



MANTAX

Digittech®

V1.6 ENGLISH USER'S GUIDE



Contents

Haglöf Sweden® 5

Mantax Digitech® 6

Assemble the caliper jaws..... 7

 Adjust the handle 8

 Jaw angle 8

MENU SELECTIONS..... 9

 Battery 10

 LOCAL..... 10

 1-key registration (1But) 10

 3-key registration 10

 Double scale function 10

 1-key registration (1But) 10

 3-key registration 11

 Delete latest registration 11

 Reading heights from Vertex and Vertex Laser Height Measurers..... 11

 LINE..... 12

 CLR 13

 INSP..... 13

 COPY 13

PC.....	13
DigiCom V1.0.....	14
Code.....	14
Name of tree species	15
Edit Data	15
Delete 0-diameters.....	15
Two 0-diameters=New plot	15
Three 0-diameters=New List, Stand	15
Export data	16
Identities.....	16
Radius	16
Result Example Standtable	17
Explanations.....	17
Example tab separated Excel txt file.....	18
Data file from the caliper.....	19
Line	19
PRINT	20
RAND.....	20
SET	21
Radio	22

Technical specification 23

 Accessories 23

 IR4..... 23

 IR6..... 23

 DigiRadio V1.6 23

 DigiAntenn..... 23

Declaration of conformity 24

Warranty and Service Information 24

SOFTWARE 24



HAGLÖF SWEDEN®

HAGLÖF SWEDEN AB IS A FAMILY OWNED COMPANY WITH A LONG TRADITION OF DEVELOPING AND PRODUCING INSTRUMENTS FOR PROFESSIONAL FOREST MEASURING WORK. TODAY, HAGLÖF SWEDEN MANUFACTURE AND SELL THE MOST COMPLETE PRODUCT RANGE FOR CRUISING AND INVENTORY WORK.

A profound know-how in workshop production technique has grown to encompass our state-of-the-art manufacturing of electronic instruments and field software.

There are over 200 companies representing the Haglöf Sweden brand name around the world. Being a manufacturer with self-owned and -run production facilities, the entire production process is under our control. This ensures availability and reliable deliveries for you, as well as prompt service and support when you need it, no matter where in the world you are located.

Every operator of a Haglöf Sweden product is a member of our innovation team. We mark our resources for product development and maintain the flexibility of a small organization.

Many Haglöf Sweden instruments are used also outside the forestry industry, such as in building dimensions and utility industry, for road construction, in police work, gardening, power line survey, archaeology, geology and for wildlife management.

Haglöf Sweden AB, Box 28, SE-882 21 Långsele, Sweden.

Phone: +46 620 255 80. Fax: +46 620 205 81. E-mail: info@haglofsweden.com

www.haglofsweden.com



MANTAX DIGITECH®

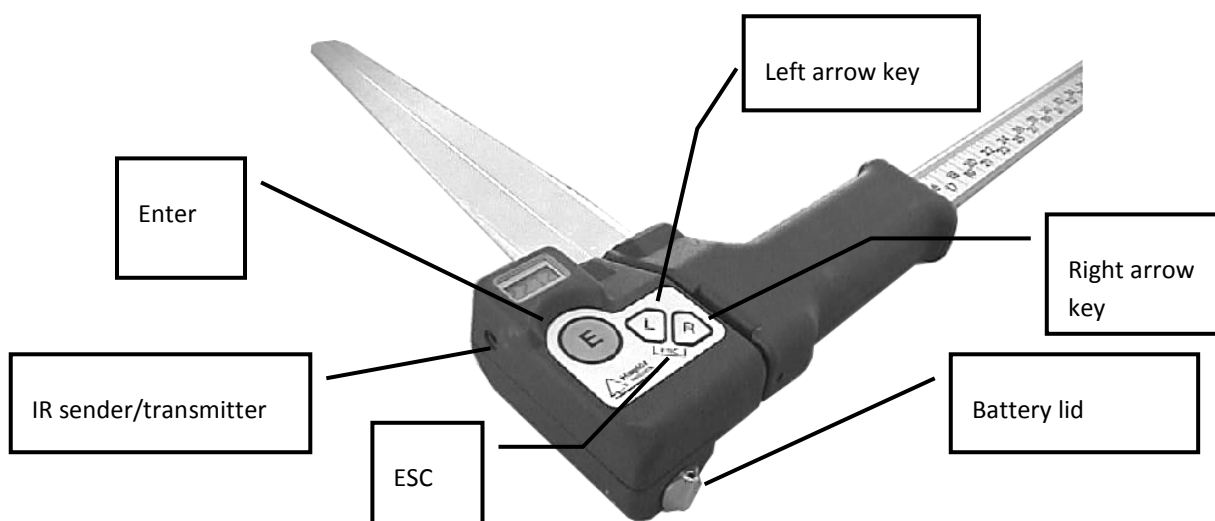
The Mantax Digitech® is a light weight, easy learn-easy use digital computer caliper, designed to endure any type of climate and daily use in a tough environment. The Digitech® consumes little battery and can communicate with radio signals with handheld computer and other devices. Several Digitech units can operate on an area, sending online individually separated measuring results to one handheld unit, adding value and increasing efficiency to investments and equipment.

The Digitech caliper is available in two configurations, the Digitech® Digicruise for inventory tasks (described herein), and the Digitech® Digilog, for log measuring, with 2000 registers possible and different variables (see www.haglofsweden.com for details on the Digilog model). Diameters and up to 8 different tree species can be captured and stored in the internal memory if not transferred online with radio signals or infrared light (IR). The Mantax Digitech® is equipped with an IR receiver for direct communication with the Haglöf Sweden® Vertex and Vertex Laser height measurers for receipt of height results.

The Digitech caliper is manufactured in three different lengths and several graduation options. For trees that are larger than the physical scale length, the Digitech can operate with a “double scale” function, enabling the user to register trees with large diameters. Digitech has with a built in generator for random pick of sample trees while cruising.

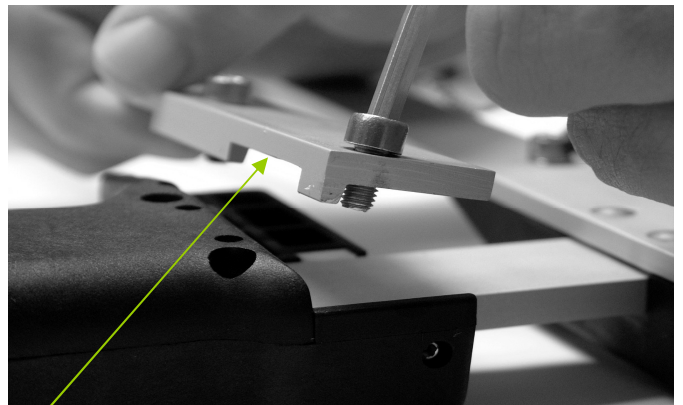
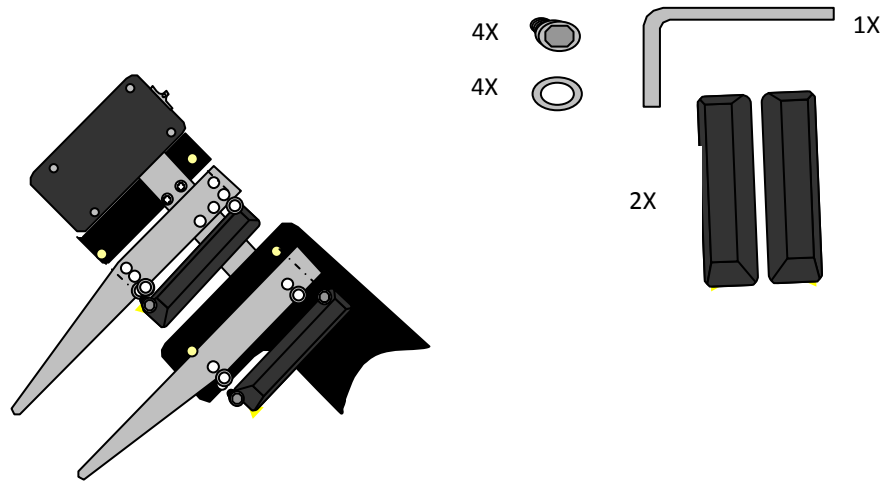
The Mantax Digitech® has jaws that can be removed and exchanged with red laser pointer Gator Eyes jaws. The red laser pointers are useful for operation in obscure surroundings and allows for diameter measuring and measuring of branches at a distance. See www.haglofsweden.com for details on the best Gator Eyes solution for your Haglöf caliper.

The Mantax Digitech® is operated through a menu based system. The keys L for left arrow key and R for right arrow key, are used to choose desired function. The E-key - Enter is used to activate the function you have chosen to work with. E is also used to turn on the Digitech caliper. To turn off, simply press both arrow keys simultaneously (ESC) when caliper is set in main menu. ESC is also used to step out of a current menu.



ASSEMBLE THE CALIPER JAWS

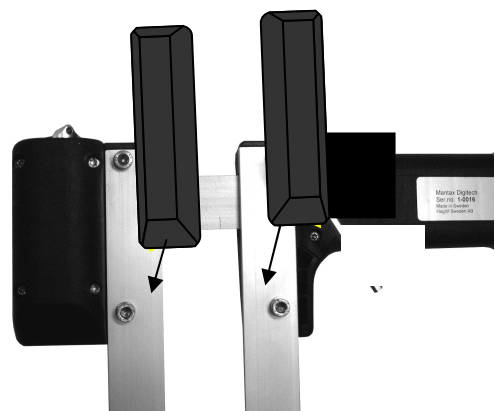
Assemble the caliper jaws using the enclosed Allen key (wrench) and the screws with washers.



Make sure the jaws are correctly assembled and guided into the material marks on your caliper.



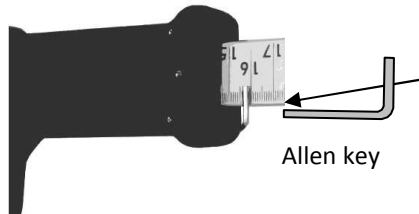
Tighten the screws using the Allen key.



Mount the jaw lids

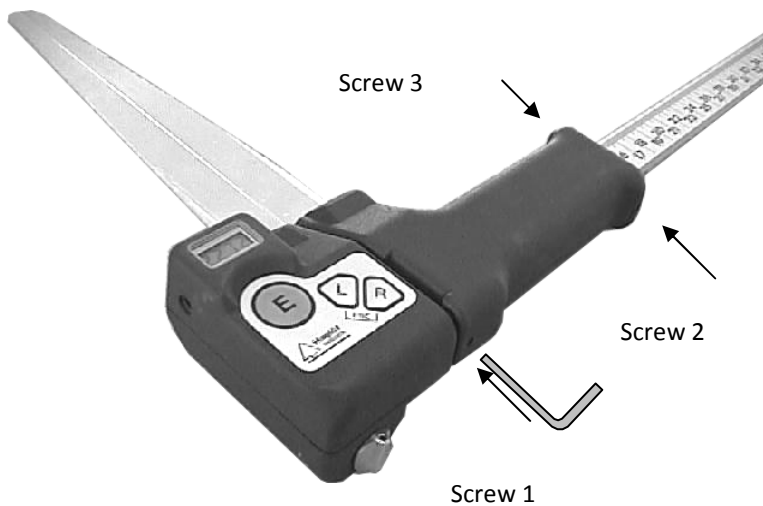
ADJUST THE HANDLE

In the back part of the caliper handle you will find a compartment containing a small Allen key. Use the Allen key to adjust the sliders and jaw angle for perfect run and alignment.

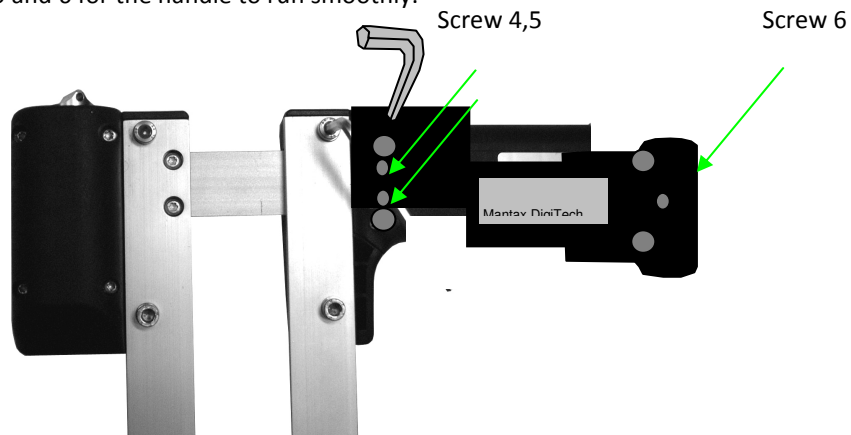


JAW ANGLE

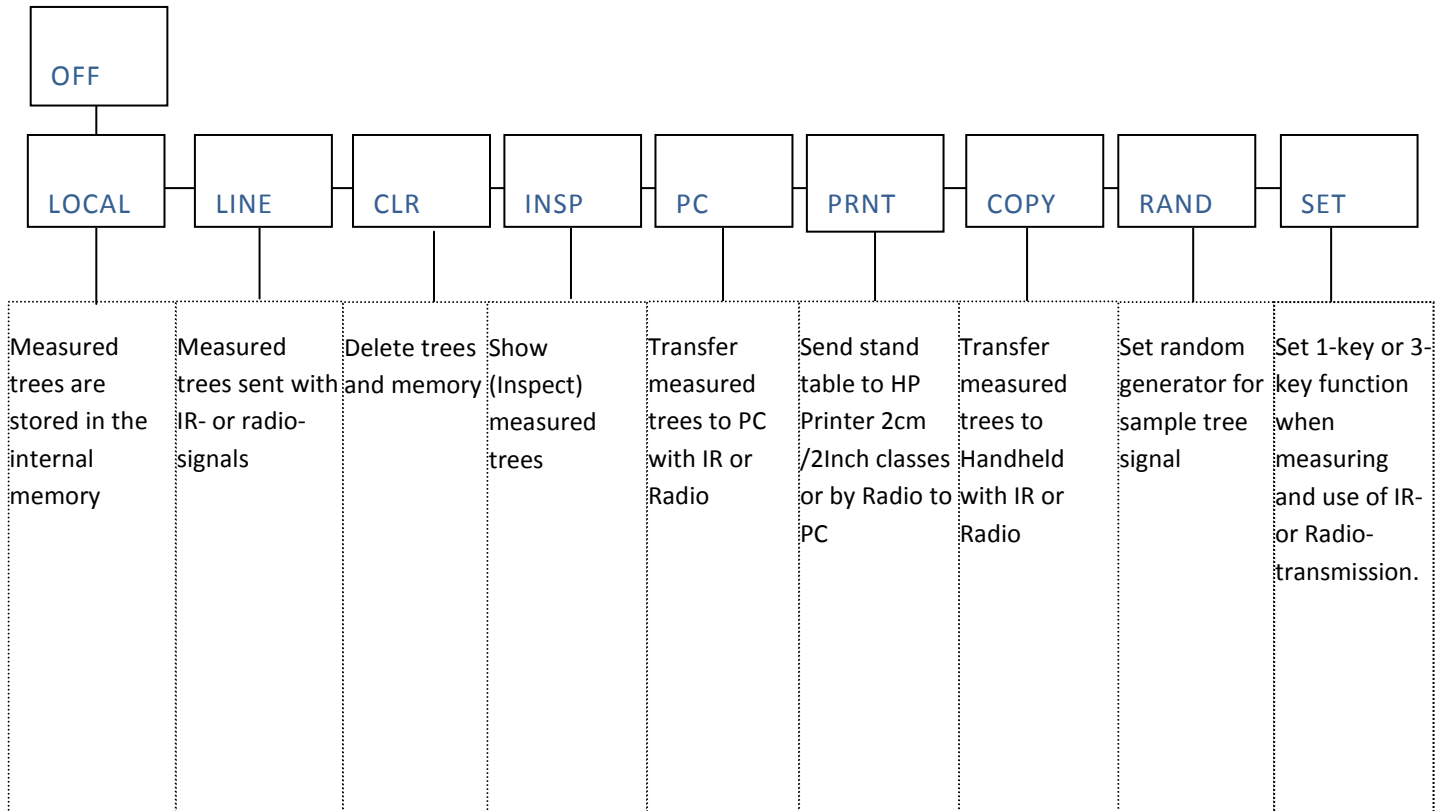
Adjust screw 1 until the handle runs smoothly. Adjust screws 2 and 3 for the jaws to be aligned (parallel).



Tighten screws 4, 5 and 6 for the handle to run smoothly.



MENU SELECTIONS



BATTERY

The caliper will alert the user when the battery needs to be changed by showing 'Bat0' in the display.

V 1.6

Collected data will remain in the memory also when changing the battery. The memory is of a non-volatile type and does not need any backup battery. When changing battery, the version number of your caliper firmware is shown in the display. Depending on number of previous registers, you may have to wait up to 6 seconds before you can start working with the caliper after replacing the battery.

LOCAL

Measured trees are stored in the internal memory in the Local menu.

1034

The number of captured measurements is featured in the display for a short while. Registration of tree species and diameters can be made in two different ways, and your choice is made under **SET** in the menu. When delivered, the Digitech caliper is set in 3-key registration mode.

1-KEY REGISTRATION (1BUT)

Press the caliper jaws around the object to measure a diameter. Select species by pressing the number as stated below with the E-key.

- 1 short press for tree species 1
- 2 short presses for species 2
- 3 short presses for species 3
- 4 short presses for species 4
- 5 short presses for species 5 (or 1 fast +1 long press)
- 2 short presses +1 long press for species 6
- 3 short presses +1 long press for species 7
- 4 short presses +1long press for species 8

3-KEY REGISTRATION

Pick species 1..8 with the arrow keys L or R. Press the jaws around the object to measure and press E.

Tree species'd' offer to feature the diameter in the display without registering any value (see double scale function next side).

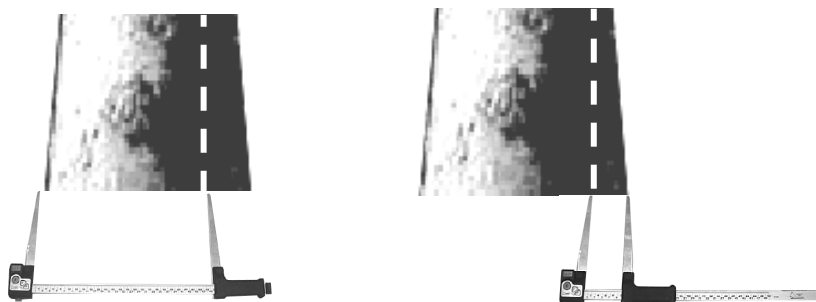
DOUBLE SCALE FUNCTION

1-KEY REGISTRATION (1BUT)

If pressing E for a short while, the current diameter will be shown in the display but no registration will be stored. Keep pressing the E key and move the caliper jaws to zero position (0) when you temporarily wish to

“extend” the scale length with 500mm / 18”. A larger diameter than the physical scale length can now be captured in the Digitech caliper.

1. Measure the diameter manually up to 500mm / 18” and put a mark on the tree stem.
2. Double the scale according to the above.
3. Register the remaining section standard procedure.



3-KEY REGISTRATION

Choose species ‘d’ and press E, keeping the key depressed. Move the caliper jaws to zero (0) and release the E button. The scale length will temporarily be expanded with 500 mm / 18” .A larger diameter can now be stored. See Double scale function above.

DELETE LATEST REGISTRATION

By keeping the L key pressed for a while, it is possible to delete the latest registration made. When doing this, the total number of registrations is shown in the display and the updated total number after deletion has been completed.

READING HEIGHTS FROM VERTEX AND VERTEX LASER HEIGHT MEASURERS

Activate the reading by pressing the R key for a short while. When ‘IR’ is continuously shown in the display, data can be sent from the Vertex and/or Vertex Laser instrument.

Data is transferred from the Vertex/Vertex Laser height measurer when pressing the IR key on the instrument (turn to the instruments manual for details on measuring result transmission). Repeat the process if necessary (for example if the Digitech caliper did not respond to the IR transfer).

NOTE: It is important to aim the IR exit port on the instrument towards the IR input on the Digitech to transfer data.



The IR reading can be stopped by pressing ESC on the Digitech caliper (L + R buttons).

LINE

In the LINE Menu, captured trees are transferred directly via Radio or IR without storage in the internal memory. Register tree species and diameters in the same way as in LOCAL menu. Radio or IR is set under menu SET. Data is transferred as 4 signs, where the first sign represents the species number '1'..'8'. The other three signs represent the diameter in mm (or inches +10) and finishes with CR and LF (Carrige Return, Line Feed). The receiving serial port should be set to 1200,8,N,1. Radio-receiver DigiRadio V1.6 or IR-receiver IR6 can be used as receiving module.

Ex. 1224 [CR]+[LF]

1=species and 224 is the diameter in mms

CR=carrige return character, LF=Line feed character.

Note: The caliper Id can be set in the Digitech® menu **Set**. If the Id is 1, 2, 3, 4, 5 or 6, an extra digit is added after the diameter digits. This makes it possible for a receiving unit (handheld computer) to separate caliper data if more than one caliper unit is operating in the field transferring online measuring results.

Ex. 12245 [CR]+[LF] when Caliper Id is set to 5. Caliper Id 0 is the default setting, no Id after diameter character.

CLR

In the CLR (CLEAR) menu, some or all registrations can be deleted. If pressing the E key for approximately 10 sec's, all tree data is deleted. If you make a short press, only the latest registered tree will be deleted.

INSP

Captured field data can be checked in the INSP (Inspection) menu. Use the arrow keys L and R to scroll registrations. L=go back, R=go forward. Leave the INSP mode by pressing ESC.

COPY

In the COPY menu, captured registrations can be sent to a handheld via Radio or IR. Data is sent in the following format:

;130	'Number of trees (0..999), modula 1000.
1123	Species and diameter, see Line
1430	"-"
1435	"-"

PC

DigiCom.exe enables easy transfer of field data to PC. Captured data is exported to Excel as a tab-separated text-file or as a Stand table in 1- or 2-cm classes with the corresponding sample trees and sample plot data.

Name of tree species, method for inventory and settings for data interpretation from the Digitech can be defined in the program. Data from more than one caliper unit can be transferred and interpreted as one object. You can also choose to perform a total measurement or a circular sample plot measurement.

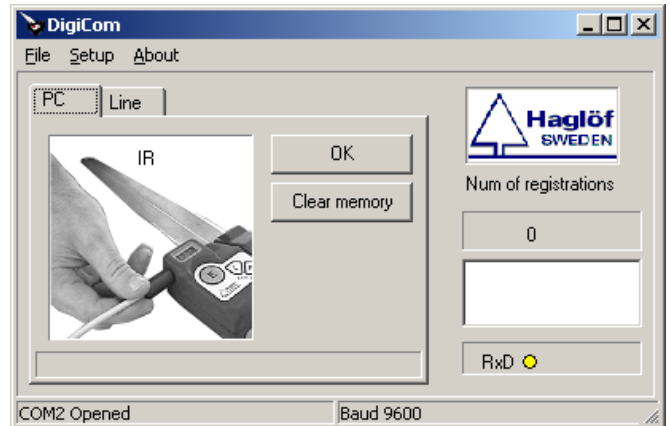
The DigiCom program will interpret two 0-diameters following each other (dia<5mm) as a New Sample Plot, and three 0-diameters as a New List (stand). This function enables to operator to capture and store Sample plots and Stands in the Digitech caliper in timely manner.

Tree heights are usually captured and stored under Code=8. To use, first register the tree species and diameter. Input the tree height as a diameter (dm) using code 8. Up to 3 different heights per individual object (=tree) can be registered, normally stating the total height, the height of green crown and a third, optional height.

If using the Vertex and/or Vertex laser instruments to transfer heights to the Digitech caliper, the height value will always be stored under code=8. Up to 3 different heights per registration can be captured and stored, as total height, green crown height and the third, optional height.

DIGICOM V1.0

1. Start DigiCom.exe program
2. Connect the IR4 cable to serial port and hold the cable towards the Digitech (see image).
3. Go to the PC menu in the Digitech and press the E-key. Hold the cable in the same



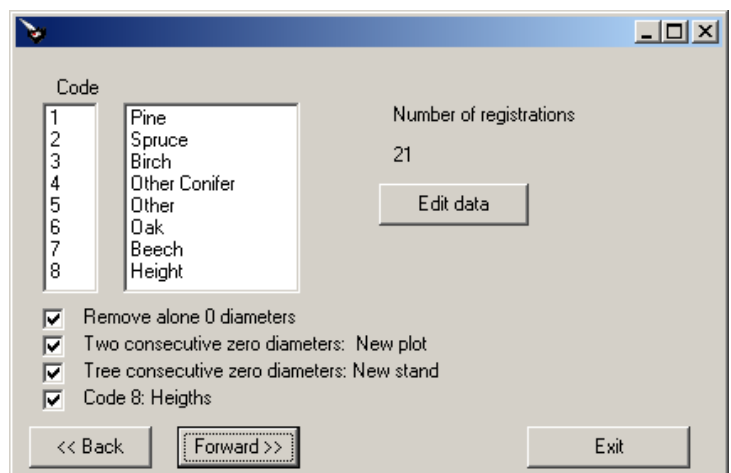
position until "PC" is displayed again in the caliper display.

If this operation is not successful, make sure that **Ir** has been selected in the SET menu in your Digitech caliper. If it still does not work, switch the serial port in the Settings menu, in DigiCom.

4. When data is received, a new screen will open up in the PC. Settings on how to interpret data from the Digitech can now be made.

CODE

The CODE is equal to the number that you have chosen in the Digitech when you measure a tree. This number is normally equal to the tree species. Heights are (normally) registered as Code=8. If using the Vertex and/or Vertex Laser height measuring instrument for height input, the height value will always be stored as Code 8. Up to three different heights per each register can be captured and stored as total height, green crown height and a third, optional height.



NAME OF TREE SPECIES

To change name of tree species, click "Tree species"

EDIT DATA

Input data can be edited, changed, deleted or added in this menu.

DELETE 0-DIAMETERS

If certain 0-diameters that are not required have been input, they can be ignored and deleted here.

TWO 0-DIAMETERS=NEW PLOT

Choose this if performing a circular sample plot measuring method.

THREE 0-DIAMETERS=NEW LIST, STAND

Choose this option if you have several stands registered in one caliper unit.

<<Back

Choose this option if you wish to read data from more than one caliper unit.

Break

Choose this option if you wish to interrupt or read data from more than one caliper unit.

Forward>>

Step forward to next screen where list and export format are chosen.

EXPORT DATA

In the following screen sequence, the chosen list to be exported and the way it should be presented in the out-file, are picked.

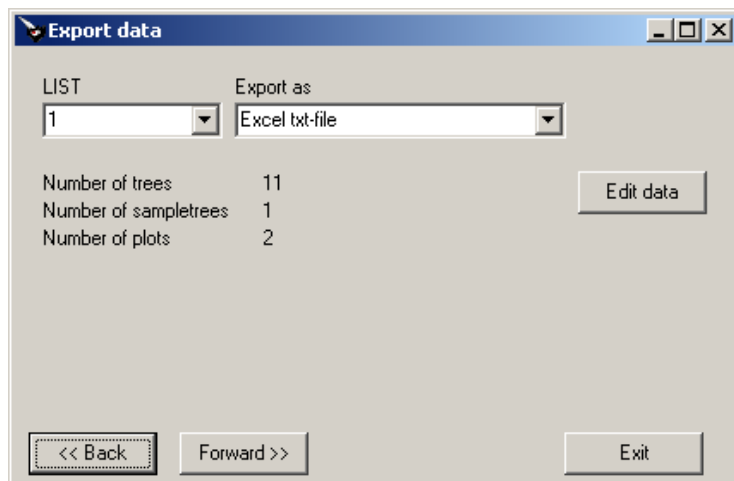
1. Choose list by marking the list-number under **LIST**.

2. Choose export format under **Export as** between:

1cm Standtable

2cm Standtable

Excel txt -file



Forward>>

Step to the following screen where ID for the chosen list is set.

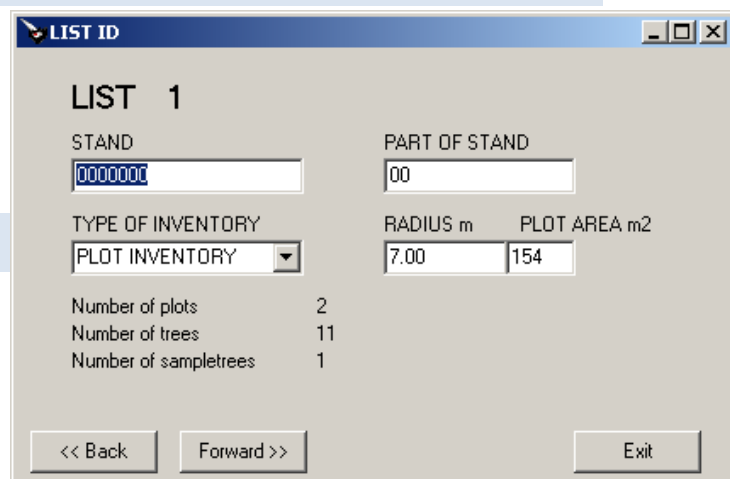
IDENTITIES

Choose stand- and partial stand-names.

RADIUS

If having made a circular sample plot measurement, the radius- or area size can be set here.

Forward>>



Continue and go further to store and name the result file. The standtables will automatically open up in a file editor, while the tab-separated excel-file is manually opened by the user (as a txt-file).

RESULT EXAMPLE STANDTABLE

C:\test.txt 2002-02-13 07:34:33

LIST 1
 STAND TestStand 1
 PART OF STAND part 2
 TYPE OF INVENTORY PLOT INVENTORY
 Number of plots 2
 Number of trees 11
 Number of sample trees 1
 PLOT AREA m2 154
 AREALFACTOR 32.5

SAMPLETRE	DIA mm	HEIGHT dm	HEIGHT2 dm	HEIGHT3 dm
1 Pine	335	208		

PLOT	BA m2/ha	NUM/ha
1	38.9	195
2	36.7	162

STANDTABLE

CLASS CM	Pine	Spruce	Birch	Other Co	Other Oak	Beech	TOT
10-12	1						1
14-16	1						1
18-20	1						1
20-22	2						2
22-24	1						1
24-26	1						1
28-30	1						1
32-34	1						1
36-38	2						2
SUM	11						11
Aver.Dia	24.7				24.7		
Aver2Dia	26.0				26.0		
Aver3Dia	29.6				29.6		
A.Heigth	20.8				20.8		

EXPLANATIONS

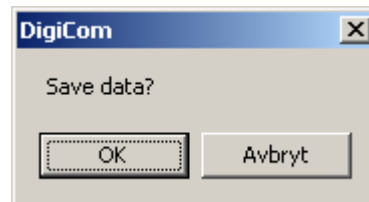
Area factor	Quotient of 1ha and total sample area		
BA	Basal area m2/ha		
Aver.Dia	Average diameter	sum dia/n	
Aver2Dia	Average dia*dia	sqrt(sum(dia*dia)/n)	
Aver3Dia	Average dia*dia*dia	sum (dia*dia*dia)/sum(dia*dia)	
A.Heigth	Average heigth sum h/n (sampletree)		

EXAMPLE TAB SEPARATED EXCEL TXT FILE

LIST	STAND	PARTOFSTAND	PLOT	PLOTAREAm2	SPECIE	DIA mm	HEIGHTdm	HEIGHT2	HEIGHT3
1	1	TestStand 1 part 2	1	154	Pine	157			
2	1	TestStand 1 part 2	1	154	Pine	244			
3	1	TestStand 1 part 2	1	154	Pine	335	208		
4	1	TestStand 1 part 2	1	154	Pine	118			
5	1	TestStand 1 part 2	1	154	Pine	201			
6	1	TestStand 1 part 2	2	154	Pine	362			
7	1	TestStand 1 part 2	2	154	Pine	236			
8	1	TestStand 1 part 2	2	154	Pine	290			
9	1	TestStand 1 part 2	2	154	Pine	374			
10	1	TestStand 1 part 2	2	154	Pine	218			
11	1	TestStand 1 part 2	2	154	Pine	181			

DATA FILE FROM THE CALIPER

Data from the Digitech caliper can be stored as a dig-file. This file can be opened later on if you wish to delay export of data.



A register in the dig-file will be stored as a four (4) digits string where the first digit signifies code as '1'...'8' and the three remaining digits show the tree diameter in mm.

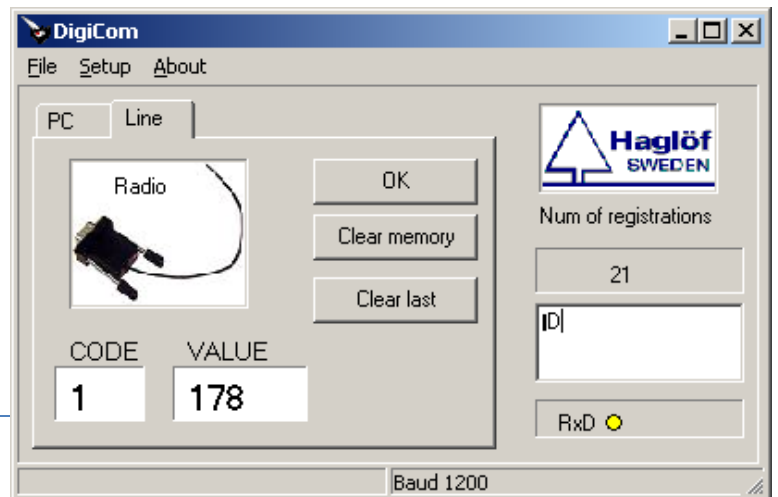
For example: 11232345

1st register: Code 1, 123mm

2nd register: Code 2, 345mm

LINE

Data from the Digitech® can be transferred online to DigiCom. Choose LINE in the Digitech menu and Line in the DigiCom. Data from the current registration will be received by the connected radio receiver and stored by the DigiCom. By clicking in the field below CODE or VALUE you can make changes in the last registration. Delete is easiest made in "Delete last". Choose OK after finishing the measuring and to start exporting data.



PRINT

In this menu, data can be sent as a standtable to a HP-printer.

```

MANTAX DIGITECH
D * #1 #2 #3 #4
  * #5 #6 #7 #8 TOT
0* 5 - - -
  * 1 - - - 6
2* 2 - - -
  * - - - - 2
4* 15 - - -
  * - - - - 15
6* 7 - - -
  * - - - - 7
8* 8 - - -
  * - - - - 8
10* 6 - - -
  * 1 - - - 7
12* 5 1 - -
  * - - - - 6
14* 23 1 - -
  * - - - - 24
.
.
.
76* 1 - - -
  * - - - - 1
82* 1 - - -
  * - - - - 1
86* 1 - - -
  * - - - - 1
TOT 188 14 3 -
*** 5 - - 1 211

```



RAND

In the RAND menu (- random), parameters for sample tree registrations can be set. The form factor used in the sample tree generator is: $K \times d^2/D^2$

K (quote %) between 0 and 99
d Captured diameter
D Mean diameter of tree specie

If the number is larger than the random number between 0 and 99 a loud beep will go off 10 times, indicating the registration of a sample tree. The parameters D and K can be named separately for tree species 1,2 and 3. For other species D and K are normally named.

The parameters are shown and can be changed as follows:

Choose RAND menu and tree species 1 to 4 with the L or R key. Press E. The D value for the current tree species is now featured in the display. By giving a short press on the E key, you step forward to the K value. Another short press and you return to the chosen tree species.

If a value needs to be changed, press the key for a short while and move the caliper jaw until desired value is featured in the display. Tree species with a K-value 00 will not be marked as sample trees.

SET

One- or more key function is set in this menu, and Radio- or IR-transfer. First select between 1but (one-key function) or 3but (3-key function). Use the arrow keys L and R to choose 1but or 3but, activate your choice with the E-key.

1but Choose species and register diameter with the E-key.

3but Choose species with L and R keys and register diameter the E-key.

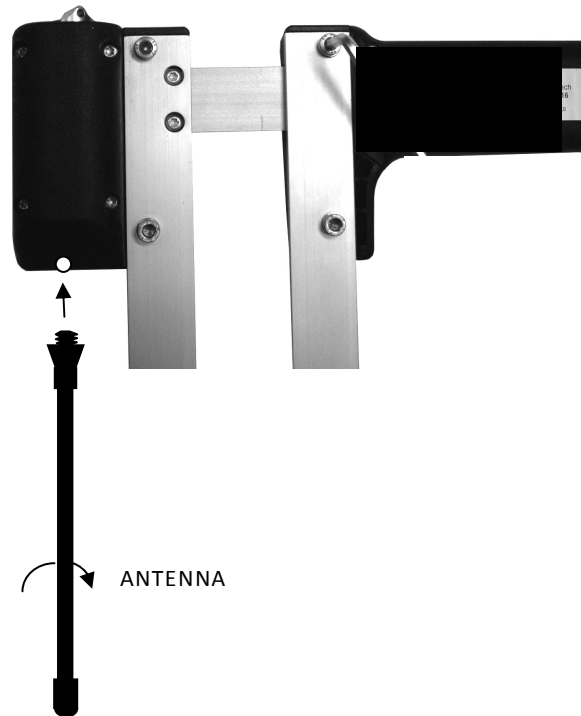
Then select Radio- or IR- transfer. This selection has to be made depending on what receiver you intend to use when sending captured data.

Rdio: Radio transfer
Ir: Infra red transfer

RADIO

The Digitech has a built in radio transmitter, enabling wireless data transfer up to 25m/82feet with an external antenna, without antenna, up to 5m/16feet.

The antenna is mounted at the back of the Digitech caliper. Remove the cover before mounting the antenna.



Data can be sent online when the user presses Enter, see **Line**. Data can also be sent as a file, including all stored registration, see **PC**. Make sure to set the caliper in Radio mode when using the Radio. Choose **Rdio** instead of **IR** in the **SET menu**. The receiver can be used in any PC compatible 9 pin serial port.



Receiver for other types of interfaces can be ordered from Haglöf Sweden AB.

TECHNICAL SPECIFICATION

Length	50cm/65cm/80cm 18"/24"/30"
Memory	8000 registers
Processor	Low power 32 bit arm based processor
Measuring system	Electronic, non-contact
Jaws	Detachable aluminium
No of tree species	8ea (1..8)
Measuring range	0..999mm / 0..36" (when using the 'double scale' function)
Battery	1ea 1.5V AA battery
Communication	IR and radio
Power	20mW
Weight	600g (scale 500 mm)
Temperature range	-20...+60 C
Signal	Built-in loud speaker
Tests	IP67 moist + dust proof. See Declaration of conformity

Digitech radio: UHF transceiver 433.92MHz ISM (Industrial, Scientific and Medical) frequency band, in compliance with the European Telecommunication Standard Institute specification EN 300 220-1 V1.2.1. Theoretical power output 10mW.

Power output dependencies:

Antenna length 125mm	55mm	30mm	No antenna
E(mV/m)@3m <20	<6	<2.5	<1.4

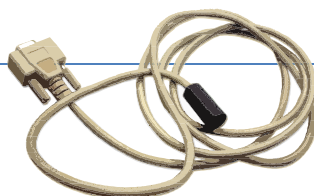
Antenna 125mm can be used in EU countries

Antenna 30mm can be used in US , FCC Regulation Part 15, Section 231

ACCESSORIES

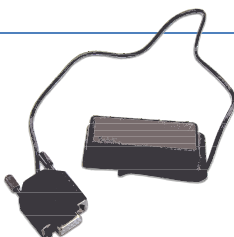
IR4

IR-receiver for PC



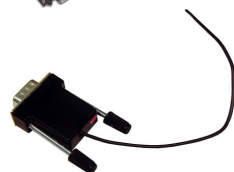
IR6

IR-receiver for Handheld



DIGIRADIO V1.6

Radio-receiver for PC or Handheld



DIGIANTENN

Radioantenna for DigiTech.



DECLARATION OF CONFORMITY

According to the EMC Directive 89/336/EEG, 92/31/EEG & the Low Voltage Directive 73/23/EEG and 93/68/EEG including amendments by the CE-marking Directive 93/68/EEG Type of equipment Caliper. Brand name or trade mark Haglöf Sweden®, Digitech. Type designation(s)/Model no(s) Digitech & DigiRadio. Manufacturer's name, address, telephone & fax no Haglöf Sweden AB, Klockargatan 8, SE-882 21 Långsele, Sweden Tel: + 46 620-25585, Fax: + 46 620-20581 The following standards and/or technical specifications, which comply with good engineering practice in safety matters in force within the EEA, have been applied: Testreport/ technical construction file/ normative document. Ref. No: 02012 Standard EN 50081-1, EN 55011 Class B EN 50082-2, EN 61000-4-2, -3 Level 3. FPA prüfnummer 3595, Kwf nr 1.06.3595. The product is CE-marked. 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.

WARRANTY AND SERVICE INFORMATION

Haglöf Sweden AB warrants that this product shall be free from defects in materials and workmanship, under normal intended use, for a period of 12 months after date of shipment. The warranty excludes the batteries, the accessories and any written materials. The warranty does not apply if the product has been improperly installed, improperly calibrated or operated in a manner not in accordance with the user's guide. Warranty is also automatically expired if the product has been opposed to external force and warranty is not applicable for cosmetic defects. The one-year limited warranty time covers obvious fabrication defects. Defects in the electronic components 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 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.

IMPORTANT ISSUES:

- For a valid warranty, a copy of invoice or dated receipt of your purchase must be presented. The serial number of the returned product has to be clearly stated upon return. Go to <http://www.haglofsweden.com/PDF/HaglofRMA.pdf> for return form/turn to your supplier for assistance.
- The return freight to us is on buyer's expense. After warranty repair or exchange, the return freight to you is on our expense. If warranty has expired or is null and void, all freights are on buyer's expense.
- If no original invoice can be presented upon shipment, or if two years or more have passed from date of purchase, a customs fee will be added by the applicable customs authorities and possibly in receiving country as well. These fees are on buyers account.
- We perform repair and service of products where warranty has expired when possible. Cost estimation will be sent to you after evaluating the returned product for cost approval. Please also see above paragraph on customs fees.
- Please do not hesitate to contact us or any Haglöf Sweden AB representative for questions or comments! **Any signs of misuse or negligence automatically withdraw our warranty commitments**

SOFTWARE

© Copyrights of Haglöf Sweden AB Software belong to Haglöf Sweden AB. Unauthorized duplication is prohibited. Haglöf Sweden and DIGITECH are registered trademarks of Haglöf Sweden AB. Production is made in Sweden.

Haglöf Sweden and its suppliers cannot warrant the performance or results when using the firmware, software or hardware, nor the documentation. No warranties or conditions are made; neither expressed nor implied, of merchantability, suitability or special fitness for any particular purpose. If software problems appear, please contact your programmer for support. Haglöf Sweden takes no responsibility for loss of income, time, or problems and delays due to problems in soft- or hardware of products. ***Copyrights of all software & firmware made by Haglöf Sweden belong to Haglöf Sweden*** Any lists and/or information of software for any Haglöf Sweden AB products should be considered as brief descriptions and not as a complete guide to what may and may not be available. For further details, please see ORGALIME SW01, General Conditions for Computer Software, and Supplement to ORGALIME S 2000 or ORGALIME SE 94.

