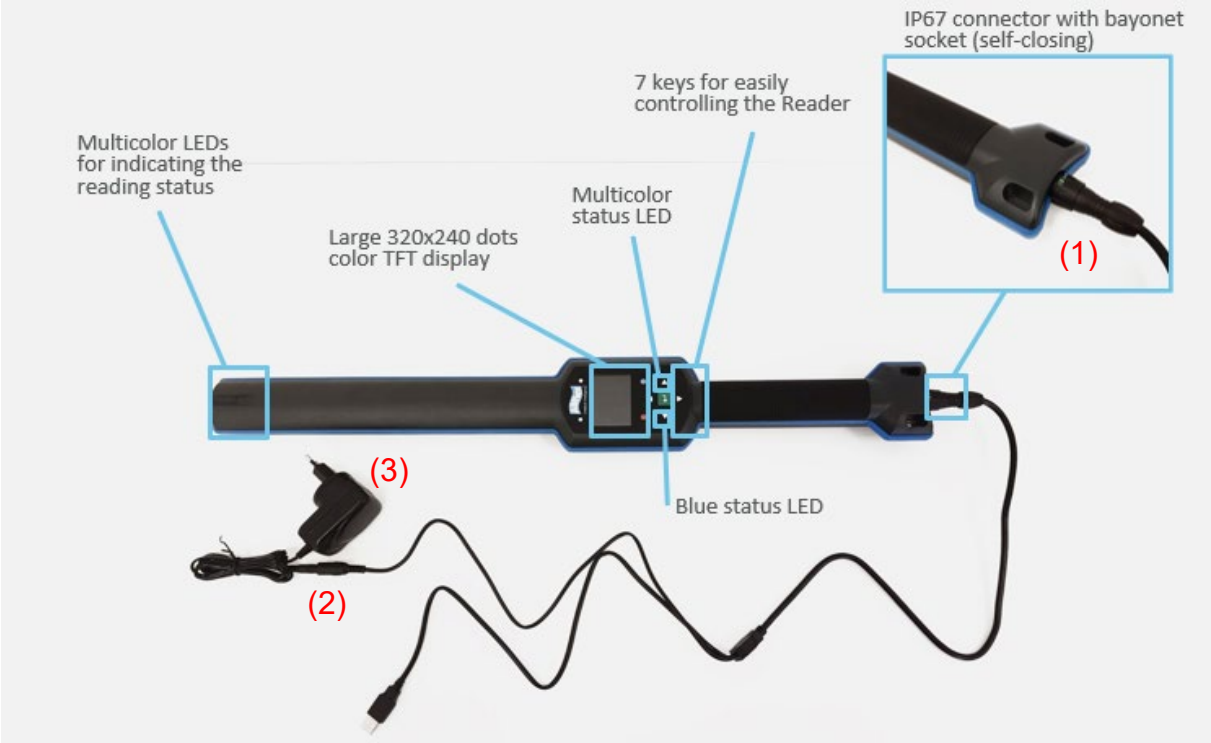
1 Introduction

The AWR300 is a high quality, ruggedized portable RFID reader for tags, complying with the ISO11784 / 11785 standard. It can read transponders with FDX-B and HDX technology. In addition to the reading functions, the device can store up to 1,000,000 records in several groups in the large internal memory. Each record also contains a timestamp, and a Visual ID and an Alert, if available. The data are transmitted via several available interfaces directly after reading, such as USB, RS232, Bluetooth and Wi-Fi (optional).

The reader has a large color display that displays various information at one glance. Together with the seven keys, you can easily navigate through the menus and data. There are also status LEDs above the display that indicate the charging and interface status and multicolor LEDs at the tip which indicate the current reading state. The integrated speaker provides acoustical feedback and the vibrating handle is very useful in noisy environments.

1.1 Before You Start

The internal high-capacity lithium-ion battery should be fully charged before the first use. The battery can be charged using the provided Y-Cable and power adapter. Connect the Y-Cable to the bayonet connector at the bottom of the reader (1) and the power supply to the circular connector (2) of the Y-Cable. The plug-in power supply (3) should be fitted with the correct mains adapter. Then you can plug in the power supply into a mains outlet and the AWR300 should start charging the battery. See Chapters 3.1.2.1 for details about the battery status.



The internal fast charging takes approx. 3.5 hours maximum if the battery is completely empty. Note that the battery will only be charged within a temperature range of 0°C to 45°C (+32 to 113°F).

2 Hardware Specifications

This section describes the AWR300 hardware including all accessories.

2.1 AWR300 Parts

- 65 centimeters long
- 750 grams
- Provides an excellent reading performance
- Large 2.4 inch color TFT display
- Multicolor LED indicator at the tip
- Two status LEDs above the display
- Speaker and vibrating handle
- The Reader can be controlled with seven ergonomic keys below the display
- Uses a 7.4V Lithium-Ion battery with a capacity of 2.600mAh located in the handle. This battery can be replaced but it is not normally necessary because of its very long operating time

2.2 Accessories

Accessory	Description
	ARB300 – Battery Pack
	Y-Cable (USB / Charge) - The USB plug of the Y-Cable can be connected to any USB-port of a computer. Note that it is necessary to install the appropriate USB driver first. The power adapter has interchangeable plugs for most power outlets used all over the world. Use the provided screwdriver to remove and replace the battery cover screws
	Power adapter
	Screwdriver

	Optional: RS232 cable 'APC310': The RS232 cable 'APC310' (p/n 4061) allows the wired serial RS232 connection to other devices if these devices do not support Bluetooth..
	Optional: The robust transport box ATB300 (p/n 4063) enables easy transportation of the AWR300. It can accommodate the reader and accessories, and additional devices such as a mobile printer (not included, has to be purchased via local distributors).

2.3 Connecting the USB Cable

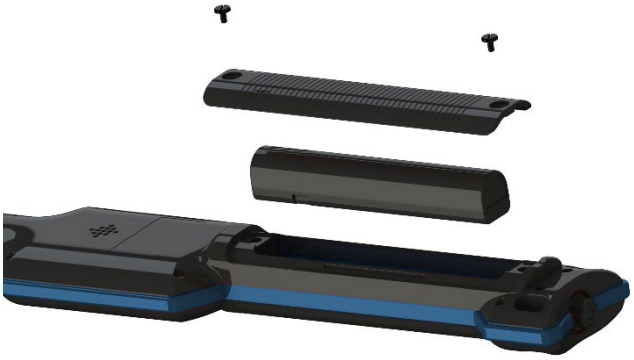
The AWR300 uses a bayonet connector system that is IP67 without an additional cap:

1. Attach the connector of the serial cable to the socket at the bottom of the reader. Pay attention on the correct orientation (see marking).
2. Push the connector against the socket and turn it clockwise until it is locked.

3. Turn the connector counterclockwise in order to unlock the connector. The socket closes itself automatically after removing the plug.

2.4 Exchanging the Battery Pack

Although not normally required because of long operating time of the battery pack, it is possible to change it. This might be necessary if the pack has reached the end of its life cycle.



Remove the flat-head-screws by using the provided screwdriver. Lift the battery cover and take out the battery. After the new battery pack has been inserted, close the battery cover again and tighten the two flat-head-screws.

3 Controlling the AWR300

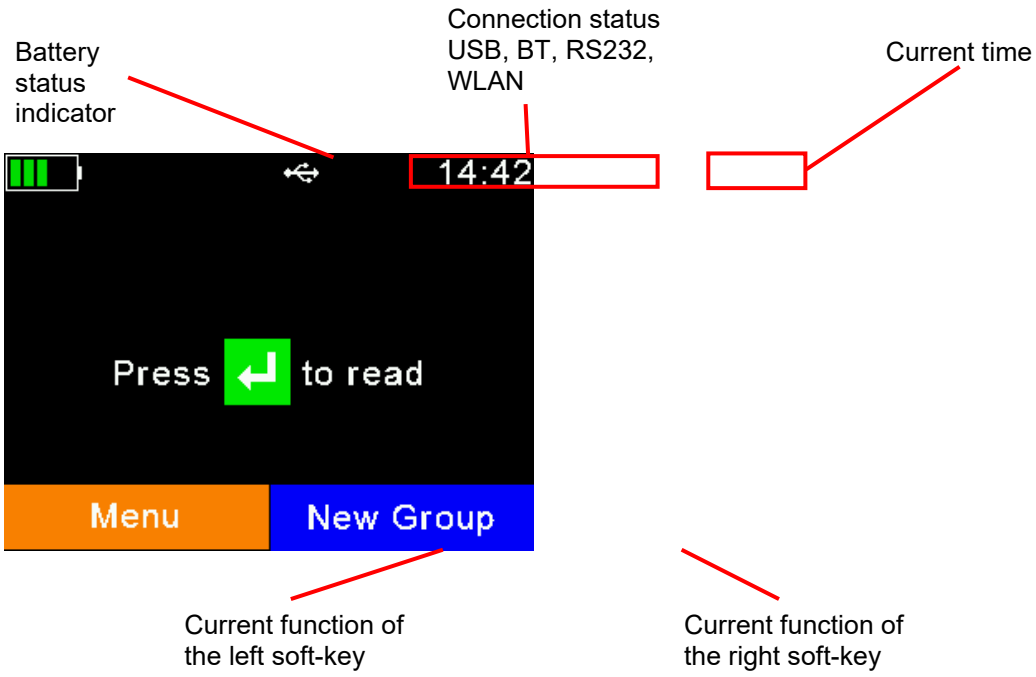
The AWR300 has a large color display and seven keys used for controlling the device.

- The Reader is activated by pressing the ↵ key in the middle of the directional pad.

3.1 AWR300 Display

3.1.1 Home Screen

After the reader is switched on, the following home screen appears:



- The battery status indicator shows the approximate battery level. In this example the battery is fully charged. It would also display possible faults concerning the battery, like high-temperature.

- In the example shown here, the only active connection is USB (symbol on the right side). The reader would also indicate an active RS232 connection or the status of Bluetooth or WLAN (optional).
- The soft keys have different meanings depending on the current operation.
    - In the home screen, the left soft key is used for entering the menu and the right one for creating a new group separator.
    - The '*new group*' function is only the default action triggered by pressing the right soft key.
    - Other '*quick menus*' can be configured and uploaded to the reader from the PC and the action to be started can be changed on the reader by long pressing the right soft key.

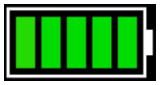
3.1.2 Symbols at the Top of the Display

The status bar in the first display line provides the time (on the right side) and information about the battery status and the different interfaces.

The blue symbol is for WLAN (optional) and the orange symbol is for Bluetooth. The color of this symbol depends on the current connection status.

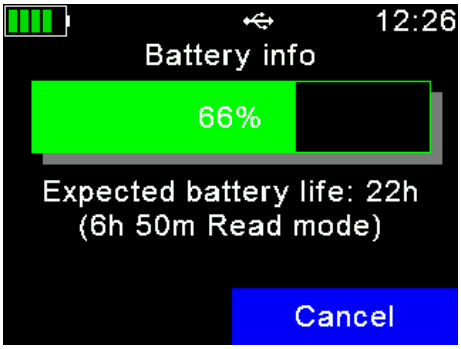
3.1.2.1 Battery Status

The battery symbol on the left side indicates the approximate battery capacity.

Status	Meaning
	Battery capacity is higher than 80 percent.
	Capacity is between 60 and 80 percent.
	Capacity is between 40 and 60 percent.
	Capacity is between 20 and 40 percent (no charger connected -> discharging)
	Capacity is between 10 and 20 percent (no charger connected -> discharging) When flashing, capacity is lower than 11 percent.
	Capacity is between 20 and 40 percent (only green when charging).
	Capacity is between 10 and 20 percent (only green when charging).
	General charging error. There is a condition that prevents charging. Check the external power supply. If this error is shown repeatedly, the battery may no longer work correctly and should be replaced. This error also occurs when the battery is charged outside the allowed temperature range of 0°C to 45°C.
	Charging not allowed because the battery temperature is outside the allowed range of 0°C to 45°C.

During charging, the battery symbol fills from the point of the remaining capacity. The battery charge is complete when flashing stops. The charger can be disconnected in this case.

The menu item '*Show Battery Info*' in the '*Setup*' menu (chapter **Error! Reference source not found.**) shows an estimate of the remaining battery capacity in percent as well as the estimated remaining operating time in idle mode and in continuous read mode.



Navigation from the home screen:

3.1.2.2 WLAN Status

Status	Meaning
	WLAN is switched on but not connected to an Access Point
	Connected to an Access Point and waiting for connection (listening)
	Connection is established (TCP or UDP – port is open)
	WLAN error: Communication to WLAN module failed or booting in progress

3.1.2.3 Bluetooth Status

Status	Meaning
	Slave Mode – AWR300 can be connected from other devices
	Master Mode – AWR300 is trying to connect to remote device
	Connected (in either Bluetooth Mode)
	Bluetooth init: Communication to Bluetooth module failed or booting in progress

3.1.2.4 USB Status

The USB status is shown in the middle at the top of the display:

Status	Meaning
	The USB symbol displays when the AWR300 is connected to the USB port of a computer.

3.1.2.5 RS232 Status

Status	Meaning
	This symbol displays if the AWR300 is connected to an RS232 interface.

3.2 Status LEDs

There are two status LEDs above the display:

- Left LED is a multicolor LED and color changes depending on the charging status
- Right LED is blue and it is used for indicating the connection status.

The RGB LED on the left side indicates the charging status of the battery pack as follows:

Status	Interval	Meaning
	Flashing, every second for 10ms	Battery is charging
	Solid	Battery is fully charged

The multicolor LEDs are only used when the AWR300 is turned off. When switched on, the battery symbol in the display indicates the charging status.

The blue LED on the right side is only used when the display is turned off. Then it indicates the following operating modes:

Status	Interval	Meaning
	Flashing every 3 seconds	AWR300 is in SD-Card-Mode
	Flashing once a second	AWR300 is in Suspend-Mode (CDC)

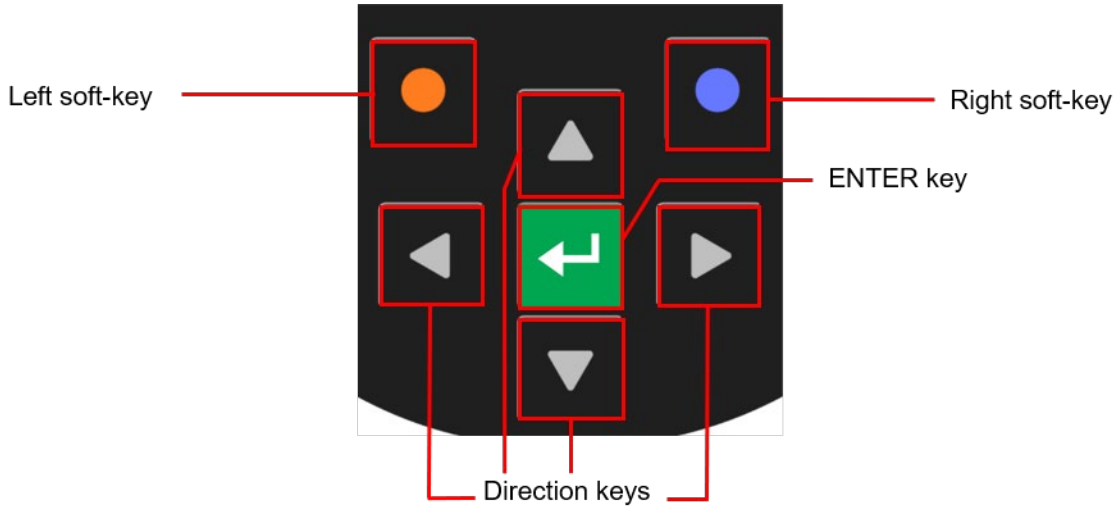
3.3 Multicolored LEDs

The AWR300 has multicolor LEDs at the tip of the reader. They indicate the reading status when the device is pointing in the direction of the transponder and where it might not be possible to look at the readers display.

Color	Interval	Meaning
	Flashing slowly	RF is activated, ready to scan tags
	Flashing fast	Tag has been read the first time (new tag)
	Flashing fast	Tag has been read repeatedly (duplicate)

3.4 Using the Keyboard

The AWR300 has 7 keys to allow easy operation of the reader. The directional pad has an ENTER key in the middle and two additional soft-keys below the display whose functionality is dependent on the current action.



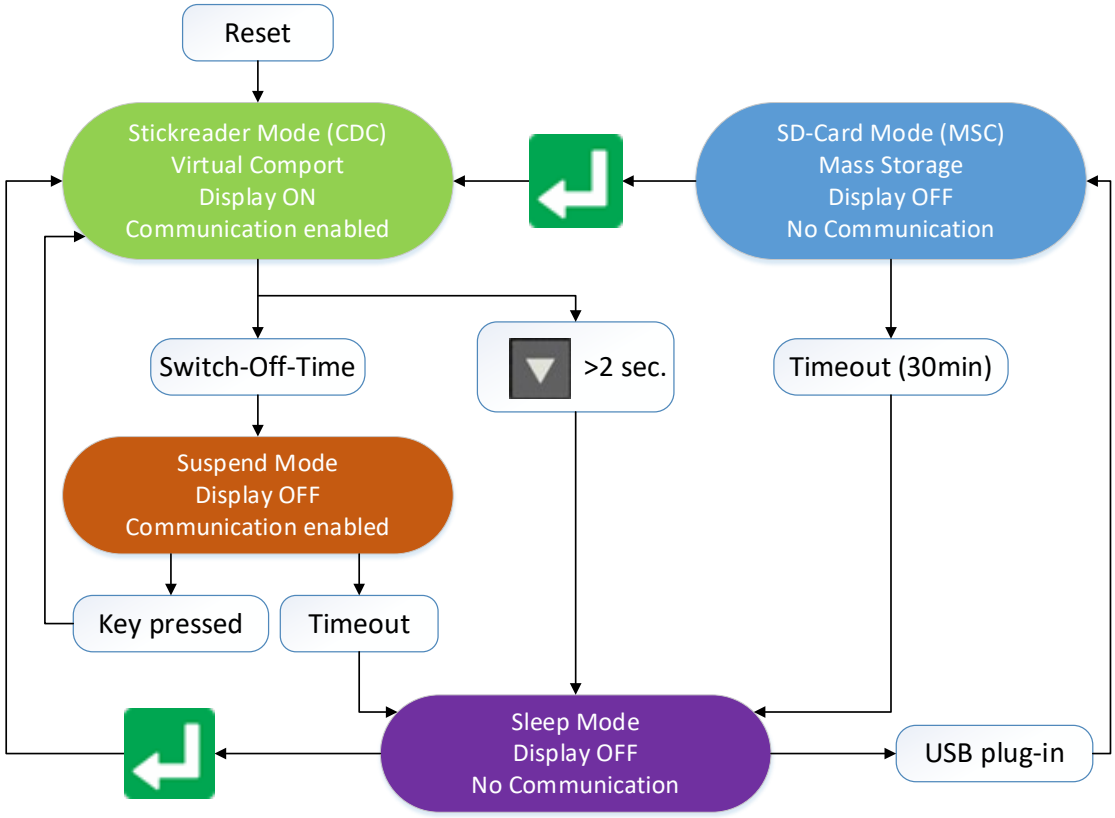
Status	Action
	Opens the menu in the home screen. Moves up one menu level (‘Back’), other functions depend on current operation – the current function is always displayed on the left side in the last display line (above the key).
	From the home screen, executes the configured ‘quick action’. Exits the menu completely and moves back to the home screen. Depending on the actual operation, other functions are shown in the display on the lower right side.
	Switches on the AWR300. Starts a reading attempt from the home screen. Enters menu items and confirms selections there.
	No function in home screen *

	Switches off the AWR300 on a long press (>2 seconds) *
	No function in home screen *
	No function in home screen *

*The directional keys are also used to navigate within menus (up, down, left and right), for scrolling through selection lists and for selecting characters in numeric or text input fields.

4 Operating States

The AWR300 has several operating states related to display status and communication possibilities over USB. The following chart shows the different states.

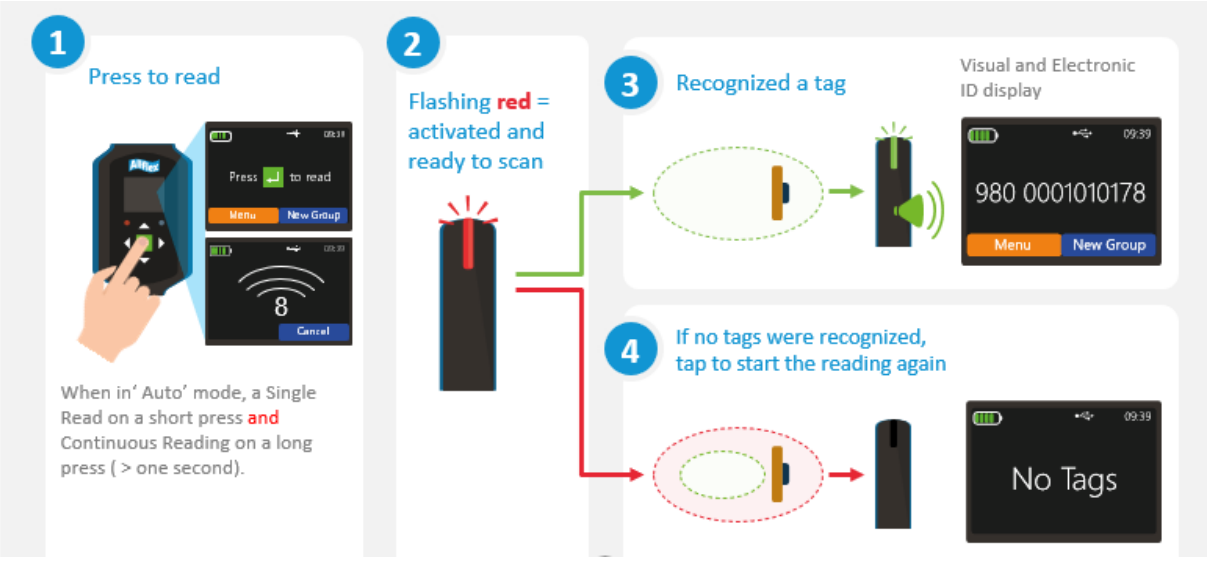


When the reader is switched on and it is connected via USB, it works in CDC mode. This means that a virtual comport is created on the computer and it can send commands to the device via a serial port connection. In this state, the mass storage mode is not activated and files cannot be copied to or from the AWR300.

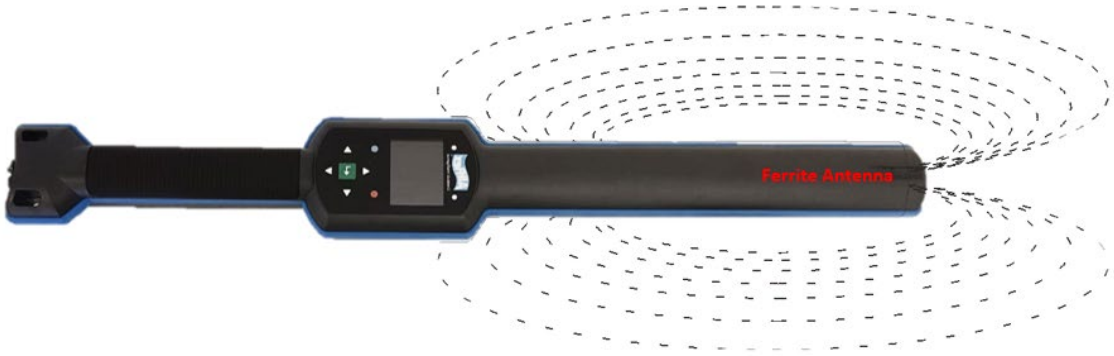
After the configurable switch-off-time (default = 60 seconds) has elapsed, the reader enters suspend mode. The display is switched off but communication is still possible. In this state, the blue LED on the right above the display flashes in cycles of one second. After the switch-off-time has elapsed again, the device enters sleep mode and communication is not possible anymore. When the external power adapter is connected (charging, multicolor LED is flashing red), the device remains in suspend mode and does not enter sleep mode at all.

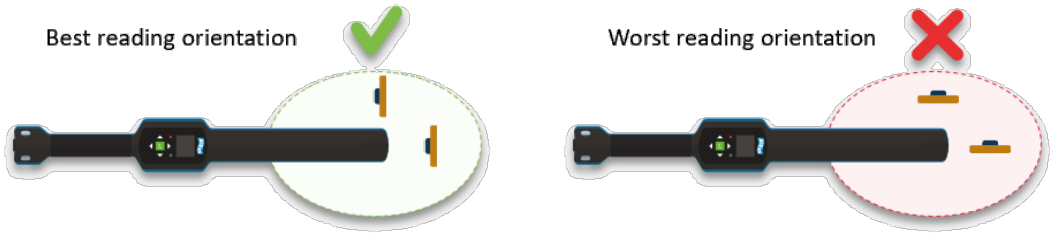
If the AWR300 is connected to USB while it is switched off, the SD-card mode is activated. In this case, the reader is attached to the computer as a mass storage device and file transfer is possible. Once the ↵ key is pressed, the device switches on and uses CDC mode immediately.

5 Reading Transponders

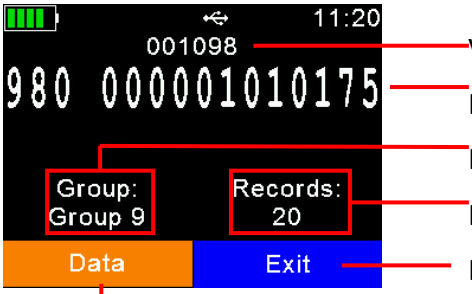


Flux Lines





When a tag is read, the following information displays:



VID – Visual ID

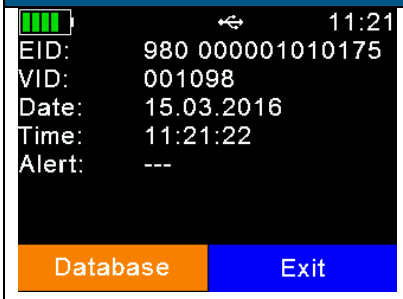
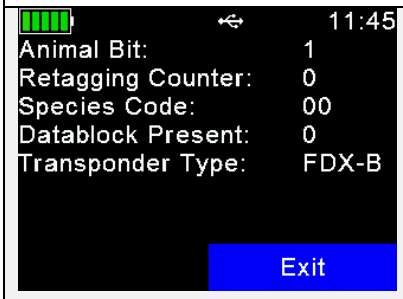
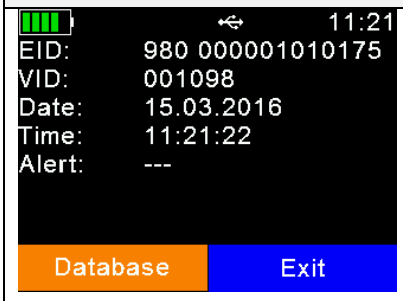
EID – Electronic ID

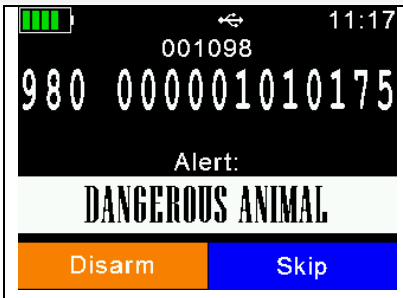
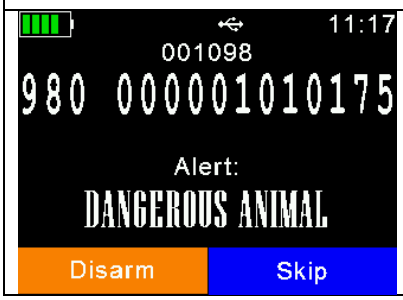
Name of the current group, here: ‘group 9’

Number of records in the current group, here: ‘20’

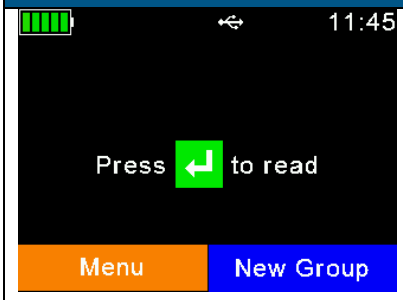
Return to home screen

Show more information

Screen	Details
	This screen displays when Data is pressed. It provides information about the EID, VID (if available), Date and Time of reading and the Alert text (if there is one for this tag).
	This screen displays when ▼ or ▲ is pressed. It indicates the tag type (FDX or HDX) and displays the so called ‘advanced ISO information’. You can move from one screen to the other by pressing any of these keys.
	If a Database-Record is available for this transponder, you can view the Database information by pressing the left soft key.
	This picture shows the Database entries. The fields depend on the definition of the Database. You can also edit fields by selecting them and pressing ↵ if they have been defined for editing in the Database definition. All other fields cannot be selected.

 	If an alert is present for the transponder just read, the alert text is displayed continuously, with the color inverting and an alert sounding. The alert can be disarmed (not shown again after next reading of this tag) or it can be skipped.

6 Menu Items

Screen	Details
	Press ● in the home screen to access the AWR300 menu.
	This screenshot shows the top menu level. It contains the items 'New Group', 'Data', 'Print' and 'Setup'. If another language other than the default one has been selected, the menu items will be different.

Use all seven keys to navigate through the different menus. The directional keys have the following functions:

Screen	Details
	Enters the next submenu or performs particular actions in the lowest menu level
	Moves up one menu item
	Moves down one item
	Jumps to first entry in the current menu
	Jumps to last item in the actual list

With exception of the lowest menu levels, the left (orange) soft key forces the device to move one menu level upwards and the right one (blue) returns the reader to the home screen. In the lowest submenu, the right soft key cancels the action.

6.1 Menu Structure

The following table shows the menu structure for the AWR300, including submenus and options. Options or actions are shown in *italic* and the default values for options are marked with ' * '.

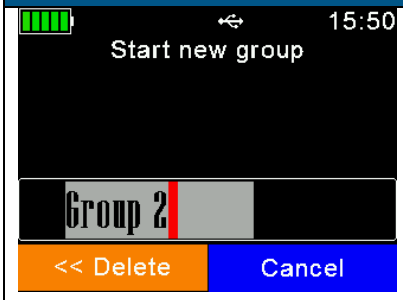
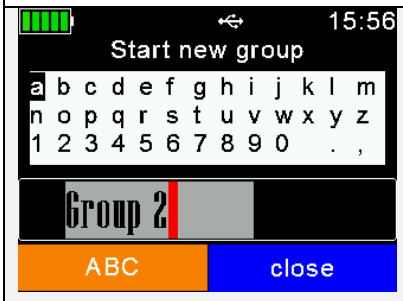
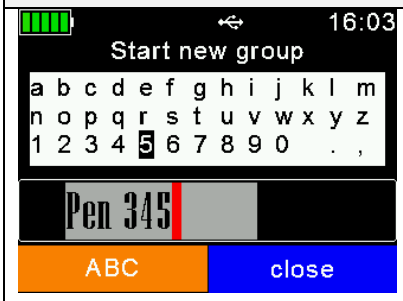
Main Menu	*1st sub menu*	*2nd submenu*	*3rd submenu*	*4th submenu*
New Group	*Start new group*			
Data	Show Data	*Select Group To Show*		
	Clear Data	Clear Groups	*Clear Last Group*	
			Select Group	
			Clear All Groups	
	Memory Info			
Print	*Print Last Group*			
	Select Group			
	Print All Groups			
	Print Barcode			
	Setup Printer	Set Printer Type	*1 - Generic Line Printer*	
			*2- Able Systems AP 1300 **	
			3 - Extech APEX 2	
			4 - Extech APEX 3	
			5 - Extech APEX 4	
			6 - Zebra QL220	
			7 - Zebra QL320	
			8 - Zebra QL420	
			9 - Zebra QLn220	
			10 - Zebra QLn320	
			11 - Zebra QLn420	
			12 - Martel MCP 1880/7880	
		Set Printer Interface	*Bluetooth **	
			RS232	
		Set Printer Baudrate	*115200*	
			57600	
			38400	
			28800	
			19200	
			*9600 **	
			4800	
			2400	
			1200	
			600	
			300	
		Search BT printer		
Setup	Reader Settings	Animal Counter On/Off	*Animal Counter ON*	
			*Animal Counter OFF **	
		Set Read Mode	*Single Read **	
			Continuous Read	
			Auto	
		Set Online Mode	Online Mode On/off	*Online Mode ON **|
				Online Mode OFF
			Set Output Format	*ASCII*
				Byte Structure
				Compact Coding
				Custom Format
				ISO24631
				NLIS
				Raw data
				*Short ASCII 15 **
				Short ASCII 16
				ASCII + SCP
		Wireless Sync On/Off	*Wireless Sync. ON*	
			*No Sync. **	

Main Menu	*1st sub menu*	*2nd submenu*	*3rd submenu*	*4th submenu*
Setup	Reader Settings	Volume & Vibrator	Set Volume	*0% (OFF)*
				20%
				40%
				*60% **
				80%
				100%
			Vibrator On/Off	*Vibrator ON **
				Vibrator OFF
	Display	Set Date/Time	[set values manually]	
		Set Switch Off Time	*60 min*	
			30 min	

			20 min	
			10 min	
			5 min	
			3 min	
			2 min	
			90 sec	
			*60 sec **	
			30 sec	
			20 sec	
			10 sec	
			5 sec	
		Set Display Colors	*Black **	
			White	
		Set language	[depends on uploaded languages]	
	Interface Setup	Set RS232 Baudrate	*115200*	
			57600	
			38400	
			19200	
			*9600 **	
		Setup Scale	Set Scale Type	*1 - Tell **
				2 - Iconix FX15
				3 - TruTest XR3000
				4 - BWT BW(S) & JD-II
				5 - Gallagher
				6 - Dini Argeo DFWLB
				7 - Te Pari Scale
			Set Scale Interface	*Bluetooth **
				RS232
			Set Scale Baudrate	*115200*
				57600
				38400
				28800
				19200
				*9600 **
				4800
				2400
				1200
				600
				300
		Setup Printer	[same as printer setup on the previous page]	
		Bluetooth	Set Bluetooth Mode	*Master Mode*
				Slave Mode
				*Bluetooth OFF **
			Start BT Inquiry	
			BT Device History	
			Set BT Profile	*SPP **
				HID
				BLE
				HID Smart
			Set BT Passkey	[default = '1234']
			Show Bluetooth Info	
		WLAN	Set WLAN Mode	*Station*
				Access Point
				*WLAN OFF **
			Set WLAN Protocol	*UDP **
				TCP Server
				TCP Client
			Show WLAN Info	

6.2 New Group

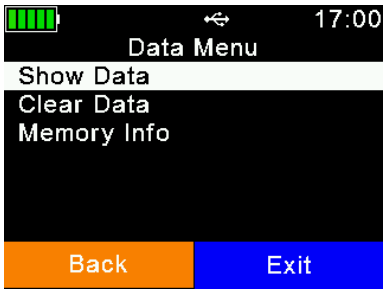
Records in the AWR300 memory are organized in groups. One group can contain up to 10,000 records. A new record is created for every transponder that is read. If you do not wish to create new records for duplicate reads, enable the '*Animal Counter*' so that duplicate records are not saved in the same group.

Screen	Details
	After selecting 'New Group', you are prompted to enter a group name. You can accept the suggested name by pressing ↵ or delete it by pressing the left soft key character by character. A long press removes all digits in one step. Press ▲ or ▼ to open a soft keyboard.
	Use the ↵ key to navigate around the keyboard to enter the group name. Press the left soft key to switch keyboard content (capitals & special characters).
	When you have entered the group name, press the right soft key (here: 'close') to exit the soft keyboard. Check and confirm the name by pressing ↵. All transponders read from now are saved in this group (max. 10.000).

If no group has been created manually before the first transponder is read, the device inserts a group with the default name '*Group 1*' automatically. If you want to change the name of the first group., you must create a group **before** scanning for transponders.

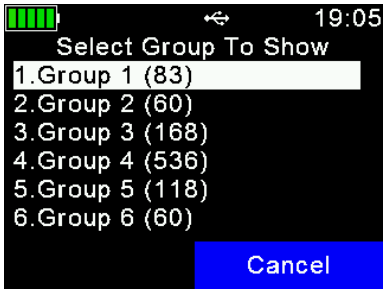
When a group reaches 10,000 records, the device forces you to create a new group, even if groups are not required for a particular application.

6.3 Data

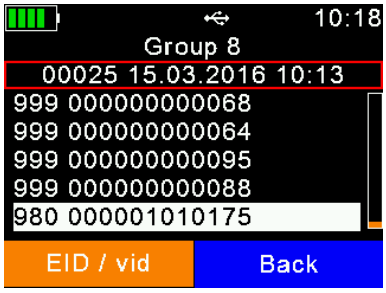
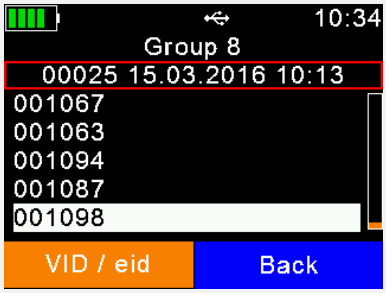
Screen	Details
	The 'Data' menu contains items for showing and deleting data.

6.3.1 Show Data

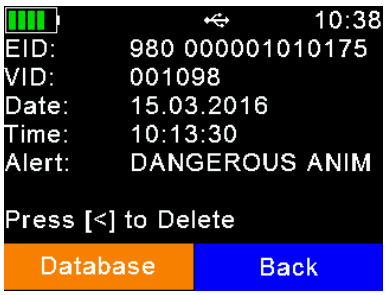
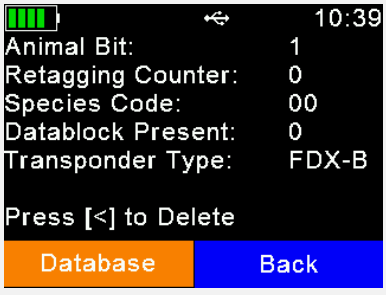
The device displays a list of all current groups. Each entry shows the group name and the number of records within the group in brackets.

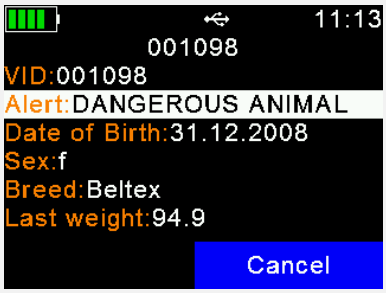
Screen	Details
	… One group down … One group up … Scroll down 6 groups … Scroll up 6 groups … Select group

When a group is selected, it is opened and all records in the group display. The first display line shows the group name, here: '*Group 8*'. The second line shows the record number (within the current group) and date and time of reading for the selected record. A scroll bar on the right side shows the approximate position of the selected record in this group (here it is the last record).

Screen	Details
	▼ … One record down ▲ … One record up ▶ … Scroll down 50 records ◀ … Scroll up 50 records ↵ … Select record ● … Switch between EID and VID view
	This example shows the same list but instead of the EID, the VID is shown. This is applicable only if VIDs are available on the device, i.e. a Linklist has to be uploaded. If there is no VID available for particular records, the EIDs are shown.

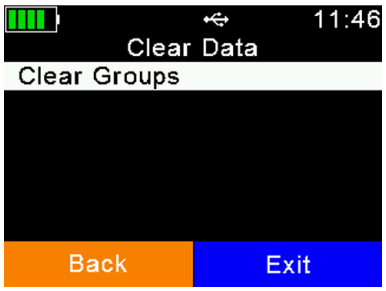
To show detailed information for a particular record, select an entry from the list and confirm with ↵. The details of the record are shown on two pages.

Screen	Details
	The first page shows the EID, the VID, date and time of reading and the alert string, if there is one assigned. ▼ / ▲ / ▶ … Switch to next page ◀ … Delete record (only last record in last group) ↵ / ● … Return to list of records
	Page two shows the 'advanced ISO information' such as Animal Bit, Retagging Counter or Species Code. The transponder type (FDX-B or HDX) is shown as well. Press ● to open the appropriate Database record. If there is no Database entry available for this record, then Database does not display.

	You can also edit fields by selecting them and pressing ↵, if they are allowed to be editable in the Database definition. Non-editable fields are not selectable at all. ◀ / ▶ … Switch to next page ▼ / ▲ … Select next / previous (editable) Database field ↵ … open Database field (if defined to be editable).
	Example for a 2nd Database page ◀ / ▶ … Switch to next page ▼ / ▲ … Select next / previous (editable) Database field ↵ … open Database field (if defined to be editable)

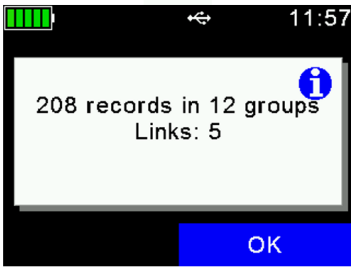
6.3.2 Clear Data

You can delete data from the AWR300. There are various ways to delete data, depending on how that data was collected. The standard records are saved in groups. These are the records that have been saved after the transponder reading starts from the home screen

Screen	Details
	After selecting 'Clear Data', two submenus are shown: • **Clear Groups**: refers to records made in groups
	• **Clear Last Groups**: Erases the last group completely • **Select Group**: opens the list of groups to select a particular group to delete • **Clear All Groups**: Erases ALL groups from the device memory

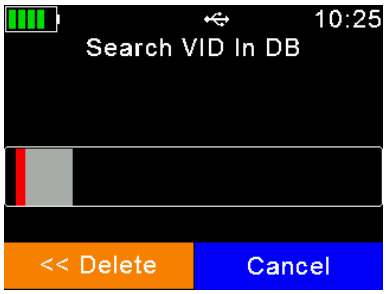
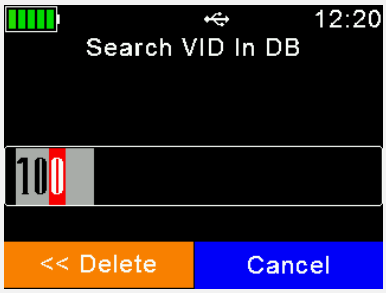
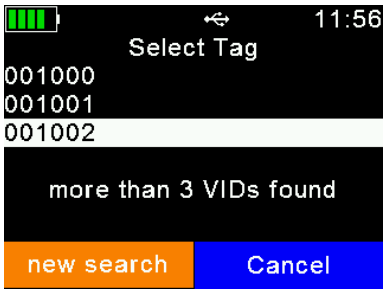
Data that is deleted is removed permanently. The action cannot be reversed. Before deleting, make sure you back up the data first.

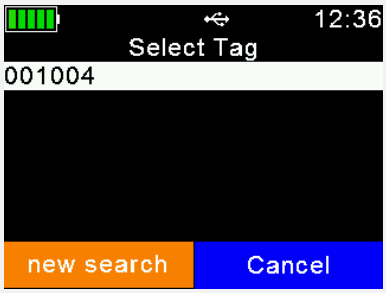
6.3.3 Memory Info

Screen	Details
	This menu item shows information about the amount of collected data (number of records in number of groups), the number of entries in the uploaded Link list.

6.3.4 Search Database using VID

It is possible to search entries in the uploaded database by entering the VID. This is useful if the transponder is lost or defective. But usually scanning the transponder is the faster way and more convenient. Note that this menu item is only shown if a database has been uploaded to the device.

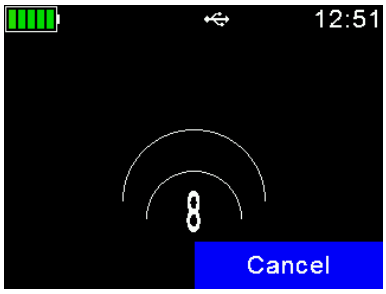
Screen	Details
	Use the ▼ / ▲ keys in order to change the character and the ◀ / ▶ keys to move to the previous / next digit. When browsing through the list of characters, you can hold the ▼ or ▲ key in order to increase the scrolling speed. Press ● in order to leave the VID search.
	Press the ↵ key when enough digits have been entered. The ● key deletes the last digit, if you hold it for one second, all digits will be erased.
	In this example, the device has found more than three matching database entries. Press ● to narrow the search by entering more digits.

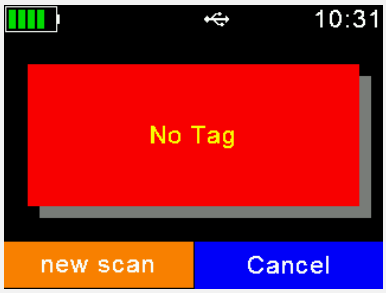
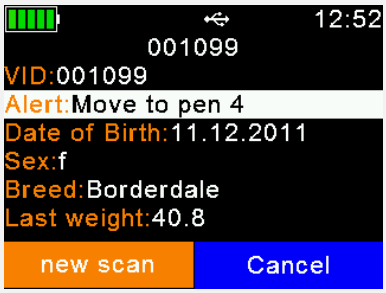
	Now there is only one matching item left. Press the ↵ key in order to access the database for this entry.
	The database entry for the selected VID. You can move to the previous / next (editable) field by using the ▼ / ▲ keys and switch between the different pages via ◄ or ►. The ↵ key enables modifying the data, if the field is configured to allow editing.

Non-editable fields are only shown but cannot be selected nor modified. In this case, the Database 'creator' did not want to allow editing this information.

6.3.5 Search Database using EID

This menu item searches the Database for a matching entry on the basis of the electronic ID. As soon as the transponder is read, the AWR300 starts looking up this number in the database. Note that this menu item is only visible if a database has been uploaded.

Screen	Details
	The AWR300 starts scanning for a transponder for a maximum of 10 seconds. The remaining scanning time in seconds is shown.

	If the timeout has elapsed without a successful detection of a tag, 'No Tag' is displayed. • Use the key to start a new scan. • Use to abort the EID search.
	If the transponder was read but there is no match in the Database, 'Not in database' is shown.
	As soon as a tag has been read AND there is a match in the Database, the entry is shown. You can move to the previous / next (editable) field by using the / keys and switch between the different pages via or . The key enables modifying the data, if the field is configured to allow editing.

Non-editable fields are only shown but cannot be selected nor modified. The difference from scanning for tags from the home screen is that no record is created here. This is just for searching the database.

6.4 Print

You can send the collected records from the AWR300 to a mobile Bluetooth printer. Printing options include:

- Printing the last group
- Printing a specific group
- Printing all groups

It is also possible to change basic printer settings here.

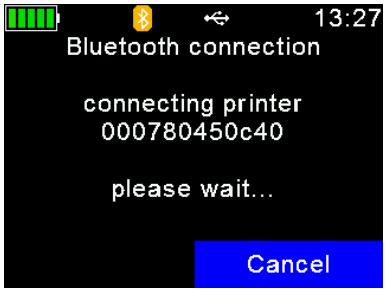
Ensure that your printer is set up correctly before trying to print records.

The AWR300 stores the printer's Bluetooth address as a secondary address only. When there are no print jobs, the AWR300 attempts to connect to its primary Bluetooth partner, such as a computer, smartphone, PDA or weighing indicator in Master Mode. When a print job begins, the reader drops the connection to the primary device and tries to connect to the configured Bluetooth printer.

After exiting the Print menu, the connection to the printer is lost and the AWR300 tries to re-connect to the configured primary Bluetooth partner again (if in Master Mode). This means that the user does not need to select a different Bluetooth device just for printing.

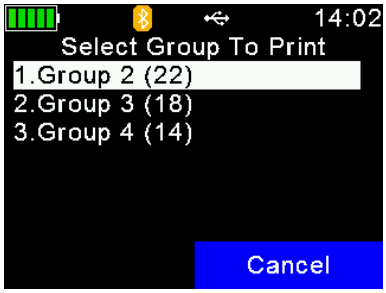
6.4.1 Print Last Group

Once selected, the AWR300 tries to connect to the configured printer. If connected, this connection remains active until the '*Print*' menu is closed.

Screen	Details
	The screen shows the reader is trying to connect to the Bluetooth printer. When the connection is established, printing starts immediately. If there is a lot of data to be printed, a progress bar is visible. The AWR300 returns to the printer menu afterwards.

6.4.2 Select Group

You can select a specific group to print the data, rather than the last one or all groups.

Screen	Details
	Select the group to be sent to the printer using the ▼ / ▲ keys and confirm with ↵. If the Bluetooth connection has not been established yet, the AWR300 tries to connect to the mobile printer. If the connection to the printer is established, printing will start right away.

When printing is finished, the reader returns to the screen shown above.

6.4.3 Print All Groups

You can select to print all the memory content,. The procedure is similar to '*Print Last Group*'. No further selections are required.

6.4.4 Print Barcode

It is also possible to print the barcode of a particular EID. This is useful if you want to label blood samples, for example. To be able to print the EID as a barcode, the AWR300 has to read the transponder first. When you select '*Print Barcode*', the device activates the RFID engine. After the tag has been read, the AWR300 sends an appropriate command to the mobile printer.

Screen	Details
	The barcode type is '2of5 interleaved'. Other barcode types are not currently supported.

6.4.5 Printer Setup

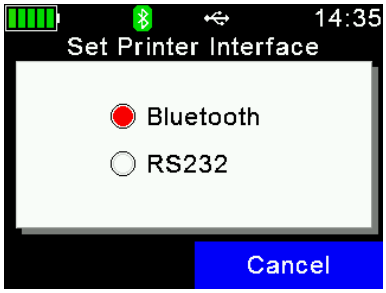
To set up the printer, select the correct model first. If this setting is incorrect, the printer feature will not work. All other additional options are software configurable. For example, AWR-PC-Demo can be used for configuring all possible printer options.

6.4.5.1 Set Printer Type

The AWR300 Firmware supports various printer types, such as the Able Systems 'AP1300', the Datamax-O'Neil 'Apex' series (former Extech Apex), the Zebra QL-series and QLn-series and the Martel 'MCP 1880/7880'. The type '*Generic Line Printer*' might work for particular printers as well, but there are no special control codes sent for this printer type – so it can only work for simple ASCII printers.

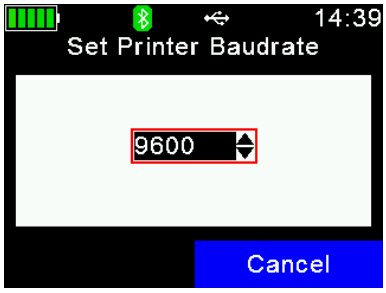
Use the directional keys to select the correct printer type from the list and confirm by pressing the ↵ key.

6.4.5.2 Set Printer Interface

Screen	Details
	Select the interface using the ▼ / ▲ / ◀ / ▶ keys and confirm with ↵.

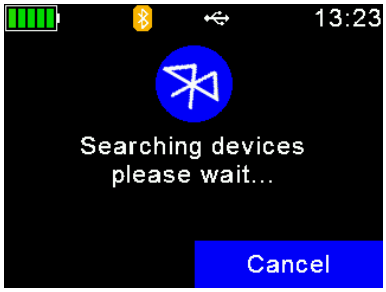
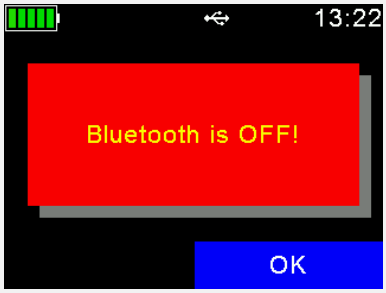
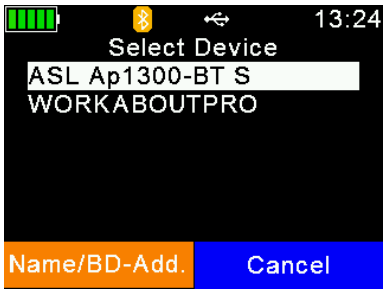
6.4.5.3 Set Printer Baud Rate

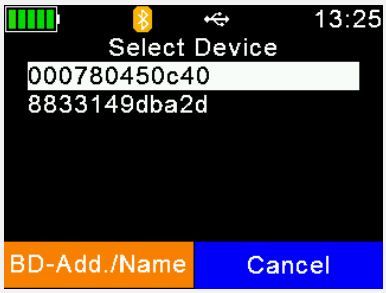
If the baud rate the printer is using differs from the configured printer baud rate on the AWR300, this might cause communication issues when using Bluetooth as the printer interface. For an RS232 connection, the communication will not work at all if the baud rates do not match. So, they must always be configured to the same values on both devices.

Screen	Details
	Select the correct baud rate using the ▼ / ▲ keys and confirm with ↵. Baud rates from 300bps to 115200bps are possible in particular steps.

6.4.5.4 Search BT Printer

Before you can start printing via Bluetooth, the AWR300 must be paired with a printer. The reader scans for available Bluetooth devices first. The scan starts when this menu item is selected.

Screen	Details
	Depending on how many devices are present, the scan can take a while, but at least 10 seconds.
	If Bluetooth is switched off, the AWR300 shows the corresponding error message. In this case, activate Bluetooth first (see chapter 6.6.3.3).
	After the scan has completed, the available devices are listed. Note that not only printers are listed here, but other Bluetooth devices also. Ideally, you should know the name of your Bluetooth printer. Sometimes it might be useful to see the BD-address of the found devices instead of the names. You may switch between both views by using the ● key.

	A list of discovered devices with their BD-addresses instead of the device names displays. In some cases, the BD-address can be found somewhere on a label of a Bluetooth device. Since this address is unique, it can quickly help to identify the correct device.

Choose a device from the list and select it by pressing ↵. The AWR300 stores this device as the Bluetooth printer and attempts to connect to it for all scheduled print jobs until a different device is selected.

6.5 Setup

The AWR300 is very flexible concerning its configuration. Several settings can be adjusted directly in the device menu. Special settings cannot be modified on the AWR300 itself but they are software-adjustable only.

A possible software for altering AWR300 settings is AWR-PC-Demo. But generally Allflex strongly recommends the use of professional management software since the Allflex provided software is just meant to be used for configuration and demonstration purposes.

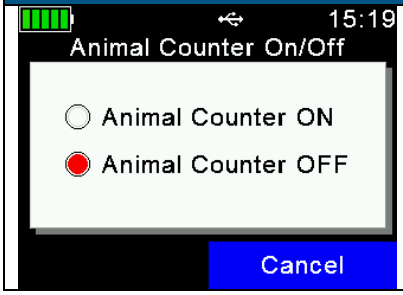
The Setup menu is divided into several other menus and submenus. See chapter **Error! Reference source not found.**6.1 for an overview of the complete menu structure.

6.5.1 Reader Settings

6.5.1.1 Animal Counter On/Off

The animal counter is used to determine if double-reads have been saved or not. A double-read occurs if a tag with the same EID is read within the same group twice:

- If activated, an EID is not stored twice in the same group
- If deactivated, an EID can be stored twice in the same group. Deactivation enables double read of an EID.

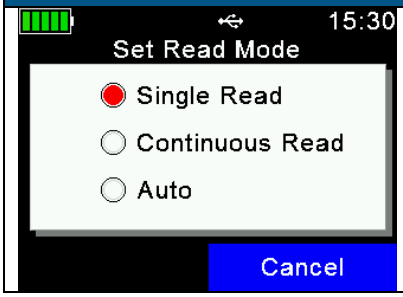
Screen	Details
	Decide whether the Animal Counter should be activated or not using the ▼ / ▲ / ◀ / ▶ keys and confirm with ↵.

	The display also looks different after reading a transponder, depending on how this setting is configured: When the Animal Counter is not activated, the current group and the number of records in this group is shown but the records can also include duplicate EIDs.
	When the Animal Counter is activated, the display shows 'Animals' instead of 'Records' – duplicates are not possible here.

6.5.1.2 Set Read Mode

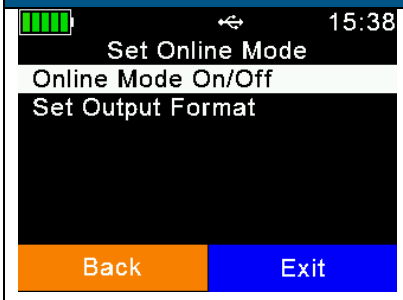
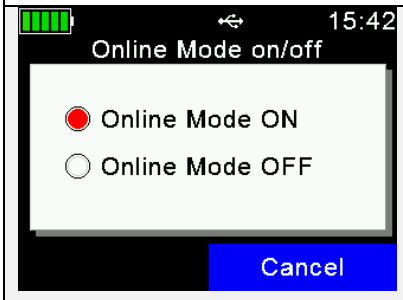
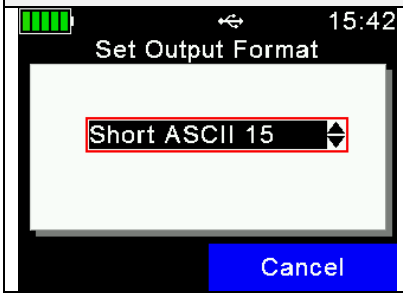
By default, the AWR300 is configured to '*Single Read*'. This means that RFID is activated until a transponder has been detected or the '*Single Read Time*' (default = 10 seconds) has elapsed. The ↵ key has to be pressed to scan for tags again.

The AWR300 also allows using the '*Continuous Read*' mode. The RFID engine will not be de-activated after a tag has been read. It continues scanning until the '*Continuous Read Time*' (default = 60 seconds) has elapsed. Every new tag read resets this timeout.

Screen	Details
	Select the Read Mode using the ▼ / ▲ / ◄ / ► keys and confirm with ↵. The 'Auto' setting starts a Single Read on a short press of ↵ and Continuous Read on a long press (> one second).

6.5.1.3 Set Online Mode

The Online Mode deals with the format used for sending the EID to the interfaces directly after a tag has been read. The interface can be USB or Bluetooth. Usually the EID is further processed on a third-party device such as a weighing indicator or a smartphone. It is important to know which format is expected by this other device and to configure the correct one.

Screen	Details
	After selecting 'Set Online Mode', a new menu appears. The first menu item enables activating or deactivating the Online Mode completely. The second determines the format used for sending the EID.
	The Online Mode is switched on by default. When switched off, the AWR300 will not send the EID to the interfaces after reading a tag! It is not recommended to disable it unless absolutely required. Select the desired setting using the ▼ / ▲ / ◄ / ► keys and confirm with ↵.
	Select the correct output format via ▼ or ▲ and confirm with ↵.

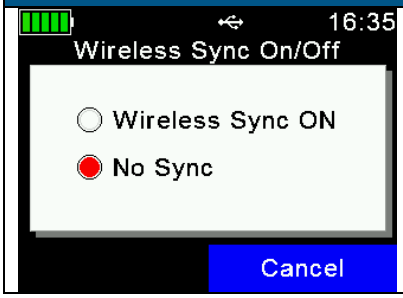
The default output format is '*Short ASCII 15*'. This sends the 3-digit country code directly followed by the 12-digit national ID (no space in between), terminated with <CR><LF>. This format is quite common and accepted by most weighing indicators on the market. A detailed explanation of the AWR300 output formats can be found in the separate document '*AWR300_Output-Formats_…*'.

6.5.1.4 Wireless Sync On/Off

ISO11784/11785 RFID readers have activation and listening periods. If two or more readers operate in close vicinity, they must be synchronized to prevent interference and hence a reduction of reading performance, especially for HDX transponders.

Since it is not possible to synchronize mobile readers wired in the field, Allflex readers offer a feature called '*Wireless Synchronization*'. This function enables mobile devices to operate close to stationary readers without interfering with them. In addition, several mobile readers can synchronize wirelessly.

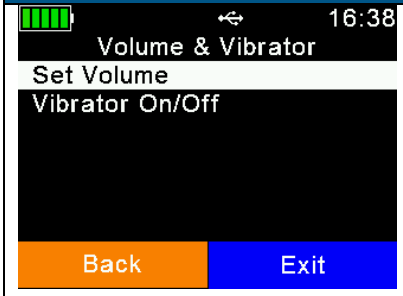
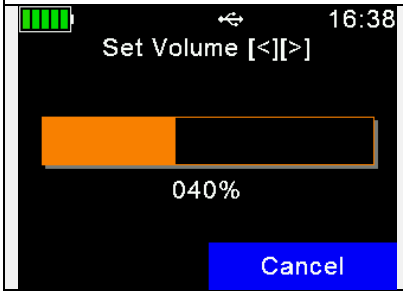
If you have other ISO11784/11785 readers operating close to the AWR300, it is highly recommended to activate this function.

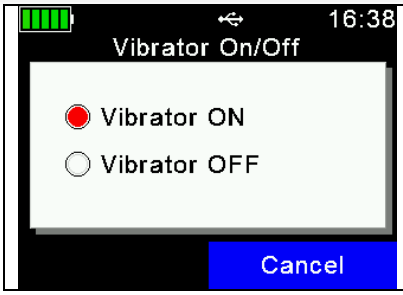
Screen	Details
	Select the desired setting using the ▼ / ▲ / ◀ / ▶ keys and confirm with ↵.

If stationary readers are used, the Wireless Synchronization works best when all the equipment is Allflex. This is because **Allflex S**tationary **R**eaders (ASR) also offer Wireless Synchronization and fixed timings, which allow for the best possible performance for wirelessly synchronized mobile readers.

6.5.1.5 Volume and Vibrator

The AWR300 provides a speaker and a vibrating handle for alerts, in addition to the LEDs and the display. These can be configured in this menu:

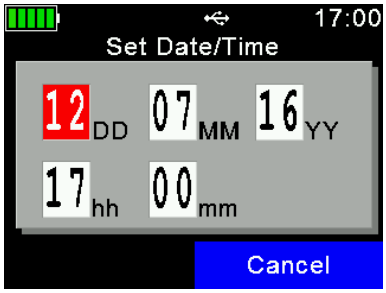
Screen	Details
	After selecting 'Volume & Vibrator', a new menu is shown. • The first menu item sets the speaker volume. • The second is used to activate the vibrating motor in the handle or to deactivate it.
	Select the desired volume by using the ◀ / ▶ keys. Each time a key is pressed, a sound is played to indicate the currently selected volume. Confirm the selected volume with ↵.

	Select the desired setting via ▼ or ▲ and confirm with ↵.

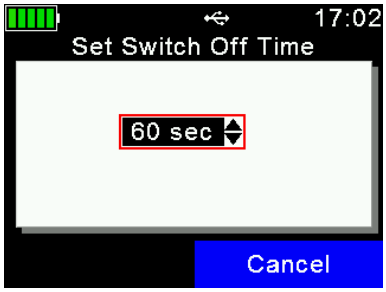
6.5.2 Display

Screen	Details
	The Display menu contains the items shown on the left side. Use the ▼ / ▲ / ◄ / ► keys to select a setting and enter the item via ↵.

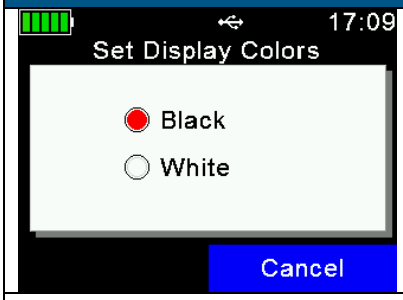
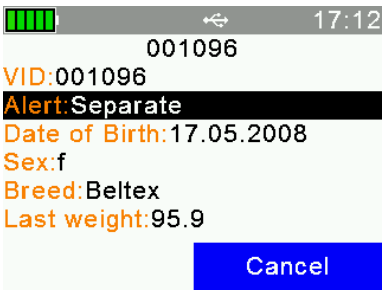
6.5.2.1 Set Date and Time

Screen	Details
	• DD … Date – Day MM … Date - Month • YY … Date - Year hh … Time - Hour • mm … Time - Minute • ▼ / ▲ … Modify value in the current field • ◄ / ► … Switch to previous / next field • ↵ … Apply the new settings

6.5.2.2 Set Switch Off Time

Screen	Details
	The 'Switch Off Time' determines after which period (of no action) the AWR300 enters suspend mode. Any action, like a key press, will reset this timer. See Chapter 4 for further details. The maximum possible time is 60 minutes, but keep in mind that this reduces the operating time. time. ▼ / ▲ … Modify the Switch Off Time ↵ … Apply the new setting

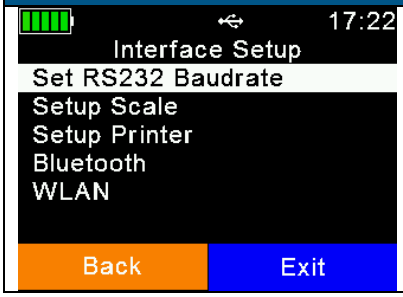
6.5.2.3 Set Display Colors

Screen	Details
	Depending on the light conditions, it may be necessary to invert the background color. It can also be a question of user preference. That can be done within this menu item. ▼ / ▲ / ◀ / ▶ … Change the setting ↵ … Apply the setting
	

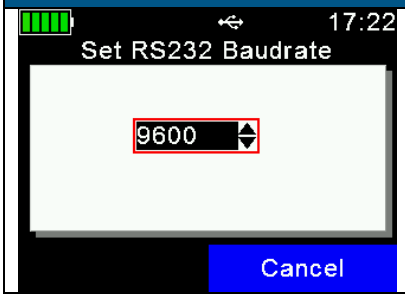
6.5.2.4 Set Language

Screen	Details
	The default display language is always English. It is possible to upload up to 9 custom languages. Please contact your local distributor for further details. ▼ / ▲ … Select the desired language ↵ … Set the selected language

6.5.3 Interface Setup

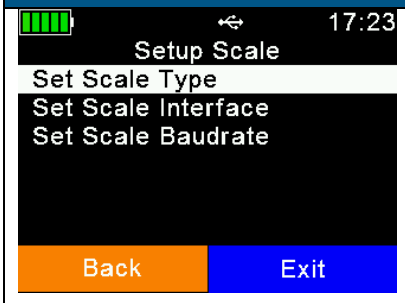
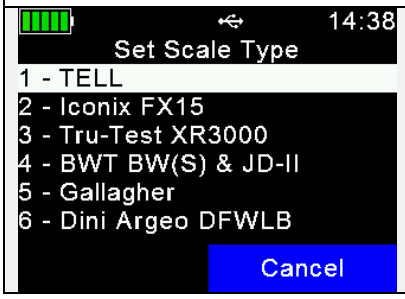
Screen	Details
	The Interface Setup contains several interfaces, such as RS232, Bluetooth or WLAN (optional). If your device does not incorporate the Wi-Fi option, the item ‘WLAN’ is not shown.

6.5.3.1 Set RS232 Baud Rate

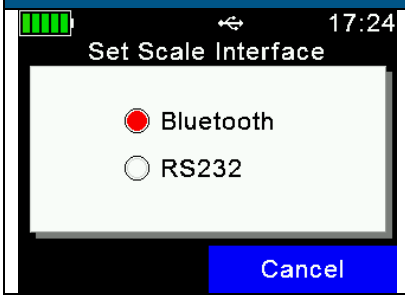
Screen	Details
	To allow devices to communicate via RS232, the connection speed (→ baud rate) must be the same on both devices. The default value of '9600' is common, but quite slow. Values of up to '115200' are possible. ▼ / ▲ … Change the baud rate ↵ … Set the new value

6.5.3.2 Setup Scale

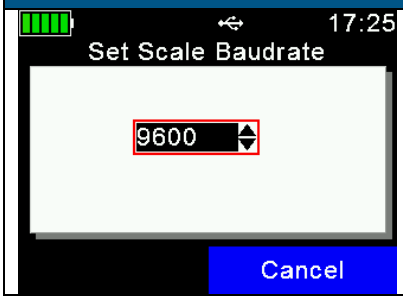
The AWR300 is able to receive the weight from indicators that can send it via Bluetooth. There are different scale types supported, including some major brands on the market. This function can only be used for *Task-Mode*, where the '*Weight-from-Scale*' field is available.

Screen	Details
	The scale type, the interface and the scale baud rate must be configured correctly to allow this feature to work.
	Choose the correct type depending on the model you have. ▼ / ▲ / ◀ / ▶ … Select the scale type ↵ … Apply the setting

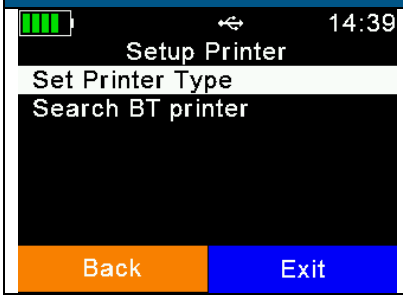
The AWR300 always includes a Bluetooth module and if the scale has Bluetooth built in as well, so using an RS232 cable connection is not necessary. Scales without integrated Bluetooth can be upgraded using an external adapter. Contact your local distributor for further details. However, RS232 is also supported by the AWR300 but in this case you will need the optional RS232 cable 'APC310' (p/n 4061). An adapter might be necessary additionally, depending on your weighing indicator.

Screen	Details
	Select the interface using the ▼ / ▲ / ◀ / ▶ keys and confirm with ↵.

If the baud rate of the scale differs from the configured scale baud rate on the AWR300, this might cause communication issues when using Bluetooth as the scale interface. For an RS232 connection, the communication will not work if the baud rates do not match. They must be configured to the same values on both devices.

Screen	Details
	Select the correct baud rate using the ▼ / ▲ keys and confirm with ↵. Baud rates from 300bps to 115200bps are possible in particular steps.

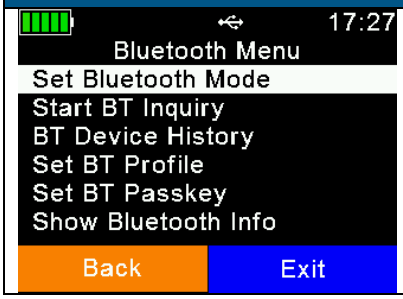
6.5.3.3 Setup Printer

Screen	Details
	The printer setup is the same as described in Chapter 6.5.5, This is another menu entry for configuring the same settings.

6.5.3.4 Bluetooth

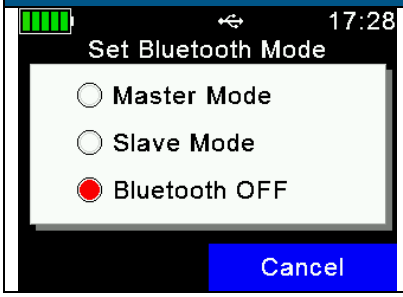
The AWR300 incorporates a Class1 Bluetooth module. The range is up to 80 meters in 'line of sight'. When inside buildings or when any other obstacles are present, the range is lower. Note that the range also depends on the Bluetooth partner. If the other device is only Class2, the range is much lower. This applies particularly to devices like smart phones.

The Bluetooth menus and configuration are explained here.

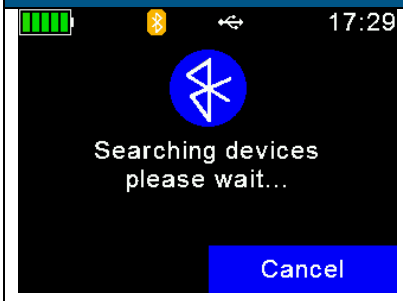
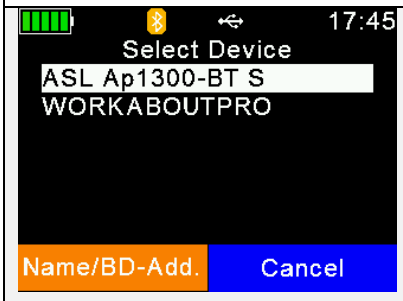
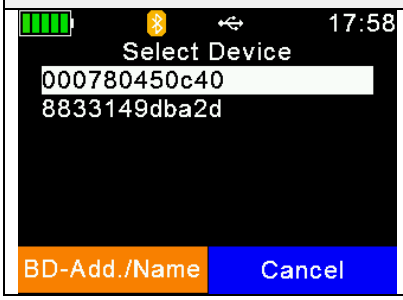
Screen	Details
	▼ / ▲ … One item down / up ◀ / ▶ … Switch to first / last item ↵ … Enter submenu resp. start action (BT Inquiry)

6.5.3.4.1 Bluetooth Mode

The Bluetooth Mode determines if the AWR300 can initiate the connection to another device (Master Mode) or if other devices can connect to the AWR300. By default, Bluetooth is not activated (OFF), so it must be switched on first. Then you need to decide whether the AWR300 should be the device initiating the connection (Master) or the other device (Slave).

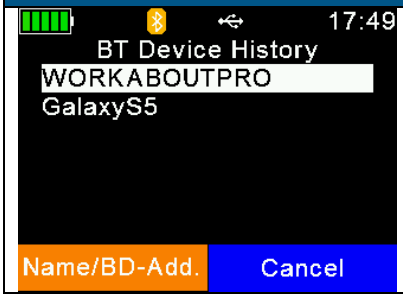
Screen	Details
	Select the desired Bluetooth Mode using the ▼ / ▲ / ◀ / ▶ keys and confirm with ↵.

When the AWR300 is in Master Mode, it needs to know the address of the intended Bluetooth partner, also called 'remote device'. An easy way to find out this address is to scan for Bluetooth devices in range. Make sure the other device has Bluetooth activated and is 'discoverable' and 'connectable' and in range. For smart phones, for example, it is normally required to make them discoverable first, usually for a particular time. This can be done in the phones Bluetooth settings. If this has been done, select '*Start BT Inquiry*' and press ↵.

Screen	Details
	The AWR300 starts scanning for other Bluetooth devices in range. This can take at least 10 seconds, depending on how many devices are found.
	The discovered devices are listed after the scan, sorted according to their names. To see the BD-address of the devices found instead of the names, you can switch between views by using the ● key.
	Here you can see the list of discovered devices with their BD-addresses rather than the device names. Very often, the BD-address is somewhere on a label of a Bluetooth device. Since this address is unique, it can help to identify the correct device quickly.

Choose a device from the list and select it by pressing ↵. The AWR300 stores this device as the Bluetooth partner and attempts to connect to it automatically and permanently, if the reader is configured to Master Mode.

It is not recommended to have too many Bluetooth devices connected to the AWR300. To prevent unnecessary scans when switching from one Bluetooth partner to another one, the reader stores a '*Bluetooth Device History*'. This list includes the devices, which were selected as Bluetooth partner in the past. So scanning for already known devices is not required.

Screen	Details
	Choose a device from the history to change the Bluetooth partner. The AWR300 then uses this device as remote device until further changes. ▼ / ▲ … Select a device from the history ↵ … Set the device as the new remote device

The AWR300 supports four different Bluetooth profiles:

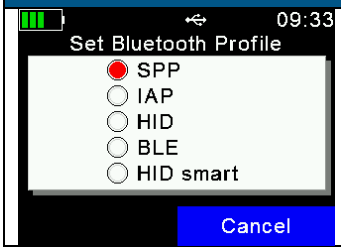
Serial Port Profile (*SPP)* emulates a serial cable to provide a simple replacement for RS232 connections. Commands can be sent into both directions – it uses virtual serial ports.

iPOD Accessory Protocol Profile (iAP): Allows serial communication with the iOS devices

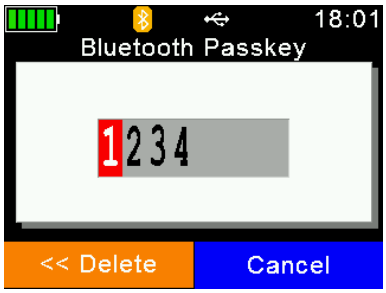
Human Interface Device (HID) is used for 'typing in' the EID sent via Bluetooth into text fields of applications running on the host device. This removes the need to develop a serial interface for the reader. The AWR300 is connected to the host as a 'virtual keyboard'. When the cursor is in a text field in the app running on the host, the EID is entered in this field after a transponder has been read. Note that it is not possible to send commands to the AWR300 in HID mode – communication only works into one direction.

HID smart: This is the same as HID but the connection to the other device is only established after a transponder has been read. This is required for the use with Apple devices because if a Bluetooth device is connected as HID keyboard, the on-screen keyboard is not available.

Bluetooth Low Energy (*BLE)* is currently reserved for special applications.

Screen	Details
	Choose the desired Profile using the ▼ / ▲ / ◀ / ▶ keys and confirm with ↵.

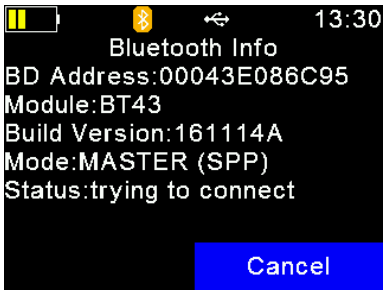
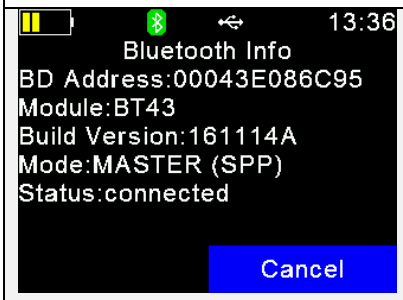
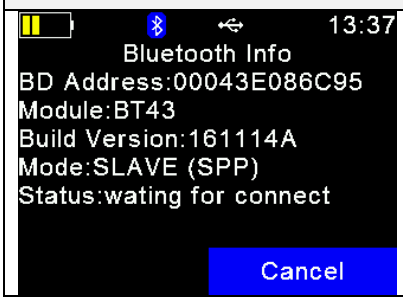
The AWR300 itself does not need a passkey. However, if other Bluetooth devices use a higher security level and they require one, the passkeys on both devices must match to establish a connection.

Screen	Details
	Use the ▼ / ▲ keys to change the character and the ◀ / ▶ keys to move to the previous / next digit. When browsing through the list of characters, you can hold down the ▼ or ▲ key in order to increase the scrolling speed. The ● key deletes the last digit. If you hold it for at least one second, all digits will be erased. Press the ↵ key to set the passkey.

The menu item '*Bluetooth Info*' shows:

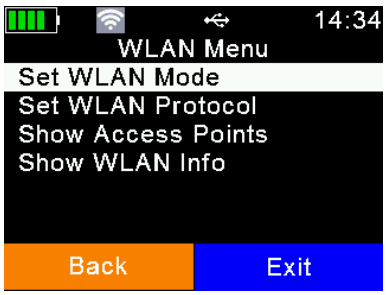
- Bluetooth hardware and firmware related information
- The configured Bluetooth Mode & Profile
- The connection status

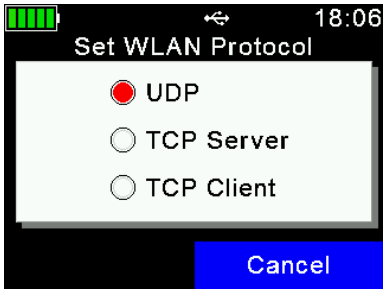
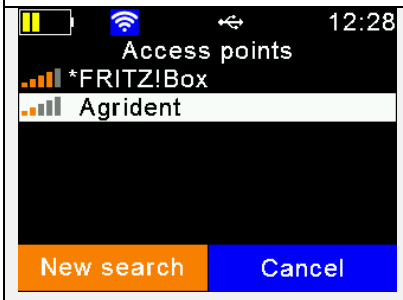
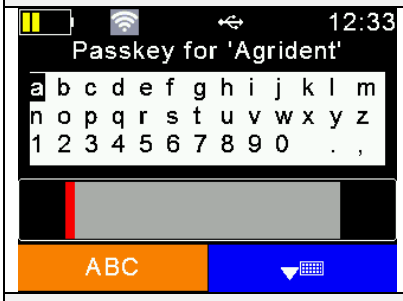
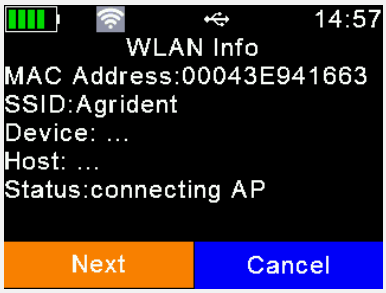
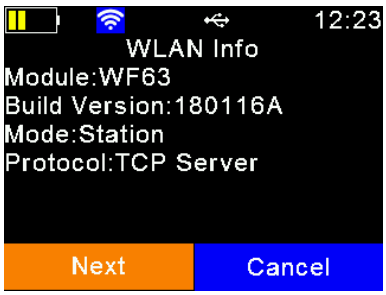
Details concerning the color of the Bluetooth symbol depending on the connection status are explained in Chapter **Error! Reference source not found.**3.1.2.3.

Screen	Details
	• **BD Address**: Bluetooth Device Address of the AWR300s Bluetooth module, unique worldwide. • **Module**: Bluetooth model, built into the reader; here: 'BT43'. • **Build Version**: AWR300s Bluetooth module Firmware version • **Mode**: Bluetooth Mode plus Bluetooth Profile in brackets. • **Status**: Connection Status, here: tries to connect to remote device.
	In this case, the AWR300 is connected to the remote device. If the connection is lost, the reader attempts to reconnect to the configured Bluetooth partner until it successful. This is done automatically.
	Here the AWR300 is configured to be the Bluetooth Slave. It is discoverable by other devices and it is connectable. The reader does not try to connect to a remote device in this configuration, but waits for incoming connections.

6.5.3.5 WLAN

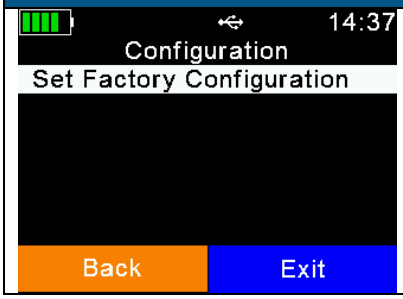
The WLAN menu is only visible if the AWR300 contains a Wi-Fi module. In the standard item, WLAN is not shown.

Screen	Details
	The WLAN settings available on the device itself are only basic ones. Showing all possible settings would make the menu too complex, so the advanced settings are only software configurable – e.g. via AWR-PC-Demo. It is not necessary to modify these settings repeatedly – an initial configuration is normally enough if the IT infrastructure remains the same.
	WLAN is not activated per factory default settings. Before it can be used, it has to be switched on. There are two operating modes: **Station**: This is the most common scenario where an existing Wi-Fi infrastructure contains an Access Point that the reader connects to. The Access Point has an SSID (Service Set Identifier) which makes it discoverable and connectable. The SSID has to be configured correctly via software (such as AWR-PC-Demo) and it must match the SSID used by the Access Point. Usually WLAN connections use security mechanisms such as 'authentication'. The AWR300s WLAN module supports 'no authentication' or 'WPA2'. Other authentication methods, such as WEP or WPA, are not supported. If WPA2 is selected as the authentication method, the 'passphrase' configured for the Access Point has to match with the one set for the AWR300. Note that the passphrase is also case-sensitive! The easiest way for AWR300 to join the Access Point is to let the Access Point work as a DHCP server. This means that IP addresses are assigned automatically. If all these settings are configured correctly, the AWR300 should be able to join the Access Point **Access Point**: When the AWR300 is configured to 'Access Point', it does not try to connect to another Access Point but creates its own. This is comparable with the 'mobile hotspot' function on smartphones. As soon as the created Access Point is 'open', i.e. there is no authentication available. Select the desired WLAN Mode using the ▼ / ▲ / ◀ / ▶ keys and confirm with ↵.

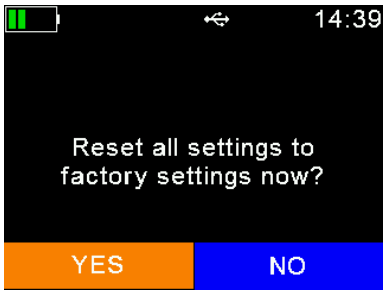
	When the AWR300 joins an Access Point, or another device connects to the AWR300, a UDP or TCP connection must still be opened to enable communication and before data can be exchanged!
	Depending on the application, a UDP or TCP connection must be established, and an appropriate port must be opened. Explanations regarding TCP, UDP and Ports are outside the scope of this manual. Choose the correct WLAN Protocol (depending on your application) using the ▼ / ▲ / ◀ / ▶ keys and confirm with ↵.
	The menu item 'Show Access Points' is only visible if WLAN is enabled and set to Station Mode. It lists the currently available Access Points and has a signal strength indication. You can also connect to an Access Point from here by pressing ↵.
	If the Access Point uses WPA2 security, you are prompted to enter the passphrase. To change it, press any of the ▼ / ▲ / ◀ / ▶ keys. A virtual keyboard opens.
	• MAC Address is a unique 12-digit number which clearly identifies each network adapter worldwide. • SSID is the network name. • Device and Host do not show anything yet because there is no connection. • Status 'connecting AP' means that the AWR300 is trying to connect to the configured Access Point. By pressing ●, the display switches to the next screen.
	• WLAN module type is shown. The older version is 'WF43' and the newer one 'WF63'. • Build Version shows the firmware version of the WLAN module. • WLAN Mode is 'Station' which means that the AWR300 will try to join the configured Access Point. • WLAN Protocol is 'TCP Server', so the Host is the TCP Client and has to open the correct port for the correct IP address.

	In this screen, the AWR300 has joined the configured Access Point (WLAN symbol turned into blue) and the Status has changed to 'waiting for connect'. Device shows the IP address (192.168.1.3) of the AWR300 plus the configured port (2010). Now the host can open a connection by using this IP address and this port.
	Here the host has opened the connection (WLAN symbol turned into green) and the devices can communicate. The Host has the IP address '192.168.1.2' and it has connected to the AWR300 using IP address '192.168.1.3' and port '2010'.

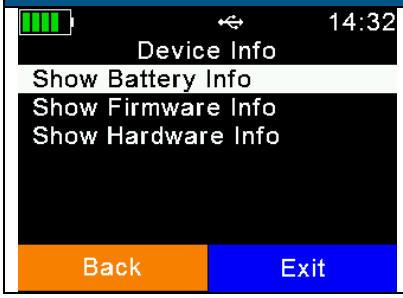
6.5.4 Configuration

Screen	Details
	After selecting 'Configuration', this men displays.

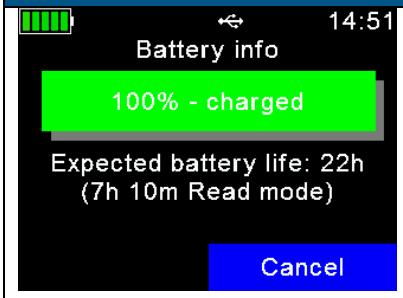
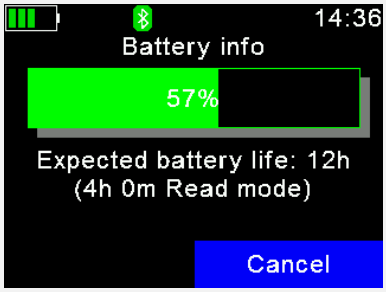
6.5.4.1 Set Factory Configuration

Screen	Details
	'Set Factory Configuration' resets factory settings back to default values. This may be useful if specific settings have been changed and the AWR300 is not operating as intended anymore. Note that this action cannot be undone. Settings that differ from the factory defaults will have to be reset. …confirm reset … abort reset

6.5.5 Device Info

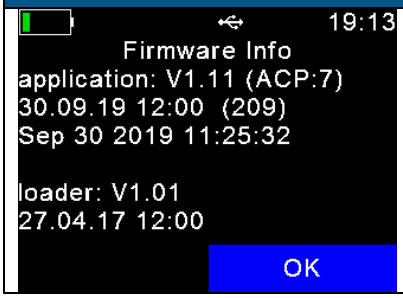
Screen	Details
	The Device Info menu includes information about the current battery status, the AWR300 firmware and some information on the hardware.

6.5.5.1 Show Battery Info

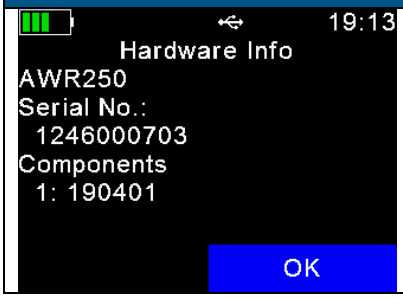
Screen	Details
	When fully charged, the battery info shows '100%'. Below the charging indication are estimates concerning the remaining operating time in standby mode (AWR300 running but RFID engine is off), here 22 hours, and in continuous read mode, here 7 hours and 10 minutes.
	In this example the battery capacity is at 57 percent. The expected standby time is 12 hours and in continuous read mode there are 4 hours left. Bluetooth is also activated in this example; this is also included into the calculations. So the shown expected battery life considers all electric consumers that are currently active.

For more information, see Battery Status.

6.5.5.2 Show Firmware Info

Screen	Details
	This screen displays the reader's firmware version and additional information such as build date and bootloader version. You should have this information available when contacting support.

6.5.5.3 Show Hardware Info

Screen	Details
	This screen shows the reader's serial number and revisions of printed circuit board that is built into the device. You should have this information available when contacting support.

Appendix A: Battery Precautions

There are important things to consider concerning the rechargeable battery pack:

- Permitted charge temperature is between 0°C to +45°C (32°F to 113°F).
- Discharging is allowed within the range of -20°C to +60°C (-4°F to 140°F) – this is the allowed operating temperature for the battery.

Storage Instructions

- The battery must be stored in shipping condition (70% discharge) or over than 70% discharge condition to storage for long period.
- The battery must be stored in dry condition of low humidity, especially be free from high temperature (45°C / 113°F or more). (Recommended Temperature 23°C / 73°F, Humidity 65±20% or less.)
- Do not store the battery near heat sources, nor in a place subject to direct sunlight to storage in warehouse.

Using the Battery

- Misuse of the battery may cause it to get hot, explode, or ignite and cause serious injury. Be sure to follow the safety rules listed below:
    - Do not place the battery in fire or heat the battery.
    - Do not install the battery backwards so that the polarity is reversed.
    - Do not connect the positive terminal and the negative terminal of the battery to each other with any metal object (such as wire).
    - Do not carry or store the batteries together with necklaces, hairpins, or other metal objects.
    - Do not penetrate the battery with nails, strike the battery with a hammer, step on the battery, or otherwise subject it to strong impacts or shocks.
    - Do not solder directly onto the battery.
    - Do not expose the battery to water or salt water, or allow the battery to get wet.
- Do not disassemble or modify the battery. The battery contains safety and protection devices which, if damaged, may cause the battery to generate heat, explode or ignite.
- Do not place the battery on or near fires, stoves, or other high-temperature locations. Do not place the battery in direct sunshine, or use or store the battery inside cars in hot weather. Doing so may cause the battery to generate heat, explode, or ignite. Using the battery in this manner may also result in a loss of performance and a shortened life expectancy.
- Do not insert the battery into equipment designed to be hermetically sealed. In some cases hydrogen or oxygen may be discharged from the cell which may result in rupture, fire or explosion.
- Immediately discontinue use of the battery if, while using, charging, or storing the battery, the battery emits an unusual smell, feels hot, changes color, changes shape, or

appears abnormal in any other way. Contact your distributor if any of these problems are observed.

- Do not place the batteries in microwave ovens, high-pressure containers, or on induction cookware.
- In the event that the battery leaks and the fluid gets into one's eye, do not rub the eye. Rinse well with water and immediately seek medical care. If left untreated the battery fluid could cause damage to the eye.
- When the battery is worn out, insulate the terminals with adhesive tape or similar materials before disposal.

Charging the Battery

- Be sure to follow the rules listed below while charging the battery. Failure to do so may cause the battery to become hot, explode, or ignite and cause serious injury.
    - When charging the battery, only use chargers supplied by Allflex.
    - Do not attach the batteries to a power supply plug or directly to a car's cigarette lighter.
    - Do not place the batteries in or near fire, or into direct sunlight. When the battery becomes hot, the built-in safety equipment is activated, preventing the battery from charging further, and heating the battery can destroy the safety equipment and can cause additional heating, breaking, or ignition of the battery.
- Do not continue charging the battery if it does not recharge within the specified charging time. Doing so may cause the battery to become hot, explode, or ignite.
- The temperature range over which the battery can be charged is 0°C to 45°C. Charging the battery at temperatures outside of this range may cause the battery to become hot or to break. Charging the battery outside of this temperature range may also harm the performance of the battery or reduce the battery's expectancy.

Discharging the Battery

- Do not discharge the battery using any device except for the specified device. When the battery is used in devices aside from the specified device it may damage the performance of the battery or reduce its life expectancy, and if the device causes an abnormal current to flow, it may cause the battery to become hot, explode, or ignite and cause serious injury.
- The temperature range over which the battery can be discharged is -20°C to 60°C. Use of the battery outside of this temperature range may damage the performance of the battery or may reduce its life expectancy.

Disposing of the Battery

- Observe local, state and federal laws and regulations concerning battery disposal.
- Do not disassemble the battery!

Appendix B: Safety and Care

Agrident GmbH ("Allflex") accepts no liability for damage resulting from improper use or use not consistent with that described in these operating instructions.

- The AWR300 Reader contains no parts that can be repaired by the user. For this reason, the Reader Electronic may only be repaired by authorized customer service personnel.
- In both operation and storage of the reader please ensure to comply with the environment conditions specified in the technical data.
- Clean the AWR300 Reader only with a damp cloth. Use only water and any commercially available cleaning agent.

Any modification to the AWR300 Reader Electronic will render the warranty null and void.

Appendix D: International Approvals

CE Marking

Hereby, Allflex declares that the AWR300, if used according to the instructions, is in compliance with the essential requirements and other relevant provisions of the Radio Equipment Directive (RED) 2014/53/EU. For use in all countries of the EU.
To obtain a copy, contact Allflex and request the '*AWR300 Declaration of Conformity*' document.

In case of alteration of the product, not agreed to by us, this declaration will lose its validity.

This symbol indicates proof of conformity to applicable European Economic Community Council directives and harmonized standards published in the official journal of the European Communities.

FCC and IC digital device limitations

This device complies with Part 15 of the FCC rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

FCC Interference Statement (Part 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 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.

FCC Part 15 Clause 15.21

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This device complies with Industry Canada license-exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes : (1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.