



ENG

MD II

USER'S MANUAL



Firmware: MDII 3.3 – From MD II serial number: 35500

THE MANTAX DIGITECH MD II IS A DIGITAL CALIPER MADE BY HAGLÖF SWEDEN AB. THE MD II OFFERS GREAT FUNCTIONALITY, ADAPTIVE TECHNOLOGY, EASY HANDLING AND PRECISION RESULTS.



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THE MD II

The MD II is a digital diameter caliper, developed and manufactured by Haglöf Sweden AB. The development focus has been to design a modern and tree diameter caliper for professional use, packed with modern technology, that offers great versatility and is user friendly yet rugged and robust.



- Icon based menu system with updated firmware.
- Low weight: 890g/500 m scale; 1000g/600mm scale; 1110g/800 mm scale.
- Foldable jaws with patented technology.
- Built-in rechargeable Li-Ion batteries.
- Low energy consumption – approx. one week per charge.
- USB connection for quick and safe communication.
- Wireless Bluetooth® communication with external devices.
- Secure data storage with built-in 1Gb SD memory card.
- Store up to 1 000 000 individual trees with data on diameter and height.
- Proven functional, non-incremental and energy saving measuring system.
- Built-in IR-receiver for height transfer from Haglöf Sweden height measurers Vertex and Vertex Laser.
- Graphical backlit display for excellent visibility.

The MD II is a modern tree diameter caliper with an icon-based firmware application designed for quick start and easy handling. The MD II allows for registering of tree species, diameter and height, and the data can be stored locally or transferred online to cellphone, handheld computer, PC or tablet with Bluetooth technology. The MD II can be ordered with metrical (mm) measuring scale or as imperial (inch) version. Data can be stored in XML-file and sent to PC with a standard USB-cable. The XML-file can be opened in Excel or imported to database for further processing.

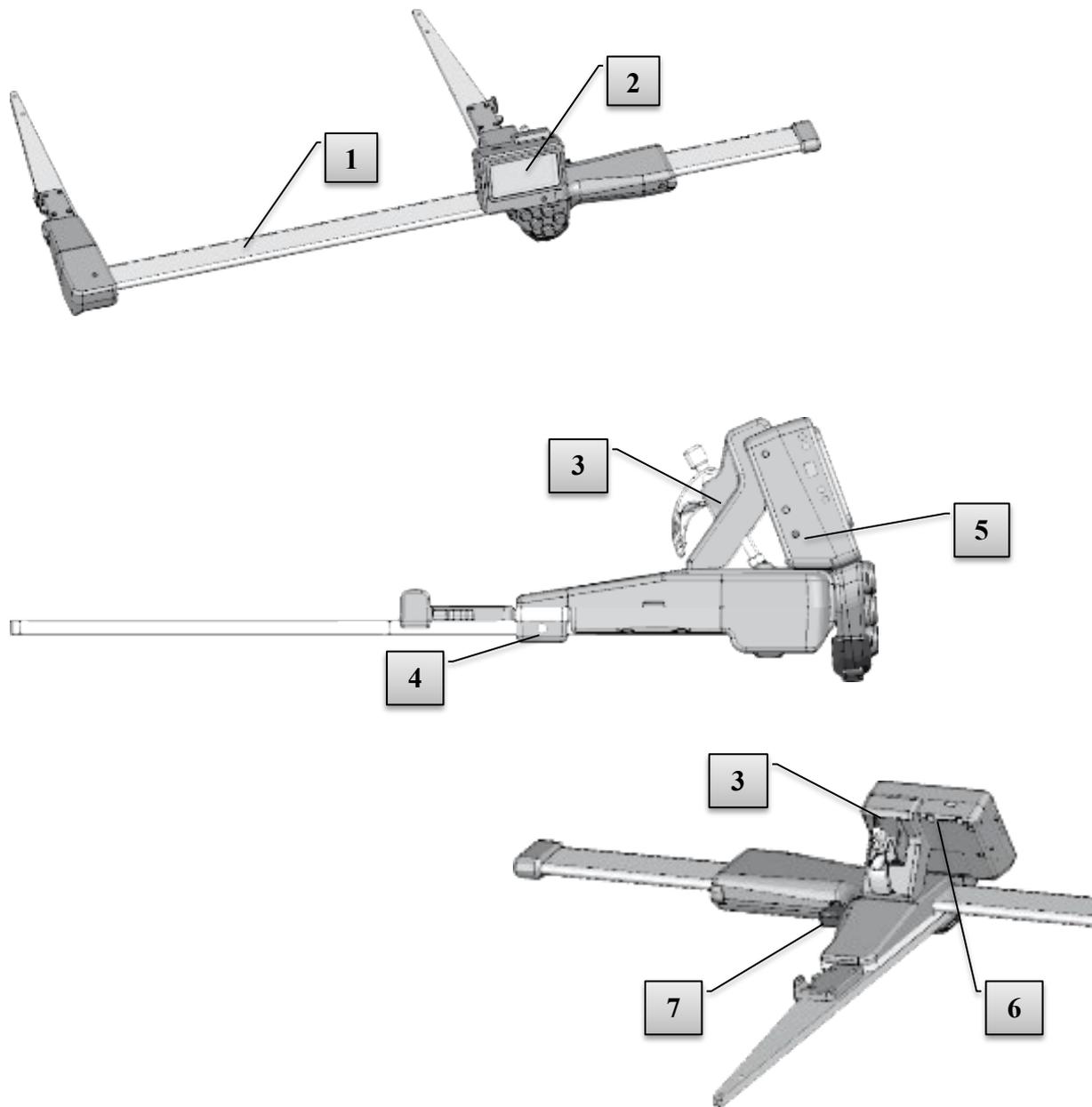
The MD II Com is a file handling program that can be used to transform the XML-files from the MD II to text files, and to generate different reports such as list of standing trees, tab separated text-file or as printouts.

Apart from connecting the MD II to a Bluetooth serial port, the MD II can be used as a virtual Bluetooth enabled keyboard. The MD II will send data as a keyboard press to program such as Open Text file, Excel, mail or as cellphone text message.

Unique lists of tree species including with up to 100 individual species names can be created, and special settings include cross measured diameters with mean diameter value and circumference results feature in the display.

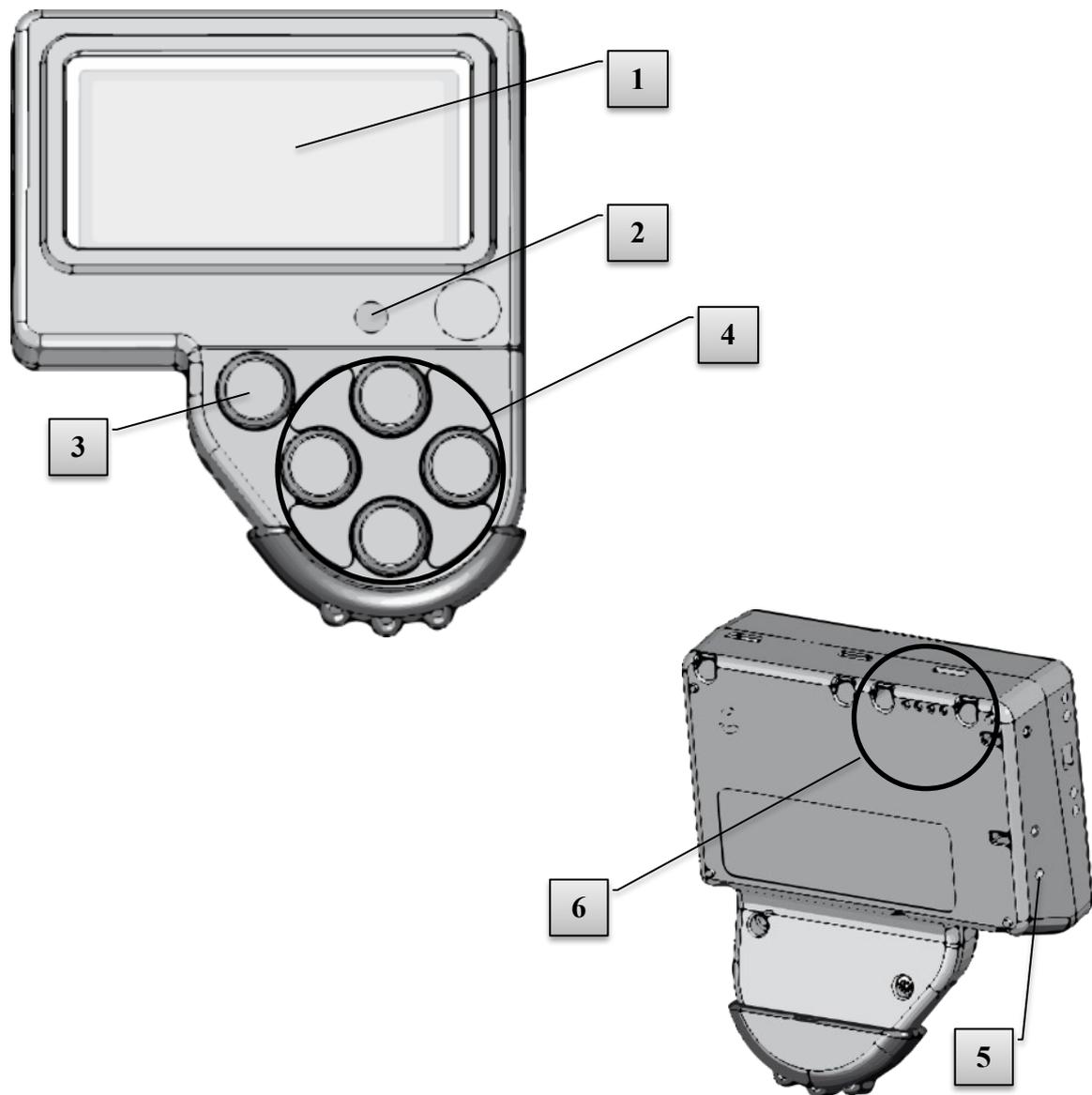
If you have worked with previous Mantax Digitech models and software applications, the MD II can be set to Mantax Digitech mode. The MD II data format will be identical to the format used for Mantax Digitech.

PRODUCT OVERVIEW



1. MD II Measuring Scale
2. Data Terminal
3. Holder for Data Terminal
4. Adjustment Screw for Jaws
5. Loudspeaker
6. USB Interface and Battery Charge Contact
7. Enter Button (mechanical)

DATA TERMINAL

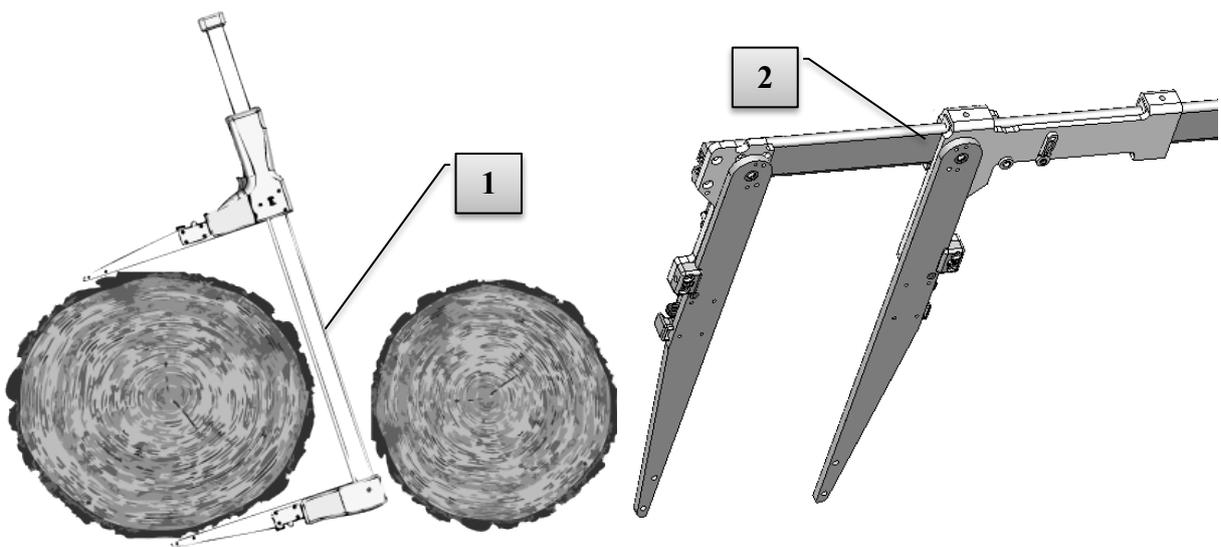


1. LCD Display
2. IR Receiver
3. Enter key
4. Arrow keys (4 ea)
5. Loudspeaker
6. USB Interface and Battery Charge Contact

MEASURING SCALE “SMARTSCALE”

The measuring scale for MD II is called “SmartScale” and consists from the foldable jaws and the non-incremental measuring system with battery and radio. The radio uses ISM band 2.4GHz. The SmartScale is synchronized to the data terminal, and sends data to this specific terminal. If changing/replacing either the SmartScale or the data terminal, a new synchronization must be made (see section Data Terminal). The SmartScale for MD II is available in the following lengths: 500mm, 600mm, 650mm, 800mm, 950mm, 1000mm and 18”, 24”, 30” and 36”. The MD II SmartScales can also be ordered with circumference print (500mm, 600mm, 650mm, 800mm, 950mm and 1000mm length).

SLIM JAWS AND ROBUST DESIGN



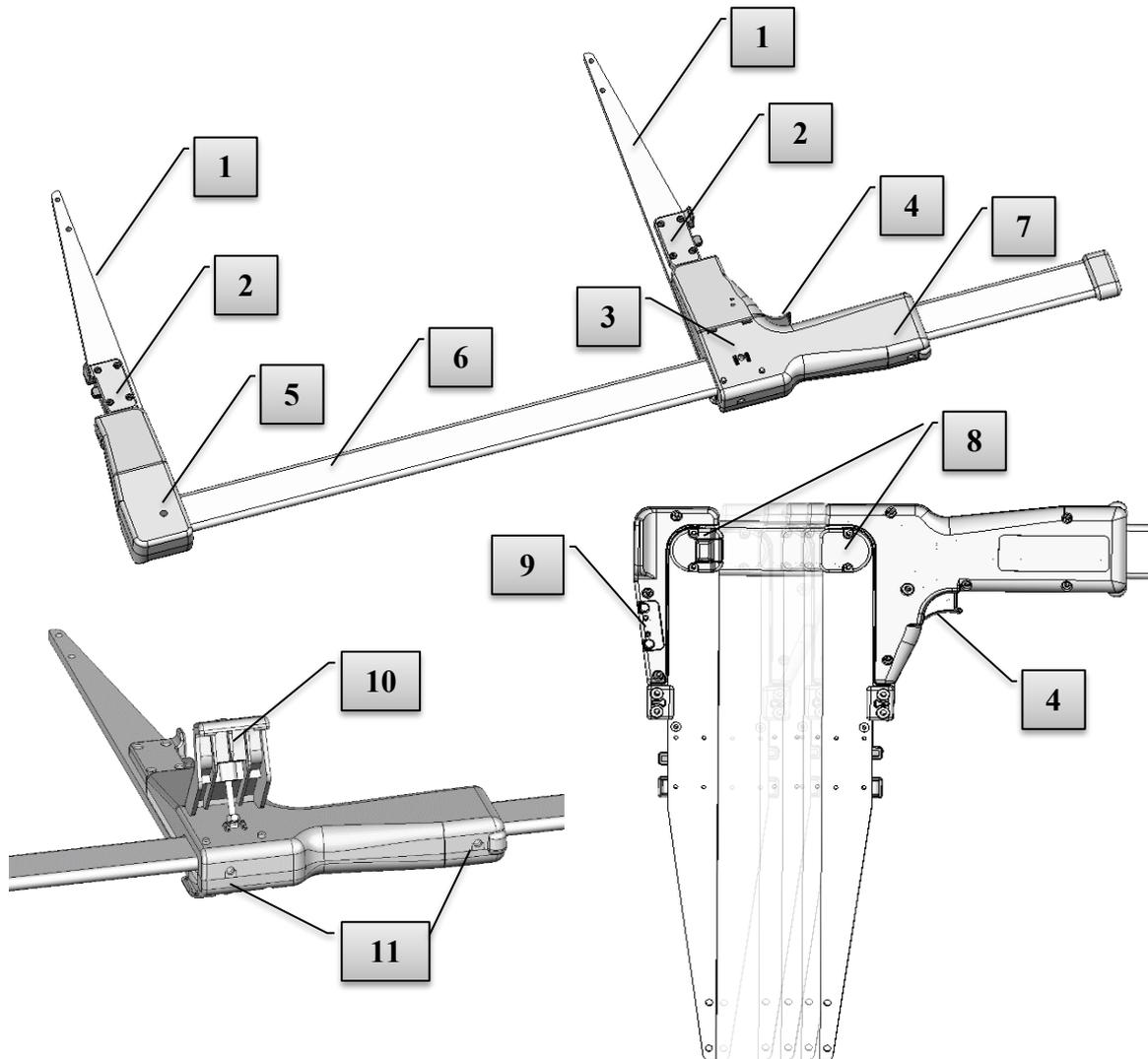
The MD II caliper is designed for easy reach and simple use and the firm jaw has a special design for use in dense forests and to measure in log piles.

The caliper is built strong with robust design and reinforced metal chassis. Image [2] shows a stripped version of the SmartScale.

RECHARGEABLE BATTERIES

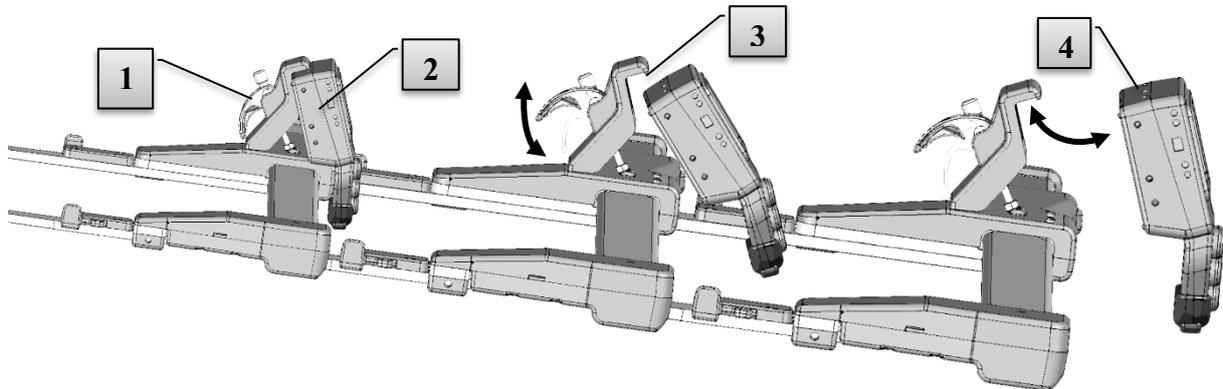
Both the SmartScale and the MD II terminal have built-in Li-Ion batteries and low energy consumption with approx. one week of work/charge. The batteries are charged through the USB port, the USB adapter and a mini USB cable that can be connected to PC or to external USB charger. See [Charging the SmartScale](#).

THE SMARTSCALE



1. Foldable jaws
2. Lock for foldable jaws
3. Attachment data terminal
4. Enter key
5. LED indicator for measuring scale battery
6. Scale
7. Movable handle
8. Handle lock
9. Connection battery charger contact
10. Support for data terminal
11. Adjustment screw for slide bushings

HARDWARE HANDLING



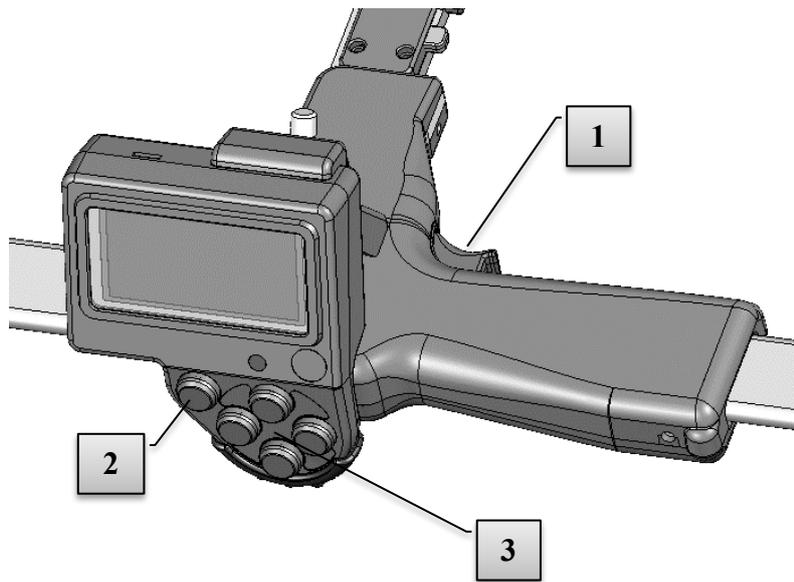
DEMOUNTING THE DATA TERMINAL

1. Push the shackle [1] to upright position.
2. Lift the data terminal [2] straight up and angle out the down part of the terminal.

MOUNTING THE DATA TERMINAL

1. The shackle [1] on the handle folded up.
2. Mount the data terminal [2] by hooking the support [3] in the compartments [4] on the upper part of the terminal. Lift the support [3] with the data terminal and angle the lower part to the movable handle. Sink down the data terminal and lock it in position with the shackle [1].

BUTTONS

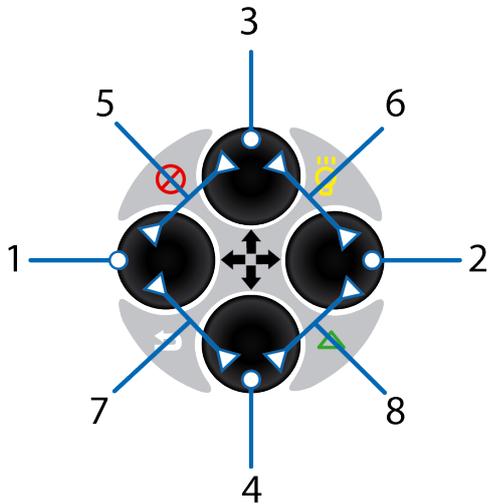


The data terminal is assembled on the movable handle. The red enter button on the handle (1) can be used to register diameters. Registering can also be done with the enter button on the terminal (2).

The arrow keys (3) are used to navigate in the program and to enter data. Different functions are activated when pressing two keys simultaneously, for example to activate backlit display or to turn off the terminal.

ARROW KEYS

The arrow keys are used to navigate in the program and to enter data. Different functions are activated when pressing two keys at the same time, see below.



No	Icon	Key/s	Description
1		Left	Step left
2		Right	Step right
3		Up	Step up
4		Down	Step down
5		Up + Left	Turn-off
6		Up + Right	Turn on display light
7		Down + Left	Quit, Escape
8		Down + Right	Activate IR receiver

Example multi-function button

Press Escape to leave a menu or a measurement operation. Press both keys simultaneously (see image).



DISPLAY SYMBOLS

The graphical black/white display has 128x64 pixels and a backlit function that can be activated with quick keys. The display light will be active for approx. 30 sec's for each key press. To turn off the light, use the same key press as when activating the function. Note that the caliper consumes more power when this function is active. Symbols on the right side of the display indicate the following:

	Bluetooth communication active
	Backlit function active
	USB interface tension
	Flash = charging
	Poor battery 3.00-3.30V
	Normal battery 3.30-3.50V
	Full battery 3.50-4.20V

CHARGING BATTERIES IN TERMINAL AND SCALE

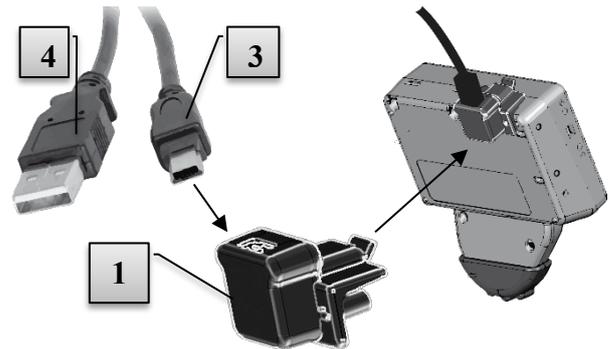
The MD II SmartScale and MD II data terminal have built-in rechargeable Li-Ion batteries. Fully charged, the batteries last for approx. one week of measuring work. Charge the batteries with 5V through the USB-ports and USB adapter along with a mini USB cable that can be connected to PC, USB car charger or external USB charger.

Charging normally takes 3-4 hours, depending on temperature and other. The charging time will shorten when the terminal is set in USB mode. USB mode is normally entered automatically.

NOTE THAT THE SCALE ALSO NEEDS TO BE CHARGED!

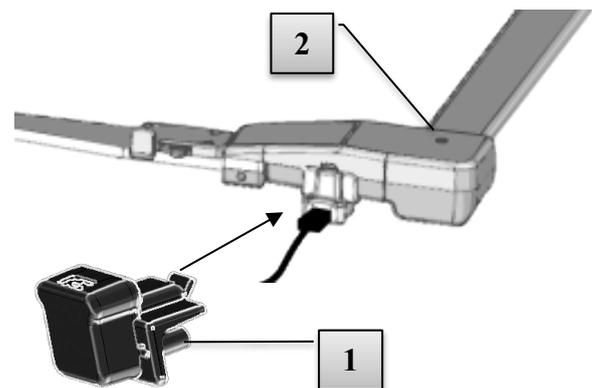
CHARGING THE TERMINAL

1. Connect the USB cable (Mini-B) [3] in the USB adapter [1].
2. Connect the other end (Type A) [4] to a USB port in your PC or to a USB charger.
3. Connect the USB adapter [1] with a USB cable on the data terminal.
4. Set to USB mode for quicker charge.



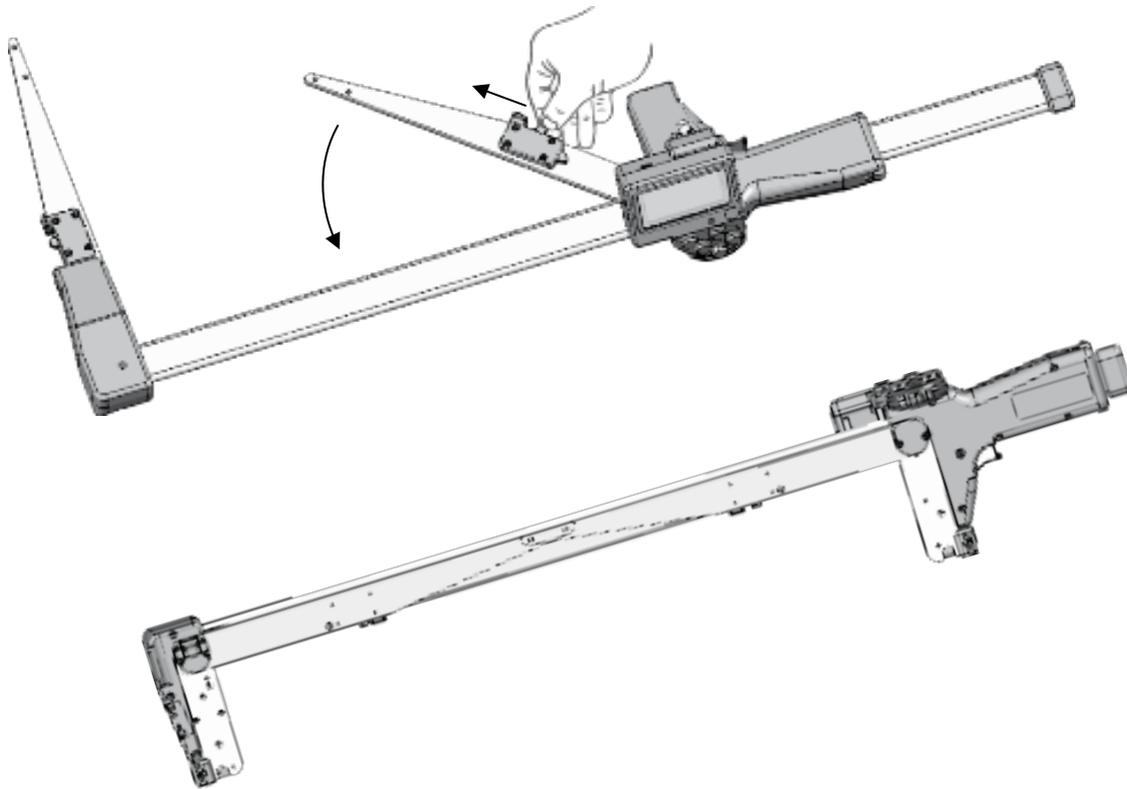
CHARGING THE SMARTSCALE

1. Connect the USB adapter [1] with the mini USB cable [3] and the USB charger [4], PC or USB-car charger to the SmartScale, see image. Charging time is approx. 3 hours.
2. The LED [2] indicator is on when charging the SmartScale. When the LED [2] blinks this is an indication of low battery. This indicator goes out when the battery is charged.
3. The data terminal warns during measuring when power is low in the SmartScale battery.



HANDLING SMARTSCALE

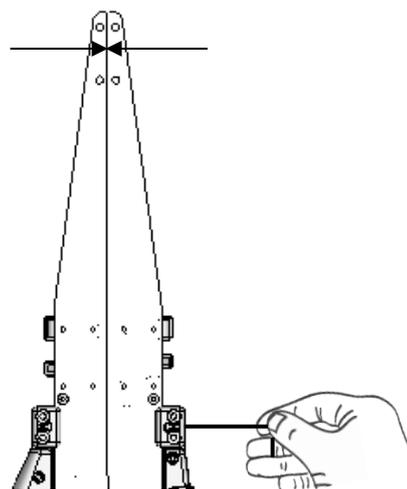
FOLDABLE JAWS



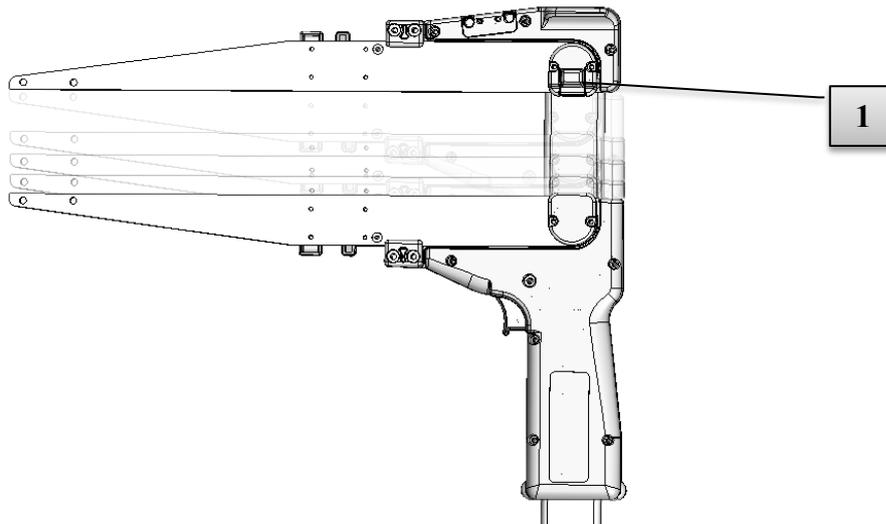
The SmartScale measuring scale has foldable jaws. To fold the jaws, move the lock forward and fold (see image). Pull the handle as far to the side as possible. The jaws are locked into each other as shown above.

ADJUSTING THE ANGLE OF THE JAWS

After some time of use it may be necessary to adjust the angle of the jaws. Use a 2 mm Allen Key, see image.

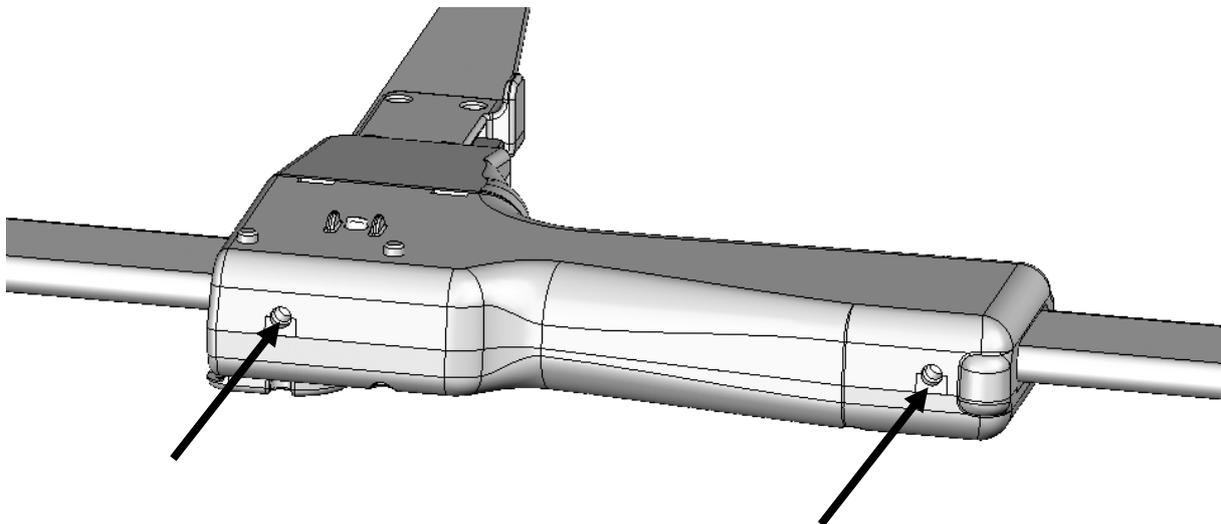


LOCK ON HANDLE



The movable jaw on the handle can be locked when the jaws are retracted, which is practical when transporting the MD II. To unlock, press on the small "hump" on one of the jaw locks [1] on the underside of the caliper and move the handle to the side. The locks can be removed if preferred.

ADJUSTING THE HANDLE



The handle has built-in friction pads. Use the 2 mm Allen key to adjust the handle. The key is included on delivery in the MD II package.

SYNCHRONIZATION DATA TERMINAL AND SMARTSCALE

For the radio to connect, the data terminal needs to be synchronized with the SmartScale. The function is available in the system menu. Note that synchronization is made on an open channel, and it is recommended not to keep other SmartScale devices in close proximity (<10m/yds.) to avoid interruption of the synchronization process.

Go to  SET -  System.Set

1. Set the SmartScale to **25cm**.
2. Activate the **System menu — Settings — Radio — Sync.Scale** in the MD II data terminal.

CALIBRATION

The SmartScale will normally not need to be calibrated. Check on a regular basis the displayed diameter to be equal to digits shown on the measuring scale, or use a calibration profile to control the measure. For divergences larger than (+-1mm) the caliper should be calibrated.

Use calibration profile, see below:

1. Go to  SET -  System.Set och then Calibrate.
2. Pull the movable jaw to 0 cm and press ENTER.
3. Pull the movable jaw to 50 cm and press ENTER. The caliper is calibrated.

Select menu SET - System Set. and then Calibrate.

If Calibration was unsuccessful, control the following:

- Error code -1: Hardware error. Try recalibrating.
- Error code -2: Calibration error. Try recalibrating.
- Error code -3: Measuring system interference. Try recalibrating.
- Error code -4: No radio contact. Try to synchronize SmartScale and data terminal.

CONTROLLING THE SMARTSCALE

Controls of the SmartScale are made in the application, or menu SET – System Set. -TESTER and Scale.

Use a calibration profile (art no 16-102-1007), or the printed scale on the SmartScale.



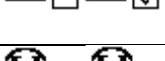
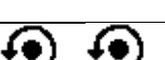
Make sure that the diameter value featured in the display is equal to the profile measure or the printed scale.

MAINTENANCE

Use a clean, and if required, slightly damp cloth to clean the terminal housing. Be careful not to scratch the display. It is not recommended to use cleansing liquid or chemicals of any kind. To clean the aluminum scale use a clean cloth and if necessary mild detergent. Rub paint stains and resin with a small amount of denatured alcohol on the cloth.

HANDLING OF SOFTWARE

MENU

	LINE - Start measuring work with Bluetooth transfer.	
		Connect to latest used Bluetooth device.
		Search for new Bluetooth device and connect this to the MD II.
		Exit and return.
	LOCAL – Start measuring work and save data on MD II terminal.	
	INSPECT – Inspect data saved on MD II terminal.	
	SEND – Send file locally to the Haglöf Link app. 	
	CLR – Select to delete data saved on MD II terminal.	
		Delete tree of option. (NO REGRETS!)
		Delete all registered data. It is mandatory to confirm with YES before all data is deleted. (NO REGRETS!)
		Exit and return.
	SET – Settings for program and system.	
		Select tree species to use/activate. Press right arrow key to activate/deactivate.
		Program settings. Use ENTER to activate or deactivate.
		MD II-mode is active (Mantax Digitech mode deactivate) and data is saved in XML-file if stored on MD II terminal.
		Mantax Digitech mode is active (MD II mode deactivate). The MD II functions and data format are compatible with the Mantax Digitech caliper model when data is transferred online (LINE).
		Activate cross measuring of diameters. The MD II will save a mean diameter measure. The icon  is shown in lower display frame when this mode is active.
		Activate to show circumference instead of diameter measure. The icon  is shown in lower display frame when this mode is active.
		Activate to show measuring value with one decimal.
		System settings for the MD II such as Bluetooth and Calibration of scale.
		Set to select sample trees with the MD II for tree species 1 to 4. The formula $(K \cdot d^2 / D^2)$. K = (part of %) between 0 and 99, d = Diameter, D = Mean diameter.
		Exit and return.
	ZZzz – Sleep	
	USB - Activate USB mode. This is (normally) automatic when USB-cable is connected to PC.	

MEASURE AND REGISTER

Use the MD II to register tree species, to measure diameters with millimeter accuracy and to register measuring values for heights or lengths.

Data values can be stored in the MD II memory, or transferred online via Bluetooth to external devices such as cellphones, tablets or handheld computers.

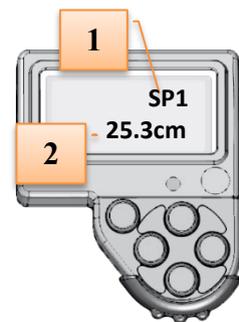
- To store data in memory [LOCAL – Measure and Store](#)
- To send data [LINE – Send Wireless Data](#)

All work is performed as described below independent on if data is stored in the MD II or transferred to another device.

TREE SPECIES

Change tree species by pressing right and left arrow key. The species are numbered from 1 to 100 and the names for the different species can be edited, see [Create Tree Species](#).

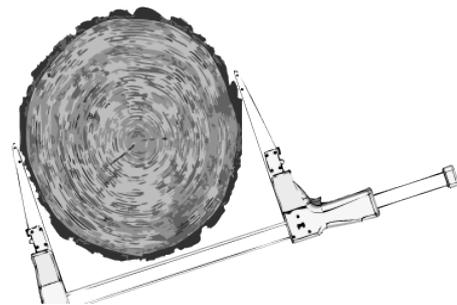
1. Tree species. Change with ←left or →right arrow key.
2. Diameter. Change with the measuring scale.
3. Quick scroll. Hold →right arrow key depressed.



DIAMETER MEASUREMENT

To measure and register a tree diameter, place the jaws on each side of the diameter to measure. Register by pressing Enter.

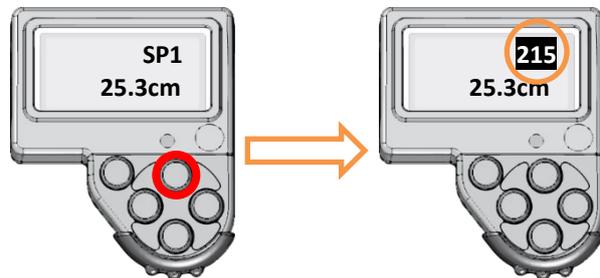
- The MD II display shows latest registered diameter and is updated when a new diameter is registered.
- To show current diameter without registering it, press briefly on ↓ down arrow key.
- If you need to register a larger diameter than the physical length of the SmartScale, you can temporarily “double” the scale by pressing ↓ down arrow key for approx. 2 sec’s (jaws together at 0 cm) until the diameter is displayed as white text on black **background**. Set the desired diameter value and press Enter to register.
- To perform cross measuring (also “cross scaling”), press and keep ↓ down arrow key depressed until the digit (2) is shown on the right side of the diameter value. Measure and register the next diameter with Enter. The mean value from the two diameters is the registered value.
- The MD II can be set to always demand two diameters/mean diameter value: [Cross Measuring](#).



HEIGHT OR LENGTH

Heights, and in current cases lengths, can be registered after the diameter of the tree is registered.

1. Register height/length by pressing ↑ up arrow key. The field is activated with black background.
2. Change the value with the measuring scale or adjust with ↑ up or ↓ down arrow keys.
3. Save with Enter.

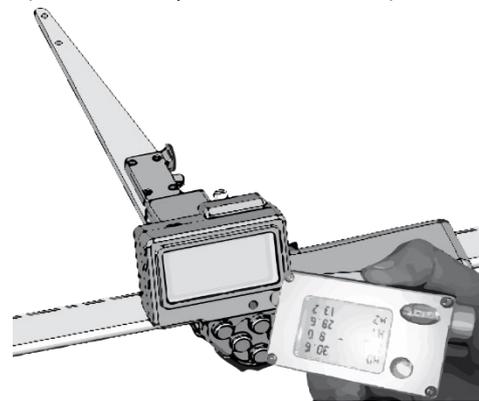


Heights can be transferred from IR-supported (Infrared) height measuring instruments. Up to three heights per tree can be transferred. [Heights via IR.](#)

HEIGHTS VIA IR

Transfer height values from the Vertex and Vertex Laser instruments (or other compatible instruments) with IR technology.

1. The IR reading is activated when pressing → Right and ↓ Down arrow key simultaneously.
1. Data can be transferred from the height measuring instrument by pressing SEND key (IR/SEND). Refer to instrument manual for details. *Aim the IR port on your instrument straight to the IR port on the MD II terminal to transfer data.*
2. Accept/register the transferred height value(s) by pressing the Enter key on the MD II.



DELETE LATEST REGISTER WHILE YOU MEASURE

To delete your latest registered value, press and hold ← left arrow key depressed a few seconds.

LINE – SEND WIRELESS DATA



LINE mode is used to send all data for tree species, diameter, and heights to device that is connected with Bluetooth®. No data is stored in the MD II in this mode.

Bluetooth technology enables wireless communication between instruments within a limited range (<10m) and with limited energy consumption.

Adjust the communication settings in the MD II. See section on [Bluetooth](#) before connecting. All settings should be aligned also in the connecting device.

1. Bluetooth needs to be activated and visible on the device before initiating connection.

2. Go to  and press Enter and select
 -  CONNECT TO LAST DEVICE
 -  CONNECT TO NEW DEVICE

CONNECT TO LAST DEVICE

1. Go to  and press Enter to reconnect to latest used Bluetooth device.
The MD II will search for this device and reconnect.
2. Start measuring work. [Measure and Register](#).
3. To abort/quit press Esc = ← left arrow and ↓ down arrow key simultaneously.

CONNECT TO NEW DEVICE

1.  Press Enter to connect to a new device.
2. The MD II starts a search for new devices.
3. A list of devices appears.
4. Select which device to use and press Enter.
5. A code may be requested when connecting. The MD II uses standard code 1234. State this code for the connecting device.
 - a. If Bluetooth in the MD II is set to [Master](#) mode, the external device code may be requested. Refer to the user's manual for the external device. See [Bluetooth®](#).
6. When connection is up [Measure and Register](#).
7. To abort/quit press Esc = ← left arrow and ↓ down arrow key simultaneously

LOCAL – MEASURE AND STORE



In Local, all data is stored in the MD II memory. The storage capacity is approx. 1 000 000 trees with data on diameter and height.

- It is recommended to perform regular (daily) memory back-ups.
- Data is stored in XML-file format and can be reached with USB. Use the file handler, for example File Explorer in Windows. The file is located in the DATA folder in the MD II.
- The MD II Com program can also be used.



1. Go to  and press Enter to store values in the MD II.
If data is available in the memory, the number of stored registers will be displayed momentarily.
2. Start to [Measure and Register](#).
3. To abort/quit press Esc = ← left arrow and ↓ down arrow key simultaneously. You can at any point go back and continue to measure.

SEND – SEND TO HAGLOF LINK



With this function the user can send local stored files to a mobile application **Haglof Link** available for both **Android** and **iPhone**.

1. Start  **Haglof Link** on your mobile device.
2. Select **Start Recieving**
3. Go to  and press Enter to send the locally stored file to **Haglof Link**.



Haglof Link can be downloaded on **Google Play**® and **App Store**®.



4.



INSPECT - SEE STORED DATA



This menu allows for inspection of your stored data.

- Inspection can only be made on data stored in the MD II (LOCAL).



1. Press Enter.

If data is stored in the memory, the number of registrations is displayed momentarily.

1. Use ← left arrow key or → right arrow key to scroll between stored data.
2. To abort/quit press Esc = ← left arrow and ↓ down arrow key simultaneously.

CLR – SELECT TO DELETE FROM MEMORY



Delete single registrations or all data in memory.

- Go to  and press Enter and select
 1.  Delete registration
 2.  Delete all registrations
 3.  Esc – Escape go back (return) in menu

You can at any point go back and delete latest registration by holding ← left arrow key depressed for a few seconds.

DELETE A REGISTRATION

1. Go to  and press Enter. Select  Press Enter.
2. Use ← left arrow key or → right arrow key to find the registration you wish to delete.
3. Press Enter to delete the selected registration. It is not possible to regret the deletion of data!

DELETE ALL REGISTRATIONS

1. Go to  and press Enter. Select  and press Enter.
1. The MD II asks [Delete all?]. Change to OK with → right arrow key. Press Enter.
2. All data is deleted. It is not possible to regret the deletion of data!

FINISH – ESC

1. Go to  and press Enter.
1. Or use Esc = press ← left arrow key and ↓ down arrow key simultaneously

SET – SETTINGS



Select tree species, if to cross measure, if to show circumference instead of diameter, if to show decimal, sample trees and to reach MD II system menu.

- Go to  and press Enter
- 1.  **Species** – SELECT SPECIES
- 2.  **Program set.** – PROGRAM SETTINGS
- 3.  **System set.** – System settings for the MD II
- 4.  **Random** – Random sample trees
- 5.  **Esc** – Escape/return in the menu

SPECIES – SELECT SPECIES



Select names for tree species to appear in order of preference.

The names for tree species can be picked up from text file SPECIES.txt. This file can hold up to 100 different names for species [Create Tree Species](#).

1. Go to menu SETTINGS: **SET**  and  Press Enter.
2. Step and press ↓down arrow key or ↑ up arrow key to the tree species you wish to show or hide.
3. Press → right arrow key to activate or deactivate.
4. A ticked square shows if the name is active and visible.

CREATE TREE SPECIES

The names for tree species are stored in a text file named "SPCNAME.TXT". Write order of appearance, number and names of the species you wish to work with.

After connecting the MD II to your computer, the file can be retracted in folder DATA on the MD II. Use the File Explorer in your PC:

 MDII:\DATA\MDII\SPCNAME.TXT

File requirements:

- The files have to be stored in folder  MDII:\DATA\MDII\ and named **SPCNAME.TXT**
- Max number of signs for individual tree species names: 7 signs.
- Only ASCII signs are allowed to use for the names.
- Max number of names: 100, one name per line.

SPCNAME.TXT Example

```
NWSPRUC  
LONGLEA  
WH.OAK  
REDOAK
```

1. Connect the MD II to your PC with USB cable.
2. Open the file handler and go to folder  MDII:\DATA\MDII\
3. Use for example Notepad to open the file SPCNAME.TXT
4. Write one name (tree species) per line and maximum 100 different names.
5. Save the file and start using the MD II with your unique list of tree species names.

PROGRAM SET. – PROGRAM SETTINGS



Settings for the measuring work.

- Go to  and press Enter to go to program settings for MD II.
 -  **MD II MODE** – MD II data format
 -  **Digitech mode** – Mantax Digitech data format
 -  **2 x dia** – Cross measuring
 -  **CIRCUMFERENCE** – Show circumference
 -  **DECIMAL** – Show decimal for diameter
 -  **Esc** – Escape return in menu

MD II MODE



MD II mode = Inactive



MD II mode = Active

The MD II can be set in either **MD II mode** or **Digitech mode**. The difference is in the format for data that is saved, or sent with wireless transfer. The Digitech mode is available to make the MD II caliper compatible with the preceding caliper model the Mantax Digitech.

The standard setting for the MD II is **MD II mode**. Data is saved in an XML file in the MD II and wireless transfer is made with Bluetooth® technology in NMEA format [Data format](#).

ACTIVATE MD II MODE



MD II mode

- Go to **SETTINGS: SET**  and then to **Program set** 
 - Go to **MD II mode**  and press Enter.
- The square is ticked when **MD II mode**  is active and **Digitech mode**  is inactive.

DIGITECH MODE

 **MD II mode** = Inactive  **MD II mode** = Active

The MD II can be set in two different modes, **MD II mode** or **Digitech mode**. Data in the MD II and data that is transferred online are in different formats. In Digitech mode, the MD II is compatible with the preceding caliper model the Mantax Digitech.

The default (standard) setting for the MD II is **MD II mode**. Data is stored in an XML-file on the MD II. For wireless data transfer, the format used is NMEA [Data Format](#).

ACTIVATE DIGITECH MODE



MD II mode

1. Go to SETTINGS: **SET**  and then **Program set** 
 2. Go to **Digitech mode**  and press Enter
- The square is ticked when **Digitech mode**  is active and **MD II mode**  is inactive.

2 X DIA – CROSS MEASURE

 **2 x DIA** Cross measure = Inactive  **2 x DIA** Cross measure = Active

Activate Cross measure to register mean value from two diameters in the MD II.

- The mean value from two diameters of the tree is saved.
- This icon  is shown in the lower display frame when the cross measure function is active.
- The function has to be activated to cross measure and store mean diameter values [Diameter Measurement](#)

ACTIVATE CROSS MEASURE


2 x DIA

3. Go to SETTINGS: SET  and then to Program set 
 4. Go to **2 x dia**  and press Enter. The square will be ticked  .
- When the function is active, the MD II will require two measuring values to register the mean diameter value.
 - This icon  is shown in lower display frame when the function is active.

DEACTIVATE CROSS MEASURE


2 x DIA

1. Go to SETTINGS: SET  and Program set 
 2. Go to **2 x dia**  and press Enter to untick in the square. 
- The cross measure function is deactivated.

CIRCUMFERENCE



The MD II can be set to show circumference instead of diameter values while measuring. **Circumference** needs to be activated to show the circumference value in the display. Note that the registered value will be the diameter measurement. The icon  is shown in lower display frame when Circumference is active.

ACTIVATE TO SHOW CIRCUMFERENCE VALUE IN DISPLAY



Circumference

1. Go to SETTINGS: SET  and then Program set .
2. Go to **Circumference**  and press Enter to tick the square .
 - The circumference is displayed instead of the diameter value while measuring. The value stored or transferred will be the diameter value.
 - This icon  is shown in lower display frame when active.

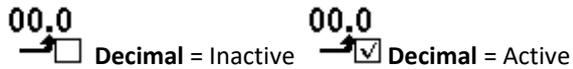
INACTIVATE CIRCUMFERENCE



Circumference

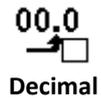
1. Go to SETTINGS: SET  and Program set .
2. Go to **Circumference**  and press Enter to untick the square. .
 - The diameter value is shown while measuring.

DECIMAL – SHOW DECIMAL ON DIAMETER



Activate to show decimal on measured diameter.

ACTIVATE DECIMAL



1. Go to SETTINGS: SET  and Program set 
2. Go to **Decimal**  and press Enter to tick the square .
 - Diameters will be shown with one decimal when measuring.

INACTIVATE DECIMAL



1. Go to SETTINGS: SET  and then Program set 
2. Go to **Decimal**  and press Enter to untick the square. .
 - Diameters will be shown without decimal when measuring.

SYSTEM SET. – SYSTEM SETTINGS FOR MD II

 System settings such as Bluetooth and calibration of the scale.

1. Go to SETTINGS: SET  and then System set. 
2. [System Settings MD II](#)

RANDOM – RANDOM SAMPLE TREE



This function enables random selection of sample trees.

Formula to select random sample trees: $Q \times d^2/D^2$

- **Q**: (quota %) between 0 and 99
- **d**: Measured diameter
- **D**: Mean diameter for species

A signal with five (5) beeps is heard from the MD II caliper if the number is larger than a randomly selected number between 0 and 99. The signal indicates that the tree has been selected as a sample tree.

- The random sample tree values are unique for tree species 1-3 (4) and following species will use D and Q from species number 4.

ACTIVATE AND SET SAMPLE TREE

1. Go to SETTINGS: **SET**  and then **Program set** 
2. Go to **Random**  and press Enter
 - a. Select tree species SPC 1, SPC 2, SPC 3 or SPC 4 and press Enter
 - b. Set value Q in % 1 to 99 with ← left arrow key or → right arrow key to change value with 2 digits, ↑ arrow key up or ↓ arrow key down for single digits. Press Enter to save.
3. Set value D equal to diameter with ← left arrow key or → right arrow key to change value for two (2) digit numbers, ↑ arrow key up or ↓ arrow key down for single digit numbers. Press Enter to save. Repeat from a) for the next tree species.
4. To quit, press Esc = ← left arrow key and ↓ down arrow key simultaneously.

DEACTIVATE RANDOM TREE

The function for random sample trees can be deactivated if the value Q is set to 00.

1. Go to SETTINGS: **SET**  and then **Program set** 
2. Go to **Random**  and press Enter
 - a. Select tree species SPC 1, SPC 2, SPC 3 or SPC 4 and press Enter
 - b. Set value Q = 00 to deactivate random sample trees with keys ← left arrow key or → right arrow key to change two (2) digit numbers, and ↑ arrow key up or ↓ arrow key down for single digit numbers and press Enter to save.
3. Repeat from a. for next tree species.
4. To quit, press Esc = ← left arrow key and ↓ down arrow key simultaneously.

ZZZZ – TURN OFF MD II



Turn off the MD II.

1. Go to  and press Enter to turn off.

USB – SET MD II IN USB MODE



Activate communication mode and terminal battery charge. This is automatic when the USB adapter and cable to PC are connected with the MD II.

1. Go to  and press Enter to set MD II in USB mode.
2. Start MD II Com or a file handler to transfer data to PC.

Note that the SmartScale also contains a battery [Charging the SmartScale](#).

SYSTEM SETTINGS MD II

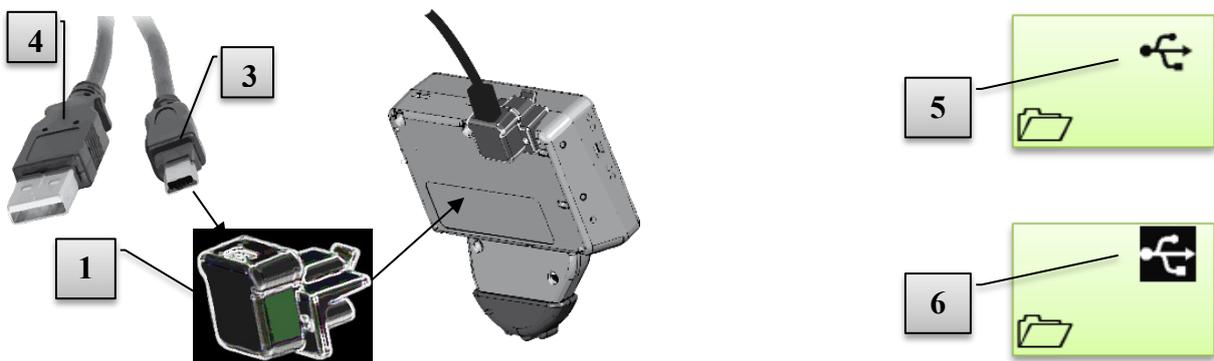
COMMUNICATION

The MD II communicates with external devices with USB or Bluetooth® technology.

USB

Transfer data with USB cable with your file handler. No special drivers or programs are needed. When the MD II is connected with USB to the PC, the battery is also charged.

CONNECTION USB



- 1 Connect the USB cable [3] (Mini-B) on the MD II USB adapter [1].
- 2 Connect the other end (Type A) [4] to a USB port on the PC.
- 3 Connect the MD II USB adapter [1] with the USB cable on the data terminal.
- 4 Go to USB mode in the data terminal (usually automatic). Image [5] shows the display when the data terminal is in USB mode. To manually go to USB mode, reset (press down all five keys) the terminal and navigate with the arrow keys to the USB menu and press Enter.
- 5 When the operating system in the PC is connected, the USB icon in the display [6] is marked black. The data terminal now works as a USB memory stick.
- 6 Your regular PC file handler can now be used to copy, move or delete files in the data terminal. Data files are in the [\\DATA](#) library
- 7 Finish the session with Escape in the data terminal.
- 8 Remove the USB adapter by releasing the lock and pulling the adapter backwards.

BLUETOOTH®

Bluetooth® technology enables wireless communication between electronic devices on short distances (<10m) with comparably low power consumption. The MD II uses Bluetooth to transfer data. Communication settings need to be set for use. Handheld computers and PC applications normally use a comport to read data. The comport is often a physical port, and virtual ports for Bluetooth SPP (Serial Port Profile) are also used. If the handheld/PC does not include this application, data can be sent with HID (Human Interface Device Profile), using the MD II as a wireless keyboard for data transfer to Excel spreadsheet or other document.

BLUETOOTH MODE

Consult the manual for the application. Some type of Bluetooth Comport is normally used for data transfer.

1. Go to SETTINGS: **SET**  and then **System set.** 
2. Select **Com Port – Bluetooth**

BLUETOOTH - SLAVE

The Bluetooth function in MD II is often used in **Slave** mode when connecting to external devices.

1. Go to SETTINGS: **SET**  and then **System set.** 
2. Select **Com Port – Bluetooth – Slave**
3. Select **Exit** and press Enter to return to the MD II software
4. Select to connect the MD II with the external wireless data receiving device.
[LINE – Send wireless data](#)

In some cases the code **1234** needs to be stated during the connection.

The MD II will use latest used device. For other device, press “OK” when asked “New device?”

BLUETOOTH - MASTER

If the PC, handheld, or Android device has a port for incoming data, the MD II can be set in **Master** mode.

Go to SETTINGS: SET  and then System set. 

1. Select **Com Port – Bluetooth – Master**
2. Select **Exit** and press Enter to go back to the MD II software.
3. Start the application in your PC, handheld or Smartphone to open the port.
4. Select to connect the MD II with the external device to send data.

[LINE – Send wireless data](#)

Select device from the list. Normally a code is stated. Refer to the external device's user's manual for this code. 1234 is a common code, and the code used for the MD II. MD II will use the latest connected device. If using another device, delete the previous used device with "OK "when questioned "NEW DEVICE".

PAIR (BONDING)

The Pair mode is used to bond the MD II with external device as for LINE - [Connect to new Bluetooth device.](#)

Select **Pair** to bond the MD II with external device under **Slave, Master** or **Keyboard**.

1. Go to SETTINGS: SET  and then System set. 
2. Select **Com Port – Bluetooth – Slave, or Master** and press Enter.
3. Select **Pair**.
8. A list of available devices is shown.
9. Select the device you wish to connect to and press Enter.
10. A code may be required to connect the device. The standard code for the MD II is **1234**. State the same code for the pairing external device.
 - b. If the MD II Bluetooth has been set to **Master** mode, it is necessary to use the external device's code. Refer to the user's guide for the external device for this code.
4. When the connection is ready, start to measure in LINE and [Connect to latest Bluetooth device.](#)

EXAMPLE WINDOWS 7 CONNECTION

MD II connection to PC with Bluetooth SPP profile – example:

- 1 Set Bluetooth Slave in MD II menu **SET\System set.\Com Port\Bluetooth\Slave\Pair**
- 2 Click on the triangle (Hidden icons) in Windows' activity field.

- 3 Double click on the Bluetooth icon.

- 4 Click on "Add device".
- 5 Click on the icon **MDII XXXX** and "Next".
- 6 Select "Input pincode".
- 7 Input pincode 1234.
- 8 Confirm with Enter on the MD II.
- 9 MD II and Windows are now connected. Use Escape in the MD II to leave the Slave mode. To control the new number for Comport in Windows:
- 10 Click on the triangle (Hidden icons) in Windows' activity field.
- 11 Double click on the Bluetooth icon.
- 12 Right click on MD II and select "Attributes" followed by "Services". Note the number for the Comport, in this case COM6. This port can now be used for communication with the MD II.
- 13 Test data transfer with for example Hyperterminal in Windows. Example:
- 14 Activate MEAS menu in the MD II. Select "NO" when questioned "New Device".
- 15 The MD II waits for the Comport that was assigned when the connection was opened.
- 16 Start Hyperterminal.exe.
- 17 Input a name for the connection, for example "MD II".
- 18 Open the Comport, in this case comport COM6.
- 19 Data can be received in Windows.

TECHNICAL SPECIFICATION

MD II DATA TERMINAL

MEMORY:	1GB Flash File System. Non-volatile, high security. 1Mb high-speed RAM
PROCESSOR:	Low Power 32 bit Arm Based Processor
DISPLAY:	Graphical black/white, 128x64 pixels Interface
LIGHT:	YES. High visibility in poor light
KEYBOARD:	Enter/Execution Four (4) arrow keys. Speed keys (light, turn-off, Escape, Vertex height input)
SIGNAL:	Loudspeaker, built-in
COMMUNICATION:	USB 2.0 MSD (Mass storage device), Bluetooth® <ul style="list-style-type: none">• SPP, NMEA• BLE, GATT database Built-in IR Vertex receiver
TEMPERATURE:	-20C... +60C / -4F...140F
CLOCK:	Real-Time Clock and Calendar
BATTERIES:	Rechargeable Li-Ion battery. Charge through USB interface. Energy consumption >one week per charge.
WEIGHT:	150 g/5 oz
CLASSIFICATION:	IP67

MD II SMARTSCALE

SCALE:	SmartScale TM Aluminum, non-reflecting, clear digits, durable
MEASURING RANGE STANDARD:	500mm/18" 600mm/24" 650mm 800mm/30" 950mm/36" 1000mm
MEASURING SYSTEM:	Non-incremental, sealed.
WEIGHT:	500mm/18" - 740 g/26 oz 600mm/24" - 850 g/30 oz 800mm/30" - 960 g/34 oz 950mm/36" - 1070 g/38 oz
CLASSIFICATION:	IP67

Return products for recycling at this address: Haglöf Sweden AB, Klockargatan 8, SE-882 30 Långsele, Sweden.

PACKING

The complete MD II package can have different contents depending on configuration ordered. The scale length should be specified on order.(500mm, 600mm, 650mm 800mm, 950mm, 1000mm, 18", 24", 30", 36")

- SmartScale with mechanical enter button
- MD II data terminal
- Aluminium transport case
- 2ea MD II USB adapter
- 1ea Mini B USB cable 0.5m
- 1ea Mini B USB cable 2.0m
- 1ea international AC/DC USB charger
- 1ea car charger USB
- 1ea 2mm Allen key for adjustment of jaws

DATA FORMAT

The data format depends on which mode the MD II has been set to work with.

The MD II device can be set in two different data modes, **MD II mode** or **Digitech mode**. The modes differ in terms of wireless data transfer. Read more [MD II mode](#) or [Digitech mode](#).

The default setting is **MD II mode**. Data is saved in an XML-file and wireless data is in NMEA format.

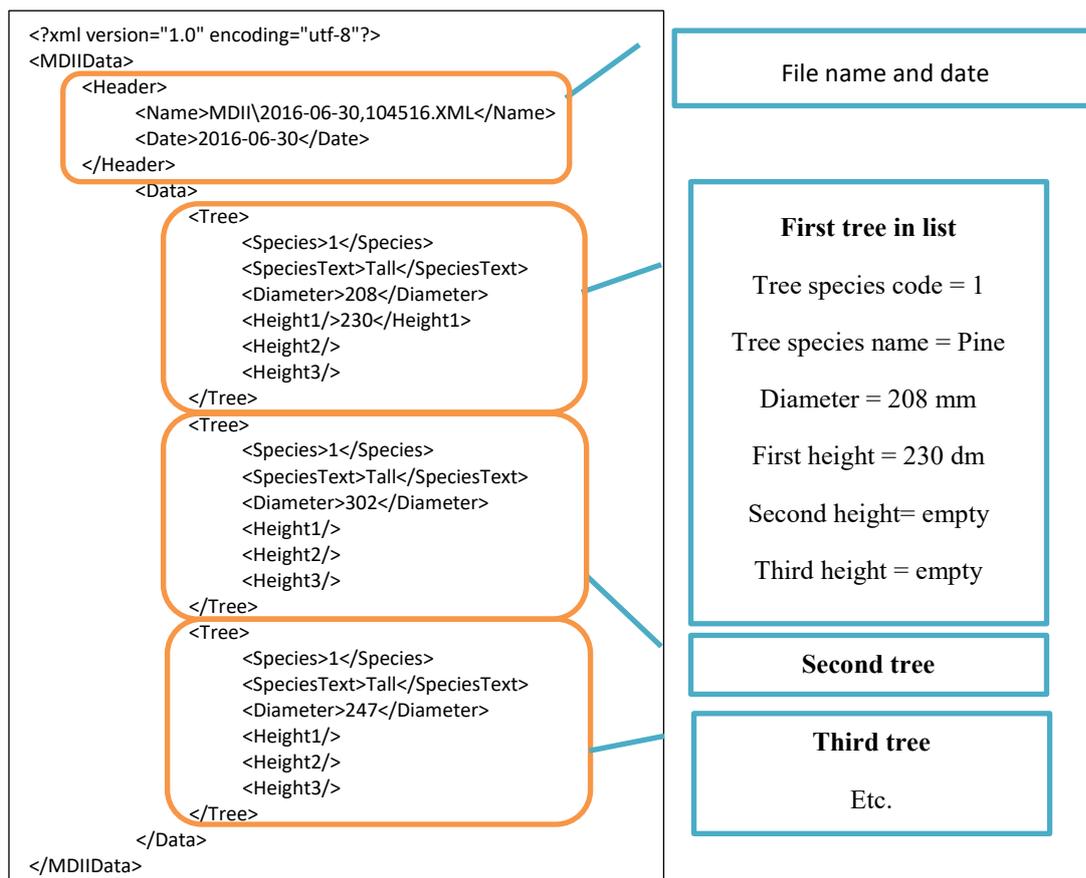
XML

The XML-file has tags. Between these tags you will find the registered value.

<MDIIData> Registered values are listed in this tag.

<Header> Tag contains <Name> which is the file name and <Date> which is the date.

<Data> Contains all registered trees. Each tree has the tag <Tree> that contains <Species> that is the code for tree species, <SpeciesText> that is the name for the species, <Diameter> = the diameter of the tree, <Height1> the height of the tree 1, <Height2> second tree height, and <Height3> third tree height.

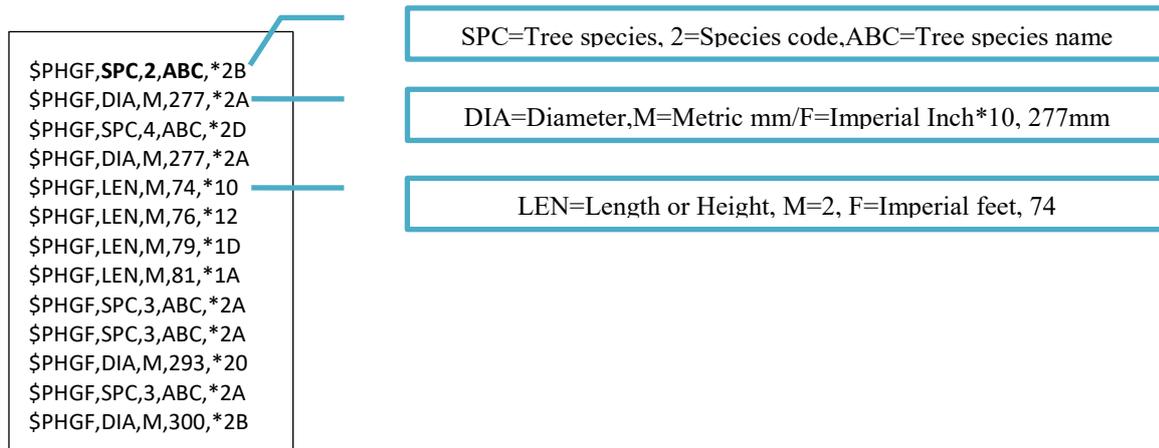


NMEA

Data is sent as a NMEA string and ends with a checksum and end of line. [CR][LF].

Tree species, diameter and height are sent as individual NMEA packets, see below.

- Tree species code, tree species text and diameter are sent when measuring a diameter.
- The height if measured is sent after the diameter. More than one height can be input. If you send more than three (3) heights, the receiving software should be set to overwrite the first height etc.
- The tree is to be saved when a new diameter is received or when measuring ends. Tree species and diameter are to be registered before data is saved.

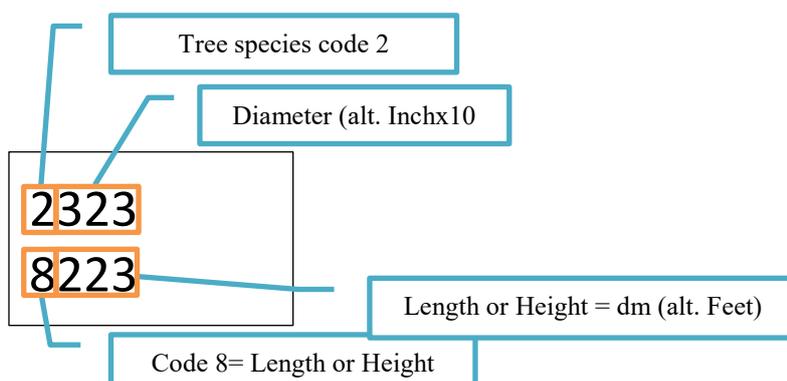


DIGITECH MODE

This data format is compatible to previous caliper model the Mantax Digitech. Data is sent as four digits. The first digit equals tree species, and the following three (3) digits equal diameter or height. Heights is sent as species number 8. Data is finished with line ending sign [CR][LF].

Ex:

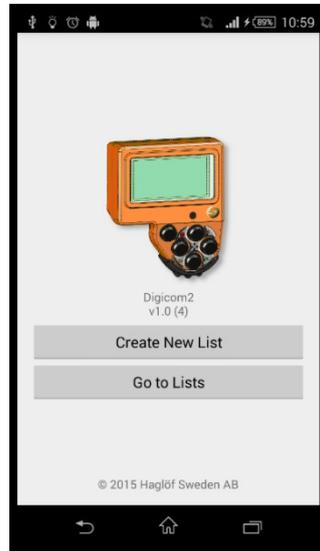
1023 Tree species 1, 23 mm (alt. inchx10)
 2323 Tree species 2, 323 mm
 8123 Height 1, 123 dm (alt. feet)
 7321 Tree species 7, 321 mm
 8223 Height 1, 223 dm
 8125 Height 2, 125 dm. *Comment: From Vertex/VL*
 8012 Height 3, 12 dm. *Comment: From Vertex/VL*



MD II COM - ANDROID APP



The MD II Com App is a custom application for Android devices such as SmartPhones and tablets. Bluetooth technology is used to read data from the MD II, and data is saved in XML file format and can be shared through email, Google Drive, Dropbox etc.



Bluetooth®



INSTALL THE MD II COM APP

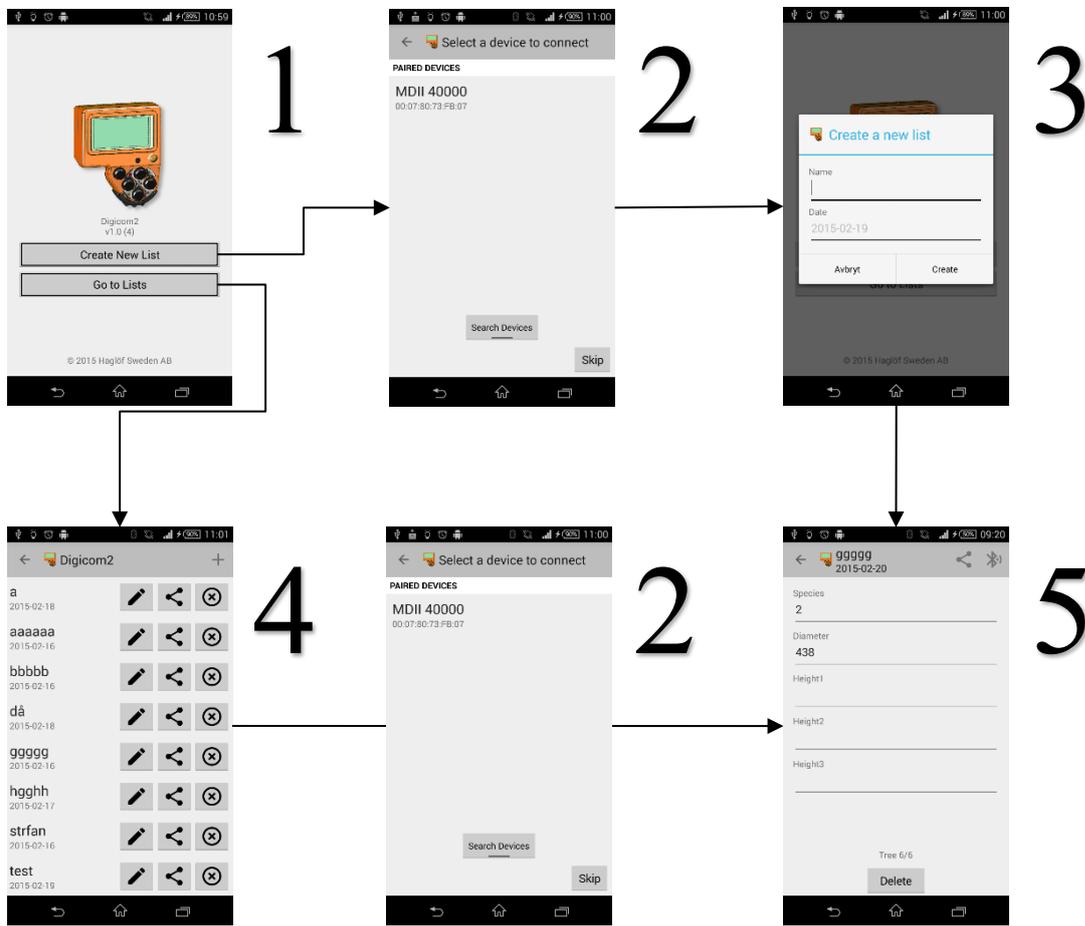
Download and install the **MD II Com** from **Google Play** to your Android device.

Address: <https://play.google.com/store>



HANDLING

Start **MD II Com** by clicking the icon  on your Android device.



1. In the start screen you can select to create a new list or to open existing list.
2. Pair with the MD II in LINE mode. See MD II manual for details.
 - a. Select MD II in the list or Search device.
3. State Name and Date to Create a list.
4. Shows saved lists.
 -  Change
 -  Delete
 -  Share list
5. Data collection mode. Data is read from the MD II in LINE mode. See this manual.
 - a. Scroll between values with left and right.
 - b. Delete the value with [Delete].

SOME POINTS ON WARRANTY AND SERVICE

- Warranty claims should be made to the location where the product was originally purchased. Consult your Haglöf Sweden representative for all service matters.
- The products are covered by a one-year limited warranty. The warranty covers fabrication defects and excludes, for example, reckless operations and cosmetic damages. The warranty is valid in the country where the product was originally purchased.
- For a valid warranty, a copy of the original invoice and dated proof of your purchase must be presented. For electronic products please state the serial number of your product upon return. RMA authorization number must accompany all returns.
- We perform repair and service of products where warranty has expired when possible. Cost estimation for approval are provided after our service department has examined and evaluated the returned product. All costs are on buyers expense.
- Any signs of misuse or negligence automatically withdraw our warranty commitments. No guarantees of usability and suitability for any special purpose are given. No liabilities for loss (business, profits, savings or alike) or damages are accepted.
- Read more in Haglöf Sweden General Terms of Business with Amendment.

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The products include no parts that can be serviced by the operator. Non-authorized repairs or changes can cause permanent damage to an instrument and will immediately withdraw all and any warranty commitments. The one-year limited warranty time covers obvious fabrication defects. Defects in electronic components and software bugs that are impossible for the manufacturer to detect prior to assembling and shipping of the product may occur. Haglöf Sweden AB can in no case be responsible for problems of this nature and has no liability for any loss of business, profits, savings, consequential damages or other damages resulting from use of the products described. Signs of misuse, cosmetic damage, accidents or equal automatically withdraw the warranty. The warranty is automatically withdrawn at signs of abuse wrongful or reckless operation, wrongful connection of cables and/or batteries. The warranty is valid in the country where your Haglöf product has been purchased. A product covered by warranty will be object to exchange, service, and repair or according to special agreement between seller and buyer, within the frames of the limited warranty. Haglöf Sweden reserves the right to determine which option will be most suitable for each separate case after having examined and evaluated the product. An inspection cost per hour is invoiced for products that are returned for service and/or repair, also when no fault is detected.

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All instruments with this symbol should be returned for recycling. Remember to always recycle used batteries and packing material when possible. Please accept your distributor's/reseller's responsibilities and reclaim products with built-in batteries for recycling.



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Haglöf Sweden products are always designed for professional use in tough surroundings. They are built rugged and made to increase your efficiency, improve overall accuracy and to save your valuable time and money.

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HAGLÖF SWEDEN AB

KLOCKARGATAN 8, SE-882 30 LÅNGSELE
PH: +46 620 255 80. FAX: +46 620 205 81
E-MAIL: INFO@HAGLOFSWEDEN.COM

HAGLOF INC.,

100 SOLLEFTEA DRIVE, MS 39110 MADISON, USA
PH: +1 601 856 5119, FAX: +1 601 856 9075
E-MAIL: SALES@HAGLOFINC.COM

DECLARATION OF CONFORMITY

DECLARATION OF CONFORMITY, COMPLIANCE STATEMENT/DÉCLARATION DE CONFORMITÉ

According to EMC Directive 2004/108/EC and Low Voltage Directive 2006/95/EC

Type of equipment: Computer caliper

Brand name or trade mark: Digitech Professional II

Type designation(s)/Model no(s): Digitech Professional II

Manufacturer's name, address, telephone & fax no: Haglöf Sweden AB, Klockargatan 8, 882 30 Långsele, Sweden,

Tel: 46 (0)620-25585, Fax: 46 (0)620-20581

The following standards and/or technical specifications, which comply with good engineering practice in safety matters in force within the EEA, have been applied:

Test report/ technical construction file/ normative document: Ref. No: 13095 / Issued by: Dectron AB

Standards

EMC Emission: EN 61000-6-3:2007

EMC Immunity: EN 61000-6-2:2005, EN 61000-4-2, -3, -4, -5, -6, -11

Low Voltage Directive: 2006/95/EC

Additional information

The product is CE-marked in 2013

As manufacturer/ the manufacturer's authorized representative established within EEA, we declare under our sole responsibility that the equipment follows the provisions of the Directives stated above.

Date and place of issue: Långsele 2015-02-15

Authorized person: Joakim Nygren R&D manager, Haglöf Sweden AB

FCC

This device, Digitech Professional II, FCC ID 2AAYWDPII, 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.

IC CANADA

This device, Digitech Professional II, IC ID 11894A-DPII, complies with Industry Canada's licence-exempt RSSs. 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.

Ce produit, Digitech Professional II, IC ID 11894A-DPII, est conforme au Chapitre 15 du Règlement FCC et le RSS du Règlement IC. L'utilisation est soumise aux deux conditions suivantes:

- (1) le périphérique ne peut pas causer d'interférences nuisibles et

(2) l'appareil doit accepter toute interférence en réception, y compris les interférences causant un dysfonctionnement de l'appareil.

FCC PART 15.21 STATEMENT

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

User modifications / changes

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.