Height Systems
by Haglöf Sweden®

Effective Technology in Forest and Field

Innovative instrument solutions and applications that will improve your measurement accuracy - and make your job quicker!

New Colors
New Visibility
New Functionality

WHO

Haglöf Sweden is an experienced manufacturer of measurement instruments for survey, forestry, construction, control, research, geology, mining, archaeology and many more outdoor technical applications.

WHAT

Our product range includes original instruments and complex management solutions that take you all the way from the field to the office. Our company lead words are craftsmanship, quality and innovation.

WHY

Knowing number, dimension, volume, value and condition of your assets is a good thing. Apply a higher knowledge about your forests, logs, utility systems, power lines, tunnels, roads... Knowledge pays off!

What you Measure is What you Know

Quality Craftsmanship since 1943

Haglöf SWEDEN

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Haglöf Sweden®

Your Partners for Quality Measurement Work!

Haglöf Sweden® manufactures a full range of precision measurement solutions used by industry professionals all over the world. We focus on combining tough exteriors with smart interiors for solutions that are easy to use, packed with modern technology and that offer exceptional communication and compatibility skills.

Apart from the world's largest selection of increment borer models for quality control of wood, we offer a great choice of diameter caliper models, hypsometers, rangefinders and other instruments and tools for field management, testing and control work. Patented technology and long manufacturing know-how are keys to why Haglöf Sweden® is one of the most respected brand names in the business. Our products are developed and made in limited and quality assured series by our experienced team. With a tight organization and close collaboration with operators, customers and branch experts, you can rely on Haglöf Sweden® products.

The Vertex IV

Quality and Accuracy

- Classic ultrasonic measurement system for foresters
- Proven accurate & reliable technology
- Durable and rugged with aluminum housing and sealed electronics
- Excellent for radius measurement in sample plots
- Leading instrument solution for tree height measurement
- Built-in BAF (point sampling/reverse prism) functions
- Slope to horizontal distance conversions, measure in steep terrain
- Built-in Bluetooth® and IR
- Low battery consumption
- Reference users worldwide

The Vertex IV is primarily designed to measure the height of standing objects, and most often trees. The Vertex IV can also be used to measure distance, horizontal distance, angle and inclination. With efficient ultrasonic measuring technique, the Vertex IV has proven especially useful in dense terrains with thick undergrowth, where conventional methods such as measuring tapes, lasers and mechanical height measurers, are difficult to use.
The Vertex IV instrument has aluminum housing, sealed electronics and a large, easy-to-read alphanumerical display. A built-in tilt sensor allows for exact height measuring in slopes and hills. IR and Bluetooth® transmitters enable direct transfer of measurements to unlimited peripheral devices. Measure distances up to 30 meters with multiple heights per object, sample plot radius, limiting distances and diameters for BAF point samples and more.
To define a reference point in a secure and reliable way, the Vertex IV works with the transponder T3. The T3 reference point is used as a sight mark for height measuring and can be placed at optional heights, where visibility is the best in for example thick vegetation. The reference point height (T.HEIGHT in Vertex instrument setup) is set in a special menu in the Vertex instrument and automatically added to the measured height.

The yellow T3 transponder is used for ultrasound measurements with the Vertex IV. From February 2015, T3 transponders for the ultrasound function in VL5 instruments will be delivered in a bright orange color.

15-105-1008 Vertex IV 360° package/set incl. Vertex IV instrument, transponder T3, plot centre staff, adapter. User instructions included. Aluminum transport case.
15-105-1009 Vertex IV 60° package/set incl. Vertex IV instrument, transponder T3, User instructions included. Aluminum transport case.

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The VL5 Vertex Laser

New Orange High Visibility Color

The Professional Foresters' Primary Choice

The VL5 Vertex Laser is the complete solution for measurement work in the forest. With integrated tilt sensor and the unique combination of measurement technologies, the VL5 offers a variety of options for reliable results in all situations and surroundings.

The VL5 has extra shockproof housing in a new, high visibility orange color and improved functions to determine hazard trees and delta height - plus instant results for mean tree height.

With built-in BAF-factors, storing capacity and functions to instantly calculate mean height, the VL5 is an efficient and complete instrument solution in sample plots and reverse prism cruising.

The VL5 instrument has a shockproof and reinforced housing. The new bright orange color both for measuring instrument and Transponder T3 ensures high visibility in the forest.

- Ultrasound and laser combination technology
- Bluetooth® and IR communication
- Angle compensated/horizontal distance value and tilt sensor
- Features all advantages from the Vertex IV instrument for plot sample measurement and forest cruising
- Laser technique for range, height and angle measurements as 1, 2 or 3-point measuring, with or without reference
- Extended range measuring capacity from 0.5 m to 700 m
- Reverse prism factors (BAF-factors) 5-50 (English) / 0.5-9 (Metric)
- Mean/average height calculation
- Data storage & processing capacity
- Incorporated functions designed to for control work along power lines, building sites, houses, roads and railways
- Borderline and hazard trees, safety distance, tree limit, line clearance
- Delta height calculation
- Red cross aim for easy spotting of tree tops & thin objects
- Adjustable laser filter
- Rechargeable built-in Li-Ion battery
- Easy operation with field adapted keypad and step-through menu
- Rugged, reinforced and shockproof housing
- Perfect in the forest and for logging/wood industry,
- Possibility to custom order measurement functions
- Accessories include reflector/transponder T3, monopod for transponder T3, monopod with footbracket.

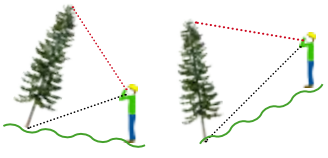
The **ultrasound method** with preset basal area factors is the preferred method in forests with thick vegetation and when your vision to target is obscured by branches and shrubs. Measure distances from approx.10cm/3,9" to approx 25-30 meters/80-100ft.

Recommended instrument configuration forestry cruising:
15-103-1020 VL5-360° package/set incl. VL5 instrument, transponder T3, plot centre staff, adapter, and charging cable.

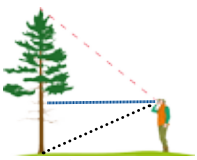
The VL5 **laser method** is used for long range measuring in clear areas. Measuring capacity from approx. 0,5m/1.5ft up to 700 meters/2300ft and longer with very high accuracy. A laser filter allows for flexible measuring, select to measure the closest object, the farthest object or the object that submits the strongest reflection.

Recommended instrument configuration:
15-103-1021 VL5-60° package/set incl. VL5 instrument, transponder T3, charging cable and adapter.

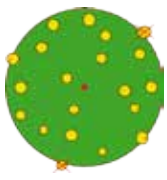
VL5 Laser: One-point measuring with laser



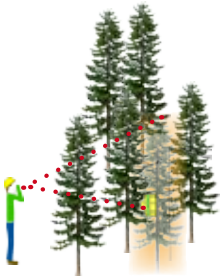
Two-point measuring for leaning trees, on hills and on slopes with laser



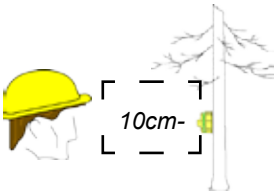
Three-point measuring



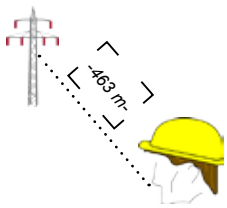
BAF Basal Area Factor in sample plots



Measuring in dense forest with ultrasound



Short distances



Long distances

Hazard trees/Tree limit, Delta Height: Also see L5 instrument.

The L5 Laser

New Blue Color for the Pro's in Utility - Power - Construction

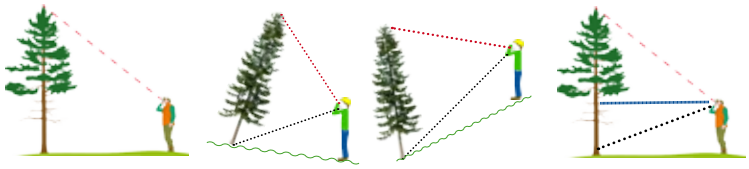
The L5 Laser is adapted for long range measurement in open areas. The L5 instrument will be useful for many outdoor applications and work areas in utility, industry, control work, power distribution, accident prevention and more.

A laser filter allows for flexible measuring, where you can select to measure the closest object, the farthest object or the object that submits the strongest reflection. Red adjustable and illuminated sighting cross improves sighting and **spotting of individual lines** and other objects. The L5 is shockproof with a reinforced and stabilized housing in **high-visible blue color**; IP67 secured and has user friendly interface.

The L5 includes several integrated complex measurement functions for the professional user. With the possibility to store and process data and to custom order certain instrument functions, the L5 is a great instrument choice for precision measurement in different areas, in plants and on industries.

The L5 Laser is adapted for survey and control measurements in open terrain and measures distances from around 0.5m/1.5ft up to 700m/2300ft. High accuracy results on inclination, distance and heights, processing capacity and storage of thousands of measurements. Results transfer with IR or Bluetooth®.

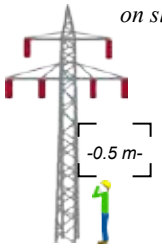
15-103-1030 L5 package/set incl. L5 instrument, charging cable with adapter. User instructions included. Aluminum transport case. Li-Ion battery built- in measuring instrument.



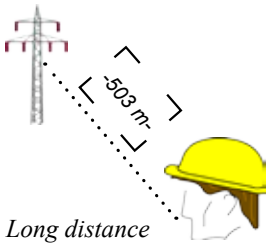
One-point measuring with laser

Two-point measuring for leaning trees, on hills and on slopes with laser

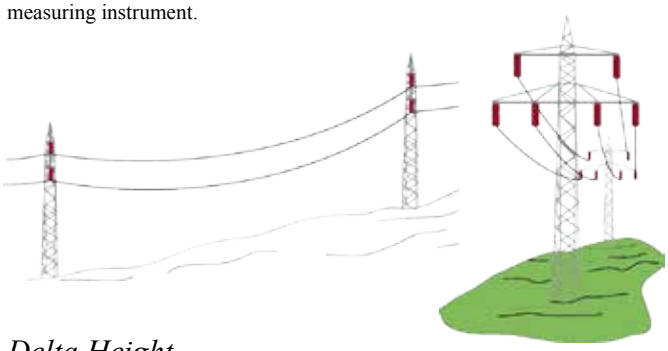
Three-point measuring with laser



Short distance with laser



Long distance with laser

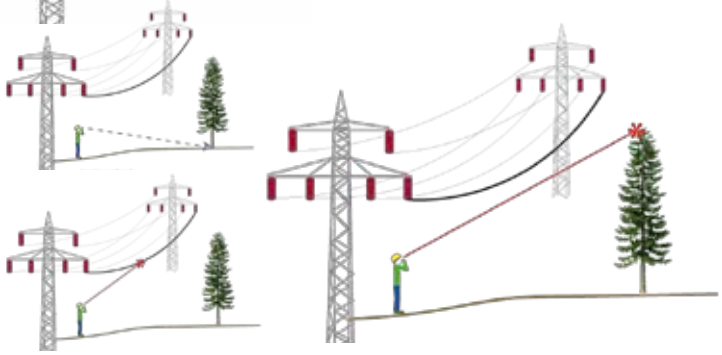


Delta Height

The Delta Height-function is used in maintenance work and control operations along power lines. The Delta Height equals an estimated height difference between a point on an imagined straight line between two fixed points, and a third point, for example a power line, where the line sag is the closest to the ground.

Tree Limit - hazard trees

The L5 integrated Tree Limit function is used for accident prevention and to calculate the safety distance/line clearance) for borderline trees along highways, power lines and railways.



- Laser technique for extended range, height and angle measurements
- Bluetooth® and IR communication
- Data storage capacity
- Data processing capacity
- Hazard trees safety distance, tree limit, line clearance
- Delta height calculation
- Red cross aim for easy spotting of thin objects
- Adjustable laser filter
- Rechargeable built-in Li-Ion battery
- Easy operation with field adapted keypad and step-through menu
- Rugged, reinforced,high-visibility blue and shockproof housing
- Perfect for logging/wood industry, power distribution, pole control, shooting ranges, construction, planning, mining industry, etc.
- Choose if to save and process measurement results in the instrument or transfer with built-in IR or Bluetooth®
- Custom order measurement functions
- Optional accessories include camera-type monopod with foot bracket for direct use on instrument for a steadier aim.

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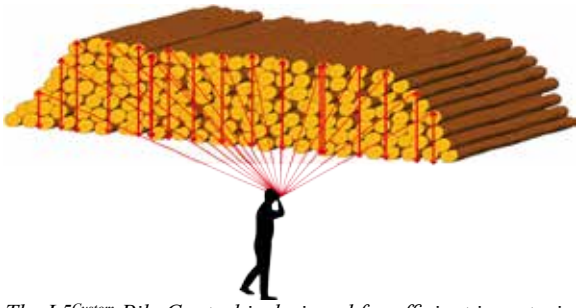
L5^{Custom} Pile Inventory and Pile Control Made Easy

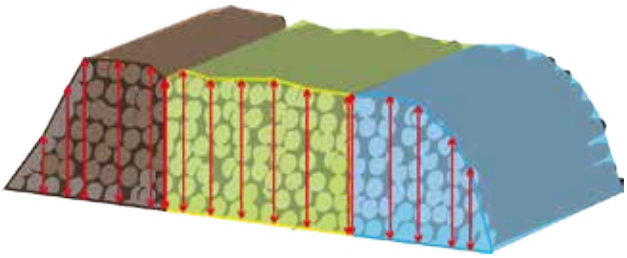
Use the L5^{Custom} Pile Control Laser to control and know the size of your inventory. With a series of simple measurement operations, advanced calculations are performed as a one-person and single-instrument job. Pile lengths and heights are measured with great accuracy and the total volume is processed, calculated, and instantly presented to you. Results can be stored or transferred to PC or handheld.

- Measure piles of wood and wood chips
- Obtain your field data with accuracy and precision
- Control and calculate the volume and have results presented to you instantly
- Report within seconds with wireless transfer, store and process in the instrument
- Measure close to the pile or from far with extended range laser
- Avoid pacing and climbing in hazard areas
- Work comfortly without paper and pen
- Use in all weather conditions and temperatures
- Rechargeable Li-Ion battery
- Easy access to measurement modes and menus with field adapted keypad
- Ruggedized, reinforced and sealed housing in new high-visibility blue color
- Specified, tested & approved by independent users and industry professionals
- Ask for more custom functions for your L5^{Custom} instrument

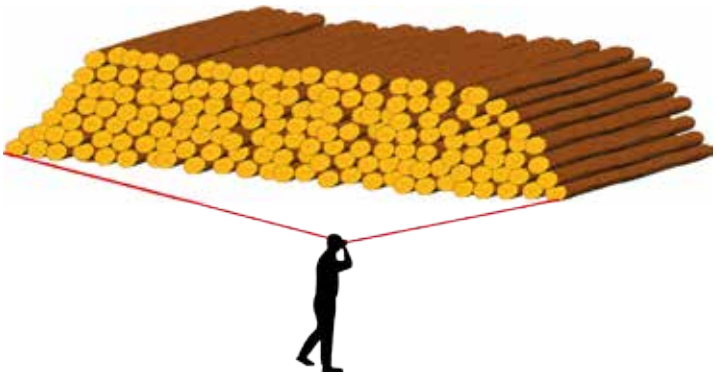


The L5^{Custom} Pile Control is designed for efficient inventories of timber piles or wood chip piles. The possibility to measure distances from 0.5m or 1.5ft is a great advantage when working on plants and logyards, as it allows you to get measurement results without stepping,climbing and pacing in insecure areas. A pile of wood or wood chips can be divided in several sections. Set variables such as width (log length), assortment and volume factor in percentage. The instrument will store and process all data to calculate total volume, mean values for pile width, percentage of wood volume and more.

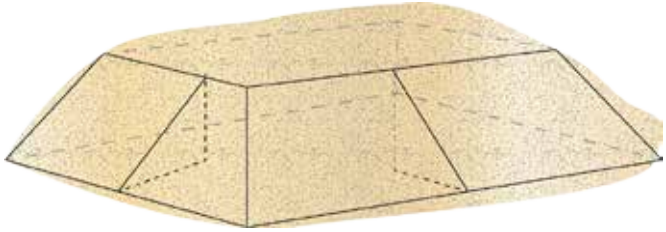
The L5 Pile Control instrument has a non-volatile memory with capacity to store numerous inventories of timber piles or wood chip piles. In timber pile control mode, the volume will be accounted for with section number, number of heights, the arithmetic mean height and volume for the section. Result presentation include arithmetic mean width for all sections, arithmetic mean height of all measured heights and percentage of wood volume for all sections.



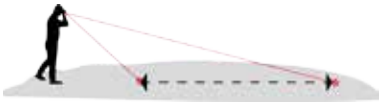
The pile can be divided into sections. The sum of the sections' length is equal to the total pile length. The operator measures and registers pile width, assortment and wood volume factor for each section.



Several different incorporated methods enable you to measure the section lengths. It is possible to measure piles from a straight angle, starting at one corner to measure the total length of the pile, followed by a series of height measurements to obtain mean height.



Wood chip piles are measured side by side. A minimum of two sides are measured (side 1 and side 2). With diversiformed piles, it is recommended to add more measures (side 3 and 4). Pile length is measured and one or more heights (maximum 28 heights) for each side. Height measurements are made using a 2-point method from base to top along the pile side.



Two-point distance measurement with L5^{Custom} Pile.

15-103-1032 L5^{Custom} Pile Control incl measuring instrument, charger and charging cable, user guide and aluminum safety case.
15-103-1030 L5 instrument configuration for forest & field measurement work.

Haglöf SWEDEN

The Postex®

- The Postex instrument solution is a versatile system for individual positioning in coordinate systems on sample plots.
- The Postex is often used together with Haglöf Sweden computer caliper models Digitech Professional or DP II and software Postax
- The data can be exported as a CSV file, which can be easily consumed for visualization and analysis in, for example, ArcGIS Online.
- Gather more field data in less time and using reliable technology.
- Developed in collaboration with leading scientists

Positioning with Ultrasound and Laser

The Postex® instrument is used to position trees and objects, mainly in sample plots. Individual positioning of trees with the Postex® is a proven reliable work method for moderate accuracy demands as when connecting "ground truth" measurements to aerial LiDAR surveys. Postex® is an excellent tool to follow up individual trees in long term projects on permanent sample plots. One person can measure and electronically capture all of the object data and position calculations. The Postex® system has been developed in cooperation with leading scientists and foresters, and is based on proven durable instruments and functional software from Haglöf Sweden®.

Use the Postex system to position trees and objects in sample plots. The Postex VL5 instrument includes both ultrasound and laser technology for easy and accurate height measuring of individual trees and has a user friendly and rugged exterior combined with a smart interior and advanced functionality. With ultrasound you will not be limited to line of sight measurements, and not bound to targets. Seedlings may not make for good laser targets, but with ultrasound, you can position them precisely. One person can measure and electronically capture all of the tree data and position calculations.

SYSTEM 1 Postex VL5 15-103-1040
System 1 Postex VL5 is the most common Postex system model and used with Haglöf Sweden calipers Digitech Professional or DP II and corresponding software. System 1 can be used as a separate solution for positioning of individual objects in the field.

System 1 includes the VL5 ultrasound and laser measuring instrument programmed and customized for the Postex specifications, transponders A, B and C with Postex custom rack, adapters for the transponders and a libel (for alignment). Charging cable, charger and aluminum transport case also included on delivery.
Use Postex System with Digitech Professional/DP II caliper or other handheld device and corresponding software.

SYSTEM 2 Postex DME With L5 Laser and DP II Caliper 15-103-1041
System 2 Postex DME L5 is an adapted and complete solution recommended for users that prefer to work with ultrasound technology in the DP II computer caliper, using the the custom programmed DME accessory.

System 2 includes: DP II caliper with Bluetooth and Radio Enter Button (specify scale configuration), Postax software for DP II; L5 Laser instrument, Postex DME instrument, transponders A, B and C with Postex custom rack, adapters for the transponders and a libel (alignment). Charging cable, charger and aluminum transport case included on delivery.
DP II Computer caliper and Postax software license are mandatory for Postex System 2. System 2 can be ordered without the L5 Laser instrument, ask for details.

SYSTEM 3 Postex DME With DP II Terminal 15-103-1042
System 3 Postex DME with DP II Terminal is suitable where the positioning of objects does not include height or diameter measurements, for example historic research and follow up work.

System 3 includes: DP II Bluetooth terminal with wrist link, Postax software license; Postex DME instrument for DP II computer terminal, transponders A, B and C with Postex custom rack, adapters for the transponders and a libel. Charging cable, charger and aluminum transport case also included on delivery.
DP II Terminal and Postax software license are mandatory for System 3.

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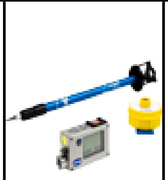
Professional Instruments

by Haglöf Sweden®

Technical Spec.					
Product Name	**Vertex IV**	**VL5 Vertex Laser**	**L5 Laser**	**L5^{Custom}**	**Postex**
Work Method	Ultrasound	Laser and ultrasound	Laser	Laser	Laser and ultrasound
Size	80x50x30mm/ 3.2x2x1.2”	93x63x72mm /3.7x2.5x2.8”	93x63x72mm /3.7x2.5x2.8”	93x63x72mm /3.7x2.5x2.8”	93x63x72mm /3.7x2.5x2.8”
Weight	180g/6.35oz incl battery	243g/8.6oz	243g/8.6oz	243g/8.6oz	243g/8.6oz
DISTANCE Horizontal/ Slope	30m/98ft; with 360° adapter: 20m/60ft.	Laser 46cm/1.5ft - 700m/2000ft depending on target. Ultrasound:30m/98ft; with 360° adapter: 20m/60ft.	Laser 46cm/1.5ft - 700m/2000ft depending on target.	Laser 46cm/1.5ft - 700m/2000ft depending on target.	Laser 46cm/1.5ft - 700m/2000ft depending on target. Ultrasound:30m/98ft; with 360° adapter: 20m/60ft.
Resolution	0.01m/0.1ft	Laser: 0.1m/ft (0.01m/0.1ft in DME-mode). Ultrasound: 0.01 m/ 0.1 ft.	0.1m/ft.	0.1m/ft.	Laser: 0.1m/ft. Ultrasound: 0.01 m/ 0.1 ft.
Accuracy	1% or better	Ultrasound: 1% or better. Laser: 4cm/0.1ft.	4cm/0.1ft.	4cm/0.1ft.	4cm/0.1ft.
ANGLE, VERTICAL	-55˚ to 85˚/ -60 to 94 grad	-55˚ to 85˚/-60 to 94 grad	-55˚ to 85˚/-60 to 94 grad	-55˚ to 85˚/-60 to 94 grad	-55˚ to 85˚/-60 to 94 grad
Resolution Angle	0.1˚	0.1˚	0.1˚	0.1˚	0.1˚
Accuracy Angle	+ - 0.1˚	+ - 0.1˚	+ - 0.1˚	+ - 0.1˚	+ - 0.1˚
HEIGHT	Min 0 Max 999m/ft	Min 0 Max 999m/ft	Min 0 Max 999m/ft	Min 0 Max 999m/ft	Min 0 Max 999m/ft
Resolution/ Height	0.1m/0.1ft	0.1m/0.1ft	0.1m/0.1ft	0.1m/0.1ft	0.1m/0.1ft
Classification	CE, IP67	CE, IP67, NEMA 6	CE, IP67, NEMA 6	CE, IP67, NEMA 6	CE, IP67, NEMA 6
Temperature	-20˚ Max 45˚C /4˚ Max 113˚F	-20˚ Max 45˚C /4˚ Max 113˚F	-20˚ Max 45˚C /4˚ Max 113˚F	-20˚ Max 45˚C /4˚ Max 113˚F	-20˚ Max 45˚C /4˚ Max 113˚F
Battery Type and Consumption	1x1.5AA Al-kaline, current 20mA. With Bluetooth:150 mA	Rechargeable Li-Ion 3.7V, built-in, approx. 9000 measurings. Charging time max 3.5h. USB mini B interface wall charger 110/220AC/5VDC; car charger adapter 12VDC. Cable Usb mini B Male/Usb Type A Male, 0.5m. Consumption max 0.9W.	Rechargeable Li-Ion 3.7V, built-in, approx. 9000 measurings. Charging time max 3.5h. USB mini B interface wall charger 110/220AC/5VDC; car charger adapter 12VDC. Cable Usb mini B Male/Usb Type A Male, 0.5m. Consumption max 0.9W.	Rechargeable Li-Ion 3.7V, built-in, approx. 9000 measurings. Charging time max 3.5h. USB mini B interface wall charger 110/220AC/5VDC; car charger adapter 12VDC. Cable Usb mini B Male/Usb Type A Male, 0.5m. Consumption max 0.9W.	Rechargeable Li-Ion 3.7V, built-in, approx. 9000 measurings. Charging time max 3.5h. USB mini B interface wall charger 110/220AC/5VDC; car charger adapter 12VDC. Cable Usb mini B Male/Usb Type A Male, 0.5m. Consumption max 0.9W.
Ext. Comm.	IR, Bluetooth® Class 2 SPP	Ir, Bluetooth®class 2 (HID international keyboard; SPP)	Ir, Bluetooth®class 2 (HID international keyboard; SPP)	Ir, Bluetooth®class 2 (HID international keyboard; SPP)	Ir, Bluetooth®class 2 (HID international keyboard; SPP)
Memory Capacity	–	2000 set of data, non-volatile	2000 set of data, non-volatile	**Application depending. *For L5^{Custom} Pile***: 62 log piles/inventories, Max 8 sections/pile; 57 heights/section; Wood Chip Piles: Max 4 sides, 28 heights/ side. Non-volatile	-
Use with/ Accessories	T3, monopod, adapter, lanyard, soft bag, alkaline batteries, safety case.	T3, monopod, adapter, lanyard, soft bag, alkaline battery, emergency power pack, charging cable, adapter, safety case.	Monopod with foot bracket adapter, charging cable, adapter, emergency power pack, lanyard, soft bag, safety case.	Monopod with foot bracket adapter, charging cable, adapter, emergency power pack, lanyard, soft bag, safety case and more.	Transponders, bracket, adapters, lanyard, soft bag, alkaline batteries T3, emergency power pack, charging cable, adapter, safety case. Digitech Professional/DP II caliper & Postax software.

Haglöf SWEDEN

Instrument Model	Vertex IV	VL5	L5	L5 Pile	L5Custom	Postex
Reinforced aluminium housing	×					
Reinforced poly-carbonate plastic housing		×	×	×	×	×
Color	Silver/ black. TRP: Yellow	Orange/black. TRP: Orange	Blue/black	Blue/black	Blue/black	Black, TRP A, B, C: Yellow
IP67 and shockproof, CE marked	×	×	×	×	×	×
Temperature proof from -20C to +45C	×	×	×	×	×	×
Horizontal and vertical distance measurement	×	×	×	×	×	×
Distance range measurement from approx.10cm	×	×				×
Distance range from 46cm - 700m		×	×	×	×	×
Slope & Height	×	×	×	×	×	×
Ultrasound technology	×	×				×
Laser		×	×	×	×	×
Built-In battery		×	×	×	×	×
Replaceable battery	×					
Ir & Bluetooth®	×	×	×	×	×	×
Memory		×	×	×	×	
Processing capacity		×	×	×	×	
Customization possibilities		×			×	

Instrument Functions	Vertex IV	VL5	L5	L5 Pile	L5Custom	Postex
BAF - Basal Area Function	×	×			Depending on specification	
(Tree) Heights	×	×	×		Depending on specification	×
Forest Survey	×	×	(×)		Depending on specification	×
Positioning						×
Power Line Measurement Control		×	×		Depending on specification	
Safety Distance/Tree Limit/Hazard Trees/Line Clearance		×	×		Depending on specification	
Delta Height		×	×		Depending on specification	
Distance between two points				×	Depending on specification	
Pile Measurement (Wood and Wood Chips)				×	Depending on specification	
Construction		×	×		Depending on specification	
Mining Industry		×	×		Depending on specification	

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