

DP II



User Manual



Haglöf Sweden®

Haglöf Sweden® AB is a family company with a long history of developing and manufacturing professional forest measurement instrument solutions. Our genuine know-how in workshop production paired with high-tech electronic and software development offer unique concepts and the markets' most complete product range for professional forest measurement work.

Haglöf Sweden product range includes increment borers, mechanical calipers, thread meters, height- and distance measurers, solutions for positioning, computer calipers, software and complete system solutions.

The Digitech Professional and DP II are market leading computer calipers used for forest inventory, log scaling, harvester calibration and more. Together with unique accessories, communication and compatibility with other instruments, the DP forms a complete measuring system for efficient field operations with versatility and focus on user adaptation and ruggedness.

Haglöf Sweden works for constant and continual improvement. Our goal is to make your measurement work more efficient while producing more accurate results. Adaptability, compatibility and flexibility are some of the means to reach this goal. A large software library with hundreds of software solutions enables completely new users a quick start. Communication with external instruments such as GPS devices and Vertex Lasers improves efficiency and reduces error sources.

Haglöf Sweden instruments are used in forestry, construction and planning, police and armed forces, agriculture, archaeology, geology, geography, fishery and wildlife research, utility industry and power line control and many more business and research sectors. More than 200 companies around the world distribute Haglöf Sweden products and can offer quick and professional service even in very remote locations. Check www.haglofsweden.com and contact us for more information!

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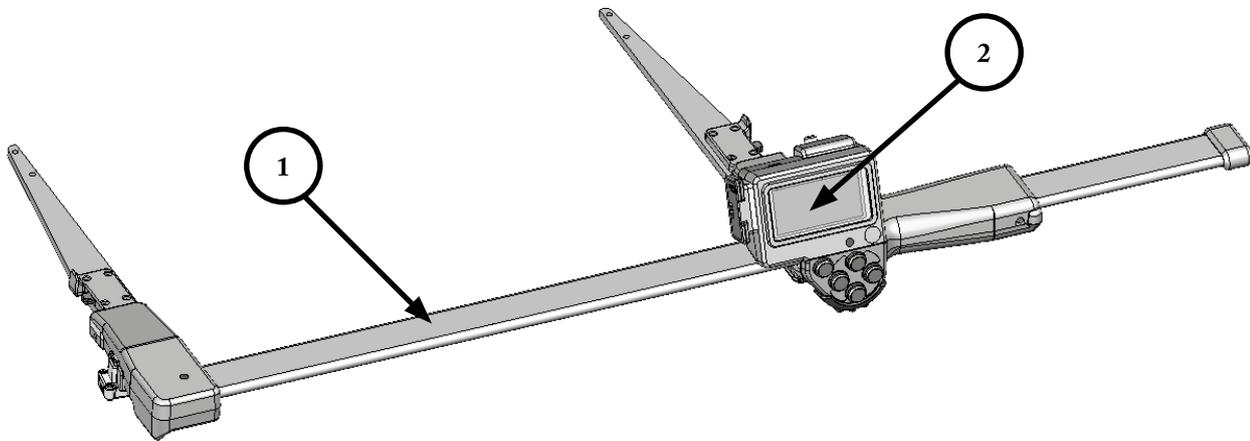
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1 Overview

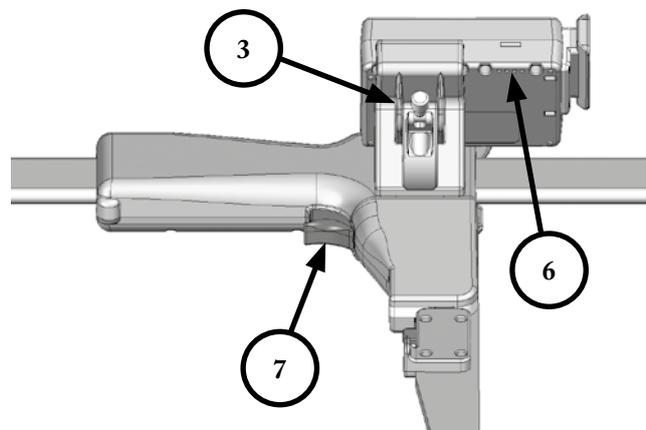
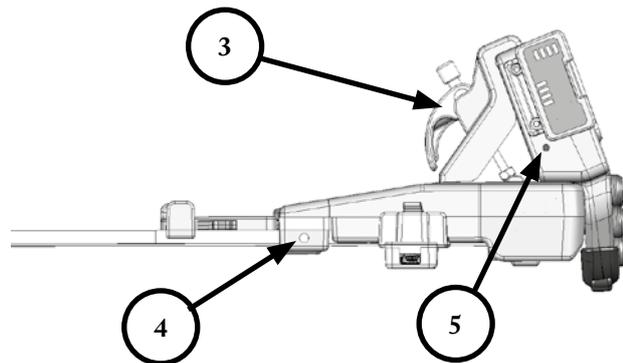
The DP II caliper incorporates the experience and knowledge gained from more than 70 years of developing and manufacturing professional field measurement instrument solutions for use in forests all over the world. Haglöf Sweden's extensive experience combined with innovation capacity and new ideas have resulted in this revolutionary computer caliper. The DP II includes these unique features and more:

- ◆ The lightest and most modern computer caliper on the market: approx. 890g or 35.6oz for 500mm/18" scale.
- ◆ Built-in metal chassis in computer terminal for high stability
- ◆ Patented foldable jaws with new design for easier use in confined spaces
- ◆ Built-in rechargeable Li-ion batteries for environmental concern
- ◆ SmartScale measuring system with wireless radio communication
- ◆ Flexible use and optional placing of computer terminal
- ◆ Built-in USB communication for quick and safe data transmission
- ◆ Serial RS232 communication
- ◆ Built-in Bluetooth®
- ◆ Updated technology, secure data storage (SD card) and great memory capacity (>1GB)
- ◆ Proven precise and energy conserving measuring system with SmartScale that can be used as a stand-alone instrument
- ◆ Unique accessories such as digital external keyboard, digital measuring tape, distance measurer, green laser pointers etc
- ◆ Extensive software library and adaptable and compatible software options for all types of work
- ◆ Built-in clinometer and communication with Haglöf Sweden Vertex and Vertex Laser height measuring instruments
- ◆ Low energy consumption with more than one week of work on a single charge
- ◆ Backlit graphical black/white display with excellent visibility

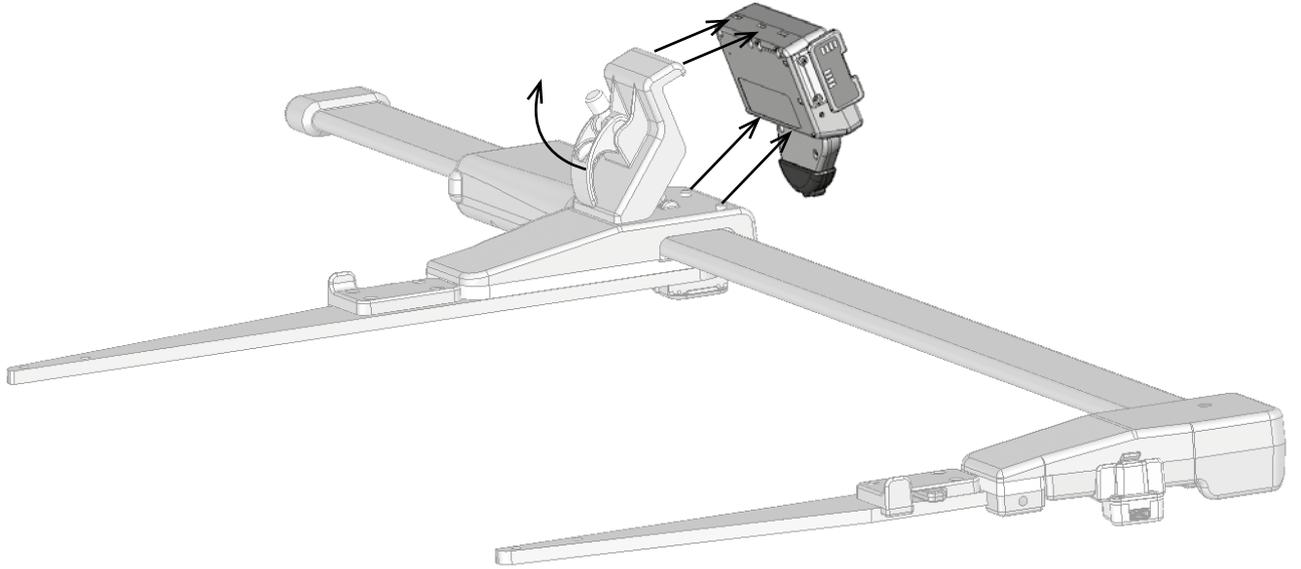
DP II



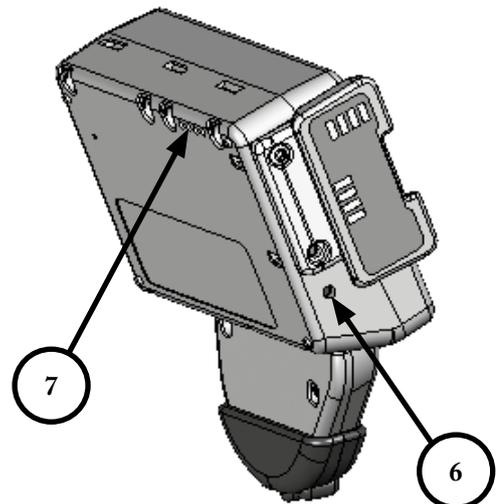
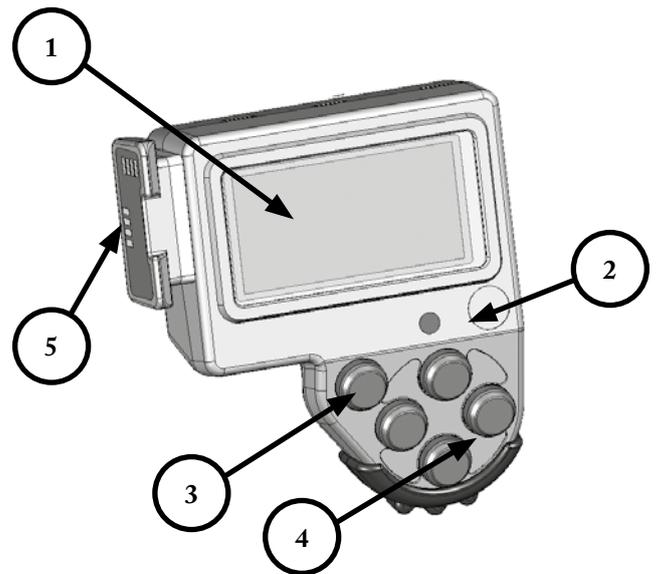
1. DP II SmartScale
2. DP II computer terminal
3. Quick release attachment for the computer terminal
4. Adjustment screws for the handle
5. Loudspeaker
6. USB interface and contact for battery charge
7. Enter button



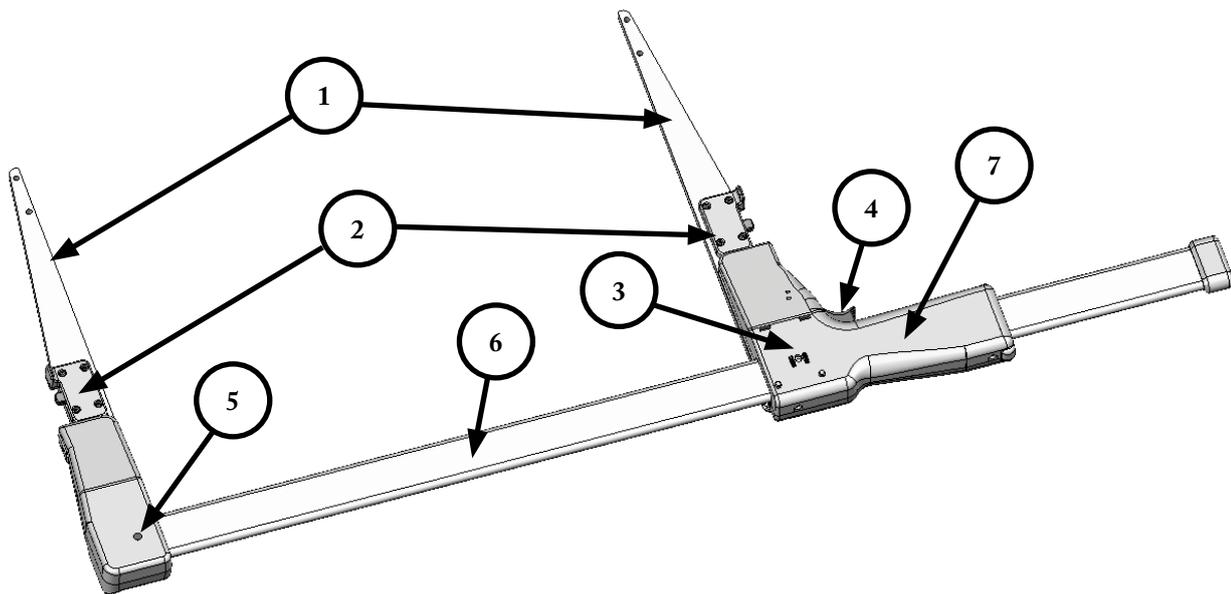
DP II Computer Terminal



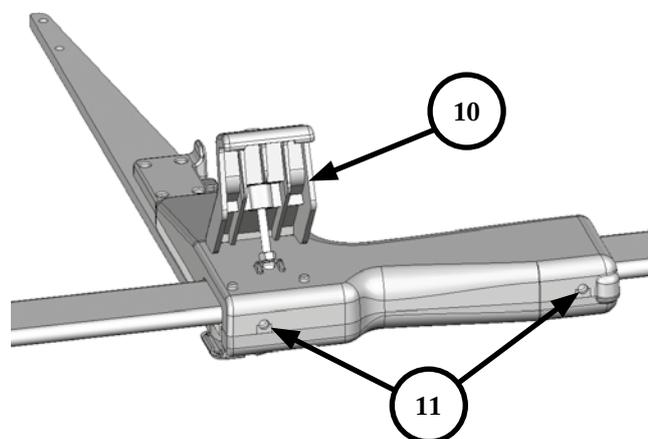
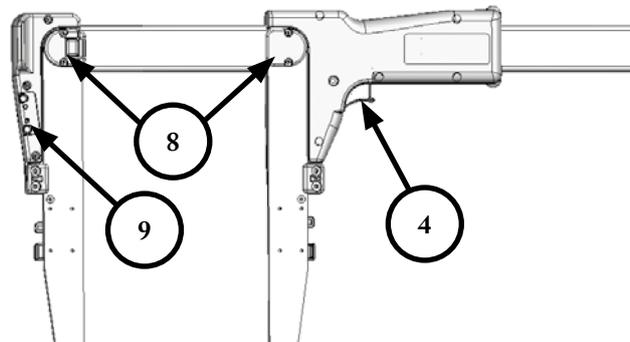
1. LCD Display
2. IR receiver
3. Enter button
4. Arrow buttons (4ea)
5. Serial Port
6. Loudspeaker
7. USB interface and contact for battery charge



SmartScale



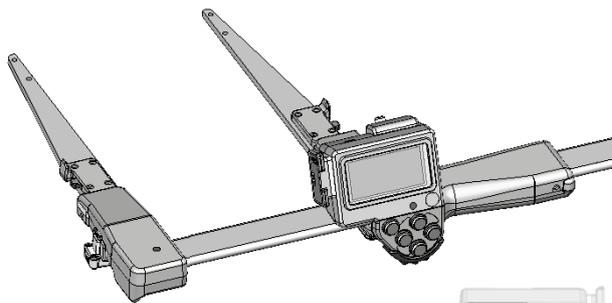
1. Foldable jaws
2. Lock for the foldable jaws
3. Assembly point for quick release attachment for the computer terminal
4. Enter button
5. LED Indicator
6. Scale
7. Movable handle
8. Handle lock
9. Contact position for battery charger
10. Quick release attachment for the computer terminal
11. Adjustments screws for the handle



2 System Description

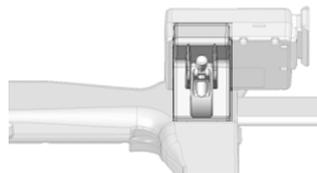
DP II

The DP II offers special features for flexible use and versatile operation. The user can decide how to work with the caliper based on the current work situation. The DP II computer terminal is both a stand-alone device and can be assembled and used with the moveable handle. In this mode, the DP II will look like and work similar to a traditional computer caliper.



Computer Terminal

The DP II computer terminal includes the necessary interfaces such as high visibility display, five-button keypad, USB port, serial port, loudspeaker, Bluetooth® and radio communication. Data is stored in the built-in industrial SD card with high security and extra protected to sustain cold, heat and hard impacts.



Computer Terminal excl. Serial Port

For operators that have no need for special accessories or serial communication, the DP II computer terminal can be special ordered excluding the serial port. The unit weight and size will be less without the serial port.



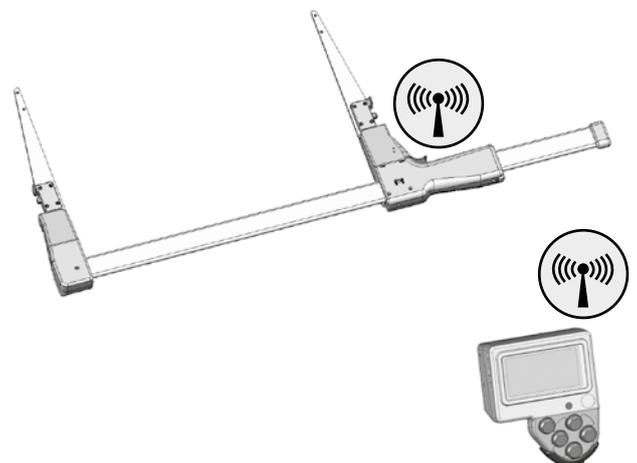
Detachable Computer Terminal



The DP II Computer Terminal can be detached from the moveable handle and the SmartScale. This is practical for example when transferring data to your office PC.

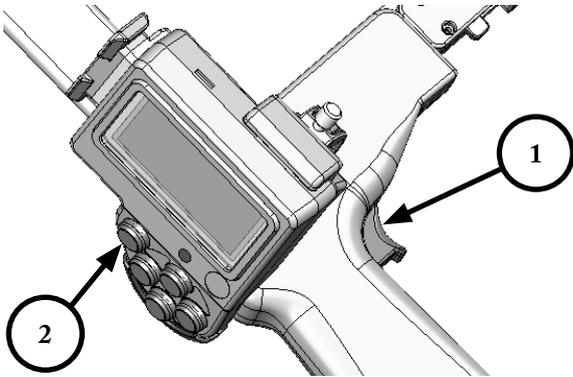
When performing tree inventory in dense tree stands with thick and low branches, it can be difficult to reach the measuring point. The DP II Computer can be removed from the SmartScale and jaws and placed inside your vest or jacket pocket, worn on your wrist with the wrist holder accessory or placed at a distance from you. The DP II SmartScale will in such cases look and work similar to a manual/mechanical caliper with its low weight and simple operation, but carries all advantages expected from a computer caliper. For the remote operation, the SmartScale has to be factory ordered and equipped with a Radio Enter button.

The computer terminal communicates wirelessly with the SmartScale measuring system at distances up to 10 meters. The remote Radio Enter button replaces the mechanical enter button on the moveable handle.



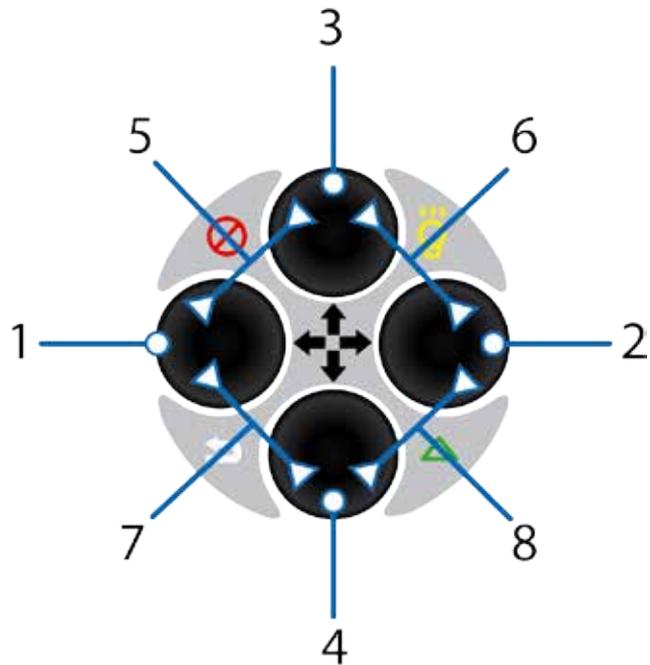
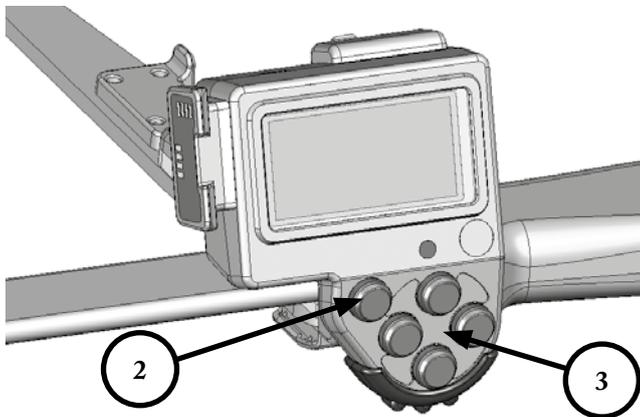
The Buttons on the Keyboard

When the DP II computer terminal is mounted on the handle, many users prefer to work with the "trigger-style" Enter button(1) on the handle.



When the computer terminal is used as a stand-alone computer, the onboard Enter button(2) on the terminal is preferred. A remote Radio Enter button called DP Radio is available as an accessory in cases where the caliper SmartScale is used as a stand-alone unit. See below for more details.

The arrow buttons (3) are used to navigate in the program and to enter data. By pressing two buttons at the same time, different functions can be activated, such as turn on backlit display, shut off computer terminal and more.



No	Icon	Key/s	Function
1		Left	Step left
2		Right	Step right
3		Up	Step up
4		Down	Step Down
5		Up + left	Power Off
6		Up + right	Back lit display
7		Down + left	Escape
8		Down + right	Vertex IR

Example Multi Function Button

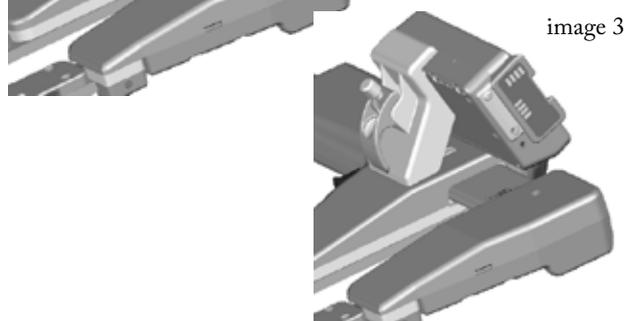
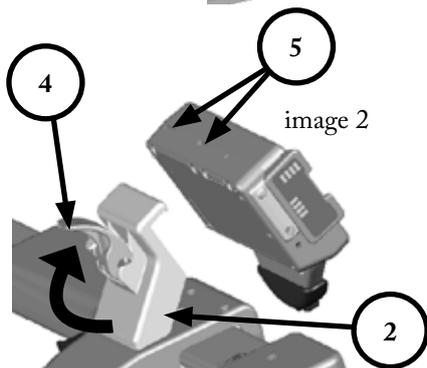
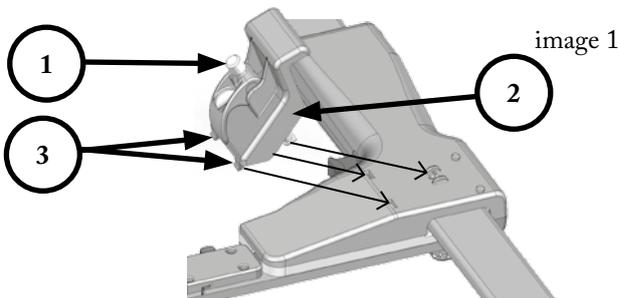


Use **Escape** to step out of a menu or to interrupt an ongoing Kermit communication. Press both buttons simultaneously according to the image.

3 Operating Procedure

How to Assemble the Computer Terminal

1. Mount the support (2) by attaching the two guide pins (3) in the outlets on the upper part of the movable handle and firmly fastening the locking screw (1). Be careful not to overtighten the screw.
2. Make sure that the clamp (4) on the handle is in raised position, see image below.
3. Attach the computer terminal by engaging the support (2) in the outlets (5) of the upper part of the terminal; continue by lifting the support (2) with the terminal and tilt the lower part to the movable handle. Lower the computer terminal and lock it by folding the clamp down (4).



How to Disassemble the Computer Terminal

1. Lift the clamp to the upright position.
2. Lift the computer terminal straight up and pull the lower part of the terminal outward.



Assembling the Computer Terminal on the Wrist Holder

The computer terminal can be used as a stand-alone hand-held computer and attached onto the DP II Wrist holder accessory and worn on your wrist.

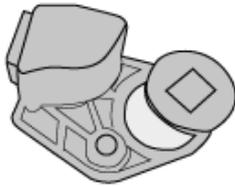
1. Steer the guide pins in the metal holder into the outlets on the upper part of the computer terminal.
2. Stretch the metal holder open using the large tab on the bottom of the holder and steer the lower guide pins on the holder into the outlets on the terminal.

Removing the Computer Terminal from the Wrist Holder

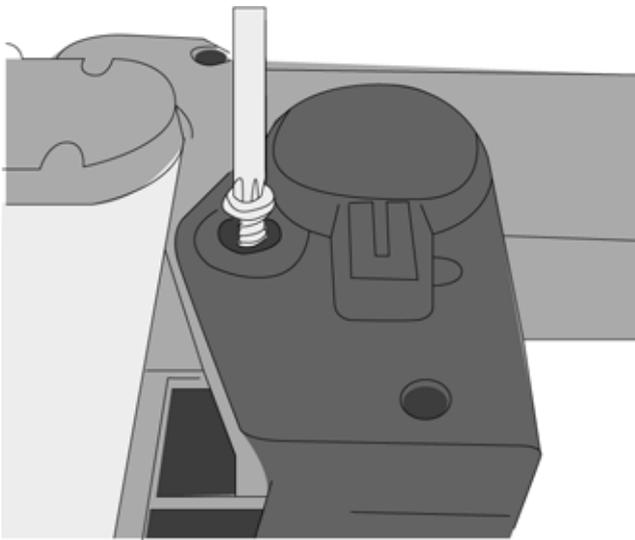
Stretch the metal holder open using the large tab on the bottom of the holder and remove the guide pins from the terminal.

DP Radio Button

The DP Radio Enter button can replace the mechanical enter button on the caliper movable handle. The radio button is used when the DP terminal and SmartScale are used stand-alone. The Radio Enter button is factory assembled on the DP II caliper.



Changing the Battery



The battery in the DP Radio button will last for approximately one year depending on use. The DP Radio uses a CR2032 3V battery. To change the battery, follow these instructions.

1. Unscrew the screw (Torx T10) that attaches the DP Radio button on the handle.
2. Remove the DP Radio button from the handle. Remove the battery lid by pulling it straight up. Remove the battery.
3. Replace the old battery with a new battery. – inside, + toward battery lid. Press the lid into position.
4. Attach the DP Radio on the handle with the screw.

Always dispose of old batteries in special battery containers

Synchronizing the DP Radio Enter Button

The DP Radio is synchronized with the computer terminal. When assembling a new DP Radio Button, the synchronization needs to be made as follows:

1. Disassemble the DP Radio Button and battery according to point 1 and 2 above.
2. Press 5-6 times on the DP Radio Button to drain it completely.
3. Assemble the battery with – to the inside and + to the battery lid.
4. Press the battery lid in place.
5. Start menu "Radio" in the computer terminal. **System menu—Settings—Radio—SYNC.BUTTON**".
6. When the menu is running, press one (1) time on the DP Radio Button and the message **Press DPRadio button** is shown.
7. Repeat point 1-6 if the procedure failed.
8. Assemble the DP Radio Button on the handle with the screw.

Turn off/on the DP Radio Function

The Radio function in the computer terminal can be turned off when the DP Radio Button is not in use to save battery.

1. Select "**System menu—Settings—Radio—Enter OFF**" and press ENTER to turn off the function.
2. The Menu text will change to: "**System menu—Settings—Radio—Enter ON**".

Synchronization with the SmartScale

The computer terminal needs to be synchronized with the SmartScale measuring scale, to connect the radio units. Functions for connection are available in the system menu. Note that the synchronization is made on an open channel. Avoid having other Smart Scale units close by (<10m) since this may interrupt the synchronization.

1. Reset the DP II by simultaneously pressing all five buttons. The DP II resets and restarts.
2. Set the SmartScale at 25 cm/10”.
3. Activate the menu **Systemmenu — Settings — Radio — Sync.Scale** in the DP II computer terminal.

Display

The graphic black and white display uses 128x64 pixels. A quick button function activates the backlit display, where the light will be ON for approx. 30 seconds after a button is pressed. Repeat the quick button press to turn off the function. The caliper will consume more energy with the backlit display function activated. At the right side in the display there are symbols/icons that indicate the following information:



Bluetooth communication on



Backlit display on



Tension on in the USB interface

Battery Indicator



Flashing = charging



Poor battery 3.00-3.30V



Normal battery 3.30-3.50V



Good battery 3.50-4.20V

Charging the Computer Terminal

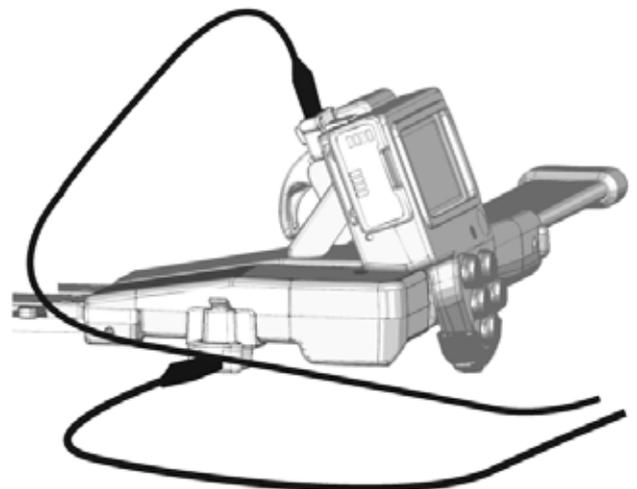
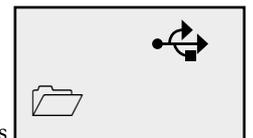
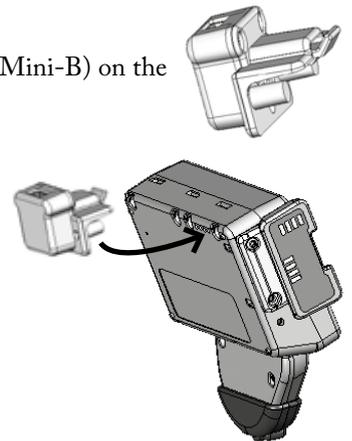
The DP II SmartScale and the DP II terminal use rechargeable Li-ion batteries. Fully charged batteries last for approximately one week depending on application used. The batteries are charged with 5V through the USB connections with the USB adapter and a mini USB cable that can be connected to a PC, a USB car charger or an external USB charger.

Normal charging time is 3-4 hours, depending on temperature and other factors. The computer terminal will charge quicker if put in “USB mode”. In other cases the charging time can exceed 4 hours. USB mode will (in normal cases) automatically be activated, provided that your terminal software allows it.

Note that the SmartScale needs to be charged as well; see separate chapter on the SmartScale

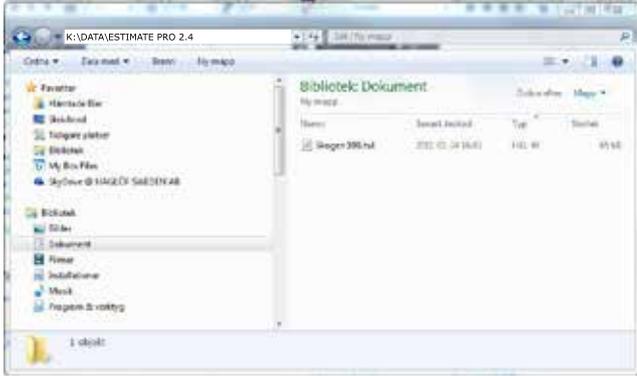
How to Charge

1. Place the USB cable (Mini-B) on the DP II USB adapter.
2. Place the opposite end (Type A) in a USB connection in your PC or in a USB charger.
3. Connect the DP II USB adapter with the USB cable on the computer terminal.
4. USB mode allows for quicker charging process. In normal cases the terminal software will automatically go to USB mode. The image shows the display when the terminal is in USB mode.

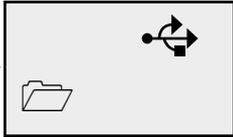
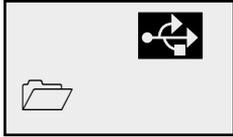


PC Communication

Transfer your programs and data using your regular file explorer. No specific drivers or programs need to be installed. The computer terminal charges the battery also when the USB is connected to the PC.



Connection to PC

1. Place a USB cable (Mini-B) to the DP II USB adapter.
2. Place the opposite end (Type A) in a USB connection in the PC.
3. Connect the DP II USB adapter with the USB cable on the terminal.
4. Go to USB mode in the terminal. In normal cases, the software you are using in the terminal will automatically go to this mode. The image shows the terminal display in USB mode. You can also choose to go to USB mode after a reset (reset is made by pressing all five buttons on the terminal at the same time) and use the arrow keys to go to the USB menu and press Enter.
 
5. When your PC operating system is connected, the USB icon in the display will turn black. Your computer terminal is now working as a regular USB memory stick.
 
6. Your regular PC file explorer can now be used to copy, move or delete files in the terminal. The data files are usually located in the directory \\DATA, and programs for the caliper in the directory \\PRG.
7. Finish the session by pressing Escape in the DP II computer terminal.
8. Remove the USB adapter by releasing the stop and pull the USB adapter backwards.

BLUETOOTH®

With Bluetooth technology you can work with wireless communication to the Internet or to other electronic instruments with Bluetooth. Energy consumption is comparably low. Bluetooth® is built-in the computer terminal for communication to external devices such as GPS, scanners and printers. The DP II terminal supports Master- and Slave mode.

◆ Master

Master mode is most common to use, and set under menu SETTINGS/Com Port/Bluetooth. When in Master mode, the computer terminal determines which external device to communicate with.

◆ Look for other devices

Before Bluetooth communication starts, the computer terminal will look for nearby Bluetooth devices. Any found devices are shown in a list, where the user selects which device to connect to. A code is usually stated that will be used as a key for coming connections. For the code key to the external device, please turn to the corresponding manual. The code key is often 1234, which is also the key used by the computer terminal when in Slave mode.

◆ Pair (BONDING)

The computer terminal will use the last connected device for coming connections. If using other device, delete the last used device in the menu SETTINGS/Com Port/Bluetooth/Reset to initiate a new search. Note that the SETTINGS menu is usually reached in the application that is running in the computer terminal.

◆ PC

There are many options for simple and inexpensive USB-adapters with Bluetooth®, enabling Bluetooth connection in your PC. The following examples show what a Bluetooth communication can look like. Connect your USB Bluetooth adapter in your PC and install the drivers according to instructions.

Example: Send File to the Computer Terminal with Bluetooth®

1. The computer terminal: Reset the terminal by pressing all five (5) buttons simultaneously.
2. Select Bluetooth in the computer terminal as your Com Port.
3. PC: Press to open the Bluetooth icon  and check for incoming ports. If there are no incoming ports, you will have to set one up. Note the COM port number when the port is set up.
4. PC: Start Hyperterminal in the PC. (Program/Accessories/Communication/Hyperterminal)
5. PC: Select to use the Com port (see point 2).
6. Computer terminal: Select the FILE/Receive file menu. The terminal starts to search for devices.
7. Computer terminal: Select your PC from the list and state the code, for example 1234.
8. PC: Click on the Bluetooth note that appeared on your PC screen and state code 1234.
9. PC: Select menu Transfer/Send file in Hyperterminal.
10. PC: Select file, for example Skalman6.DP2
11. PC: Select Protocol Kermit
12. PC: Select Send

The file is transferred to the caliper and the computer terminal will automatically disconnect the Bluetooth connection when ready.

Program

There are numerous software options for many different applications to the DP II. One or more programs can be downloaded to your caliper. In most cases you will need a valid software license. This license can be activated by the user. All programs for the DP II should have file extension ".DP2"

Older programs

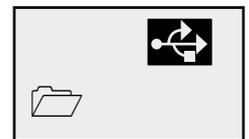
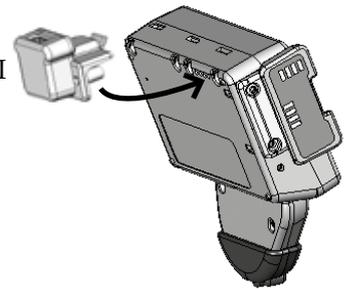
Programs developed for/ modified for previous (Haglöf Sweden®) caliper models are not suited for direct transfer or compatible for the DP II. Please contact your distributor for information on compatible programs for the DP II.

Updating programs

If you have a valid license to a DP II program, this license is inherited by the next program when upgrading, and uses the same product code. Delete older program versions after a new version has been started to reuse licenses.

Transfer programs to the DP II

1. Reset the DP II by giving a short press on all five (5) buttons on the terminal at the same time. The DP II resets.
2. Put the USB cable (Mini-B) in the DP II USB adapter.
3. Put the other end (Type A) in the PC USB port.
4. Connect the DP II USB adapter with the USB cable on the computer terminal.
5. Go to USB mode by navigating with the arrow keys to the USB menu and press Enter.
6. When the PC operating system is connected the USB icon in the display will turn black. The computer terminal now works as a common USB memory.
7. Start the PC file explorer and copy this or copy the software options that are to be used in the DP II to file "\PRG".
8. Disconnect the PC by pressing Escape in the DP II.
9. Remove the USB adapter by releasing the stop and pulling the USB adapter backwards.
10. Program files that have been copied to the DP II are now available in the menu "SELECT PROGRAM". In normal cases the program should be activated with a license key before running it, see next page.



Activate program license

The license key can be obtained from your Haglöf Sweden DP II distributor. If you do not have a license key, note the DP II serial number (SerNo) and product code (PROD) before contacting your distributor.

To activate the license, select menu "SELECT PROGRAM" and press ENTER. Use arrow button up- or down to select the application and press ENTER.

Select menu "Open file" followed by "LICENSE" and press ENTER.

State your code with the up- and down arrow buttons to increase or decrease the value of digit above cursor. Use the left- and right button to move cursor to next position. Store the code with ENTER.

When upgrading a program with identical product code you will not need to state the license key, provided that the licensed program has not been deleted from the computer terminal.

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DP II	Revised: 2015-03-16 15:47

Start a new program

A new program is started by selecting the menu "Reset" (usually placed as a sub menu under "SETTINGS"). After a reset, the DP II will display a list of downloaded programs. Select one of the alternatives and press ENTER. Go to "START" menu to start the program.

A program can also be started with a caliper reset (press all five (5) buttons at the same time). Select menu "SELECT PROGRAM".

The program that was last used will start in the start menu.

Upgrading the BIOS

BIOS is the program that handles all hardware in the caliper. The BIOS needs to be upgraded on occasion as follows:

1. Reset the DP II by giving a short press on all five (5) buttons at the same time on the terminal. The DP II resets.
2. Navigate to the "USB" menu with right arrow button.
3. Press Enter.
4. Connect the USB adapter to the DP II and the USB cable to the USB adapter and PC.
5. The PC operating system will initiate connection to the DP II. The DP II now works as a USB memory stick (MSD device)
6. Start the PC file explorer and copy the new Bios file (ex. "DP2 V2.0.DPB") to the root directory. In the root directory you need to have the file "BiosLoadV10.DPL".
7. Disconnect the PC with Escape in the DP II.
8. Remove the USB adapter by releasing the stop and pulling the USB adapter backwards.
9. Reset the DP II with a short press on all five (5) buttons at the same time. The DP II restarts and updates the Bios.

System menus

◆ RESET

The operating system is started with a reset that can be forced by pressing all five (5) buttons simultaneously. Several functions in the operating system are reached from below the system menu.

◆ LANGUAGES

Several menus and commands in the system menu are translated to different languages. Select the language menu and set your preferred language with ENTER. Check the time and date settings in the terminal settings.

◆ START

Start the last used application and press ENTER to execute the application. A license number should normally be stated before starting to use an application. You can run an application for five (5) days as trial before stating a license number. This number can be purchased from your DP II distributor and stated in the following menu, SELECT PROGRAM.

◆ SELECT PROGRAM

Use the SELECT PROGRAM menu to select application. Press arrow button up- or down to select, followed by ENTER. To start the application, select START and press ENTER. INFO contains information on licenses and date for download of program.

Delete all

Use the "Delete all" if you wish to delete all downloaded applications. Individual applications can be deleted through menu SELECT PROGRAM. Select which application to delete.

LICENSE

A license key will be obtained from your Haglöf Sweden DP II distributor. If you do not have a license key, note the serial number SerNo and PROD before contacting your distributor. To activate the license, select menu SELECT PROGRAM and press ENTER. Use the up- or down button to select the application and press ENTER. Select LICENSE and press ENTER. State your code with the up- or down buttons to increase/decrease the value of cursor. Use the left- and right button to move cursor to next position. Store the code with ENTER.

Delete program

To delete a program in the computer terminal select menu SELECT PROGRAM in the system menu and press ENTER. Use the up- or down button to select application and press ENTER. Select DELETE and press ENTER.

Files

The operating system provides a menu where all files that have been created and stored can be deleted or transferred to PC or other external terminal. Files can contain data from applications. Before deleting a file or formatting the flash disc, make sure that no important data is left in the files. Files can normally be deleted straight from an application without the need to activate the system menu.

1. Reset the computer terminal by pressing all five (5) buttons at the same time.
2. Press ENTER to go to the SYSTEM MENU.
3. Select the FILE menu.

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File list

All saved files are listed (up to 200 ea). Individual files can be selected and handled in the following menu system.

The selection "Delete all" deletes all data files in the directory "\DATA".

OPEN FILE

The menu can be used in the application that is run to for example open a file with data.

Send

Send a file with Bluetooth (Ftp/obex) to cell phone or other device. The computer terminal has to be connected to the receiving device, see the chapter on Bluetooth.

INFO

Information on selected files is shown, for example how many bytes the file contains and when it was created.

KERMIT

The Kermit protocol can send the file with a cable (serial) or with Bluetooth (Serial profile) to PC or other handheld.

DELETE

The file can be deleted.

USB

Activate the USB mode. In USB mode, the computer terminal is ready to be connected to PC via USB cable and to be handled as a USB memory stick. Files can be copied, deleted, created etc. with the regular file explorer in the PC. Quick battery charge of terminal is also activated in USB mode.

Information

Information on the Flash disc, such as available space on the internal flash disc is displayed.

Receive file

Use Kermit to send files from PC or other caliper to the computer terminal.

FORMAT C:>

The flash disc can be zero set by formatting it. All stored data and programs are deleted.

Settings

There are different settings that need to be considered in the system menu depending on software used in the DP II.

Serial port

Bluetooth®

The Bluetooth is a built-in wireless communication port. Set as Master when the computer terminal is to initiate communication and connection to external devices. Slave mode is used when external devices need to connect to the computer terminal. Use Reset to delete the information on last used connection. Pair (bonding) is used to connect devices to the DP II.

Com cable

Regular serial port where a straight modem cable is used. Also setting for baud rate. (1200...115200kbs)

Language

Set system language.

Contrast

Set display contrast (0..63). Normal value is 32.

CLOCK

Set the built-in clock. If terminal has been without battery power, the clock needs to be reset. Start with setting the year with right- or left button and step one (1) step = year at a time. Use up- or down to step with ten (10) years at a time. Accept with ENTER. Continue with month, date, hour, minutes and seconds in the same way.

Calibrate

Calibration of SmartScale, "Calibration" on page 16.

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Test Menu

Most menus under TEST MENU are used for service and error detection and not by DP II users.

Scale

Test for scale calibration and radio contact between the SmartScale and the computer terminal.

Digitech Tape

Control and calibration of the Digitech® Tape accessory.

DP DME

Control and calibration of the DP DME accessory.

Long timer 600

Test of the internal timer, 600ms.

No timer

Test mode for built-in electronics.

Read Time

Display clock in the display.

AD-channels

Test mode for built-in electronics. First line in display shows temperature of built-in battery when charging. Battery temperature is constantly monitored and charging will be interrupted if the temperature goes below 0°C/32F or exceeds 45°C/113F. The second line shows the battery tension (3.00-4.50V).

Backlight

Turn on/off of display backlight.

Charger info

Testmode for built-in electronics.

Flashdisc c:>

Shows information on what type of flashdisc is being used.

Blue terminal

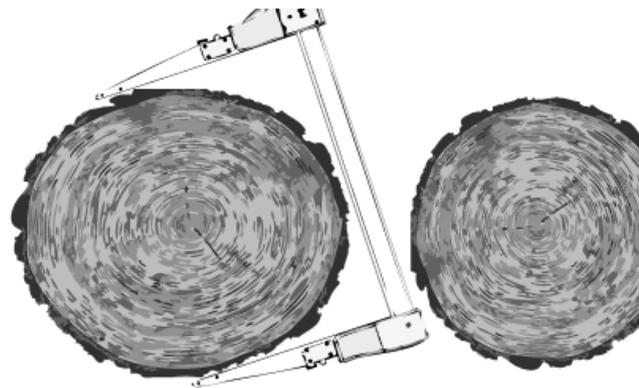
Terminal mode directly to built-in Bluetooth.

SmartScale

The SmartScale is the DP II measuring scale and jaws. The Smart Scale contains the measuring system, a battery and radio transmitter. The radio uses the ISM band on 2.4GHz. The Smart Scale is synchronized with the computer terminal and can after synchronization exclusively send data to this specific terminal. If either of these units (the Smart Scale or the computer terminal) are changed, a new synchronization has to be performed, see chapter Computer Terminal. The Smart Scale is available in the following lengths: 500mm, 650mm, 800mm, 950mm, 1020mm, 18", 24", 36", 40"

Unique jaw design

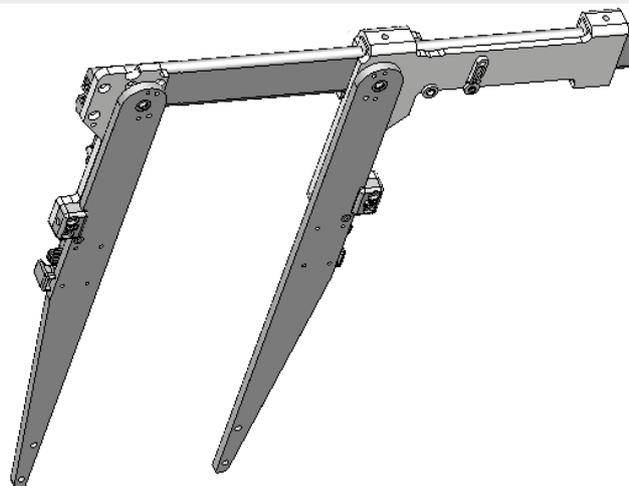
The DP II jaws are adjusted for smooth operation when measuring timber in piles and when working in narrow spaces. The firm jaw on the DP II Smart Scale has a special design that allows it to slide in between and under logs



Robust Design

Exact measurements can be performed thanks to the extra robust design and a strong, well balanced and light weight aluminum chassis.

DP II SmartScale (excl. plastic details)



Rechargeable Batteries - Environmental Concern

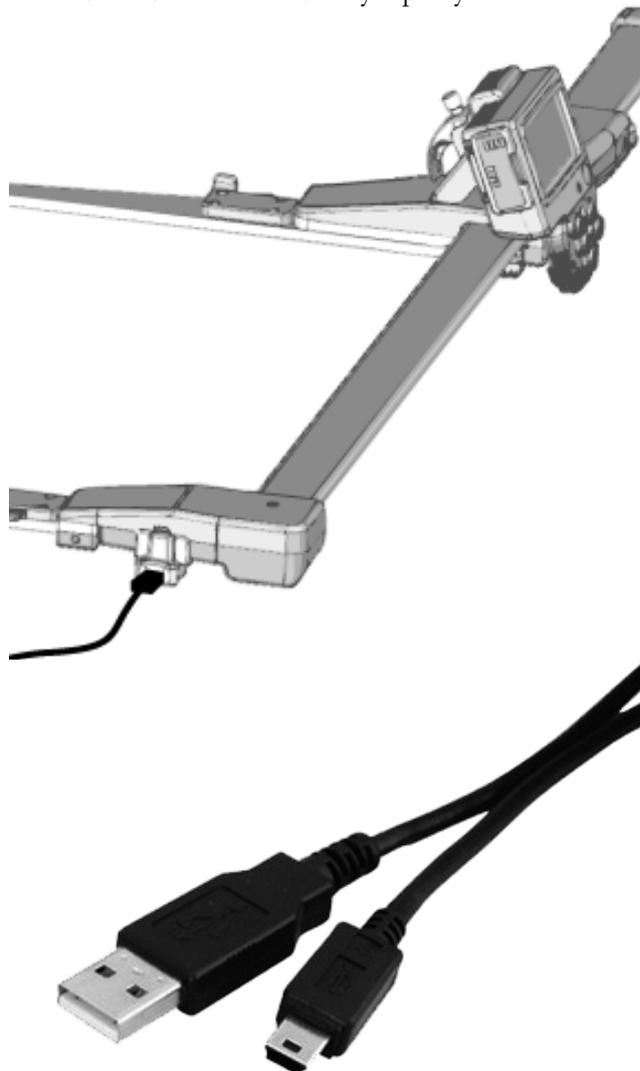
Both the SmartScale measuring system and the computer terminal in the DP II use rechargeable Li-ion batteries. Fully charged, the batteries will last for approximately one week depending on application used. The batteries are charged through the USB ports with the USB adapter and a mini USB cable that can be connected to a PC or to an external USB charger.

Charging the SmartScale

Connect the DP II USB adapter with the mini USB cable and USB charger, PC or USB car charger to the SmartScale according to the image. The charging time is approximately 3 hours.

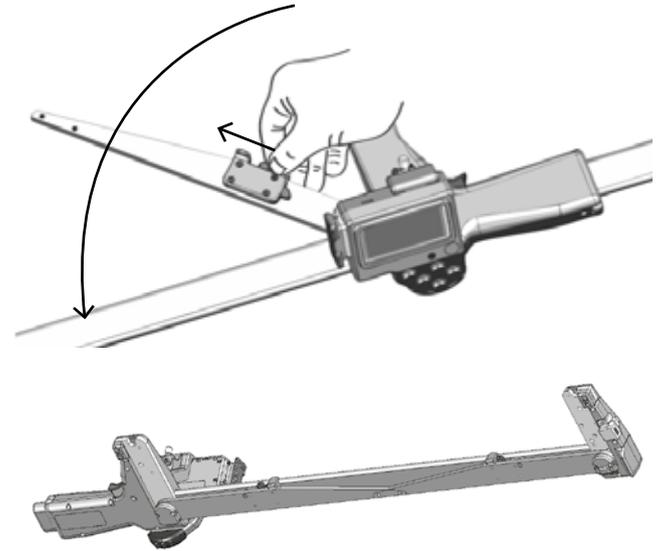
A LED indicator lights up when charging the SmartScale. When the LED light blinks, it is time to charge the battery. The indicator goes out when the battery is fully charged.

The computer terminal will warn when measuring if the DP II SmartScale has low battery capacity.



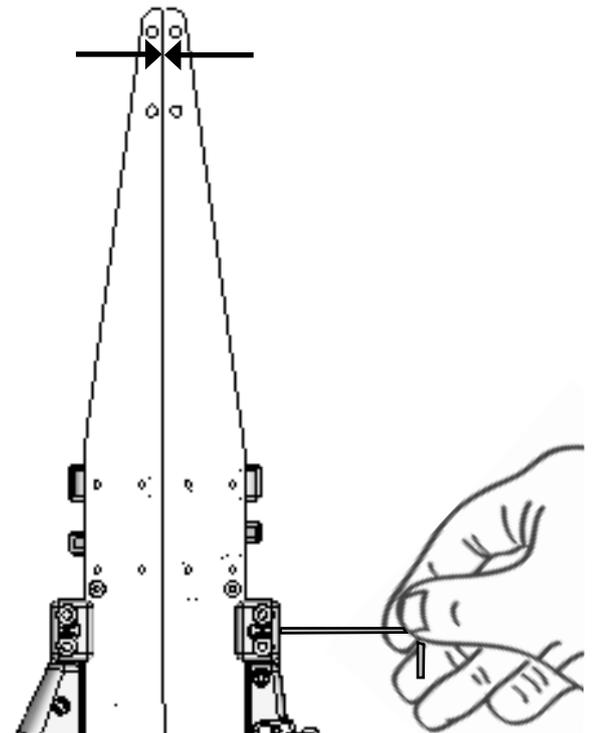
Foldable Jaws

The measuring scale has foldable jaws that can be locked in position. To fold the jaw, push the lock up and fold according to image below. Move the handle to the side as far as possible. Both jaws are locked in position and to each other along the scale.



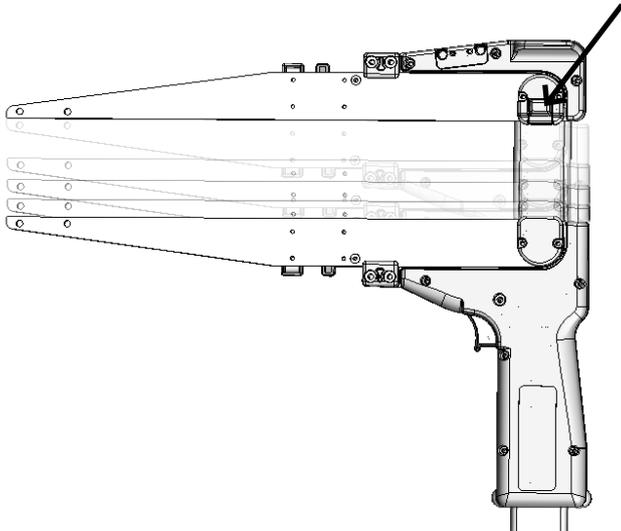
How to adjust jaws angle

The Smart Scale angle of the jaws may need to be adjusted after some time of use. The right and left jaw are adjusted with a 2 mm Allen Key according to the image below.



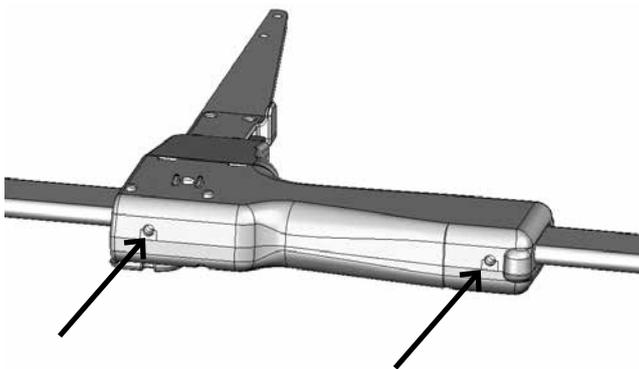
Handle lock

The movable handle on the scale can be locked if moved toward the the fixed jaw. This is practical when carrying the caliper in the handle and in other transport situations. To unlock the handle, press the button-like part on one of the jaws on the underside of the caliper, and at the same time gently press the handle to the side. The locking function (one or both locks) can be removed if preferred.



Adjusting the Handle

Use a 2mm Allen Key to adjust the handle. The handle has built-in sliders to avoid too easy run.



Calibration

The SmartScale will normally not need calibration. Make it a habit to check the displayed diameter to be identical to the scale featured diameter measure (or calibration guide). If there are divergences, (+-1mm) the SmartScale needs to be calibrated.

Preferably use a calibration guide as described below:

Go to **SETTINGS** menu and then to **CALIBRATION**.

1. Place the movable jaw at 0 cm and press **ENTER**
2. Place the movable jaw at 500 mm (18 inches) and press **ENTER**. The caliper is calibrated.

If the calibration failed, check the following:

Error code -1: Hardware error. Try recalibrating.

Error code -2: Not correctly calibrated. Recalibrate.

Error code -3: Measuring System disturbances. Try recalibrating.

Error code -4: No radio contact. Try to redo the synchronization between the SmartScale and the Computer Terminal process.

Angle Measuring

The computer terminal contains an inclinometer that can be used to measure angles and to calculate heights. The Gator Eyes laser pointers accessories are recommended to use as aim. The Gator Eyes are factory assembled on the caliper jaws (specify on order!) and consist from two powerful green laser pointers visible at long range and used to measure diameters from a distance and/or as aiming guides when measuring angles and heights. Remember that the use of laser pointers can be restricted in your area! Always treat and use laser pointers with care and consideration. Always check local restrictions and guidelines before using green laser. For information and instructions for the Gator Eyes, see separate user guide and product sheets.

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Calibrating the inclinometer

The clinometer is calibrated on delivery but may need fine adjustment according to below procedure:

1. Go to **"SYSTEM MENU—SETTINGS—ANGLE—CAL XYZ"**
2. Place the computer terminal on a flat surface (a table) with the display facing up. Press Enter when the text "1:FLAT" appears.
3. Rotate the terminal clockwise/counter clockwise half a turn and press Enter when the text "2:Turn Flat" appears.
4. Turn the terminal upside down. The label on the back should now be in front of you. Press Enter.

Calibrate the zero angle (0)

For calipers with factory assembled Gator Eyes. Go to **"SYSTEM MENU—SETTINGS—ANGLE—ZERO"**

1. Put a visible mark on a wall, for example the height of your chin.
2. Walk 10m-30m from the wall and point with the Gator Eyes, the point on the firm jaw on the mark with the caliper held at the height of your chin. Press Enter to store this 0-angle.
3. Control measure this 0-angle.

Controlling the SmartScale

Controls of the SmartScale is made in the application used, or in the menu **SETTINGS—TESTS** and Scale.

A calibration guide is used to control the measuring scale (art no 16-102-1007). If you cannot access a calibration guide, use the scale print.

Control that the displayed diameter value is consistent with



the value shown on the guide and/or the printed scale. Control at several points, 0 mm, 50 mm, 150 mm etc. For divergences of >1mm, the SmartScale should be calibrated.

Maintenance

When cleaning the plastic housing, it is recommended to use a dry or lightly moist piece of cotton cloth to remove dust and dirt. Do not use a brush on the display, since this may scratch the surface. Use a clean cloth and carefully wipe the display clean. Do not use chemicals or cleansing liquids since this may damage the housing. To clean the aluminum scale, use a clean and dry cotton cloth and, if necessary, some mild detergent. For paint stains and resin, a small amount of pure alcohol can be used on the cloth to carefully wipe off the stain.

4 Accessories, some examples

Digitech® Tape

The Digitech® Tape is an electronic measuring tape for lengths up to 7.5m/yds. The Digitech Tape is assembled on the computer terminal. Measured lengths are automatically transferred to the computer terminal, which registers and stores the information with the press of a button. The Digitech Tape has no battery or display. It is supported by the computer terminal and uses its display for result feature. The resolution is approximately 1mm with the accuracy of 1cm/10m. The Digitech Tape should not be permanently assembled on the terminal but removed after the measuring work is performed.

More recent models of the Digitech Tape will fit both the Digitech Professional and the DP II computer calipers, with a special adjusted serial port where the tape is mounted. If you have an older version of the Digitech Tape, this will not fit the DP II caliper!

Assembling the Digitech Tape

1. Put the caliper jaws to 0 cm.
2. Assemble the Digitech Tape by lowering the down part of the serial port into the port of the Digitech Tape.
3. Push the Digitech Tape forward for a firm lock.

Removing the Digitech Tape

1. Put the caliper jaws to 0 cm.
2. Press down the lock of the Digitech Tape and push the tape in opposite direction until finish.
3. Fold out the tape from the port.

DP232

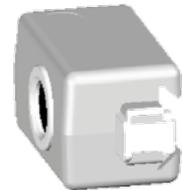
The DP II SmartScale can communicate with external handheld computers through the accessory DP232. Data from the DP II SmartScale is sent serially via the accessory DP232 to the handheld, and it is synchronized with a SmartScale and a DP Radio enter button.

DP Keyboard

The Digitech Keyboard contains a multitap keyboard for quicker registration of extensive field data. Numbers and signs A-Z, including ÅÄÖÜ

DP DME

The DP DME accessory to the DP II caliper can quickly and accurately deliver information on distance from the plot centre. Together with data from the caliper on the tree diameter, the answer is given if the tree is within or outside of the plot borders. The DP DME uses ultrasound technology to determine distances and works with a Transponder T3, often placed on a plot staff in the plot centre.



Accessories

- ◆ USB for serial adapter
- ◆ Serial adapter
- ◆ DP II wrist band and holder for the DP II terminal
- ◆ DP Radio, remote Radio Enter button
- ◆ Calibration guide 50 cm
- ◆ Carrying holster
- ◆ Measuring tape, mechanical 15 m
- ◆ Factor gauge
- ◆ Marktax marking system
- ◆ Display protection
- ◆ GPS (Bluetooth)
- ◆ Barcode scanner
- ◆ Printer
- ◆ More accessories are available, ask your distributor for details.

5 Technical Specification

Data terminal	
Memory capacity:	<ul style="list-style-type: none"> ◆ 1GB Flash File System. Non-volatile, high data security ◆ 1Mb high-speed RAM
Processor:	Low Power 32 bit Arm Based Processor
Display:	Graphical black-white, 128x64 pixels graphic interface
Background lighting:	Improved display visibility in poor light conditions
Keyboard:	<ul style="list-style-type: none"> ◆ Enter/Execution button ◆ Four (4) arrow buttons ◆ Quick buttons (light, turn-off, Escape, Vertex input) Enter/Execution button
Signal:	Built-in loudspeaker
Communication:	<ul style="list-style-type: none"> ◆ USB 2.0 MSD (Mass storage device), ◆ Bluetooth® (SPP, OPP) ◆ External serial port via adapter, USB (CDC) via adapter ◆ Built-in IR Vertex receiver
Temperature:	-20C... +60C / -4F...140F
Clock:	Clock with calendar and time
Batteries:	Rechargeable Li-ion battery. Charging through USB interface Energy consumption >one week per charge depending on software application
Angle accuracy:	0.4 degrees
Angle resolution:	0.1 degrees
Weight:	150 g/5 oz
Water resistance:	IP67
FCC	FCC ID: 2AAYWDPII 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.

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SmartScale	
Scale:	SmartScale aluminum, non reflecting, clear and durable graduation
Measuring range:	<ul style="list-style-type: none"> ◆ 500mm/18" ◆ 600mm/24" ◆ 650mm ◆ 800mm/30" ◆ 950mm/36" ◆ 100mm ◆ 1020mm/40"
Measuring system:	Non incremental, sealed
Weight:	<ul style="list-style-type: none"> ◆ 500mm/18" - 740 g/26 oz ◆ 650mm/24" - 850 g/30 oz ◆ 800mm/30" - 960 g/34 oz ◆ 950mm/36" - 1070 g/38 oz ◆ 1020mm/40" - 1120 g/40 oz
Water resistance:	IP67
FCC	<p>FCC ID: 2AAYWSS</p> <p>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.</p>

Packet Contents

Depending on selected configuration, the DP II packet will include different items as stated below. Length of the SmartScale is always stated at order (50cm, 60cm, 65cm, 80cm, 95cm, 100cm, 102cm, 18", 24", 30", 36")

Configuration	Opt.A	Opt.B	Opt.C	Opt.D	Opt.E
SmartScale with mechanical enter button	X		X		
SmartScale with DP Remote Radio Enter button		X		X	X
DP II Computer Terminal	X	X			
DP II Computer Terminal excluding serial connection			X	X	
DP232 Serial Radio Receiver for handheld computer					X
Aluminum case	X	X	X	X	X
USB communication (and battery charge)	X	X	X	X	X
◆ 2 ea DP II USB adapter (1 ea if alt. E)					
◆ 1 ea Mini B USB cable 0.5m					
◆ 1 ea Mini B USB cable 2.0m					
Battery charger	X	X	X	X	X
◆ 1 ea international AC/DC USB charger					
◆ 1 ea car charger USB					
Adjustment of jaws/sliders	X	X	X	X	X
◆ 1 ea 2mm Allen Key					

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6 Juridical information

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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.

Serial numbers and license numbers (if any) should appear on documents for products that are resold by retailer to third party. Retailers are not allowed to copy any software manufactured by the seller. If doing this, applicable legal actions will be taken. Any and all returns must be accompanied with RMA form and authorization number.

All instruments and batteries should be returned for recycling. Remember to always recycle used batteries and packing material when possible.

For further details, refer to Haglöf Sweden AB General Terms of Business; ORGALIME SW14, General Conditions for Computer Software, and Supplement to ORGALIME S 2012 with the exception of clause 46, and special agreements concerning Payment, clause 19 and The Purchaser's right to use the computer software clause 3.1, transfer of software to subsequent owners. Allmänna Leveransbestämmelser NL09 and Tillägg till NL 09 Copyright and/or Sublicensed to Teknikföretagen; and Svensk Programvaruindustri Licensavtal för programprodukter by Föreningen Svensk Programvaruindustri, SPI, and Elektronikindustriföreningen.

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Declaration of conformity

according to

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

Type of equipment

Computer calliper

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 882 30 Långsele, Sweden

Tel: 0620-25585, Fax: 0620-20581

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: Dectrum 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

City, datum

Långsele 2013-09-16

Signature of authorized person

Joskin Nygren

Name & Position

R&D manager



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