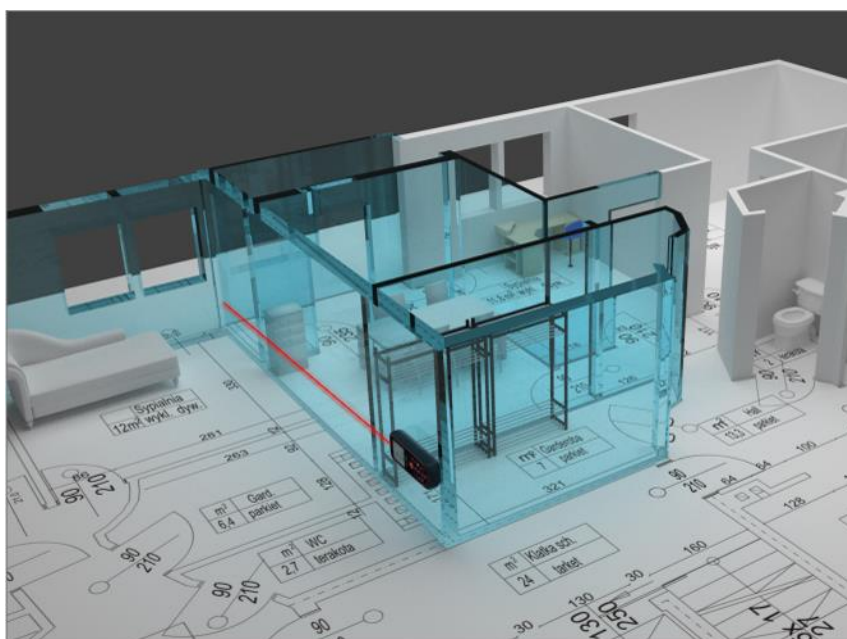


ArCADia-SURVEYOR

ArCADia-SURVEYOR User Manual



2019-07-26

Introduction

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Introduction

1. INTRODUCTION

Introduction

1.1. About

ArCADia-SURVEYOR is a piece of software that supports drafting professional technical documentation consisting of views and sections of surveyed buildings directly in the course of the measurements. The software is a plug-in of the ArCADia system, enabling wireless data download from electronic measurement devices via the Bluetooth interface. It is designed for people dealing with all the aspects of building survey. Since the software offers the possibility to indicate the measurement direction with a press of the rangefinder's function keys, the user may at the same time conduct measurements and create a 3D model of the building. This allows to greatly reduce the working time, since right after measurements of a building are concluded the user obtains an almost complete set of documents. An important advantage of the software is also the fact that the building plan and that of its installations is created in real time. This way the user instantly sees the results of his work on the screen of his computer and may repeat the appropriate measurement if necessary.

1.2. Software features

- Downloading data from electronic measurement devices via Bluetooth.
- Project import from the ArCADia-DRAFTER application.
- Moving the selected room or a group of rooms to be joined with other rooms.
- Rotating the selected room or a group of rooms by the indicated angle.

Installing and running the program

2. INSTALLING AND RUNNING THE PROGRAM

Installing and running the program

2.1. Hardware requirements

- Pentium IV PC (recommended min.: Intel Core i5).
- 2 GB RAM (recommended: 8 GB and 64 bit system)
- Approximately 3 GB of free HDD space for the installation.
- graphic card compatible with DirectX 9.0c (recommended cards 1GB RAM minimum)
- Windows 7, 8.1 or 10.
- A Bluetooth-enabled computer.
- A Bluetooth-enabled rangefinder.

NOTE: The software was tested with Leica rangefinders: DISTO A6, DISTO D3a BT, DISTO D8, DISTO D2, DISTO D510, DISTO D810, DISTO D910 and Bosch: Professional GLM 100C.

NOTE: rangefinders: DISTO D510, D810 and D910 rangefinders by Leica are compatible only with computers with Windows 8.1 and 10 operating systems. Older systems do not detect these devices.

2.2. Software installation

The program installation is started automatically when the CD is inserted into the CD drive. The installation should be started manually if the Auto start function is disabled. Open the CD content (Computer/CD drive), and run the [Setup.exe](#) file from the program folder. Once the installation is started, proceed according to the instructions displayed on the screen.

2.3. Distance meter installation

1. Make sure that the computer has a Bluetooth connection and that it is turned on. Information about the devices installed on your system may be found in the *Device Manager* available under: *Control Panel\System and Settings\System*.

Installing and running the program

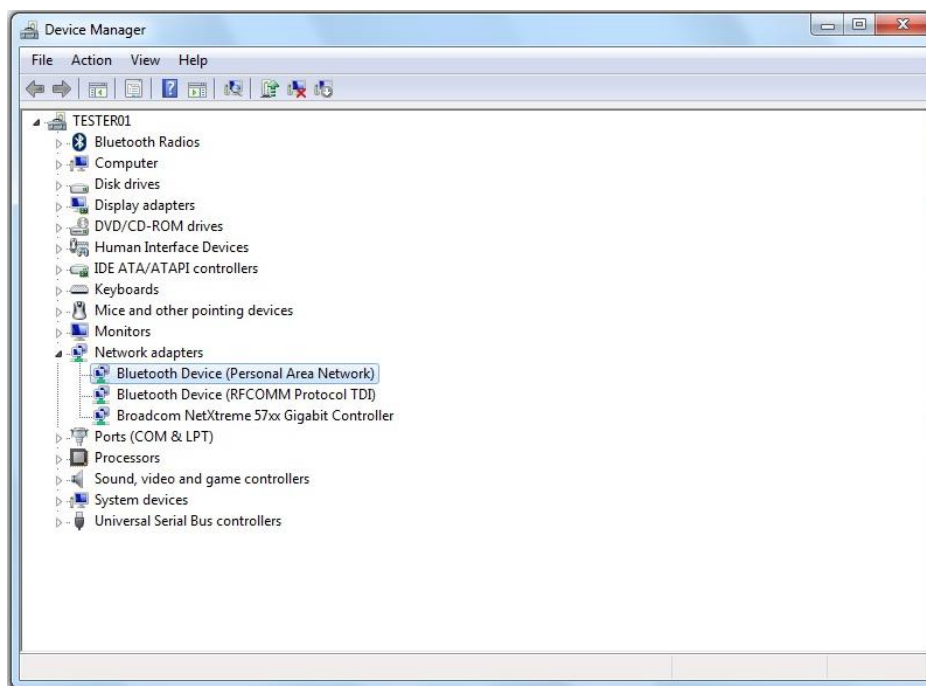


Fig. 1. Device Manager

2. Turn the rangefinder on and activate Bluetooth connectivity.



Fig. 2. DISTO D3a BT rangefinder

3. Open the *Control Panel* again and choose the *Devices and Printers* tab.

Installing and running the program

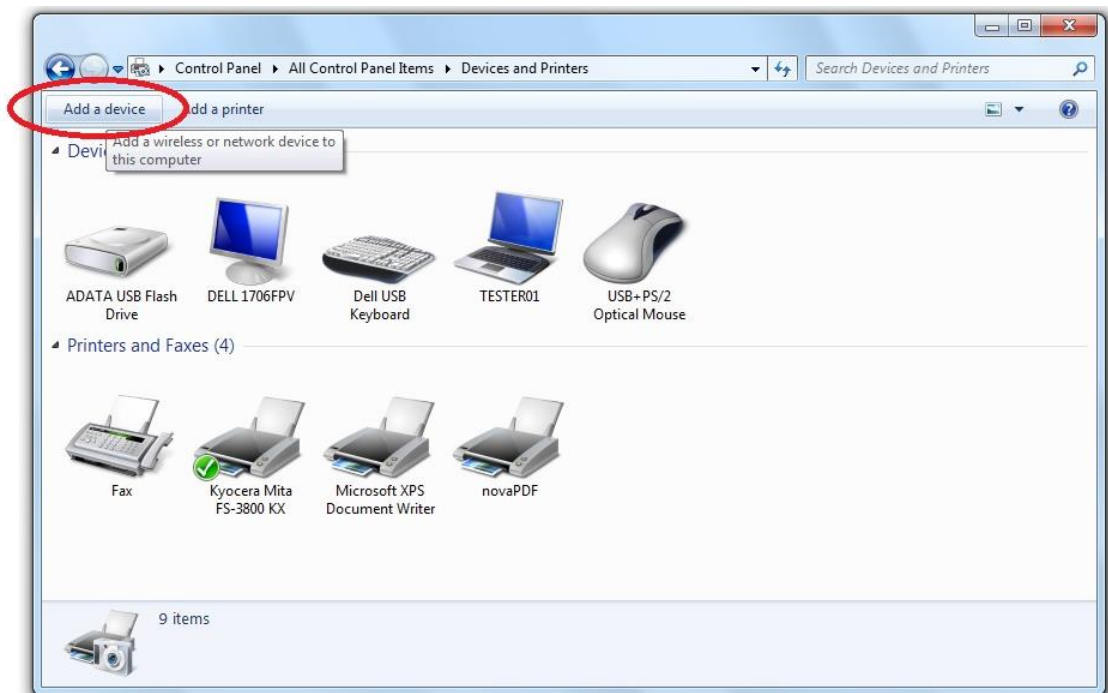


Fig. 3. Add a device Tab

4. Select the [Add a device](#) tab.
5. The computer will find the rangefinder that has been turned on.

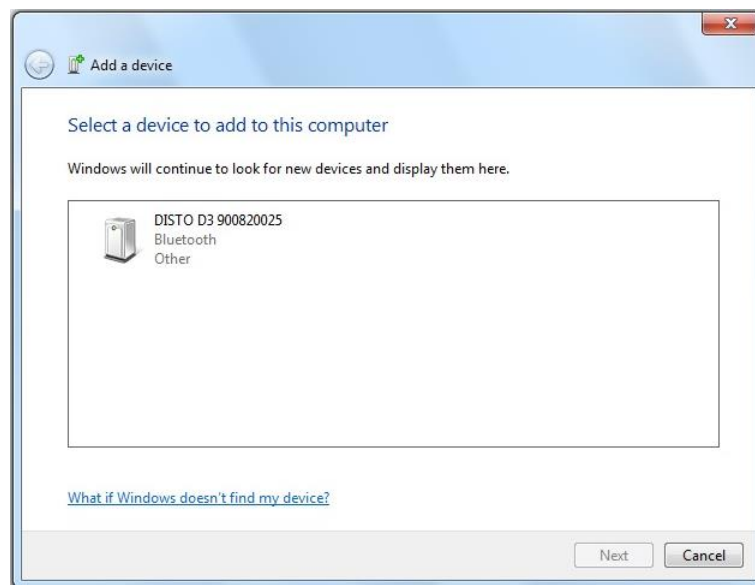


Fig. 4. Setting up a Bluetooth device

6. Choose the rangefinder from the list of available devices and click [Next](#).
7. In the next windows choose [Enter device pairing code](#) and click [Next](#).

Installing and running the program

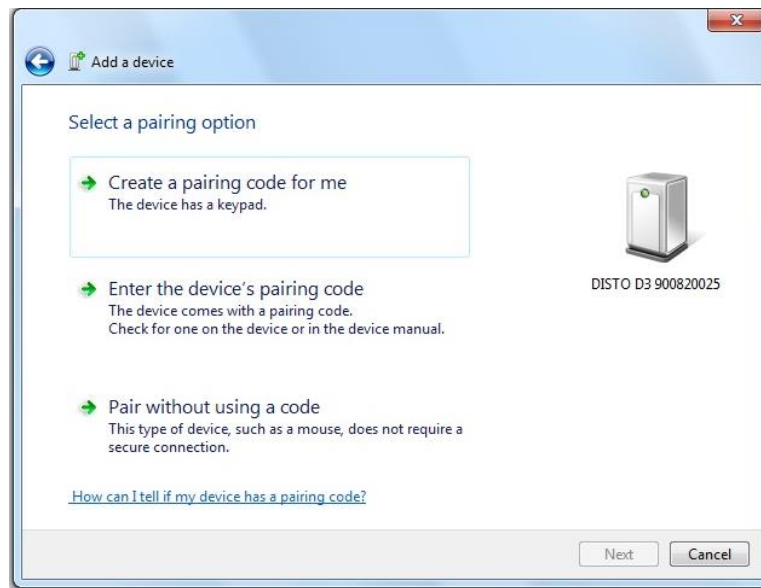


Fig. 5. Device pairing options selection

8. The pairing code should have been provided by the manufacturer and placed either directly on the device or provided in its user's manual. Usually it is a string of four zeros — "0000".



Fig. 6. Entering the device pairing code

9. After entering the code and clicking *Next* the system will install the necessary drivers. Once a device is successfully set up on the computer it is ready to work.

Installing and running the program



Fig. 7. Device configuration complete

2.4. Running

The program can be run by double clicking on the **CAD** program icon (ArCADia LT, ArCADia or ArCADia PLUS) located on the desktop, and by switching to the **Surveyor** ribbon, you can start working with the module.

2.5. Opening a project (CAD)

Any of the following file types may be opened:

- A standard .dwg drawing file.
- Any of the following sample drawings supplied with the ArCADia LT, ArCADia or ArCADia PLUS software may be used.
- A .dxf drawing exchange file.
- A .dwt network transmission file.
- A .dwt drawing template file.




In order to quickly access the last edited drawing choose **File> <file name>**. The software stores the names of the last four drawings. In order to quickly access a drawing from the **Open drawing** dialog box, double-click the drawing name.

A drawing may be opened when browsing drawings on the computer using e.g. the Windows Explorer. All you need to do to open the drawing is to double-click the file to open it in ArCADia LT or ArCADia (PLUS). Miniatures of drawings are displayed when browsing which facilitates the identification of the selected drawing.

Opening an existing drawing

1. Use one of the following methods:




Installing and running the program

- Select  **ArCADia** ⇒  **Open**
 - Quick selection bar ⇒  **Open**
2. In the file type, select the type of file that you want to open.
 3. Select the folder containing the given drawing.
 4. Do one of the following:
 - Select the drawing you want to open and click **Open**.
 - Double-click the drawing you want to open.

If the drawing requires a password, enter the password, click **OK** to check the password and click **Open** again.

2.6. Saving a project (CAD)




A drawing may be saved at any moment.

- Select  **ArCADia** ⇒  **Save**
- Quick selection bar ⇒  **Save**

When you save a drawing for the first time, the system will display the dialog box **Save drawing as**, which enables you to select the folder and give a name to the drawing. You can use any name desired when saving the drawing for the first time. In order to save the same drawing later under a different name, select the option **Save as** and then type in the new name.

2.7. Autosave and back-up copy (CAD)

Aby zapisać rysunek, użyj jednej z poniższych metod: To save the drawing use one of the following methods:

- Select  **ArCADia** ⇒  **Save**
- Quick selection bar  **Save**

In order to avoid data loss in case of a power outage or another system error, it is necessary to save your drawing files often. The software may be configured to periodically save your drawings automatically. The **Autosave** setting determines the interval in minutes between automatic saves. The software resets this interval each time when the user saves a drawing file.

When the **Autosave** feature is activated, the software creates copies of the drawing. This file is automatically saved to the **Temp** folder for the logged in user. The path to the directory is available in the **Options** or **Autosave settings** window, depending on the CAD program being used (ArCADia or ArCADia LT). A more detailed description can be found in the help for these programs.

Working with the software

3. WORKING WITH THE SOFTWARE


Working with the software

3.1. Software element description

The **ArCADia-SURVEYOR** module creates a set of its own dedicated tools in ArCADia LT, ArCADia or ArCADia PLUS programs.









**BIM* – options available to ArCADia BIM license holders, i.e. after purchasing one of the following programs: ArCADia, ArCADia LT or ArCADia PLUS.

Tab. 1. ArCADia-SURVEYOR toolbar functions located on the Start and Insert ribbon

Ikona	Opcja	Opis	*BIM
	<i>DRAFTER import</i>	Imports a project made in the ArCADia-DRAFTER mobile application.	✓

**BIM* – options available to ArCADia BIM license holders, i.e. after purchasing one of the following programs: ArCADia, ArCADia LT or ArCADia PLUS.

Tab. 2. ArCADia-SURVEYOR toolbar functions located on Inventory ribbon.

Icon	Option	Description	*BIM
	<i>Turn on rangefinder</i>	Turns on rangefinder operation.	X
	<i>Turn off rangefinder</i>	Turns off rangefinder operation.	X
	<i>Navigator</i>	Turns the navigator window on and off, which helps when drawing a view of the building being inventoried.	X
	<i>Move/Join a group of rooms</i>	Enables moving the selected room or a group of rooms to be joined with other rooms.	X
	<i>Rotate left</i>	Rotates a room or group of rooms by 90o to the left.	X
	<i>Rotate right</i>	Rotates a room or group of rooms by 90o to the right.	X
	<i>Rotate freely</i>	Rotates a room or group of rooms by any angle.	X
	<i>Help</i>	Displays the help window.	✓

3.2. Description of commands

Creating a building inventory in the ArCADia-SURVEYOR module is done using the graphic program option that is installed and connecting them to the rangefinder. The taken values are entered into the elements property windows (e.g. windows and doors) and directly to the drawing. For easier navigation when creating the inventory, the *Navigator* window was created, in which most of the required drawing options for the measured building were grouped.

Working with the software

Activation:











- *Surveyor* ribbon ⇒ logical group *Surveyor* ⇒  *Navigator*





Fig. 8. Navigator window

Tab. 3. Options available in the Navigator window

	<i>Insert wall</i>	Inserts layered walls on a level view.
	<i>Insert window</i>	Inserts windows into the walls along with the symbol and description.
	<i>Insert door</i>	Inserts a door into the walls along with the symbol and description.
	<i>Insert opening</i>	Inserts openings into the walls.
		The icon showing the connection status with the rangefinder (active or inactive).
	<i>Length</i>	Field completed by the value provided by the rangefinder or entered manually.
	<i>Angle</i>	Field completed by the value provided by the rangefinder, entered manually or indicated by the following directional icons
		Directional icons allowing to indicate the wall drawing direction (this is a duplication of directional arrows located on the rangefinder)
	<i>OK</i>	Icon confirming the entered length and direction by drawing them on the view, for example by drawing a wall.
	<i>Block drawing</i>	Selecting the field allows you to take the value from the rangefinder, but without entering them automatically into the drawing, e.g. to adjust the angle of drawing the wall.
	<i>Absolute directions</i>	Selecting the option allows drawing walls with absolute directions. By default, the directions are given relative to the last wall entered, e.g. from it to the right, even though the wall on the view relative to the screen has been drawn vertically.

Working with the software

3.2.1. Turn on rangefinder

The command turns on the *Bluetooth* device functionality showing the active icon  in the navigator window. Similar icons  will also be displayed in the element properties windows (e.g. windows and doors) in front of value fields.

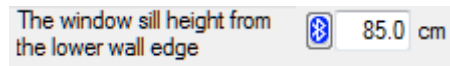


Fig. 9. Example editing field with rangefinder functionality turned on

When connecting with the rangefinder, an error message may appear saying that no supported device was found (rangefinder support will be automatically disabled). If the user, however, has a supported device, he should make sure that it is enabled, has Bluetooth on and try again to enable the rangefinder.

3.2.2. Turn off rangefinder

This command turns off the monitoring of signals transmitted from the rangefinder.


3.2.3. Show help

The command, activated with the  button, displays the Help file.

3.3. Drawing inventory by using a rangefinder

The general rule of drawing views using a rangefinder connected by *Bluetooth* technology with the ArCADia system is that the data being collected automatically draws the walls of the measured building, by default placing them at a right angle in the indicated direction. Windows and doors are inserted into the drawn walls, which are first measured and information about widths, heights, etc. is sent to their properties windows, and then entered into the drawing using the *Reference* option and the direction indicated on the rangefinder. This means that the best method for creating an inventory is to take your laptop to the place of measurement and to draw the subsequent views passing along all the values.


How to to use the *DISTO D3a BT* rangefinder is shown below.

1. Turn on the rangefinder.
2. Initiate  *Bluetooth*.
3. Turn on the second degree functions (measurement direction transmission).

Working with the software



Fig. 10. Rangefinder's keyboard with the 2nd button marked

4. Run the *Insert wall* command  found in the *Navigator* window or on the ribbon in the program.
5. Once the inserting toolbar appears, select the wall introduction edge.

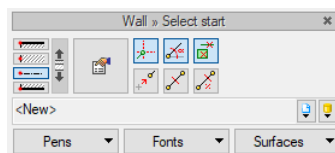


Fig. 11. Wall insertion window

6. Indicate the location of the wall's beginning.
7. Measure the wall's length with the rangefinder.



Fig. 12. Rangefinder's keyboard with button measuring the length marked

8. Transmit data to the software using the direction feature.



Fig. 13. Rangefinder's keyboard with the menu button marked


Working with the software


9. The software will draw a wall in the indicated direction.
10. Measure the next wall and transmit it to the program pressing appropriate direction, e.g. to the left of the previously inserted wall



Fig. 14. Rangefinder's keyboard with the directional arrow button marked

11. The software will draw a wall in the indicated direction.
12. Measure the remaining walls of the room, each time transmitting the measurement with the direction feature.

Directional arrows located on the rangefinder and in the navigator window inserts walls at an angle of 45° or 90° from the previous wall. If the angle between walls is visibly different, in the *Navigator* window check the box  *Block drawing*, measure the length of the wall using the rangefinder, and send it to the program. Then measure the angle and enter it manually in the navigator window. The wall will be inserted after clicking *OK*.

After drawing the rooms contours, the windows and doors can be inserted. It is best to measure and define a window or door before inserting them. To do this, in the *Navigator* window we choose *Insert Window*  in the insert window we choose properties.

Working with the software

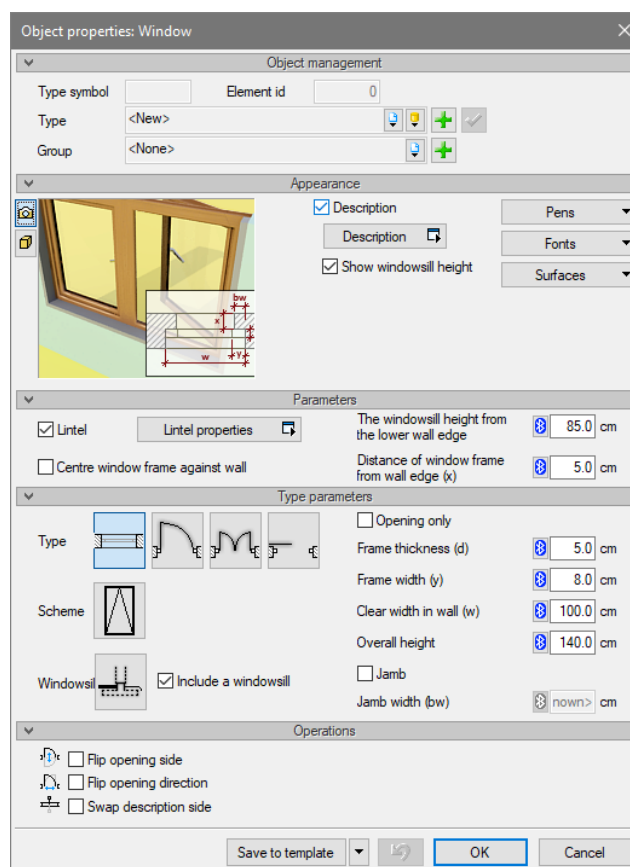


Fig. 15. A sample window of window properties

Press the [Bluetooth](#) icon preceding the value that we will measure, and a small window will appear while waiting for the transfer of data from the rangefinder.

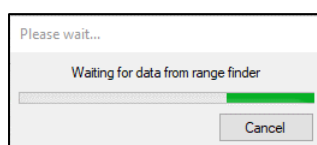


Fig. 16. Window of waiting for data to be sent from the rangefinder

We measure for example the width of the window in the opening in the wall and we send the data using one of the directional arrows located on the rangefinder. Then we click again on the [Bluetooth](#) icon preceding another value and proceed analogously to measure the entire window. After confirming the size of the window, it should be inserted at a measured distance from one of the corners of the room. From the insertion window we select the [Reference](#) option, indicate the corner of the room and show the side (without clicking) of the window insertion. We measure the distance of the window from the corner and send the value by pressing the appropriate direction arrow on the rangefinder. If we have chosen the upper left corner of the room and the window is inserted from it to the left, then the left arrow is pressed.

Working with the software



NOTE: Detailed information on inserting individual system elements (walls, windows, ceilings, pipes, cables, etc.) can be found in the relevant modules help files, for example inserting windows, doors, ceilings and walls is described in detail in the ArCADia-ARCHITECTURE module help.

The program allows you to enter all elements of the system using the rangefinder. It is therefore possible to insert into the project analogously to the above all sanitary installations supported by the program, along with the accessories.

The method of measuring the building with the Leica *DISTO D3a BT* rangefinder is described above. Other rangefinders that are on the market which use *Bluetooth* technology can work differently. For example, another Leica distance rangefinder DISTO D8 (with a built-in camera showing the target location) in order to send data to the program needs an additional pressing of the *Bluetooth* button. This means that each time after measuring the length and pressing the appropriate directional arrow the *Bluetooth* button should be pressed.

Another example is the rangefinder of the *BOSCH* company the *Professional GLM 100 C* (also the *Leica Disto D510, D810, D910, D2* models), this model does not have directional arrows or second functions of rangefinder buttons. The device's operation while drawing the inventory is therefore more closely related to the computer, because it is there in the program, that we must show the insertion direction of walls, windows and doors.

In detail, this operation will look like this:

1. Switch on the rangefinder.
2. Turn on the  *Bluetooth* function.
3. Run the *Insert wall* command  found in the *Navigator* window or on the ribbon in the program.
4. When the insertion window appears, select the edge of the wall insertion.

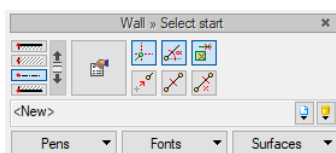


Fig. 17. Wall insertion window

5. Indicate the beginning of the wall in the drawing.
6. Indicate the direction in which the wall will be drawn.

NOTE: If the walls are at 90° in relation to each other, for the more precise and faster work, the *ORTHO* mode can be turned on, which will show directions every 90°, ie vertically and horizontally in relation to the screen.

Working with the software

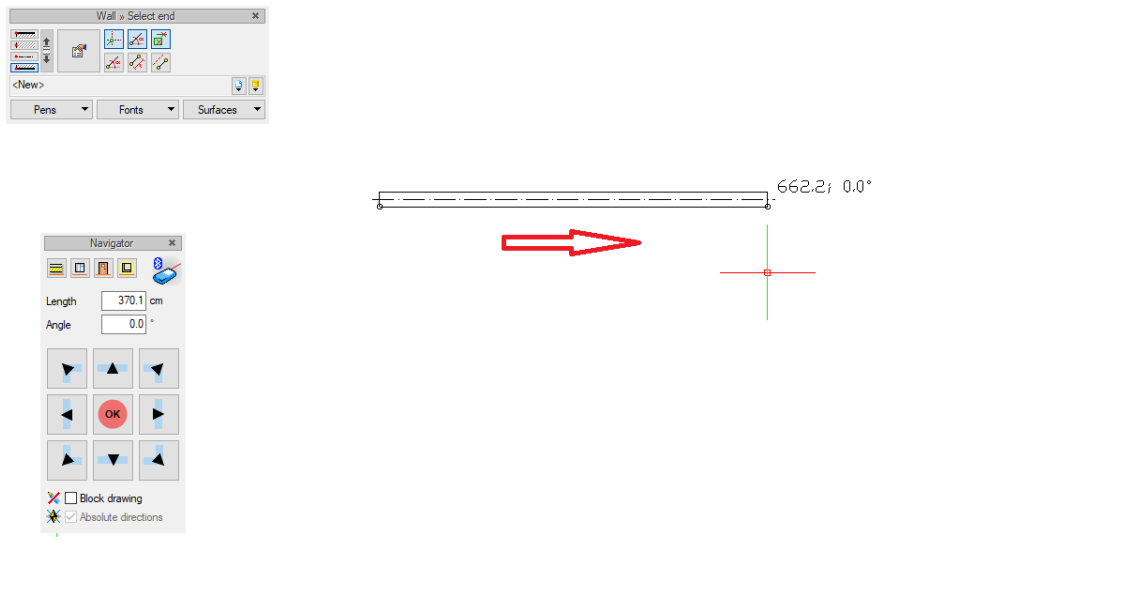


Fig. 18. Preparation of the wall option to provide information through a rangefinder

7. Measure the wall length using the rangefinder.



Fig. 19. Keypad of the rangefinder with a marked button that measures and simultaneously transfers the result to the program

8. The length will be taken over automatically, which means that the walls will be drawn with the measured length and the previously indicated direction.

Working with the software

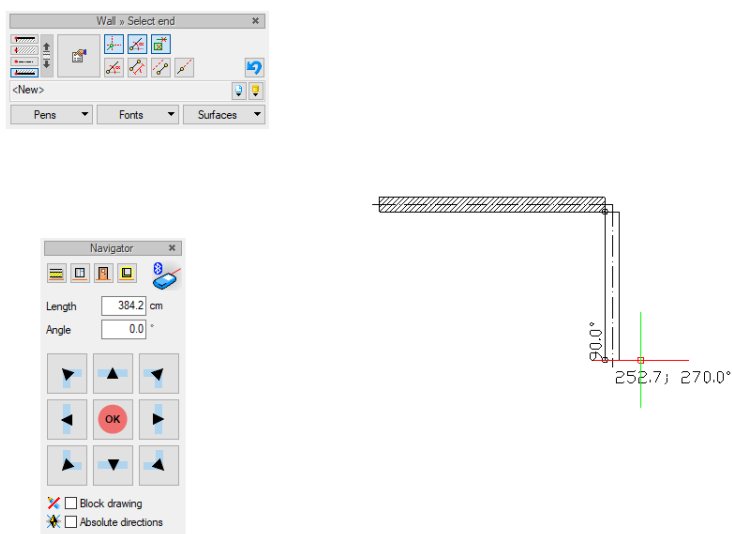


Fig. 20. The drawn wall with indicated direction of the next wall

9. Indicate the direction of the next wall and measure it.
10. The program will draw the wall.
11. Again, indicate the direction of drawing, measure the wall and proceed in this way until the whole room is drawn.

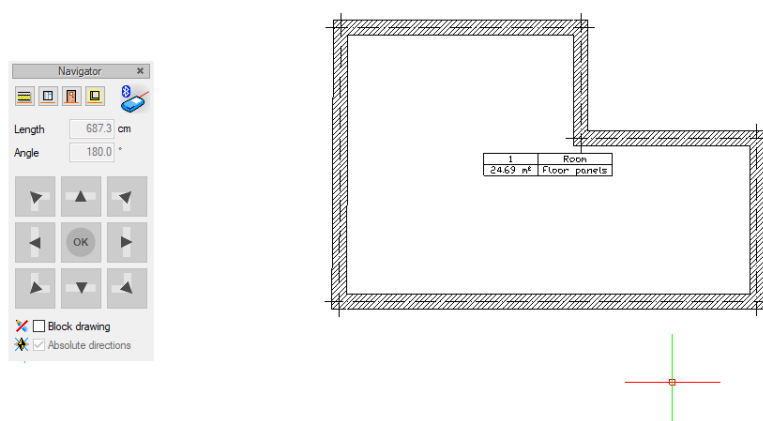



Fig. 21. The drawn rooms

Inserting windows and doors is analogous to the Leica rangefinder described previously, first we measure the width, height, height of the windowsill (in the properties window by clicking the [Bluetooth](#) icon  the dimension is transferred from the rangefinder), and then the [Reference](#) option indicate the reference place and the direction of window or door insertion and we measure the distance transferring it to the program immediately.

Working with the software

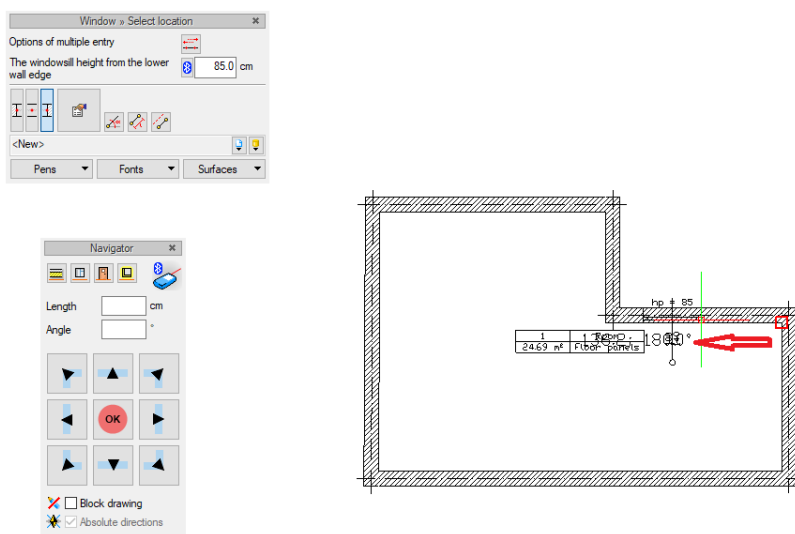


Fig. 22. Indication of the insertion direction of the window

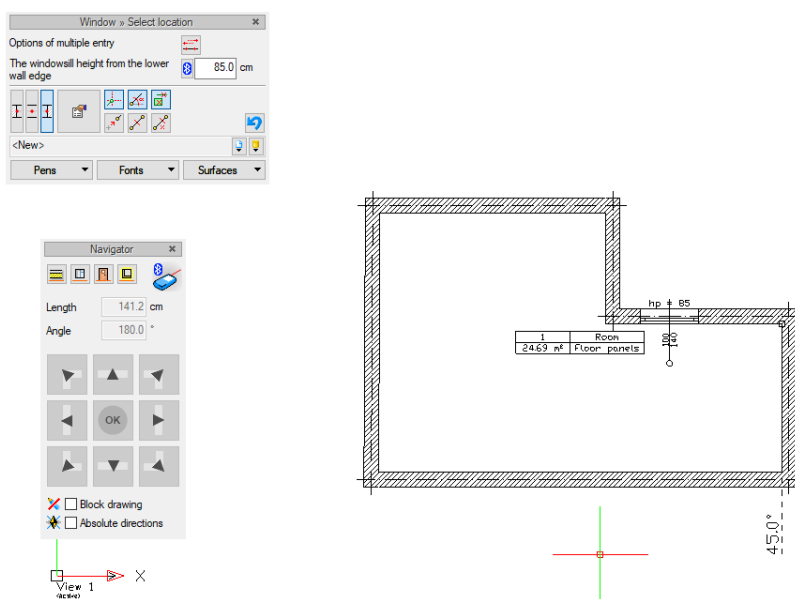


Fig. 23. Inserted window

3.4. ArCADia-DRAFTER import

ArCADia-DRAFTER is a mobile application that allows you to create a building inventory on your mobile phone at the site of measurement. In the application, you can enter items manually or receive data from the rangefinder connected to the device.


When drawing in the ArCADia-DRAFTER application it is very helpful to insert walls always in the same direction so that when importing, the walls will be drawn properly.

For detailed information on how to draw and set properties for elements, see the application help file.



Working with the software

3.5. Modifications of the inserted rooms


3.5.1. Move/Join a group of rooms

The software enables the surveying of buildings without the need to maintain the spatial distribution of rooms. A user may carry out measurements of each of the rooms separately and – once the entire process is complete – put all the rooms together to form the final level. To do so the user has to activate the *Move/Join a group of rooms* command with the  button, mark the selected room or a group of rooms and move it closer to another room. Both elements will be merged.

3.5.2. Rotate a group of rooms by 90° left/right

The commands *Rotate left/right*, which are initiated with the buttons  and  respectively, provide access to the most frequently used rotations. After activating one of the above commands it is necessary to indicate a room or a group of rooms. The indicated elements will be rotated by the angle of 90°.

3.5.3. Rotate group of rooms by any angle

In order to rotate a room or group of rooms by a freely chosen angle it is necessary to activate the command *Rotate freely* with the  button. Then the user has to indicate the rooms and provide the selected angle using the mouse or keyboard. The selected elements will be rotated.