# Panasonic VRF Software

New features of VRF software

April 2013

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# Mounting scheme

This section describes some features that are related to mounting scheme.

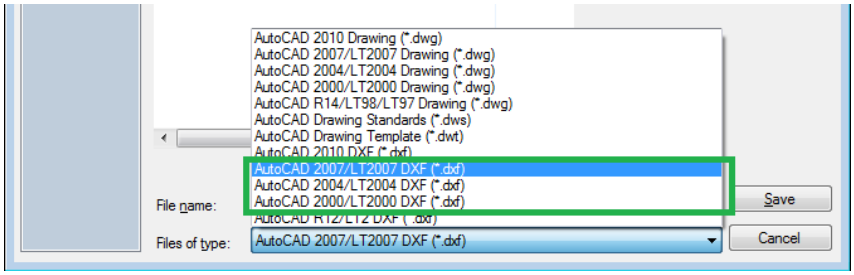
## 1. Import building scheme into software

You may use existing building scheme or export it from AutoCAD.

### 1.1. Export building scheme as DXF from AutoCAD

You may use building scheme exported from AutoCAD, please follow by the steps:

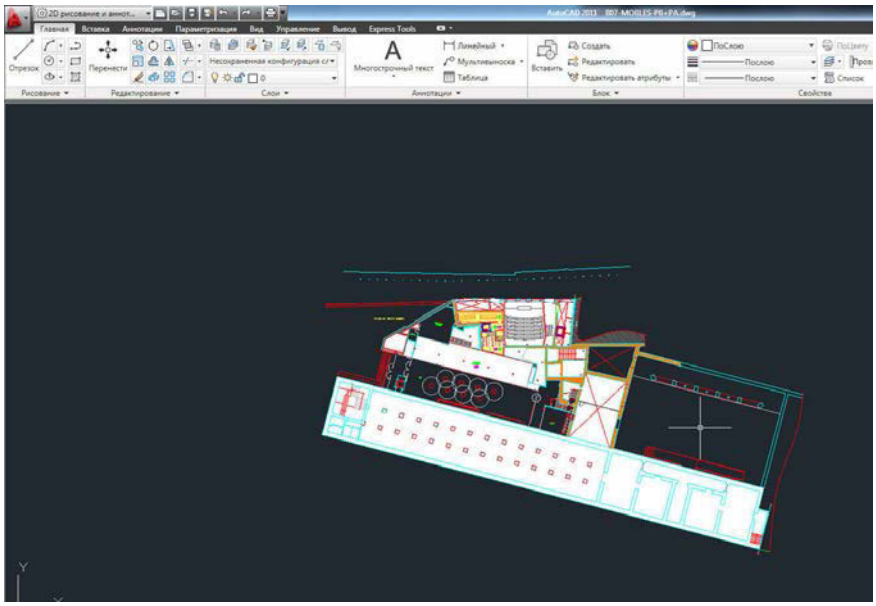
1) Open building plan in AutoCAD (v2004-2012);
2) Select Save As;
3) Select type of file: DXF (2004, 2007, 2010)



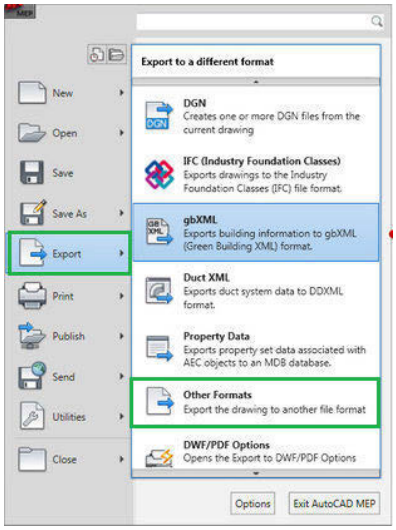

### 1.2. Export building scheme as image from AutoCAD

Also you may use building scheme exported as image file from AutoCAD:

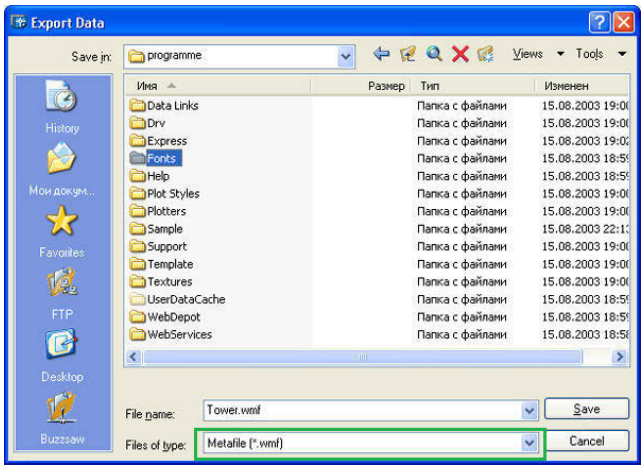
1) Open building plan in AutoCAD:



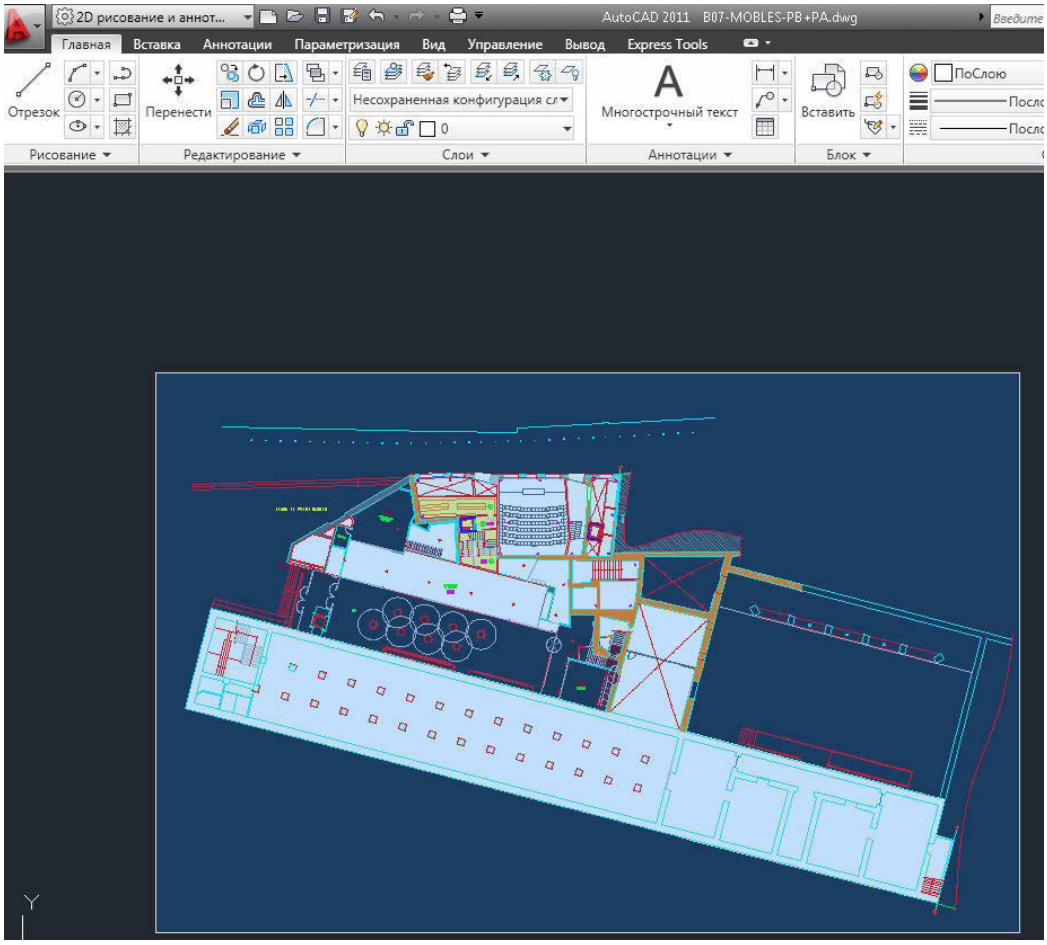
2) Select Export-> Other formats:



3) Select type of file: bmp or wmf (wmf is preferred):




4) Select objects for export and press “Enter”:

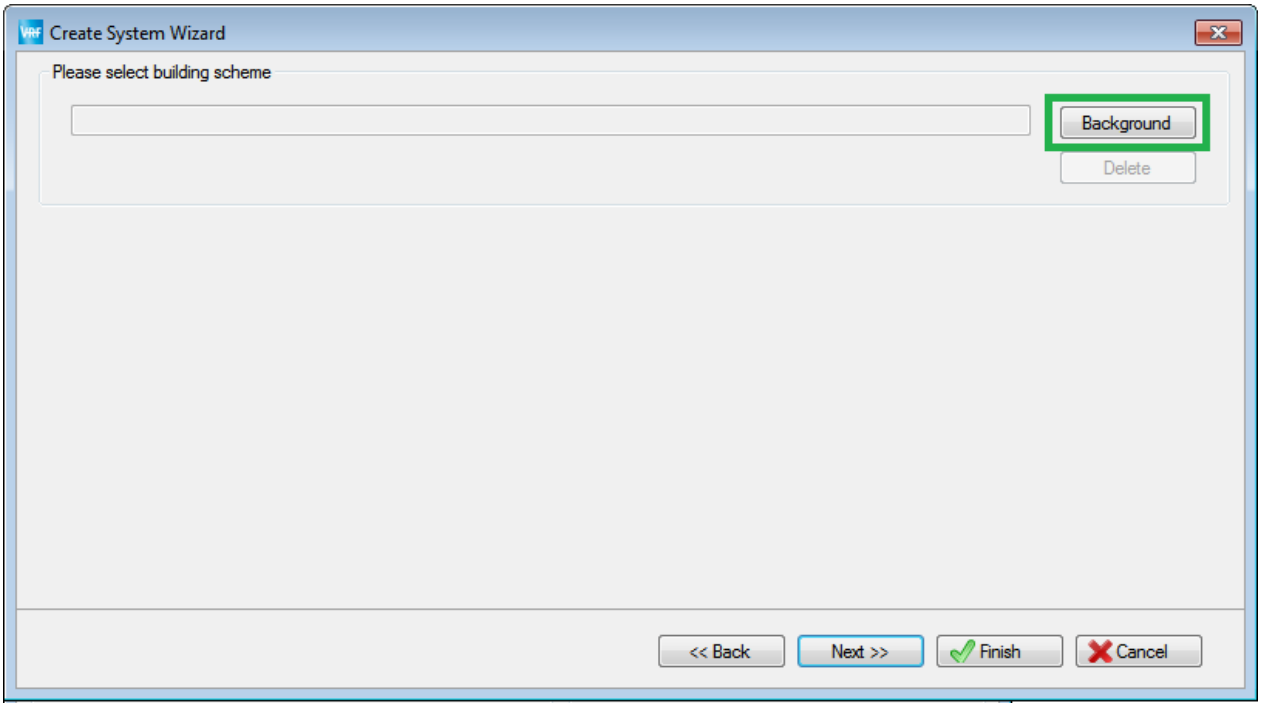


## 1.3. Import existing building scheme

You may import the scheme in DXF or image format in 3 ways:

1) Create building scheme for mounting system with single floor in “Create System Wizard”

As a result software will display “Background” form

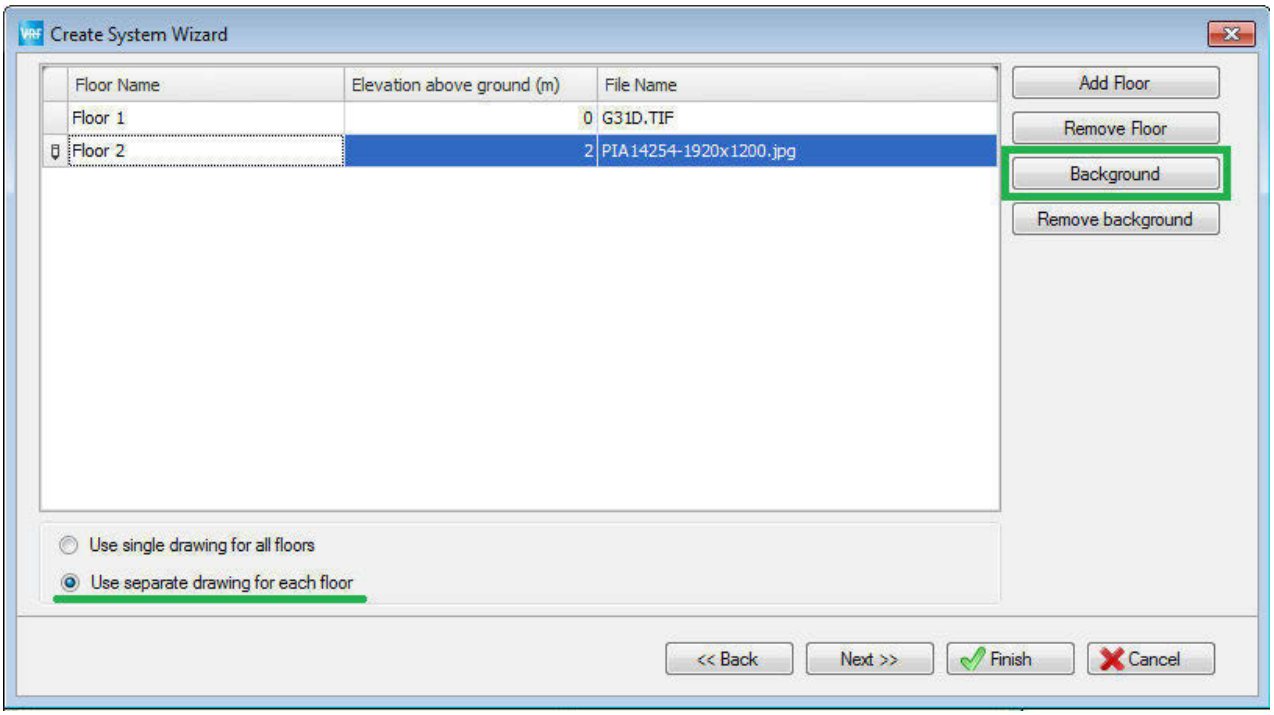



2) Create building scheme for mounting system with multiple floors in “Create System Wizard”

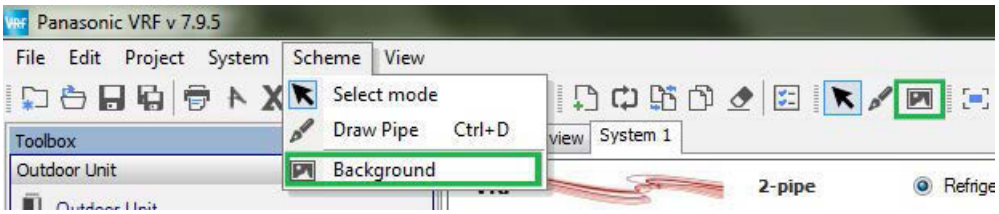
Then follow the steps:

- select radio button “Use separate drawing for each floor”.
- click on “Background” button

As a result software will display “Background” form



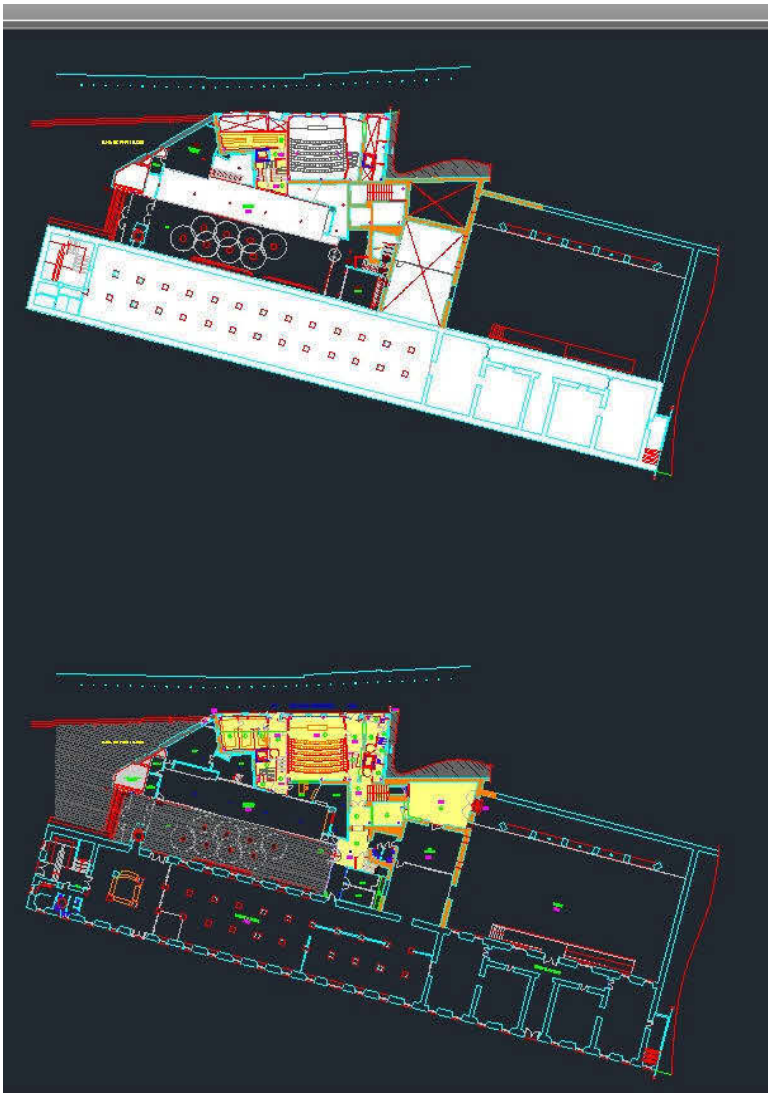
3) Click on “Background” button on “Scheme" toolbar or in main menu.
As a result software will display “Background” form




## 1.4. “Background” form

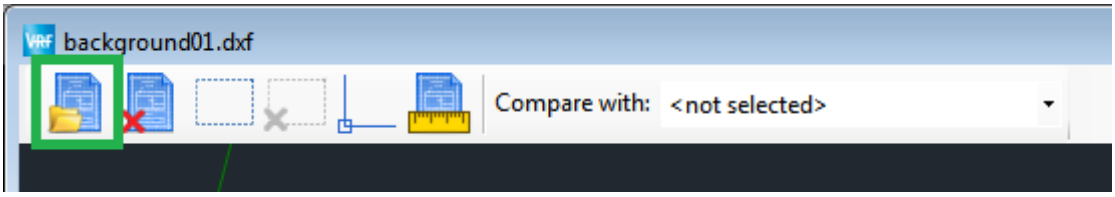
You may use “Background” form to load and adjust building schemes.

The following sample demonstrates how to work with background form.
Source file in AutoCAD:

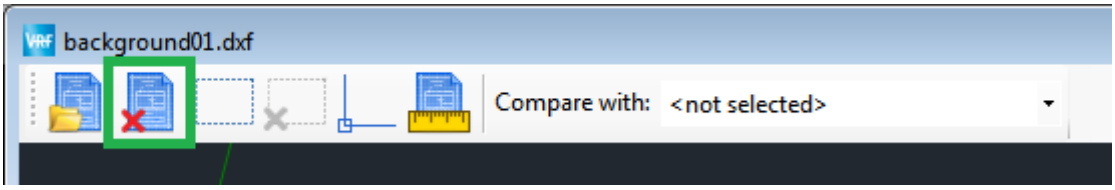


You may use the following tools on the background form:

1) Opening the file

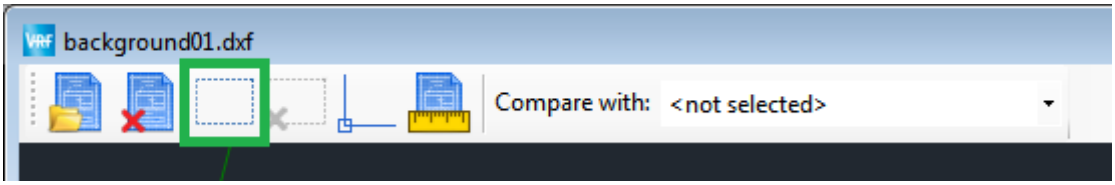



Also you may clear background by clicking “Remove background”.

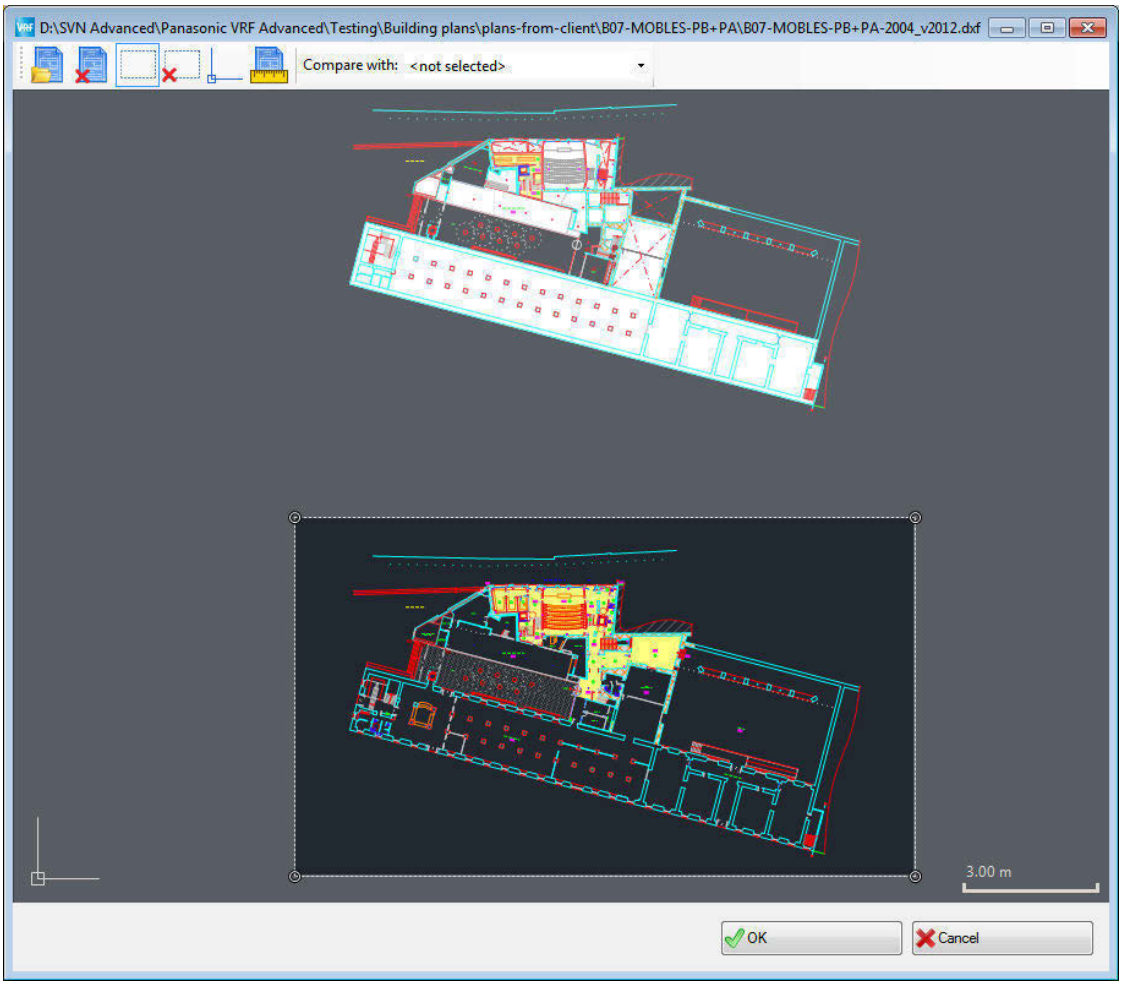



2) Selection

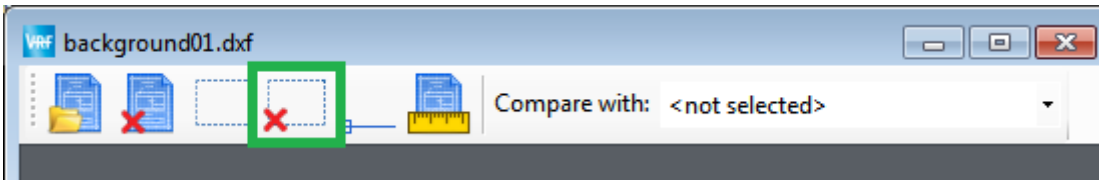
You may select part of drawing to be imported using “Select” button.




To select a part of building scheme, drag the cursor, thus creating a frame for selection

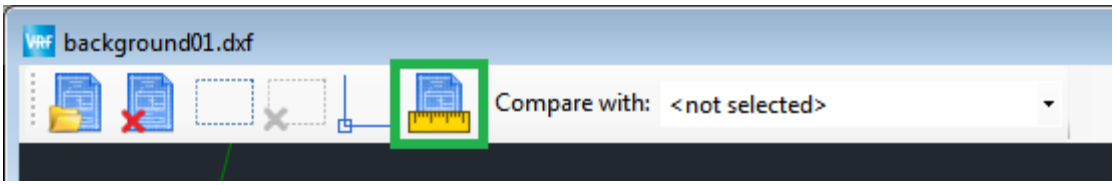


You may cancel selection by clicking on “Cancel selection” button.




3) Scale

You may set the scale of your building plan using Set scale tool, accessible through “Set scale” button

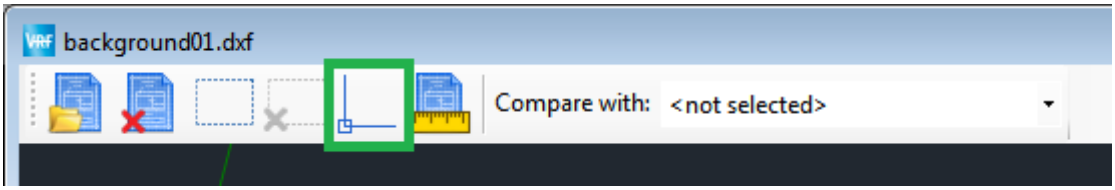



4) Anchor

Anchor is used to specify relative position of the drawing regarding other drawings within the same system.

Anchor determines locations of cross-drawing connectors, which are used to connect pipes/wires on separate drawings.

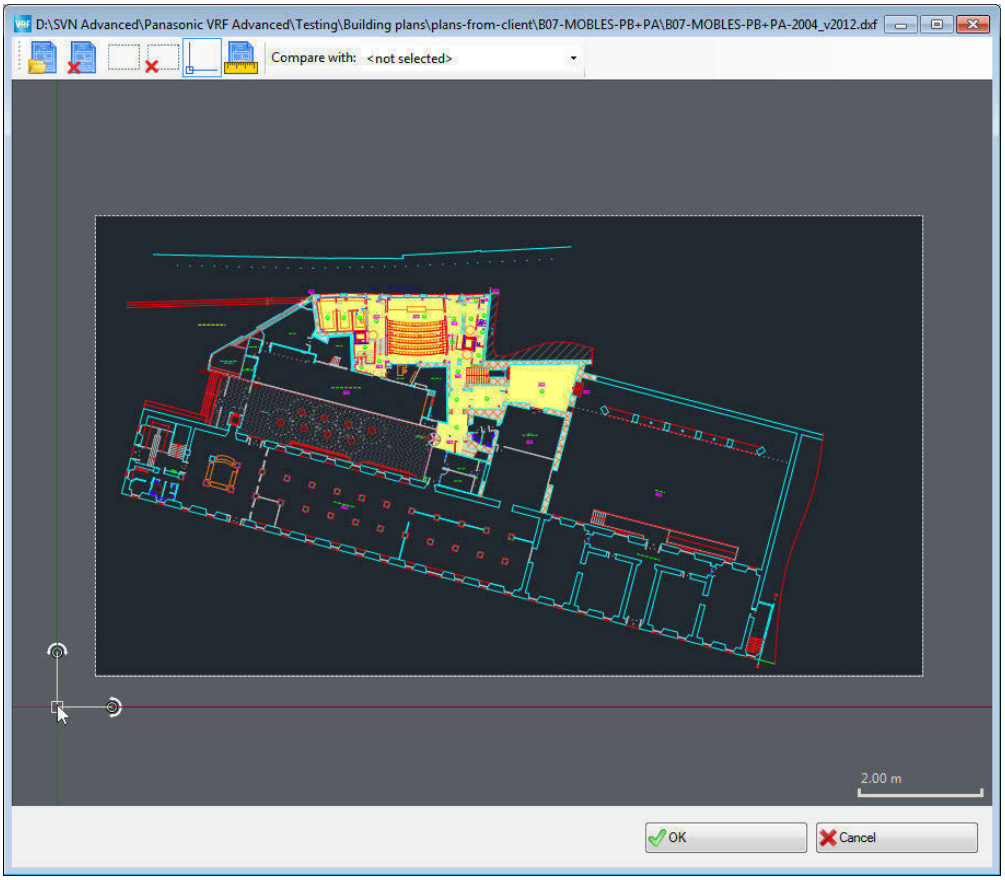
You may edit the anchor by clicking on “Anchor” button. This will automatically show and select the anchor.

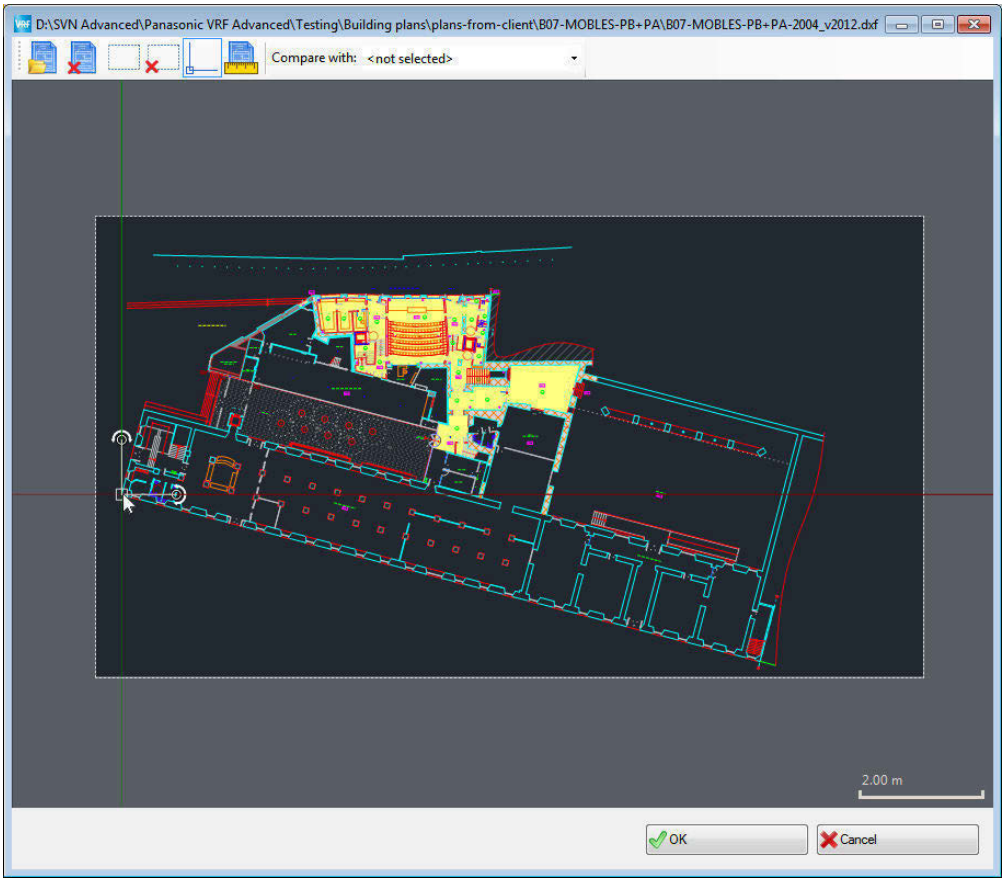



You may do the following:

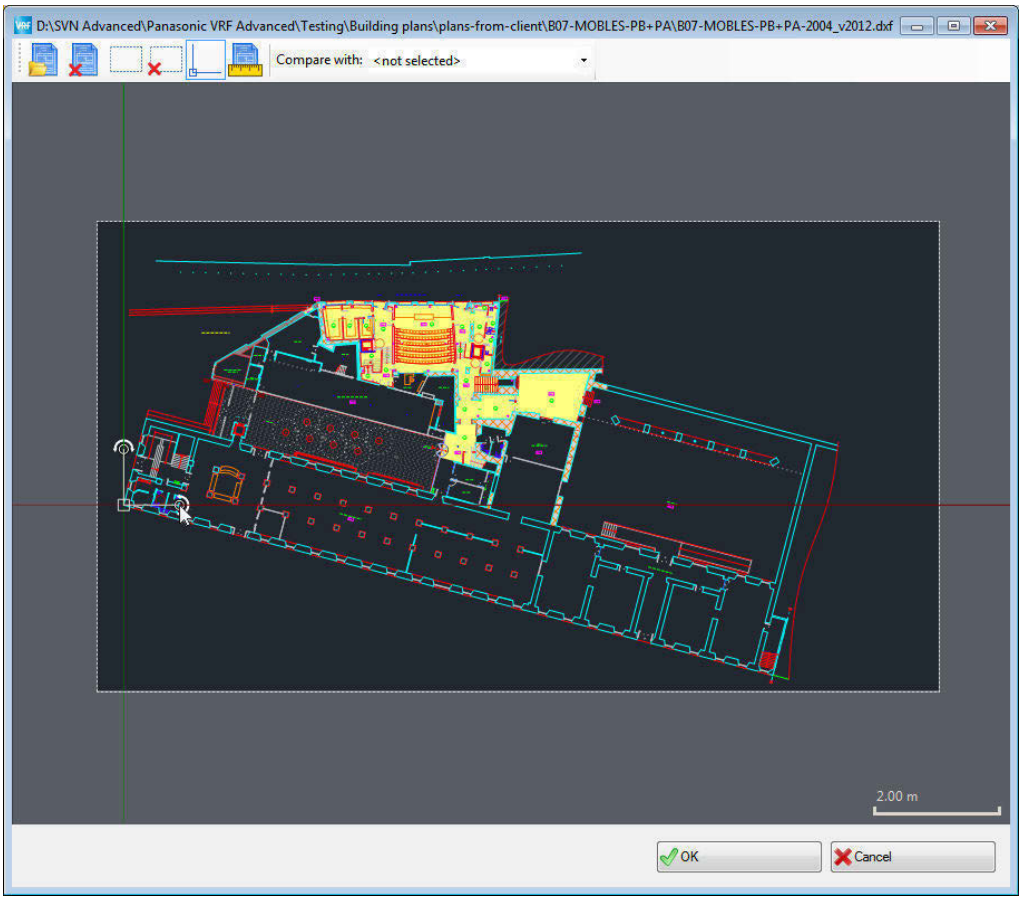
- Move anchor
- Rotate anchor

In order to move anchor, drag it to a desired point.

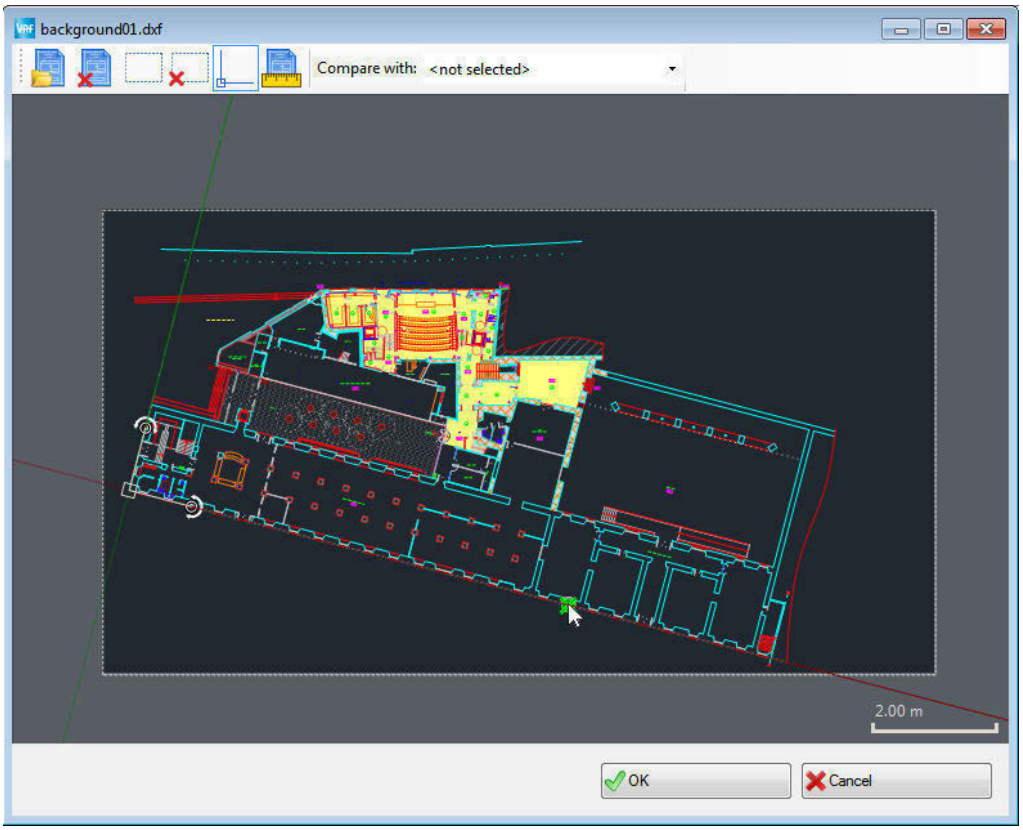


In order to rotate the anchor, select the anchor. Then drag anchors rotating point to change angle of the anchor.




Anchor rotation supports snapping to objects of the scheme.



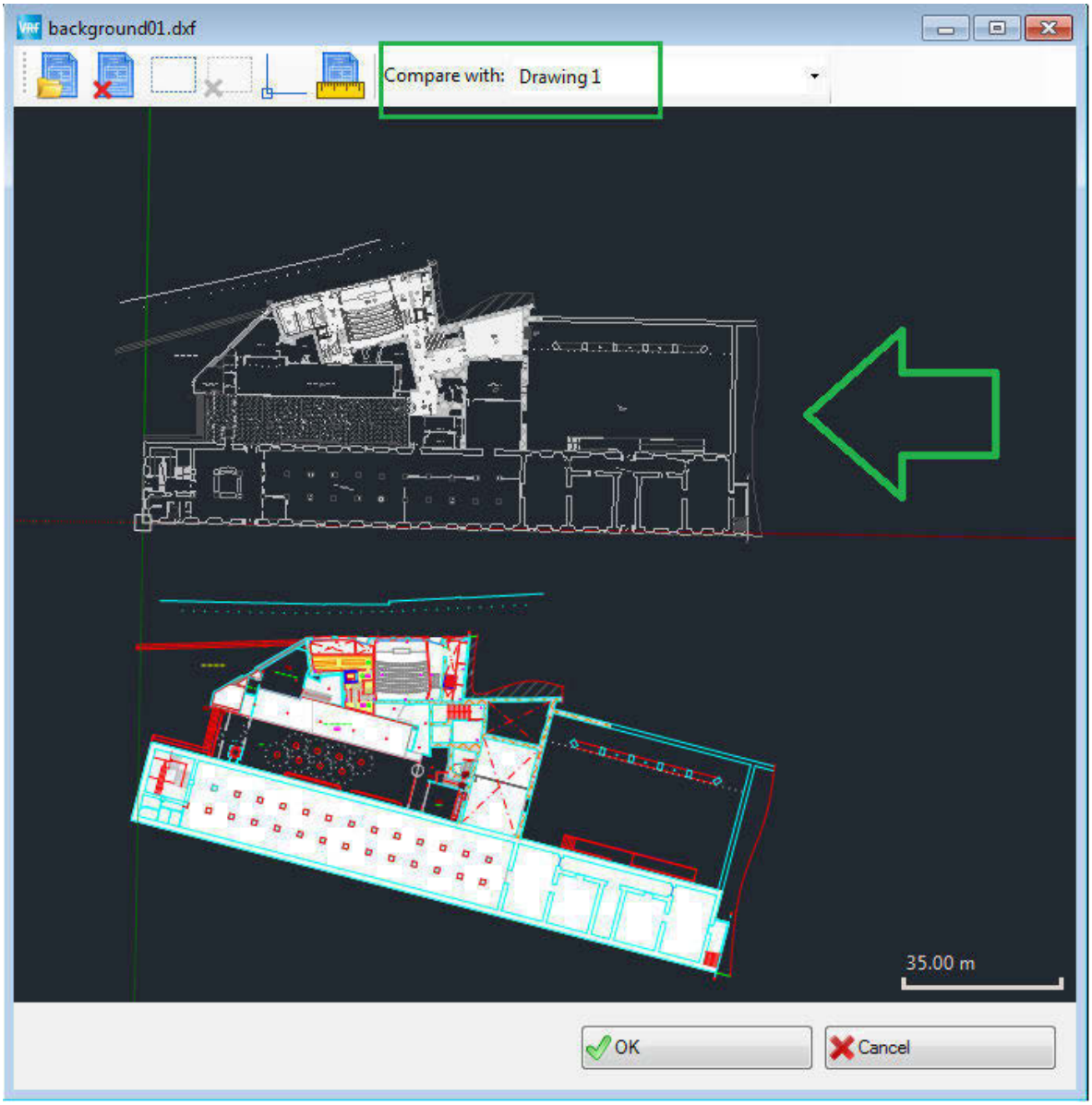
5) Comparison with other drawings.

You may compare and align current background with other drawing within the same system.

To view other drawing, select a drawing's name in "Compare with" selection box.

As a result, the drawing selected for comparison will be displayed in a black/white.

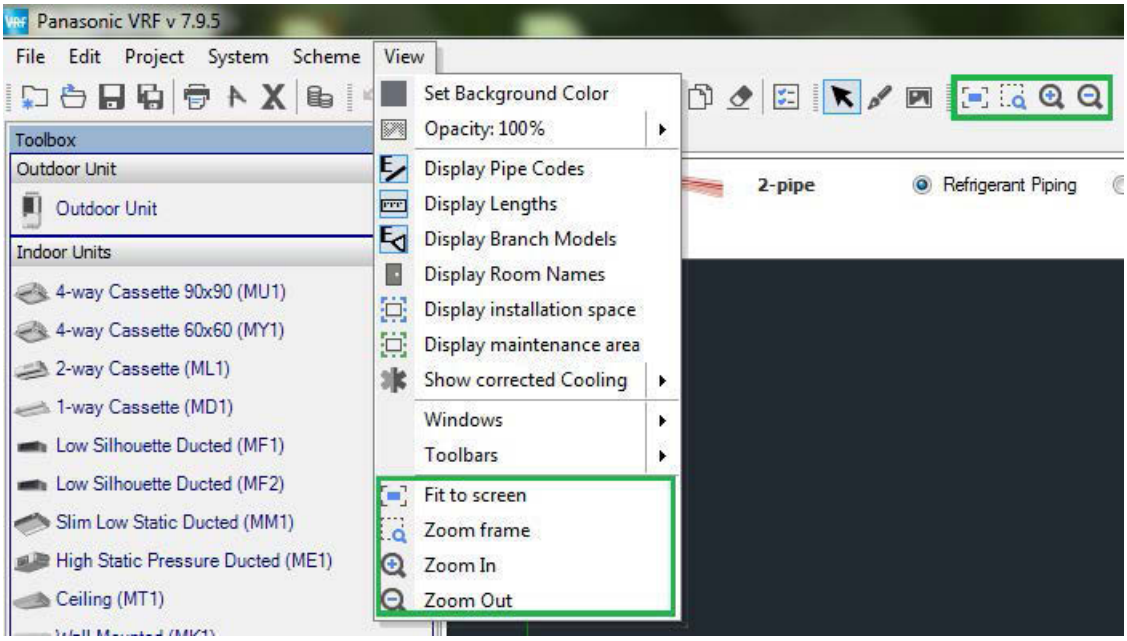
You may align two drawings using Scale and Anchor on both drawings




## 2. Zoom

Application allows to use zoom in 2 ways:

1) "Scroll wheel"
2) zoom buttons in main menu and toolbar:




Note:

- Zoom-in works until one meter is displayed for full screen (calculated considering specified Scale).
- Zoom considers selected scheme. In case it does not work click on any point of drawing.

## 3. Move scheme

You may move the scheme in the following ways:

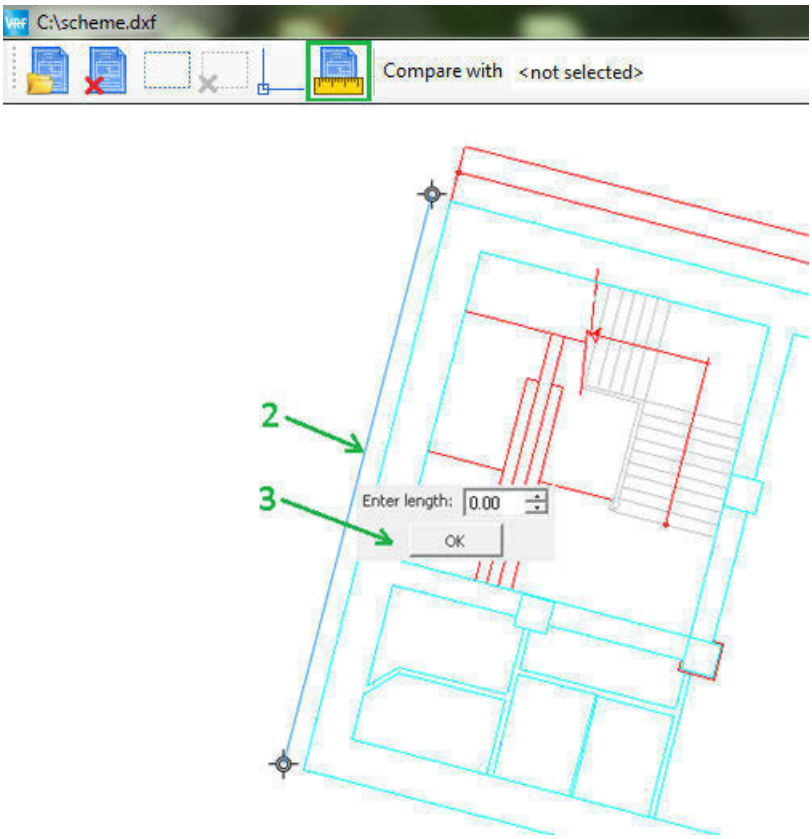
- Press middle mouse button and drag the scheme;
- Hold Space + left mouse button and drag the scheme.

## 4. Specify scale for imported scheme

In order to specify scale for scheme please follow by the steps:

1) Click “Set scale” button
2) Draw “Scale line” by specifying endpoints (you may move endpoints of created line).
3) Specify length of this line in meters.

Note: you may place “Scale line” near any object on scheme with known length (e.g.: wall, etc.).




## 5. Work with indoor and outdoor units

You may use the following main operations at work with units:

- Add new unit
- Rotate unit
- Remove unit

Note: units are displayed according to their real sizes. Also display-size of unit depends on current zoom and specified scale.

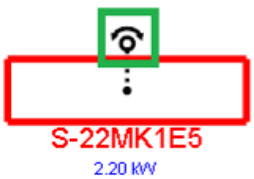
### 5.1. Add new unit

You may add new unit in 2 ways:

1) Drop unit from toolbox:
2) Copy/paste indoor unit using context menu or “Ctrl + C”/ “Ctrl + V” shortcuts.

### 5.2. Rotate unit

To rotate unit, select it and move using dedicated “control point”

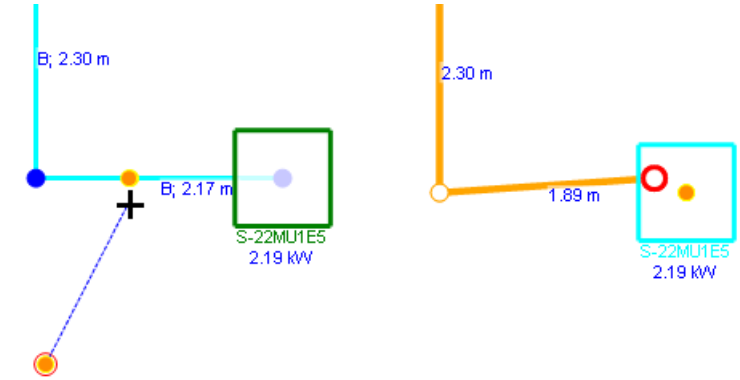



### 5.3. Remove unit

In order to remove unit use Context menu -> “Remove…” or select unit and press “Delete” key.

## 6. Connection

Application highlights (in blue color) the target object which active object can connect to




| Connect pipe to existing pipe | Connect pipe to unit |
|---|---|

Note: In case of software does not highlight target object, then connection is not possible (e.g. unit already is connected to pipe).

Before establishing connection, application calculates and suggests possible snap point for this connection. Connection is possible only in case snap point is determined.

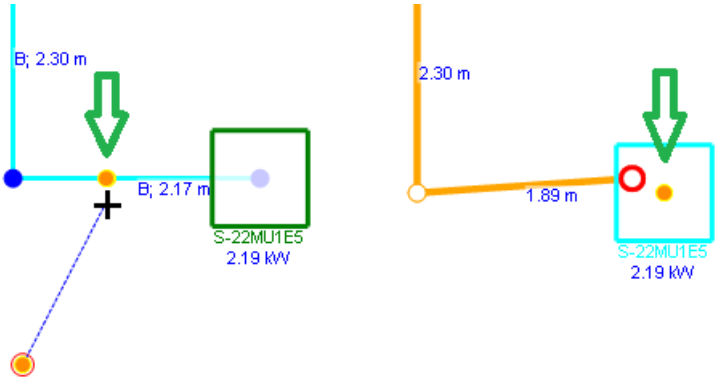
## 7. Snap to VRF object

Depending on current object position, the application calculates and suggest possible snap point.
Snap point is a location current object (to its part) will be placed on.
There possible 2 types of snap points:

- Regular snap point displayed in orange color
- Polar snap point displayed in green color

### 7.1. Regular snap point

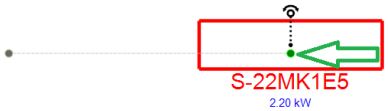
If current object is close to another (existing) object, application calculates and suggest possible regular snap point.




Note: Determined snap point does not ensure target object allows connection. But if the target object allows connection, then connection will be established in this snap point.

## 7.2. Polar snap point

Application suggests location which is in the same line (horizontal/vertical/turned on 45 degrees angle) comparing to other existing object. The suggested location is highlighted in green:

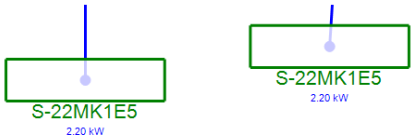



Note: Software suggests “polar snap” in case angle between current object position and “point for polar snap” is close to 0°, 45°, 90°, etc. Those angles depend on the rotation of the anchor.

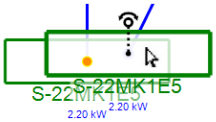
Application also may highlight two additional points (points for polar snap) and corresponding lines in grey. First “point for polar snap” (grey dot on screenshot below) shows start of operation. E.g. start location at drag-n-drop, or last point of pipe at drawing pipe:

Second “point for polar snap” gets established in case of any snap point determined and no mouse moving for 1 sec. This snap point gets grayed out and corresponding line appears at further moving the object.
For example, in order to locate units on the same horizontal line, please make the following steps:

1) Initial position:



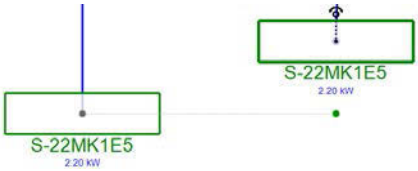

2) Select unit and drag it to another unit until snap point appears and wait for 1 second.




3) Move the object to see second “point for polar snap”

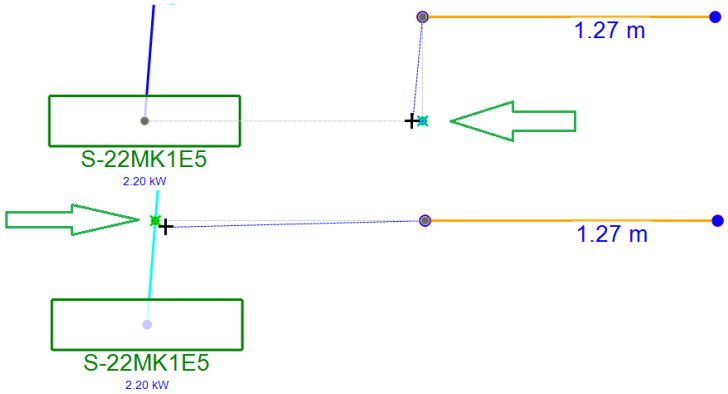
## 7.3. Polar mode

The system may work in “polar mode” in case of holding “Shift” key at moving the object.
In “Polar mode” the system shows the “polar snap point” even when position of object is out of area to determine the “polar snap point”.




## 7.4. Interaction of two snap points

In case of “polar snap point” coincides with other snap point (regular or polar) software displays green “x”:




### 7.5. Disable snap functionality

In order to disable snap functionality, hold “Ctrl” key. As result software will not suggest and use snap points.

Note: in such mode connection between objects is not possible either.

### 7.6. Determine snap priority logic

In case there is more than one snap point available the software selects nearest one.

## 8. Work with pipes and wires

You may use the following main operations at work with pipes:

- Create pipe (wire)
- Create pipe’s (wire’s) elements
- Remove pipe (wire)
- Remove pipe’s (wire’s) elements

### 8.1. Start drawing of pipe (wire)

You may start drawing of pipe (wire) in following ways:

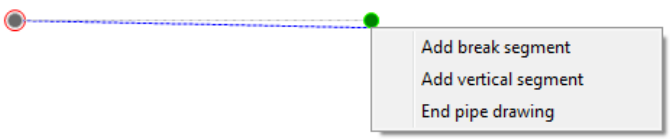
1) Main menu or toolbar “Scheme” -> “Draw pipe (wire)” button
2) Context menu -> “Draw pipe (wire)”
3) Context menu (on pipe-end or wire-end) -> “Continue drawing”
4) Context menu (on segment of pipe) -> “Branch pipe (wire)”
5) Context menu on unit, branch or other object that can accept one more connection -> “Start pipe (wire)”

As result you can create pipe by clicking on scheme.

### 8.2. Process of pipe (wire) drawing

Following functionality is available while software is in drawing mode:

1) Add “bend point” – “Left click”.
2) Add “vertical segment” – Context menu (during pipe or wire drawing) -> “Add vertical segment”
3) Add “break segment” – Context menu (during pipe or wire drawing) -> “Add break segment”



4) Click on point before last point (highlighted in blue on scheme): removes last point and continues pipe drawing.

## 8.3. Finish pipe (wire) drawing

You may finish drawing of pipe (wire) in following ways:

1) Main menu or toolbar “Scheme” -> Click on “Select mode” button.
2) Press “Esc” button.
3) Double click on drawing.
4) Context menu -> click on “End pipe (wire) drawing”.
5) Click on previous (last specified) point (highlighted in green on screenshot below):

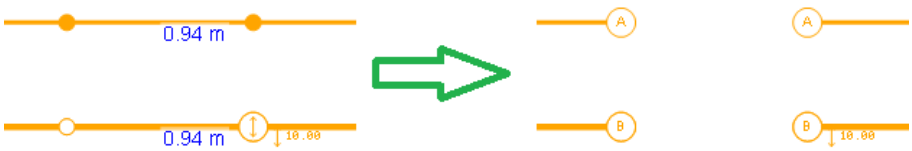
6) Click on unit, branch or other object that can accept one more connection.

## 8.4. Create pipe’s (wire’s) elements

You may create following elements of pipes or wires:

1) Create “Bend point” – Context menu -> “Add bend point”
2) Create “Vertical segment” in 2 ways:
   - Context menu (on pipe or wire)-> “Add vertical segment”
   - Toolbox -> Drag&Drop “Vertical segment”
3) Create “Break segment” in 2 ways:
   - Context menu (on segment of pipe or wire) -> “Add break segment”
   - Toolbox -> Drag&Drop “Break segment” on segment of pipe or wire

   Note: Segment can be converted to “Break segment” only if it has “Bend points” or “Vertical segments” on its end-points:




   In all other cases conversion to “Break segment” is impossible.

4) Create branch – connect pipe (wire) to existing pipe (wire).
5) Create header – connect the fourth pipe to branch.
6) Add ball valve, solenoid valve kit – drop item from toolbox on pipe.

## 8.5. Remove pipe (wire)

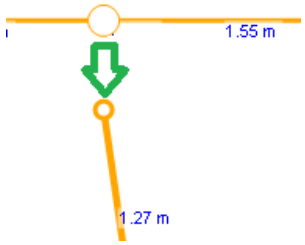
You may remove pipe (wire) in 2 ways:

1) Context menu -> “Delete pipe (wire)”
2) Select pipe (wire) and press “Delete”

### 8.6. Remove pipe's (wire's) elements

You may remove pipe's (wire's) elements in following ways:

1) Remove "Bend point" – Context menu -> "Remove bend point"
2) Remove "Vertical segment" – Context menu -> "Remove vertical segment"
3) Remove "Break segment" – Context menu -> "Convert to regular segment"
4) Remove branch. In order to remove branch follow by the steps:
   a) select pipe (wire) connected to it,
   b) remove pipe (wire) or move end-point of selected pipe (wire):




5) Remove header – remove pipes (wires) connected to it.
6) Remove ball valve, solenoid valve kit – Context menu -> "Remove…"

## 9. Wiring group

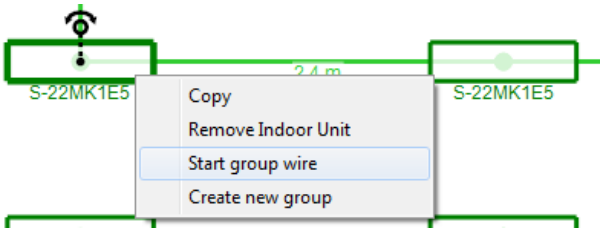
You may use the following main operations at work with wiring groups:

- Create wiring group
- Add new unit to group
- Join groups
- Remove wiring group
- Remove unit from wiring group

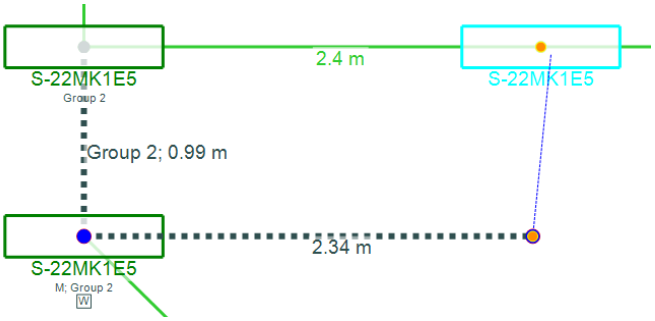
### 9.1. Create wiring group

You can create wiring group in following way:

- Context menu (on indoor unit) -> "Start group wire"




Route group wire between units. All units connected by group wires are automatically added to the same group.




### 9.2. Add new unit to group

Connect new unit to group using group wire.

### 9.3. Join groups

Connect unit from first group with unit from second group using group wire.

### 9.4. Remove wiring group

Context menu (on indoor unit that is member of group) -> “Remove group”.

### 9.5. Remove unit from wiring group

You can remove unit from wiring group in 2 ways:

1) Context menu (on indoor unit that is member of group) -> “Remove from group”
   Note: In case unit has 2 group wires connected the software removes unit from group but does not remove related wires, since those wires are still necessary for group.
2) Disconnect group wires from unit

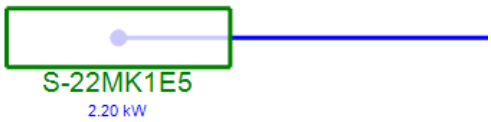
## 10. Color indication

Software uses color indication in order to highlight status of each existing object.

### 10.1. Indoor and Outdoor unit color indication:

1. Red –unit is not connected to pipe.

2. Green –unit is connected to pipe.



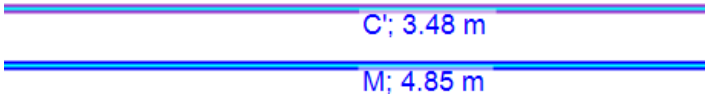

### 10.2. Pipes color indication

1. Orange –software cannot determine type of this pipe. Most likely: it is not connected to valid piping tree or has one unconnected end-point.

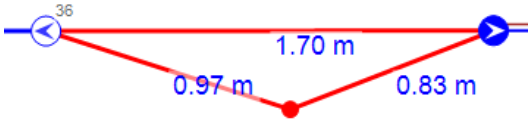
2. Dark blue – 2-way pipe

3. Violet – 3-way pipe

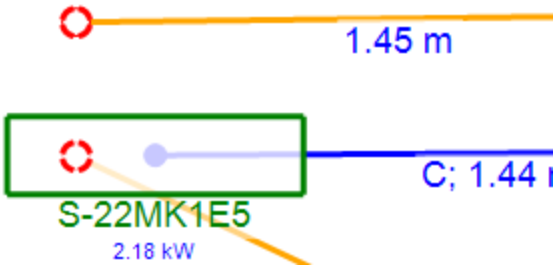
4. Light blue center - main pipe




5. Red – error. (e.g. loop)



6. Red end-point – this end-point is not connected to any object. Such end-points are displayed above all other objects for easy detection.




# 11. Warnings functionality

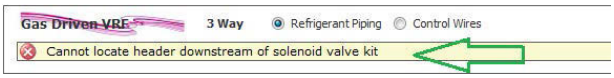
In case scheme does not satisfy certain requirements, warning(s) appear.

There are two possible warning types:

- Global warnings
- Object warnings

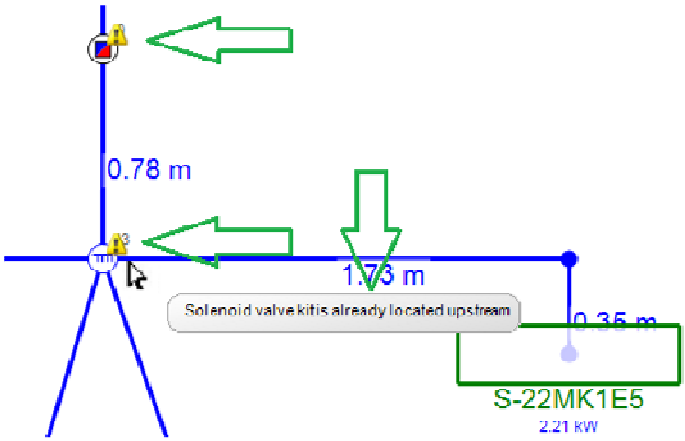
## 11.1. Global warnings

Global warnings are displayed above scheme



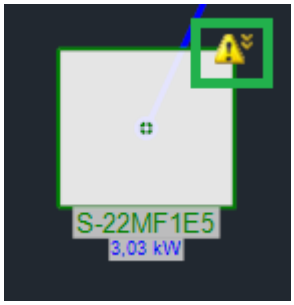

## 11.2. Object warnings

Besides global warnings software displays orange triangle over scheme objects if necessary.



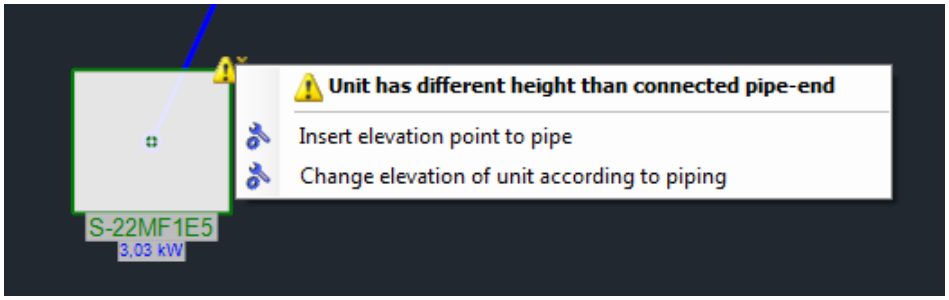

## 11.3. Resolve options

Software displays special warning sign in case of inconsistency between height of unit and height of connected pipe-end (wire-end):




You may open resolve options by clicking on warning sign.
You may resolve it in two ways:

- Change height for unit;
- Insert vertical segment with necessary height to pipe (wire).




# 12. Floors

This section describes specific extension of floors functionality in mounting scheme
General information about floors functionality is described in section “Common features”-> Floors

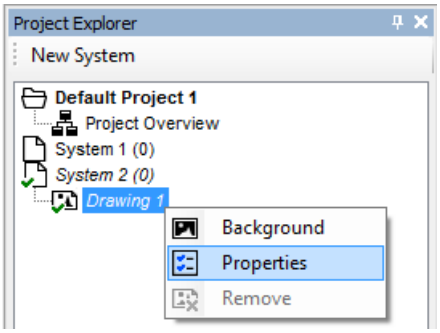
## 12.1. Relation between floors and drawings

You may use one or several floors on the same drawing as well as use several drawings for the same floor

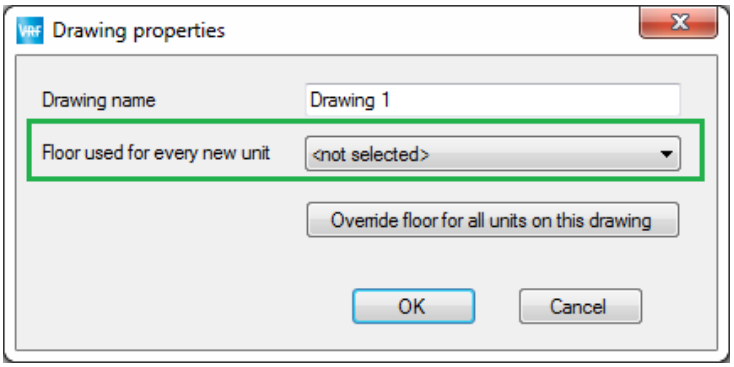
## 12.2. Floor used for every new unit

You may set the “Floor used for every new unit” for drawing to have all new units to be assigned to this floor:

1. In Project Explorer click “Properties” in the context menu



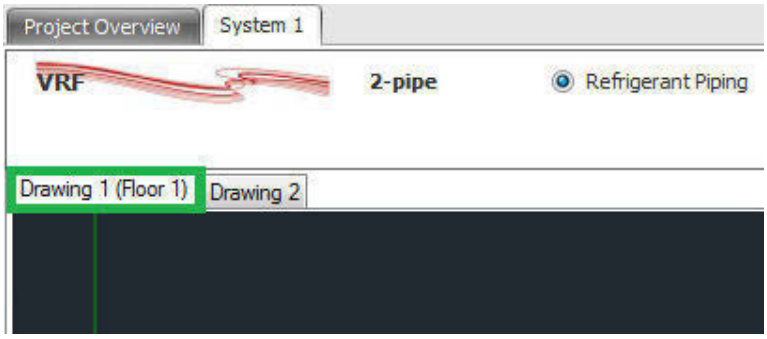

2. A “Drawing properties” form will appear




In “Drawing properties” form user may:

- set the “Floor used for every new unit”
- assign all units that are already located on the drawing to the selected floor

Drawing tab will display name of the default floor in case it is set:



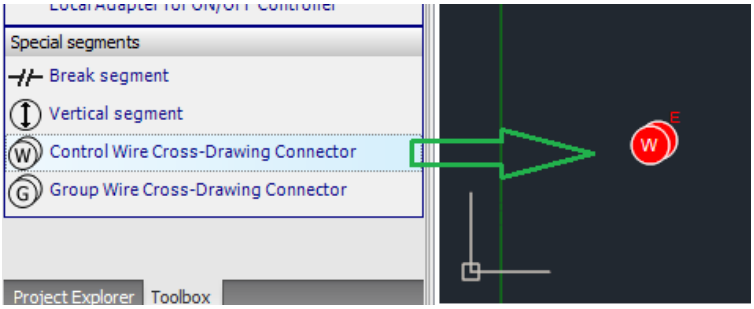

## 13. Cross-drawing connectors

You may use cross drawing connector to connect pipes/wires on separate drawings.

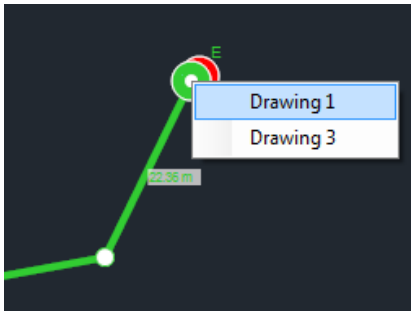
There are 3 types of cross drawing connectors:

- Pipe cross-drawing connector
- Control wire cross-drawing connector
- Group wire cross-drawing connector

You may drag connector from the toolbox




After connecting pipe/wire to connector you will be prompted to select drawing to continue on.




In case of connection is correct, one of the connector's circles is displayed in different color.

While the cross-drawing connector has at least one free endpoint it is displayed through all drawings.
The cross-drawing connector that has both endpoints occupied is displayed only on involved drawings.

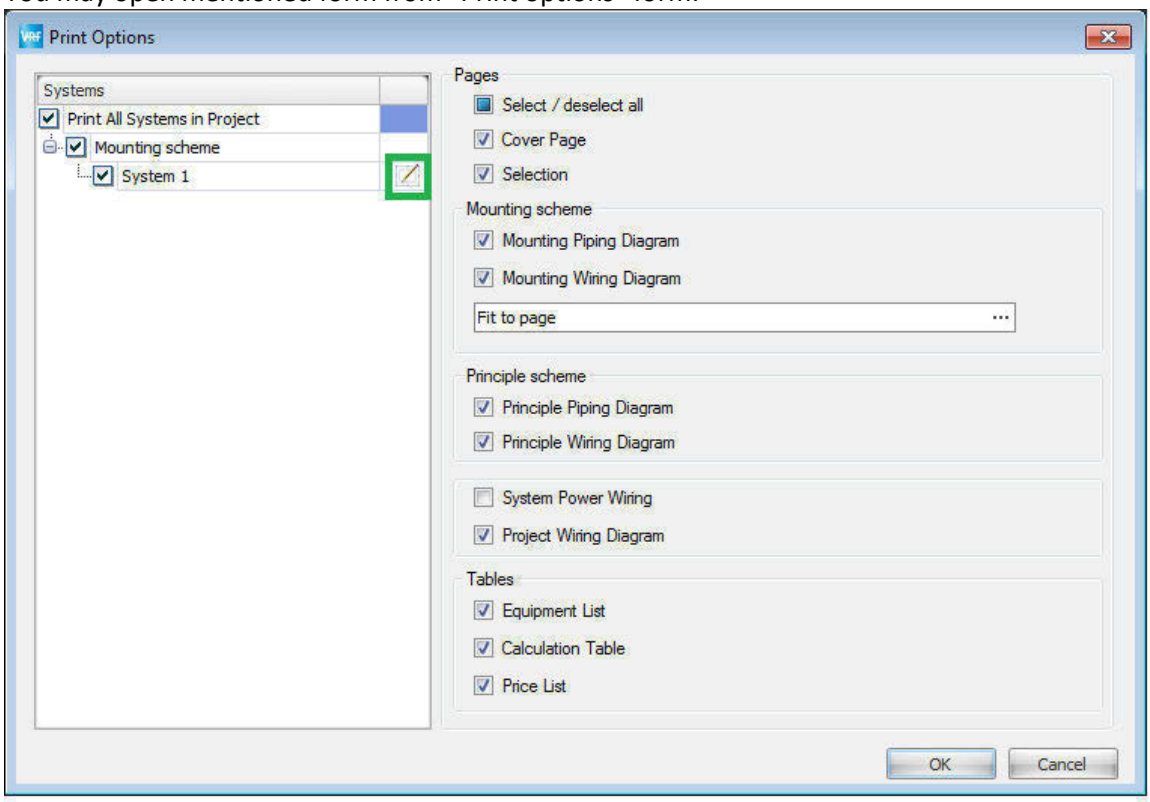
You may double click cross-drawing connector to navigate to drawing of connected endpoint.

Location of cross-drawing connector on each drawing depends on

- Anchor's location and angle
- drawing's Scale.

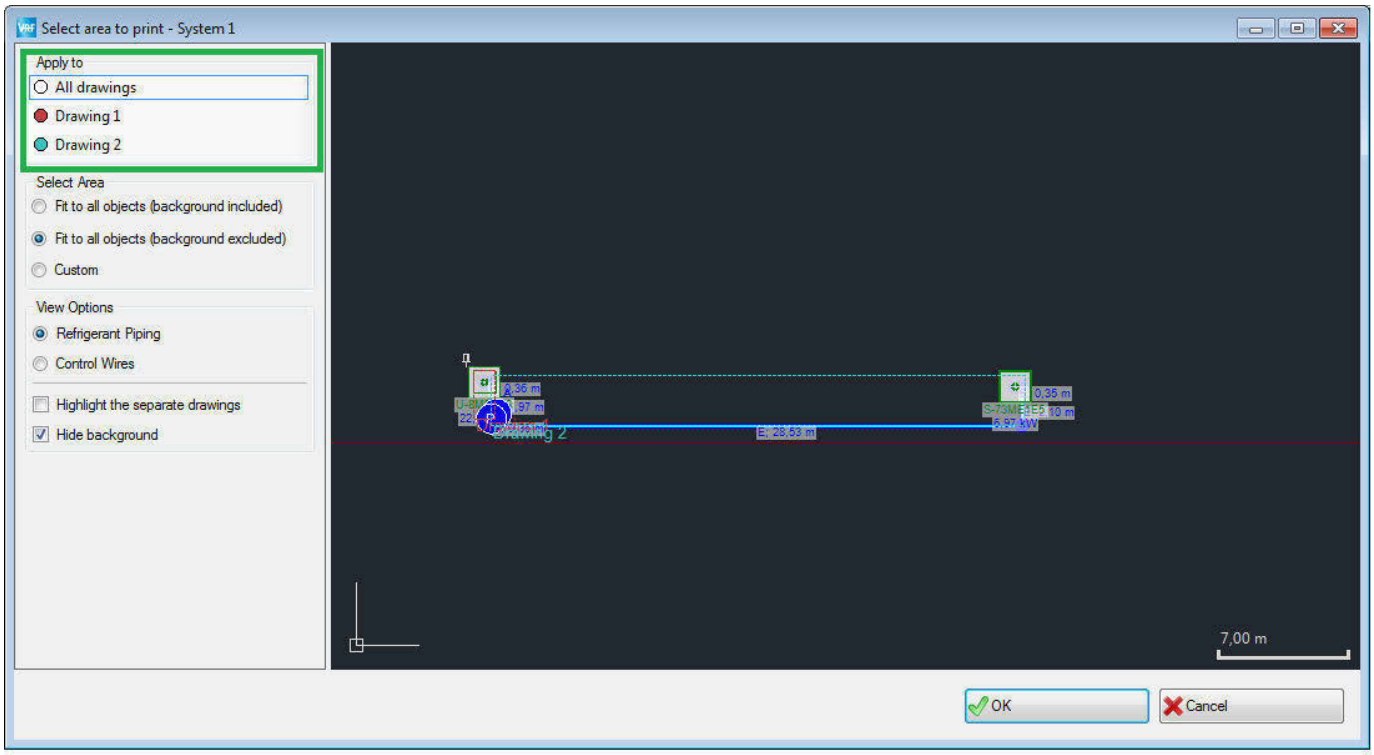
## 14. "Select area to print" form

You may use "Select area to print" form in order to select part of scheme for printing.
You may open mentioned form from "Print options" form:



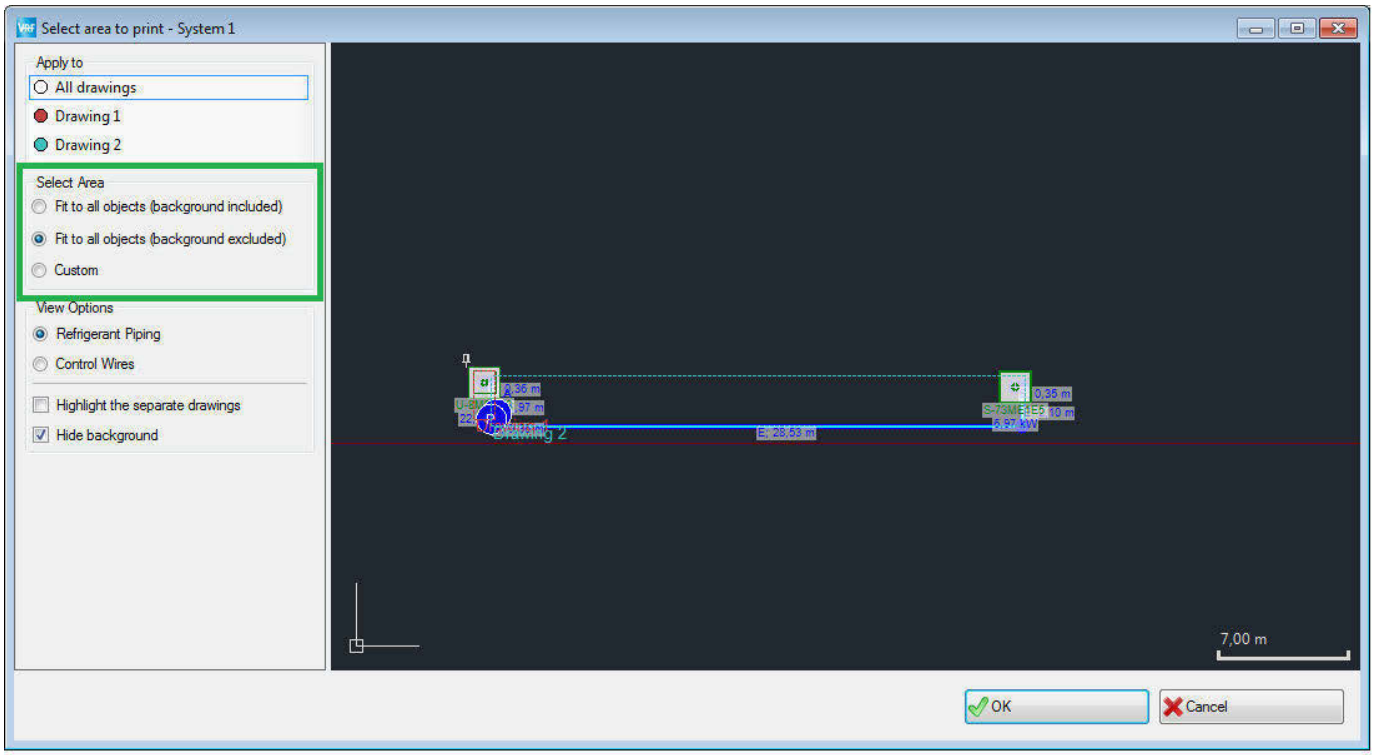

You may apply changes to:

- All drawings;
- Individual drawing;

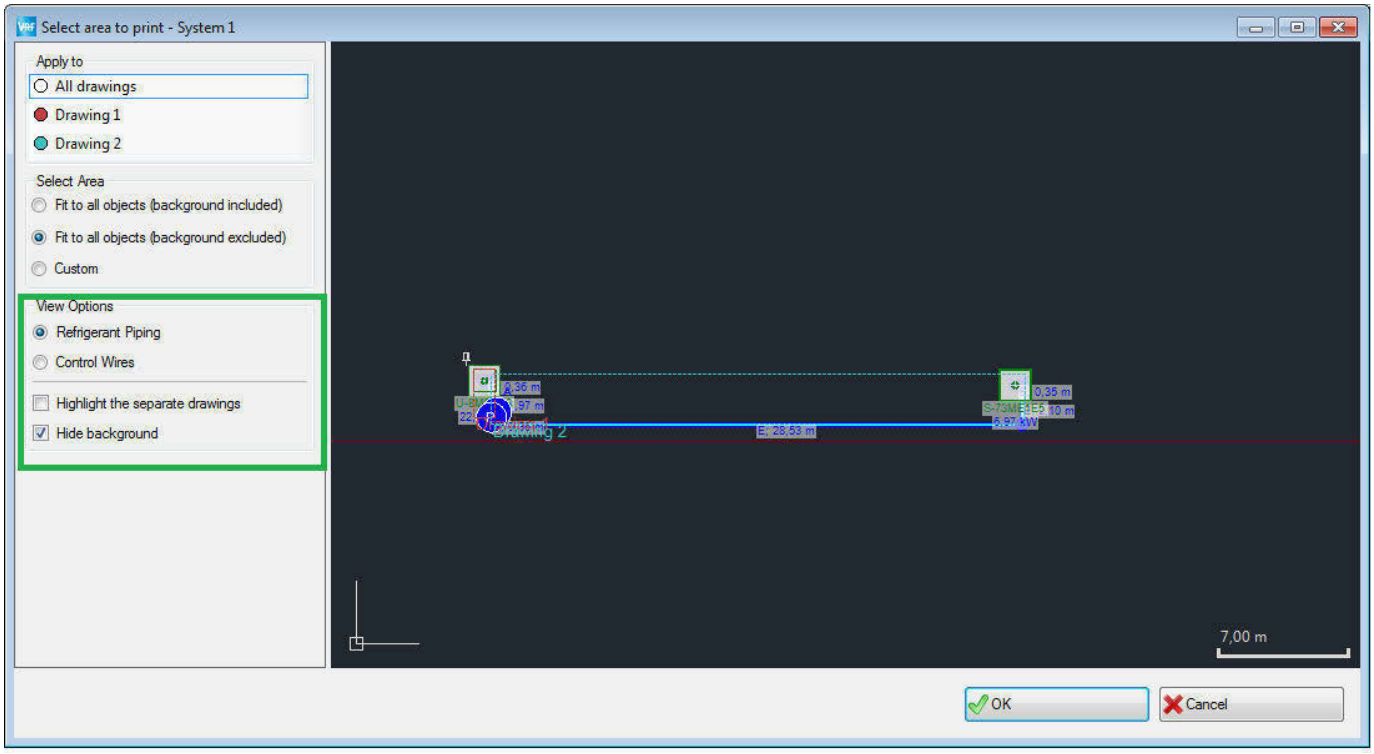



In order to select area for printing you may use the following options:

- Fit all schema objects and background;
- Fit all schema objects but not background;
- Create custom selection;



Also you may choose “View options”:



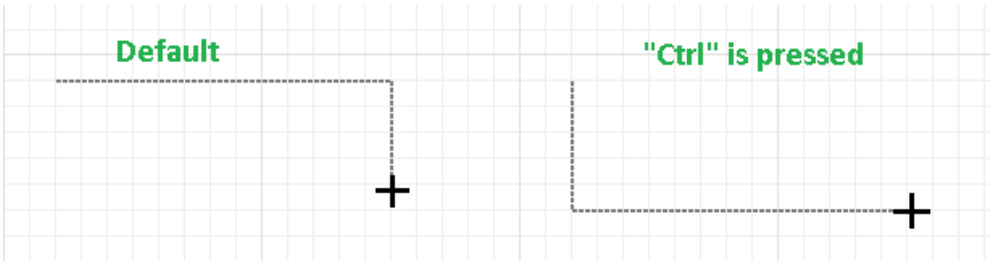
# Principle scheme

This section describes some features that are related to principle scheme and were not present in VRF designer before.

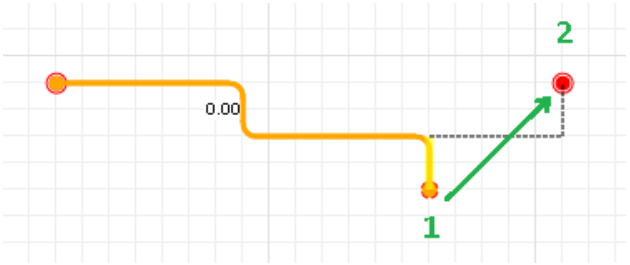
## 1. Automatic routing of pipe-segment

Software automatically suggests optimal route for currently drawn pipe-segment:

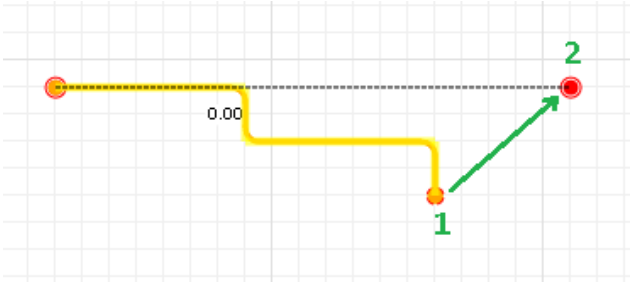
By default software suggests first line horizontally. You may hold “Ctrl” key to create first line vertically:



Automatic routing also works in case you move pipe end-point:




You may hold “Shift” key and move pipe-endpoint to reroute entire pipe:




## 2. Header

You may use the following main operations at work with header:

1) Create header
2) Remove header
3) Use “Header extension”

### 2.1. Create header

You may create header in 2 ways:

- Context menu on branch -> “Convert to Header”
- Drop header from toolbox

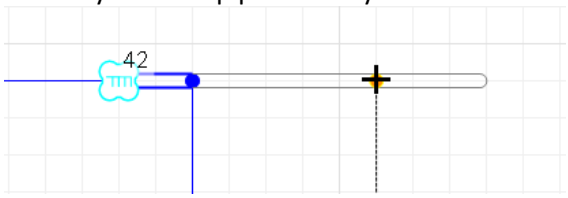
### 2.2. Remove header

You may remove header in 2 ways:

- Context menu on header -> “Convert to Branch” (it is enabled if more than 2 pipes are connected directly to header)
- Context menu on header -> “Remove” (it is disabled if more than 2 pipes are connected directly to header)

### 2.3. Use “Header extension”

“Header extension” is designed to simplify connection of pipes to header in complex schemes.
You may connect pipes directly to header or to its “Extension”:




In order to create “Header extension”, please follow the steps:

- Select header
- Drag end-point of “Header extension”

## 3. Wiring group

You may use the following main operations at work with wiring groups:

- Create wiring group
- Add and remove unit(s) from wiring group
- Join wiring groups
- Remove wiring group
- Work in “Wiring Group Mode”

### 3.1. Create wiring group

You may create wiring group in the following way:

- Context menu on Indoor Unit -> “Create group”
  As result software enables “Wiring Group Mode”

### 3.2. Add and remove unit(s) from wiring group

You may add and remove unit(s) from wiring group in following ways:

- Context menu on Indoor Unit -> “Add to group” (select from dropdown)
- Context menu on Indoor Unit -> “Remove from group”
- Context menu on Indoor Unit that is already in wiring group -> “Edit Group”
  As result software enables “Wiring Group Mode”

### 3.3. Join wiring groups

You may join wiring groups in the following way:

- Context menu on Indoor Unit -> Join with Group -> Group name

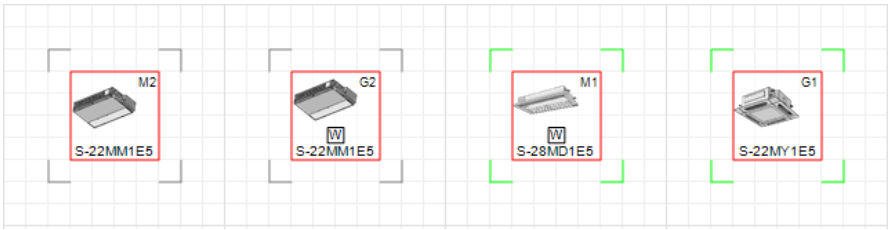
### 3.4. Remove wiring group

You may remove wiring group in the following way:

- Context menu on Indoor Unit -> Remove group

### 3.5. Work in “Wiring Group Mode”

“Wiring Group Mode” is implemented to simplify and speed-up creation of wiring groups on principle scheme.
In this mode active (edited) group has green frames and all other groups have grey frames:




You may enable “Wiring group Mode” in following ways:

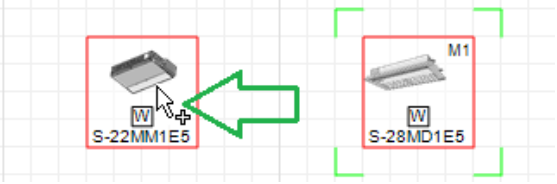
- Context menu on Indoor Unit -> “Create group”
- Context menu on Indoor Unit that is already in wiring group -> “Edit Group”

You may disable “Wiring group Mode” in following ways:

- Context Menu -> Finish edit
- Press “Esc” button
- Press “Enter” button
- Double click on Indoor Unit (as result unit is added/removed accordingly)

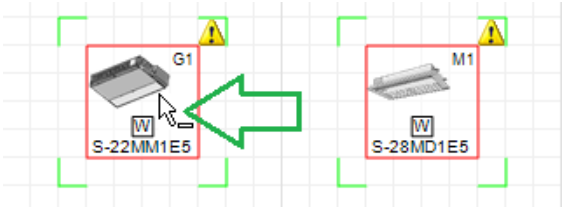
In “Wiring group Mode” you may use the following main operations:

1) Add unit to wiring group in following ways:
   - Context menu (on Indoor Unit that does not belong to active wiring group)-> “Add”
   - Left mouse button click on Indoor Unit that does not belong to active wiring group
     Cursor shows “+” above such unit:



2) Remove unit from group

- Context menu (on Indoor Unit that belongs to active wiring group) -> “Remove”
- Left mouse button click on Indoor Unit that belongs to active wiring group
  Cursor shows “-” above such unit:



# Features common for principle and mounting scheme

This section is dedicated to features available in both principle and mounting schemes.

## 1. Floors

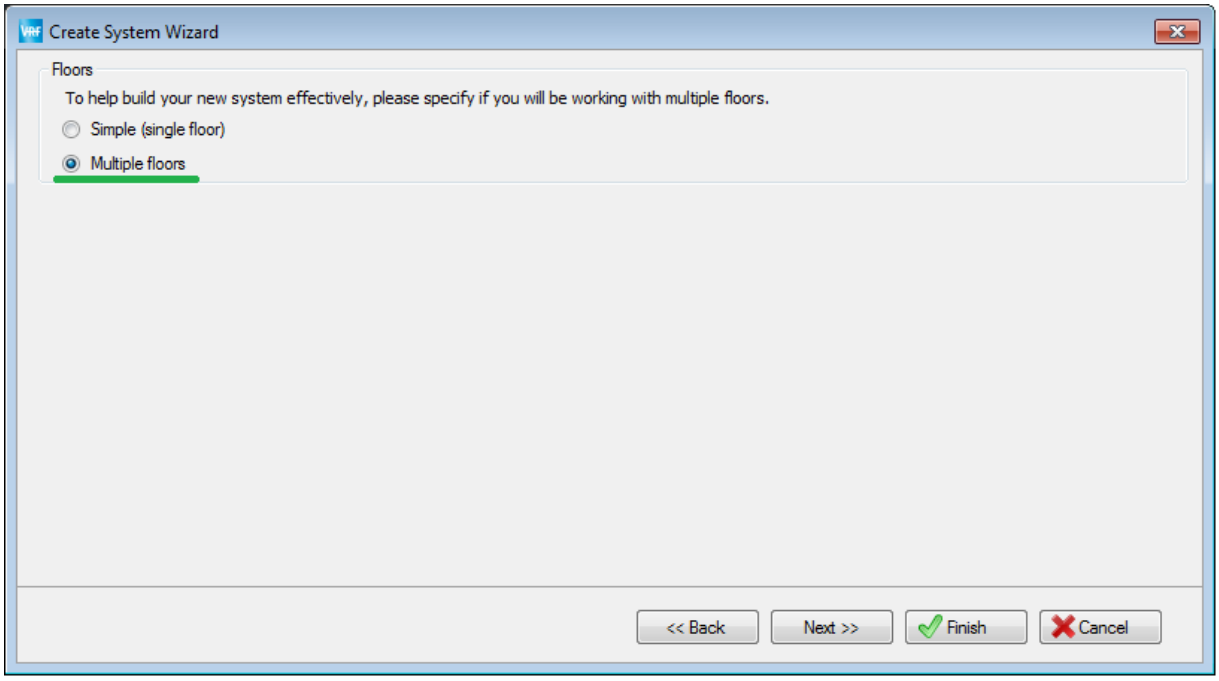
You may use Floors feature for convenient work with units' elevation.

This is available either in mounting scheme or in principle scheme.

### 1.1 Creating and editing floors

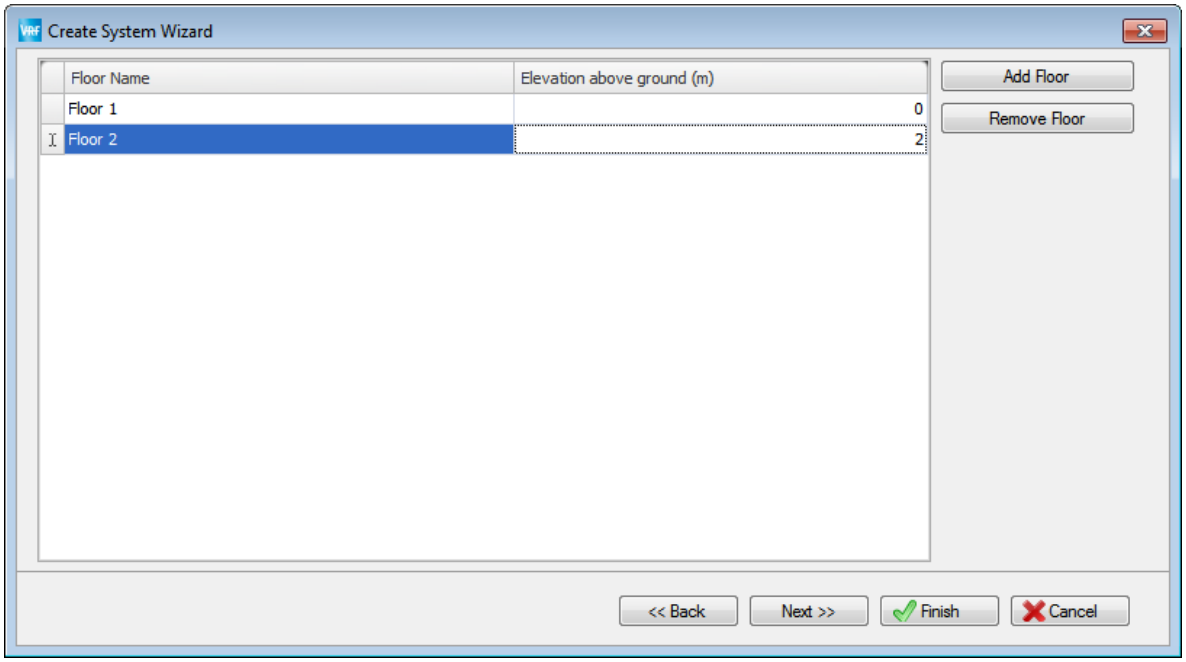
You can edit floors in 2 ways:

1) On wizard select "Multiple floors" and click "Next "

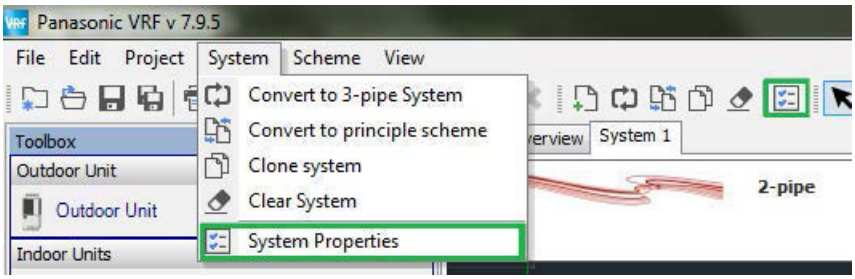



Then in the next step use "Add Floor" and "Remove Floor" buttons to add/remove floors.

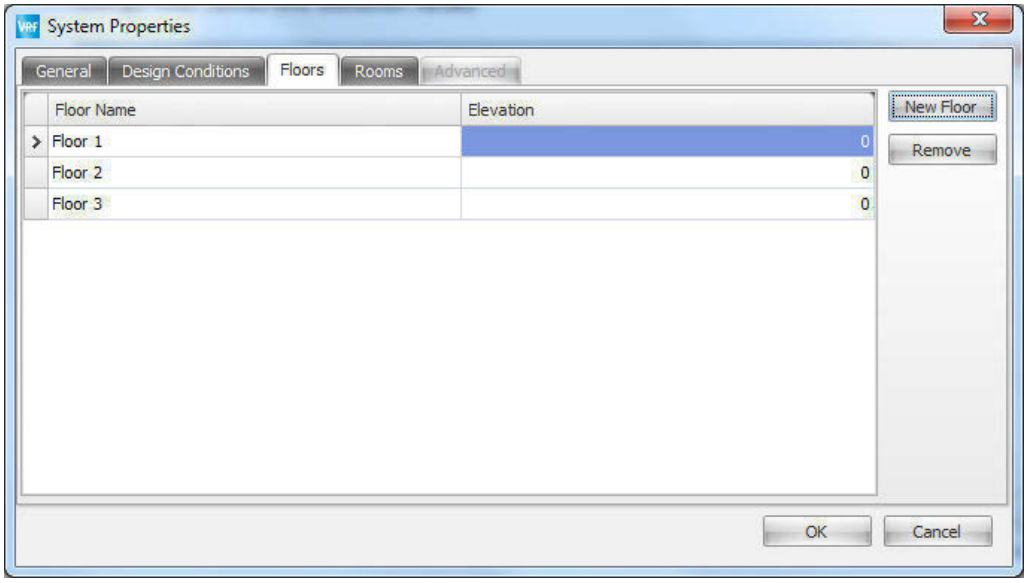
Also you may change floor name and elevation values.



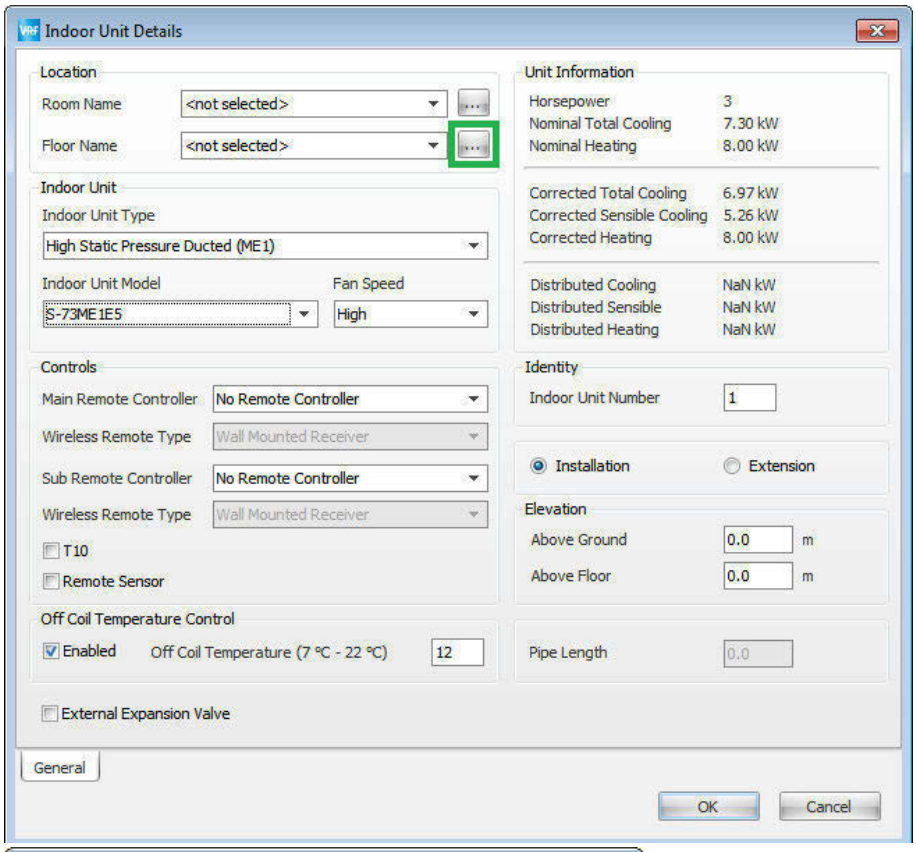
2) You may click “System Properties” button on the main menu or toolbar.

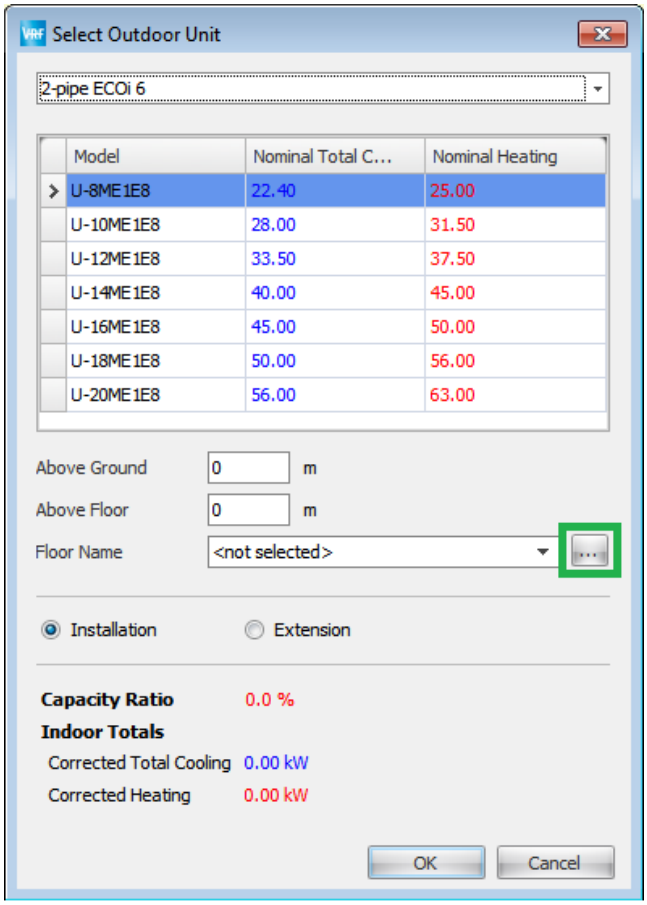



Then, in “System Properties” window go to “Floors” tab, where you can add/remove floors and change floor name and elevation.



Also you may access this window in the “Indoor unit details” form and “Outdoor details” form by clicking on the “…” button next to the floor selection box.



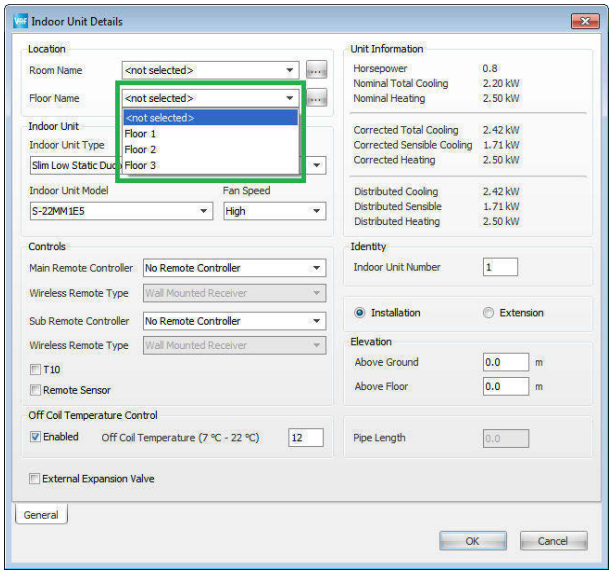



## 1.2 Assigning units to floors

You may set floor for each unit:

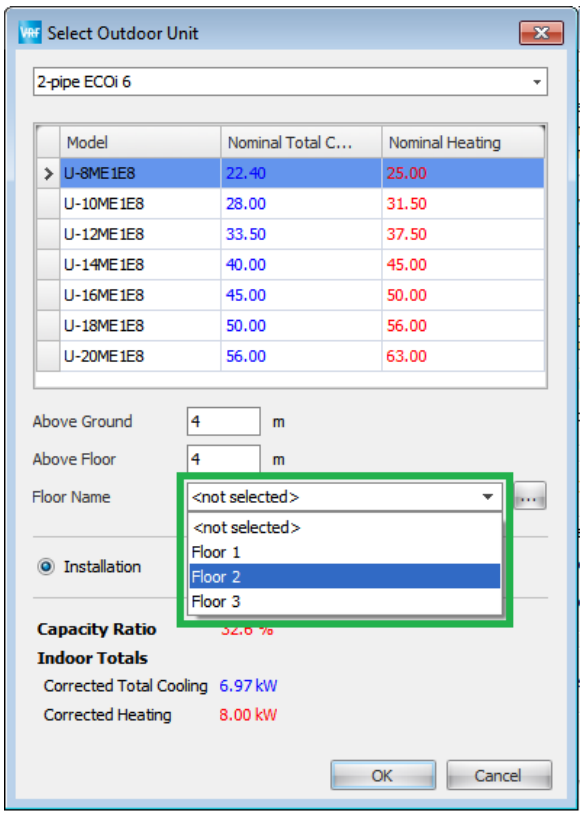
1) Indoor units

Open “Indoor Unit Details” form, then click on the “Floor Name” combo box and select floor from the list.




2) Outdoor units

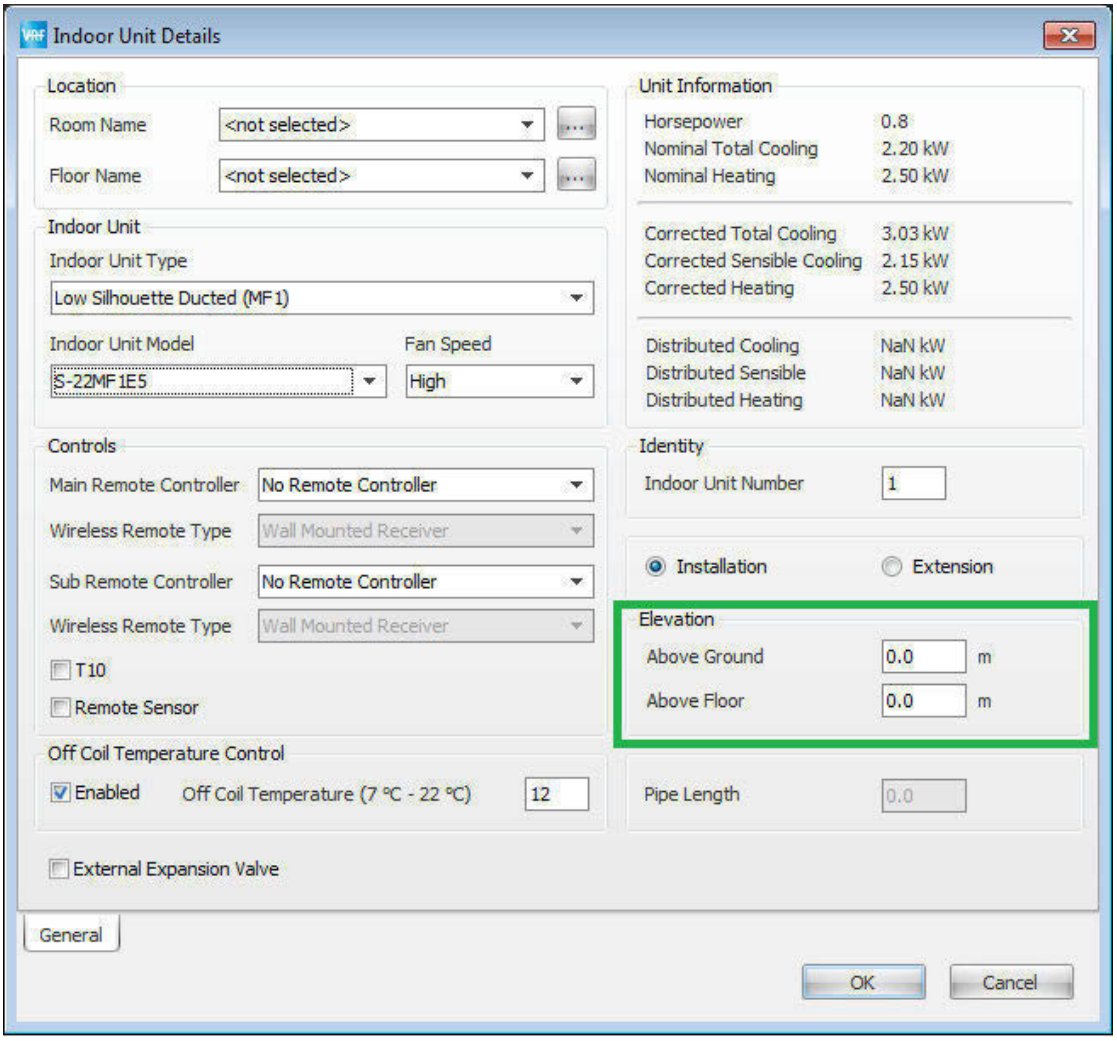
Open “Select Outdoor Unit” form, then click on the “Floor Name” combo box and select floor from the list.



## 2. Elevation

You may set two types of Elevation:

- “Above Ground” elevation is a value that defines elevation of the unit relative to the ground level.
  Note: “Ground” is an abstract base level, defined by user and may be different than the real ground level
- “Above Floor” elevation is a distance from the floor to the unit.

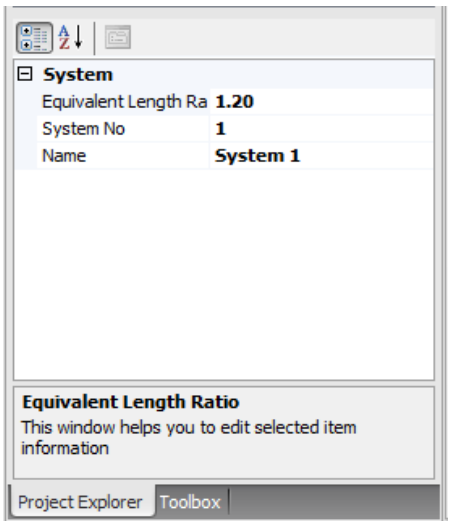



## 3. Project explorer

New features of “Project Explorer” include Property grid and ability to work with multiple drawings.

## 3.1. Property grid

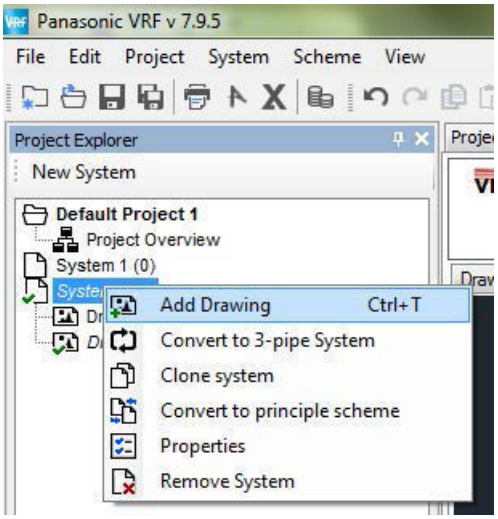
In property grid you may change properties of the project, system and drawing. It shows properties of currently selected tree node.



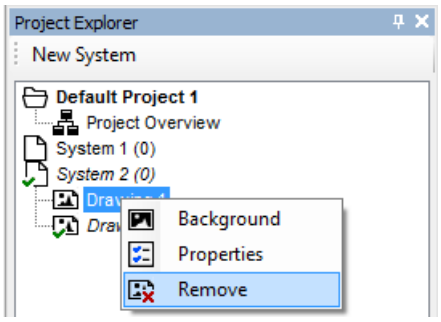

## 3.2. Working with drawings

“Project Explorer” provides functionality to add/remove drawings, edit drawing properties and import background.

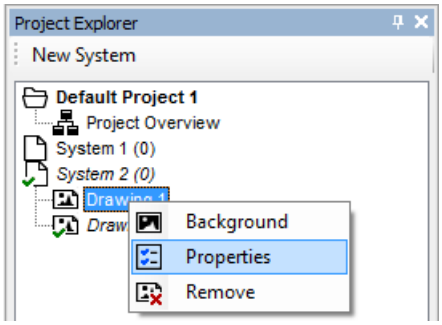
In order to add drawing to system click “Add Drawing” in the context menu.



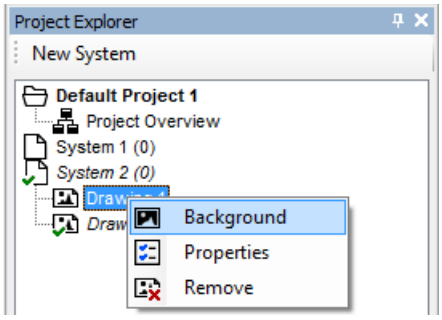

In order to remove drawing from the system click “Remove” in the drawing context menu.



In order to edit drawing properties click “Properties” in the drawing context menu.




In order to edit Background click “Background” in the drawing context menu.




# 4. Shortcuts

New shortcut feature provides possibility to access frequently used commands through a combination of keyboard keys, making work with VRF designer more fast and efficient.

List of available shortcuts:

- Ctrl + N – Create new system
- Ctrl + T – Create new drawing (mounting system)
- Ctrl + O - Open project file
- Ctrl + S – Save project file
- Ctrl + E – Export to AutoCAD (in dxf format)
- Ctrl + P – Print project
- Ctrl + D – Start drawing pipe or wire depending on type of selected scheme
- Ctrl + C – Copy selected object(s)
- Ctrl + V – Paste
- Ctrl + Z – Undo
- Ctrl + Y – Redo
- Delete – Remove selected object(s)

# 5. Multi-select

You may select one or more objects in order to copy / paste / move / delete them.

## 5.1. Select objects

You may select object(s) in two ways:

- Using selection frame (press left mouse button and drag);
- Press Ctrl + left mouse button;

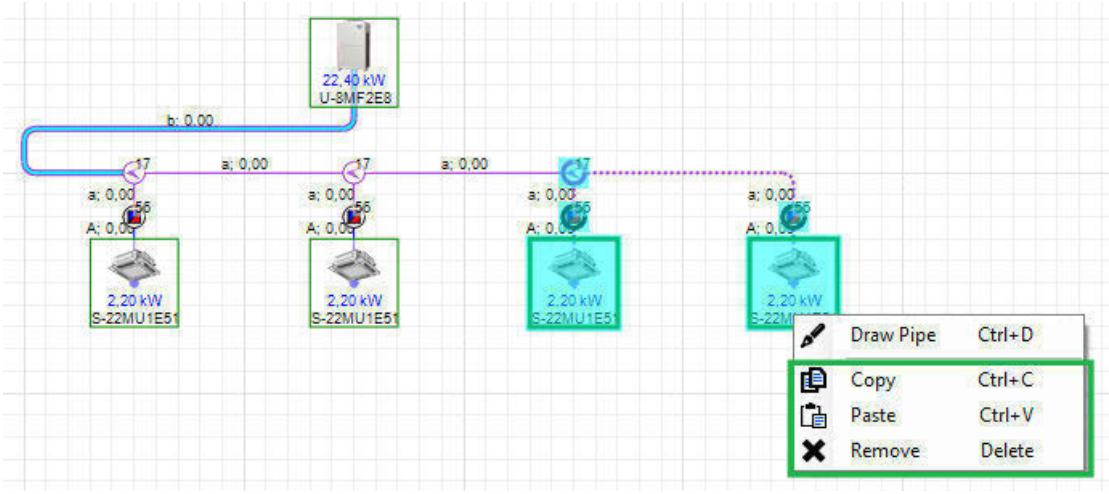
Note:

- In case you create selection frame from left side to right, you will select all objects that are completely inside of selection frame;
- In case you create selection frame from right side to left, you will select objects that are inside of selection frame or are intersected with it.

## 5.2. Move/copy/paste/delete objects

On mounting scheme user may: move, copy, paste, delete all objects.
On principle scheme user may: copy, paste, delete all objects; move indoor and outdoor units.

You may use context menu or shortcuts in order to copy/paste/delete selected object(s).




Note: you may copy/paste object(s) between different systems in the same project (even between mounting and principle systems).
Note: from mounting to principle system you may copy indoor and outdoor units only.