

# **HVM selection tool**

## **Manual**

SEACE Business development team

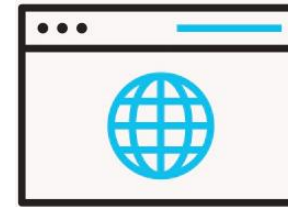
# HVM selection tool

## What is HVM selection tool?

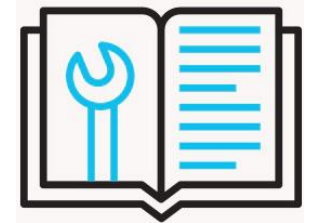
- It will help you design the complete system in a modular way, making it simple and speedy.
- The online selection tool provides you with the required information such as efficiency data (SCOP, COP, SEER and EER), and also total water-flow and total system pressure drop, that will enable you to select the appropriate water pump and piping.
- To enable pre-adjustment of balancing valves, the online selection tool includes a detailed list of indoor units with water-flow, pressure drop and pressure difference data for the water line holding the highest pressure drop.

## What to expect?

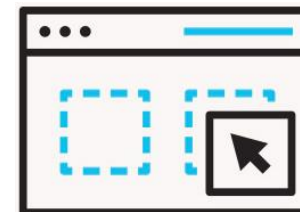
- You can opt for an annual energy consumption assessment; high resolution pdf documents of wiring diagrams and piping diagrams that include the pipe dimensions; a tender specification file including full descriptions and complete technical data; and a detailed project report in a layout that is easy to understand.



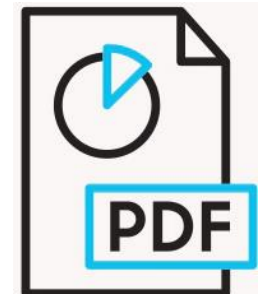
No software  
installation required



Easy system  
configuration



Complete technical  
information



Automated  
project report

# Access

## No software installation required

Connect the below address:

<https://hvm.openforce.com/project?origin=samsung>

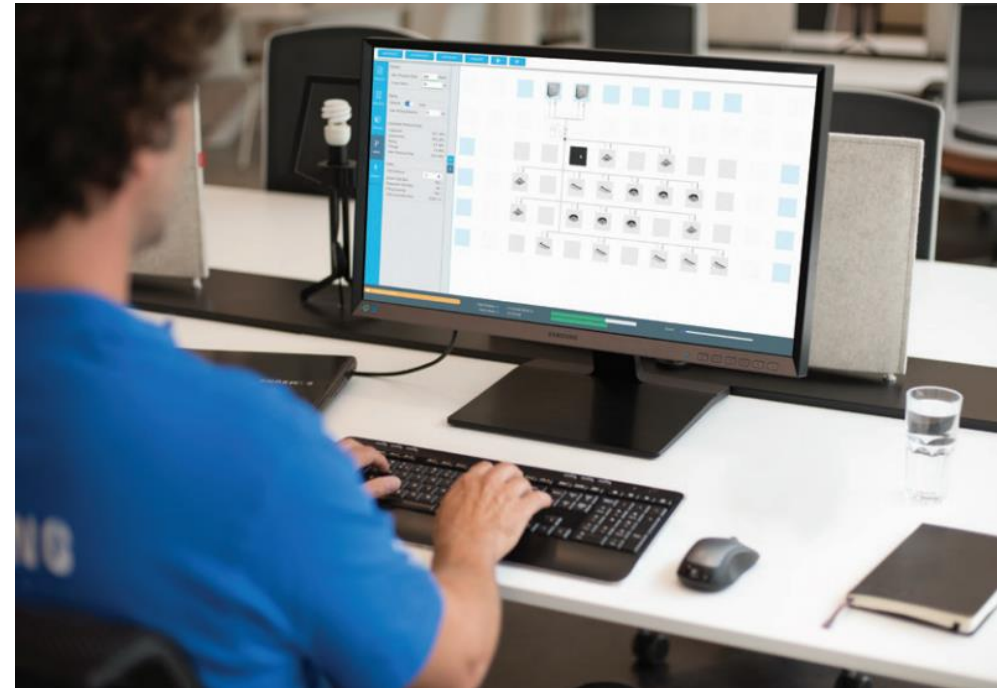
The recommended web browser for using the HVM online selection tool is Google Chrome.

## How to contact the HVM selection tool team?

When you have any questions or find some errors, please contact the HVM team.

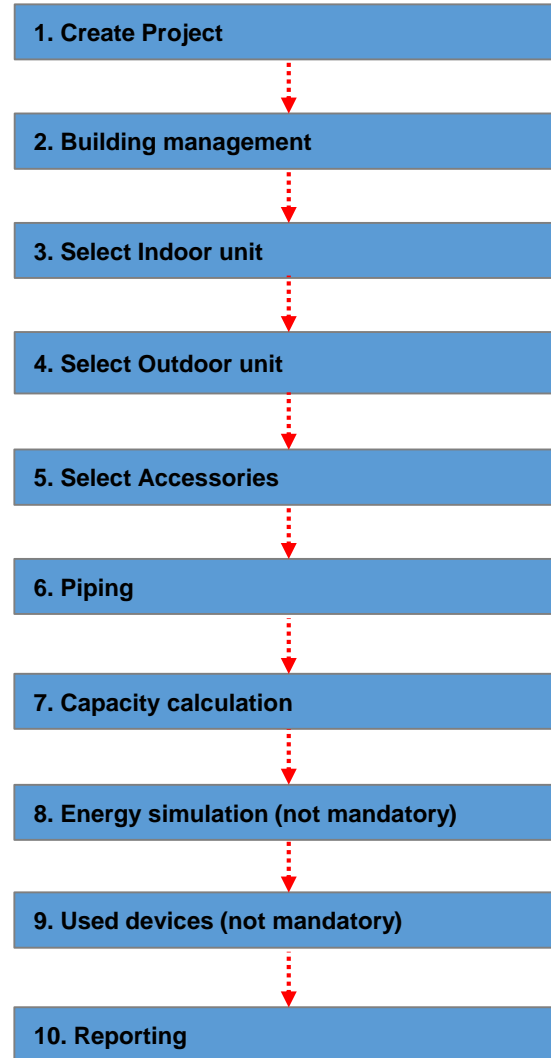
**Email :** [hvmhelp@samsung.com](mailto:hvmhelp@samsung.com)

This information will be shown in the info button of the HVM selection tool.



# Design Process

## Flow Chart



# Create Project

## Design steps

1. To create the project, click “New Project” button.
2. Enter the project name: the project name will be saved as a file name.
3. Enter the customer information and designer information (Optional). This will be shown in the report.
4. Enter Design conditions:
  - Firstly the conditions are represented based on an average European selection and then the user can edit the data manually
  - Cooling is set as default setting and main mode, but the tool allows to make calculations for Cooling, Heating or Cooling and Heating.
5. To turn on the Heating mode click on the “Heating” button
6. The Main mode and Brine concentration can be modified under the section of “System”.

The screenshot displays the HVM Selection Tool interface. At the top right, the SAMSUNG logo is visible. The main navigation bar includes buttons for 'NEW PROJECT', 'UPLOAD PROJECT', 'SAVE PROJECT', and 'CALCULATE', along with icons for file operations and help. A left sidebar contains icons for 'PROJECT', 'BUILDING', 'DEVICES', 'PIPES', 'ENERGY', and 'USED DEVICES'. The main content area is a large grid of colored squares (light blue and grey). A vertical sidebar on the left contains input fields and controls, with red boxes and numbered callouts (1-6) highlighting specific areas: 1. 'NEW PROJECT' button; 2. 'Project name' field (containing 'My Project'); 3. 'Customer' and 'Designer' information fields; 4. 'Cooling' mode selection and temperature fields (Room Temp. 27°C, Outside Temp. 35°C, Leaving water Temp. 7°C, Return water Temp. 14°C); 5. 'Heating' mode toggle; 6. 'System' section (Main Mode: Cooling, Brine concentration vol. 0%). At the bottom, a status bar shows 'Project status ok' with a green checkmark, and energy usage metrics: 'Total Outdoor 0.00 kW 0.00 %' and 'Total Indoor 0.00 kW'. Copyright information for Samsung Electronics Air Conditioner Europe B.V. is at the bottom left.

With this tool you will calculate the capacity, based on the capacity and  $\Delta T$  of the main mode the software calculates the waterflow. In case you want to calculate the capacity by using Cooling + Heating, and select Cooling as main mode; then it is not possible to fill in the return water temp for Heating as you have the water flow rate already given.

# Building

1. To define the Building, click on the “Building” tab.
2. Define the number of floors (by default only ground floor and roof).
3. Define the floor height (it has 250 cm as default setting).
4. A schematic representation is given (not the layout of the building). The default setting is 12 columns and 5 rows, but this can easily be modified by changing the number at “Columns” and “Rows”.
5. Name the Ground floor.
6. Define the floor height of the ground floor.
7. The “Copy floor” button can be used to copy a floor which is identical. It requires an empty floor to insert a copied floor.\*

The screenshot displays the HVM Selection Tool interface for configuring a building. The interface is divided into several sections:

- Top Bar:** Contains buttons for "NEW PROJECT", "UPLOAD PROJECT", "SAVE PROJECT", "CALCULATE", and icons for file operations and help.
- Left Sidebar:** A vertical menu with icons and labels for "PROJECT", "BUILDING", "DEVICES", "PIPES", "ENERGY", and "USED DEVICES". The "BUILDING" tab is currently selected.
- Configuration Panel:** A form with the following fields:
  - Building:** "Number of Floors" (set to 1), "Default Floor Height" (set to 250 cm).
  - Columns:** "Columns" (set to 12), "Rows" (set to 5).
  - Floor:** "Number" (set to 0), "Name" (set to "Ground Floor"), "Floor Height" (set to 250 cm).
  - Buttons:** "COPY FLOOR", "R", and "0".
- Schematic Grid:** A large grid of colored squares representing the building's layout. The grid is 12 columns wide and 5 rows high. The top row is light blue, and the rest are light gray.
- Bottom Bar:** A status bar with a yellow warning icon and text "Calculation required!". It also displays "Total Outdoor" (0.00 kW 0.00 %) and "Total Indoor" (0.00 kW) with corresponding progress bars. A "Zoom:" slider is also present.
- Footer:** Copyright © 2019 Samsung Electronics Air Conditioner Europe B.V. All rights reserved. Samsung is a registered trademark of Samsung Electronics Co., Ltd.

\*A floor can be copied after IDU's have been inserted, but if the piping is also identical it is advised to copy the floor after piping is done.

# Devices (select indoor units)

1. To select the devices, click on the “Devices” tab.
2. Select Indoor units by clicking on the “Indoor” tab.\*
3. Select the product type on the drop/down menu of “Device Groups” (FCU 1Way/FCU 4Way/FCU360 My IDUs).
4. Drag & drop the selected IDU to the grid.\*\*
5. The values for Cooling and Heating given at the IDU’s are the calculated values on the selection from the design conditions of the project (Room temp., Outside temp, Water temp.).

HVM Selection Tool

SAMSUNG

NEW PROJECT UPLOAD PROJECT SAVE PROJECT CALCULATE

Indoor Outdoor Accessories

PROJECT

Device Groups

- FCU 1Way
- FCU 1Way
- FCU 4Way
- FCU 360
- My IDUs

2.39 kW 2.41 kW

AG032MN1DEH

3.25 kW 2.89 kW

AG042MN1DEH

4.13 kW 4.16 kW

R

0

Drag & Drop

Calculation required!

Total Outdoor: 0.00 kW 0.00 %

Total Indoor: 0.00 kW

Zoom:

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\*First select the IDU’s to see how much capacity is needed.

\*\*The grey squares can be used to place the IDU’s and the blue squares can be used for the ODU’s.

# Devices (select indoor units)

1. Click on this symbol to see more general information about the IDU when it is placed on the grid. A name can be given to the IDU.
2. Click on this symbol to change the accessory. There is always a default setting for an accessory.
3. Click on this symbol for the copy function. The IDU with selected accessory can be copied.
4. Click on this symbol to delete the IDU.
5. The bar is colored orange when calculation is required or when the design of the project is not finished yet.
6. The total Outdoor Capacity and Indoor Capacity is given.

**HVM Selection Tool** **SAMSUNG**

NEW PROJECT | UPLOAD PROJECT | SAVE PROJECT | CALCULATE | [Icons]

**Indoor** | Outdoor | Accessories

PROJECT: Device Groups: FCU 1Way

BUILDING

DEVICES

PIPES

ENERGY

USED DEVICES

Indoor Devices

- AG026MN1DEH ❄️ 2.39 kW 🔥 2.41 kW
- AG032MN1DEH ❄️ 3.25 kW 🔥 2.89 kW
- AG042MN1DEH ❄️ 4.13 kW 🔥 4.16 kW

R  
0

1. Information icon (IDU details)  
2. Accessory icon (Accessories panel)  
3. Copy icon  
4. Delete icon

Label: IDU. (0 / 1 / 1)

Product: AG042MN1DEH  
Installed Loc.: 0 / 1 / 1

	Cooling	Heating
Leav. W. Temp.	7 °C	45 °C
Ret. W. Temp.	14 °C	37.9 °C
Total capacity	4.13 kW	4.16 kW
Sens. capacity	3.06 kW	
Vol. Flow		0.141 l/s
Pressure drop		24.9 kPa

Accessories

Controller: Touch Remote Controller (wired) ▾

Panel: Slim 1-Way Cassette ▾

External Contact Interface Module:

5. Calculation required! (orange bar)

6. Total Outdoor ❄️: 0.00 kW 0.00 %  
Total Indoor ❄️: 4.13 kW

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# Devices (select indoor units, adding other IDUs)

1. Select "My IDUs" under "Device Groups" to add other IDUs.\*
2. Click on the "+" symbol, then a new window is popped up.
3. Fill in required data about the IDU (name of the product, piping connections, pressure drop, coil volume, power input as this selection tool does not know this data).  
Green bar under the data will appear.
4. Click on the "Floppy" button to save the data for the IDU, then a new window is popped up.
5. Under "Indoor Devices" it will show you the newly created IDU with the values which have been inserted at step 3. You can add as many "My IDUs" as you want.
6. Drag and drop "My IDU" to a grey square of the grid.

The screenshot shows the HVM Selection Tool interface. The top navigation bar includes buttons for 'NEW PROJECT', 'UPLOAD PROJECT', 'SAVE PROJECT', and 'CALCULATE'. The main interface is divided into a sidebar and a main workspace. The sidebar has a 'DEVICES' section with a 'new device' form. The main workspace has a 'Device Groups' dropdown set to 'My IDUs' and an 'Indoor Devices' section showing a newly added 'FCU 3rd party' unit with a power input of 2.80 kW and 2.90 kW. A red dashed arrow labeled 'Drag & Drop' points from the 'FCU 3rd party' unit to a grey square on the grid. The interface also displays '3rd Party Indoor Devices' and a 'Download Template' button. A yellow bar at the bottom indicates 'Calculation required!'.

\* This function can be used if you need IDUs for one specific project with certain design conditions

# Devices (select indoor units, template\*)

1. An example with guidelines of the data file for a 3rd party device is given when you click on “Download Template”. A new tab in Chrome will open.
2. Right mouse click and then click on the “Save as..” button to save the txt. document.

**HVM Selection Tool**

NEW PROJECT | UPLOAD PROJECT | SAVE PROJECT

Indoor | Outdoor | Accessories

PROJECT: My IDUs

BUILDING: FCU 3rd party (2.80 kW, 2.90 kW)

DEVICES: 3rd Party Indoor Devices (1) | **Download Template**

PIPES

ENERGY

USED DEVICES

new device

Product: FCU 3rd party

Piping connections: 1.5

Pressure drop: 38 kPa

Coil volume: 1,6 l

Power Input: 49 W

Cooling

Total capacity: 2,8 kW

Sens. capacity: 2,4 kW

Heating

Total capacity: 2,9 kW

Browser: Samsung HVM | https://hvm.openforce.com/assets/3rdPartyIDUExample.txt

```
# This is an example data file for one 3rd party device. You can upload multiple files into your projects
# to include multiple 3rd Party devices.
#
# Lines starting with # are a comment and are not processed.
"# There are 3 sections marked by ""SECTION_HEADER"", ""SECTION_COOLING_OPERATION_DATA""
# and SECTION_HEATING_OPERATION_DATA

SECTION_HEADER
# This section contains key=value data for the device. You must supply data for all these keys
product=IDU Series X
group=My IDUs
water.fill.liters=0.0
piping.connections=PF 3/4
# Power consumption in Watts of IDU fan
power.input=0

# Cooling nominal conditions are leaving.water.temperature 7 deg, returning water
# temperature 12 and temperature inside is 27 deg. At this operation point set
# the pressure drop in kPa:
cooling.mode.nominal.conditions.pressure.drop=0.0

SECTION_COOLING_OPERATION_DATA
# This section contains TAB separated values.
# leavingWaterTemperature    returningWaterTemperature    roomAirTemperature    coolingTotCapacity    coolingSensCapacity
7    12    27    0    0
6    11    27    0    0
6    13    27    0    0
6    15    27    0    0
7    14    27    0    0
7    16    27    0    0
9    14    27    0    0
9    16    27    0    0
11   14    27    0    0
11   16    27    0    0
13   16    27    0    0
6    11    26    0    0
6    13    26    0    0
6    15    26    0    0
7    12    26    0    0
7    14    26    0    0
7    16    26    0    0
9    14    26    0    0
9    16    26    0    0
11   14    26    0    0
11   16    26    0    0
13   16    26    0    0
..   ..   ..   ..   ..
```

Context Menu: Back (Alt+Left Arrow), Forward (Alt+Right Arrow), Reload (Ctrl+R), **Save as... (Ctrl+S)**, Print... (Ctrl+P), Cast..., Translate to English, View page source (Ctrl+U), Inspect (Ctrl+Shift+I)

Calculation required!

Total Outdoor: 0.00 kW 0.00 %  
Total Indoor: 0.00 kW

\*A template can be used in case you want create your own database to change the selection data of the IDU with automatic calculation function of the tool.

# Device template

Open a new Excel file and open the saved txt. file which has been created earlier.

1. New pop-up screens will open, click on; Next, Next and Finish.

Now the Excel data file for one 3rd party device will open.

Required fields to be filled in within the Excel file are:

Cel A13 Water.fill.liters= .....

Cel A14 piping.connections= ....

Cel A16 power.input=...

Cel A21= cooling.mode.nomimal.conditions.pressure.drop=...

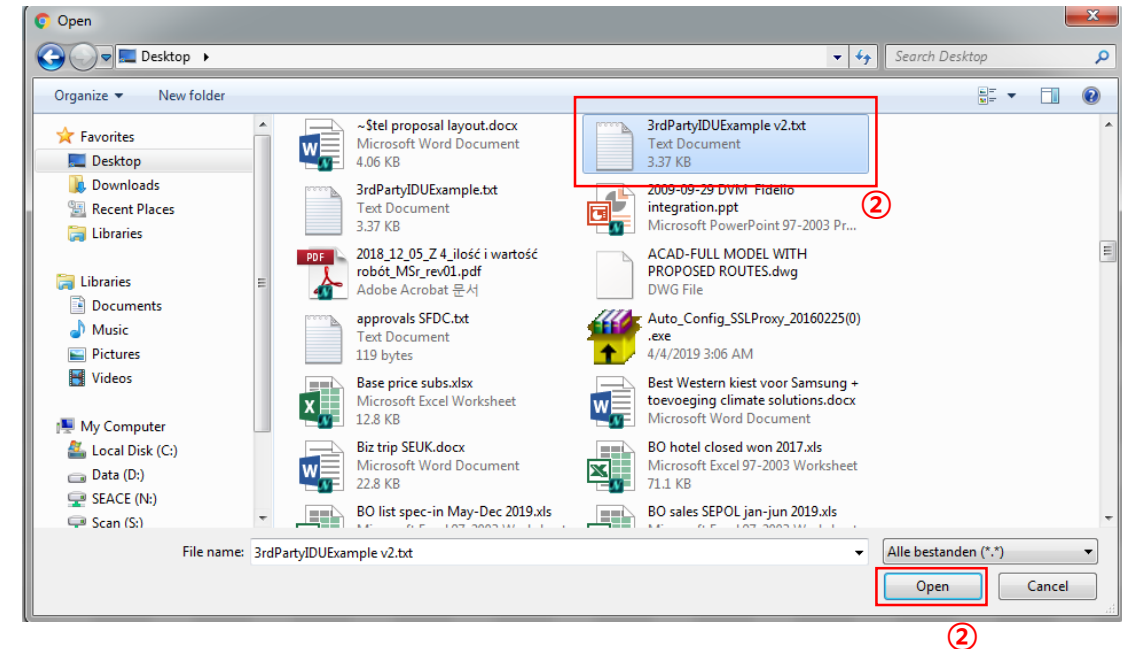
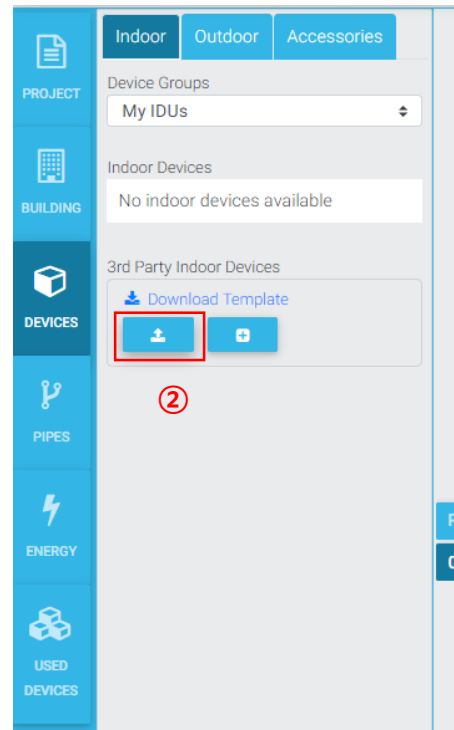
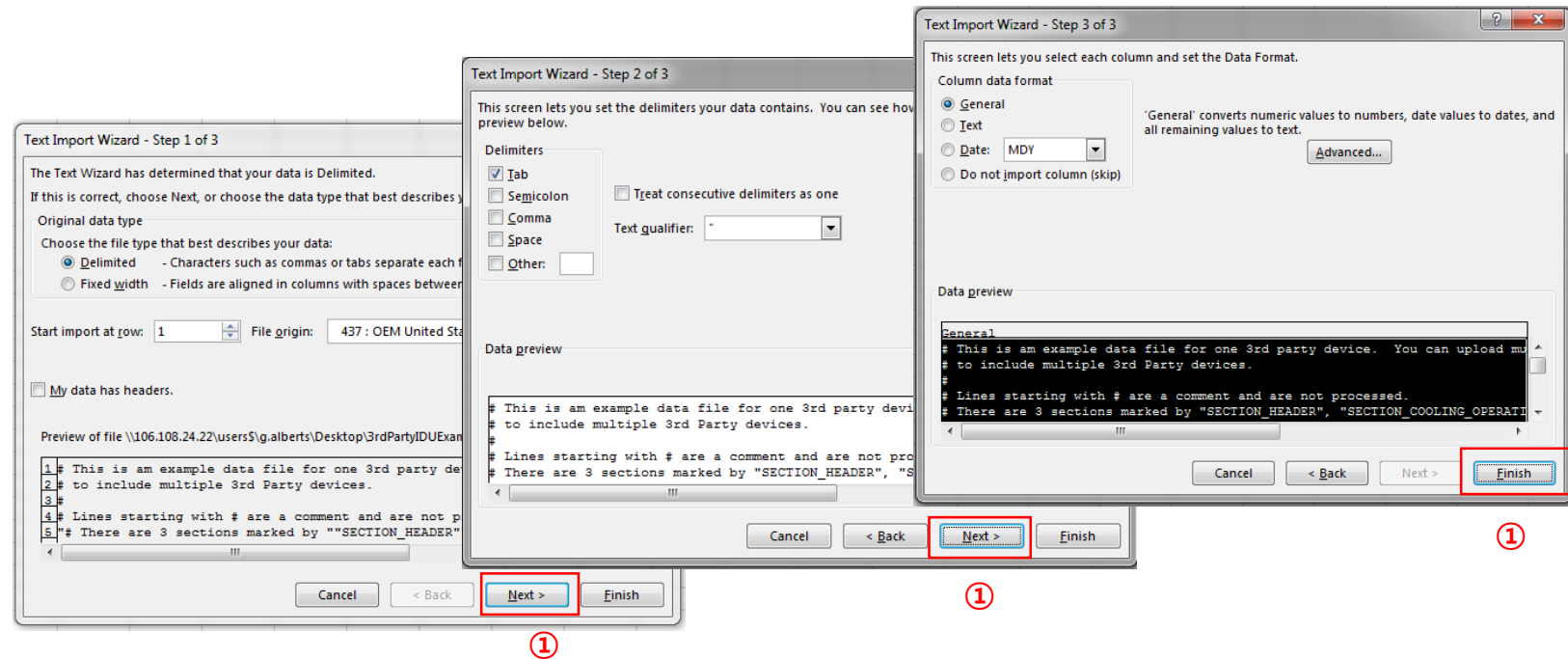
Cel D27-D138 coolingTotCapacity

Cel E27-E138 coolingSensCapacity

Cel D144-206 heatingTotCapacity

Save the Excel file on your PC.

2. Open the Excel file by clicking on this button.



# Devices (select outdoor units)

1. Click on the “Devices” tab.
2. Select Outdoor units by clicking on the “Outdoor” tab.
3. Select the Outdoor Unit. Any combination of up to 8 ODUs is possible.
4. Drag & drop the selected ODU to the grid.\*
5. The bar behind “Total Outdoor” will turn green when you have selected ODUs with enough capacity for the IDUs.

**HVM Selection Tool** **SAMSUNG**

NEW PROJECT | UPLOAD PROJECT | SAVE PROJECT | CALCULATE

Indoor | **Outdoor** | Accessories

PROJECT: Device Groups: Samsung

**1** BUILDING: **DEVICES** (circled 1)

Outdoor Devices (circled 3):

- AG042KSVANH: 42.00 kW (cooling), 34.74 kW (heating)
- AG056KSVANH: 56.00 kW (cooling), 45.50 kW (heating)
- AG070KSVANH: 65.00 kW (cooling), 55.47 kW (heating)

**2** Drag & Drop (circled 4) →

PIPES | ENERGY | USED DEVICES

R | 0

⚠ Calculation required!

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Total Outdoor ❄️:	0.00 kW 0.00 %	<div style="width: 0%;"></div>
Total Indoor ❄️:	0.00 kW	<div style="width: 0%;"></div>
<b>5</b> Total Outdoor ❄️:	42.00 kW 68.81 %	<div style="width: 68.81%;"></div>
Total Indoor ❄️:	28.90 kW	<div style="width: 42.0%;"></div>

\*The blue squares can be used to place the ODUs. On the Roof (R) you will see the blue squares in the middle.

# Devices (select system accessories)

1. Click on the “Devices” tab.
2. Select Accessories by clicking on the “Accessories” tab.
3. Select the required System Accessories.

The screenshot displays the HVM Selection Tool interface. At the top, there are buttons for 'NEW PROJECT', 'UPLOAD PROJECT', 'SAVE PROJECT', and 'CALCULATE'. The 'SAMSUNG' logo is in the top right corner. A vertical sidebar on the left contains icons for 'PROJECT', 'BUILDING', 'DEVICES', 'PIPES', 'ENERGY', and 'USED DEVICES'. The 'DEVICES' icon is highlighted with a red box and a circled '1'. The main area has three tabs: 'Indoor', 'Outdoor', and 'Accessories'. The 'Accessories' tab is selected and highlighted with a red box and a circled '2'. Below the tabs, there is a list of accessories with checkboxes and toggle switches. The 'Data management server DMS2' is selected, highlighted with a red box and a circled '3'. Other accessories include 'Touch centralized controller' and 'Watt hour meter interface module'. The bottom of the screen shows a status bar with a warning icon and the text 'Calculation required!'. On the right, it displays 'Total Outdoor: 42.00 kW 82.14 %' and 'Total Indoor: 34.50 kW' with corresponding green progress bars. The footer contains the copyright notice: 'Copyright © 2019 Samsung Electronics Air Conditioner Europe B.V. All rights reserved. Samsung is a registered trademark of Samsung Electronics Co., Ltd.'

# Piping Automatically (IDUs)

1. Click on the “Pipes” tab to start the piping design.
2. By default Max Pressure drop is 100 Pa/m and 3-way Valves 80%. This can be modified.\*
3. When you have selected the IDUs and ODU in previous steps then you can choose for Auto. By choosing for “Auto” the piping will be done automatically. When selecting (“Manual”) refer to next page.
4. Fill in the Max Piping Distance (e.g. 10m, by default 0m) between the ODU and the IDU which is the most far away from the ODU.
5. Click on the “Calculate” button to complete the piping placement automatically.
6. An estimation of the Pressure drop and Hydraulic system will be given.
7. Select the connection scheme for Outdoor units in the drop/down menu.
  - Simultaneous operation = all ODUs work as 1 large OD.\*\*
  - Individual operation (single pressure controlled water pump plus motor valves)
  - Individual operation (multiple water pumps) = every chiller has its own pump.
8. The orange bar at the bottom will change from Calculation required (orange) to Project status ok (green). If not please click on the orange bar, it will give an indication about what is missing or wrong.

The screenshot shows the HVM Selection Tool interface with the 'PIPES' tab selected. The interface includes a top navigation bar with buttons for 'NEW PROJECT', 'UPLOAD PROJECT', 'SAVE PROJECT', and 'CALCULATE'. The main panel is divided into a left sidebar with icons for PROJECT, BUILDING, DEVICES, PIPES, ENERGY, and USED DEVICES. The central area contains configuration fields for System, Piping, Calculation Pressure Drop, and Hydraulic system. The bottom status bar shows a green bar for 'Project status ok' and a yellow bar for 'Calculation required!'. On the right, there is a grid of device icons and a diagram showing the connection scheme for outdoor units.

**System**

Max. Pressure Drop	100 Pa/m
3 way Valves	80 %

**Piping**

Manual  Auto

Max. Piping Distance: 10 m

**Calculation Pressure Drop**

Indoor unit	38 kPa
Outdoor unit	20.8 kPa
Piping	0.5 kPa
Fittings	0.3 kPa
System Pressure Drop	59.6 kPa

**Hydraulic system**

Connection scheme for Outdoor units: Simultaneous operation

Min. Buffer Tank Size	259 l
Min. Expansion Tank Size	32 l
Filling Quantity	294 l
Total volumetric flow	1.172 l/s

**Status Bar**

Calculation required! (Yellow bar)

Project status ok (Green bar)

Total Outdoor: 42.00 kW 82.14 %

Total Indoor: 34.50 kW

\* Depending on space or efficiency requirements a selection between 100 Pa/m and 300 Pa/m can be applied.

\*\* If only 1 ODU is selected then the Hydraulic connection scheme must be set as “Simultaneous operation”.

# Piping automatically (ODUs)

1. Go to the floor where the ODU's have been placed (e.g. on the Roof, by clicking on the "R" button)
2. After clicking on the "Calculate" button; the piping, the Tank (if necessary for the minimum water charge), Pump and Valve symbol will appear and it will be automatically connected to the large dot (Riser pipe)
3. An estimation of the Pressure drop and Hydraulic system will be given.\*
4. The color of the bar in the bottom will change to green and the naming will change to "Project status ok".
5. Click on the "Save Project" button to save it.\*\*

## Design Tip

When you have identical floors in a building, use the copy function to duplicate the floor including IDUs and Piping

The screenshot displays the HVM Selection Tool interface. The top navigation bar includes buttons for 'NEW PROJECT', 'UPLOAD PROJECT', 'SAVE PROJECT' (5), and 'CALCULATE' (2). The left sidebar contains navigation icons for PROJECT, BUILDING, DEVICES, PIPES, ENERGY, and USED DEVICES. The main panel shows system settings (Max. Pressure Drop: 100 Pa/m, 3 way Valves: 80%), piping options (Manual/Auto, Max. Piping Distance: 10 m), and calculation results (3). A red box highlights the 'Calculation Pressure Drop' table:

Calculation Pressure Drop	
Indoor unit	38 kPa
Outdoor unit	20.8 kPa
Piping	1.3 kPa
Fittings	0.7 kPa
System Pressure Drop	60.8 kPa

Below this is the 'Hydraulic system' section with a dropdown for 'Simultaneous operation' and a table of system parameters:

Hydraulic system	
Connection scheme for Outdoor units	
Simultaneous operation	
Min. Buffer Tank Size	255 l
Min. Expansion Tank Size	32 l
Filling Quantity	294 l
Total volumetric flow	1.172 l/s

The right side of the interface shows a grid of floor plans with a red box (4) highlighting a specific floor plan containing a piping diagram. The bottom status bar (1) shows 'Project status ok' in green, along with energy consumption data: Total Outdoor: 42.00 kW (82.14%), Total Indoor: 34.50 kW. The footer contains copyright information for Samsung Electronics Air Conditioner Europe B.V.

\*Pressure drop and Hydraulic system calculation will be shown in the report as well.

\*\*It is depending on your browser settings where the project will be saved. It will be saved as a .json file

# Piping manual (IDUs 1.1)

1. Select "Manual" (turn off Auto).\*
2. Click on the "Piping Mode off" button to turn on the Piping mode (it will turn orange).
3. Click on an IDU which is placed on the grid and click on another IDU or any white area of the grid.  
Then a new window is popped up.\*\*
4. Enter actual piping length (by default 1m).  
See next page.

## Design Tip

Input this piping data as accurate as possible because the result of "System check" and "Capacity simulation" can differ based on the piping length. This will be shown in the report as well.  
Without entering data, every pipe line has the length of 1m.

The screenshot displays the HVM Selection Tool interface. The top navigation bar includes buttons for 'NEW PROJECT', 'UPLOAD PROJECT', 'SAVE PROJECT', 'CALCULATE', and a 'PIPING MODE' toggle. The left sidebar contains menu items for 'PROJECT', 'BUILDING', 'DEVICES', 'PIPES', 'ENERGY', and 'USED DEVICES'. The main panel is divided into several sections: 'System' (Max. Pressure Drop: 100 Pa/m, 3 way Valves: 80%), 'Piping' (Manual mode selected, Max. Piping Distance: 0 m), 'Calculation Pressure Drop' (Indoor unit: 0 kPa, Outdoor unit: 0 kPa, Piping: 0 kPa, Fittings: 0 kPa, System Pressure Drop: 0 kPa), and 'Hydraulic system' (Connection scheme for Outdoor units: Simultaneous operation, Min. Buffer Tank Size: 0 l, Min. Expansion Tank Size: 0 l, Filling Quantity: 0 l, Total volumetric flow: 0 l/s). A grid of IDU icons is shown in the center, with a red box highlighting a selected IDU and a pop-up window displaying piping parameters: Length (1 m), Inside Diameter (0 mm), Vol. Flow (0 l/s), Flow velocity (m/s), Pressure Drop Fitting (0 kPa), Pressure Drop (0 kPa), and Pressure Drop/Meter (0 Pa/m). A status bar at the bottom shows 'Calculation required!' and energy data: Total Outdoor (42.00 kW, 82.14%) and Total Indoor (34.50 kW). The Samsung logo is visible in the top right corner.

\*Once you have selected the manual mode, you cannot return to auto mode anymore.

\*\*User can connect the piping by clicking on the IDUs, on the piping itself or any white area of the grid.



# Piping Manual (IDUs 1.2)

1. All the IDUs need to be connected with the piping.
2. Connect the piping to the “Riser pipe” by clicking on the piping and Large dot (•).\*
3. Click on the “Calculate” button.
4. Calculation of Pressure drop and Hydraulic system will be shown after clicking on the Calculate button.\*\*
5. To apply modifications to the piping length turn Piping mode off and then click on the piping.
6. Click on this symbol to modify the piping length and see general information about the piping.

See next page.

The screenshot displays the HVM Selection Tool interface. The top navigation bar includes buttons for 'NEW PROJECT', 'UPLOAD PROJECT', 'SAVE PROJECT', 'CALCULATE', and a 'PIPING MODE ON' indicator. The left sidebar contains navigation icons for PROJECT, BUILDING, DEVICES, PIPES, ENERGY, and USED DEVICES. The main workspace shows a piping diagram with a riser pipe and several indoor units (IDUs). A red box highlights the riser pipe and a large dot (•) on it. A red circle (1) is placed on the riser pipe, and another red circle (2) is on the large dot. A red circle (3) is on the 'CALCULATE' button. A red circle (4) is on the 'Calculation Pressure Drop' section of the left sidebar. A red circle (5) is on the 'PIPING MODE ON' button. A red circle (6) is on the 'PIPES' icon in the sidebar. A pop-up window shows the 'Length' of the selected piping segment, set to 1 m, and a list of properties: Inside Diameter (19.6 mm), Vol. Flow (0.081 l/s), Flow velocity (0.27 m/s), Pressure Drop Fitting (0.1 kPa), Pressure Drop (0.1 kPa), and Pressure Drop/Meter (63.3 Pa/m). The bottom status bar shows 'Project status ok', 'Total Outdoor: 42.00 kW 82.14 %', 'Total Indoor: 34.50 kW', and a zoom slider.

Category	Value
Max. Pressure Drop	100 Pa/m
3 way Valves	80 %
Manual	Auto
Max. Piping Distance	0 m
Calculation Pressure Drop	
Indoor unit	38 kPa
Outdoor unit	20.8 kPa
Piping	1.1 kPa
Fittings	0.6 kPa
System Pressure Drop	60.5 kPa
Hydraulic system	
Connection scheme for Outdoor units	
Simultaneous operation	
Min. Buffer Tank Size	251 l
Min. Expansion Tank Size	32 l
Filling Quantity	294 l
Total volumetric flow	1.172 l/s

\*The place of the riser pipe can be modified by clicking on it and moving it to another spot. The piping mode should be turned off.

\*\*Pressure drop and Hydraulic system calculation will be shown in the report as well.

# Piping Manual (ODUs)

1. Go to the floor where the ODU have been placed (e.g. on the Roof, by clicking on the “R” button)
2. After clicking on the “Calculate” button; the piping, the Tank, Pump and Valve symbol will appear.
3. Connect the “Riser pipe” with the “Tank/Pump/Valve”
4. Click on the “Calculate” button
5. An estimation of the Pressure drop and Hydraulic system will be given.\*
6. The color of the bar in the bottom will change to green and the naming will change to “Project status ok”.
7. Click on the “Save Project” button to save it.\*\*

The screenshot displays the HVM Selection Tool interface. The top toolbar contains buttons for 'NEW PROJECT', 'UPLOAD PROJECT', 'SAVE PROJECT', and 'CALCULATE'. The left sidebar has icons for 'PROJECT', 'BUILDING', 'DEVICES', 'PIPES', 'ENERGY', and 'USED DEVICES'. The main workspace shows a grid with a riser pipe (labeled 'R') and an outdoor unit (ODU) connected by a red dashed line. The bottom status bar shows 'Project status ok' in green, along with energy data: Total Outdoor: 42.00 kW 82.14 % and Total Indoor: 34.50 kW. A zoom slider is also visible.

System	Value	Unit
Max. Pressure Drop	100	Pa/m
3 way Valves	80	%

Piping	Value	Unit
Manual	<input type="checkbox"/>	
Auto	<input type="checkbox"/>	
Max. Piping Distance	0	m

Calculation Pressure Drop	Value	Unit
Indoor unit	38	kPa
Outdoor unit	20.8	kPa
Piping	1.1	kPa
Fittings	0.6	kPa
System Pressure Drop	60.5	kPa

Hydraulic system	Value	Unit
Connection scheme for Outdoor units	Simultaneous operation	
Min. Buffer Tank Size	251	l
Min. Expansion Tank Size	32	l
Filling Quantity	294	l
Total volumetric flow	1.172	l/s

\*Pressure drop and Hydraulic system calculation will be shown in the report as well.

\*\*It is depending on your browser settings where the project will be saved. It will be saved as a .json file

# Energy simulation (ESEER)\*

1. Click on the “Energy” tab to start the energy simulation.
2. Fill in the Currency (default is EUR.)
3. Fill in the Energy cost per kWh.\*\*
4. Fill in the Power consumption of all pumps used (in kW).
5. Fill in the annual operation hours at.
6. Click on the “Calculate” button.
7. The calculation for the estimated annual energy consumption will be given.

The screenshot shows the HVM Selection Tool interface with the following components:

- Navigation Bar:** Includes buttons for NEW PROJECT, UPLOAD PROJECT, SAVE PROJECT, CALCULATE (circled in red), and an information icon.
- Left Sidebar:** Contains icons for PROJECT, BUILDING, DEVICES, PIPES, ENERGY (highlighted in red), and USED DEVICES.
- Form Fields:**
  - Currency: EUR (circled in red)
  - Energy costs: 0 EUR/kWh (circled in red)
  - Power consumption pumps: 0 kW (circled in red)
  - ESEER: Annual operation hours: 0 h (circled in red)
  - Outside Temp. table (circled in red):

Outside Temp. °C	Weight %
35	3
30	33
25	41
20	23
  - ENERGY tab (circled in red) showing:

EER35 (Outdoor units)	3.45
EER30 (Outdoor units)	3.92
EER25 (Outdoor units)	4.39
EER20 (Outdoor units)	4.74
ESEER (Outdoor units)	4.29
  - Estimated annual energy consumption table (circled in red):

Estimated annual energy consumption	
Outdoor units	0 kWh
Indoor units	0 kWh
Pumps	0 kWh
Total	0 kWh
Annual energy costs	0 EUR
  - SCOP section:

Climate	Average
SCOP (Outdoor units)	0
Estimated annual energy consumption	
Outdoor units	0 kWh
Indoor units	0 kWh
Pumps	0 kWh
Total	0 kWh
Annual energy costs	0 EUR
- Right Panel:** A grid of device selection options, with a central schematic diagram showing a split-system layout with two indoor units and two outdoor units.
- Bottom Bar:** Project status ok (green bar), Total Outdoor 42.00 kW 82.14 %, Total Indoor 34.50 kW (green bar).
- Footer:** Copyright © 2019 Samsung Electronics Air Conditioner Europe B.V. All rights reserved.

\*Energy simulation is not mandatory, ESEER = cooling mode

\*\*The Energy Cost per kWh depends on your country

# Energy simulation (SCOP)

- 1. Under SCOP (heating mode) you only have to choose the climate zone at the drop/down menu (warmer/average/colder).\*
- 2. Click on the "Calculate" button.
- 3. The calculation for the SCOP and Estimated annual energy consumption will be given.\*\*

HVM Selection Tool

NEW PROJECT | UPLOAD PROJECT | SAVE PROJECT | CALCULATE

Currency: EUR

Energy costs: 0 EUR/kWh

Power consumption pumps: 0 kW

ESEER

Annual operation hours: 0 h

Outside Temp. °C	Weight %
35	3
30	33
25	41
20	23

EER35 (Outdoor units): 3.45  
EER30 (Outdoor units): 3.92  
EER25 (Outdoor units): 4.39  
EER20 (Outdoor units): 4.74  
ESEER (Outdoor units): 4.29

Estimated annual energy consumption

Category	Value	Unit
Outdoor units	0	kWh
Indoor units	0	kWh
Pumps	0	kWh
Total	0	kWh
Annual energy costs	0	EUR

SCOP

Climate: Average

Category	Value	Unit
SCOP (Outdoor units)	0	
Estimated annual energy consumption		
Outdoor units	0	kWh
Indoor units	0	kWh
Pumps	0	kWh
Total	0	kWh
Annual energy costs	0	EUR

Project incomplete

Total Outdoor: 42.00 kW 82.14 %  
Total Indoor: 34.50 kW

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\*SCOP = heating mode

\*\*You do not need to insert the annual operation hours in heating mode (SCOP) because this is given by defining the climate zone for your country.

# Used Devices

1. Click on the “Used Devices” tab to see all selected IDUs.
2. It gives information about where the IDU has been placed on the grid; floor/column/row.
3. The name of the IDU can be modified in the text field under the IDU (e.g. Office 1)

HVM Selection Tool

SAMSUNG

NEW PROJECT | UPLOAD PROJECT | SAVE PROJECT | CALCULATE

PROJECT | BUILDING | DEVICES | PIPES | ENERGY | **USED DEVICES**

Used Indoor Devices

AG026MN1DEH	0 / 1 / 1
IDU. (0 / 1 / 1)	
AG026MN1DEH	0 / 4 / 1
IDU. (0 / 4 / 1)	
AG060MN4DKH	0 / 1 / 2
IDU. (0 / 1 / 2)	
AG060MN4DKH	0 / 4 / 2
IDU. (0 / 4 / 2)	
AG060MN4PKH	0 / 1 / 3
IDU. (0 / 1 / 3)	
AG060MN4PKH	0 / 4 / 3
IDU. (0 / 4 / 3)	
FCU 3rd party	0 / 1 / 4
IDU. (0 / 1 / 4)	
FCU 3rd party	0 / 4 / 4
IDU. (0 / 4 / 4)	

R  
0

Project status ok

Total Outdoor: 42.00 kW 82.14 %  
Total Indoor: 34.50 kW

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# Reporting – My Project Report

1. Click on the “Reporting” button. A drop/down menu will appear with the options for Report/Text for Tender/Hydraulic Diagram/Wiring Diagram.
2. Click on “Report”.
3. The report will show the following information.\*

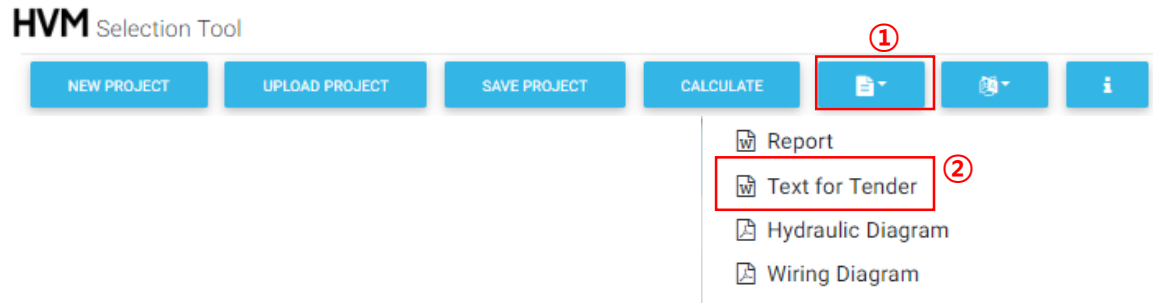
The screenshot shows the HVM Selection Tool interface. At the top, there is a navigation bar with buttons for 'NEW PROJECT', 'UPLOAD PROJECT', 'SAVE PROJECT', 'CALCULATE', and 'Report'. The 'Report' button is highlighted with a red box and a circled '1'. A dropdown menu is open below it, showing options: 'Report', 'Text for Tender', 'Hydraulic Diagram', and 'Wiring Diagram'. The 'Report' option is highlighted with a red box and a circled '2'. Below the navigation bar, the 'SAMSUNG' and 'HVM' logos are visible. A large red box highlights the 'Table of Contents' section, which is circled with a red '3'. The table of contents lists various sections and their corresponding page numbers.

Section	Page
Table of Contents	2
Equipment List	3
Outdoor Devices	3
Indoor Devices	3
Valves	3
Accessories	3
Pipes	5
Calculation Pressure Drop	5
Hydraulic system	5
Pumps	5
Devices	6
Outdoor Devices	6
Indoor Devices	6
Energy Efficiency	7
ESEER : European Seasonal Energy Efficiency Ratio	7
ESEER - Outdoor units	7
Estimated annual energy consumption	7
SCOP: Seasonal Coefficient of Performance	7
Estimated annual energy consumption	7
Technical data sheets	8
AG042KSVANH	8
AG026MN1DEH	10
FCU 3rd party	11
AG060MN4DKH	12
AG060MN4PKH	13
Disclaimer	14

\*An editable Word file will be created

# Reporting – Text for Tender

- 1. Click on the “Reporting” button.
- 2. Click on “Text for Tender”.
- 3. The report will show the following information.\*



<b>SAMSUNG</b>	<b>HVM</b>
<b>Table of Contents</b>	
Table of Contents.....	2
Outdoor Devices.....	3
AG042KSVANH.....	3
Indoor Devices.....	5
AG026MN1DEH.....	5
AG060MN4DKH.....	7
AG060MN4PKH.....	9
FCU 3rd party.....	11
Accessories.....	12
MIM-D01AN Data management server DMS2.5.....	12
MCM-A00N DVM Chiller module Controller.....	12
MIM-F10N Hub PBA.....	12
MIM-F00N FCU kit.....	12
MWR-SH11N Touch Remote Controller (wired).....	12
PC4NUDMAN square, white.....	12
PC4NUSKAN Waffle, white.....	13
PC1NUSMAN Slim 1-Way Cassette.....	13
Hydraulic system.....	14
Pipes.....	14
Buffer Tanks.....	14
Fittings.....	14
Pumps.....	14

\*An editable Word file will be created

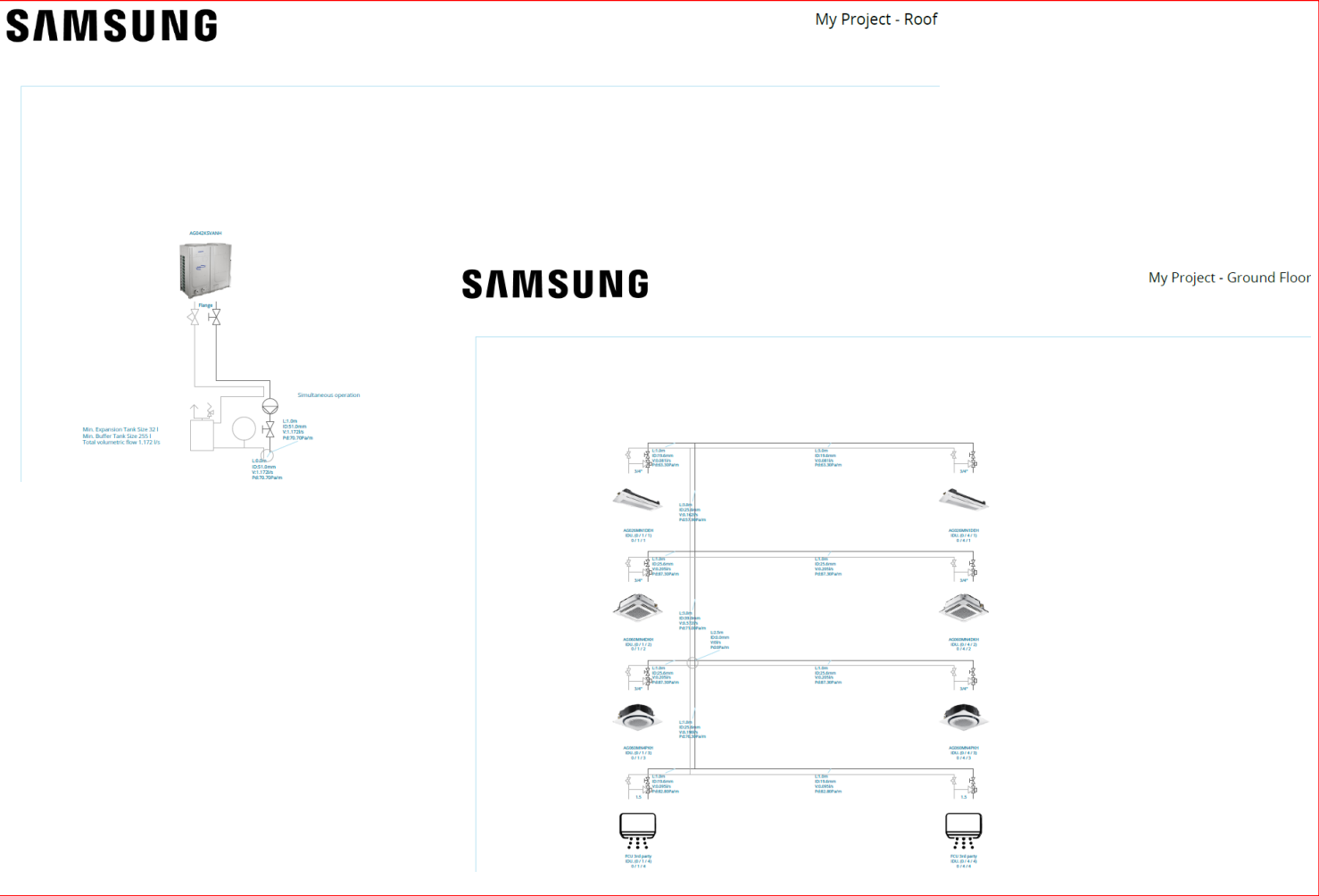
# Reporting – Hydraulic Diagram

- 1. Click on the “Reporting” button.
- 2. Click on “Hydraulic Diagram”.
- 3. The report will show the Hydraulic Diagram for the ODUs and IDUs.\*

HVM Selection Tool

NEW PROJECT    UPLOAD PROJECT    SAVE PROJECT    CALCULATE    **1**    **2**

- Report
- Text for Tender
- Hydraulic Diagram**
- Wiring Diagram



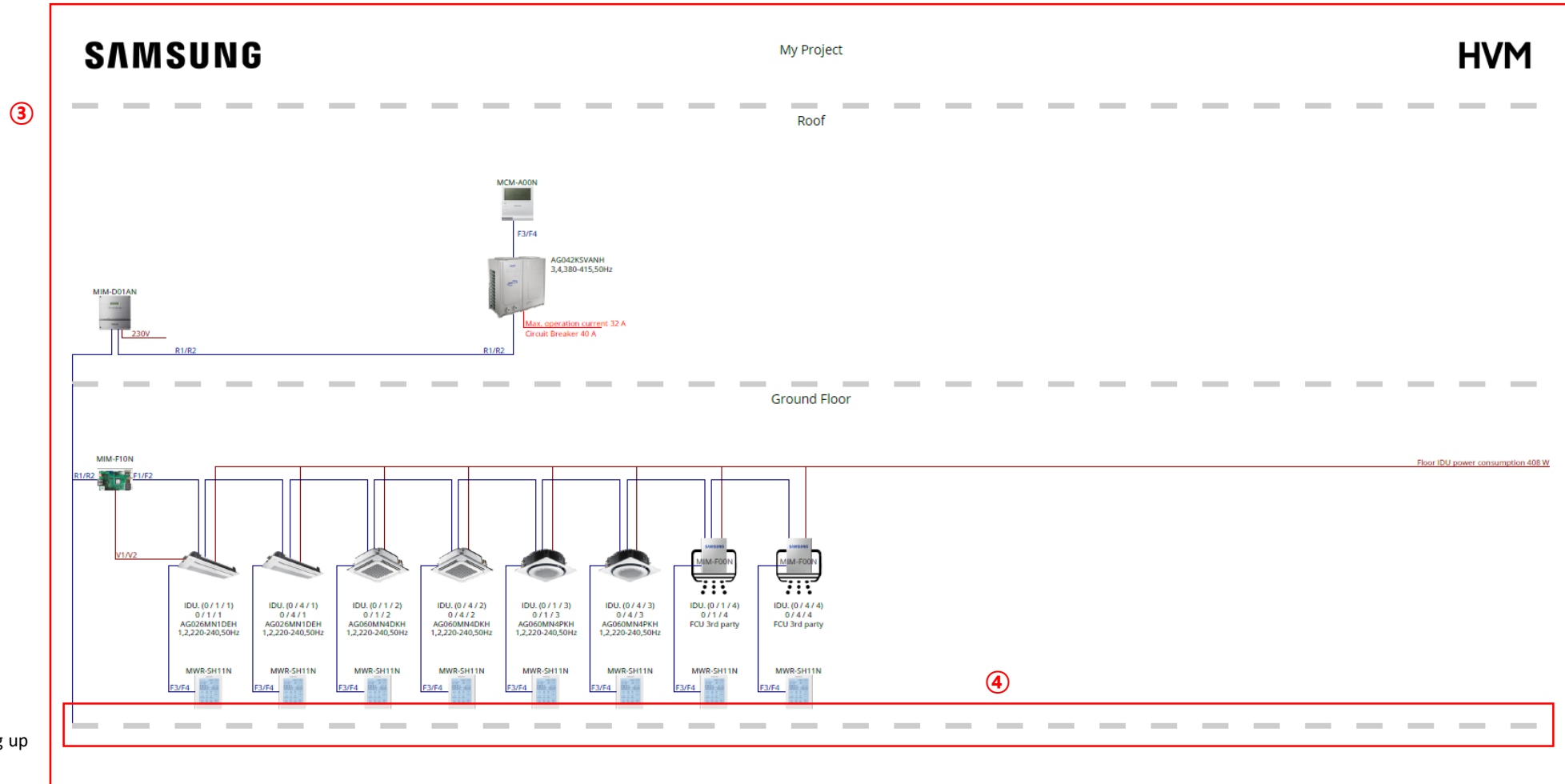
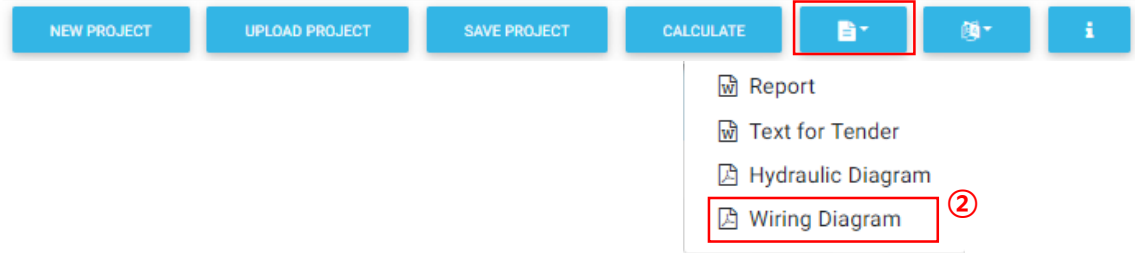
\*A high resolution PDF file will be created allows printing up to A0



# Reporting – Wiring Diagram

1. Click on the “Reporting” button.
2. Click on “Wiring Diagram”.
3. The report will show the Wiring Diagram for the ODU and IDUs.\*
4. Dotted line is the floor.

HVM Selection Tool



\*A high resolution PDF file will be created allows printing up to A0

# Uploading project

1. Click on the “Upload project” button.\*
2. Choose the .json file you want upload.
3. Click on “Open” and the project will be uploaded.

The screenshot displays the HVM Selection Tool interface. The top navigation bar includes buttons for 'NEW PROJECT', 'UPLOAD PROJECT' (circled in red with a '1'), 'SAVE PROJECT', and 'CALCULATE'. The left sidebar contains icons for 'PROJECT', 'BUILDING', 'DEVICES', 'PIPES', 'ENERGY', and 'USED DEVICES'. The main area shows project details for 'My Project', including customer information (Name, Phone, Email, Address), designer information (Name, Phone, Email, Address), and temperature settings for cooling and heating. A status bar at the bottom indicates 'Project status ok' and provides energy consumption data: Total Outdoor (0.00 kW 0.00 %) and Total Indoor (0.00 kW). A file explorer window is open, showing the 'Downloads' folder. The file 'My Project (2).json' is selected (circled in red with a '2'). The 'Open' button in the file explorer is circled in red with a '3'.

Name	Date modified	Type	Size
My Project (2).json	7/11/2019 4:13 PM	JSON File	6 KB
report1562845078682.xls	7/11/2019 1:38 PM	Microsoft Excel 97...	5,712 KB
report1562841133105.xls	7/11/2019 12:32 PM	Microsoft Excel 97...	6,091 KB
report1562840297158.xls	7/11/2019 12:18 PM	Microsoft Excel 97...	6,972 KB
nsc11637627.nsc	7/11/2019 12:18 PM	NSC File	6,972 KB
My Project_Wiring (2).pdf	7/10/2019 5:01 PM	Adobe Acrobat 문...	142 KB
My Project_Hydraulic (1).pdf	7/10/2019 4:54 PM	Adobe Acrobat 문...	112 KB
My Project_Tender.docx	7/10/2019 4:50 PM	Microsoft Word D...	30 KB
My Project_Report (1).docx	7/10/2019 4:43 PM	Microsoft Word D...	262 KB
report1562751770528.xls	7/10/2019 11:43 AM	Microsoft Excel 97...	16,509 KB
nsc37857168.nsc	7/4/2019 7:34 PM	NSC File	5,922 KB
report1562261634657.xls	7/4/2019 7:34 PM	Microsoft Excel 97...	5,922 KB
report1562261624785.xls	7/4/2019 7:33 PM	Microsoft Excel 97...	5,922 KB
offerslist (33).xls	7/4/2019 6:46 PM	Microsoft Excel 97...	8,076 KB
QuoteProductLayout (7).xls	7/4/2019 1:17 PM	Microsoft Excel 97...	24 KB
SHA9-2_Salec Ren Activitv(SFACF) (2).xlsx	7/3/2019 11:08 AM	Microsoft Excel W...	39 KB

\*All project files/reports can be stored locally at your computer and be shared easily with others by email.

# Changing language

1. Click on the "Language" button and a drop/down menu will appear.
2. Click on the preferred language.

The screenshot displays the HVM Selection Tool interface. At the top right, the SAMSUNG logo is visible. Below it, a navigation bar contains buttons for NEW PROJECT, UPLOAD PROJECT, SAVE PROJECT, CALCULATE, and a Language button (marked with a red circle 1). A dropdown menu is open from the Language button, listing the following options: Deutsch, English (selected with a checkmark), Italiano, Čeština, Nederlands, and Español (marked with a red circle 2). The main interface is divided into a left sidebar with categories: PROJECT, BUILDING, DEVICES, PIPES, ENERGY, and USED DEVICES. The PROJECT section is active, showing fields for Project name (My Project), Customer (Name, Phone, Email, Address), Designer (Name, Phone, Email, Address), Cooling settings (Room Temp. 27°C, Outside Temp. 35°C, Leaving water Temp. 7°C, Return water Temp. 14°C), Heating settings (Room Temp. 21°C, Outside Temp. 2°C, Leaving water Temp. 45°C, Return water Temp. °C), and System settings (Main Mode: Cooling, Brine concentration vol. 0%). The main workspace shows a grid of device icons, with some icons labeled 'AGDMMN10CH'. At the bottom, a status bar indicates 'Calculation required!' and displays energy consumption data: Total Outdoor 42.00 kW 82.14% and Total Indoor 34.50 kW. The footer contains the copyright notice: Copyright © 2019 Samsung Electronics Air Conditioner Europe B.V. All rights reserved. Samsung is a registered trademark of Samsung Electronics Co., Ltd.

# HVM selection tool

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