

**INDUSTRIAL AUTOMATION**

Interactive Graphical SCADA System

**INSIGHT AND OVERVIEW**



# IGSS Online Training

## Exercise 8: Creating Templates



## Exercise: Create Templates and Template Based Objects

- Purpose**
- Learn how to create templates and create objects with a template.
  - Understand the benefits of using templates.

**Duration** Max. 45 minutes.

**Task 1: Create an analog template** We will create an analog template to be used later when we create level gauges.

*TIP:* Create the templates in the **Global** area to make them globally available and always name your templates with CAPITAL LETTERS to be easily identified when determining object characteristics.

Step	Action
1.	Create an analog template called <b>LEVEL</b> . (Go <b>Template</b> → <b>Create...</b> ) with the following properties:

<i>Tab Name</i>	<i>Setting</i>	<i>Input Parameters</i>
<b>ANALOG</b>	<b>Description</b>	Level gauge
	<b>Max. and Min. (range)</b>	Max. =10.00 and Min.. = 0.00
	<b>No. of decimals</b>	2
	<b>Unit</b>	m=meter (Note: If you didn't do the Optional Task exercise on page 28, skip this setting.)
	<b>High Alarm (HA)</b>	9.00
	<b>Actual Value</b>	5.00

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<b>EDIT MAPPING</b>	<b>Alarm Details</b>	First, set <b>i/o mode</b> to <b>local</b> for <b>High Alarm</b> , then create a new alarm text for HA: "High alarm level exceeded", priority 10, alarm color must be red and blinking enabled, operator instructions: "Take corrective action".
	<b>PLC address</b>	Set <b>i/o mode</b> to <b>in</b> for <b>Actual Value</b> . DataGroup = 21, Word Offset = 14, Bit Offset =0, Ext. Type = FP16S.
<b>DATA MANAGEMENT</b>	<b>Scan interval</b>	5000 msec.
	<b>Logging</b>	> 2%
	<b>Base interval</b>	20 min.
<b>DATA MANAGEMENT</b>	<b>Data Reduction</b>	Average, Min. and Max.
	<b>Transfer to History</b>	Reduced value
<b>SYMBOL DEFINITION</b>	<b>Symbol</b>	Do not change any settings here. Keep the default as we'll be using other settings later.

**Task 2:**  
**Create a digital template**

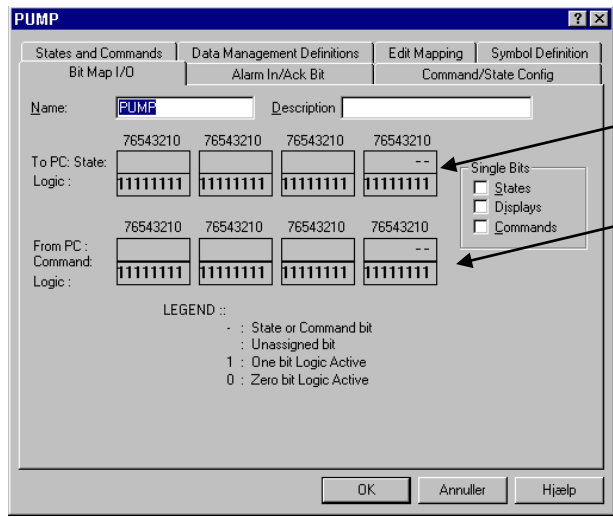
We will create a digital template that we will be using to create a number of pumps later on. Again, remember to create it in the **Global** area and name it with CAPITALS.

**Step    Action**

1. Create a new digital template called **PUMP** with the following properties:

<b>Tab Name</b>	<b>Setting</b>	<b>Input Parameters</b>
<b>BIT MAP I/O</b>	<b>Description</b>	4-state pump

	<p><b>To PC: State:</b></p> <p><b>From PC: Command</b></p>	<p>Click once below bits <b>0</b> and <b>1</b> to enable them as state bits (a dash "-" appears).</p> <p>Click once below bits <b>0</b> and <b>1</b> to enable them as command bits (a dash "-" appears).</p>
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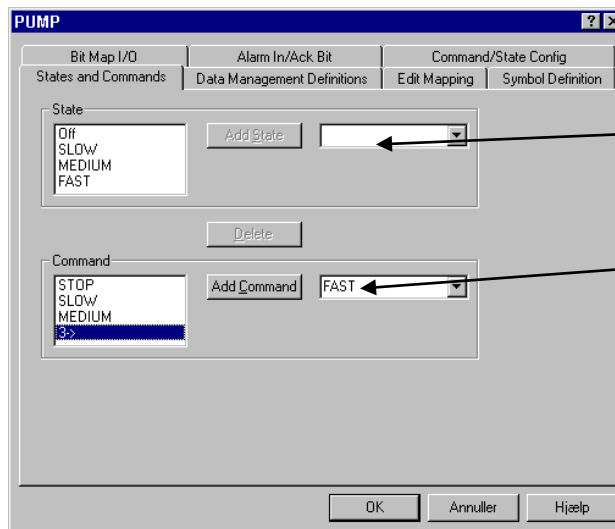
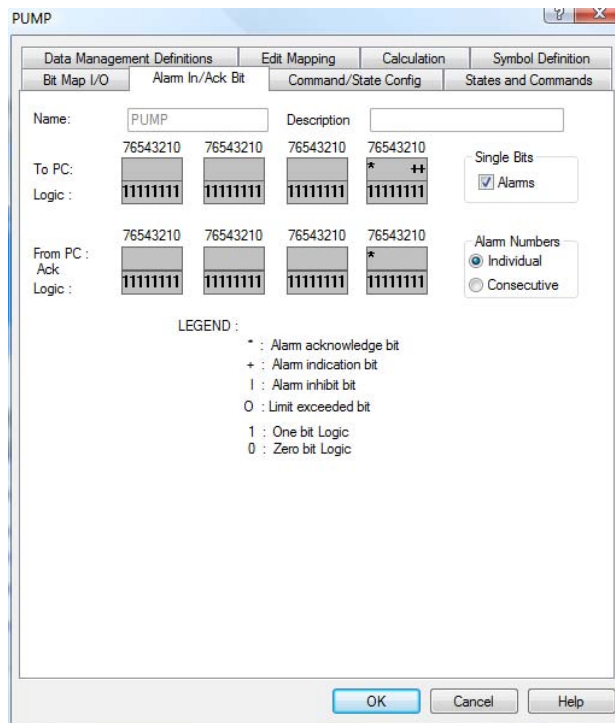


Set the State bits going from the PLC to the PC

and

the Command bits going from the PC to the PLC

<p><b>ALARM IN/ACK BIT</b></p>	<p><b>To PC:</b></p> <p><b>From PC: Ack</b></p> <p><b>Single Bits</b></p>	<p>Click once below bit <b>0</b> to activate it as an alarm indication bit to PC (a plus sign "+" appears).</p> <p>Click once below bit <b>1</b> to activate it also as an alarm indication bit.</p> <p>Click twice below bit <b>7</b> as alarm acknowledgement bit from the PLC to the PC (an asterisk "*" appears).</p> <p>Click once below bit <b>7</b> to enable it as alarm acknowledgement bit from the PC (an asterisk "*" appears).</p> <p>Select the <b>Alarms</b> check box. If you do not select this check box, the two alarms cannot exist simultaneously.</p>
<p><b>STATES and COMMANDS</b></p>	<p><b>State Command</b></p>	<p>Off, slow, medium and fast</p> <p>Stop, slow, medium and fast</p>




Enter names for the four states

and

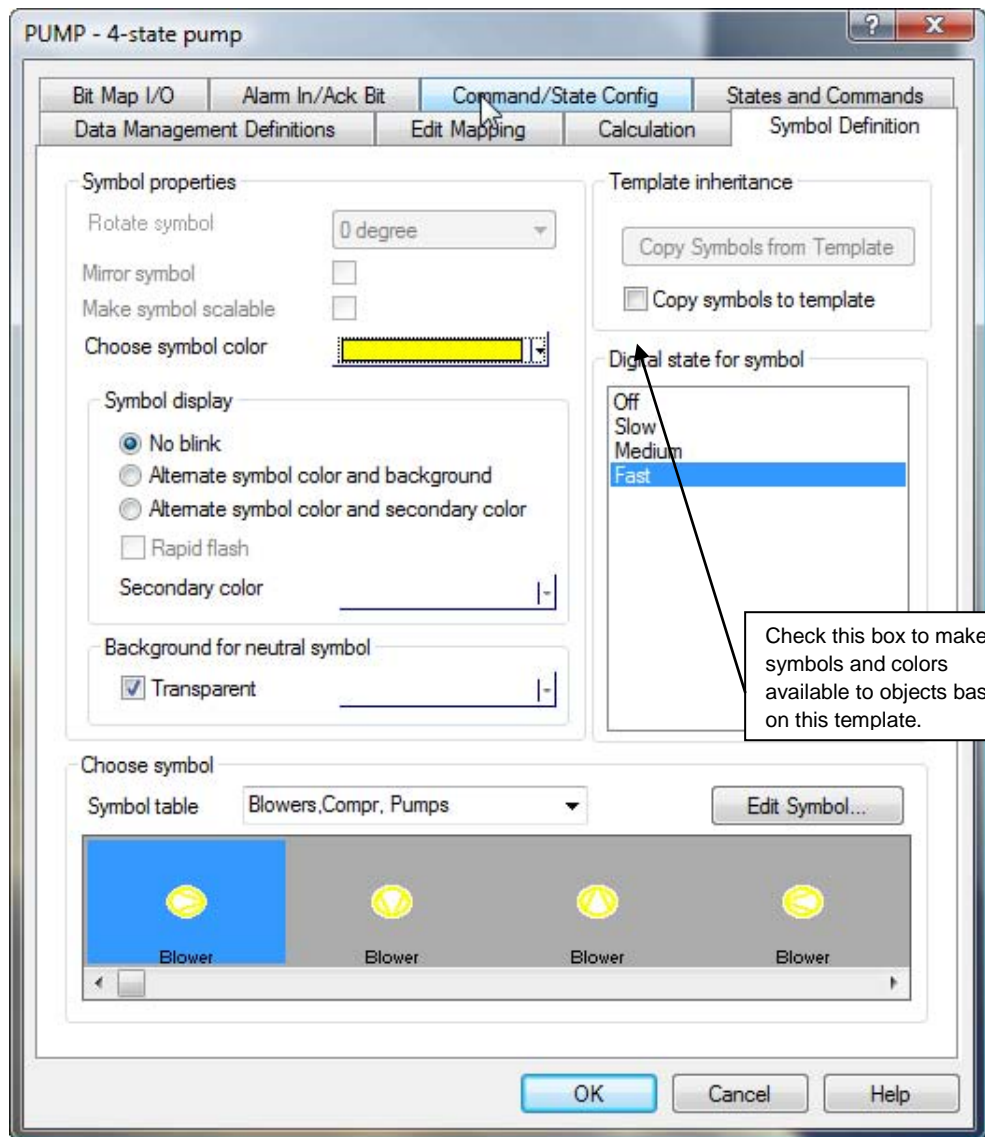
for the four commands

**Note:** Before you key in a name in the field to the right, the Add buttons do not

<b>DATA MANAGEMENT DEFINITIONS</b>	<b>Scan interval</b>	5000 msec.
<b>DATA MANAGEMENT DEFINITIONS</b>	<b>Logging</b>	All Changes
	<b>Base interval</b>	10 min.
	<b>Data reduction</b>	Change

	<b>Transfer to History</b>	Actual Total Value
<b>COMMAND/ STATE CONFIG</b>	<b>States</b> <b>Commands</b>	Set the appropriate commands to be available for each state and set the appropriate default command for each state.
<b>EDIT MAPPING</b>	<b>PLC addresses</b>	<b>Driver:</b> 7T3964R (MyStation) <b>Node:</b> 1 <b>Command:</b> DG = 22, WO = 10, BO = 0 (I/O mode = Out) <b>State:</b> DG = 23, WO = 10, BO = 0 (I/O mode = In) <b>Alarm-in:</b> DG = 24, WO = 10, BO = 0 (I/O mode = In) <b>Alarm-out:</b> DG = 25, WO = 10, BO = 0 (I/O mode = Out)
	<b>Alarm details</b> <b>New</b>	Drop down the <b>Digital Alarms</b> list and select <b>&lt;+1</b> to define the first alarm text. Click <b>New</b> and define the following alarm text properties: "Pump defective", priority = 10, alarm colour = red and blinking enabled, operator instructions "Change pump".  Drop down the list again and select <b>&lt;+ 2</b> to define the second alarm text with these properties: "Pump overheated", priority = 10, alarm colour = red and blinking enabled, operator instructions "Cool down pump and calibrate".
<b>SYMBOL DEFINITION</b>	<b>Choose symbol</b>	Use this symbol  for all four states. Use four different colors for the different states. Enable <b>Copy symbols To template</b> .

Select a different colour for each state

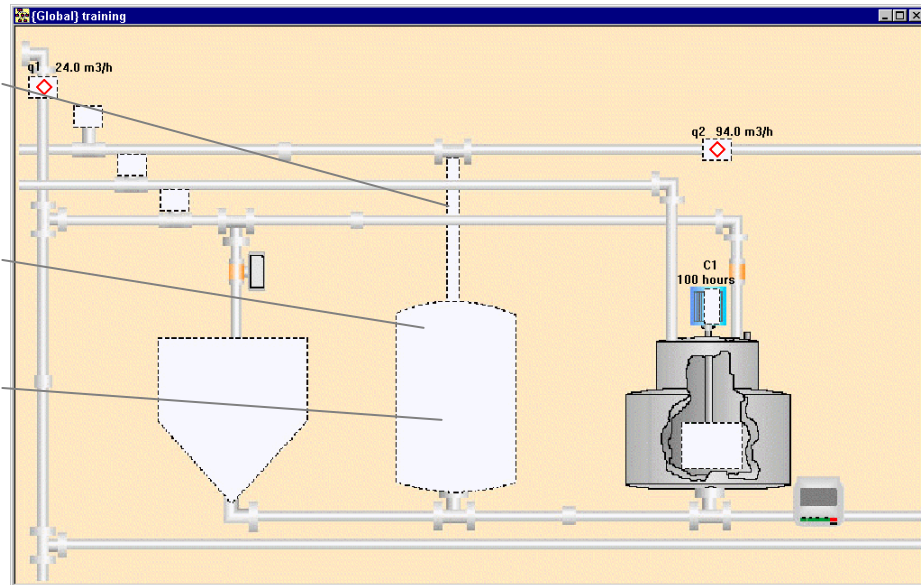




**Task 3:** We will create a new object (**L1**) based on the **LEVEL** template to monitor the level of the water in a tank.

**Create a new object based on the template**

**LEVEL**

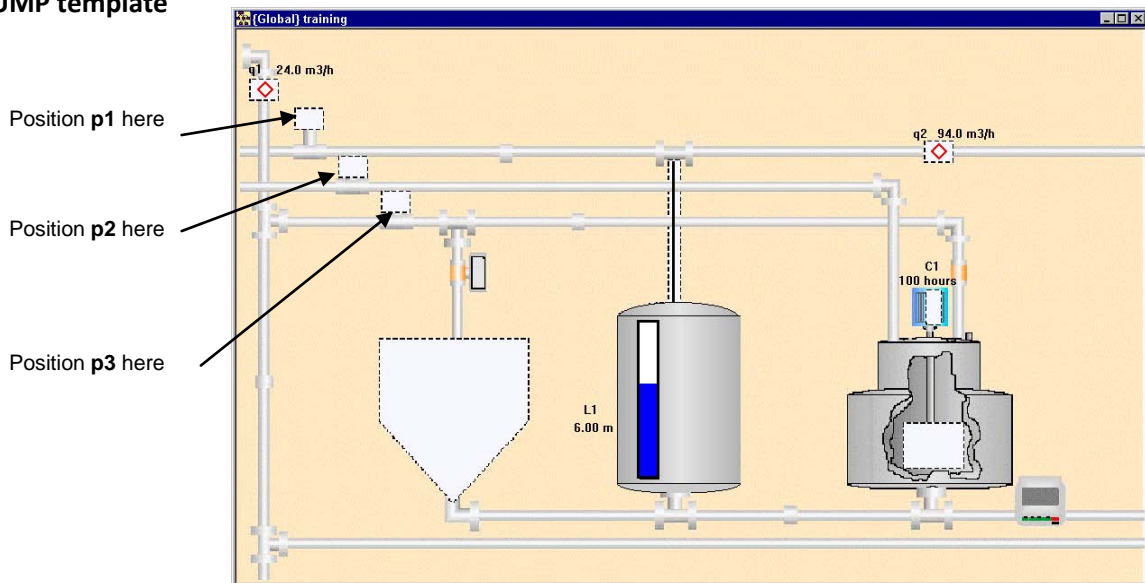
- Place a pipe here by using the **Animated Symbol** icon from **Drawing Toolbar**
- Position **Tank-2.emf** here and resize to fit the cutout.
- Position **L1** bar display inside the tank.



Step	Action
1.	<i>TIP:</i> Position a pipe from the <b>Animated Symbol</b> library accessed from the <b>Drawing Toolbar</b> (drag the  icon onto the diagram) by finding a symbol in the <b>Pipes</b> category.
2.	From the <b>Drawing Toolbar</b> drag the Image icon  onto the picture by holding the left mouse button down and releasing. Left click on the icon to go into "browse folders" mode. Find the path to your <b>IGSS project (C:\Configuration\Training\Images)</b> and then choose the <b>Tank-2.emf</b> graphics file and place it on the tank cut-out in the middle of the picture. Resize it to fit the whole cut-out.
3.	Now, choose <b>Objects</b> → <b>Bar Display</b> on the menu to create a bar display object based on the <b>LEVEL</b> template and name this object <b>L1</b> . On the <b>Edit Mapping</b> tab, type a word offset of 10 for the Atom called <b>Actual Value</b> .
4.	Define only the two following properties of the bar display on the tab <b>Attributes Of Bar</b> :  <b>Show Limits:</b> No limits, <b>Bar View:</b> 2-D View.

5. Position and resize the bar display to fit within the tank opening.

**Task 4:** We will now create three new pumps (**p1**, **p2**, **p3**) based on the **PUMP** template.  
**Create three objects based on PUMP template**



- | Step | Action  |
|------|---|
| 1.   | Go to the <b>Objects</b> menu and select <b>Blowers, Compr and Pumps</b> .  |
| 2.   | In the <b>Object Browser</b> dialogue, click the + sign beside <b>Digital</b> and select the <b>PUMP</b> template.  |
| 3.   | In the <b>Create new object</b> area under <b>Name</b> , give it the name <b>p1</b> .   |
| 4.   | Go to the <b>Edit Mapping</b> tab and give the pump a unique PLC address by simply adding a new <b>Word Offset</b> .  |
| 5.   | Lastly, go to the <b>Symbol Definition</b> tab and under the <b>Template inheritance</b> group, click on the button <b>Copy Symbols From Template</b> to make sure that the template's symbols and colors are replicated on the object. |
| 6.   | Click <b>OK</b> .   |

*THIS COMPLETES THE EXERCISE*