

Leica Builder Quickguide



Version 1.0
English

- when it has to be **right**

Leica
Geosystems

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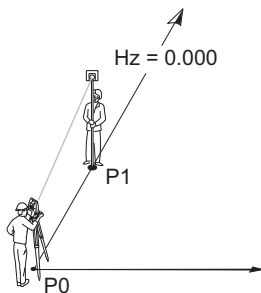
To use the product in a permitted manner, please refer to the detailed safety instructions in the User Manual.

1 SETUP: Establish Control Line - Over 1st Point

Description

The Setup method **Control Line - Over 1st Point** is used to set the station coordinates to $E_0=0.000$, $N_0=0.000$, $H_0=0.000$ and the orientation to 0.000 . All further measuring points and points to be staked are in relation to the control line.

Diagram



P0 Station
P1 Target point

Setup method Establish Control Line - Over 1st Point step-by-step

Step	Screen	Description
		Make sure that PROG Mode is active.
1.		Press SETUP .
2.		Press to highlight Setup option Control Line and accept with OK .
3.		Press to highlight Setup option Over 1st Point and accept with OK .
4.		Aim at target point and accept with OK .
		Station and Orientation will be set after pressing YES .
		Previous Station and Orientation parameters will be replaced by the new calculated ones.

2 SETUP: Establish Control Line - Anywhere

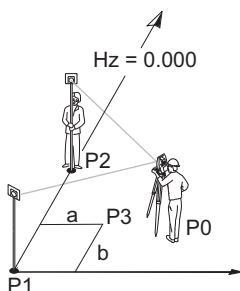
Description

The Setup method **Establish Control Line - Anywhere** is used to set up the instrument along a control line. The coordinates of line start point are set to $E_0 = 0.000$, $N_0 = 0.000$ and $H_0 = 0.000$. The orientation is set to 0.000 in the direction of the second line point. Additionally line startpoint can be shifted by entering or measuring line and offset values. All further measuring points and points to be staked are in relation to the control line.



The height of line start point is used as the reference height for all further measurements.

Diagram





- P0 Station
- P1 Line start point
- P2 Second line point
- P3 Shifted line start point
- a Line value for shift
- b Offset value for shift

Setup method Establish Control Line - Anywhere step-by- step

Step	Screen	Description
		Make sure that PROG Mode is active.
1.		Press SETUP .
2.		Press to highlight Setup option Control Line and accept with OK .
3.		Press to highlight Setup option Anywhere and accept with OK .
4.		Aim at line start point.
5.		Measure and record line start point.
6.		Aim at second line point.
7.		Measure and record second line point.

SETUP: Establish Control Line - Anywhere

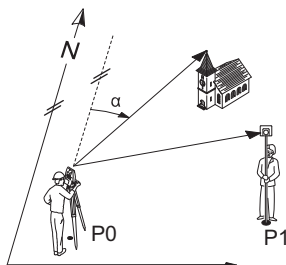
Step	Screen	Description
		Station and Orientation will be set after pressing YES .
		Previous Station and Orientation parameters will be replaced by the new calculated ones.

3 SETUP: Establish Coordinates - Over Known Point

Description

The Setup method **Establish Coordinates - Over Known Point** is used to set up the instrument on a known point and orient to a known azimuth or to a known backsight point. All further measuring points and points to be staked are in relation to the used coordinate system.

Diagram

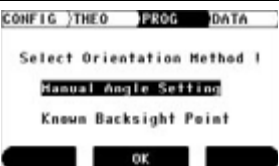









P0 Known Station
P1 Known backsight point
 α Known azimuth

Setup method Establish Coordinates - Over Known Point step-by-step

Step	Screen	Description
		Make sure that PROG Mode is active.
1.		Press SETUP .
2.		Press to highlight Setup option Coordinates and accept with OK .
3.		Press to highlight Setup option Known Point and accept with OK .
4.		Enter instrument height and reflector height and accept with OK .
5.		Select point from the memory or enter new point or coordinates of known station point and accept with OK .

SETUP: Establish Coordinates - Over Known Point

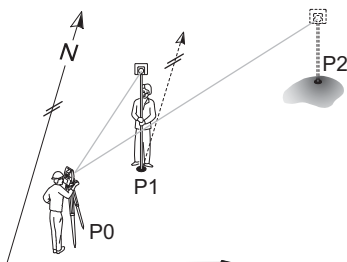
Step	Screen	Description
6.		Press  to select orientation method and accept with OK .
		For orientation method Manual Angle Setting continue with step 7. For orientation method Known Backsight Point continue with step 9.
7.		For orientation method Manual Angle Setting enter bearing and accept with OK .
8.		Aim at target point and accept with OK .
		Station and Orientation will be set after pressing YES .
		Previous Station and Orientation parameters will be replaced by the new calculated ones.
9.		For orientation method Known Backsight Point select point from the memory or enter new point or coordinates of known backsight point and accept with OK .
10.		Aim at target point and accept with OK .
		Station and Orientation will be set after pressing YES .
		Previous Station and Orientation parameters will be replaced by the new calculated ones.

4 SETUP: Establish Coordinates - Anywhere

Description

The Setup method **Establish Coordinates - Anywhere** is used to set up the instrument on an unknown point and set the orientation by measuring angles and distances to two known target points. All further measuring points and points to be staked are in relation to the used coordinate system.

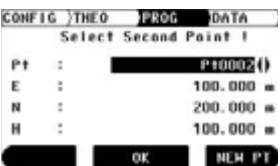

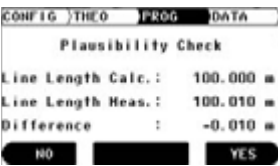


Diagram



P0 Station
P1 First known point
P2 Second known point

Setup method Establish Coordinates - Anywhere step-by-step

Step	Screen	Description
		Make sure that PROG Mode is active.
1.		Press SETUP .
2.		Press to highlight Setup option Coordinates and accept with OK .
3.		Press to highlight Setup option Anywhere and accept with OK .
4.		Enter instrument height and reflector height and accept with OK .
5.		Select first point from the memory or enter new point or coordinates and accept with OK .
6.		Aim at first point.
7.		Measure and record first point.

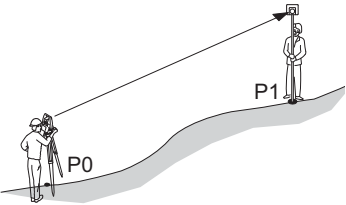
Step	Screen	Description
8.		Select second point from the memory or enter new point or coordinates and accept with OK .
9.		Aim at second point.
10.		Measure and record second point.
		Compare the calculated line length and the measured line length.
11.		If the difference is within the limit accept with YES .
		Station and Orientation will be set after pressing YES .
		Previous Station and Orientation parameters will be replaced by the new calculated ones.

5 SETUP: Establish Height

Description

The Setup Option **Establish Height** is used to enter the station height, instrument height and reflector height. If the station height is unknown a **Height Transfer** can be performed to determine the height of the position of the instrument from a measurement to a target point with known height. All further measuring points and points to be staked are in relation to the entered values.

Diagram Height Transfer




P0 Station
P1 Point with known height

Setup method Establish Height step-by-step

Step	Screen	Description
		Make sure that PROG Mode is active.
1.		Press SETUP .
2.		Press to highlight Setup option Height and accept with OK .
3.		Enter station height, instrument height and reflector height and accept with OK .
		If the station height is unknown press HTRANS to access setup method Height Transfer .
4.		Select known height point from the memory or enter new point or height and accept with OK .
5.		Aim at height point.
6.		Measure height point.
		New station height will be set after pressing YES .

SETUP: Establish Height

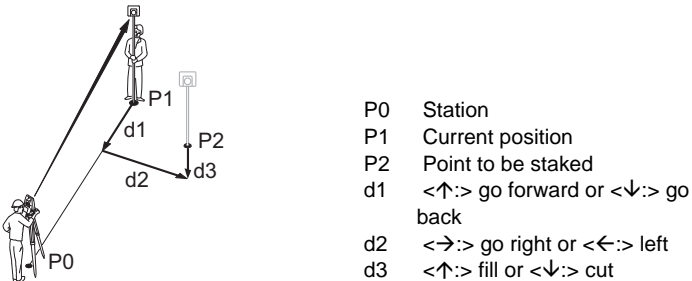
Step	Screen	Description
		Previous station height will be replaced by the new calculated ones.

6 APPLICATION PROGRAM - Layout




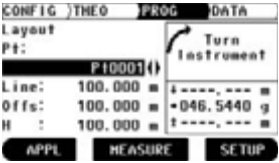

Description



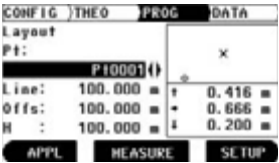
The application program **Layout** is used to place markers in the field at predetermined points. These predetermined points are the points to be staked. The points to be staked are defined by entering line and offset or easting, northing and height depending on the used setup method. For **BUILDER RM** the points can also be selected from the memory. The program calculates and displays the difference between the measured point and the point to be staked.

Diagram



Application program
Layout step-by-step

Step	Screen	Description
		Make sure that PROG Mode is active.
1.		Press APPL .
2.		Press  to highlight application program Layout and accept with OK .
3.		If a Setup method with Control line was used enter line, offset and height values for the point to be staked relative to the control line. If a Setup method with Coordinates was used enter east, north and height coordinates of the point to be staked. For BUILDER RM press  to select points from the memory, if available.
4.		Turn telescope until horizontal angle shows nearly 0.000.

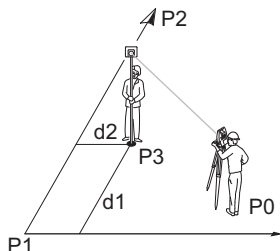
Step	Screen	Description
		Press MEASURE for at least 5 seconds to turn on/off Tracking Mode . If Tracking Mode is activated the stake out differences are displayed continuously.
5.		Press MEASURE to measure point.
		The stake out differences Δ line, Δ offset and Δ height are calculated and displayed. The graphic shows the position of the prism relative to the point to be staked.
6.		Move prism until stake out differences show nearly 0.000m.

7 APPLICATION PROGRAM - As Built

Description

The application program **As built** is used for measuring an unlimited number of points. The program shows line and offset values or easting, northing and height depending on the used Setup method.

Diagram



- P0 Station
- P1 Line start point
- P2 Second line point
- P3 Measured point
- d1 Line
- d2 Offset

Application program As Built step-by-step

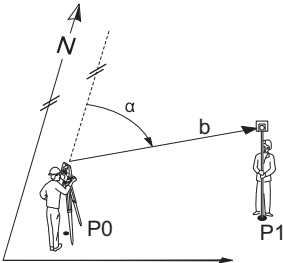
Step	Screen	Description
		Make sure that PROG Mode is active.
1.		Press APPL .
2.		Press to highlight application program As Built and accept with OK .
3.		Aim at target point.
		Press MEASURE for at least 5 seconds to turn on/off Laser-pointer .
4.		Measure and record point.
		If a Setup method with Control line was used, the values line, offset and height are displayed.
		If a Setup method with Coordinates was used, the easting, northing and height are displayed.
		The graphic shows the position of the station, the reflector and the measured points.

8 APPLICATION PROGRAM - Angle & Distance

Description

The application program **Angle & Distance** is used for measuring an unlimited number of points. The program shows horizontal angle, horizontal distance and height.

Diagram



- P0 Known Station
- P1 Measured point
- α Measured horizontal angle
- b Horizontal distance

Application program Angle&Distance step-by-step

Step	Screen	Description
		Make sure that PROG Mode is active.
1.		Press APPL .
2.		Press to highlight application program Angle & Distance and accept with OK .
3.		Aim at target point.
		Press MEASURE for at least 5 seconds to turn on/off Laser-pointer .
4.		Measure and record point.
		The measured horizontal angle, horizontal distance and height difference are displayed.
		The graphic shows the position of the station, the reflector and the measured points.

9 APPLICATION PROGRAM - Tie Distance

Description

The application program **Tie Distance** is used to compute horizontal distance, height difference grade and slope distance between two target points. The target points have to be measured.

The user can choose between two different methods:

- Polygonal (P1-P2, P2-P3);
- Radial (P1-P2, P1-P3);

Diagram Polygonal (P1-P2, P2-P3)

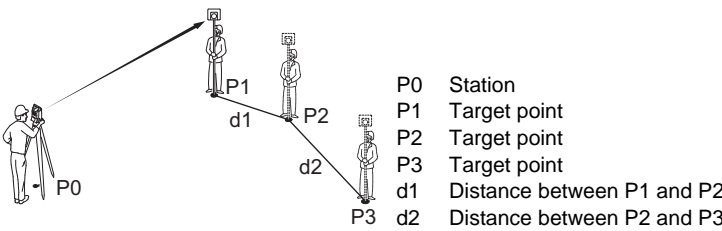
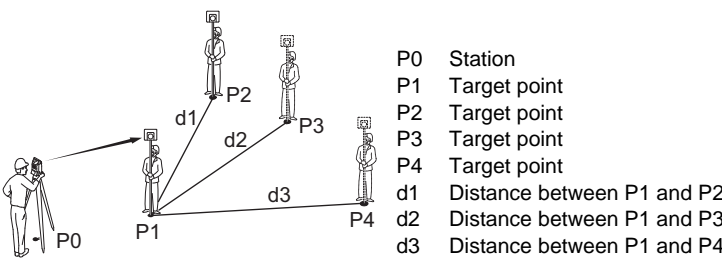
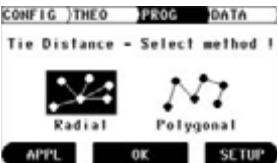



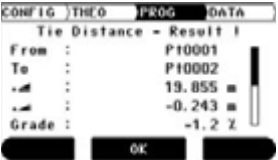


Diagram Radial (P1-P2, P1-P3)



Application program Tie Distance step-by-step

Step	Screen	Description
		Make sure that PROG Mode is active.
1.		Press APPL .
2.		Press to highlight application program Tie Distance and accept with OK .

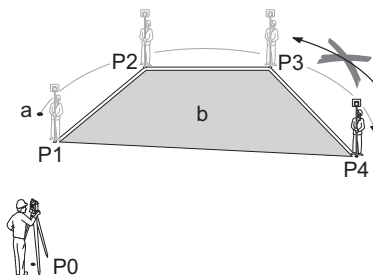
Step	Screen	Description
3.		Press  to select method and accept with OK .
		Press MEASURE for at least 5 seconds to turn on/off Laser-pointer .
4.		Aim at first point.
5.		Measure and record first point.
6.		Aim at second point.
7.		Measure and record second point.
		Once two points have been measured and recorded the calculated horizontal distance, height difference, grade and slope distance between the measured points are displayed.
8.		Press OK to measure more points.

10 APPLICATION PROGRAM - Area

Description

The application program **Area** is used to compute online areas from an unlimited number of points connected by straights. The target points have to be measured. Additionally a block volume can be calculated.

Diagram



- P0 Station
- P1 Start point
- P2 Target point
- P3 Target point
- P4 Target point
- a Perimeter
- b Calculated area, always closed to the start point P1

Application program Area step-by-step

Step	Screen	Description
		Make sure that PROG Mode is active.
1.		Press APPL .
2.		Press to highlight application program Area and accept with OK .
		Press MEASURE for at least 5 seconds to turn on/off Laser-pointer .
3.		Aim at first point.
4.		Measure and record first point.
5.		Aim at second point.
6.		Measure and record second point.
7.		Aim at third point.
8.		Measure and record third point.
		Once three points have been measured and recorded the calculated area, perimeter and number of points are displayed.
9.		Press OK to measure more points.

Step	Screen	Description
10.		Or press VOLUME to calculate a block volume.

Total Quality Management: Our commitment to total customer satisfaction.



Leica Geosystems AG, Heerbrugg, Switzerland, has been certified as being equipped with a quality system which meets the International Standards of Quality Management and Quality Systems (ISO standard 9001) and Environmental Management Systems (ISO standard 14001).

Ask your local Leica dealer for more information about our TQM program.

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