



## Athletics for TOPCON – User manual

An application for measurement of throws, puts and jumps in athletic events

Compatible with TOPCON – SOKKIA GPT-7500, GPT-9000, QS, OS, PS and DS

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### Athletics

Athletics application serves for the purpose of optical measurement of performance in athletic events for Topcon total stations. It can be used to measure these events:

- **Throwing Events**
  - Hammer
  - Discus
  - Javelin
  - Shot Put
- **Horizontal Jumps**
  - Long Jump
  - Triple Jump
- **Pole Vault**

## Main Menu - Main of ATHLETICS application

Athletics	
Main Menu	
Throwing Events ...	
Horizontal Jumps ...	
Pole Vault	
Options	
Exit	

### Main Menu

Action : application start

Options :

Throwing Events ...  
Horizontal Jumps ...  
Pole Vault  
Options

Buttons :

**Exit** - exit the application

## Main Menu – Throwing Events menu

Athletics		
Throwing Events		
Discus		
Hammer		
Javelin		
Shot Put		
Home		Up

### Throwing Events Menu

Action : pressing button **Throwing Events ...** in **Main Menu**

Options :

Discus  
Hammer  
Javelin  
Shot Put

Buttons :

**Home** - return to **Main Menu**  
**Up** - return to higher-level menu - **Main Menu**

## Main Menu - Horizontal Jump

Athletics		
Horizontal Jump		
Long Jump		
Triple Jump		
Home		Up

### Horizontal Jumps Menu

Action : pressing button **Horizontal Jump ...** in **Main Menu**

Options :

Long Jump  
Triple Jump

Buttons :

**Home** - return to **Main Menu**  
**Up** - return to higher-level menu - **Main Menu**

## **Main Menu - Pole Vault menu**

Detailed description to follow

## Main Menu - menu Options

Athletic measurement		battery :	
Options - Page1			
Page1	Page2	Page3	
<u>Events</u>	<u>Circles</u>	<u>Places</u>	<u>Log</u>
Discus	1.2500	2	Discus
Hammer	1.0675	2	Hammer
Javelin	8.0000	2	Javelin
Shot Put	1.0675	2	ShotPut
Horiz. Jump		2	Jump
Pole Vault		2	PoleVault
Home	Store	Default	Up

Athletic measurement		battery :	
Options - Page2			
Page1	Page2	Page3	
Write Log Files			Yes
One Log File For All Events			No
Send Data To RS232 Port			Yes
After ENTER Send Data			No
<u>Set Data Send Format</u>			
[F_CH]	[ATH_ID]	; DIST	; [ATMP]
[L_CH]	[CRLF]		
2	No	; Yes	No
3	No		No
Home	Store	Default	Up

**Options** menu - setting the main application and events options with three tabs

Action : pressing **Options** button in **Main Menu**

Options :

### Page 1

Circles : setting the radius of circle for throws and puts

Places : setting the number of decimal points for each event

Log : setting the **Log** file names ( file for storing measured values after setting the event, after verification measurements and after event measurements in the competitions ). Each event can have its own log file.

### Page 2

Write Log Files : enable/disable writing to log files

One Log Files For All Events : enable/disable writing all data into one log file ( Athletics.txt )

Send Data To RS232 Port : enable/disable writing data to serial port of the device after pressing the **Store** button in events measurement menu (see below). Used for connection with other applications for processing athletic events.

After ENTER Send Data : enable/disable sending data to serial port after the measurement

Set Data Send Format : setting the output data format

[F CH] - ASCII code of the first character ( 0 - 255 ), negative value means that the first character will not be part of output string

[ATH ID] - enable/disable printout of the athlete's number

DIST - final distance always in the output string

[ATMP] - enable/disable printout of the number of attempt

[L CH] - ASCII code of the last character ( 0 - 255 ), negative value means that the last character will not be part of the output string

[CRLF] - enable/disable CR/LF characters at the end of the input string

Buttons :

**Home** - return to **Main Menu**

**Store** - store the saved values

**Default** - read and save preset values for individual fields radius and number of decimal places according to valid IAAF rules

**Up** - return to higher menu - **Main Menu**

## Main Menu - Options menu – settings

Athletic measurement		battery :	
Options - Page3			
Page1	Page2	Page3	
Default			
User			
Red			0
Green			0
Blue			0
Home	Store		Default Up

Athletic measurement		battery :	
Options - Page4			
Page1	Page2	Page3	Page4
<u>Atmospheric correction</u>			
Temperature			
Pressure			
Humidity			
PPM			
Home	Store		Default Up

**Options** menu - setting the program and events parameters. Contains three tabs **Page1**, **Page2** and **Page3**

Action : pressing **Options** button in **Main Menu**

Options :

### Page 3

Default : default colour scheme. Can be changed as desired.

User : custom colour settings (with sliders of Red, Green and Blue)

Buttons :

Coloured (5) for Default - sets default colour for User, sets sliders of RGB of the resulting colour

Coloured (5) for User - colour selection for Custom settings with RGB sliders

**Home** - return to **Main Menu**

**Store** - store preset values

**Default** - read and store preset values for each item - radius and number of places follows IAAF rules

**Up** - return to higher menu - **Main Menu**

Options :

### Page 4

Atmospheric correction : setting atmospheric correction

Buttons :

**Home** - return to **Main Menu**

**Store** - store preset values

**Default** - read and store preset values for each item - radius and number of places follows IAAF rules

**Up** - return to higher menu - **Main Menu**

## **Main Menu – Throwing Events - Discus menu– (this description is identical also for Hammer, Javelin and Shot Put)**

Athletics		
Discus		
Measure Centre Point		
Last Definition Of Centre Point		
Measure Foul Line		
Last Definition Of Foul Line		
Measure Competetion		
Home		Up

**Discus** menu - setting the circle center, finding the circle center and measurement of performances during the athletic events

Action : pressing the **Discus** button in **Throwing Events**

Options :

**Measure Centre Point** - with this selection all values for circle center measurement set so far will be deleted, the measurement has to be performed again, the **Last Definition Of Centre** options will become disabled. Values of the circle center measurement are automatically deleted with date change.

**Last Definition Of Centre Point** - values will be taken over from the saved measurement of the circle center and are valid for max. one day

**Measure Foul Line** - after measurement of three points the circle center and radius is calculated, these will later be used for performance calculation - with this option all values set so far will be deleted, the new measurement has to be taken and the **Last Definition Of Foul Line** will be disabled. Measurement validity is one day as well.

**Last Definition Of Foul Line** - values will be taken over, their validity is max. one day

**Measure Competition** - measurement of the athletic competitions

Buttons :

**Home** - return to **Main Menu**

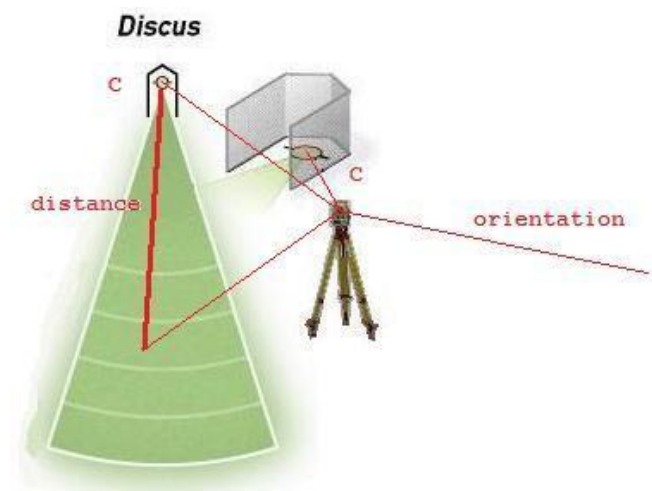
**Up** - return to higher menu - **Throwing Events**

**i** validity of measurement and automatic deletion of measurement with date change mean change of date in the device (other date)



## Main Menu – Throwing Events - Discus - Measure Centre Point window

Athletics	
Discus - Measure Centre Point	
Orientation Angle :	<b>Meas</b>
Hz: 339.5466 g	
Centre Point Measurement :	<b>Meas</b>
Hz: 250.0002 g D: 14.142 m Vz: 100.0000 g	
Foul Line Control Measurement :	<b>Meas</b>
Hz: 245.4024 g D: 13.386 m Vz: 100.0000 g	
Foul Line Distance: -0.0015 m	
<b>Home</b>	<b>Store</b>
<b>Done</b>	<b>Up</b>



**Measure Centre Point** window - measure circle center

Action : pressing the **Measure Centre Point** button in **Discus** menu

Description :

Orientation Angle : measure the orientation direction - angle only (for checking of total station twist during the event)

Centre Point Measurement : circle center measurement

Foul Line Control Measurement : measure the checking direction on the foul line (the distance calculated should be zero).

**Meas** button is inaccessible and will become accessible after measurement confirmation with **Store** button

Buttons :

**Meas** - starts the total station measurement for each item

**Home** - return to **Main Menu**

**Store** - store the measured values (this will enable the item **Last Definition Of Centre Point** in **Discus** menu)

**Done** - confirm and move to **Measure Competition** window (events measurement)

**Up** - return to the higher menu - **Discus**

**i** if orientation angle is not measured it will be taken over from the circle center measurement

## Main Menu – Throwing Events – Discus - Last Definition Of Centre Point window

<b>Athletics</b>				
<b>Discus - Last Def. Of Centre Point</b>				
<b>Orientation Angle :</b>				
Hz:339.5466 g				
<b>Centre Point Measurement :</b>				
Hz:250.0002 g D: 14.142 m Vz:100.0000 g				
Home		Done		Up

**Last Definition Of Centre Point** window - read the stored measurement at circle center during the measurement in the **Measure Centre Point** window

Action : press the **Last Definition Of Centre Point** button in **Discus** menu

Description :

Orientation Angle : measurement taken from orientation direction  
(to check the total station twist during the event)

Centre Point Measurement : taken-over circle center measurement

Buttons :

**Home** - return to **Main Menu**

**Done** - confirmation and transition to **Measure competition**  
window(events measurement)

**Up** - return to higher menu - **Discus**

## Main Menu – Throwing Events – Discus – Measure Foul Line window

Athletics	
Discus - Measure Foul Line	
Orientation Angle :	<b>Meas</b>
Hz:339.5466 g	
Foul Line Points Measurement :	
<b>Point 1</b>	<b>Point 2</b>
<b>Point 3</b>	
P1 Hz:255.4360 g D: 13.762 m Vz:100.0000 g	
P2 Hz:251.1658 g D: 12.917 m Vz:100.0000 g	
P3 Hz:245.5586 g D: 13.339 m Vz:100.0000 g	
Calculated Radius : 1.2503 m	
Home	Store
Done	Up

**Measure Foul Line** Window - measurement of three points on the foul line, calculation of the center of the foul line and circle radius

Action : pressing **Measure Foul Line** button in **Discus** menu

Description :

Orientation Angle : measure the orientation direction - angle only (for checking of total station twist during the event)

Foul Line Point Measurement : measurement of three points on the foul line - after measurement of the last point (the third one) calculation of the circle center and radius shown in the window will be performed

Buttons :

**Meas** - starts the orientation angle measurement

**Point 1** - starts the measurement of the first point on the foul line

**Point 2** - starts the measurement of the second point on the foul line

**Point 3** - starts the measurement of the third point on the foul line

**Home** - return to **Main Menu**

**Store** - store the measured values (this will enable **Last Definition Of Foul Line** button)

**Done** - confirmation and transition to **Measure Competition** window

**Up** - return to higher menu - **Discus**

**i** if orientation angle is not measured, it will be taken from the measurement of the first point of the circle

**i** certain buttons are disabled upon window loading and will become enabled during the measurement

## **Main Menu – Throwing Events – Discus - Last Definition Of Foul Line window**

Athletics		
Discus - Last Definition Of Foul Line		
Orientation Angle :		
Hz:339.5466 g		
Foul Line Points Measurement :		
P1 Hz:255.4360 g D: 13.762 m Vz:100.0000 g		
P2 Hz:251.1658 g D: 12.917 m Vz:100.0000 g		
P3 Hz:245.5586 g D: 13.339 m Vz:100.0000 g		
Home	Done	Up

**Last Definition Of Foul Line** window - loading of the saved circle center measurement with three points during the measurement in the **Measure Foul Line** window

Action : pressing the **Last Definition Of Foul Line** button in **Discus** menu

Description :

Orientation Angle : measure the orientation direction - angle only (for checking of total station twist during the event)

Foul Line Points Measurement : taken-over measurement of the three points on the foul line

Buttons :

**Home** - return to **Main Menu**

**Done** - confirmation and transition to the **Measure Competition** window

**Up** - return to higher menu - **Discus**

## **Main Menu – Throwing Events – Discus - Measure Competition window**

Window with functions for events measurement, verification measurements of the optical measurements with tape, verification measurement of the sector, viewing the Log file and verification measurement of the orientation direction is identical for throws, puts, long jump and triple jump. Will be described down in the text.

## Main Menu – Horizontal Jumps - Long Jump menu – long jump (description identical for Triple Jump)

Athletics		
Long Jump		
Measure Foul Line		
Last Definition Of Foul Line		
Measure Competition		
Home		Up

**Long Jump** Menu - setting, obtain foul line and performance measurement at the athletic events

Action : pressing **Long Jump** button in **Horizontal Jumps** menu

Options :

**Measure Foul Line** - measuring foul line with two points - all values of the foul line measurement measured so far will be erased, new measurement has to be done, **Last Definition Of Foul Line** option will become disabled. Foul line measurement values will be automatically erased after date change.

**Last Definition Of Foul Line** - saved measurement of the foul line with two points - values will be taken over and are valid for one day maximum

**Measure Competition** - athletic events measurement

Buttons :

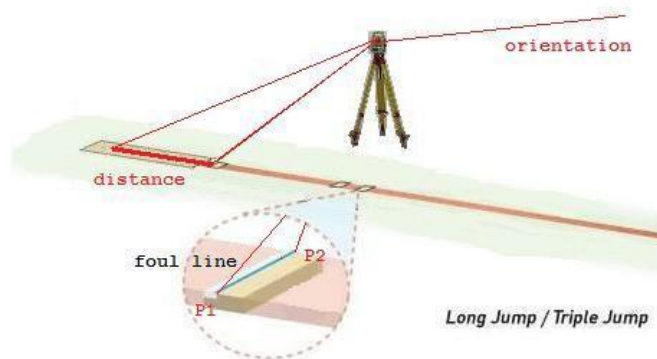
**Home** - return to **Main Menu**

**Up** - return to higher menu - **Horizontal Jump**

**i** validity of the measurement of one day and automatic erasing after date change mean the change of day in the instrument (different date)

## Main Menu – Horizontal Jumps – Long Jump - Measure Foul Line window

Athletics	
Long Jump - Measure Foul Line	
Orientation Angle :	<b>Meas</b>
Hz: 339.5466 g	
Foul Line Points Measurement :	
<b>Point 1</b>	<b>Point 2</b> <b>Control</b>
P1 Hz: 240.5222 g D: 5.411 m Vz: 100.0000 g	
P2 Hz: 251.1580 g D: 4.468 m Vz: 100.0000 g	
Control Measurement Of Foul Line :	
Foul Line Distance: 0.0003 m	
<b>Home</b>	<b>Store</b> <b>Done</b> <b>Up</b>



**Measure Foul Line** window - measuring two points on the foul line

Action : pressing **Measure Foul Line** button in **Long Jump** menu

Description :

Orientation Angle : measure the orientation direction - angle only (for checking of total station twist during the event)

Foul Line Point Measurement : measure two points on the foul line

Control Measurement Of Foul Line : measure the checking direction on the foul line (the distance calculated should be zero).

**Meas** button is inaccessible and will become accessible after measurement confirmation with **Store** button

Buttons :

**Meas** - starts the orientation angle measurement

**Point 1** - starts the measurement of the first point on the foul line

**Point 2** - starts the measurement of the second point on the foul line

**Control** - measure verification point on the foul line

**Home** - return to **Main Menu**

**Store** - save the measured values

**Done** - confirmation and transition to **Measure Competition** window

**Up** - return to higher menu - **Long Jump**

**i** if orientation angle is not measured, it will be taken from the measurement at the first point of the circle

**i** certain buttons are disabled upon window loading and will become enabled during the measurement

## Main Menu – Horizontal Jumps - Long Jump – Last Definition Of Foul Line window

Athletics		
Long Jump - Last Def. Of Foul Line		
<b>Orientation Angle :</b> Hz:339.5466 g		
<b>Foul Line Points Measurement :</b> P1 Hz:240.5222 g D: 5.411 m Vz:100.0000 g P2 Hz:251.1580 g D: 4.468 m Vz:100.0000 g		
Home	Done	Up

**Last Definition Of Foul Line** window - loading of the saved circle center measurement with two points during the measurement in the **Measure Foul Line** window

Action : pressing **Last Definition Of Foul Line** button in the **Long Jump** menu

Description :

Orientation Angle : taken-over measurement of orientation direction - angle only (to check the total station twist during the event)

Foul Line Points Measurement : taken-over measurement of two points on the foul line

Buttons :

**Home** - return to **Main Menu**

**Done** - confirmation and transition to **Measure Competition** window

**Up** - return to higher menu - **Long Jump**



## Main Menu – Throwing Events - Discus - Measure Competition – Meas (Measure Competition) tab

Athletics				
Discus - Measure Competition				
Meas	Points	Sector	View	Last
Athlete ID :		123	Attempt : 1	
Event Measurement :		- +		
Hz:119.1005g D: 43.102m Vz:100.0000g				
Event Distance :				
49.99 m				
Home	Meas	Store	Foul	Up

**Measure Competition window contains five tabs**

**Meas** - measure performance at the athletic events and send them to external device

**Points** - measurement of up to three control points before the start and after the end of athletic events with total station and up to three points for the verification

**Sector** - verification measurement of the sector width and deviation of individual branches of sector from the straight line

**View/Ori** - viewing of the Log file or verification measurement of the orientation.

**Last** - viewing of the next-to-last measurement and performance

**Measure Competition tab - Meas**

Action : pressing the **Measure Competition** button in **Discus** menu or **Done** button during the confirmation of results while setting the event or **Meas** button for switching the tab

Description :

Athlete ID : athlete's name or number

Attempt : attempt number

Event Measurement : show measured values of the current performance

Event Distance : calculated performance distance

Buttons :

[+] - increase the attempt number

[-] - decrease the attempt number **Home** - return to **Main Menu**

**Meas** - performance measurement, if cursor is at the field with athlete's number it is sufficient to press Enter on the total station

**Store** - confirm performance, send to port (if enabled)

**Foul** - will show cross sign (unsuccessful attempt) - cross sign will be sent to the port (if enabled)

**Up** - return to higher menu - **Discus**



Athletics				
Discus - Measure Competition				
Meas	Points	Sector	View	Last
Athlete ID :		123	Attempt : 1	
Event Measurement :		- +		
Hz:119.1005g D: 43.102m Vz:100.0000g				
Event Distance : distance already send				
49.99 m				
Home	Meas	Store	Foul	Up

Athletics	
Information	
Data already send	
Send again ?	
Yes	No

#### Measure Competition tab - Meas

Action : After pressing the **Store** button after the measurement the result will be sent to external device and saved to Log file - a note will be shown at Event Distance: „distance already sent“, the next pressing of the **Store** button will show window with a dialogue about sending data to external device port. Data can be sent to external device multiple times.

Athletics				
Discus - Measure Competition				
Meas	Points	Sector	View	Last
Athlete ID :		123	Attempt : 1	
Event Measurement :				- +
Hz: -.-g D: -.-m Vz: -.-g				
Event Distance : foul already send				
X m				
Home	Meas	Store	Foul	Up

Athletics	
Information	
Foul already send	
Send again ?	
Yes	No

#### Measure Competition tab - Meas

Action : After pressing the **Foul** button a cross sign will be displayed in the window (unsuccessful attempt) and the result will be automatically sent to the port - next Event Distance a note foul already sent will be shown - the cross sign has already been sent, the **Store** button will become disabled - next press of the **Foul** button will show a window with the message about sending of data to the port. The data can be sent to the port multiple times.

## Main Menu – Throwing Events - Discus - Measure Competition – Points (Measure Control Points ) tab

Athletic measurement		battery :		
Discus - Measure Control Points				
Meas	Points	Sector	View	Last
<u>Points</u>	<u>Before</u>	<u>Tape</u>	<u>After</u>	
First	64.868 m	64.864	64.866 m	
Second	Meas		Meas	
Third	Meas		Meas	
	Meas		Meas	
Home		Store	Clear	Up

**Measure Control Points** tab - **Points** - measurement of up to three verification points with a total station before and after the competition, measuring these points with a measurement tape and saving these measurements into a protocol.

Action : pressing **Points** button in the window **Measure Competition**

Description :

Points : point one, two and three description

Before : measurement of the corresponding verification point with a total station before the competition

Tape : measurement of the distance of the corresponding verification point with a tape, must be entered manually

After : measuring of the corresponding verification point with a total station after the competition

Buttons :

**Meas** - starts the measurement of the distance of the corresponding verification point

**Home** - return to **Main Menu**

**Store** - saving the measured values into Log file"

**Clear** - delete all verification points measurements

**Up** - return to higher menu - **Discus**

## Main Menu – Throwing Events - Discus - Measure Competition – Sector ( Sector's Control Measure ) tab

Athletic measurement		battery :	
Discus - Sector's Control Measure			
Meas	Points	Sector	Last
	Left part	Distance at	Right part
Line	98.749 m		
	Meas		Meas
Point		Calculate	
	Meas		Meas
Home		Clear	Up

**Sector's Control Measure** tab - **Sector** - verification measurement of the sector width and deviations of individual branches of the sector from the straight line

Action : pressing **Sector** button in the **Measure Competition** window

Description :

Left part : left part of the sector

Distance at : manually entered distance from the foul line for which the sector width is calculated, for verification of the width correctness of the marked sector

Right part : right part of the sector

Buttons :

**Meas** - Line starts the distance measurement. The point measured in this way determines the border of the sector (measured point - circle center)

**Meas** - Point starts the measurement of point that should be lying on the border of the sector (connecting line of point Line - circle center). After the measurement of this point in the bottom of the window a deviation of the measured point from the sector border determined above will be shown. This button is enabled if the Line point has been measured in the corresponding part of the sector.

**Calculate** - calculates the sector width in the distance manually entered into the field **Distance at**. The result will be shown in the bottom of the window. The button is enabled if points Line in the left and right part of the sector have been measured and the field **Distance at** is filled in.

**Clear** - deletes all the measurements for the sector verification

**Home** - return to **Main Menu**

**Up** - return to higher menu - **Discus**

## Main Menu – Throwing Events - Discus - Measure Competition – View ( View Log File / Control Orientation Angle )

Athletic measurement battery :				
Discus - View CSV File				
Meas	Points	Sector	View	Last
21;49.99;1;7:31:42;25.2.2012 22;49.99;1;7:31:48;25.2.2012 23;49.99;1;7:31:52;25.2.2012 21;49.99;2;7:31:57;25.2.2012				
Home	Ori	LOG	New	Up

Athletics				
Discus - Control Orientation Angle				
Meas	Points	Sector	Ori	Last
Orientation Angle :				
Hz: 339.5466 g				
Orientation Angle - Control Measurement :				
Hz: 255.0000 g				
Home	View			Up

**View Log File** tab - **View** - displaying the Csv or Log file according to the settings **Csv file - line content** :  
athlete's number; measured performance; attempt number; time; date

Action : pressing the **View** button in the **Measure Competition** window

Buttons :

**Home** - return to **Main Menu**

**Ori** - switches to orientation direction verification measurement panel. Angular measurement will be started automatically. The measurement will be terminated by switching to another tab or leaving this window.

**LOG/CSV** - switching between display of LOG and CSV file

**New** - creates new file (the viewed one) and erases the window. Name of the new file is created according to selection from the name of the event, date and time.

**Up** - return to the higher menu - **Discus**

**i** after clicking into the Log window while holding **Alt + Enter** buttons the LOG or CSV file will be deleted

**i** **Ctrl + Tab** will cause a switch between displaying CSV and LOG file

**Discus** tab - **Control Orientation Angle** - **Ori** - verification measurement of the orientation angle

Action : pressing the **View** button in the **Measure Competition** Window on the **Ori** tab

Description :

Orientation Angle : orientation angle measured while setting up the event

Orientation Angle - Control Measurement : verification measurement of the orientation angle

Buttons :

**Home** - return to **Main Menu**

**View** - switch to Log file panel, disable angular measurement

**Up** - return to higher menu - **Discus**

## Main Menu – Throwing Events - Discus - Measure Competition – Last ( Last Event Measure ) tab

Athletics				
Discus - Last Event Measure				
Meas	Points	Sector	View	Last
Athlete ID : 123				
Event Measurement :				
Hz:119.1005g D: 43.102m Vz:100.0000g				
Event Distance :				
49.99 m				
Home				Up

**Last Event Measure** tab - **Last** - show performance before the last measured attempt

Action : pressing the **Last** button in the **Measure Competition** window

Description :

Athlete ID : name or number of a competitor

Event Measurement : show values of performance measurement

Event Distance : calculated distance of the attempt

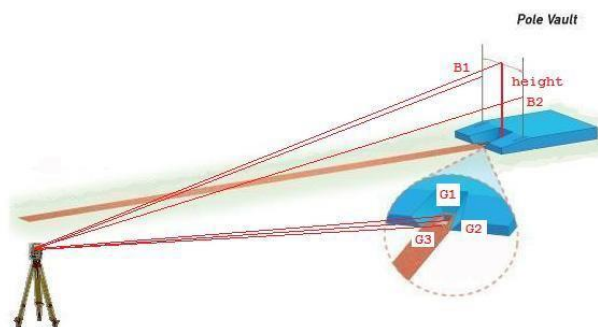
Buttons :

**Home** - return to **Main Menu**

**Up** - return to higher menu - **Discus**

## Main Menu - Pole Vault menu

Athletics		
Pole Vault		
Measure Ground Plane		
Last Definition Of Ground Plane		
Measure Base Point		
Measure Competition		
Home		Up



**Pole Vault** Menu - pole vault settings and measurement

Action : pressing the **Pole Vault** button in **Main Menu**

Options :

**Measure Ground Plane** - measure three points in the surroundings of the box for the pole insertion in order to determine average height from which the bar height is determined

**Last Definition Of Ground Plane** - stored measurement of the average terrain height in the take-off area - values will be taken over. This option is available after the previous Measure Ground Plane measurement and is valid until the date change regardless of total station power-cycle.

**Measure Base Point** - measure the points on the stand in order to determine vertical plane for the bar height measurement. Must be done after each program start, or when the terrain height changes.

**Measure Competition** - bar height measurement during the athletic competitions.

Buttons :

**Home** - return to **Main Menu**

**Up** - return to higher menu - **Main Menu**

**i** measurement validity of one day and automatic measurement deletion after date change mean day change in the device (other date)



## Main Menu - Pole Vault - Measure Ground Plane - window

Athletics	
Pole Vault - Enter Prism Height	
Prism Height :	0.200 m
OK	Esc

Athletics	
Pole Vault - Measure Ground Plane	
Orientation Angle :	Meas
Hz:339.5466 g	
Ground Plane Points Measurement :	
Point 1	Point 2
P1 Hz:298.1988 g D: 38.004 m Vz:100.0000 g	
P2 Hz:297.9010 g D: 38.032 m Vz:100.0000 g	
P3 Hz:297.9010 g D: 35.523 m Vz:100.0000 g	
Average height of plane : 1000.000 m	
Maximal deviation from plane : 0.000 m	
Home	Store
Done	Up

**Measure Ground Plane** Window - setting the terrain height

Action : pressing the button **Measure Ground Plane** in **Pole Vault** menu

Description : first a window to enter prism height at which three terrain points are measured is shown.

Buttons :

**OK** - confirm the entered height and continue the terrain measurement

**Esc** - return to higher menu - **Pole Vault**

Description :

Orientation Angle : measurement of the orientation angle - angle only(for the verification of total station twist during the competition)

Ground Plane Points Measurement : successive measurement of all three terrain points after pole insertion. After the measurement of the last - third point the calculated average height of the terrain and maximum deviation from this average height will be shown.

Buttons :

**Meas** - starts the measurement of the selected orientation point (horizontal angle only)

**Point 1** - starts the measurement of the first point on terrain **Point 2** - starts the measurement of the second point on terrain **Point 3** - starts the measurement of the third point on terrain

**Home** - return to **Main Menu**

**Store** - saving the measured and calculated values and enabling the **Last Definition Of Ground Plane** option in **Pole Vault** menu

**Done** - confirmation and transition to **Measure Base Points** window

**Up** - return to higher menu - **Pole Vault**

**i** if orientation angle has not been measured, the angle will be taken from the first terrain point

**i** after window opening only the **Point 1** button for the measurement of three points is available. After the first point measurement, also the button **Point 2** will become available



## **Main Menu - Pole Vault – Last Definition Of Ground Plane window – last saved valid measurement of the terrain**

Athletics		
Pole Vault - Last Def. Of Ground Plane		
Orientation Angle :		
Hz:339.5466 g		
Ground Plane Points Measurement :		
P1	Hz:298.1988 g D: 38.004 m Vz:100.0000 g	
P2	Hz:297.9010 g D: 38.032 m Vz:100.0000 g	
P3	Hz:297.9010 g D: 35.523 m Vz:100.0000 g	
Home	Done	Up

**Last Definition Of Ground Plane** window - loading the saved measurement and terrain height calculation

Action : pressing the **Last Definition Of Ground Plane** button in **Pole Vault** menu

Description :

Orientation Angle : loaded measurement of the orientation direction - angle only ( to check the total station twist during the competition )

Ground Plane Points Measurement : loaded measurement of all three terrain points in the pole insertion box surroundings

Buttons :

**Home** - return to **Main Menu**

**Done** - confirmation and transition to **Measure Base Points** window

**Up** - return to higher menu - **Pole Vault**

## **Main Menu - Pole Vault – Measure Base Points window – measurement of both stands to determine vertical plane**

Athletics				
Pole Vault - Measure Base Points				
Base Point 1 :	Meas			
P1 Hz:293.1730 g D: 39.099 m Vz:100.0000 g				
Base Point 2 :	Meas			
P2 Hz:302.9706 g D: 38.918 m Vz:100.0000 g				
Setting Base Line Offset :				
Offset :	0.000 m			
Home	Store	Done		Up

**Measure Base Points** window – measurement of both stands and calculation of vertical plane

Action : pressing the **Measure Base Points** button in **Pole Vault** menu

Description :

Base Point 1 : measurement of the first stand for pole vault (any point can be measured first)

Base Point 2 : measurement of the second stand for pole vault

Setting Base Line Offset : field for entering settings of the stands settings during the measurement (if they are on the line of take-off in the so-called zero or elsewhere – the vertical plane will be recalculated for stands position at zero).

Buttons :

**Home** – return to **Main Menu**

**Store** – saving the measured values

**Done** – confirmation and transition to **Measure Competition** window

**Up** – return to higher menu – **Pole Vault**

## Main Menu - Pole Vault – Measure Competition – Meas tab – bar measurement during the competition

Athletics		
Pole Vault - Measure Competition		
Meas	View	
Athlete ID :	23	
Pole Offset [m] :	0.000	
Pole Centre [g] :	0.0394	
Pole Height [m] :		
4.774 m		
Home	Store	Up

**Pole Vault** window - **Measure Competition** - bar measurement during the competition contains two tabs

**Meas** - measurement of the bar height during the athletic competitions and sending the measured height into the external device

**View/Ori** - viewing the Log file or verification measurement of the orientation. Control, design and functionality of this tab is the same as with throws, puts and long distance jumps and its description can be found above.

### **Pole Vault** tab - **Measure Competition** - **Meas**

Action : pressing **Measure Competition** button in **PoleVault** menu or **Done** button after stands measurement

Description :

Athlete ID : name or number of an athlete

Pole Offset : current distance of stands from the foul line

Pole Centre : angular distance from the center between the stands (zero is in the center between the stands - place of the biggest bar Bend)

Pole Height : last measured bar height

Buttons :

**Home** - return to **Main Menu**

**Store** - saving the measured values, sending to port (if enabled)

**Up** - return to higher menu - **Pole Vault**

**i** after showing this tab the horizontal and vertical angle measurement will be started

**i** after leaving this tab the horizontal and vertical angle measurement will be automatically switched off

**i** during the total station rotation in horizontal level the angular distance from the center between the stands is changing

**i** during the tachymeter rotation in vertical direction the bar height is changing

## All the constants, dimensions verifications and rounding (cropping) has been implemented according to the valid IAAF

### **i** Application security

The application is protected against the illegal use by a software key. The key is in the **atheltics.key** file which must be placed in the application folder. If the file is missing from the folder the application will switch to demo mode which allows the measurement of five attempts only. Afterwards the event settings will be deleted and the event has to be set up again. The key is locked to total station serial number and application version.

### **i** Language versions of the application

The primary version is in English. Together with the application also athletics.lng file is distributed. This file contains all the application texts which can be edited (texts after the „=" sign). During the installation the file is placed into the subfolder LNG of the application installation folder. Once edited, the application will use the new texts. The file encoding is UTF-8 (Unicode).

### **i** LOG and CSV files

LOG and CSV files are UTF-8 encoded. They are placed in ATH\_LOGS folder which is placed in the directory structure at the same level as the folder which contains the athletics.exe file.

e.g. athletics.exe is placed in       \Program Files\Athletics\ log and  
csv files are placed in                \Program Files\ATH\_LOGS\

### **i** Deleting registry - for advanced users

The application is saving values for its use into the registry. In the **Main Menu - Options** selection while holding **Page2** and the press of **ALT+ENTER** the registry will be deleted and application will exit.

## **Technical support**

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