

# Sample Templates Document: HVAC\_Symbol01.blu





#### **Document copyright policy:**

You agree not to reproduce, other than for your own personal, noncommercial use, all or part of this document on any medium whatsoever without permission of Schneider Electric, given in writing. You also agree not to establish any hypertext links to this document or its content.

Schneider Electric does not grant any right or license for the personal and noncommercial use of the document or its content, except for a non-exclusive license to consult it on an "as is" basis, at your own risk. All other rights are reserved.

All pertinent state, regional, and local safety regulations must be observed when installing and using this product. For reasons of safety and to help ensure compliance with documented system data, only the manufacturer should perform repairs to components.

When devices are used for applications with technical safety requirements, the relevant instructions must be followed.

Failure to use Schneider Electric software or approved software with our hardware products may result in injury, harm, or improper operating results.

Failure to observe this information can result in injury or equipment damage.



### **Safety Information**



#### **Important Information**

#### NOTICE

Read these instructions carefully, and look at the equipment to become familiar with the device before trying to install, operate, service, or maintain it. The following special messages may appear throughout this documentation or on the equipment to warn of potential hazards or to call attention to information that clarifies or simplifies a procedure.



The addition of this symbol to a "Danger" or "Warning" safety label indicates that an electrical hazard exists which will result in personal injury if the instructions are not followed.



This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.

# **DANGER**

**DANGER** indicates a hazardous situation which, if not avoided, **will result in** death or serious injury.

# 

**WARNING** indicates a hazardous situation which, if not avoided, **could result in** death or serious injury.

# **A** CAUTION

**CAUTION** indicates a hazardous situation which, if not avoided, **could result** in minor or moderate injury.

# NOTICE

NOTICE is used to address practices not related to physical injury.

#### PLEASE NOTE

Electrical equipment should be installed, operated, serviced, and maintained only by qualified personnel. No responsibility is assumed by Schneider Electric for any consequences arising out of the use of this material.

A qualified person is one who has skills and knowledge related to the construction and operation of electrical equipment and its installation, and has received safety training to recognize and avoid the hazards involved.



### About the Book



#### At a Glance

#### **Document Scope**

This manual describes how to use this product.

#### Validity Note

This documentation is valid for this product.

The technical characteristics of the device(s) described in this manual also appear online at <u>http://www.pro-face.com</u>.

The characteristics presented in the present document should be the same as those that appear online. In line with our policy of constant improvement we may revise content over time to improve clarity and accuracy. In the event that you see a difference between the document and online information, use the online information as your reference.

#### **Registered Trademarks**

Microsoft and Windows are registered trademarks of Microsoft Corporation in the United States and/or other countries.

Product names used in this manual may be the registered trademarks owned by the respective proprietors.

#### **Related Documents**

You can download the manuals related to this product, such as the software manual, from our support site at <u>http://www.pro-face.com/trans/en/manual/1001.html</u>.

#### **Product Related Information**

If the equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.

In the event this product does not run properly due to whatever reason, it may be difficult or impossible to identify a function. Functions that may present a hazard if not immediately executed, such as a fuel shut-off, must be provided independently of this product. The machine's control system design must take into account the operator being unable to control the machine or making mistakes in the control of the machine.

# 

#### UNINTENDED EQUIPMENT OPERATION

The application of this product requires expertise in the design and programming of control systems. Only persons with such expertise should be allowed to program, install, alter, and apply this product.

• Follow all local and national safety standards.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

For additional information, refer to NEMA ICS 1.1 (latest edition), "Safety Guidelines for the Application, Installation, and Maintenance of Solid State Control" and to NEMA ICS 7.1 (latest edition), "Safety Standards for Construction and Guide for Selection, Installation and Operation of Adjustable-Speed Drive Systems" or their equivalent governing your particular location.



# Table of Content

| Safety Information                           | . 3 |
|--|-----|
| About the Book                               | . 4 |
| Template Overview                            | . 6 |
| Project structure                            | 6   |
| Run Time Behavior                            | . 8 |
| How to copy the objects to your project file | . 9 |
| How to change HVAC Variables                 | 15  |



Target: ST-6500WAD Driver: None BLUE version 3.4.1 or later

## **Template Overview**

This template has Different Buttons to open HVAC Screens.

## **Project structure**

.

23 different screens are called in Main Screen.

| Screen                     |              |
|----------------------------|--------------|
| Main                       | Screen ID 1  |
| Information                | Screen ID 2  |
| Compressor_and_Pumps       | Screen ID 10 |
| Heat_exchanger_and_vessels | Screen ID 11 |
| Motor_and_Solnoid_Valves   | Screen ID 12 |
| Valves_Filling             | Screen ID 13 |
| Valves_Filling_2           | Screen ID 14 |
| Pipe_components_Filled     | Screen ID 15 |
| Sensors                    | Screen ID 16 |
| AHU_objects                | Screen ID 17 |
| RI_CO2_Heatpump            | Screen ID 20 |



| RI_Flow_chart_CO2_booster_system              | Screen ID 21 |
|---|--------------|
| RI_Flow_chart_Air2Water_chilller_up_to_3_comp | Screen ID 22 |
| RI_Flow_chart_DX_ground_heat_pump             | Screen ID 23 |
| RI_Flow_chart_Air_2_water_heatpump            | Screen ID 24 |
| RI_Booster_Pump                               | Screen ID 25 |
| RI_Flow_chart_chiller_with_hotgasbypass       | Screen ID 26 |
| RI_Flow_Chart_heating_circuite                | Screen ID 27 |
| RI_Flow_chart_simple_ref_circuit              | Screen ID 91 |
| RI_Flow_chart4                                | Screen ID 92 |
| Screen1                                       | Screen ID 93 |
| RI_Chiller_pump_part1                         | Screen ID 94 |
| RI_Chiller_pump_part                          | Screen ID 95 |
| RI_Chiller_pump_part2                         | Screen ID 96 |



### **Run Time Behavior**

Runtime/Simulation of this template displays buttons of compressor, pumps, vessels, heat exchanges, transmitter, booster system, chill compressor, heat pump water circuit. Click above buttons to open desired HVAC screens.

Click on First Flag button to Change Language in German.

Click on Second Flag button to Change Language in English.

Click on Information button to See information.



### How to copy the objects to your project file

1. Open your project file and downloaded project file simultaneously.

|                             |   | HVAC_Symbol01.blu                                 | - @ X                              |
|-----------------------------|---|---|------------------------------------|
| O BLUE                      | O BLUE  |   |                                    |
| 💙 🗅 🖻 🗸 🖼 🗸 🖌               | ► ■ ★ ■ ★ × ■ ★ ▼ ■ ★ ■ ★                           | State 0 (OFF) ∨ □                                 |                                    |
| Project Explorer 🛛 🔫 🖗 🛪    | Project Explorer 🛛 👻 🕮 🗙                            | 124   | lain × マ Object List ・ P ×         |
| B D ↑                       | B ⊂ ↑ ↓  -□ ∨ i                                     | m 🗸   🖏 Order 🗸 🗐 Align 🗸 🐰 Group 🗸 🏟 Rotate 🗸 🛱  | Q ∨ 106 % Q Q 3 3 D C   →∞ Bring i |
| > Project                   | > Project   | 0   | 700 80X 🗸 Main 👁                   |
|                             | > 😤 System Architecture                             |   | Canvas OP                          |
| System Architecture         | Screen Design                                       |   | > GroupObject1 @                   |
| Screen Design               | Screens (24)  |   | Switch German CP                   |
| Screens (1)                 | S00001 ; Main (Canvas)                              | Verdichter und Pumpen                             | Switch English                     |
| S00001 : Screen1 [Canvas]   | S00002 : Information [Scroll Canvas]                |   | ) GrounOhiert2 (C                  |
| Contents (0)                | S00010 : Compressor_and_Pumps [Canvas]              | Wärmetauscher und Behälter RI #2 CO Boosteranlage | > GroupObject2 @                   |
| > 📘 Keypad                  | S00011 : Heat_exchanger_and_vessels [Scroll Canva   |   |                                    |
| > 🔳 Scripts                 | S00012 : Motor_and_Solnoid_Valves [Canvas]          | Motor und Magnetventile RI #3 Kaltwassersatz m    | it 3 Verdichtern                   |
| > X Variables               | S00013 : Valves_Filling (Scroll Canvas)             |   |                                    |
| > Alarms/Events             | S00014 : Valves_Filling_2 [Canvas]                  | Ventile 1 RI #4 Direktverdamprur                  | igs Erowarmepumpe                  |
|                             | S00015 : Pipe_components_Filled [Canvas]            | Ventile 2 RI #5 Luft-Wasser Wärr                  | nepumpe                            |
|                             | S00016 : Sensors [Scroll Canvas]                    |   |                                    |
| > Convitu                   | S00017 : AHU_objects [Scroll Canvas]                | Rohrleitungs Komponenten RI #6 Druckerhöhungsa    | nlage                              |
| > Control Security          | S00020 : RI_CO2_Heatpump [Zoom Canvas]              |   |                                    |
| Language Table              | S00021 : RI_Flow_chart_CO2_booster_system (Zoorr    | Sensoren RI #7 Wärmepumpen H                      | draulik                            |
| > D Converters              | S00022 : RI_Flow_chart_Air2Water_chilller_up_to_3_c |   |                                    |
|                             | S00023 : RI_Flow_chart_DX_ground_heat_pump [Ca      |   |                                    |
|                             | S00024 : RI_Flow_chart_Air_2_water_heatpump [Car    | Informatitionen                                   |                                    |
|                             | S00025 : RI_Booster_Pump [Zoom Canvas]              |   |                                    |
|                             | S00026 - RI Flow chart chiller with hotnashvnass &  |   |                                    |
| Tool Chest Project Explorer | Tool Chest Project Explorer                         |   | Properties Object List Events      |

2. Open the downloaded project file.

Click the Content:C00001 from "Contents" and copy the Dialog content using copy icon from the global Toolbar.





3. Open your project file.

Click "Contents" and then click on the paste 💼 icon from the global Toolbar.



4. Select desired content ID and click "OK".

Result: Copied content is successfully pasted in your project.

| New Content         | t ×    | - |  |
|---------------------|--------|---|--|
| Paste-To Content ID | 1 🗘    |   |  |
| ОК                  | Cancel |   |  |

5. Repeat the above step for remaining content.



6. Open the downloaded project file and select the Screen S00001: Main.

|  | HVAC_Symbol01.blu   |                        |
|--|---|------------------------|
|  | ✓ ■ 念 ● 音 □ · · · ▷ · · · · · · · · Deutsch · · State 0 (OFF) · · · · · · · · · · · · · · · · · · |                        |
| Project Explorer 🔹 🕀 🗙                               |   | 1:Main ×               |
|  | Screen V 🖏 Order V 🛋 Align V 🛱 Group V 🕫 Rotate V 🛱   | ⊙ ∨ 106 % € 0          |
| Project  | 0,  | 600 700                |
| P System Architecture                                | •   |                        |
| 🖥 Screen Design                                      |   |                        |
|  | Verdichter und Pumpen RI #1 CO2 Wärme   | pumpe                  |
| 🖹 S00001 : Main [Canvas]                             |   |                        |
| - SUDDOZ - INFORMATION [SCION CARVAS]                | Wärmetauscher und Behälter RI #2 CO Booster   | anlage                 |
| S00010 : Compressor_and_Pumps [Canvas]               |   |                        |
| 🖺 S00011 : Heat_exchanger_and_vessels [Scroll Canvas | Motor und Magnetventile RI #3 Kaltwassers   | atz mit 3 Verdichtern  |
| S00012 : Motor_and_Solnoid_Valves [Canvas]           | OT #4 Direct/turered  |                        |
| 🖹 S00013 : Valves_Filling [Scroll Canvas]            |   | inprungs Erowarmepumpe |
| 🖺 S00014 : Valves_Filling_2 [Canvas]                 | Ventile 2 RI #5 Luft-Wasse  | r Wärmepumpe           |
| S00015 : Pipe_components_Filled [Canvas]             |   |                        |
| 🖹 S00016 : Sensors [Scroll Canvas]                   | Rohrleitungs Komponenten RI #6 Druckerhöh   | ungsanlage             |
| S00017 : AHU_objects [Scroll Canvas]                 |   |                        |
| 🖹 S00020 : RI_CO2_Heatpump [Zoom Canvas]             | Sensoren RI #7 Wärmepum   | pen Hydraulik          |
| S00021 : RI_Flow_chart_CO2_booster_system [Zoom      |   |                        |
| S00022 : RI_Flow_chart_Air2Water_chilller_up_to_3_c  | · · · · · · · · · · · · · · · · · · ·   |                        |
| S00023 : RI_Flow_chart_DX_ground_heat_pump [Can      | Informatitionen   |                        |

 Open your project file, Select the screen that you want to paste it. Click on the screen area and then paste it using the paste icon from the global Toolbar.





- Repeat the above step 6 and 7 for remaining screens.
  Note: You can copy All screens and Paste at a time.
- 9. Open downloaded project file and select "All variables". Select all the displayed variables and click the copy icon from global Toolbar.

| BLUE                            |                                |                     |                          | HVAC_Symbol01.blu |           |  |  |  |  |
|---------------------------------|--------------------------------|---------------------|--------------------------|-------------------|-----------|--|--|--|--|
|                                 |                                |                     | ⊥   ? ∨   A <sup>#</sup> | z V Deutsch       | ×         |  |  |  |  |
| Project Explorer 👻 🕈 💆          |                                |                     |                          |                   |           |  |  |  |  |
| $\oplus$ Folder – $\Box$ $\sim$ | $\oplus$ word $\checkmark$ Eq. | A &                 | F 9 F                    | ♥ Variables       |           |  |  |  |  |
| > 🗅 Project                     | Folder                         | Name                | Data Type                | Source            | Scan Rate |  |  |  |  |
| > 😤 System Architecture         |                                | iManifold_max_bar   | INT                      | Internal          |           |  |  |  |  |
| > 🖻 Screen Design               |                                | iManifold_set_bar   | INT                      | Internal          |           |  |  |  |  |
| > 🔳 Scripts                     |                                | iManifold max scale | INT                      | Internal          |           |  |  |  |  |
| ✓ ☑ Variables                   |                                |                     | INIT                     |                   |           |  |  |  |  |
| All Variables (22)              |                                |                     | INT                      | Internal          |           |  |  |  |  |
| 🗴 Symbol Link                   |                                | fCalculate_bar_d_s  | REAL                     | Internal          |           |  |  |  |  |
| > 🔀 All User Data Types (0)     |                                | iCalculate_bar      | INT                      | Internal          |           |  |  |  |  |
| All Scan Rates (1)              |                                | iCalculate_bar1     | INT                      | Internal          |           |  |  |  |  |
| > 🖬 Alarms/Events               |                                | iTrend_value_1      | INT                      | Internal          |           |  |  |  |  |
| > 🚡 Logging                     |                                | iTrend_value_2      | INT                      | Internal          |           |  |  |  |  |

10. Open your project file and select "All variables". Click on the variable screen and click paste icon from the global Toolbar.

| BLUE                              |                     |  | or routed                |
|-----------------------------------|---------------------|--|--------------------------|
|                                   |                     | $ \blacksquare \lor   \triangleright \lor \checkmark \downarrow   ? \lor  _{A}^{\ddagger}$ | v V                      |
| Project Explorer 🛛 🖛 🕈 🗙          |                     |  | Variables                |
| $\oplus$ Folder – $\Box$ $\vee$ : | ⊕ WORD ∨   Ē,   ∯ € | I 🖻 I 🛱 I 🖓 Variables  |                          |
| > 🗅 Project                       | Folder Name         | Data Type Source   | Scan Rate Device Address |
| > 😤 System Architecture           |                     |  |                          |
| > 🖬 Screen Design                 |                     |  |                          |
| > E Scripts                       |                     |  |                          |
| ∨ 🕱 Variables                     |                     |  |                          |
| All Variables (0)                 |                     |  |                          |
| 🗴 Symbol Link                     |                     | Click  |                          |
| 👌 🔀 All User Data Types (0)       |                     |  |                          |
| All Scan Rates (1)                |                     |  |                          |

Note: You can also create your own variables to bind with Dialog. For more details, refer <u>How to change HAVC Variables.</u>



11. Open the downloaded project file, select "Language Table". Select the displayed Language ID and click the copy icon from the global Toolbar

|                         |       | ⊧<br>18 ≞\ ⋒   11 ∨   ⊳ ∨ .↓.   <b>?</b> ∨   # |
|-------------------------|-------|--|
| Project Explorer - 4 X  |       |  |
| -== × :                 | 🕀 Tab | le 🕀 Text 🚽 Import 🖨 Export 🗔                  |
| > 🗅 Project             | ID    | O 1 Deutsch English_Gothic ∨                   |
| > 🖁 System Architecture | 1     | Filtertrockner                                 |
| > 🖬 Screen Design       | 2     | Geräuschdämnfer                                |
| > 🔳 Scripts             | 2     | Gerddsendampier                                |
| > 👿 Variables           | 3     | Flüssigkeitsfilter                             |
| > 🚺 Alarms/Events       | 4     | Schauglas                                      |
| > 🚡 Logging             | 5     | Flansch  |
| > 🚾 Recipes             | 6     | Schwingungsdämpfer                             |
| > 🛃 Security            | 7     | Niederdruckechalter                            |
| Language Table          | ,     | Nederardickschafter                            |
| All Languages (2 x 120) | 8     | Hochdruckschalter                              |
|                         | 9     | Strömungswächter                               |
| Converters              | 10    | Sensor   |

12. Open your project file, select "All Languages". Click on paste icon from the global Tool.

| BLUE   |                        |               | ****Untitled****       |        |
|--|------------------------|---------------|------------------------|--------|
|  | ~ A <   ]              |               | ? ~   <sub>A</sub> ? ~ | $\vee$ |
| Project Explorer 👻 🕂 🗙                             |                        |               | Logging                | × =    |
| $\bigoplus$ Logging Group $$ – $\square \lor$ $$ : | 🕀 Variables   🔄 Import | Export   🕞    |                        |        |
| > 🗋 Project  | Group Name             | Variable Name | Comment                | Source |
| > 😤 System Architecture                            |                        |               |                        |        |
| > 🖬 Screen Design                                  |                        |               |                        |        |
| > 🖪 Scripts  |                        |               |                        |        |
| > 🔀 Variables                                      |                        |               |                        |        |
| > 🚺 Alarms/Events                                  |                        |               |                        |        |
| Logging  |                        |               |                        |        |
| All Loggings (0)                                   |                        |               |                        |        |



13. Open the downloaded project file, select "User-Defined Converters". Select the displayed converter and click the copy icon from the global Toolbar

| 1      | BLUE                        |                                |          |                |              |  | HVAC_S                  | ymbol01.blu |
|--------|-----------------------------|--------------------------------|----------|----------------|--------------|--|-------------------------|-------------|
| 4      |                             | $\mathbb{B} \times \mathbb{S}$ | $\sim$   |                |              | $\triangleright$ $\checkmark$ $\downarrow$ | ? ~   <sub>A</sub> \$ ~ | Deutsch     |
| Pro    | ject Explorer               | <b>-</b> ₫ ×                   |          |                |              |  | Converters              | × =         |
|        |                             | -¤~ :                          | $\oplus$ | Unit $\vee$ E  | ♥ Converters |  |                         |             |
| 1      | U System Architecture       |                                |          | Name           |              | Type                                       |                         |             |
| >      | 🛅 Screen Design             |                                |          |                |              | 1)   2                                     |                         |             |
| >      | Scripts                     |                                |          | SCALE_MANIFOLD |              | Expression                                 |                         |             |
| >      | 🕱 Variables                 |                                |          | Invert         |              | Range                                      |                         |             |
| >      | Alarms/Events               |                                |          |                |              |  |                         |             |
| >      | 🚡 Logging                   |                                |          |                |              |  |                         |             |
| >      | 🚾 Recipes                   |                                |          |                |              |  |                         |             |
| >      | 🛃 Security                  |                                |          |                |              |  |                         |             |
| >      | 💀 Language Table            |                                |          |                |              |  |                         |             |
| $\sim$ | Converters                  |                                |          |                |              |  |                         |             |
|        | User-Defined Converters (2) |                                |          |                |              |  |                         |             |
| То     | ool Chest Project Explorer  |                                |          |                |              |  |                         |             |

14. Open your project file, select "User-Defined Converters". Click on the Converter screen and click paste icon from the global Toolbar.

| BLUE                        |                              |              | *                           | ***Untitled**** |
|-----------------------------|------------------------------|--------------|-----------------------------|-----------------|
|                             |                              |              | ⊥   ? ∨   A <sup>\$</sup> ∨ | /               |
| Project Explorer 🛛 🔫 🕂 🗙    | _                            |              | Converters                  | × =             |
| -11 ~ :                     | $\oplus$ Unit $\checkmark$ 🛱 | O Converters |                             |                 |
| > 🗅 Project                 | Name                         | Туре         |                             |                 |
| > 😤 System Architecture     |                              |              |                             |                 |
| > 🖬 Screen Design           |                              |              |                             |                 |
| > Scripts                   |                              |              |                             |                 |
| > 🔀 Variables               | /                            | Click        |                             |                 |
| > 🖬 Alarms/Events           |                              |              |                             |                 |
| > 🖬 Logging                 |                              |              |                             |                 |
| > 🚾 Recipes                 |                              |              |                             |                 |
| > 📝 Security                |                              |              |                             |                 |
| > 🖬 Language Table          |                              |              |                             |                 |
| Converters                  |                              |              |                             |                 |
| User-Defined Converters (0) |                              |              |                             |                 |



## How to change HVAC Variables

When you replace default variable with other variable, make sure their value bindings are same as source. They are as below:

| Screen name     | Graphic Object  | Tab/Property        | Variable Value               |  |
|-----------------|-----------------|---------------------|------------------------------|--|
| RI_CO2_Heatpump | pipe6           | Function>Basic      | uiHMI_Status_Warm_Water_Pump |  |
|                 |                 | CurrentValue        |                              |  |
| RI_CO2_Heatpump | pipe15          | Function>Basic      | uiHMI_Status_Warm_Water_Pump |  |
|                 |                 | CurrentValue        |                              |  |
| RI_CO2_Heatpump | pipe18          | Function>Basic      | uiHMI_Status_Warm_Water_Pump |  |
|                 |                 | CurrentValue        |                              |  |
| RI_CO2_Heatpump | Switch_Warm_w   | Function>Basic      | uiHMI_Status_Warm_Water_Pump |  |
|                 | ater_pump       | CurrentValue        |                              |  |
| Content2        | Switch1         | Function>Basic      | uiHMI_vis_PID                |  |
|                 |                 | CurrentValue        |                              |  |
| RI_CO2_Heatpump | ContentDisplay1 | Shape>Size/Location | uiHMI_vis_PID                |  |
|                 |                 | Visiblity           |                              |  |
| RI_CO2_Heatpump | Perc_Pump_KW    | Shape>Size/Location | uiHMI_vis_Temp_water         |  |
|                 |                 | Visiblity           |                              |  |
| RI_CO2_Heatpump | Perc_Pump_W     | Shape>Size/Location | uiHMI_vis_Temp_water         |  |
|                 | W               | Visiblity           |                              |  |
| RI_CO2_Heatpump | Temp_KW_In      | Shape>Size/Location | uiHMI_vis_Temp_water         |  |
|                 |                 | Visiblity           |                              |  |
| RI_CO2_Heatpump | Temp_KW_Out     | Shape>Size/Location | uiHMI_vis_Temp_water         |  |
|                 |                 | Visiblity           |                              |  |
| RI_CO2_Heatpump | Temp_KW_Tank    | Shape>Size/Location | uiHMI_vis_Temp_water         |  |
|                 | _bottom         | Visiblity           |                              |  |
| RI_CO2_Heatpump | Temp_KW_Tank    | Shape>Size/Location | uiHMI_vis_Temp_water         |  |
|                 | _middle         | Visiblity           |                              |  |
| RI_CO2_Heatpump | Temp_KW_Tank    | Shape>Size/Location | uiHMI_vis_Temp_water         |  |
|                 | _top            | Visiblity           |                              |  |
| RI_CO2_Heatpump | Temp_WW_in      | Shape>Size/Location | uiHMI_vis_Temp_water         |  |
|                 |                 | Visiblity           |                              |  |



| RI_CO2_Heatpump               | Temp_WW_Out  | Shape>Size/Location uiHMI_vis_Temp_water     |                          |
|-------------------------------|--------------|--|--------------------------|
|                               |              | Visiblity                                    |                          |
| RI_CO2_Heatpump               | Temp_WW_Tank | Shape>Size/Location                          | uiHMI_vis_Temp_water     |
|                               | _bottom      | Visiblity                                    |                          |
| RI_CO2_Heatpump               | Temp_WW_Tank | Shape>Size/Location                          | uiHMI_vis_Temp_water     |
|                               | _middle      | Visiblity                                    |                          |
| RI_CO2_Heatpump               | Temp_WW_Tank | Shape>Size/Location uiHMI_vis_Temp_water     |                          |
|                               | _Тор         | Visiblity                                    |                          |
| RI_CO2_Heatpump               | Num_HP       | Shape>Size/Location uiHMI_vis_Press_Ref_circ |                          |
|                               |              | Visiblity                                    |                          |
| RI_CO2_Heatpump               | Num_LP       | Shape>Size/Location                          | uiHMI_vis_Press_Ref_circ |
|                               |              | Visiblity                                    |                          |
| RI_CO2_Heatpump               | Perc_Comp    | Shape>Size/Location                          | uiHMI_vis_Press_Ref_circ |
|                               |              | Visiblity                                    |                          |
| RI_CO2_Heatpump               | Perc_EEV     | Shape>Size/Location                          | uiHMI_vis_Press_Ref_circ |
|                               |              | Visiblity                                    |                          |
| RI_CO2_Heatpump               | Temp_circ1   | Shape>Size/Location                          | uiHMI_vis_Temp_Ref_circ  |
|                               |              | Visiblity                                    |                          |
| RI_CO2_Heatpump               | Temp_circ2   | Shape>Size/Location                          | uiHMI_vis_Temp_Ref_circ  |
|                               |              | Visiblity                                    |                          |
| RI_CO2_Heatpump               | Temp_circ3   | Shape>Size/Location uiHMI_vis_Temp_Ref_circ  |                          |
|                               |              | Visiblity                                    |                          |
| RI_CO2_Heatpump               | Temp_circ4   | Shape>Size/Location                          | uiHMI_vis_Temp_Ref_circ  |
|                               |              | Visiblity                                    |                          |
| RI_CO2_Heatpump               | pipe3        | Function>Basic                               | uiHMI_Status_Cold_water  |
|                               |              | CurrentValue                                 |                          |
| RI_CO2_Heatpump               | pipe16       | Function>Basic                               | uiHMI_Status_Cold_water  |
|                               |              | CurrentValue                                 |                          |
| RI_CO2_Heatpump               | pipe17       | Function>Basic                               | uiHMI_Status_Cold_water  |
|                               |              | CurrentValue                                 |                          |
| RI_CO2_Heatpump Switch_Cold_v |              | Function>Basic                               | uiHMI_Status_Cold_water  |
|                               | ter_pump     | CurrentValue                                 |                          |
| RI_CO2_Heatpump Pipe1 Fui     |              | Function>Basic                               | uiHMI_Status_CO2_circuit |
|                               |              | CurrentValue                                 |                          |
| RI_CO2_Heatpump               | Pipe2        | Function>Basic                               | uiHMI_Status_CO2_circuit |
|                               |              | CurrentValue                                 |                          |
|                               | •            | •  |                          |



| RI_CO2_Heatpump  | Pipe4           | Function>Basic                            | uiHMI_Status_CO2_circuit      |  |
|------------------|-----------------|---|-------------------------------|--|
|                  |                 | CurrentValue                              |                               |  |
| RI_CO2_Heatpump  | Pipe5           | Function>Basic                            | uiHMI_Status_CO2_circuit      |  |
|                  |                 | CurrentValue                              |                               |  |
| RI_CO2_Heatpump  | Pipe6           | Function>Basic                            | uiHMI_Status_CO2_circuit      |  |
|                  |                 | CurrentValue                              |                               |  |
| RI_CO2_Heatpump  | Pipe7           | Function>Basic                            | uiHMI_Status_CO2_circuit      |  |
|                  |                 | CurrentValue                              |                               |  |
| RI_CO2_Heatpump  | Pipe8           | Function>Basic                            | uiHMI_Status_CO2_circuit      |  |
|                  |                 | CurrentValue                              |                               |  |
| RI_CO2_Heatpump  | Pipe9           | Function>Basic                            | uiHMI_Status_CO2_circuit      |  |
|                  |                 | CurrentValue                              |                               |  |
| RI_CO2_Heatpump  | Pipe10          | Function>Basic                            | uiHMI_Status_CO2_circuit      |  |
|                  |                 | CurrentValue                              |                               |  |
| RI_CO2_Heatpump  | Switch_CO2_Cir  | Function>Basic                            | uiHMI_Status_CO2_circuit      |  |
|                  | cuit            | CurrentValue                              |                               |  |
| RI_Flow_Chart_he | Switch_domestic | Function>Basic                            | uiHMI_Status_domestic_heating |  |
| ating_circuite   | _heating        | CurrentValue                              |                               |  |
| RI_Flow_Chart_he | Switch_pump_h   | Function>Basic                            | uiHMI_Status_hp_waterpumpe    |  |
| ating_circuite   | eatpump         | CurrentValue                              |                               |  |
| RI_Flow_Chart_he | Switch_Pump_h   | Function>Basic uiHMI_Status_hc_waterpumpe |                               |  |
| ating_circuite   | eating          | CurrentValue                              |                               |  |



Blockly Variable used with related screen. They are as below:

| Screen name                    | Block       | Variable                            |
|--------------------------------|-------------|-------------------------------------|
| RI_CO2_Heatpump                | Variable    | uiHMI_Status_Warm_Water_Pump.Value  |
| Content2                       | Valuechange | uiHMI_vis_PID.Value                 |
| RI_CO2_Heatpump                | Valuechange | uiHMI_vis_PID.Value                 |
| RI_CO2_Heatpump                | Valuechange | uiHMI_vis_Temp_water.Value          |
| RI_CO2_Heatpump                | Valuechange | uiHMI_vis_Temp_water.Value          |
| RI_CO2_Heatpump                | Valuechange | uiHMI_vis_Press_Ref_circ.Value      |
| RI_CO2_Heatpump                | Valuechange | uiHMI_vis_Press_Ref_circ.Value      |
| RI_CO2_Heatpump                | Valuechange | uiHMI_vis_Temp_Ref_circ.Value       |
| RI_CO2_Heatpump                | Valuechange | uiHMI_vis_Temp_Ref_circ.Value       |
| RI_CO2_Heatpump                | if          | uiHMI_Status_Cold_water.Value       |
| RI_CO2_Heatpump                | if          | uiHMI_Status_CO2_circuit.Value      |
| RI_Flow_Chart_heating_circuite | if          | uiHMI_Status_domestic_heating.Value |
| RI_Flow_Chart_heating_circuite | if          | uiHMI_Status_domestic_heating.Value |
| RI_Flow_Chart_heating_circuite | if          | uiHMI_Status_hp_waterpumpe.Value    |
| RI_Flow_Chart_heating_circuite | if          | uiHMI_Status_hp_waterpumpe.Value    |
| RI_Flow_Chart_heating_circuite | if          | uiHMI_Status_hp_waterpumpe.Value    |
| RI_Flow_Chart_heating_circuite | if          | uiHMI_Status_hc_waterpumpe.Value    |
| RI_Flow_Chart_heating_circuite | if          | uiHMI_Status_hc_waterpumpe.Value    |



1. In Project Explorer, select "User-Defined Converters". Then Select SCALE\_MANIFOLD

In Properties, Click to open Expression Editor.

2. In Expression Editor, select the desired variable and its expression and click ok.

