Automatic liquid vending machine:

In this assignment, you will develop a PLC program and an HMI for an automated vending machine that may be used for selling liquids like milk, mineral water, soft drinks, tea/coffee, and the like.

We will assume that the minimum volume that you can buy is **500ml.** Thereafter, you can change the volume in multiples of **100ml** and the maximum volume you can buy is **5.0 litres**.

Inputs:

- **Increase** and **Decrease** momentary contact push buttons to adjust the volume to be purchased in the **Set Mode.**
- A **Litre_mL** push button to adjust the resolution with which the volume can be set. In the 'Litre' position, each press of the **Increase** or the **Decrease** push button changes the volume by one litre. While in the 'mL' position, the volume changes by 100 mL for each press of the **Increase** or the **Decrease** push button.
- **Dispense** - a momentary contact push button, that starts the dispense mode.
- **The Hold** momentary contact push button is used to temporarily stop dispensing the liquid, while in the dispense mode. This is useful if you want to collect the liquid being dispensed in multiple containers.

Outputs:

- A digital indicator to display the set volume of liquid (in litres).
- A second digital indicator to display the volume of the liquid (in litres) to be dispensed, while in the **Dispense** Mode.
- An indicator called "**Limit reached**" lights up for one second whenever the **Increase** push button is pressed when the Set Volume is 5 litres or the **Decrease** push button is pressed when the Set Volume is 500 mL.

Mode for operation:

a. The vending machine is normally in the "**Set mode**" where you can define the amount of liquid that you want to buy. You can set the volume (from 0.5

litre to 5.0 litre, in steps of 0.1 litre) using the **Increase, Decrease** and the **Litre_mL** push buttons. Pressing the **Increase** button when the volume is 5 litres does not affect the volume; it remains at 5 litres. The "**Limit reached**" indicator lights up for one second. Similarly, pressing the decrease button when the volume is 500 mL does not affect the volume and the "**Limit reached**" indicator lights up for one second.

b. After the desired volume has been set, the user presses the **Dispense** push button, which puts the machine in the **Dispense Mode**. In this mode, the machine dispenses the selected volume of liquid. Ideally, a high-accuracy flowmeter measures the dispensed volume. However, since we do not have a flowmeter, in this assignment the dispensed volume is assumed to be proportional to the time interval for which the liquid is dispensed. **We will assume that it takes 400 milliseconds to dispense 100 ml of liquid.**

c. As mentioned earlier, a second digital indicator displays the volume of the liquid that is yet to be dispensed in steps of 0.1 litres. Initially, this is equal to the volume of the liquid that is set, in the Set Mode. Once dispense begins, the indicated volume decreases by 100 mL every 400 milliseconds, until the displayed volume becomes equal to zero, i.e., there is no more liquid to dispense. (In a practical system pushing the dispense button will activate a pump or an electrically operated valve (solenoid valve) causing the desired volume of liquid to be dispensed.)

d. In the Dispense mode, the second indicator that displays the volume of the liquid that is yet to be dispensed has a **green coloured** background that indicates that the **Dispense mode is active**. The background of the digital indicator is **red when the Set or Hold mode is active**.

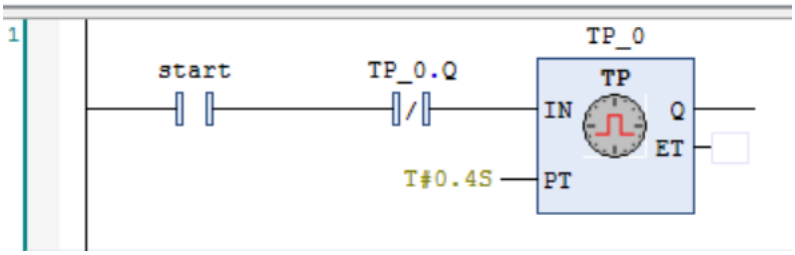
e. The Set Volume defined in the Set Mode (i.e., before the start of the Dispense mode) **cannot be changed** while in the Dispense mode. The **Increase** and **Decrease** and the **Litre_mL** push buttons are inactive (i.e. operating them has no effect) during the Dispense mode.

f. After the Set Volume is dispensed, the machine automatically switches back to the Set Mode and a new Set volume can now be defined.

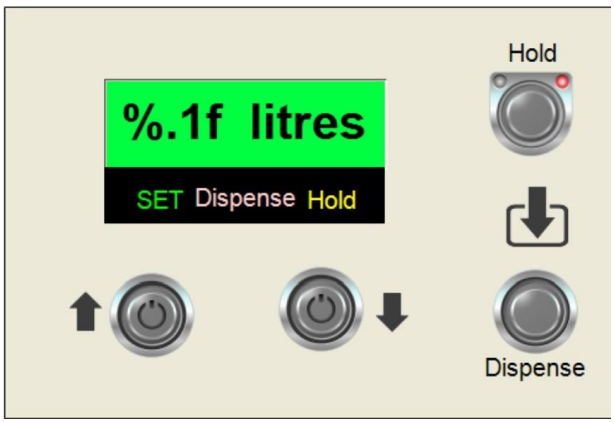
g. A **Hold** push button can be pressed during the dispense mode, which temporarily stops dispensing the liquid until the **Hold** push button is pressed again to resume dispensing the remaining volume of liquid. This may be useful to change containers collecting the liquid being dispensed. The **Hold** push button is inactive during the set mode.

Q: In the diagram shown below:

- What will be the output of the timer when start = true?
- Is the timer output synchronised with the rising edge of start?
- What happens if start = false?



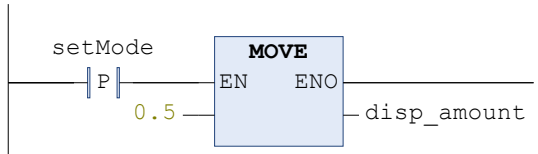
The design of the HMI is left to the creative genius in you. The various modes of the machine such as SET, Dispense, HOLD, etc. should be indicated as digital readouts and not as indicators. You can do this, for example by writing the text "SET" using Visualization Toolbox > Common Controls > Label and assigning a suitable variable to its attribute Properties > State Variables > Invisible, so that the label "SET" is visible only when relevant. Also, ensure that the function of all push buttons and switches used is labelled, and nothing is left to the imagination.

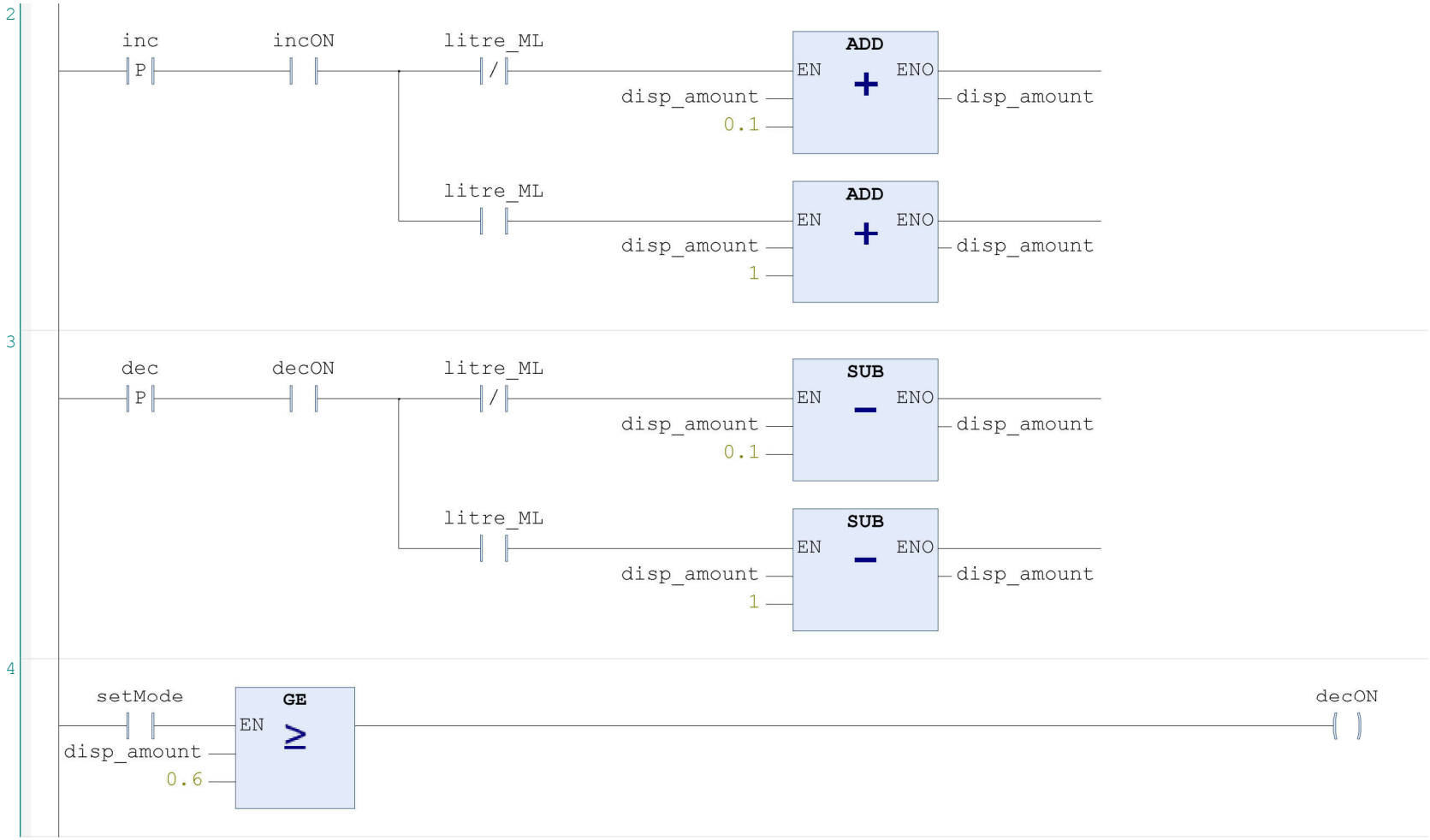


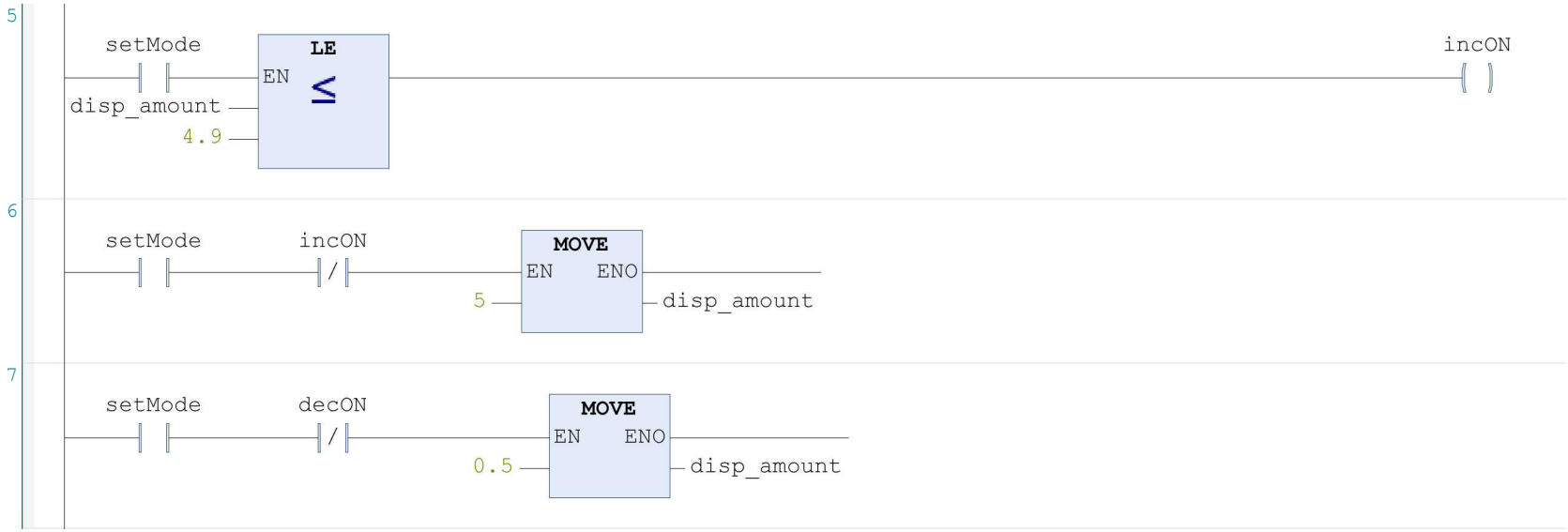
POU: Counting

```
1   FUNCTION_BLOCK  Counting
2   VAR_INPUT
3       setMode :  BOOL ;
4       litre_ML :  BOOL ;
5       dec :  BOOL ;
6       inc :  BOOL ;
7   END_VAR
8   VAR_OUTPUT
9       disp_amount :  REAL ;
10  END_VAR
11  VAR
12      decON :  BOOL ;
13      incON :  BOOL ;
14  END_VAR
15
```

1



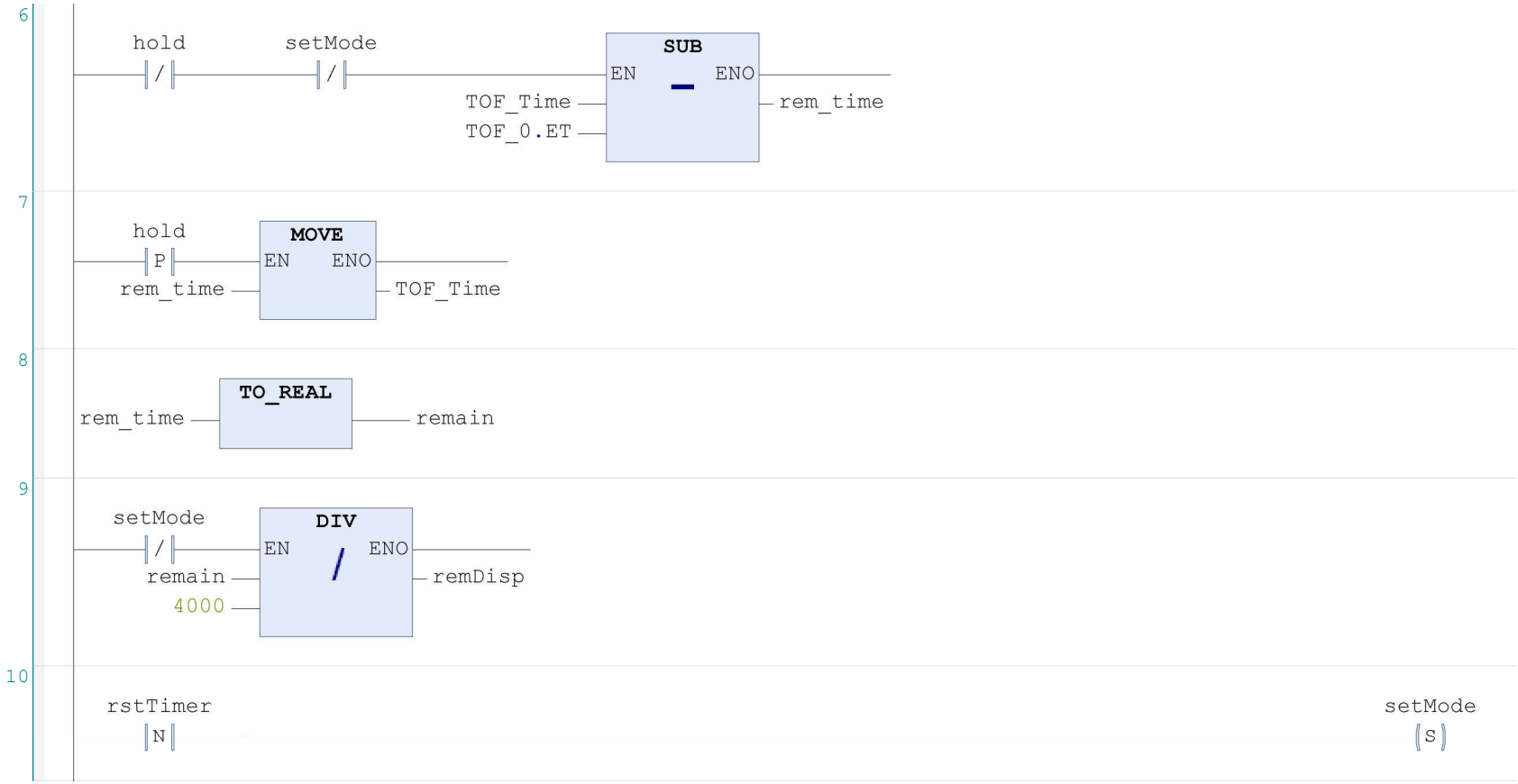

2
inc
P
incON
litre_ML
/
ADD
EN
ENO
+
disp_amount
0.1
disp_amount
litre_ML
ADD
EN
ENO
+
disp_amount
1
disp_amount
3
dec
P
decON
litre_ML
/
SUB
EN
ENO
−
disp_amount
0.1
disp_amount
litre_ML
SUB
EN
ENO
−
disp_amount
1
disp_amount
4
setMode
GE
EN
≥
disp_amount
0.6
decON


5
setMode
disp_amount
4.9
LE
EN
≤
incON
6
setMode
incON
/
MOVE
EN
ENO
5
disp_amount
7
setMode
decON
/
MOVE
EN
ENO
0.5
disp_amount

POU: Dispensing

```
1   FUNCTION_BLOCK Dispensing
2   VAR_OUTPUT
3       setMode : BOOL ;
4   END_VAR
5   VAR_INPUT
6       disp_amount : REAL ;
7   END_VAR
8   VAR
9       time_amount : REAL ;
10      TOF_Time : TIME ;
11      rem_time : TIME ;
12  END_VAR
13  VAR_INPUT
14      dispense : BOOL ;
15      hold : BOOL ;
16  END_VAR
17  VAR
18      TOF_Time1 : TIME ;
19      TOF_0 : TOF ;
20      startTimer : BOOL ;
21      time_remain : TIME ;
22      remain : REAL ;
23  END_VAR
24  VAR_OUTPUT
25      remDisp : REAL ;
26  END_VAR
27  VAR
28      rstTimer : BOOL ;
29      set : BOOL ;
30  END_VAR
31  VAR_OUTPUT
32      green : BOOL ;
33  END_VAR
34
```

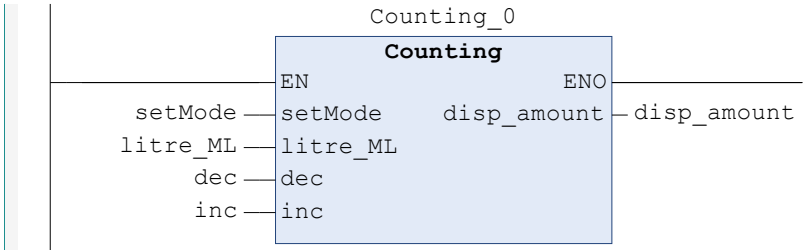
1
setMode
MUL
EN
ENO
disp_amount
4000
time_amount
2
TO_TIME
time_amount
TOF_Time1
3
setMode
MOVE
EN
ENO
TOF_Time1
TOF_Time
4
setMode
N
startTimer
hold
N
setMode
/
5
TOF_0
hold
/
TOF
EN
ENO
startTimer
IN
Q
rstTimer
TOF_Time
PT
ET

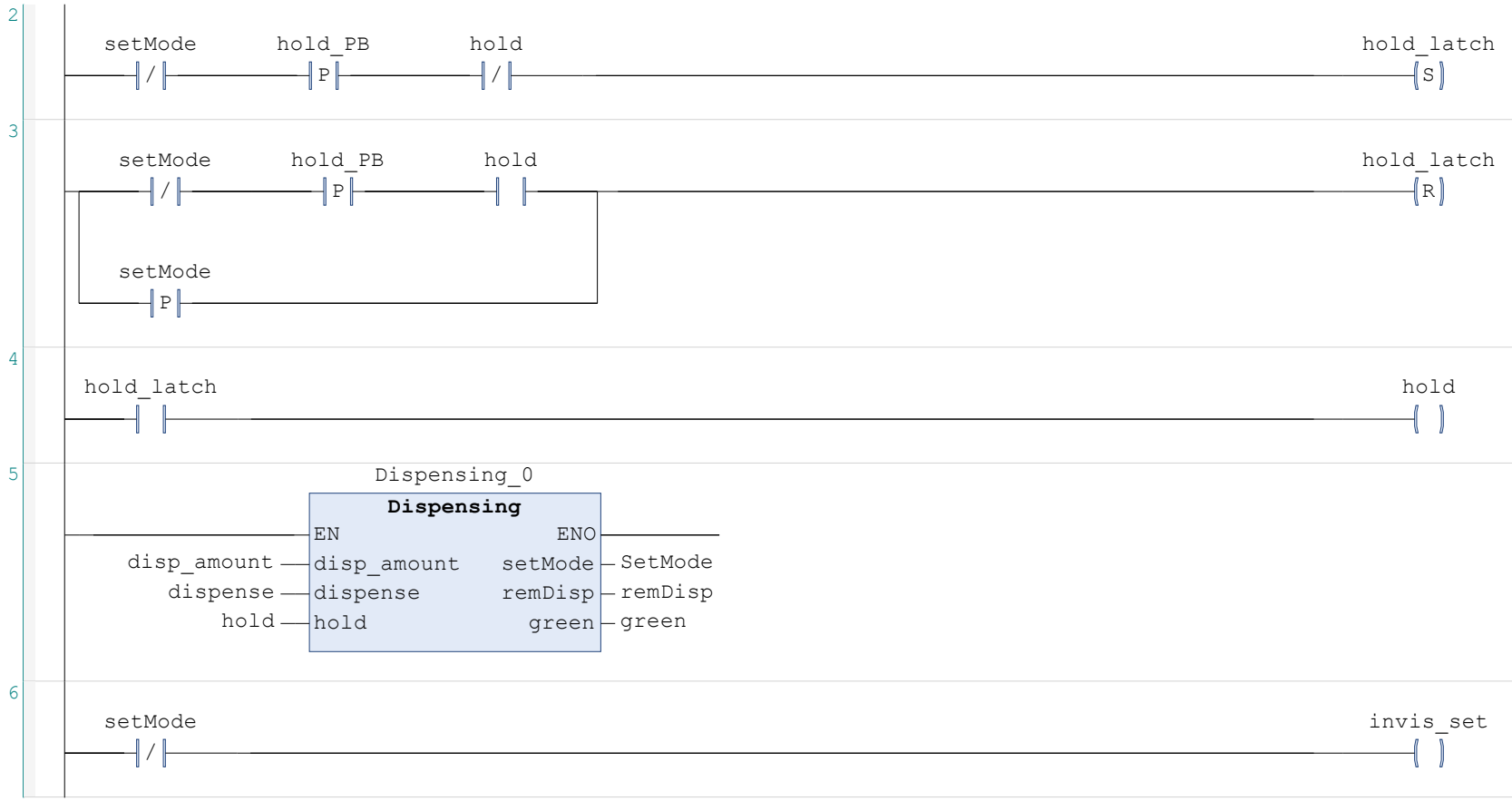

6
hold
/
setMode
/
SUB
EN
ENO
TOF_Time
TOF_0.ET
rem_time
7
hold
P
MOVE
EN
ENO
rem_time
TOF_Time
8
TO_REAL
rem_time
remain
9
setMode
/
DIV
EN
ENO
/
remain
4000
remDisp
10
rstTimer
N
setMode
S

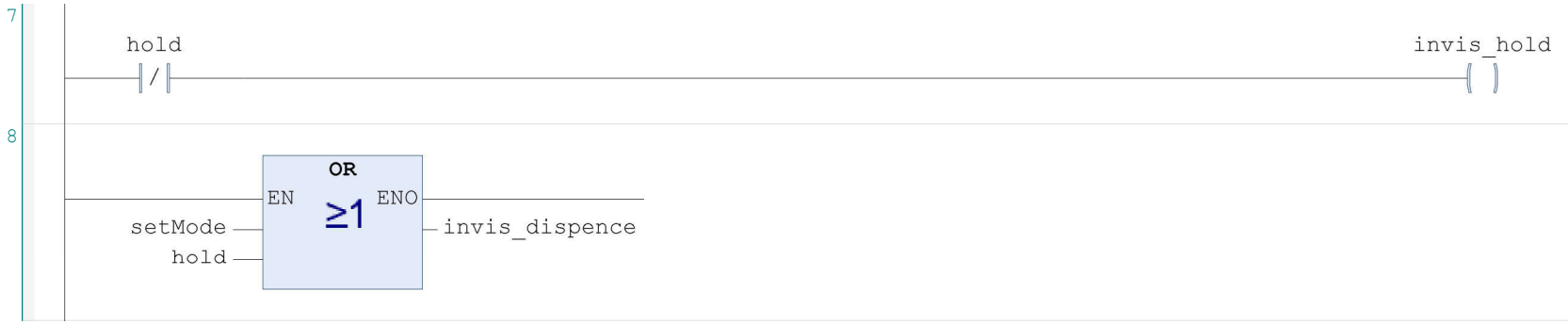
11
dispense
hold
setMode
R
12
setMode
P
set
S
13
set
setMode
S
14
hold
setMode
green

POU: PLC_PRG

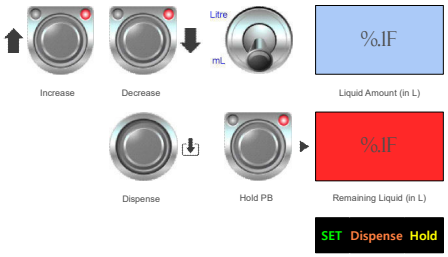
```
1   PROGRAM PLC_PRG
2   VAR
3       Counting_0 : Counting ;
4       setMode : BOOL ;
5       litre_ML : BOOL ;
6       dec : BOOL ;
7       inc : BOOL ;
8       hold_PB : BOOL ;
9       hold : BOOL ;
10      hold_latch : BOOL ;
11      Dispensing_0 : Dispensing ;
12      dispense : BOOL ;
13      remDisp : REAL ;
14      green : BOOL ;
15      disp_amount : REAL ;
16      invis_dispence : BOOL ;
17      invis_hold : BOOL ;
18      invis_set : BOOL ;
19  END_VAR
20
```




2
setMode
hold_PB
hold
hold_latch
S
3
setMode
hold_PB
hold
hold_latch
R
setMode
P
4
hold_latch
hold
5
Dispensing_0
Dispensing
EN
ENO
disp_amount
disp_amount
setMode
SetMode
dispense
dispense
remDisp
remDisp
hold
hold
green
green
6
setMode
invis_set


7
hold
/
invis_hold
8
OR
EN
≥1
ENO
setMode
hold
invis_dispence

Visualization: Visualization



General
  Visualization size algorithm version: Respecting scrollbar location
Background
  Use background color: False
  Background color: 16777215
Interface
  VAR_IN_OUT

  END_VAR
Visualization Element List
  Push Switch LED Id: 1
    Element name: GenElemInst_1
    Type of element: Push Switch LED
    Tab Order: default
    Static optimized: False
    Position
      X: 61
      Y: 43
      Width: 100
      Height: 92
    Variable: PLC_PRG.inc
    Image settings
      Transparent: False

Transparent color: Black
Isotropic type: Isotropic
Horizontal alignment: Left
Vertical alignment: Top
Element behavior: Image tapper
Tap FALSE: False
Center
X: 111
Y: 89
Animation duration: 0
Input configuration
OnValueChanged: Configure...
Background
Image: Gray
Push Switch LED Id: 3
Element name: GenElemInst_2
Type of element: Push Switch LED
Tab Order: default
Static optimized: False
Position
X: 171
Y: 43
Width: 100
Height: 92
Variable: PLC_PRG.dec
Image settings
Transparent: False
Transparent color: Black
Isotropic type: Isotropic
Horizontal alignment: Left
Vertical alignment: Top
Element behavior: Image tapper
Tap FALSE: False

Center
X: 221
Y: 89
Animation duration: 0
Input configuration
OnValueChanged: Configure...
Background
Image: Gray
Label Id: 5
Element name: GenElemInst_3
Type of element: Label
Tab Order: default
Static optimized: True
Text ID: 953
Texts
Text: Increase
Position
X: 61
Y: 145
Width: 83
Height: 30
Text properties
Horizontal alignment: Centered
Vertical alignment: Centered
Text format: Default
Font: Arial;12;Regular;Font-Default-Color, Color [A=255, R=0, G=0, B=0]
Font color
Transparency: 255
Center
X: 102
Y: 160
Animation duration: 0
Label Id: 7

Element name: GenElemInst_4
Type of element: Label
Tab Order: default
Static optimized: True
Text ID: 555
Texts
Text: Decrease
Position
X: 171
Y: 145
Width: 85
Height: 30
Text properties
Horizontal alignment: Centered
Vertical alignment: Centered
Text format: Default
Font: Arial;12;Regular;Font-Default-Color, Color [A=255, R=0, G=0, B=0]
Font color
Transparency: 255
Center
X: 213
Y: 160
Animation duration: 0
Label Id: 9
Element name: GenElemInst_5
Type of element: Label
Tab Order: default
Static optimized: True
Text ID: 573
Texts
Text: Hold PB
Position
X: 325

Y: 285
Width: 84
Height: 30
Text properties
Horizontal alignment: Centered
Vertical alignment: Centered
Text format: Default
Font: Arial;12;Regular;Font-Default-Color, Color [A=255, R=0, G=0, B=0]
Font color
Transparency: 255
Center
X: 367
Y: 300
Animation duration: 0
Dip Switch Id: 11
Element name: GenElemInst_6
Type of element: Dip Switch
Tab Order: default
Static optimized: False
Position
X: 325
Y: 43
Width: 100
Height: 91
Variable: PLC_PRG.litre_ML
Image settings
Transparent: False
Transparent color: Black
Isotropic type: Isotropic
Horizontal alignment: Left
Vertical alignment: Top
Element behavior: Image toggler
Tap FALSE: False

Center
X: 375
Y: 88
Animation duration: 0
Input configuration
OnValueChanged: Configure...
Background
Image: Gray
Label Id: 13
Element name: GenElemInst_7
Type of element: Label
Tab Order: default
Static optimized: True
Text ID: 135
Texts
Text: Litre
Position
X: 299
Y: 40
Width: 36
Height: 30
Text properties
Horizontal alignment: Centered
Vertical alignment: Centered
Text format: Default
Font: Arial;12;Regular;Blue, Color [A=255, R=0, G=0, B=255]
Font color
Transparency: 255
Center
X: 317
Y: 55
Animation duration: 0
Push Switch Id: 15

Element name: GenElemInst_8
Type of element: Push Switch
Tab Order: default
Static optimized: False
Position
X: 171
Y: 185
Width: 100
Height: 91
Variable: PLC_PRG.dispense
Image settings
Transparent: False
Transparent color: Black
Isotropic type: Isotropic
Horizontal alignment: Left
Vertical alignment: Top
Element behavior: Image tapper
Tap FALSE: False
Center
X: 221
Y: 230
Animation duration: 0
Input configuration
OnValueChanged: Configure...
Background
Image: Gray
Label Id: 17
Element name: GenElemInst_9
Type of element: Label
Tab Order: default
Static optimized: True
Text ID: 547
Texts

Text: Dispense
Position
X: 171
Y: 286
Width: 85
Height: 30
Text properties
Horizontal alignment: Centered
Vertical alignment: Centered
Text format: Default
Font: Arial;12;Regular;Font-Default-Color, Color [A=255, R=0, G=0, B=0]
Font color
Transparency: 255
Center
X: 213
Y: 301
Animation duration: 0
Text Field Id: 19
Element name: GenElemInst_10
Type of element: Text Field
Tab Order: default
Static optimized: False
Text ID: 454
Position
X: 445
Y: 42
Width: 170
Height: 92
Colors
Normal state
Frame color
Transparency: 255
Fill color

```
      Transparency: 255
  Alarm state
    Frame color
      Transparency: 255
    Fill color
      Transparency: 255
Element look
  Line width: 1
  Fill attributes: Filled
  Line style: Solid
Shadow type: From style
Texts
  Text: %.1f
Text properties
  Horizontal alignment: Centered
  Vertical alignment: Centered
  Text format: Default
  Font: Felix Titling;27;Regular;Font-Default-Color, Color [A=255, R=77, G=77, B=77]
  Font color
    Transparency: 255
Text variables
  Text variable: PLC_PRG.disp_amount
Font variables
  Size: , <pt>
Color variables
  Toggle color: <toggle/tap variable>
Center
  X: 530
  Y: 88
Animation duration: 0
Input configuration
  OnDialogClosed: Configure...
  OnMouseClick: Configure...
```

OnMouseDown: Configure...
OnMouseEnter: Configure...
OnMouseLeave: Configure...
OnMouseMove: Configure...
OnMouseUp: Configure...
OnValueChanged: Configure...
Toggle
Toggle on up if captured: False
Tap
Tap FALSE: False
Tap on enter if captured: False
Text Field Id: 21
Element name: GenElemInst_11
Type of element: Text Field
Tab Order: default
Static optimized: False
Text ID: 454
Position
X: 445
Y: 184
Width: 170
Height: 91
Colors
Normal state
Frame color
Transparency: 255
Fill color
Transparency: 255
Alarm state
Frame color
Transparency: 255
Fill color
Transparency: 255

Element look
  Line width: 1
  Fill attributes: Filled
  Line style: Solid
Shadow type: From style
Texts
  Text: %.1f
Text properties
  Horizontal alignment: Centered
  Vertical alignment: Centered
  Text format: Default
  Font: Felix Titling;27;Regular;Font-Default-Color, Color [A=255, R=77, G=77, B=77]
  Font color
    Transparency: 255
Text variables
  Text variable: PLC_PRG.remDisp
Font variables
  Size: , <pt>
Color variables
  Toggle color: PLC_PRG.green
Center
  X: 530
  Y: 229
Animation duration: 0
Input configuration
  OnDialogClosed: Configure...
  OnMouseClick: Configure...
  OnMouseDown: Configure...
  OnMouseEnter: Configure...
  OnMouseLeave: Configure...
  OnMouseMove: Configure...
  OnMouseUp: Configure...
  OnValueChanged: Configure...

Toggle
Toggle on up if captured: False
Tap
Tap FALSE: False
Tap on enter if captured: False
Label Id: 23
Element name: GenElemInst_12
Type of element: Label
Tab Order: default
Static optimized: True
Text ID: 629
Texts
Text: Liquid Amount (in L)
Position
X: 445
Y: 144
Width: 170
Height: 30
Text properties
Horizontal alignment: Centered
Vertical alignment: Centered
Text format: Default
Font: Arial;12;Regular;Font-Default-Color, Color [A=255, R=0, G=0, B=0]
Font color
Transparency: 255
Center
X: 530
Y: 159
Animation duration: 0
Label Id: 25
Element name: GenElemInst_13
Type of element: Label
Tab Order: default

Static optimized: True
Text ID: 208
Texts
Text: Remaining Liquid (in L)
Position
X: 445
Y: 285
Width: 170
Height: 30
Text properties
Horizontal alignment: Centered
Vertical alignment: Centered
Text format: Default
Font: Arial;12;Regular;Font-Default-Color, Color [A=255, R=0, G=0, B=0]
Font color
Transparency: 255
Center
X: 530
Y: 300
Animation duration: 0
Push Switch LED Id: 27
Element name: GenElemInst_14
Type of element: Push Switch LED
Tab Order: default
Static optimized: False
Position
X: 325
Y: 184
Width: 100
Height: 91
Variable: PLC_PRG.hold_PB
Image settings
Transparent: False

Transparent color: Black
Isotropic type: Isotropic
Horizontal alignment: Left
Vertical alignment: Top
Element behavior: Image tapper
Tap FALSE: False
Center
X: 375
Y: 229
Animation duration: 0
Input configuration
OnValueChanged: Configure...
Background
Image: Gray
Label Id: 64
Element name: GenElemInst_48
Type of element: Label
Tab Order: default
Static optimized: True
Text ID: 812
Texts
Text: mL
Position
X: 299
Y: 101
Width: 36
Height: 30
Text properties
Horizontal alignment: Centered
Vertical alignment: Centered
Text format: Default
Font: Arial;12;Regular;Blue, Color [A=255, R=0, G=0, B=255]
Font color

Transparency: 255
Center
X: 317
Y: 116
Animation duration: 0
Image Id: 68
Element name: GenElemInst_51
Type of element: Image
Tab Order: default
Static optimized: True
Static ID: VisuSymbols.Symbols.ArrowBoldUp
Show frame: False
Clipping: False
Transparent: False
Transparent color: Black
Scaling type: Anisotropic
Horizontal alignment: Left
Vertical alignment: Top
Position
X: 27
Y: 73
Width: 32
Height: 32
Angle: 0
Center
X: 43
Y: 89
Colors
Color
Transparency: 255
Alarm color
Transparency: 255
Appearance

Line width: 1
Line style: Solid
Text properties
Horizontal alignment: Centered
Vertical alignment: Centered
Text format: Default
Font: Arial;12;Regular;Font-Default-Color, Color [A=255, R=0, G=0, B=0]
Font color
Transparency: 255
Font variables
Size: , <pt>
Animation duration: 0
Input configuration
OnDialogClosed: Configure...
OnMouseClick: Configure...
OnMouseDown: Configure...
OnMouseEnter: Configure...
OnMouseLeave: Configure...
OnMouseMove: Configure...
OnMouseUp: Configure...
OnValueChanged: Configure...
Image Id: 70
Element name: GenElemInst_53
Type of element: Image
Tab Order: default
Static optimized: True
Static ID: VisuSymbols.Symbols.ArrowBoldDown
Show frame: False
Clipping: False
Transparent: False
Transparent color: Black
Scaling type: Anisotropic
Horizontal alignment: Left

Vertical alignment: Top
Position
  X: 263
  Y: 73
  Width: 32
  Height: 32
  Angle: 0
Center
  X: 279
  Y: 89
Colors
  Color
    Transparency: 255
  Alarm color
    Transparency: 255
Appearance
  Line width: 1
  Line style: Solid
Text properties
  Horizontal alignment: Centered
  Vertical alignment: Centered
  Text format: Default
  Font: Arial;12;Regular;Font-Default-Color, Color [A=255, R=0, G=0, B=0]
  Font color
    Transparency: 255
Font variables
  Size: , <pt>
Animation duration: 0
Input configuration
  OnDialogClosed: Configure...
  OnMouseClick: Configure...
  OnMouseDown: Configure...
  OnMouseEnter: Configure...

OnMouseLeave: Configure...
OnMouseMove: Configure...
OnMouseUp: Configure...
OnValueChanged: Configure...
Image Id: 72
Element name: GenElemInst_55
Type of element: Image
Tab Order: default
Static optimized: True
Static ID: VisuSymbols.Symbols.Download
Show frame: False
Clipping: False
Transparent: False
Transparent color: Black
Scaling type: Anisotropic
Horizontal alignment: Left
Vertical alignment: Top
Position
X: 263
Y: 214
Width: 32
Height: 32
Angle: 0
Center
X: 279
Y: 230
Colors
Color
Transparency: 255
Alarm color
Transparency: 255
Appearance
Line width: 1

Line style: Solid
Text properties
Horizontal alignment: Centered
Vertical alignment: Centered
Text format: Default
Font: Arial;12;Regular;Font-Default-Color, Color [A=255, R=0, G=0, B=0]
Font color
Transparency: 255
Font variables
Size: , <pt>
Animation duration: 0
Input configuration
OnDialogClosed: Configure...
OnMouseClick: Configure...
OnMouseDown: Configure...
OnMouseEnter: Configure...
OnMouseLeave: Configure...
OnMouseMove: Configure...
OnMouseUp: Configure...
OnValueChanged: Configure...
Image Id: 74
Element name: GenElemInst_57
Type of element: Image
Tab Order: default
Static optimized: True
Static ID: VisuSymbols.Symbols.Play
Show frame: False
Clipping: False
Transparent: False
Transparent color: Black
Scaling type: Anisotropic
Horizontal alignment: Left
Vertical alignment: Top

Position
  X: 414
  Y: 213
  Width: 32
  Height: 32
  Angle: 0
Center
  X: 430
  Y: 229
Colors
  Color
    Transparency: 255
  Alarm color
    Transparency: 255
Appearance
  Line width: 1
  Line style: Solid
Text properties
  Horizontal alignment: Centered
  Vertical alignment: Centered
  Text format: Default
  Font: Arial;12;Regular;Font-Default-Color, Color [A=255, R=0, G=0, B=0]
  Font color
    Transparency: 255
Font variables
  Size: , <pt>
Animation duration: 0
Input configuration
  OnDialogClosed: Configure...
  OnMouseClick: Configure...
  OnMouseDown: Configure...
  OnMouseEnter: Configure...
  OnMouseLeave: Configure...

OnMouseMove: Configure...
OnMouseUp: Configure...
OnValueChanged: Configure...
Text Field Id: 80
Element name: GenElemInst_60
Type of element: Text Field
Tab Order: default
Static optimized: False
Position
X: 445
Y: 325
Width: 170
Height: 46
Colors
Normal state
Frame color
Transparency: 255
Fill color
Transparency: 255
Alarm state
Frame color
Transparency: 255
Fill color
Transparency: 255
Element look
Line width: 1
Fill attributes: Filled
Line style: Solid
Shadow type: From style
Text properties
Horizontal alignment: Centered
Vertical alignment: Centered
Text format: Default

Font: Arial;12;Regular;Font-Default-Color, Color [A=255, R=0, G=0, B=0]
Font color
Transparency: 255
Font variables
Size: , <pt>
Color variables
Toggle color: <toggle/tap variable>
Center
X: 530
Y: 348
Animation duration: 0
Input configuration
OnDialogClosed: Configure...
OnMouseClick: Configure...
OnMouseDown: Configure...
OnMouseEnter: Configure...
OnMouseLeave: Configure...
OnMouseMove: Configure...
OnMouseUp: Configure...
OnValueChanged: Configure...
Toggle
Toggle on up if captured: False
Tap
Tap FALSE: False
Tap on enter if captured: False
Text Field Id: 82
Element name: GenElemInst_62
Type of element: Text Field
Tab Order: default
Static optimized: False
Text ID: 547
Position
X: 492

Y: 325
Width: 71
Height: 46
Colors
Normal state
Frame color
Transparency: 255
Fill color
Transparency: 255
Alarm state
Frame color
Transparency: 255
Fill color
Transparency: 255
Element look
Line width: 1
Fill attributes: Filled
Line style: Solid
Shadow type: From style
Texts
Text: Dispense
Text properties
Horizontal alignment: Centered
Vertical alignment: Centered
Text format: Default
Font: Malgun Gothic;16;Bold;Color [A=255, R=255, G=128, B=64]
Font color
Transparency: 255
Font variables
Size: , <pt>
Color variables
Toggle color: <toggle/tap variable>
State variables

Invisible: PLC_PRG.invis_dispence
Center
X: 527
Y: 348
Animation duration: 0
Input configuration
OnDialogClosed: Configure...
OnMouseClick: Configure...
OnMouseDown: Configure...
OnMouseEnter: Configure...
OnMouseLeave: Configure...
OnMouseMove: Configure...
OnMouseUp: Configure...
OnValueChanged: Configure...
Toggle
Toggle on up if captured: False
Tap
Tap FALSE: False
Tap on enter if captured: False
Text Field Id: 84
Element name: GenElemInst_63
Type of element: Text Field
Tab Order: default
Static optimized: False
Text ID: 844
Position
X: 564
Y: 325
Width: 51
Height: 46
Colors
Normal state
Frame color

```
      Transparency: 255
    Fill color
      Transparency: 255
  Alarm state
    Frame color
      Transparency: 255
    Fill color
      Transparency: 255
Element look
  Line width: 1
  Fill attributes: Filled
  Line style: Solid
Shadow type: From style
Texts
  Text: Hold
Text properties
  Horizontal alignment: Centered
  Vertical alignment: Centered
  Text format: Default
  Font: Malgun Gothic;16;Bold;Color [A=255, R=255, G=255, B=0]
  Font color
    Transparency: 255
Font variables
  Size: , <pt>
Color variables
  Toggle color: <toggle/tap variable>
State variables
  Invisible: PLC_PRG.invis_hold
Center
  X: 589
  Y: 348
Animation duration: 0
Input configuration
```

OnDialogClosed: Configure...
OnMouseClick: Configure...
OnMouseDown: Configure...
OnMouseEnter: Configure...
OnMouseLeave: Configure...
OnMouseMove: Configure...
OnMouseUp: Configure...
OnValueChanged: Configure...
Toggle
Toggle on up if captured: False
Tap
Tap FALSE: False
Tap on enter if captured: False
Text Field Id: 86
Element name: GenElemInst_64
Type of element: Text Field
Tab Order: default
Static optimized: False
Text ID: 158
Position
X: 445
Y: 325
Width: 45
Height: 46
Colors
Normal state
Frame color
Transparency: 255
Fill color
Transparency: 255
Alarm state
Frame color
Transparency: 255

Fill color
Transparency: 255
Element look
Line width: 1
Fill attributes: Filled
Line style: Solid
Shadow type: From style
Texts
Text: SET
Text properties
Horizontal alignment: Centered
Vertical alignment: Centered
Text format: Default
Font: Malgun Gothic;16;Bold;Color [A=255, R=0, G=255, B=0]
Font color
Transparency: 255
Font variables
Size: , <pt>
Color variables
Toggle color: <toggle/tap variable>
State variables
Invisible: PLC_PRG.invis_set
Center
X: 467
Y: 348
Animation duration: 0
Input configuration
OnDialogClosed: Configure...
OnMouseClick: Configure...
OnMouseDown: Configure...
OnMouseEnter: Configure...
OnMouseLeave: Configure...
OnMouseMove: Configure...

OnMouseUp: Configure...
OnValueChanged: Configure...
Toggle
  Toggle on up if captured: False
Tap
  Tap FALSE: False
  Tap on enter if captured: False