Users Guide Vertex III and Transponder T3

Users Guide
Vertex III and
Transponder T3

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Haglöf Sweden AB
Box 28 • 88221 Långsele • Sweden
Phone: 0620-255 80 • Fax: 0620-205 81 • Mail: info@haglof.se • Web: www.haglofsweden.com

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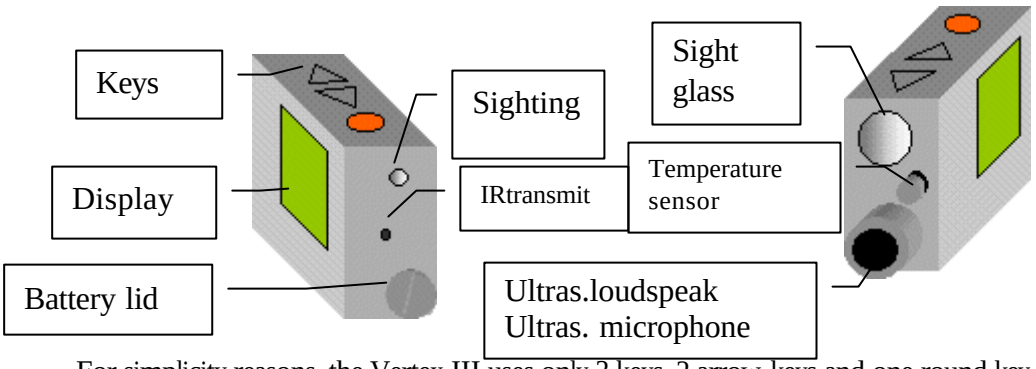
Vertex III

Vertex III Functions and Construction

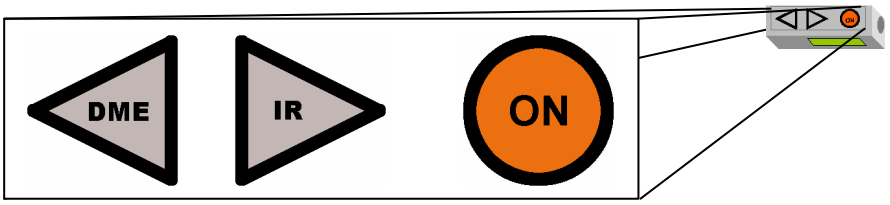
Vertex III is an instrument for measuring heights, distance, angle, inclination and current air temperature. The information can be transferred to the Mantax Computer Caliper via IR link for further processing. The Vertex can handle 6 different heights per object. When using the Vertex as a Distance Measurer in the DME position, the text will make a 90 degree turn in the display, so it is easy to view the data.

When measuring distances, the Vertex will use ultrasonic signals to obtain the exact distance. The height is calculated trigonomically through the distance and angle.

The Vertex III uses one Alkaline 1,5 volt AA battery placed in the back of the instrument underneath the battery lid (plus pole in).



For simplicity reasons, the Vertex III uses only 3 keys. 2 arrow-keys and one round key marked ON.

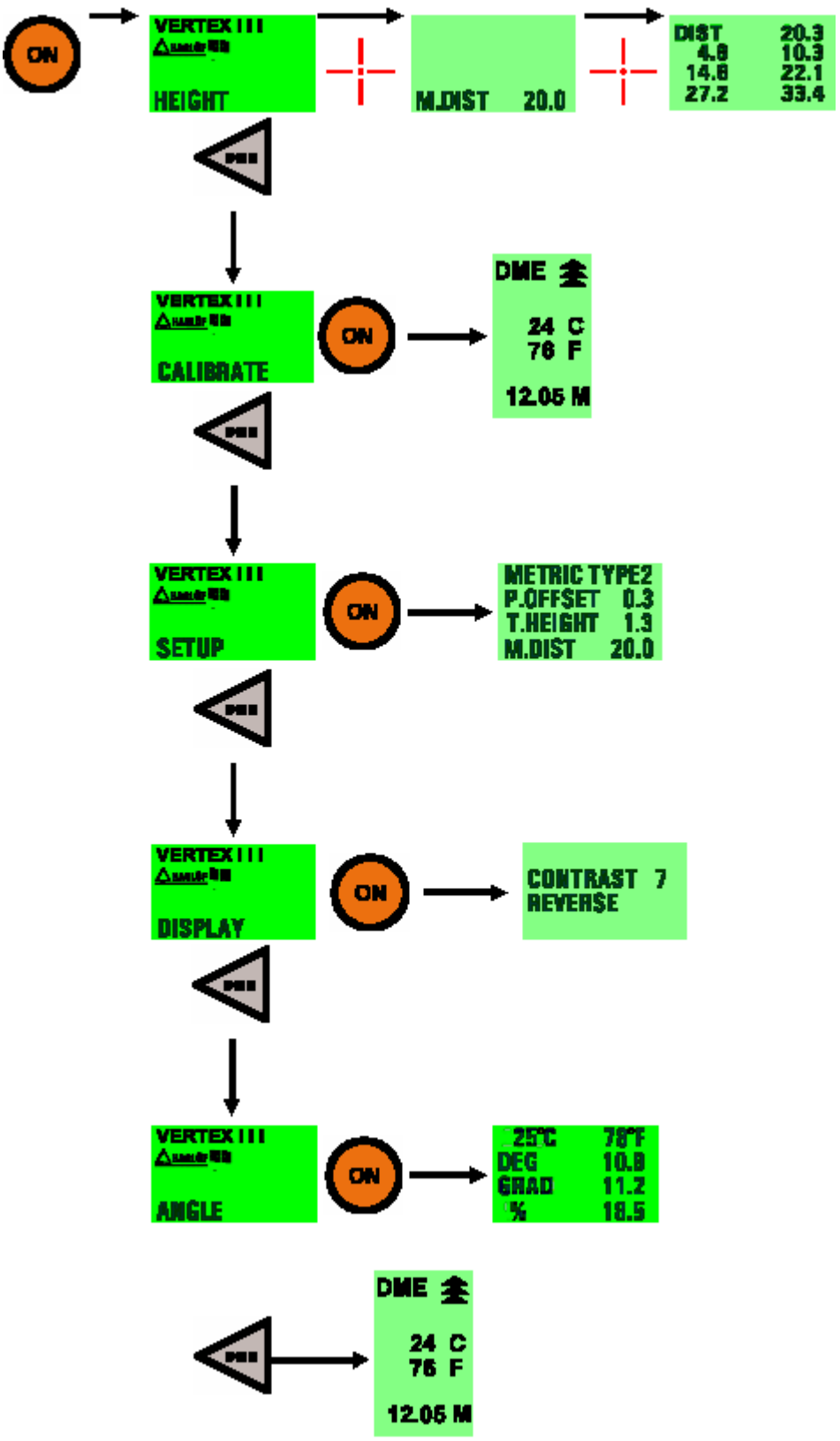


Function of the arrow keys: Use the arrow keys primarily to scroll through the menu and to change settings.
When using left arrow key, the DME position starts and the Vertex III turns into a distance measurer.
By pressing both arrow keys simultaneously, the Vertex III is shut off. If not, the Vertex will turn itself off after approximately 10-15 sec.

The ON Key function.: The ON key will start the Vertex III, will confirm a value and is also used as trigger when taking heights and angles.

The aiming means in the Vertex III is developed so the target(s) is easier to find and the instrument is held straight for most accurate results. The light can also be adjusted by using the arrow keys when aiming, for best possible visibility.

Menu Overview



Important !

Important to know before using your Vertex III

The Vertex III uses ultra sonic signals to determine distances.
Humidity, air pressure, surrounding noise and most of all temperature can affect the range and extension of the ultra sonic signals. The Vertex III has a built-in temperature sensor that automatically compensates for the divergence caused by variations in temperature.
In some cases, distances of 40 meters and greater can be measured without problems, and in other cases, the maximum distance can be shorter than 30 meters.

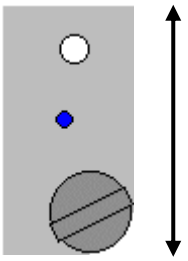
To increase and optimize the measuring accuracy, calibration should be made regularly. When calibrating, it is of utmost importance that the instrument has been given enough time to stabilize at ambient temperature.
If, for example, the instrument is carried in an inner pocket, it can take up to 10 minutes before it has adjusted to current outdoor temperature.
The measurement inaccuracy pending on temperature is approximately 2 cm/C°.

An example: Your inner pocket holds +15 C°. Outdoor air temperature is -5 C°. The measurement result will show 10,40 m and not the correct 10,00 m.

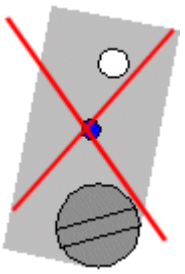
The measuring fault can be made permanent if the instrument is calibrated before reaching the correct current temperature.

-Check your instrument daily and recalibrate if necessary
-Do not touch the temperature sensor at the front of the instrument (the metal knob between the sight and the loud speaker)
-Never calibrate the instrument before it has reached ambient temperature

When measuring heights, it is important to keep the instrument as straight as possible.



Correct



Wrong

The trigonometric functions calculate the height with 2 angles and 1 distance. The distance can be measured manually with a tape, or automatically with the transponder. If using a tape, the distance has to be input in the Vertex before starting (angle-) and height-measuring

Settings

SETUP

All settings are made in the SETUP menu to measure heights, distances and angles. Choose between metric or feet, transponder type 1 or 2, pivot offset, transponder height (and manual distance).

Start the Vertex by pressing ON. Press any of the arrow keys and ON to go to settings. Step to the parameter using ON and change value with the arrow keys.

METRIC/FEET

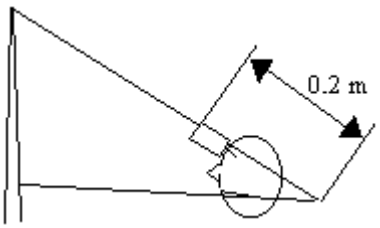
Choose if height and distance values should be given in **METRIC or FEET**. Shift with the arrow keys and confirm your choice with ON.

TYPE1/TYPE2 (Transponder type)

TYPE2 or **TYPE1** is shown. Shift with the arrow keys and confirm your choice with ON.

Transponder type 1 is used when measuring with older Transponder models. Type 1 transponder is more sensitive to surrounding noise.

P.OFFSET (Pivot Offset)



Change the value with the arrow keys and confirm your choice with ON.
" Pivot offset" is the distance between the front side of the instrument to the aimed point where the prolonging of the sight-line from the transponder and the top of the tree coincide.
The imagined point is located somewhere behind your neck and the value should in normal cases be set to 0,2-0,3 m (1.0 feet).

T.HEIGHT (Transponder height)

Change the value with the arrow keys and confirm with ON. The value is set in meters.
T.HEIGHT is the height where the transponder is set, the reference height for the measuring unit. Normal breast height is at 1,3 m(4.5 ft) and gives a good visibility.

M.DIST (Manual distance)

Change the value with the arrow keys and confirm with ON. The value is set in meters.
M.DIST is the manual distance to the object to measure. Manual distance is set when measuring without transponder.

CALIBRATE

Measure a distance of 10.0 m (32,8 feet) between the transponder and the Vertex front with a tape. Start the instrument with ON. Step in the menu to **CALIBRATE** and press ON. The instrument will calibrate to 10 m and automatically turn off when ready.

It is important to give the instrument approximately 10 minutes to set to the correct temperature before calibrating.

DISPLAY

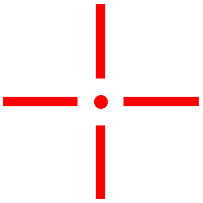
Set the display contrast to best possible visibility. Switch background to black with green letters, or depending on the lighting conditions you may ”Reverse” this setting for better visibility.

CONTRAST

Start the instrument with ON. Step to **DISPLAY** and press ON. Change the contrast with the arrow keys for best possible visibility.

REVERSE

Start the instrument with ON. Step to **DISPLAY** and press ON. **CONTRAST** is shown. Press ON once more and **REVERSE** is shown. Use the arrow keys to alter background features.



Cross Hair Sighting

Change the light in the cross sight by looking into the sight when measuring and using arrow keys to increase or decrease the light intensity.

If the sun (back-light) makes it difficult to see, use both eyes when aiming, and put a finger in front of the sight.

How to use the Vertex III

HEIGHT

There are 3 different methods for height measuring described below. Measured heights can be transferred via IR link by pressing right arrow key and ON. If the height value has not been locked, the Vertex will transmit "0". 6 heights per each object can be taken.

Height measuring with transponder

Start the transponder and place it on/towards the object to measure. *Note that the transponder should be placed on the T.HEIGHT /(transponder height) set in the settings menu.* Walk a suitable distance from the object – for optimal results the distance should be equal to the approximate height..

Manual distance window.

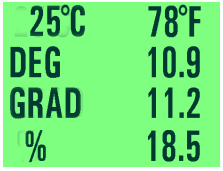
Distance

1. Start the Vertex with ON and aim towards the transponder pressing ON until the cross hair sight. Now release ON. (The Vertex now has the distance, the angle and the horizontal distance to the transponder)

2. Aim towards the height to measure (sight cross is blinking). Push ON until the cross hair disappears. The first height has now been locked. Repeat until all heights are measured (up to 6 heights per object).

Height measuring without transponder

Height measuring without the transponder can be performed in 2 different manners both using manual distance (M.DIST). *Note that aiming must be made on the same height as the T.HEIGHT /(transponder height)*



Angle Window

Temperature in C and F
Angle in grad
Angle in degree

1. Start the Vertex with ON and **HEIGHT** is displayed.

2. Push ON shortly and **M.DIST** is featured. Change this value if incorrect using the arrow keys and press ON when the value is set and the angle window is featured.

3. Aim towards the height that T.HEIGHT is set to and push ON until sight cross disappears. Release ON. The Vertex displays the angle and the horizontal distance to T.HEIGHT).

4. Aim towards the height you wish to obtain; cross hair blinks. Push and press ON until cross hair disappears. The Vertex has taken the first height. Repeat until all (6) heights are measured (see above).

Height measuring window

DIST distance
Height 1
Hei
ght 2

Height measuring from horizontal line

Height measuring from 0 angle is when the height is estimated from the horizontal line from the Vertex and without the transponder.

5. Start the Vertex with ON and **HEIGHT** is displayed.

6. Push ON and **M.DIST** is featured. Change the value if desired with the arrow keys and push ON when distance is reached and angle window is featured.

7. Angle window is displayed. Push and press left arrow key and push ON – height measuring with 0 angle is now reached.

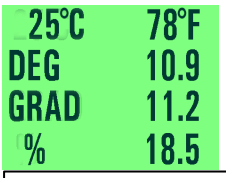
8. Aim towards the height of the object, cross hair blinks. Push and press ON until cross hair disappears. First height is taken. Repeat for more heights (see above)

Inclination (ANGLE)

The Vertex is a excellent instrument to measure inclination and angles in the terrain. With the **ANGLE** function, the Vertex will present angles

9. Start the Vertex with ON and go with arrow keys to **ANGLE** and push ON.

10. Angle window is shown. Aim towards the point where you need to know the angle. Push and press the ON until cross hair goes out. Read value in display.

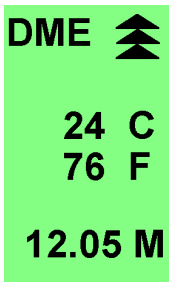


Angle window.

Temperature in C and F
Angle in Grads
Angle in Degrees
Angle in Percentage

The angle now features in Grads, degrees and percentage.

(Note that the angle is measured from the Vertex with the cross hair sight. This implies that it is not possible to use the outside of the Vertex to measure the angle of, for example a flat table surface.



Distance measuring (DME)

The Vertex can also be used as a distance measurer (DME). The display text will rotate to simplify reading the results when measuring distances.

To measure a distance, push left arrow key. The Vertex starts measuring the distance and the result is featured in the display

Horizontal Distance measuring (DME)

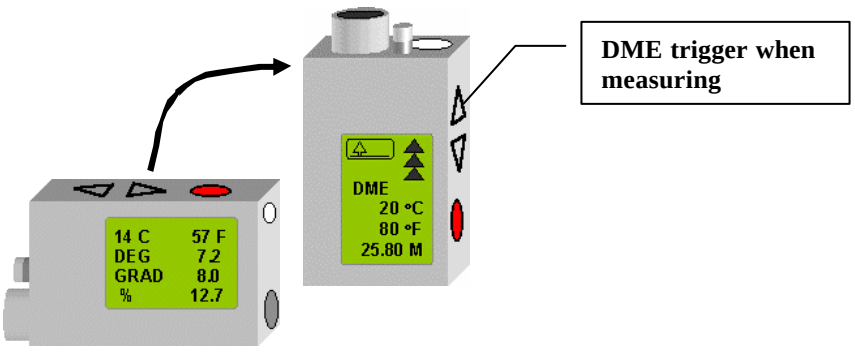
The Vertex can also be used as a horizontal distance measurer (DME). The display text will rotate to simplify reading the results when measuring horizontal distances.

1. Start the Vertex with ON and go with arrow keys to **ANGLE** and push ON.

2. Angle window is shown. Aim towards the point where you need to know the angle. Push and press the ON until cross hair goes out. Read value in display.

3. Push left arrow key. The Vertex starts measuring the horizontal distance and the result is featured in the display

(Note that the angle is measured from the Vertex with the cross hair sight. This implies that it is not possible to use the outside of the Vertex to measure the angle of, for example a flat table surface.)



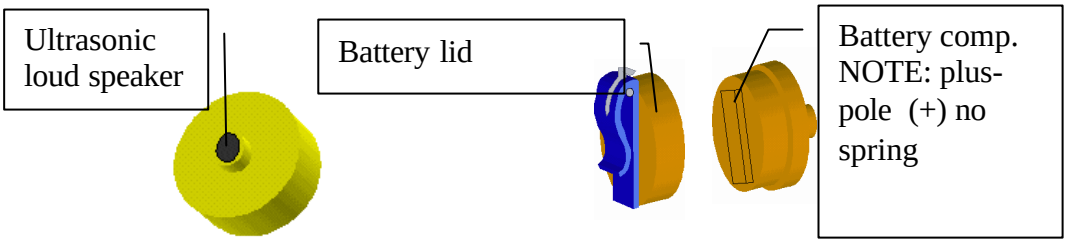
Transponder T3

The T3 transponder is an ultrasonic transmitter and receiver that communicates with the Vertex and the DME 201. The T3 transponder can be used both for direct measuring (60º), and in 360º when used with the "360 adapter" – functional for example when making circular sample plot inventories. The T3 transponder can be used also with older DME and Vertex models.

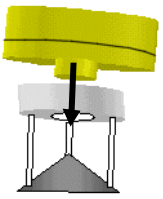
The T3 is equipped with an audible signal that tells if the transponder is activated or not. The signal can be turned off if preferred.

The T3 has no switch and therefore, the Vertex and/or DME is used as a remote control to turn off and on.

T3 uses 1 alkaline 1,5 voltage AA battery placed under the battery lid.

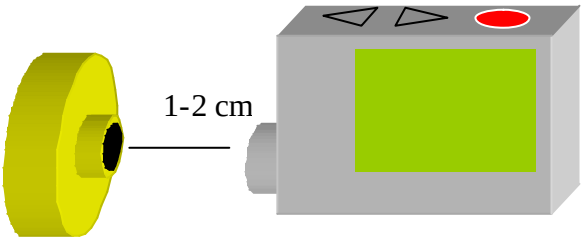


To measure in a 360° circle with the transponder, the T3 is attached to the adapter. The adapter is attached to the tailor-made plot center staff.



How to use the T3 Transponder

To perform any of the operations described below, keep the measuring unit loud- speaker towards the T3 loud-speaker.



Function	
Turn on	Press meas.unit DME ◁ trigger until 2 signals beep
Turn off	Press meas.unit DME ◁ trigger until 4 signals beep (transponder)
Signal	Press meas.unit DME ◁ trigger until signal stop/signal starts, app 10-15 sec.

Technical specification

Vertex III	
Size	80 x 50 x 30 mm
Weight	160 g (incl. battery)
Battery	1 x 1,5 AA alkaline
Current	20mA
Temperature	-15° - 45° C
Ultra sonic frequency	25 kHz
Height	0-999 m
Resolution height	0,1 m
Angles	-55° - 85° grads / -60° - 94°.
Resolution Angle	0,1
Distance with aimed transponder	30 m or more at goods conditions
Distance with 360° adapter	20 m or more at goods conditions
Resolution distance	0.01 m
Accuracy distance	1% or better if calibrated

T3 Transponder	
Size:	Diameter 70 mm
Weight:	85 g (Incl. battery)
Battery:	1,5V AA alkaline
Current:	1.0 mA

Fault Detection

Problem	**Cause**	**What to do**
No distance shown in display	Transponder turned off Poor battery in transponder Disturbing noise in surroundings Incorrect transponder type	Start the transponder Change batteries Measure from other spot or manually Change transponder type
Unstable distance value	Disturbing noise in surroundings Incorrect transponder type	Measure from other spot or manually Change tran sponder type
Incorrect distance value	Poor calibration Disturbing noise in surroundings	Calibrate Measure from other spot or manually
Cross hair will not go out	Transponder turned off Poor battery in transponder Disturbing noise in surroundings Incorrect transponder type Too large angle towards measuring object	Start the transponder Change batteries Measure from other spot or manually Change transponder type Increase distance to measuring object
Measuring unit will not start	Poor batteries Batteries put in incorrectly	Change batteries Turn batteries to right position
Transponder will not start	Poor batteries	Change batteries
No measuring values are presented	Transponder turned off Poor battery in transponder Disturbing noise in surroundings Incorrect transponder type Too large angle towards measuring object. Instrument not held steady No horizontal reference	Start the transponder Change batteries Measure from other spot or manually Change transponder type Increase distance to measuring object Attempt to hold unit steady Shake the measuring unit cautiously
Incorrect/unrealistic values	Disturbing noise in surroundings Measuring unit held unsteady	Measure from other spot or manually Attempt to hold unit steady

Quick Start Guide

Height measuring when using the transponder

1. Start the transponder and place it on the object to measure

2. Press ON. Aim towards the transponder and press ON until the cross hair sight goes out.

3. Aim towards the height to measure. Press ON until the cross hair sight goes out.

Repeat for taking another height.

Height measuring without using the transponder

1. Press ON. **HEIGHT** is displayed. Press ON and **M.DIST** is displayed. Change **M.DIST** or use the current value.

2. Aim towards the height measuring point (T.HEIGHT). Press ON until the cross hair sight goes out.

3. Aim towards the height to measure. Press ON until the cross hair sight goes out.

Repeat for taking another height.

Height measuring from the horizon

1. Press ON. **HEIGHT** is displayed. Press ON and **M.DIST** is displayed. Change **M.DIST** or use the current value and press ON.

2. The angle window is displayed. Press left arrow and ON. Height measuring position is featured

3. Aim towards the height to measure. Press ON until the cross hair sight goes out.

Repeat for taking another height.

ANGLE Measuring

1. Start the Vertex with ON and use the arrow keys to reach **ANGLE.** Press ON.

2. Sight towards the point where the angle to measure is located. Press ON until the cross hair sight goes out.

DISTANCE Measuring (DME)

1. Start the transponder and place it on the object to where the required distance to be measured is.

2. Press left arrow key and read the value measured.

Turn on and turn off the transponder T3

On

Keep the Vertex loudspeaker towards the transponder
Press left arrow key until two short signals are heard from the transponder.

Off

Keep the Vertex loudspeaker towards the transponder.

Press left arrow key until 4 short signals are heard from the transponder.

Operating Menu Reference Guide