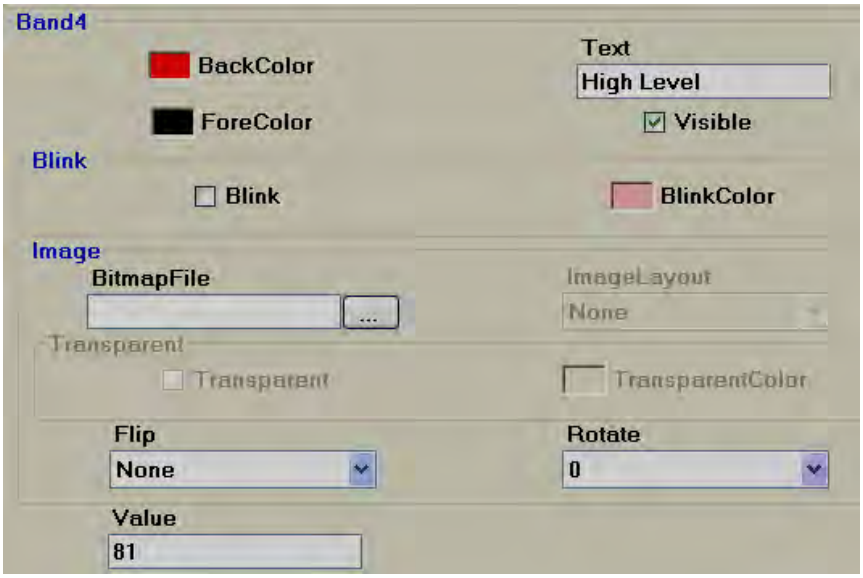
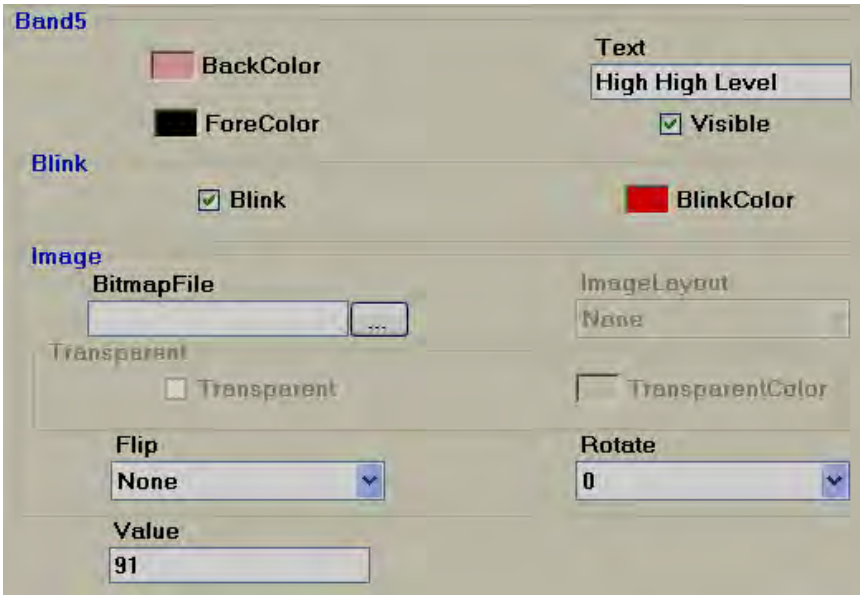


Band4 range: Band 4 value to Band5 value-1
i.e., 81 to 90



Band5 range: More than or equal to value defined at band 5 (In this case number of bands=5)
i.e., greater than 91

5.3.17.19 Check Box

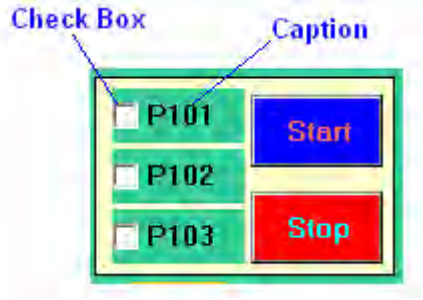
Check box (or tick box) is a graphical user interface widget that permits user to make multiple selections from a number of options in run time. Generally it is linked

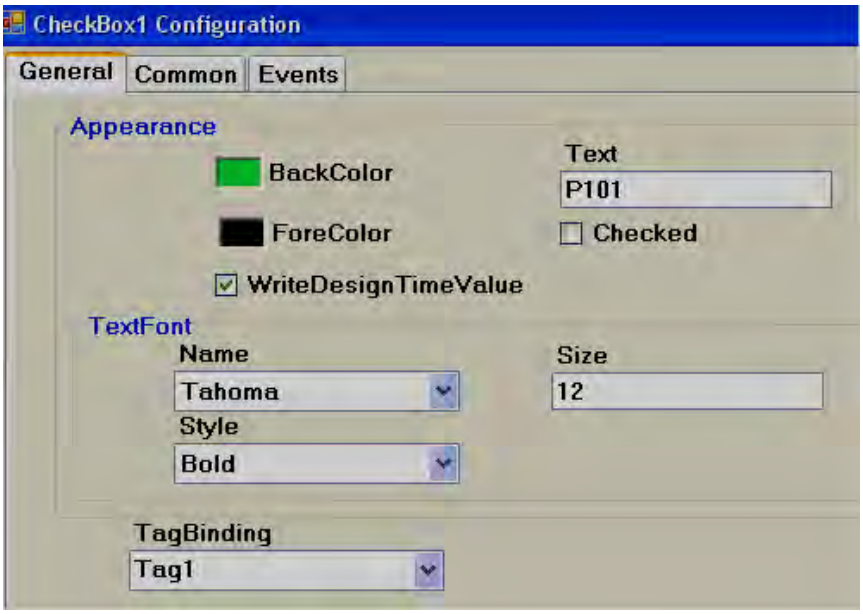
with Digital type tag Flag/Bit memory in PLC for using them in ladder programming to receive action from operator.

Every check box is linked with single ***Digital*** tag from properties.

In above white box, normally,
White space means Not selected, False, Tag Value = 0
Tick mark means, True, Tag value = 1

A caption describing the meaning of the check box is normally shown adjacent to the check box. Inverting the state of a check box is done by touching with a finger or clicking the mouse on the box, or the caption.





Properties

Write design time value: If selected, it over writes the default value defined at tag data base.

Checked: Default setting, available options True/False

For example: Tag1 is linked with Checkbox 1. If Checked = False, that means Tag1=0, if Checked = true, then Tag1 = 1.

Text: It is Text appears near Check box as caption. Example: Text = P101

Events

Changed: Define action using function editor. When operator presses on check box in Run time, the actions defined here will be executed.

Example: There are three pumps by name P101, P102 and P103 and operator may wish to select pump P101 for start up. Then, use check box, write a meaningful caption via property ñTEXTòto appear at right side of check box, and link each of above check box with appropriate Tags say P101, P102 and P103.

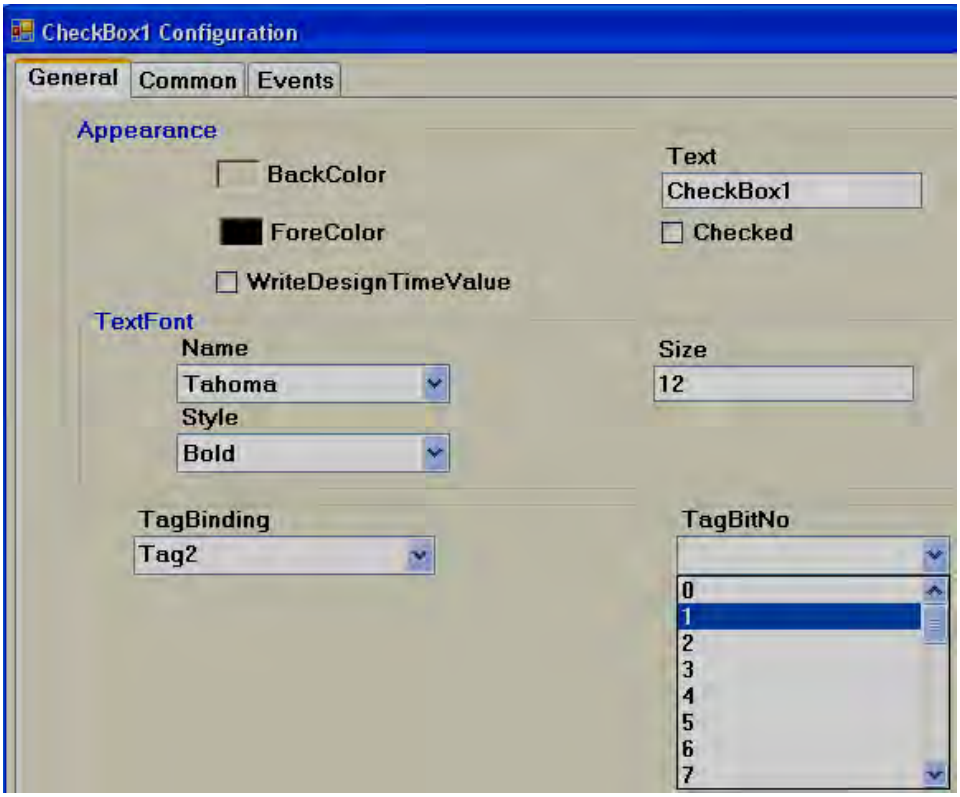
Then, when P101 is selected by operator in run time, P101 Tag value will become 1.

If checked = false is selected in design time, then, normally, Tag value = 0. If operator presses on check box in Run time, then symbol ✓ appears and Tag value becomes 1.

If checked = True is selected in design time, then, normally, Tag value = 1 and it appears ✓ in Run time. If operator presses on check box in design time, then symbol ✓disappears and Tag value becomes 0.

 **If you are unable to select the required selection using check box in Run time, please perform touch screen calibration once.**

 **If Check box is linked with Analog type Tag, then, it is possible to select individual bit.**

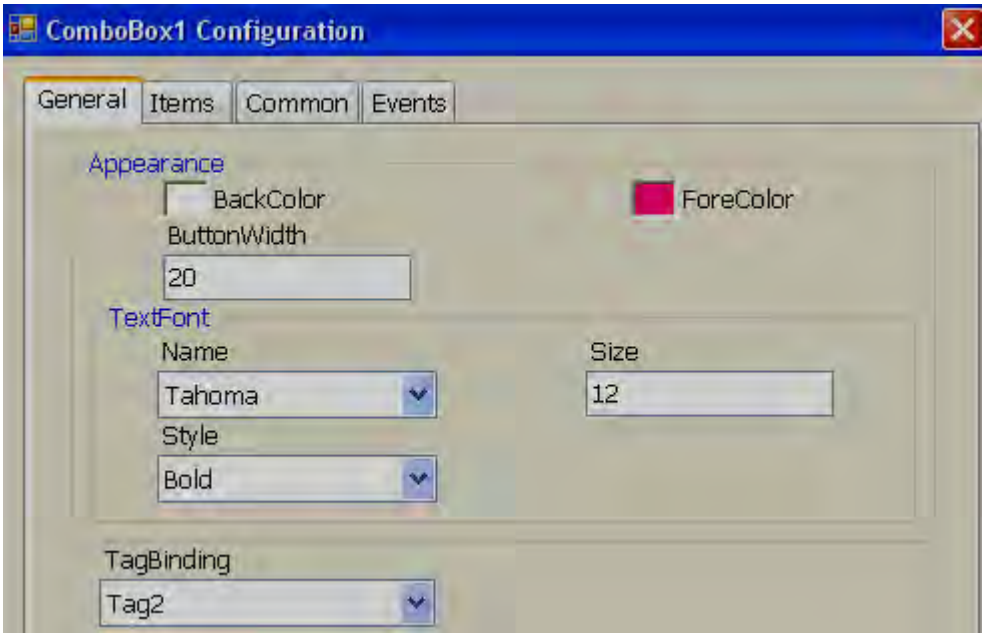


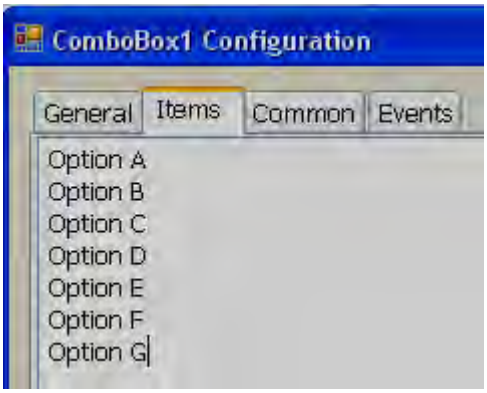
5.3.17.20 Combo box

A combo box is a commonly-used graphical user interface widget. It is a combination of a drop-down list or list box and a single-line textbox, allowing the user to choose from the list of existing options in Run time. Generally it is linked with Analog tag. Based on selection, value of tag will be changed and it can be used in Logic at PLC.

It saves space in Recorder screen by allowing operator to select the option only when it is required by touching at the down arrow at right side of Combo box.

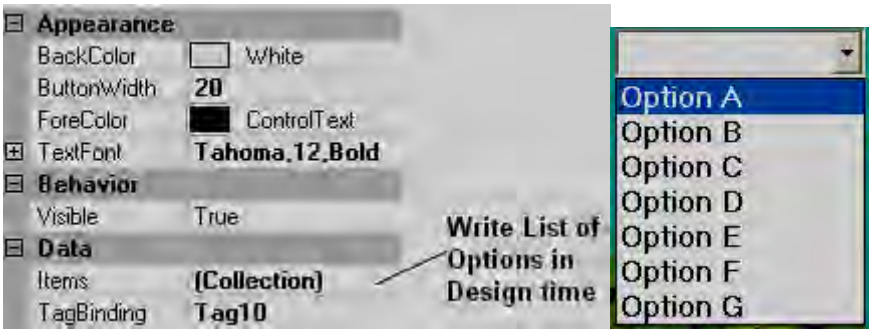
Every Combo box is linked with single ***Analog*** tag from properties.

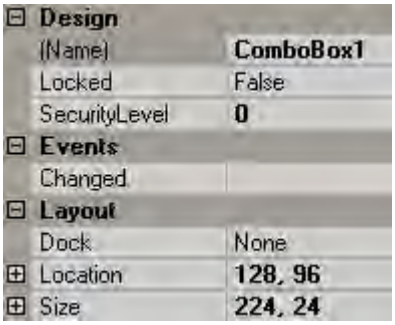




Note: Do not keep any empty space between different text entries, other wise, unpredictable results may appear

Property grid





Properties

> ***Button Width:*** Define width of Button. It modifies width of down arrow at right side of combo button.
>
> ***Items:*** Define all the available options in design time.

For example: There are 7 options available to select a process.

Tag1, Analog type of Tag is linked to Combo box1

Now, If Option A is selected, then in Run time, Tag1 value = 0
If Option B is selected, then Tag1 value = 1
é ..
é ..
If Option G is selected, then Tag1 value = 6

Events

> ***Changed:*** Define action using function editor. When operator presses on combo box in Run time, the actions defined here will be executed.

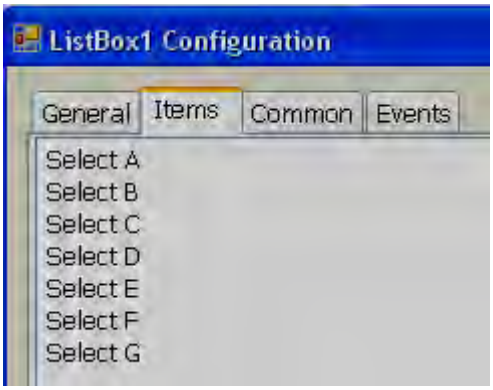
To increase up/down arrow size on combo box, then, increase size of text font.

5.3.17.21 List box

A list box is a Graphical User Interface widget that allows the user to select single item from a list of available items. The available options are entered during Design time and they are available for selection at Run Time. On selection, it writes value to a Tag based on the order number.

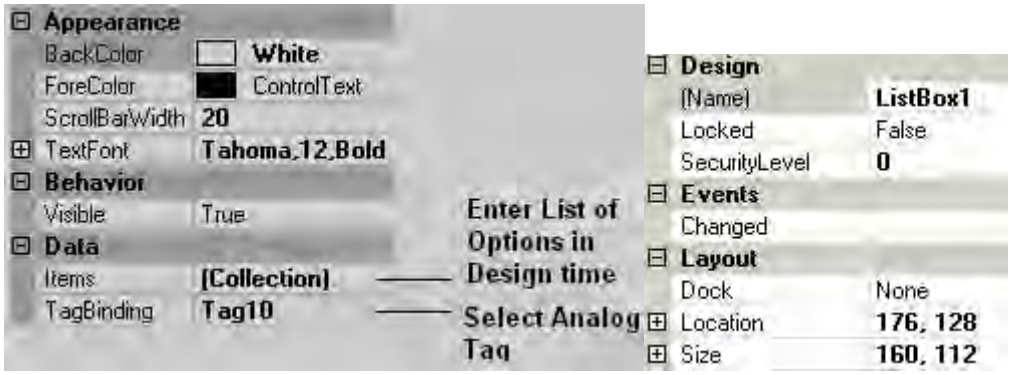
Every List Box should be linked with ***Analog*** Tag.

GUI Wizard/dialog



Note: Do not keep any empty space between different text entries, other wise, unpredictable results may appear

Property Grid



Properties

Scroll Bar Width: Define width of scroll bar appears on Right side of List box.

Items: Define all the available options in design time.

For example: There are 6 options available to select a process.

Tag1, Analog type of Tag is linked to List box1

Now, If Select A is selected, then Tag1 value = 0
If Select B is selected, then Tag1 value = 1
é ..
é ..
If Option G is selected, then Tag1 value = 5

Events

Changed: Define action using function editor. When operator presses on list box item in Run time, the actions defined here will be executed.

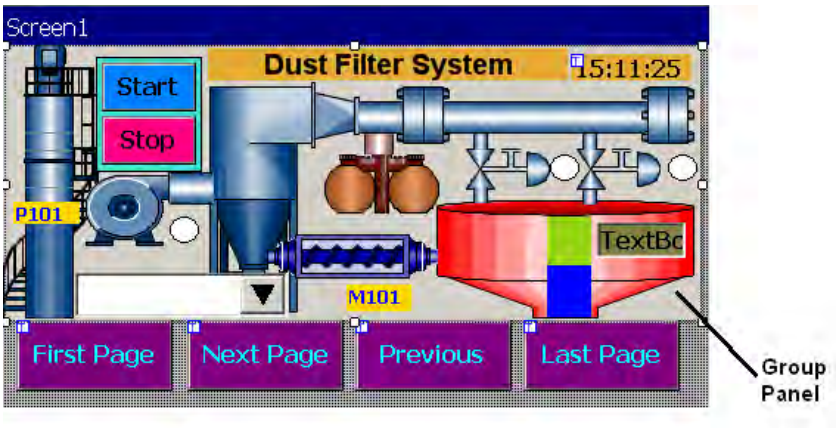
5.3.17.22 Group Panel

It is used to group objects in a screen.

Procedure

Click on ñGroup Panelòat Basic Objects

On Screen, just draw a rectangle with mouse over the objects for which group function is required. It will show as follows



Now, double click on Group Panel object

Select ñGroup Controlsò check box and click ñOKò

Now, you will be able to move group panel to another location or rescale it to fit to another screen size etc..

Group Controls: Select Check box to apply group function. De select the check box for ungroup

5.3.18 Enhanced Objects

Fine components are available for User interface and display. The components include Dial, Digital LED, Level, Meter, Slider, Switch, Thermometer and Toggle.

5.3.18.1 Common Properties

Appearance

Back Color: Set background color of the component.

Bevel: It is to set border including inner border, outer border and style of border.

Inner Border: True/False

Outer Border: True/False

Style: 9 styles are available

None, Flat, Single, Double, Raised, Lowered, Double Raised, Double lowered, Frame Raised, Frame Lowered.

Behavior

Visible: True/False, Determine whether control is visible or hidden.

Enable: This is for event control. If linked with Digital tag, if tag value =1 in run time, then, events configured for the object will be executed. If tag value = 0, then, events will be not executed

Data

Tag Binding: Select the Analog Tag of process value

Write design time value: If selected, then, value entered here in design time will be replaced by default value defined at tag data base.

Design

Name: Label1, It is name of the component. Every Component will have a **UNIQU**E number in a page. If more than one Label is available in the same page, number will be incremented automatically. If required, user can also change name of this component if required.

Component ñNameòproperty is very useful and it can be used in scripts also.

Example: Task: Change Label1 back color to blue in Run time when Tag1 is equal to 1.

```
if(Tag1 == 1)
{
  Screen1.Label1.BackColor=Color.Blue;
  }
```

Screen1: It is location of Label1
Label1: Object name
BackColor: Property of Label related to back ground color
Color.Blue: Target Color

If above script is executed in scheduler once in a sec, then when Tag1 == 1, then, back color for Label1 will be changed to Blue color in Run time.

 Properties are case sensitive.

BackColor : OK
Backcolor : Not OK

Security Level: Define security level for the component to be used by the operator. If operator security level is less than security level defined for component, it will not allow operator to operate the component.

Locked: True/False: It is to Move or Resize the component.

Layout

Dock: Defines which borders of the control are bound to the container.

Location: The coordinates of the upper-left corner of the component relative to upper-left corner of the container. Set X and Y position in screen in pixels.

Size: Size of the component in pixel. Set height and width of component in pixels.

Position**:** It is define position of Label, Value etc, for some components. Available options include None, Top Left, Bottom Right, Both and Internal.

Position naming convention for components

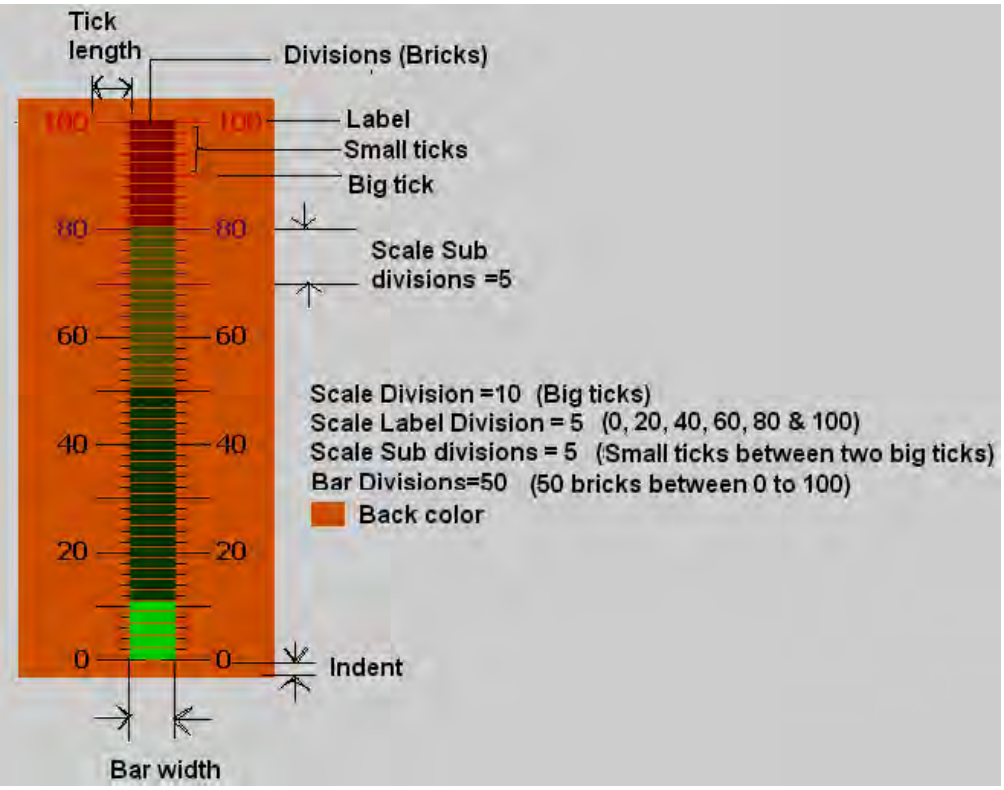
For example: Level component, Label Position = ***Bottom Right***

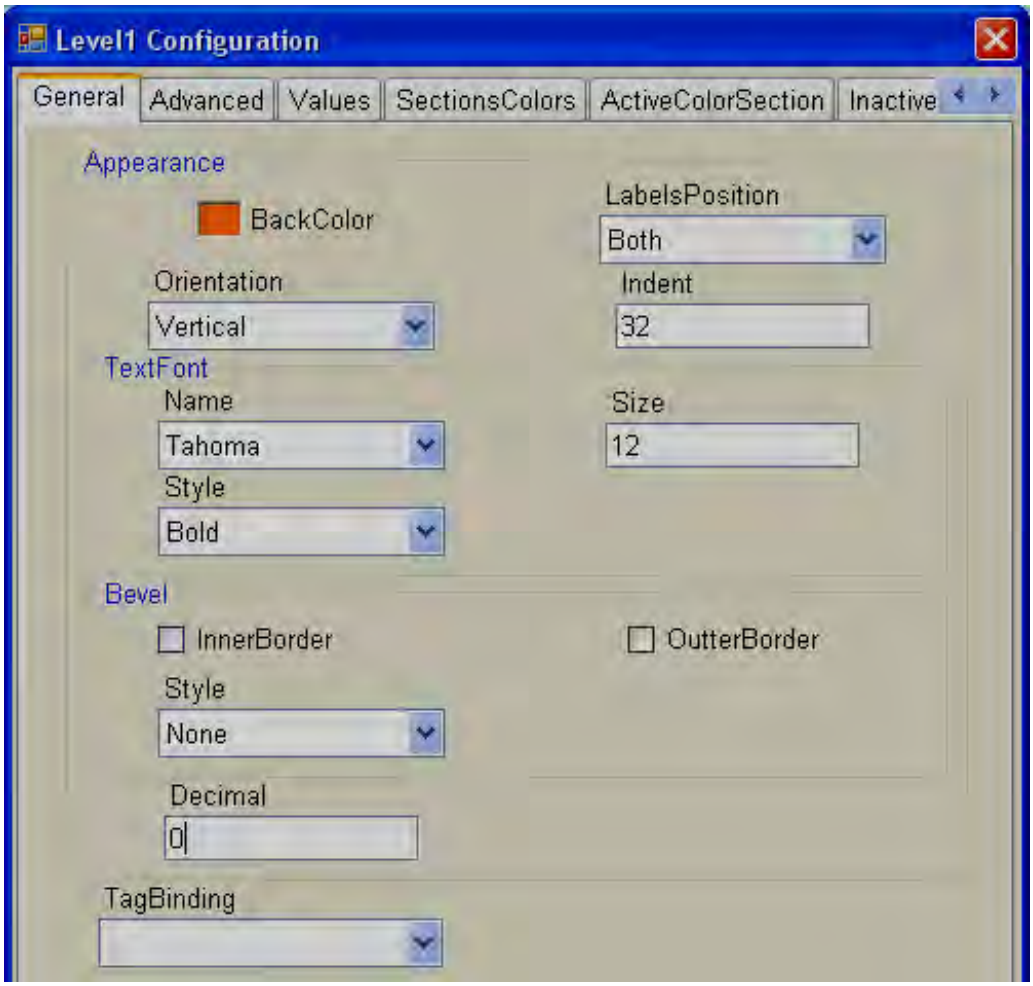
If Orientation is Vertical, then, Label will be displayed at ***Right*** side to component.

If Orientation is Horizontal, then, Label will be displayed at ***Bottom*** side to component.

5.3.18.2 Level

It is normally used to display process parameter value in several steps. Generally it is linked with Analog type tag (Analog input type tag at PLC, which is received as 4-20 mA signal from field transmitters like Ear level transmitters (sound detectors in ball mills etc).


Tick length
Divisions (Bricks)
Label
Small ticks
Big tick
Scale Sub divisions =5
Scale Division =10 (Big ticks)
Scale Label Division = 5 (0, 20, 40, 60, 80 & 100)
Scale Sub divisions = 5 (Small ticks between two big ticks)
Bar Divisions=50 (50 bricks between 0 to 100)
Back color
Indent
Bar width
100
80
60
40
20
0


Level1 Configuration
General
Advanced
Values
SectionsColors
ActiveColorSection
Inactive
Appearance
BackColor
LabelsPosition
Both
Orientation
Vertical
Indent
32
TextFont
Name
Tahoma
Size
12
Style
Bold
Bevel
InnerBorder
OutterBorder
Style
None
Decimal
0
TagBinding

Properties

***Back Color*:** Define background color for the component.

***Labels Position*:** Define labels position. Available options are Top Left, Bottom Right and Both. Naming convention depends on orientation. If orientation = Vertical, then, if ñTop leftòis selected, label position will be shown on ñLeftòside. If orientation = Horizontal, then if ñTop Leftòis selected, label position will be shown on ñTopòside of component.

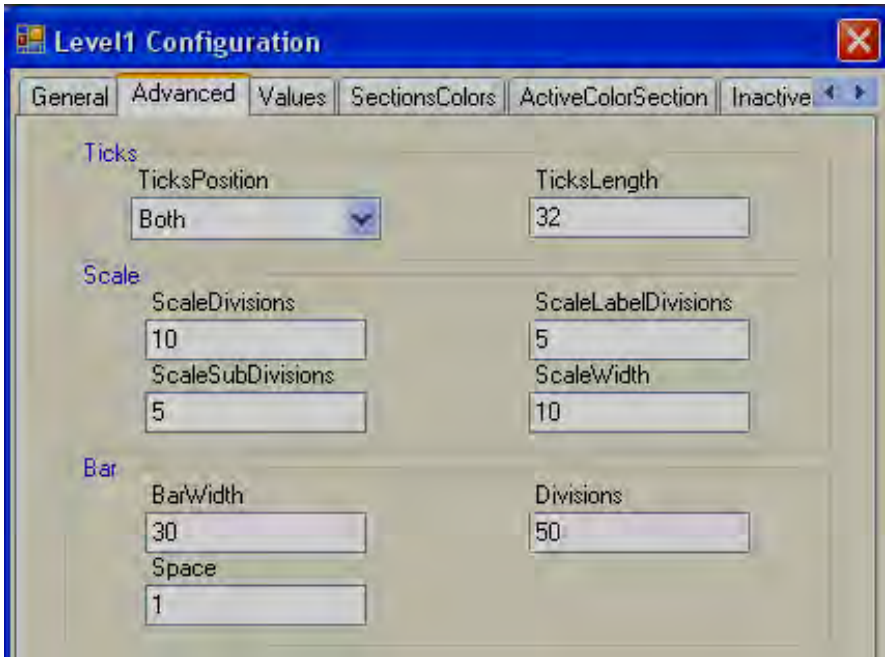
***Orientation*:** Vertical/Horizontal. Select direction.

Text Font: It is to set font for the label including Name of Font, Size of font and Style of font. Supported styles include Regular, Bold, Italic, Underline & Strikeout.

Bevel: Define inner border and outer border for the component. Please refer common properties at beginning of this section for more details.

Decimals: Define number of decimals to be displayed for value to be displayed along with level component in run time.

Tag Binding: Select the Analog Tag of process value.



Ticks:

Ticks Position: Define Ticks Position. Available options include Top Left, Bottom Right, Both and None.

Ticks length: Define length of Ticks in pixels.

Scale:

Scale divisions: Define number of Big Ticks in Level graph.

Scale Sub Divisions: Define number of ticks between two big ticks.

Scale Label Divisions: Define number of Labels to be displayed. Example: If Scale label division = 5, Scale = 0-100, then, it display labels as 0, 20, 40, 60, 80 & 100.

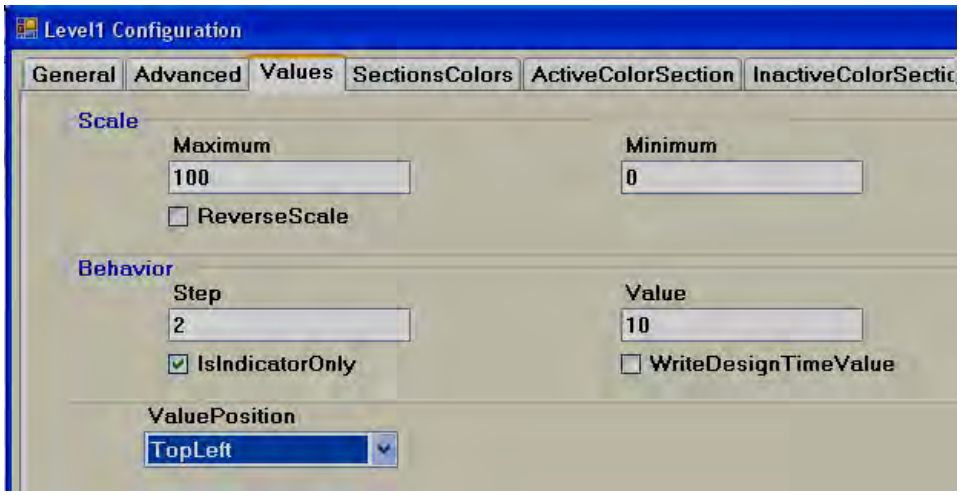
Scale Width: Define Scale width. If ticks are selected to display on both directions, then, this define width between two scales on both sides.

Bar

Bar Width**:** Define width of Bar graph.

Divisions**:** Define number of divisions (Like bricks) to appear in Bar graph.

Space**:** Define Space between divisions (bricks) in pixels.



Maximum: This is maximum range of process value (Analog input Type Tag)

Minimum: This is minimum range of Process Value (Analog input Type Tag)

Example: If Ear Level transmitter range is 0 to 100, set Minimum = 0, Maximum = 100.

Reverse Scale: True/False. If it is selected, then, zero will be on bottom side and 100 will be at top side for vertical orientation.

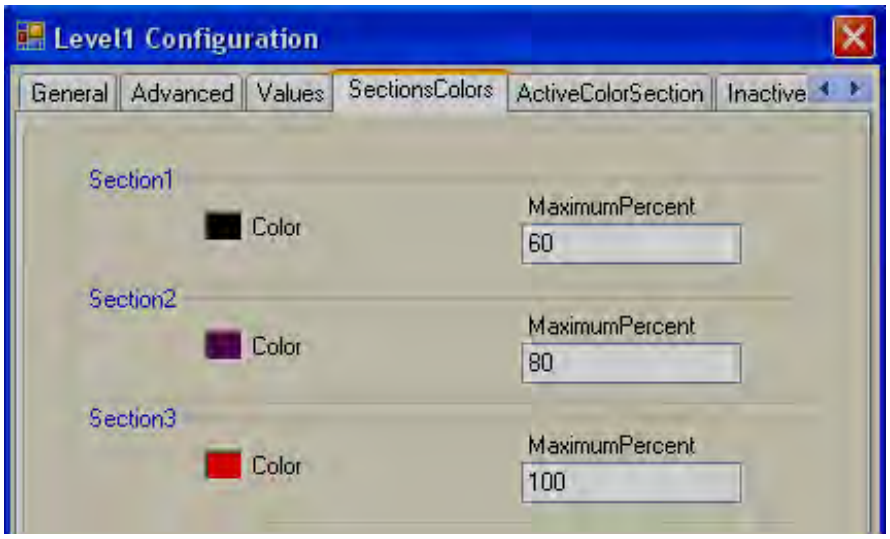
Step: It is the minimum value to reflect change in Bar graph position. Bar Step and Bar divisions settings are closely related. If Bar divisions = 50 for

scale value 0-100, then, if Step=2, when process value changes by value 2, it shows level value change clearly in level graph.

Value: It is used to enter process value in design time and check Bar graph display status in PC. It requires operator to enter value in multiples of step value or else, it is automatically corrected close to multiples of step value.

Is Indicator only: If it is selected, level graph is used only for Read only purpose. If it is not selected, then, you can use level graph for write purpose similar to Slider to send set point from Recorder to PLC etc. Just use finger to touch at various places in Level graph to set the level required.

***Value Position*:** Define position of process value to be displayed in Run time along with Level graph. Available options include None, Top Left, Bottom Right and Both.



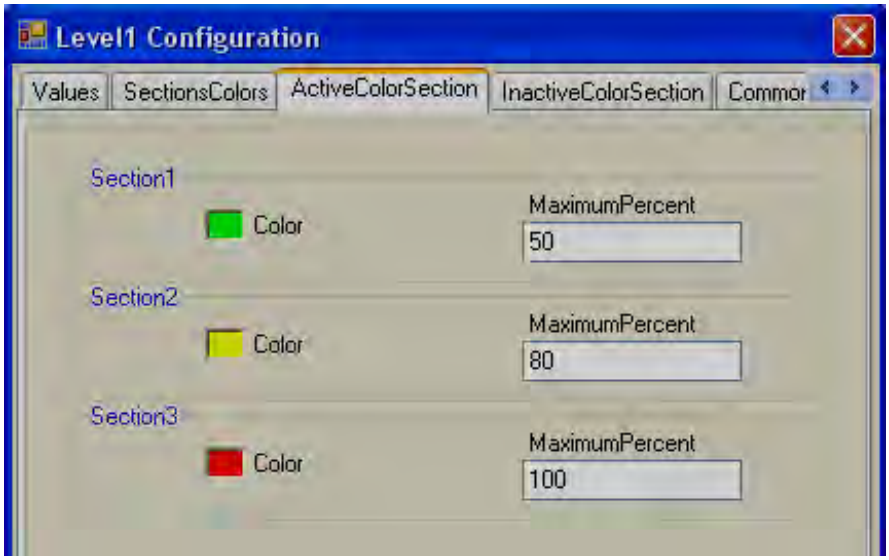
***Sections colors*:** It is configure bands for the sections to show different colors for Labels and Ticks in Level graph.

Example: Three bands
Section 1, Max % = 60 that means, its band is from 0 to 60 % it shows labels and ticks in black color.

Section 2, Max % = 80 that means, its band is from 61 to 80 %.

Section 3, Max % = 100 that means, its band is from 81 to 100 %.

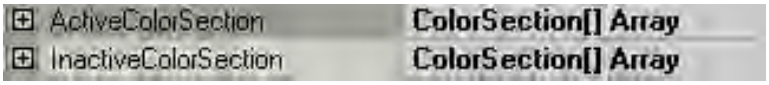
Note: Band setting is in % for the total Scale defined (Minimum to maximum).



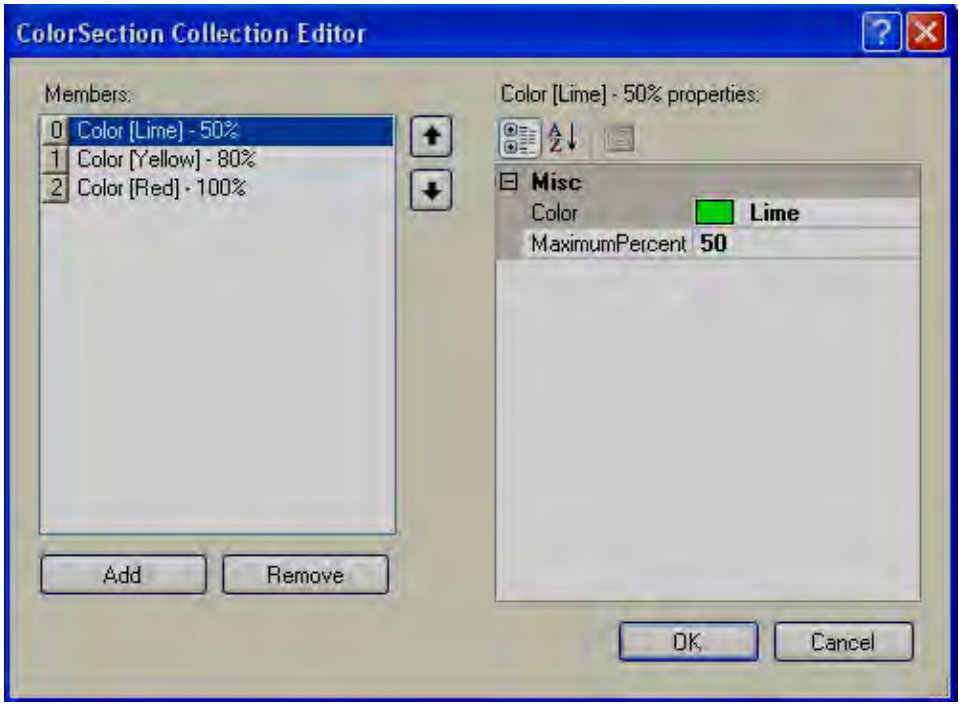
Active Color Section: Define Active color for process value band. For example: If process value range is 0-100, set different bands in % for process value, define colors to appear with in level Bar graph in Run Time.

When process value is between 0 and 50 % of scale, display bricks in Lime color.
When process value is between 51 and 80 % of scale, display bricks in Yellow color
When process value is between 81 and 100 % of scale, display bricks in Red color.

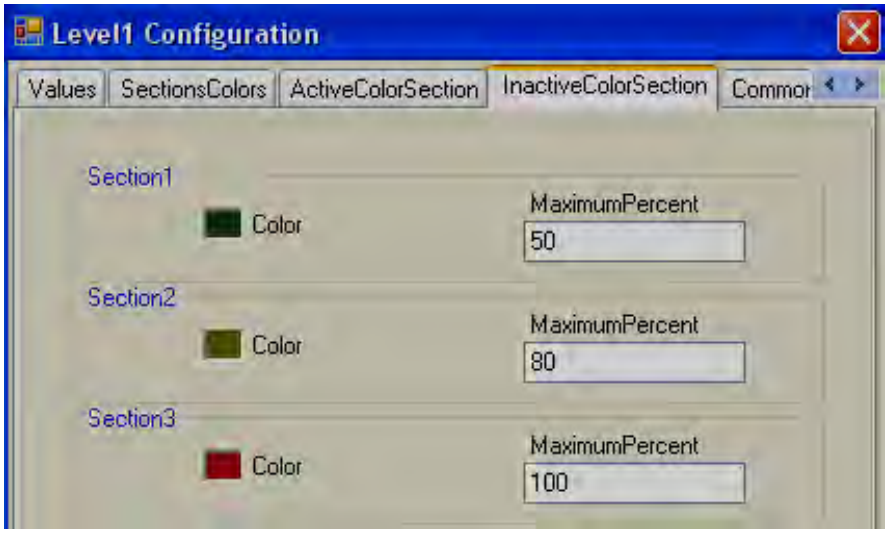
Configuration from Property grid



Click at ñColorSection[ ] Array, then it following screen will appear, then set all the bands and colors.



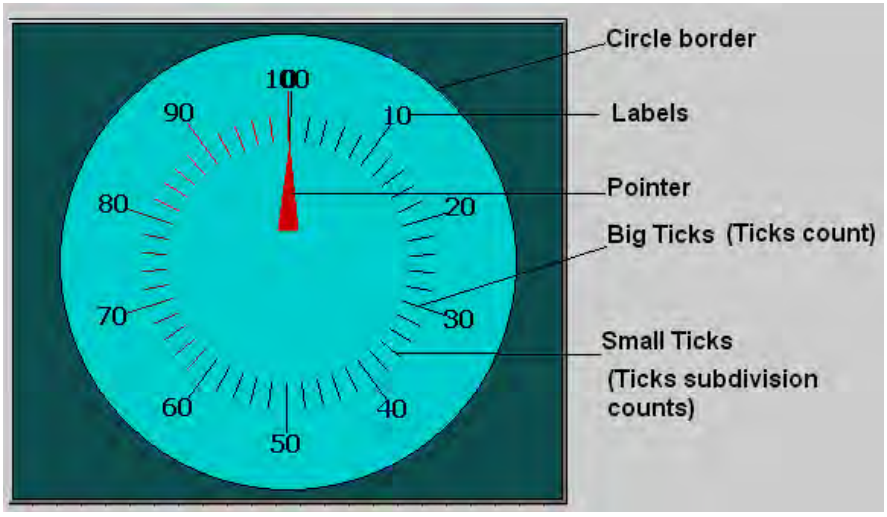
Inactive Color Section: Define Inactive color for process value bands same as above. Generally light colors are selected for Inactive colors and Dark colors with more contrast is selected for Active colors, then users/operators will be able to differentiate between active and inactive colors clearly.

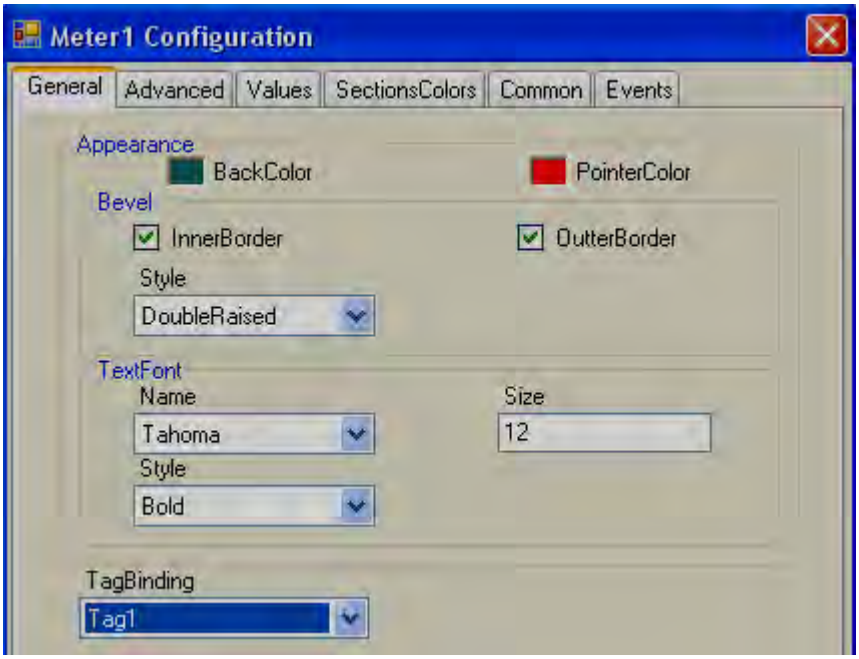


Events: It is to trigger functions/jobs to be executed when process value of tag linked with Level bar graph is changed in run time.

5.3.18.3 Meter

Meter is component generally used to display process value like pressure, Temperature, Flow etc. Generally it is linked with Analog type tag (Analog input type tag at PLC, which is received as 4-20 mA signal from field transmitters like Temperature, pressure etc...)





Properties

Back color: It is to set back ground color for the Meter.

Pointer Color: It is to set Pointer Color.

Bevel: It is to set border including inner border, outer border and style of border.

Inner Border: True/False

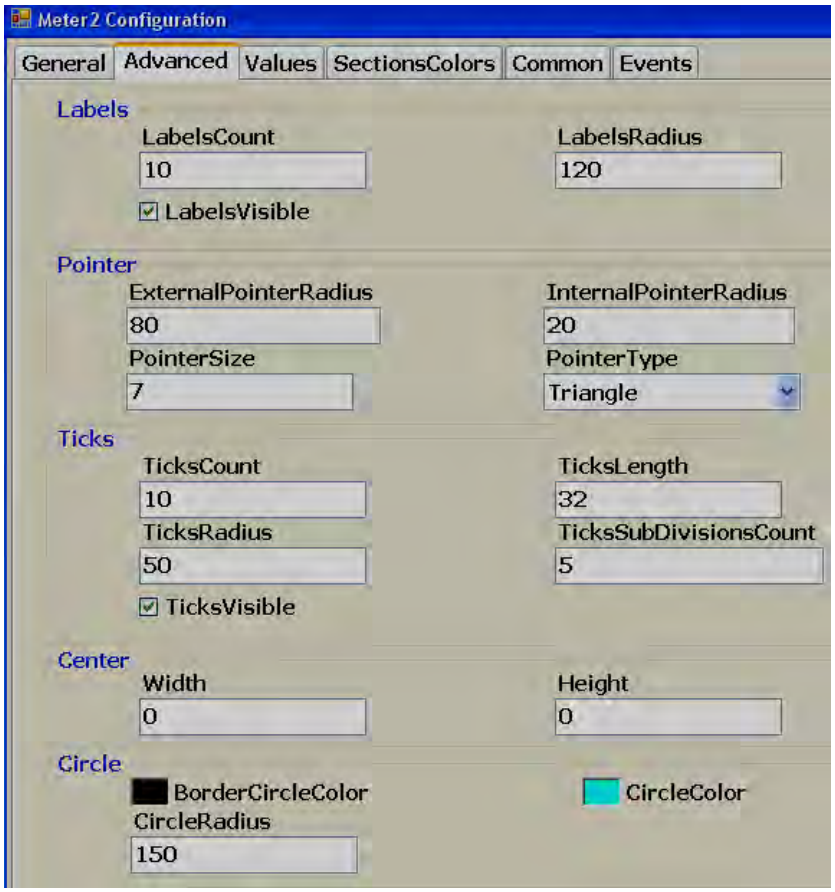
Outer Border: True/False

Style: 9 styles are available

None, Flat, Single, Double, Raised, Lowered, Double Raised, Double lowered, Frame Raised, Frame Lowered.

Text Font: It is to set font for the label including Name of Font, Size of font and Style of font. Supported styles include Regular, Bold, Italic, Underline & Strikeout.

Tag Binding: Select the Analog Tag of process value.



Labels:

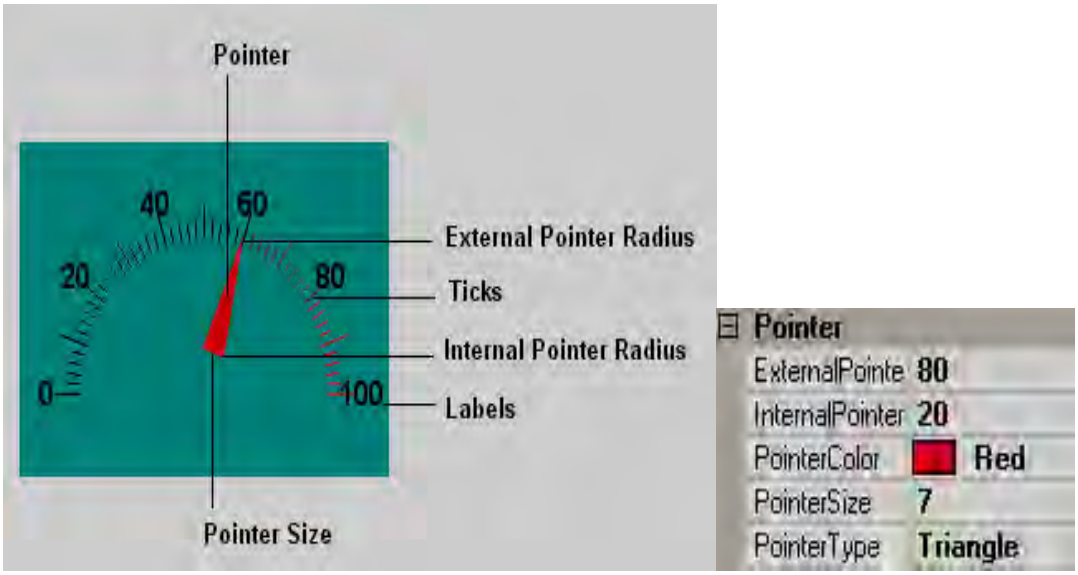
LabelsCount: Number of labels to be displayed around the Meter.

Example: Pressure transmitter range 0-100 bar
Label count: 10, then, around, Meter, you will see labels marked with 10, 20, 30, 40, 50, 60, 70, 80, 90 and 100.

LabelsRadius: It is to set radius of Labels to be displayed around the Meter.

LabelsVisible: True/Flase, it is to set visibility for the label

Pointer 



External Pointer Radius: It is to set external pointer Radius, define end position.

Internal pointer Radius: It is to set Internal Pointer Radius, defines start position.

Pointer Size: It is to set Pointer Size in pixels.

Pointer Type: It is set Pointer type. Available types include Triangle, Circle and Line.

Ticks

Ticks Count: Set number of ticks between labels.

Ticks Length: Set Tick length in pixels.

Ticks Radius: Set Tick Radius

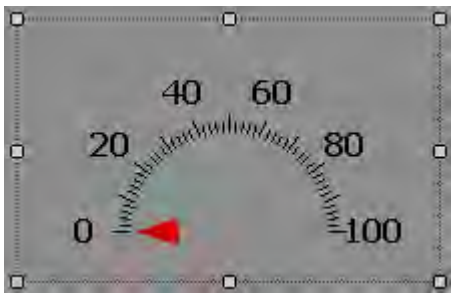
Ticks subdivision counts: Set Tick sub division counts

Ticks Visible: True/False, Set Ticks visibility

Center

Width: Adjust width of meter with in boundaries.

Height: Adjust height of meter with in boundaries. This is useful when semi meter is required and need to adjust meter to the center as shown.



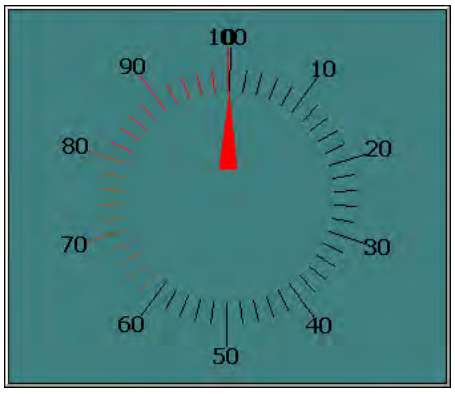
Circles

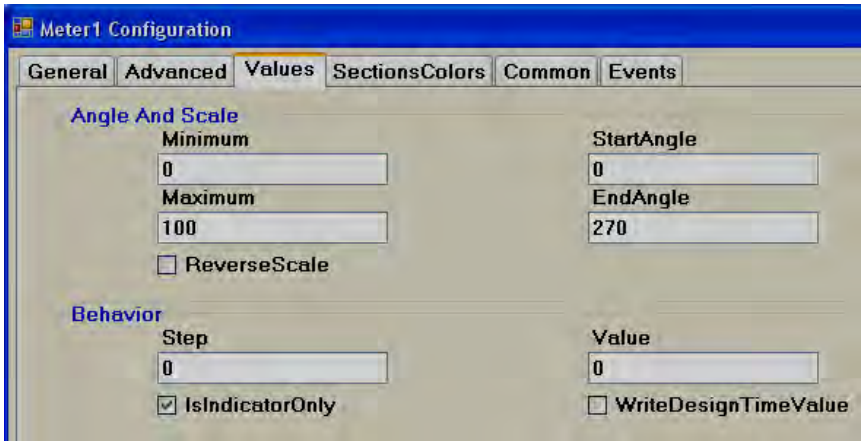
Border circle Color: Set border color for circle.

Circle Color: Set Color for circle.

Circle Radius: Set Radius for circle.

Note: If Border circle color, Circle Color is same as Back color, then, circle is not visible and it appears as shown below.





Angles & Scale

Maximum: This is maximum range of Process Value (Analog input Type Tag).

Minimum: This is minimum range of Process Value (Analog input Type Tag).

Example: If pressure transmitter range is 0 to 100 bar, set Minimum = 0, Maximum = 100.

Start Angle: *It is start angle for the Range low (Analog input)*

End Angle: It is end angle for the Range high (Analog input)

Reverse Scale: It is to set scale direction in Meter

False: Anti Clock wise

True: Clock wise

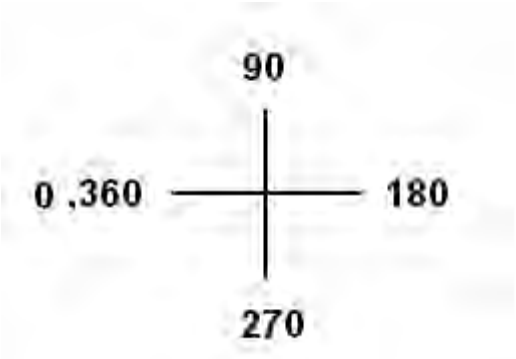


Fig: Standard Reference angle

Reverse Scale = True

For example: If you want 0^0 (Left) to 180^O (Right) Meter for Process value range 0-100, set the following.

Start Angle: 0 ^{O}, End Angle: 180 ^{O} and Reverse Scale = True.

Behavior

Step: It is the minimum value to reflect change of pointer position in Meter.

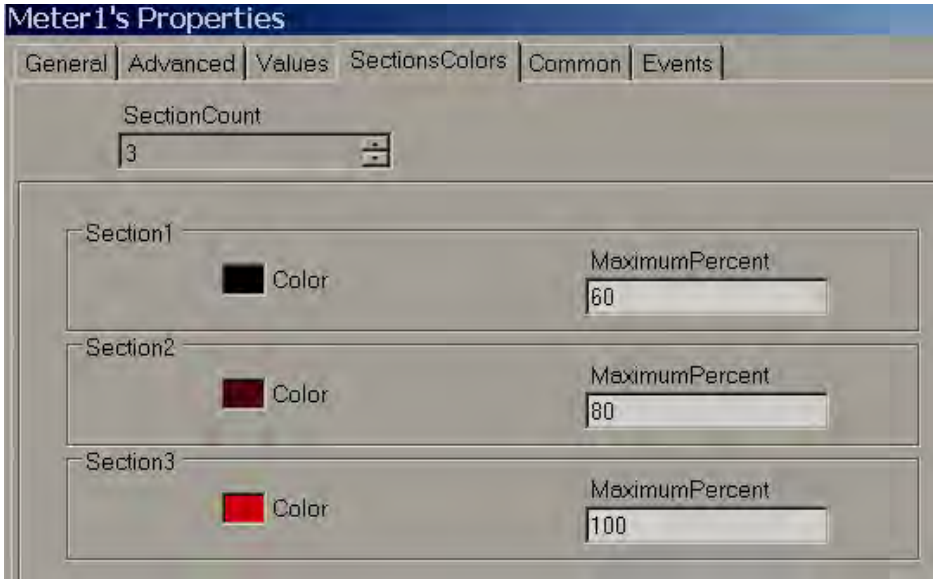
For example: By default, Step = 0, i.e., pointer moves its position in Meter in Real time even with minor change in process value.

For example: Step = 5, i.e., pointer moves its position in Meter in Real time in steps of 5.

Value: It is used to enter process value in design time and check pointer position in PC.

Indicator only: By default, it should be selected such that the meter will be used for Read only purpose. If it is not selected, then, you can use the Meter for Write purpose similar to Slider to send set point from Recorder to PLC etc. Just use finger and move pointer to change set point.

Write design time value: If selected, it writes design time value instead of default value defined at tag data base.



***Sections colors*:**

It is configure bands for the sections to show different colors for Labels and Ticks in Meter.

Example: Three bands

Section 1, Max % = 60 that means, its band is from 0 to 60 % it shows labels and ticks in black color.

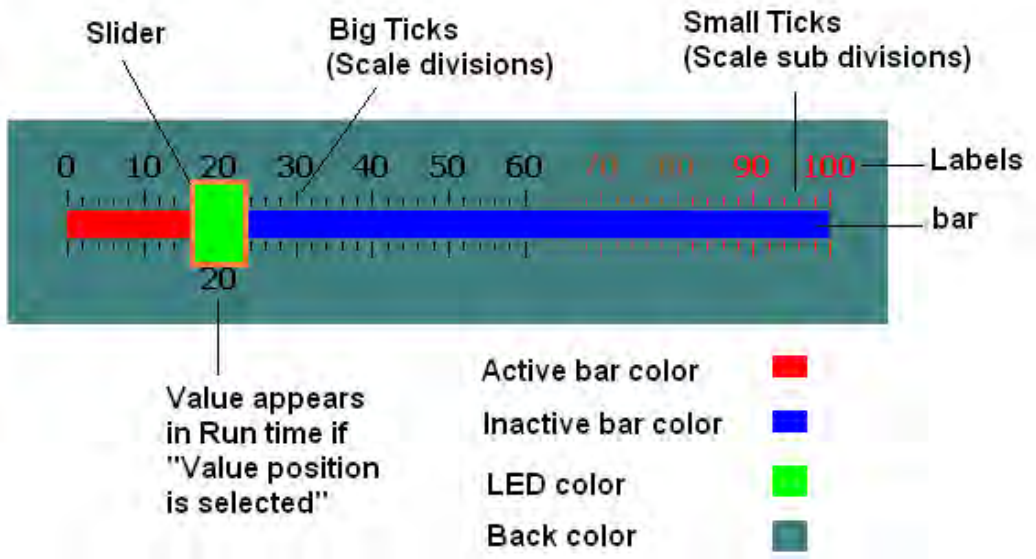
Section 2, Max % = 80 that means, its band is from 61 to 80 %.

Section 3, Max % = 100 that means, its band is from 81 to 100 %.

Note: Band setting is in % for the total Scale defined (Minimum to maximum).

5.3.18.4 Slider

This is normally used to change set point of process by operator from Recorder in Run time. Generally it is linked with Analog type tag (Analog output type tag at PLC, to send 4-20 mA signal out from PLC for external Controllers, Variable speed drives etc).



In above fig, Scale divisions = 10 (Big ticks).
Scale sub divisions = 5 (Small ticks between big ticks).
Scale Label divisions = 10 (0, 10, 20 till 100).

Properties

***Back color*:** Back color for the component.

***Active bar color*:** Define active bar color.

***Slider bar color*:** Define border color for the slider.

***LED color*:** Color of the handle

***Inactive bar color*:** Define inactive bar color.

LabelsPosition: Define Labels position. Available options include Top Left, Bottom Right, Both, Internal and None.

***Orientation*:** Horizontal/Vertical. This is orientation of Slider component and in above figure, it is Horizontal direction.

Slide size: Define height and width of the slider.

Text Font: It is to set font for the label including Name of Font, Size of font and Style of font. Supported styles include Regular, Bold, Italic, Underline & Strikeout.

Bevel: It is to set border including inner border, outer border and style of border.

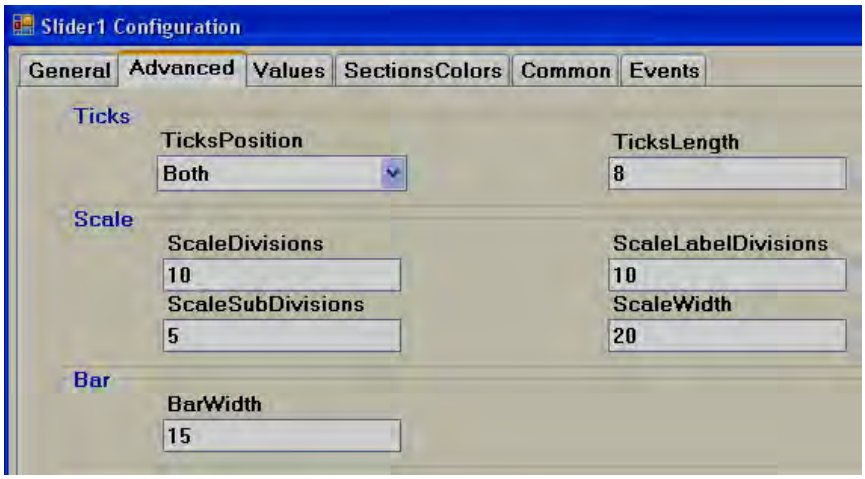
Inner Border: True/False

Outer Border: True/False

Style: 9 styles are available

None, Flat, Single, Double, Raised, Lowered, Double Raised, Double lowered, Frame Raised, Frame Lowered.

Tag Binding: Select the Analog Tag of process value.



Ticks:

Ticks Position: Define ticks position. Available options include Top Left, Bottom Right, Both, Internal and None.

Ticks Length: Set Tick length in pixels

Scale:

Scale divisions: Define number of Scale divisions (Big ticks).

Scale Sub Divisions: Define number of Sub divisions (Small Ticks between big ticks).

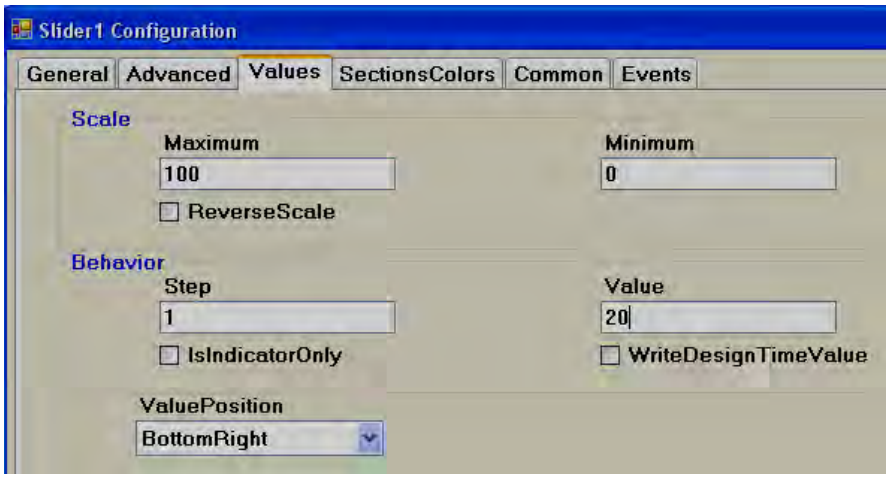
Scale Label Divisions: Define number of Labels to appear like 0, 10, 20 etc. till 100 for scale 0 to 100.

Define same value for both Scale divisions and Scale label divisions.

Scale Width: Define Scale width.
Note: This is only width for Scale divisions. Example: If ticks position is selected on both sides, then it is gap between two scale ticks (Top and Bottom in Horizontal orientation or Left and Right in vertical orientation).

Bar:

***Bar Width*:** Define width of Bar.



Scale:

Maximum: This is maximum range of Set point (Analog Tag, Normally Analog Output).

Minimum: This is minimum range of Set Point (Analog Tag, Normally Analog Output).

Example: If Controller set point is 0 to 100 Deg.C, set Minimum = 0, Maximum = 100.

Reverse Scale: If Selected, Scale labels will be displayed in Reverse.

Behavior:

Step: It is the minimum value to reflect change of the slider position.

For example: By default, Step = 0, i.e., Slider moves its position in Real time even with minor change in process value.

For example: Step = 5, i.e., Slider moves its position in Real time in steps of 5.

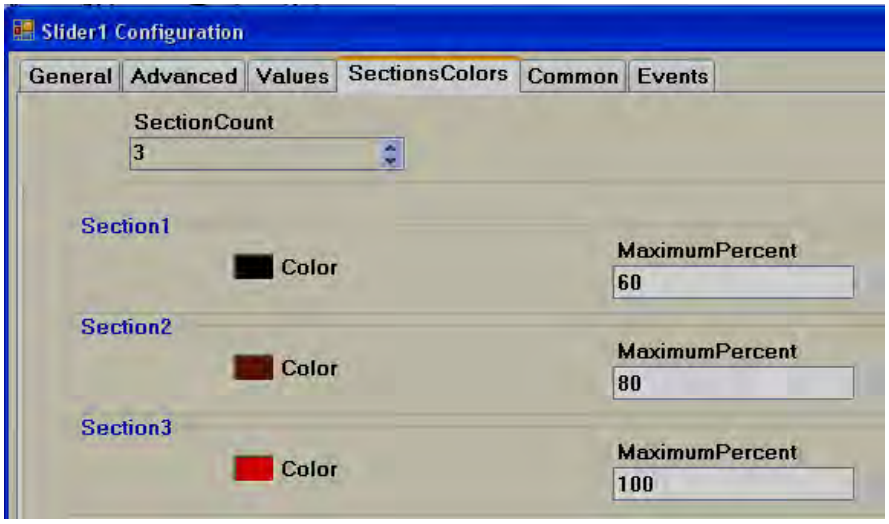
Value: It is used to enter process value in design time and check the Slider position in PC.

Indicator only:

If Indicator only is selected, slider is used for Read only. Operator will be not able to move slider in Run time.

If Indicator only is not selected, the slider is used for Read/Write. Operator will be able to move slider in Run time for example: change set point for variable speed drive.

***Value Position*:** Define position for the value to appear in Run time. Available options include Top left, Bottom Right, Both, Internal and None.



***Sections colors*:** It is configure bands for the sections to show different colors for Labels and Ticks in Slider.

Example: Three bands
Section 1, Max % = 60 that means, its band is from 0 to 60 % it shows labels and ticks in black color.

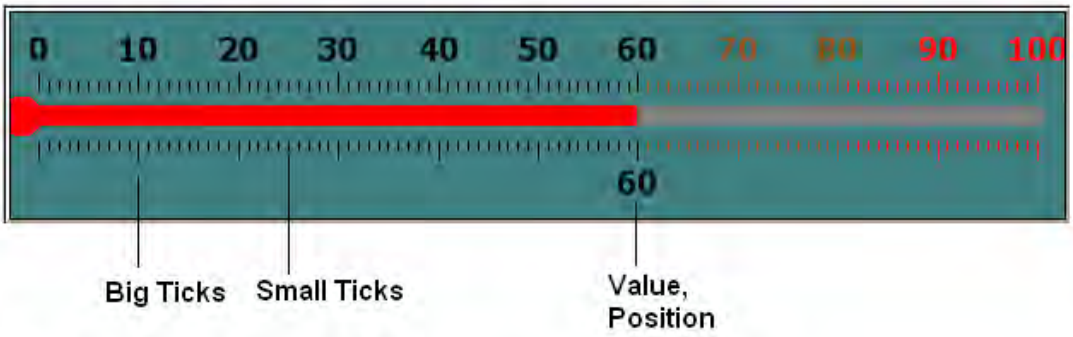
Section 2, Max % = 80 that means, its band is from 61 to 80 %, it shows labels and ticks in brown color.

Section 3, Max % = 100 that means, its band is from 81 to 100 %, it shows labels and ticks in Red color.

Note: Band setting is in % for the total Scale defined (Minimum to maximum).

5.3.18.5 Thermometer

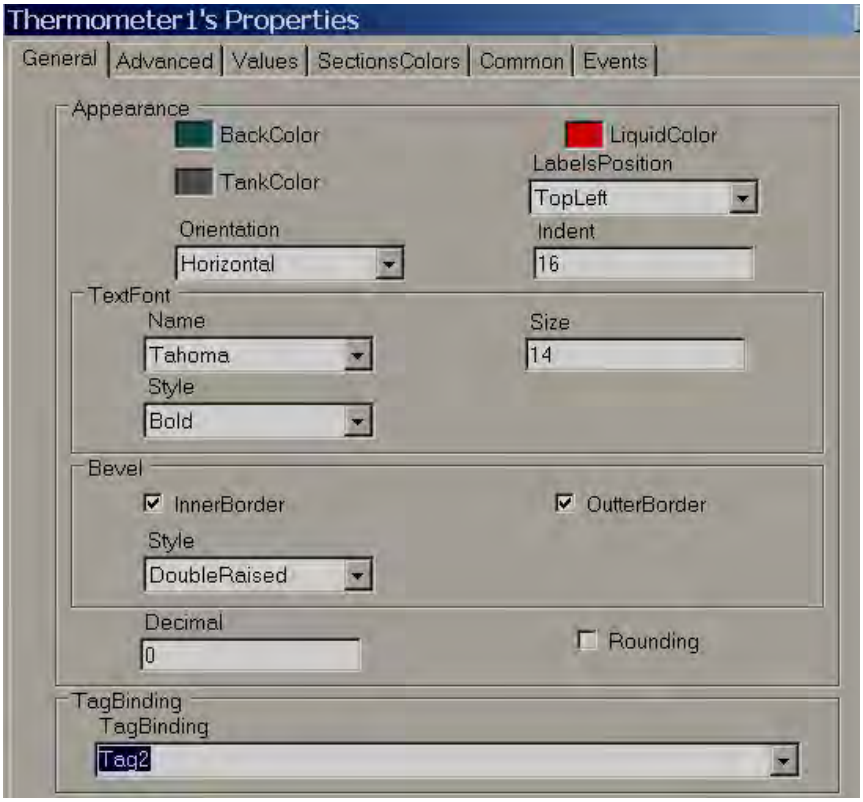
This is normally used to view process temperature by operator in Run time. Generally it is linked with Analog type tag (Analog input type tag at PLC, which is received as 4-20 mA signal from field transmitters like Temperature etc...)



Scale Label Divisions= 10 (0, 10, 20... 100)

Scale Divisions = 10 (No.of Big Ticks)

Scale Sub Divisions = 10 (No.of Small ticks between Big Ticks)



Properties

***Back Color*:** Define back color for the component.

***Liquid color*:** Shows temperature level (mercury) in Thermometer.

***Tank Color*:** Define background color of thermometer without mercury.

LabelsPosition: Define Labels position. Available options include Top Left, Bottom Right, Both, Internal and None. The naming convention is based on selected orientation of component.

***Orientation*:** Horizontal/Vertical. This is orientation of component and in above figure, it is Horizontal direction.

***Indent*:** It is the gap between border and start of scale.

Text Font: It is to set font for the label including Name of Font, Size of font and Style of font. Supported styles include Regular, Bold, Italic, Underline & Strikeout.

Bevel: It is to set border including inner border, outer border and style of border.

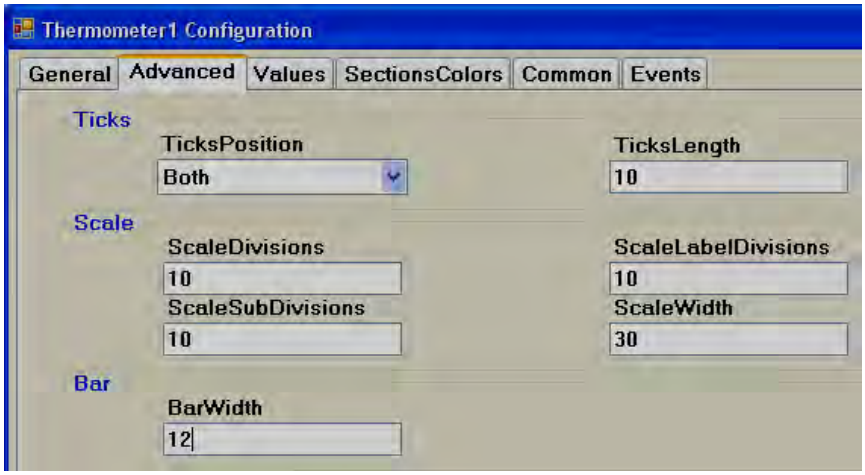
Inner Border: True/False

Outer Border: True/False

Style: 9 styles are available

None, Flat, Single, Double, Raised, Lowered, Double Raised, Double lowered, Frame Raised, Frame Lowered.

Tag Binding: Select the Analog Tag of process value.



Ticks Position: Define ticks position. Available options include Top Left, Bottom Right, Both, Internal and None.

Ticks Length: Set Tick length in pixels

Scale divisions: Define number of scale divisions (Big Ticks) for the component.

Scale Sub Divisions: Define number of Sub divisions between the above scale divisions (Number of Small ticks between any two Big Ticks).

Scale Label Divisions: Define number of Labels to be displayed for component as per Scale Range of process value. For ex: 0, 10, 20, 30é 100.

Scale Width: Define Scale width. If you have ticks on both sides of component, then, it defines width between Upper (Left) and Lower (Right) scale divisions based on orientation of component.

***Bar Width*:** Define width of Bar in pixels.

Maximum: This is maximum range of Set point (Analog Tag, Normally Analog input, 20 mA, 10V DC etc.)

Minimum: This is minimum range of Set Point (Analog Tag, Normally Analog input, 4 mA, 0V DC etc.)

Example: If Temperature transmitter range is 0 to 100 Deg.C, set Minimum = 0, Maximum = 100.

Reverse Scale: True/False. Define Scale direction.

Step: It is the minimum value to reflect change of mercury level.

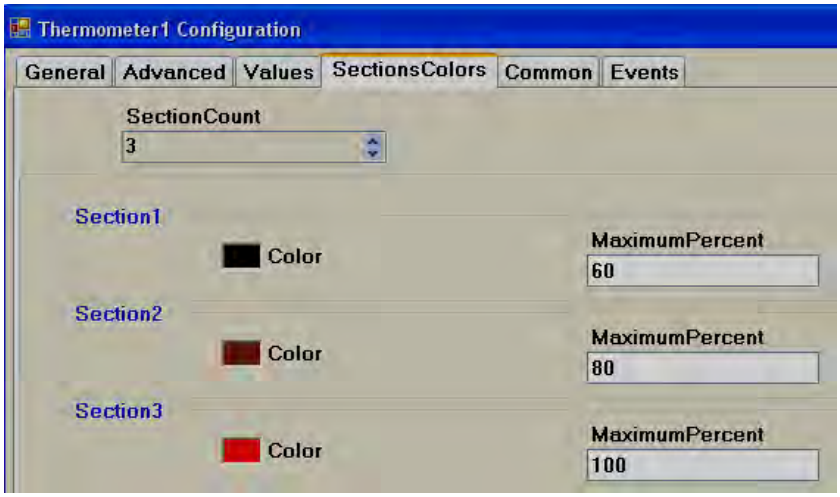
> For example: By default, Step = 0, i.e., Mercury level moves in Real time even with minor change in process value.
>
> For example: Step = 5, i.e., Mercury level moves its position in Real time in steps of 5.

Value: It is used to enter process value in design time and check mercury level position in PC.

Indicator only: If selected, then, this component is used for Read only. If it is not selected, then, this component can be used for Write/Read purpose.

Write design time value: If selected, it writes design time value instead of default value defined at tag data base.

***Value Position*:** Define position for the value to appear in Run time. Available options include Top left, Bottom Right, Both, Internal and None. The naming convention is based on orientation of component.

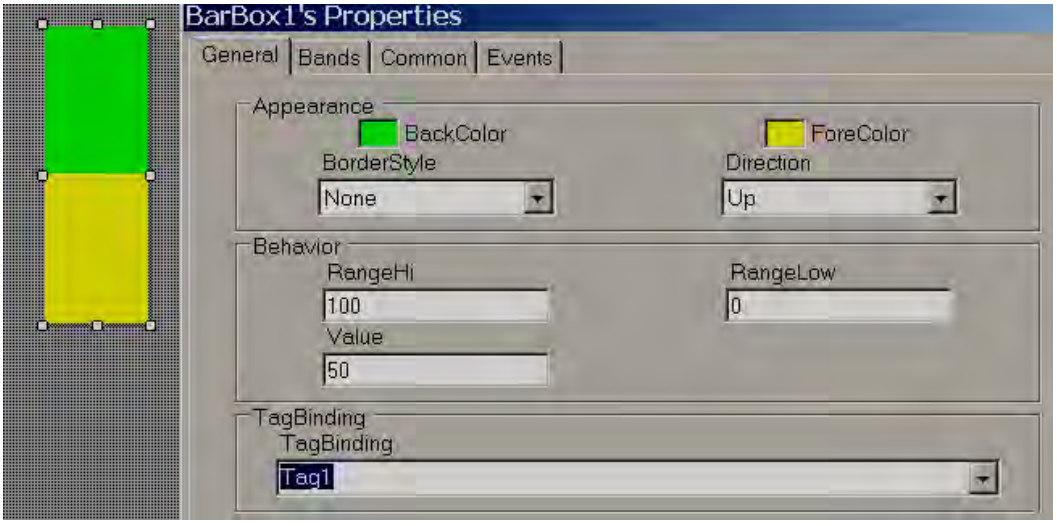


Section Colors: Define bands to display Ticks and Label color accordingly based on value of tag in Run time.

5.3.18.6 Bar Box

Bar Box is a Graphical User Interface widget display bar graph for Analog Tag in Run Time.

Every Bar box should be linked with ***Analog*** Tag.



Properties

Border Style: Define border style. They include Fixed single, Fixed 3D and None.

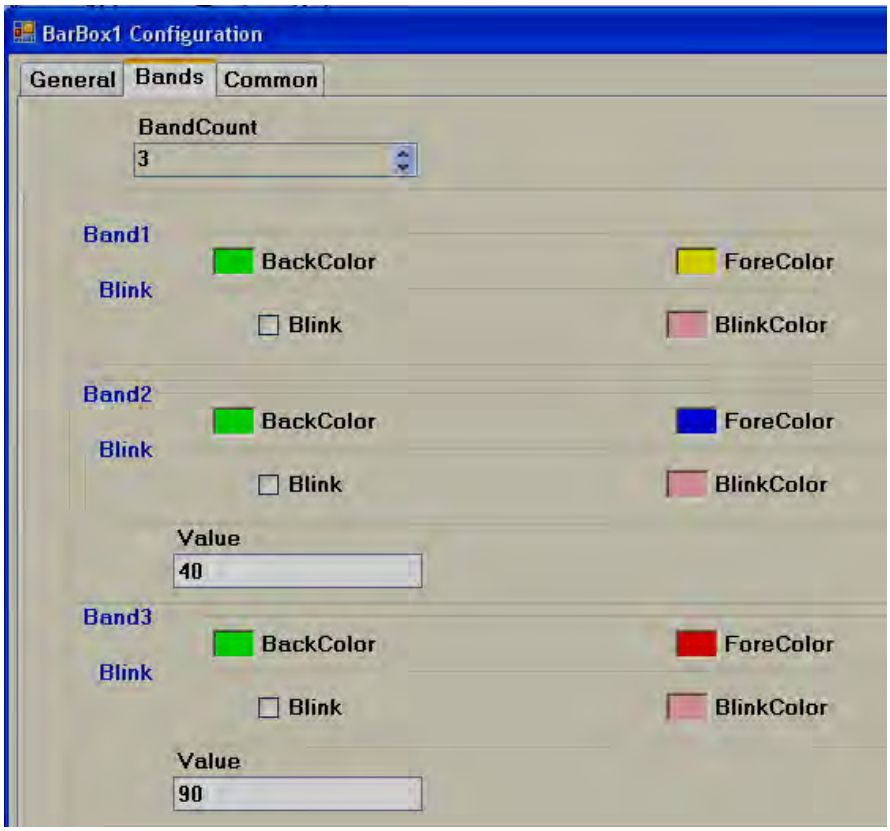
Direction: Define direction of Bar graph. Up/Down/Left/Right

Range high: Display scale high.

Range Low: Display scale low.

Value: Default value. It is to check how fore color, back color displays in PC during design time.

Tag Binding: Select the Analog Tag of process value.



Bands

It is to define various bands for the process value to appear and display animation in Run time.

Band count: Use up/down buttons to increase/decrease number of bands. Maximum 32 bands are supported. In each band, it is possible to configure back color, fore color and blink properties.

Back color: Define back color.

Fore Color: Define fore color.

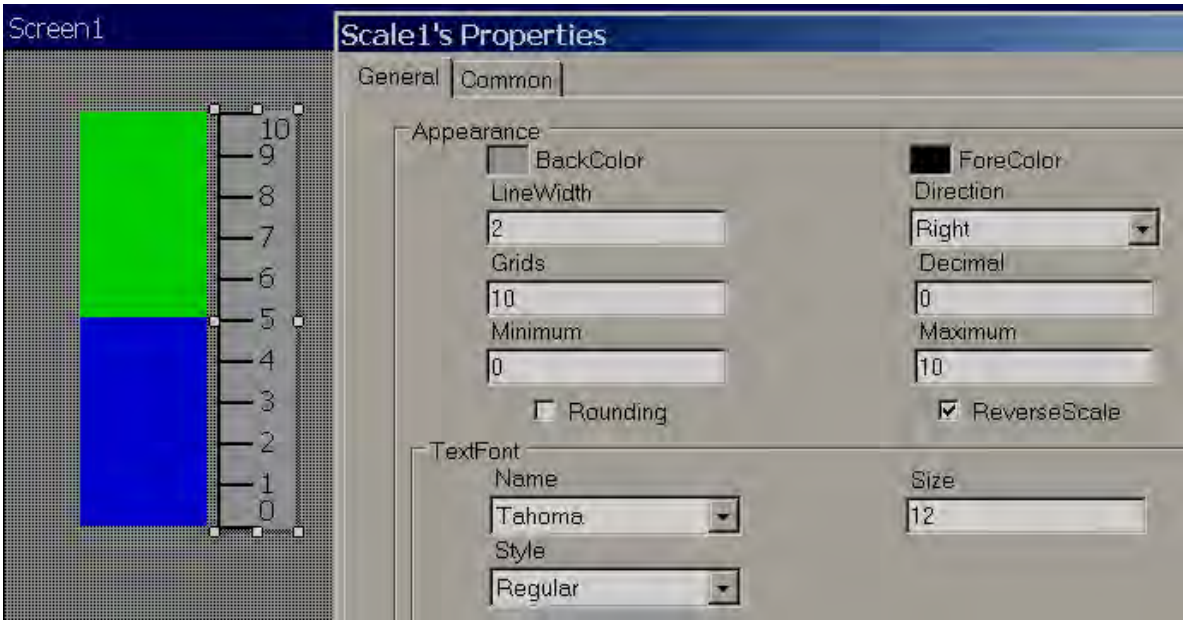
Blink: Select ñTrueòif blink is required and ñFalseòif blink is not required.

Blink color: If ñTrueòis selected for blink, then, this property is visible and select required blink color.

Value: It is the band range. For the first band, it is always Range Low value defined for bar box. Band 1 high range is value defined at Band2. Band 2 high range value is value defined at Band3 so on.

5.3.18.7 Scale

Scale is a Graphical User Interface widget used along with bar box if required.



Properties

Back color: Define back color

Fore Color: Define fore color

Line width: Define width of line

Grids: Define number of grids

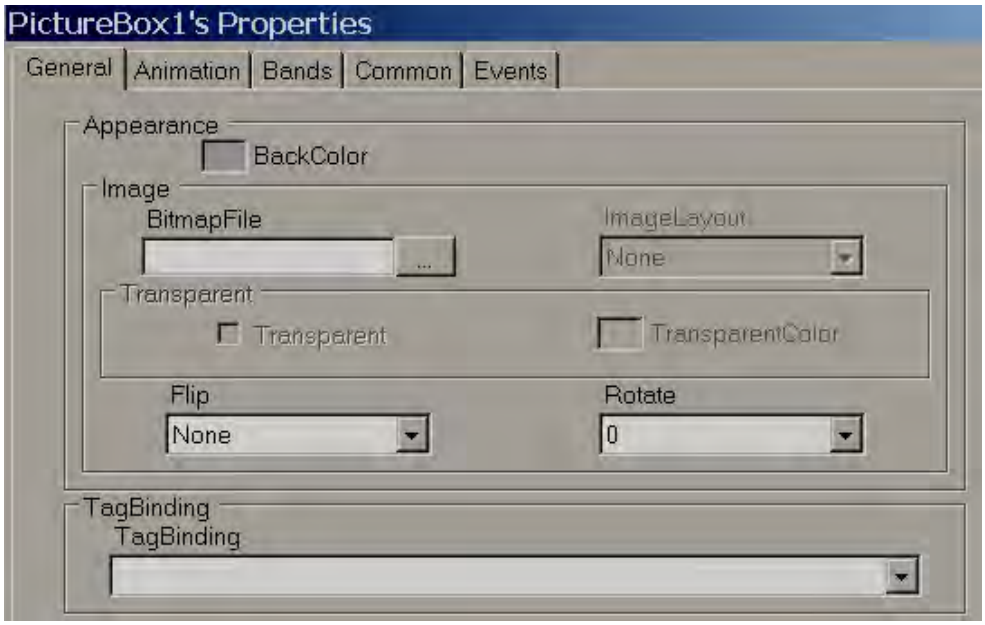
Direction: Define direction of Scale. Up/Down/Left/Right

5.3.18.8 Picture box

Picture box permits the user to link different picture file into Picture box component during design time and then later view them in Run time based on value of Tag. Supported formats includes

Bitmap file (*.bmp)

Windows Metafile (*.wmf)
JPEG File (*.jpg)
Graphics Interchange format (*.gif)
Portable Network Graphic (*.png)



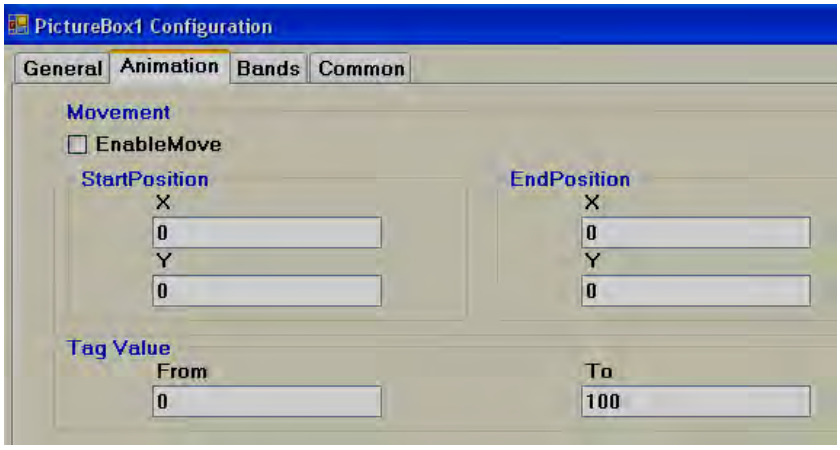
Properties

Bitmap file Select the image to be shown in the object

Flip: It is to flip picture file in design time. Available options are Horizontal, Vertical, Both and None.

Rotate: It is to select direction for the picture file in design time to adjust direction. Available directions include 0 ^{O}, 90 ^{O}, 180 ^{O} and 270 ^{O}

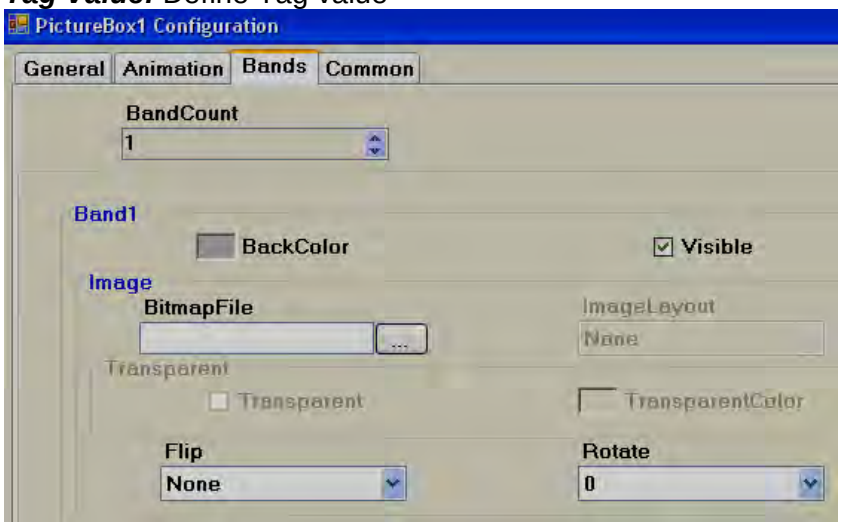
Tag Binding: Select the Analog tag to be linked with Picture box.



Movement: Select Enable Move if it is required to move picture in Run time from Location 1 to Location 2 based on tag Value. Start and End coordinates

for X and Y needs to be configured in Design time and Picture moves in Run time based on Tag value.

Tag Value: Define Tag value



Band Count: Define number of bands required.

Back Color: Define back color for the selected picture file in specific band.

Visible: Define visibility for the picture in specific band.

Bitmap file: Select picture file for specific band.

Image Layout: Position of image with in Picture container. Available options include None/Center/Stretch. When stretch is selected, it attempts to fit picture file to the size of container.

Transparent: Select if no back color is required for picture file.

Flip: It is to flip picture file in design time. Available options are Horizontal, Vertical, Both and None.

Rotate: It is to select direction for the picture file in design time to adjust direction. Available directions include 0^{O}, 90^{O}, 180^{O} and 270^{O}

Example: You may take a photo of a section of the factory floor like a tank and use this in Recorder screen instead of default symbols.

If a bitmap file by name sunset.jpg is linked with Picture box1 in screen1. If you wish the same sunset.jpg in screen no2, do not create picture box and link with sunset.jpg again. Since a resource with name sunset already available, if you try to use the same image in other place, it may not allow you to do so and may prompt with error message. If you really need the same image again, copy picture box1 at screen1 and paste it in screen no 2.

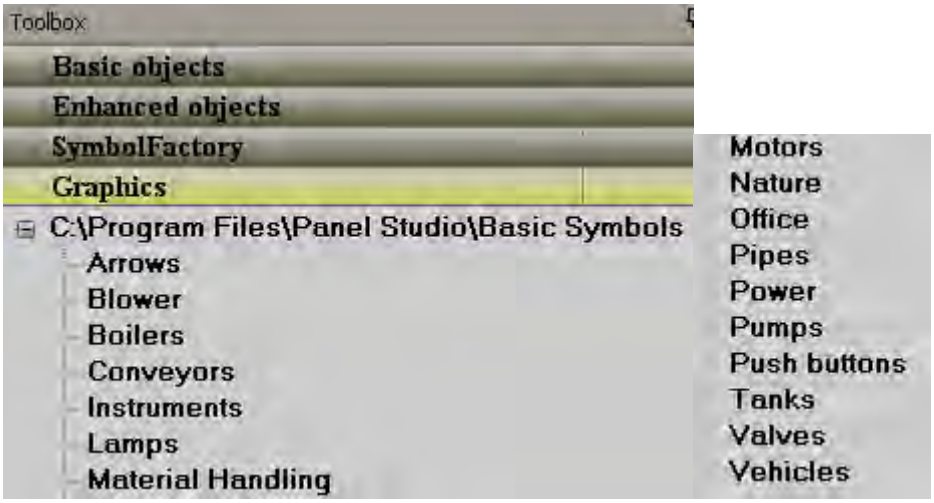
5.3.19 Graphics

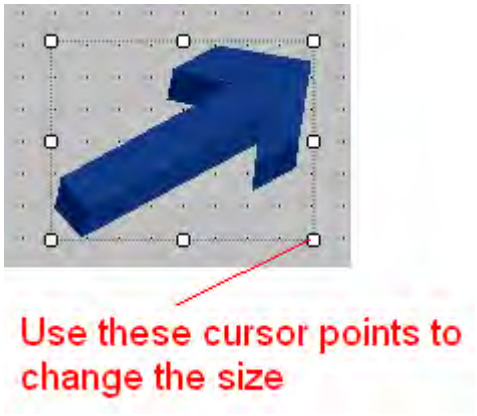
It is to select a symbol in screen like a Tank, Motor etc... Basic symbols are available in Recorder Editing Software and it includes the following symbol categories.

Symbol categories

	Category	Symbols	Colors	Qty
1	Arrows	7	6	42
2	Blowers	5	6	30
3	Boilers	4	6	24
4	Conveyors	6	6	36
5	Instruments- True Color	7	C	7
6	Lamps	4	6	24
7	Material handling	8	C	8
8	Motors	4	6	24
9	Nature-True Color	6	C	6
10	Office-True Color	7	C	7
11	Pipes	10	6	60
12	Power-True Color	7	C	7
13	Pumps	5	6	30
14	Push buttons	8	6	48
15	Tanks	5	6	30
16	Valves	8	6	48
17	Vehicles-True Color	6	C	6

C = True Color



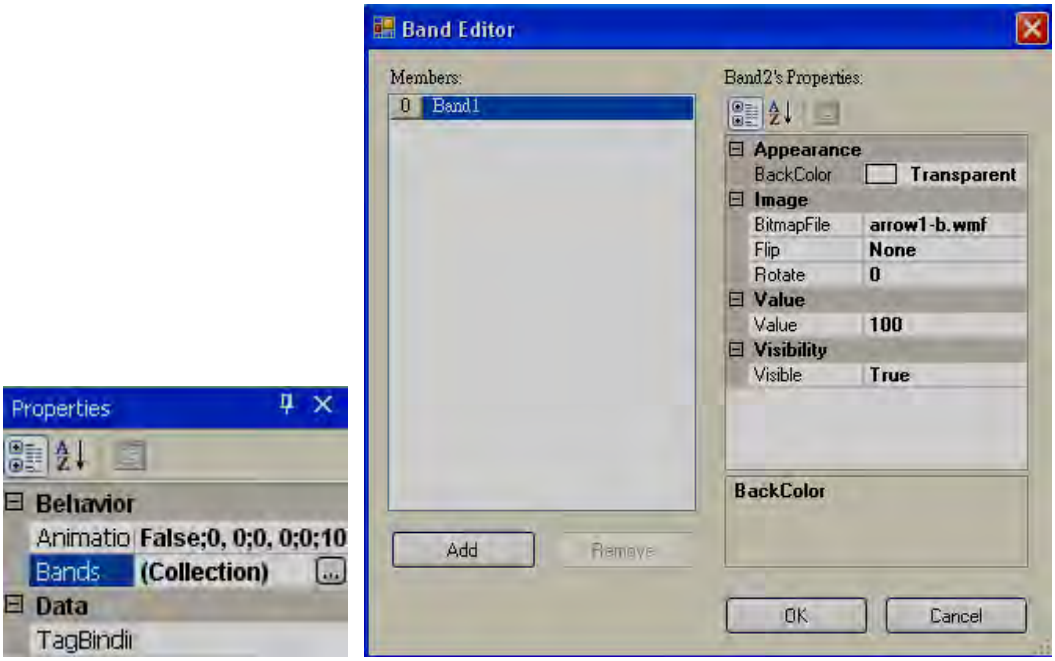


Some symbols are available with 6 different colors in Red, Green, Yellow, Blue, Brown and Grey.

All the symbols are vector graphics, occupies less memory space with high quality.

It is possible to set transparent property for symbol in design time from property grid. Transparent means screen color itself will appear as back ground color. Also, it is possible to change symbol back ground color during design time and Run time.

How to set transparent property to symbol from property grid



Click at é at Bands and then select Back Color = Transparent

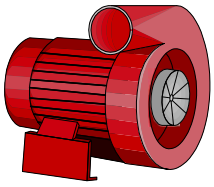


Fig: Back color=Transparent

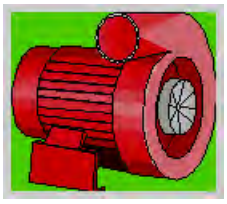


Fig: Back Color=Green color

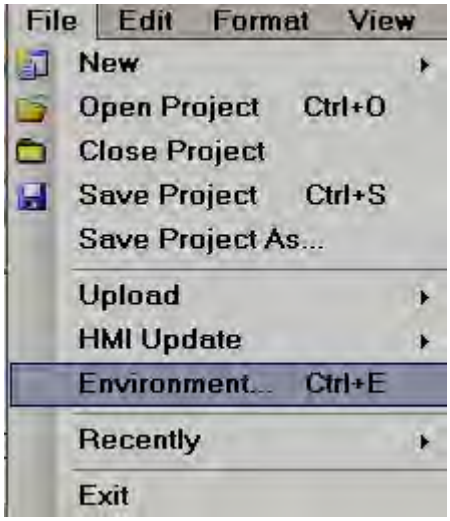
Since all are vector symbols, if symbol is enlarged, it does not loose quality.

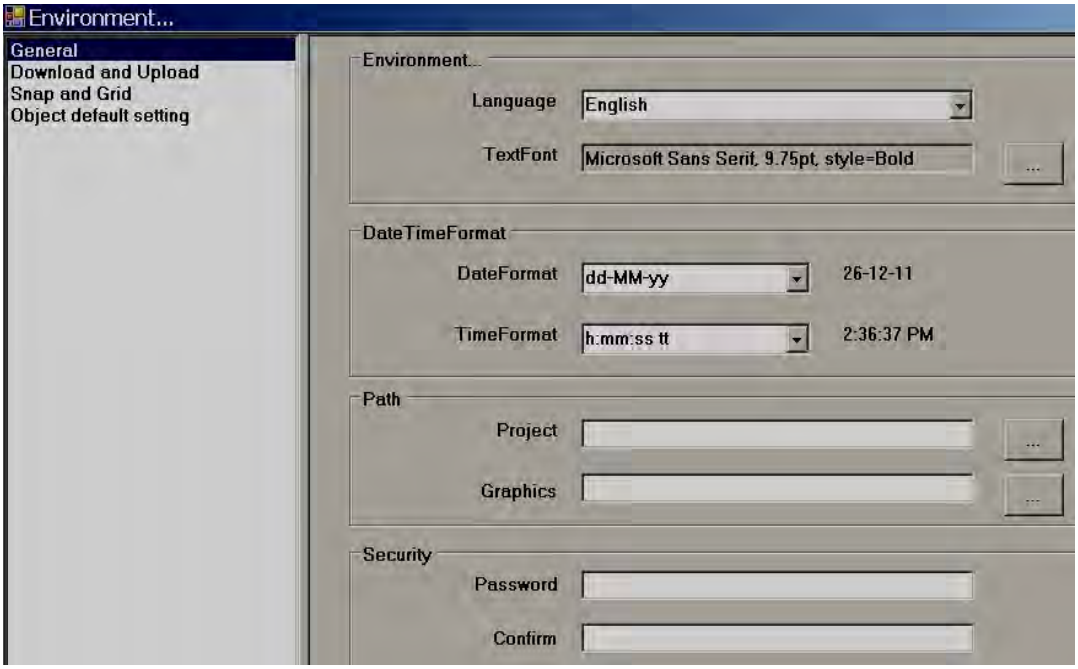
When Recorder Editing Software is installed, all the basic symbols will be installed at default folders C:\Program Files\Recorder Editing Software\Recorder Editing Software\Basic Symbols

However, if applications developer has any additional symbols, they can be arranged in folders and placed along with standard basic symbols and keep them in above path.

Example: Create a folder by name ñCustomòand copy it to C:\Program Files\Recorder Editing Software\Recorder Editing Software\Basic Symbols

It is possible to set path for graphic symbols in Recorder software. In Menu bar, Click on ñFileò, then select ñEnvironmentòand then select ñGraphics pathòsuch that all these will appear in a tree structure directly with in Recorder editor such that no need to import these kind of symbols using special component ñPicture Boxò

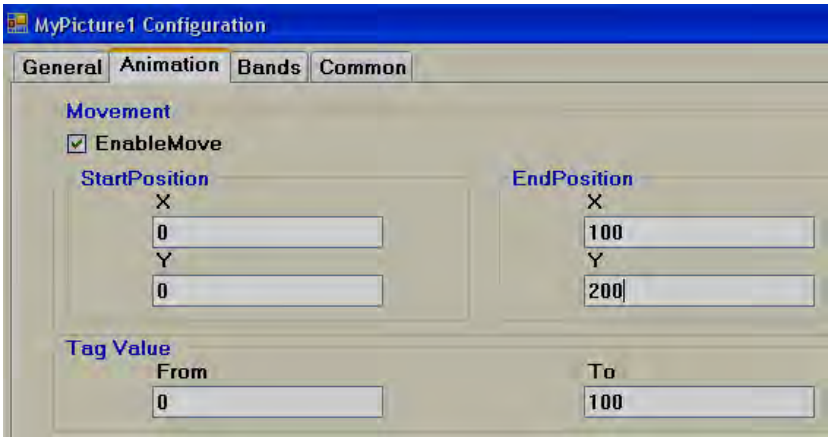




Once symbol is selected in Recorder from Graphics, then if required it is possible to change Flip or rotate basic symbols in 0^0, 90^0, 180^0 and 270^0

Properties

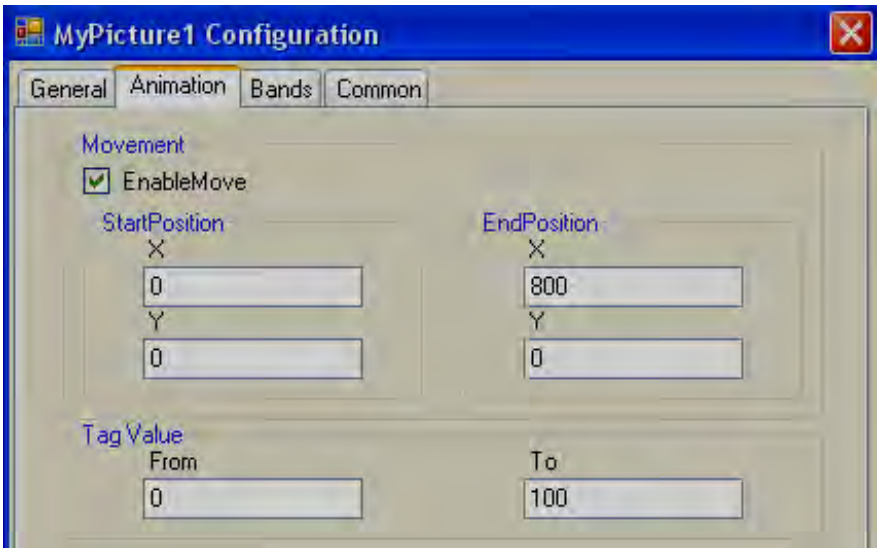
Tag Binding: Select Analog Tag if animation is required for the symbol in Run time.



Movement: Select Enable/Move and then, enter X and Y start and end positions in pixels.

Tag Value: It is linked with Start and End Positions.

Ex: Recorder 7" (High Performance), Screen Resolution = 800 X 480, Horizontal installation, Width=800, Height=480. Move symbol from Left to Right in screen at Run time when tag value changes from 0 to 100

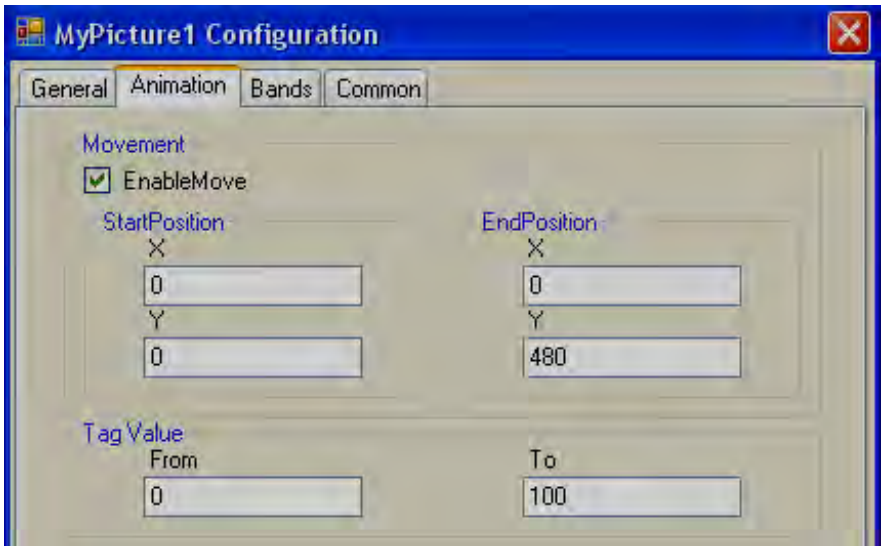


To move symbol from Left to Right, set start and end Positions for X coordinate in pixels and there is no need to set Y coordinates.

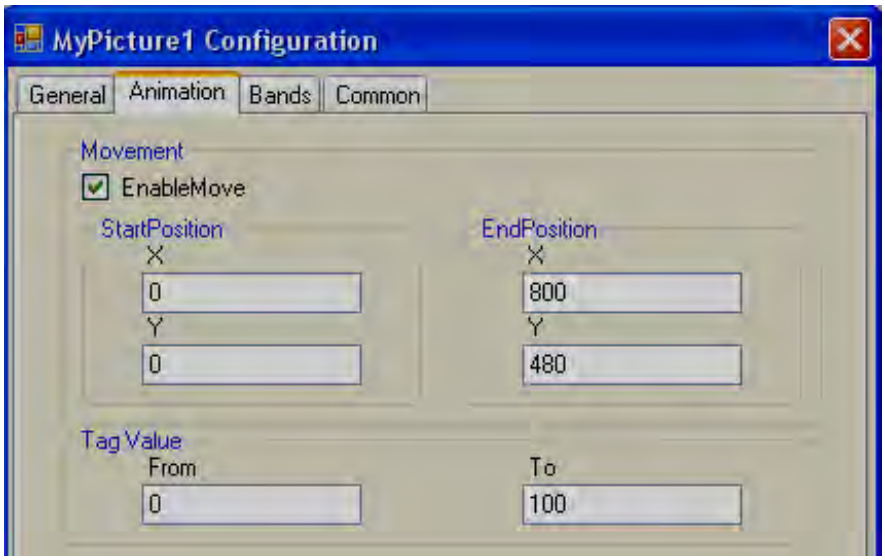
Tag value = 0 corresponds to Start Position (X)

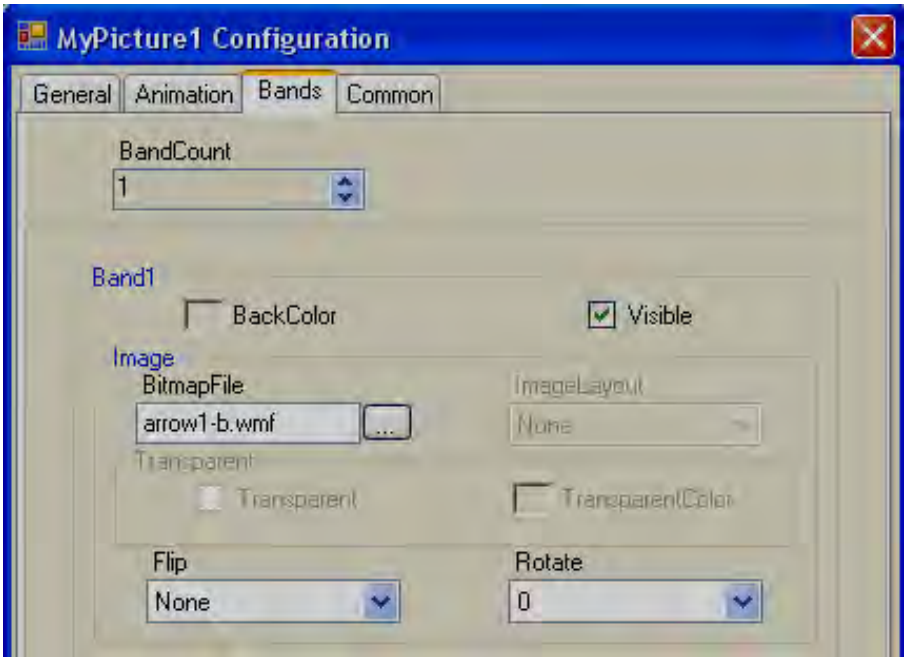
Tag value = 1000 corresponds to End Position (X)

Ex: Recorder 7" (High Performance), Screen Resolution = 800 X 480, Horizontal installation, Width=800, Height=480. Move symbol from Top to Bottom in screen at Run time when tag value changes from 0 to 100



Ex: Recorder 7" (High Performance), Screen Resolution = 800 X 480, Horizontal installation, Width=800, Height=480. Move symbol from Left Top to Right Bottom in screen in angle at Run time when tag value changes from 0 to 100





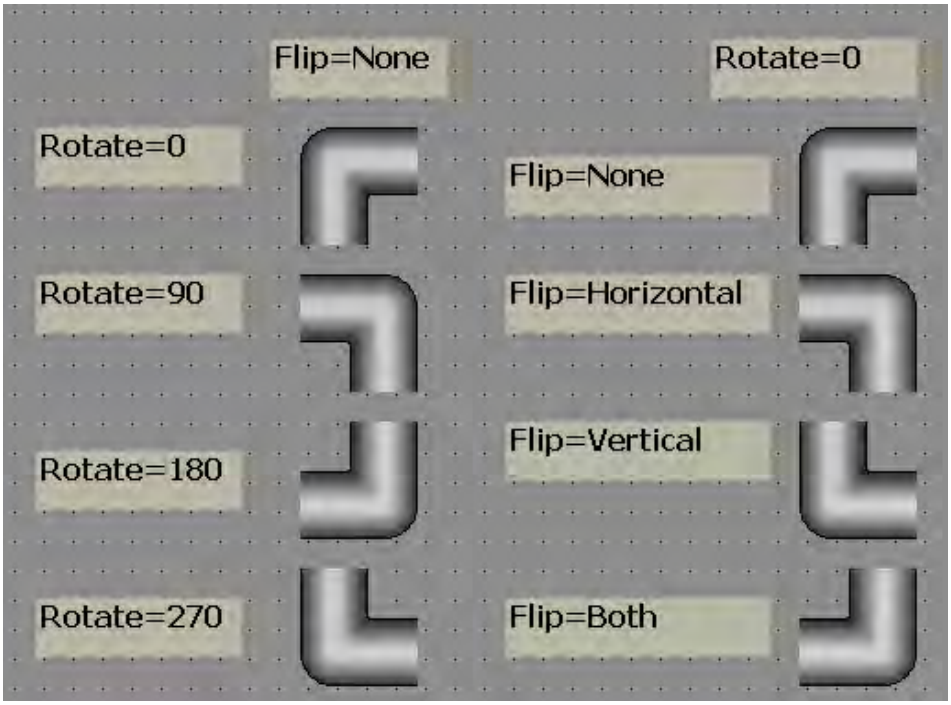
Band Count: It is to define bands for run time animation of symbol. Max. 32 bands are supported.

Back Color: Define Back Color of symbol to appear in specific band in Run time.

Visible: Define visibility control for symbol in specific band in Run time.

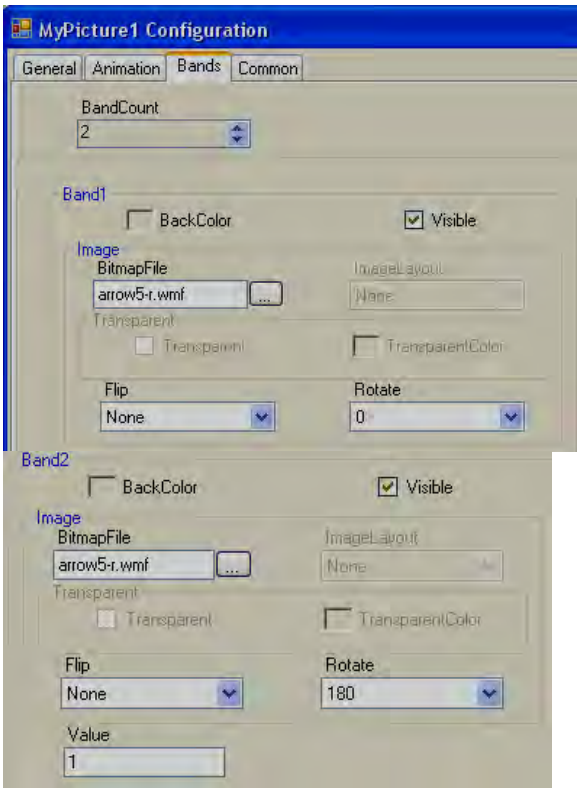
Image: Select different image file if required to display in specific band in Run time.

Flip: Define flip position for the symbol in specific band in Run time. Available options include None, Horizontal, Vertical and Both.



Rotate: Rotate symbol to any predefined direction in specific band at Run time. Available options include 0^{O}, 90^{O}, 180^{O} and 270^{O}

Example: There is Liquid level Tank. When, Tag value =0, an arrow should appear in Down direction indicating discharge of tank is in progress and when Tag value = 1, arrow should appear in Up direction indicating filling of tank is in progress.



5.3.20 Symbol Factory

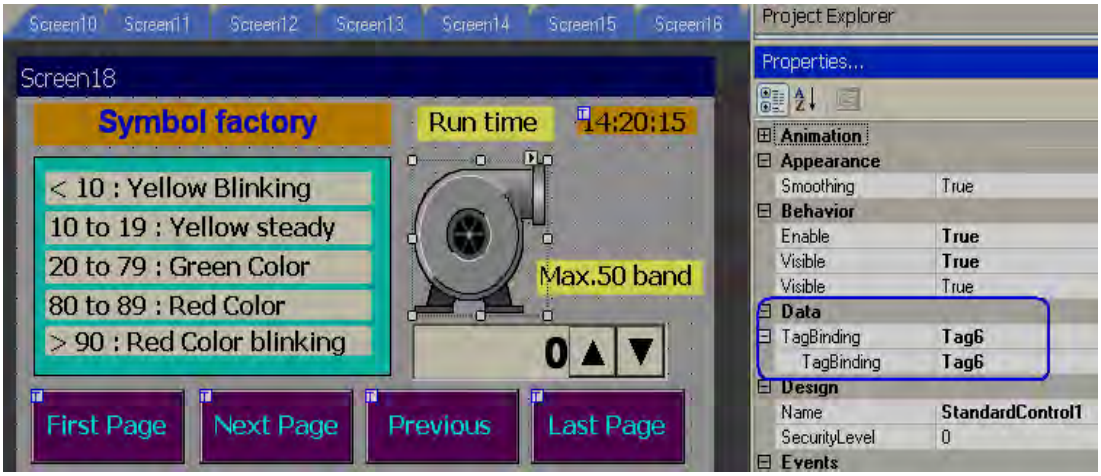
Symbol Factory® contains more than 4000 symbols in 64 categories.

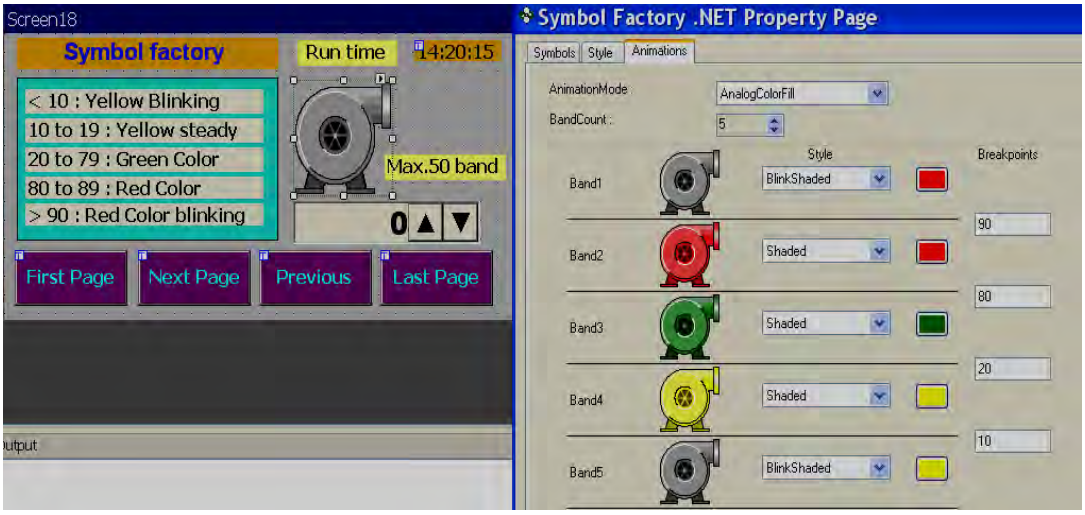
No.	Category	Symbols	No.	Category	Symbols
1	3-D Pushbuttons Etc.	73	35	Machining	90
2	Air Conditioning	140	36	Maps and Flags	23
3	Architectural	49	37	Material Handling	118
4	Arrows	63	38	Mining	63
5	ASHRAE Controls & Equipment	100	39	Misc. Pipes	39
6	ASHRAE Ducts	86	40	Misc. Symbols 1	57
7	ASHRAE Piping	49	41	Misc. Symbols 2	79
8	Basic Shapes	86	42	Mixers	24
9	Blowers Etc.	34	43	Motors	38
10	Boilers	36	44	Nature	71
11	Buildings	42	45	Operator Interface	28
12	Chemical	50	46	Panels	14
13	Computer Hardware	38	47	Pipes	82
14	Computer Keys	68	48	Plant Facilities	52
15	Containers	56	49	Power	61
16	Controllers	35	50	Process Cooling	20
17	Conveyors, Belt	40	51	Process Heating	61
18	Conveyors, Misc.	26	52	Pulp & Paper	35
19	Conveyors, Simple	56	53	Pumps	99
20	Ducts	51	54	Safety	27
21	Electrical	83	55	Scales	36
22	Finishing	45	56	Segmented Pipes	41
23	Flexible Tubing	24	57	Sensors	55
24	Flow Meters	35	58	Tank Cutaways	23
25	Food	72	59	Tanks	145

26	General Mfg.	68	60	Textures	181
27	Heating	108	61	Valves	73
28	HVAC	74	62	Vehicles	41
29	Icons and Bitmaps	159	63	Water & Wastewater	112
30	Industrial Misc.	19	64	Wire & Cable	21
31	International Symbols	42		Total	4045
32	ISA Symbols	183			
33	ISA Symbols (3-D)	123			
34	Laboratory	23			

With Recorder Editing Software, only first symbol from symbol factory can be selected. If you need all symbols, order Recorder Editing Software Plus software and we will supply USB hardware lock to access more than 4000 symbol factory graphics

It is possible to link Analog Tag with Symbol factory graphic and change colors in Run time. 50 bands are supported



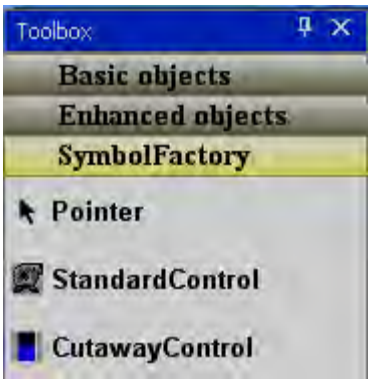


Design Time

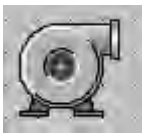
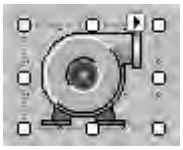
In design time it allows to you to change colors of these symbols by application engineer.

Example: Change tank color from standard grey scale to Green color.

Task: Place symbol on a screen



In Tool box, click on ñSymbol Factoryòand then, drag and drop standard control to screen.

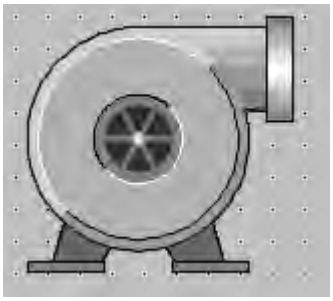


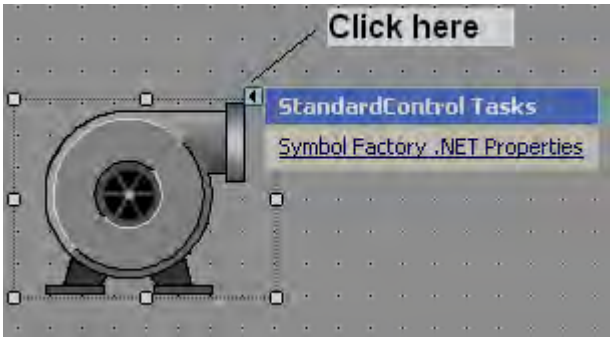
Fig 1 Fig2 Fig3 Fig4

Task: Increase size of symbol

Select the symbol in screen and it will be as shown as Fig2

Then, move mouse to a square pointer till arrow appears and then hold left click at mouse and drag to increase size of symbol as per your requirement and then it will be as shown in Fig4. Alternatively, in property grid, enter size in pixels as shown attached.

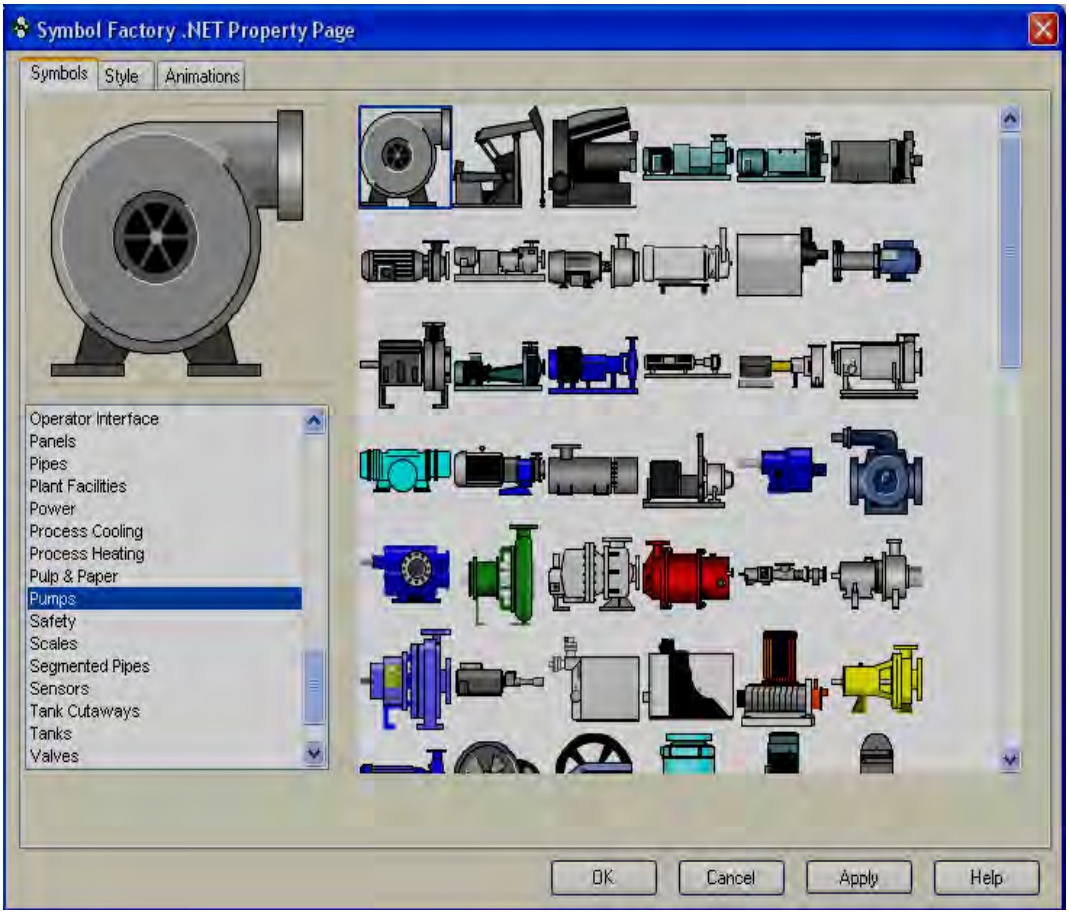
Task: Changing symbol to another category



Drag and drop symbol factory component into screen.

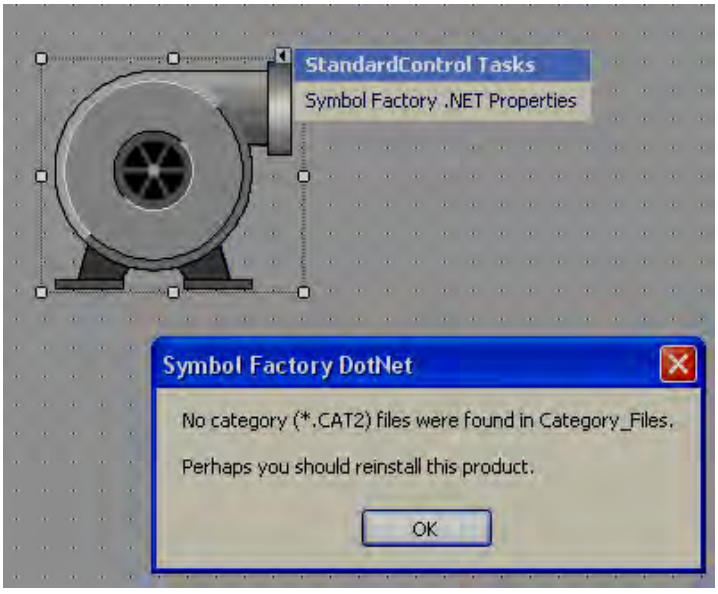
Click on ◧ and then click on Symbol Factory.NET Properties.

Alternatively, select the symbol factory component using single click (left) by mouse, keep mouse cursor on symbol, then, double click (left) in mouse to open symbol properties, then, it shows following screen.



Select the required category, select the symbol and click on button ñOKò, then new symbol will be placed in screen.

Click on Help in above screen to open Chm type help file (English) for symbol factory.



If above error message appears, then, it is required to reinstall symbol factory.

Style

It is to define style of symbol in design time.

Click on ñStyleò then ñfollowing screen will appear.

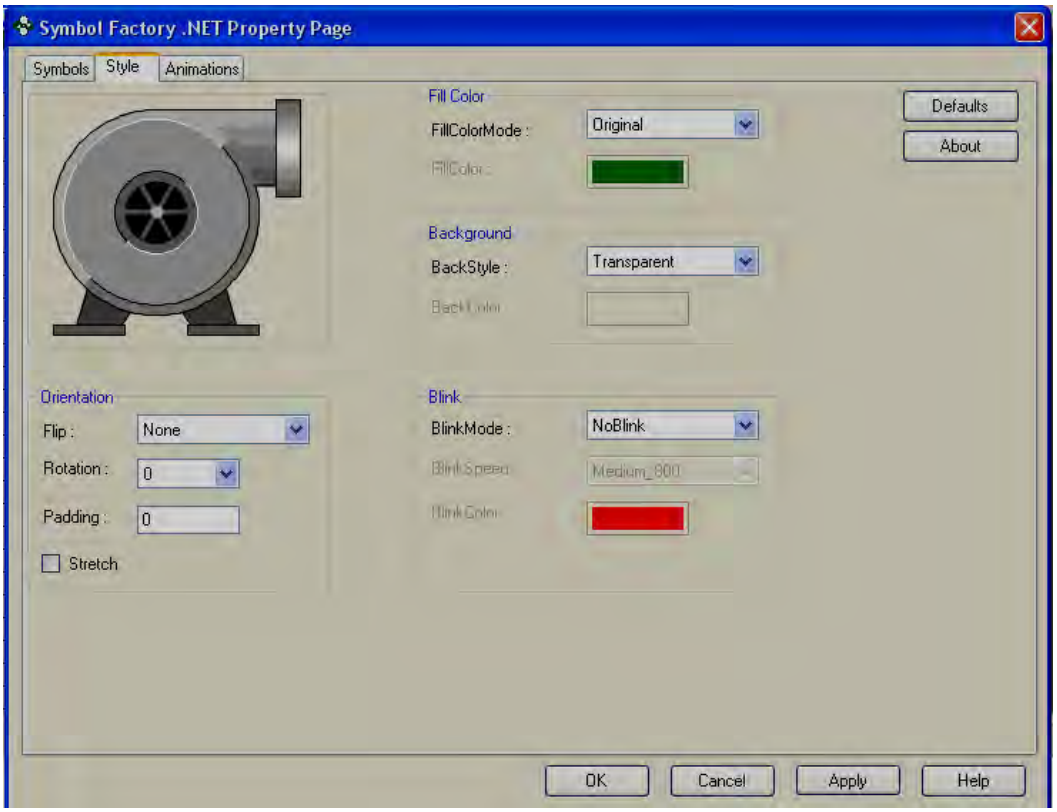
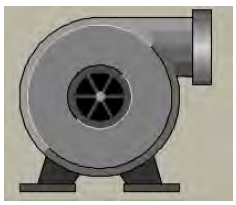
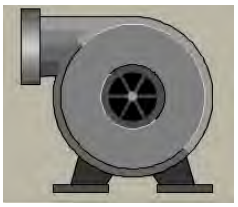


Fig: Default Style settings

Orientation:

Flip: It is possible to flip symbol in Design time and available options include Horizontal, Vertical, Both and None.





Flip=None Flip = Horizontal

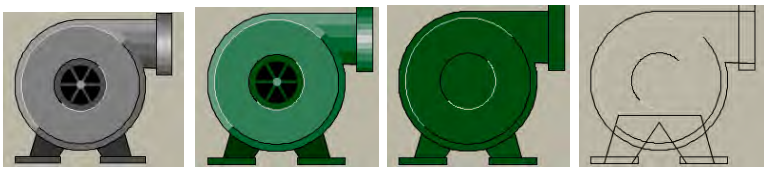
Rotation: It is possible to rotate symbol in design time and available options include 0^0, 90^0, 180^0 and 270^0

Padding: Normally it is 0. It is used to decrease size of symbol with in selected boundaries.

Stretch: It is used to stretch symbol with in selected boundaries.

Fill Color:

Fill color mode: Available options include Original, Shaded, Solid and Hollow.



Fill Color Mode:	Original	Shaded	Solid	Hollow
Fill Color:	N.A	Green	Green	N.A

Fill color: Define color to be filled in Shaded and Solid fill color mode.

Background:

Back Style: Available options include Transparent & Opaque. Transparent means screen background color will appear for symbol. Opaque means, it is possible to set different background color for specific selected symbol.

Back color: Define background color when back style = Opaque.

Blink:

Blink mode: Available options include No Blink, Blink Invisible, Blink shaded and Blink Solid.

NoBlink: Blink is not required for symbol either in design time or Run time. Blink Speed and Blink color = Not available for selection.

BlinkInvisible: Symbol will appear and disappear cyclically in both design time and Run time as per set Blink speed. Blink color: Not Available for selection.

BlinkShaded: Symbol will flash, total 2 colors, one color at a time on same symbol as per set blink speed in both design time and Run time.

Example

Fill Color mode = Shaded, Color = Green

Blink shaded setting: Blink mode=Blink shaded, Blink speed = Medium_800, Blink color = Blue

Then, green color shaded symbol appears first time, then symbol turns into blue color shade after elapsing time at blink speed setting.

Blink speed: Define blink speed. Available options include Fast_400, Medium_800, Slow_1200. Its period is in ***ms***.

Blink color: Define background color

 Normally, blink is not used in design time and default settings will be as follows

1. Fill Color Mode = Original. If different color is required for symbol, select Fill color mode = Shaded and then define Fill color

2. By default, Back Style = Transparent in Background
3. By Default, Blink mode = NoBlink

Animation

It is to define animation for the symbol to appear at Run time in Recorder.

Animation mode:

Define animation mode. Available options include Analog Color Fill, Discrete color fill, Analog integer color fill.

AnalogColorFill: Select this option if you wish to link analog type tag and then define band for the colors. For ex: 0 to 10, Color = Yellow, 10-90, Color = Green, 90-100, Color = Red etc..(See next section ñHow beak points work for more details)

DiscreteColorFill: Select this option if you wish to pass discrete values like 1,2,3é in Run time to the Tag linked with symbol for display of different colors. See next section ñHow beak points work for more details)

AnalogIntegerColorFill: This is same as Analog color fill, but only integer value is passed to the Tag linked with symbol. See next section ñHow beak points work for more details)

Band count: Define number of bands required for selected Animation mode

Styles: Define style of symbols. Available options include Original, Shaded, Solid, Blink Invisible, Blink shaded and Blink solid. All definitions are same as explained earlier.

5.3.20.1 How break points work

The idea behind Breakpoints is that certain animation will occur when a property of the component changes. If this change falls within the defined parameters (see below), an animation will be triggered

Please note: The screen shots in the examples below are based upon the Symbol Factory .NET Standard Control, but the same principle applies to the Cutaway control.

Two types of animation can be defined based upon the setting of Animation Mode: Analog Break Points and Discrete Break points

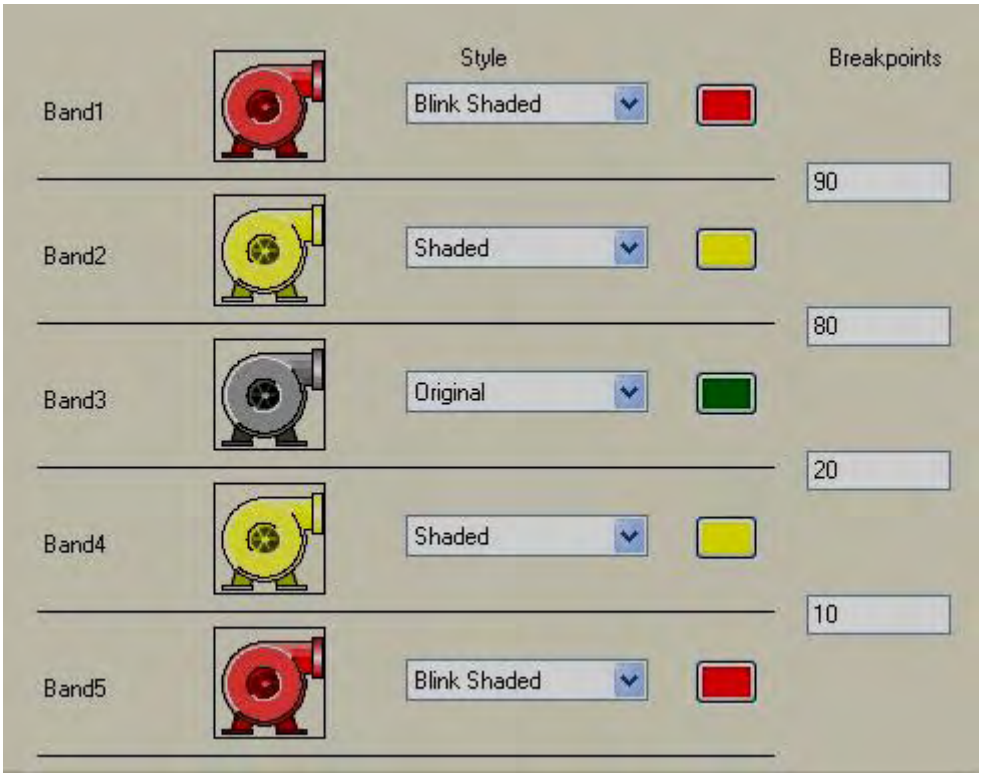
Analog Break points (Animation Mode = Analog integer color fill or Analog color fill)

Analog breakpoints are defined as a value on which an animation will trigger when a property on the component reaches that level. Depending upon your component, different properties will need to be changed depending upon the setting of Animation Mode. These properties are:

Component	Animation Mode Setting	Property that Changes to trigger an Animation
Standard	AnalogColorFill	AnalogValue1
Standard	AnalogIntegerColorFill	AnalogIntValue1
Cutaway	AnalogColorFill	Level
Cutaway	AnalogIntegerColorFill	LevelInt

Number and Ordering of Breakpoints

The number of breakpoints available to you is the number of bands defined minus 1. As a breakpoint is defined as the point to which an animation changes, make sure you arrange the breakpoints from high to low. So, for example, suppose you had this screen:



When the value of your property changes, this is what will happen to the control:

Value of Property	Band that is Active	Appearance of Component
Less than 10	Band5	Blink Shaded Red
10 to < 20	Band4	Display Shaded Yellow
20 to < 80	Band3	Original
80 to < 90	Band2	Display Shaded Yellow
Greater than 90	Band1	Blink Shaded Red

If you do not order your breakpoints in descending order, your results will be unpredictable.

Discrete break points (Animation mode = Discrete color fill)

Discrete Breakpoints aren't really breakpoints - instead, they enable animation if the "DiscreteValue" of an element in the BandsCollection is set to true.

However, since multiple DiscreteValue properties can be set at the same time, how does the component determine the animation to display? What it does is give

priority to the animations based upon their order in the BandsCollection. If the first band in the collection (by default, Band1) has its DiscreteValue set to True, then that animation will be shown no matter which band also has its DiscreteValue set. As another example, if Band2 and Band5 each has their DiscreteValue set, the animation used will be the one defined in Band2.

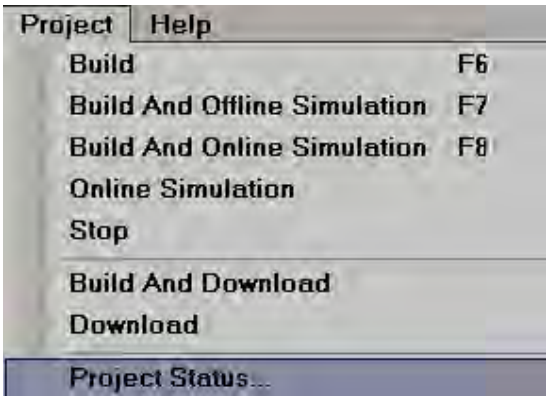
Therefore, given the following definition of five bands:

Here is what the animations will be shown based upon different values of Discrete Value

Discrete Value for Band1	Discrete Value for Band2	Discrete Value for Band3	Discrete Value for Band4	Discrete Value for Band5	Appearance of Component
True	False	False	False	False	Blink Shaded Red (Band1)
False	**True**	False	False	False	Shaded Yellow (Band2)
False	False	**True**	False	False	Original (Band 3)
False	False	False	**True**	False	Shaded Orange (Band 4)
False	False	False	False	**True**	Blink Shaded Black (Band 5)
True	**True**	**True**	**True**	**True**	Blink Shaded Red

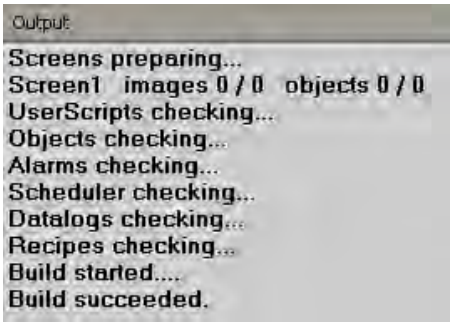
					(Band 1)
False	**True**	**True**	**True**	**True**	Shaded Yellow (Band 2)
True	False	False	False	**True**	Blink Shaded Red (Band 1)
False	False	False	False	False	Original (No bands active)

5.3.21 Project Tools



5.3.22 Build

Once project is compiled successfully, it creates build and this file need to be transferred to Recorder. If any errors during preparation of build, it shows at output window just below to screen working area. If Output is not visible below screen working area, select it via Menu, ñViewò, and then click at ñOutputòor apply ñReset window layoutòfrom the Menu-ñViewò



After creating build, if any errors are shown at Output window, do not attempt to download application from PC to Recorder or PC to USB flash disk for

transferring it to Recorder. First clear the errors and make sure that compilation errors are not present before transferring application to Recorder.

5.3.23 Build & Offline Simulation

First it creates build and then Run Offline simulation.

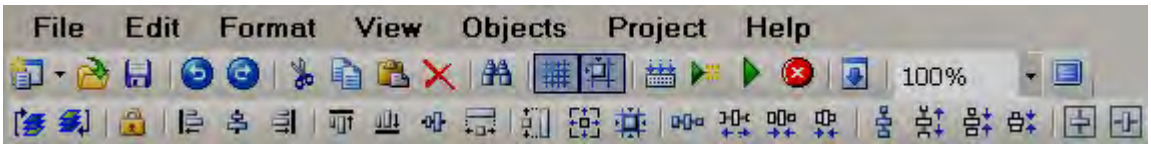
It is to test application in PC before downloading application to the Recorder, without connecting PLC to either PC or Recorder. It is possible to enter some values for the tags via table to check how the application appears in run time at PC itself with out downloading application to Recorder or connecting PLC.

Enter value at ñSetValòcaulmn and then press enter key in keyboard, then, it accepts and shows at ñCurrentValò, then, you will be able to see these values in objects linked with specific tag.

It is better to run offline simulation frequently say once in couple of hours or after completing specific screen editing by application engineer to verify how it works in Recorder such that if there are any compilation errors, it is easy to locate and rectify them to save time.

5.3.24 Stop

It is used to stop simulation program in PC. When Offline simulation is running in PC, click on  Icon in PC to stop the current running simulation.



 If Offline simulation or online simulation is already running in PC and user attempts to run it again, build will fail. It prompts error message similar to the following

Screen1
Build Started….
Could not write to Output file "C:\Program Files\Project\Recorder\Panel.exe"
"The process cannot access the file because it is being used by another process"
Build Failed

In case if the above message is prompted, click on Stop icon  couple of times and make sure that icon  is not available in Task bar. Again click on ñBuildòonce and then run simulation.

5.3.25 Build & Download

It is to build first and then download application from PC to Recorder.

5.3.26 Download

It is to download application from PC to Recorder

Available options

i) PC to Recorder via Ethernet
ii) Removable Disk to Recorder via USB flash disk

PC to Recorder via Ethernet:

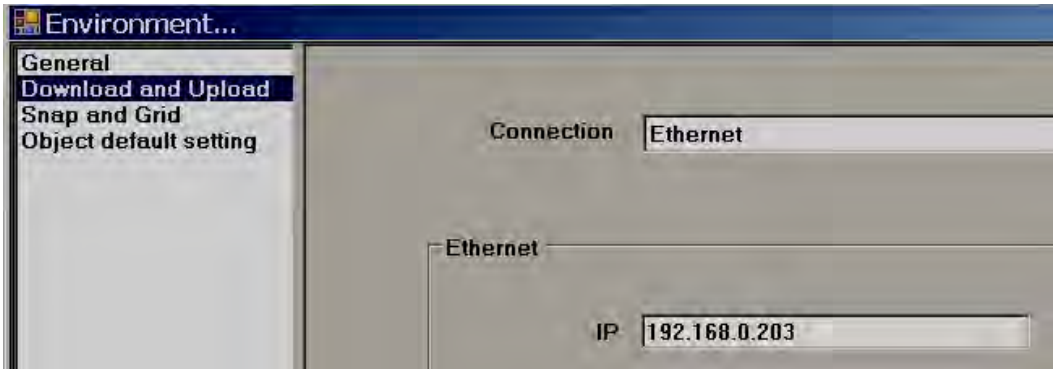
After creating application, create build in PC and make sure there are no compilation errors.

Connect Ethernet cable between PC and Recorder

In editor software, set Environment for Download via Ethernet and enter IP address of Recorder. In Environment, Select ñEthernetò at Download and then, Click at ñOKò button.

In editor software, click at ñProjectò, then click at ñDownloadòor click at  icon.

It builds and transfers application from PC to Recorder. If there are any errors during compilation, it needs to fix compilation errors first and then download it again.



Removable disk to Recorder

After creating application, create build in PC and make sure there are no compilation errors.

Connect USB flash disk in to PC via USB port.

In Recorder editor software, set Environment for Download via Removable disk. In Environment, Select ñRemovable diskò at Download and then, Click at ñOKòbutton.

In Recorder editor software, click at ñProjectò, then click at ñDownloadòor click at  icon.

It transfers application from PC to USB flash disk.

Insert USB flash disk in Recorder.

Switch on Power supply to Recorder. Press at ñLoadò, select Path of project files and then press at ñLoadòbutton near path selection.

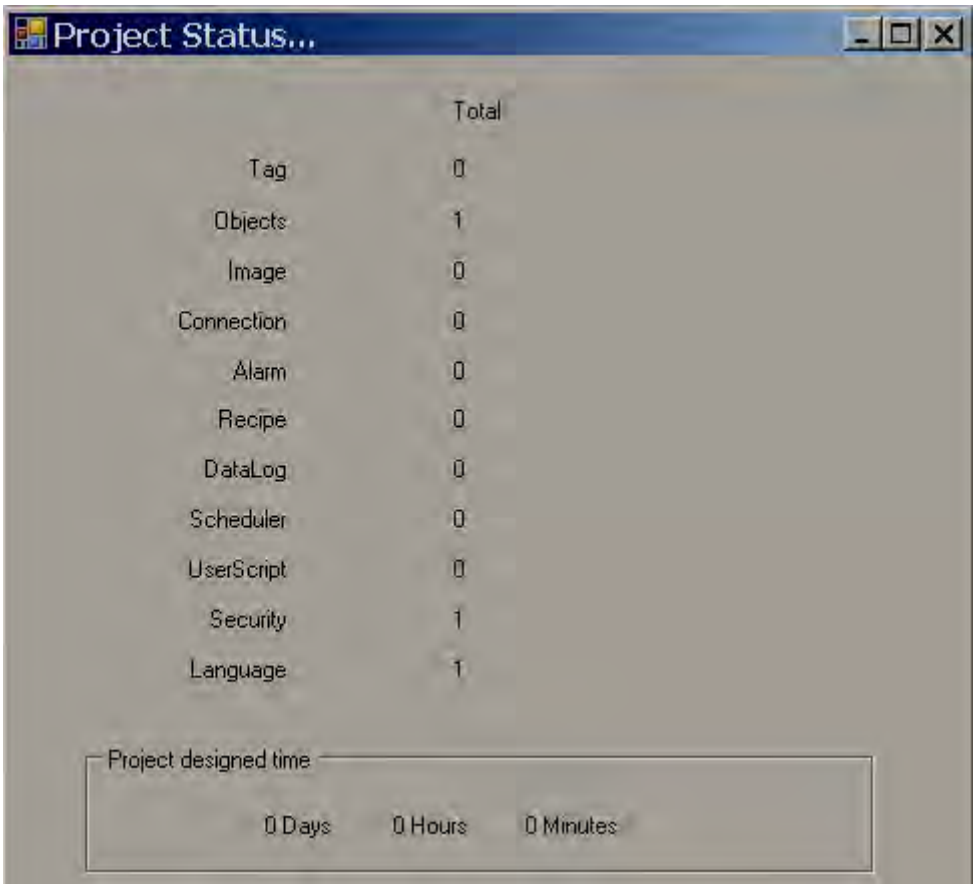
It transfers application from USB flash disk to Recorder.

PC to Recorder via USB to Ethernet Converter

For Low cost Recorder models, now Ethernet is an option. You can purchase USB to Ethernet converter and then it is possible to download application from PC to Recorder via Ethernet. Once USB to Ethernet converter is connected to Recorder, you can see IP address at the Recorder itself via system information similar to onboard Ethernet port

Note: The purpose of USB to Ethernet converter is to download application from PC to Recorder only.

5.3.27 Project status



It is for project management purpose to know limits and usage of objects.

Project used time: It shows how much time project opened for editing purpose.

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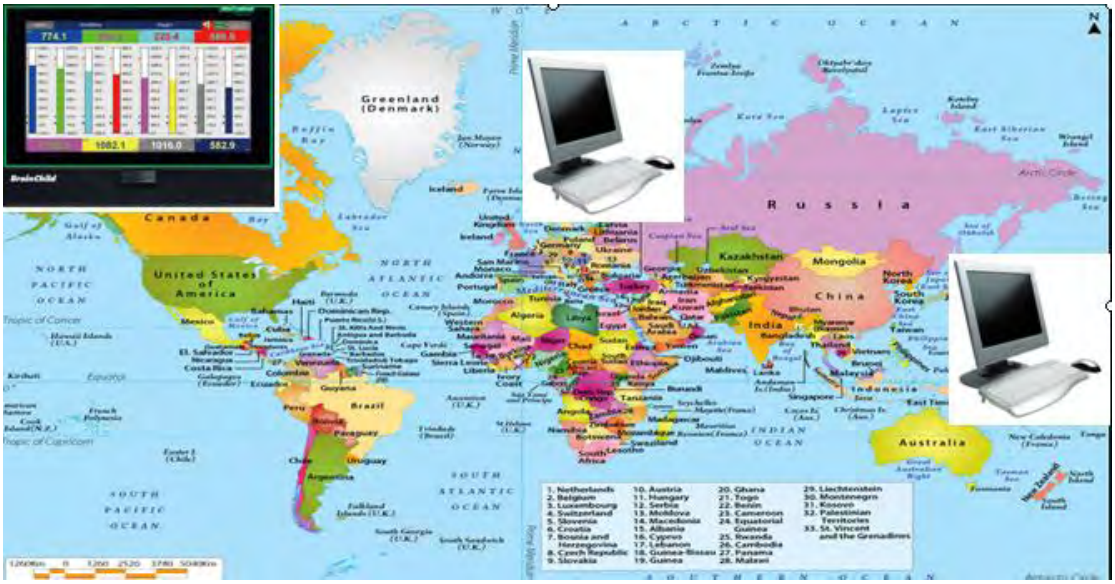
6. WEBSERVER

It is to view Paperless Recorder from Remote location via Internet.



6.1 Requirements

6.1.1 Hardware

Recommended hardware:
PC with 3G GHz processor, 512 MB RAM.
5.0GB free space in the hard disk.
Ethernet port, RJ 45 female.

6.1.2 Operating system

Windows based Operating systems, Windows XP, Windows 7, Windows 8 etc..
32 bit and 64 bit operating systems are supported.

6.1.3 Browser Requirements

Internet Explorer 10 or higher.
Google Chrome.

6.1.4 IP Address Requirements

Static IP address Required for the Recorder.
Obtain Static IP address from your Internet solution Provider (ISP). This IP address should be unique at Internet.

Once IP address configured in the Recorder, use Ping Instruction from the dos prompt first to verify if there is successful communication between Recorder and PC via Internet.

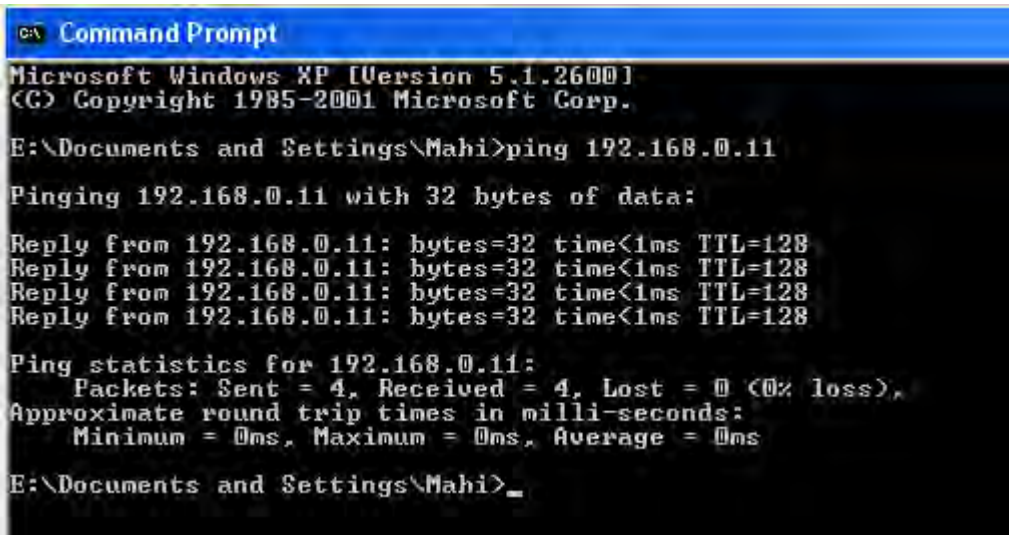
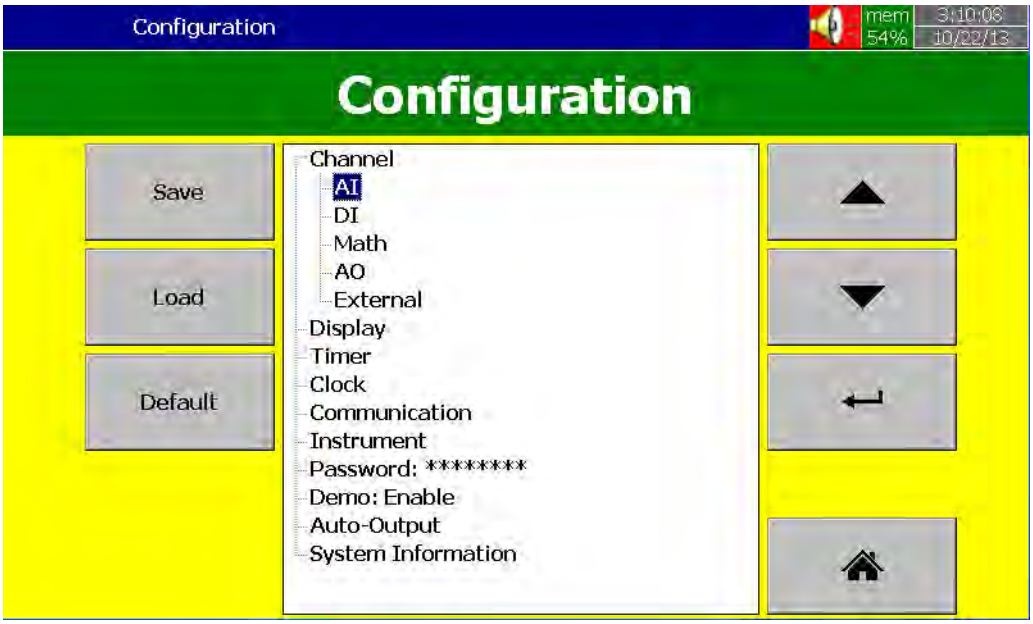


Fig: Response from the Recorder for the Ping instruction from PC

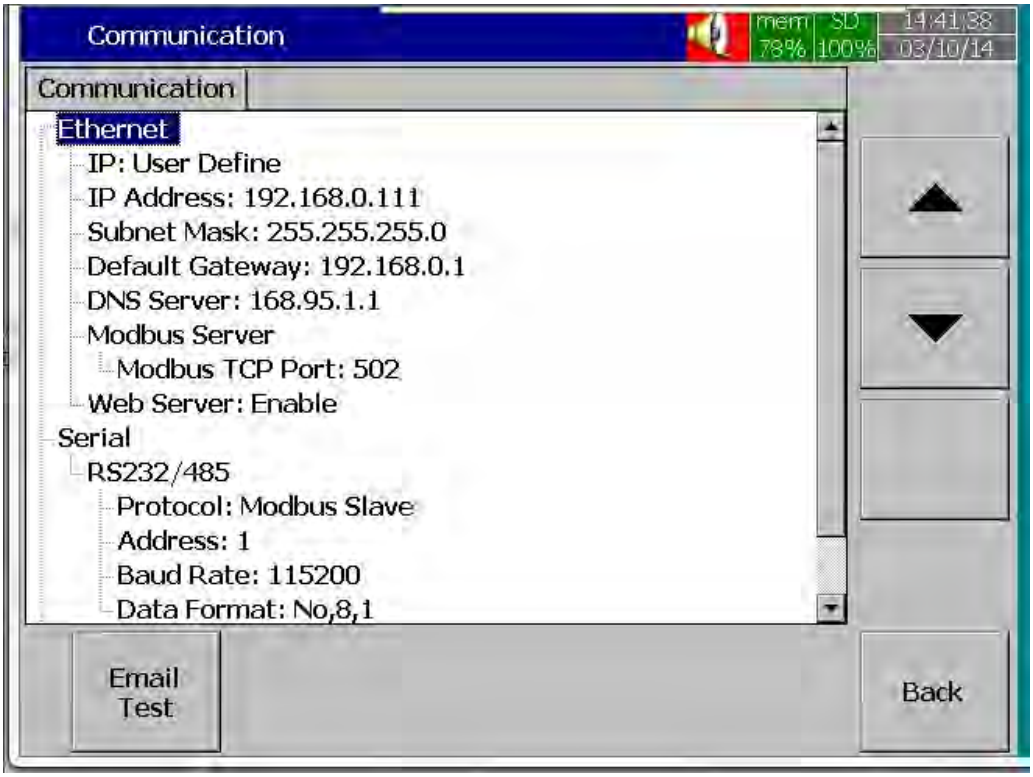
6.2 How to configure Web server Settings

For using Web server application in the PR series Recorder,Configure the Recorder for static IP address and Enable Web server.

6.2.1 How to Configure Static IP Address



In Configuration, select “Communication” and then press “Enter” soft key

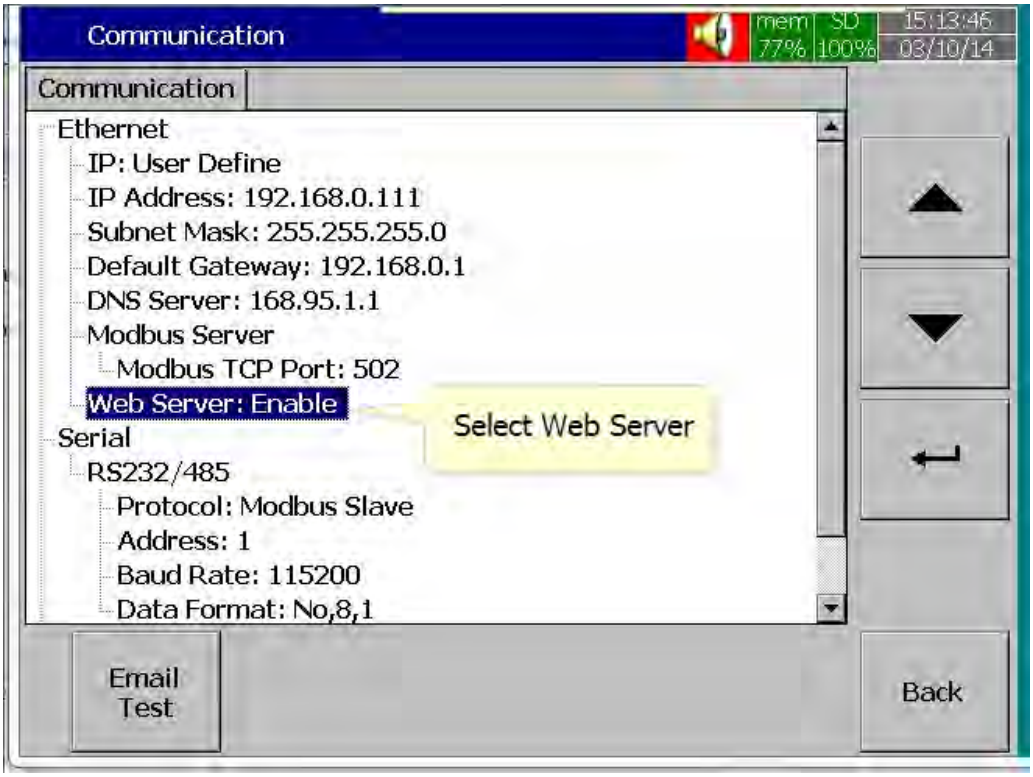


Select IP type = User Define.

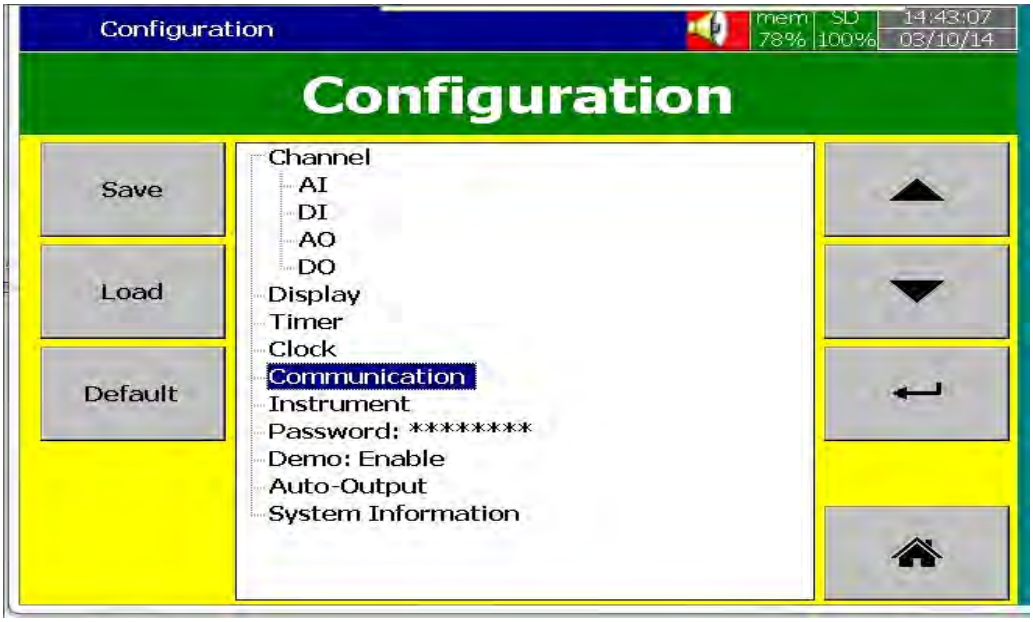
Enter the IP Address, Subnet Mask, Default Gateway, DNS Server Settings in the Ethernet Settings.

Note: Make sure to enter Global, Unique, static fix IP address received from Internet solution provider.

6.2.2 How to Enable Web Server



Select Web Server Menu in the Communication Menu.
Enable the Web Server for using Web Server application in the Recorder.



After completing the above steps, press “BACK” key first then “Home” key to return to main menu. It will save the configuration settings in the Recorder.

Now the Recorder is ready for the Web Server Applications.

6.3 How to View Recorder Data in PC Via Webserver :

Connect Paperless Recorder to the Internet

Open the browser (IE 10 or Google chrome) in the PC

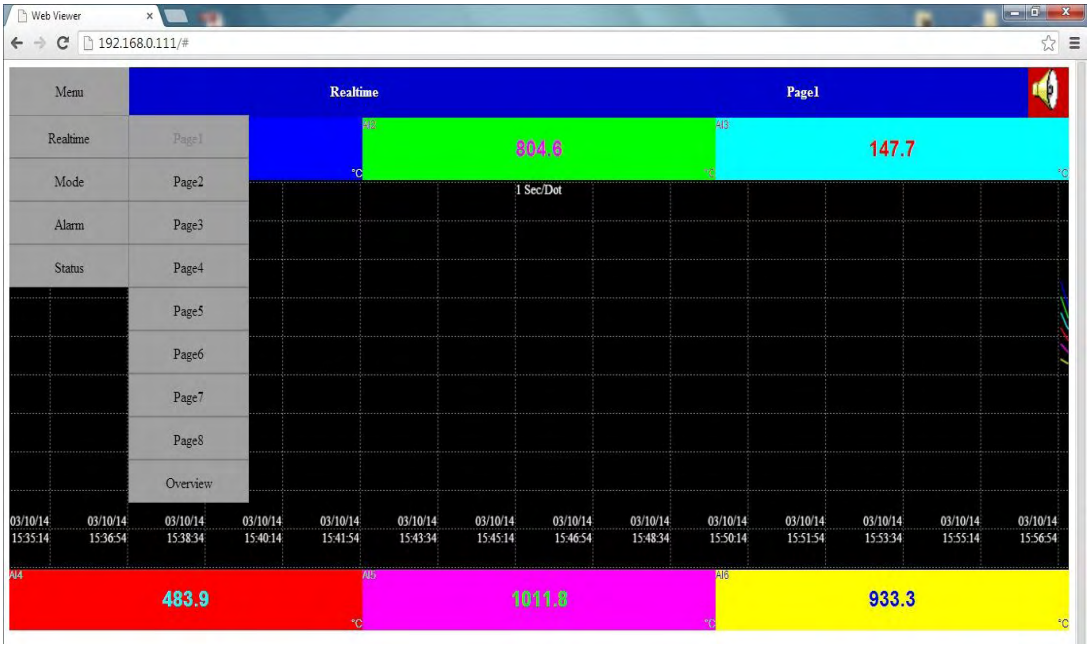
Enter the IP address of the Recorder in the address bar of the browser.

Format: http://192.168.1.111

Now you can see Paperless Recorder screens in browser as shown below

The display includes Real time values of all channels like AI,Math,Counters,Totalizers, Real time alarms, historical alarms, status of Digital Inputs, Digital Outputs, Analog Outputs, Counters, Totalizers etc..

.

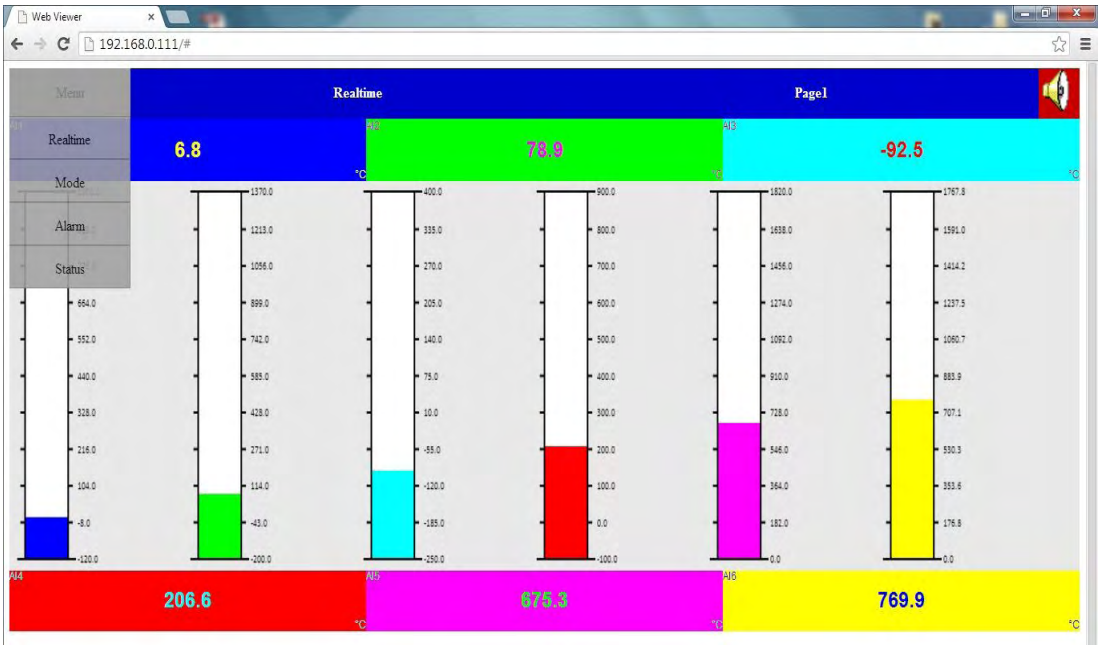


Press Overview to view the summary of all datas in single screen

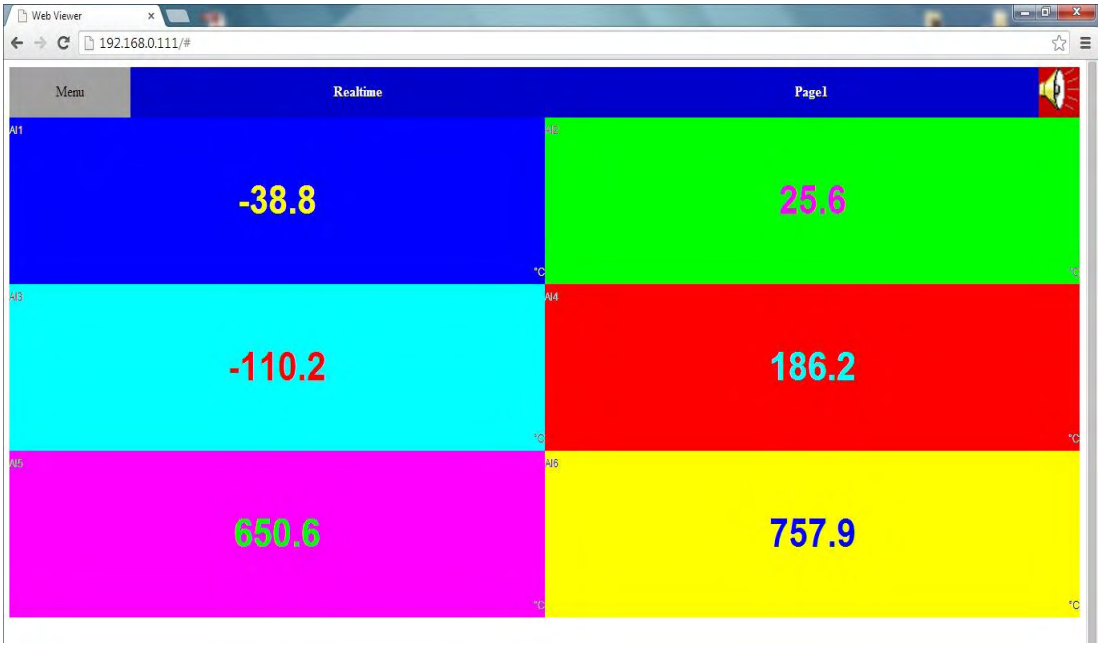
Pressing Mode You can view the datas in Bar Graph,Trend and Digital Values.

By Pressing Trend you can view the datas in trends.

By Pressing Bar You can view the datas in Bar Graph



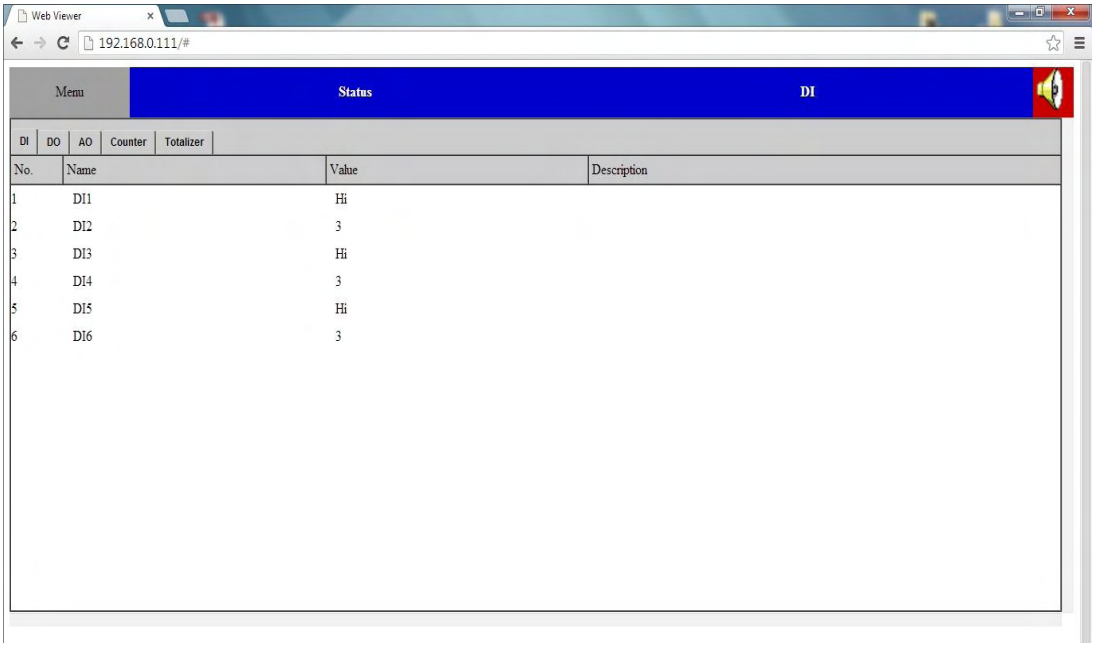
By pressing the Digit You can view the Datas in the digital format



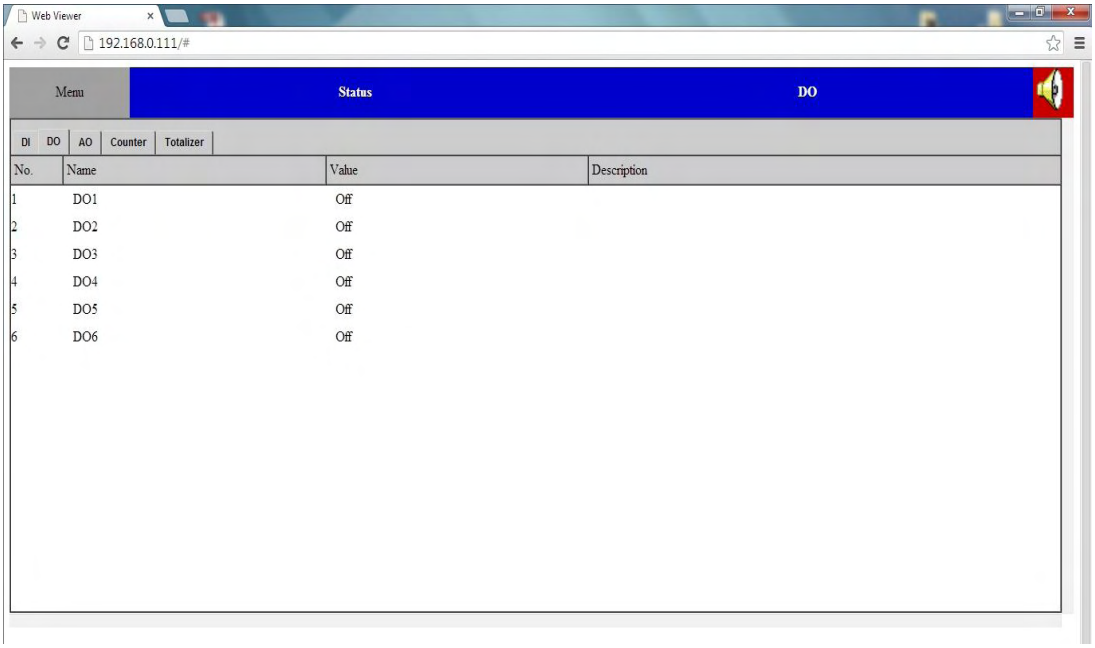
Pressing Alarm You can view the List of Alarms with the details

Pressing Status you can view the status of the Analog outputs, Digital Inputs, Digital Outputs, Counters and Totalizers.

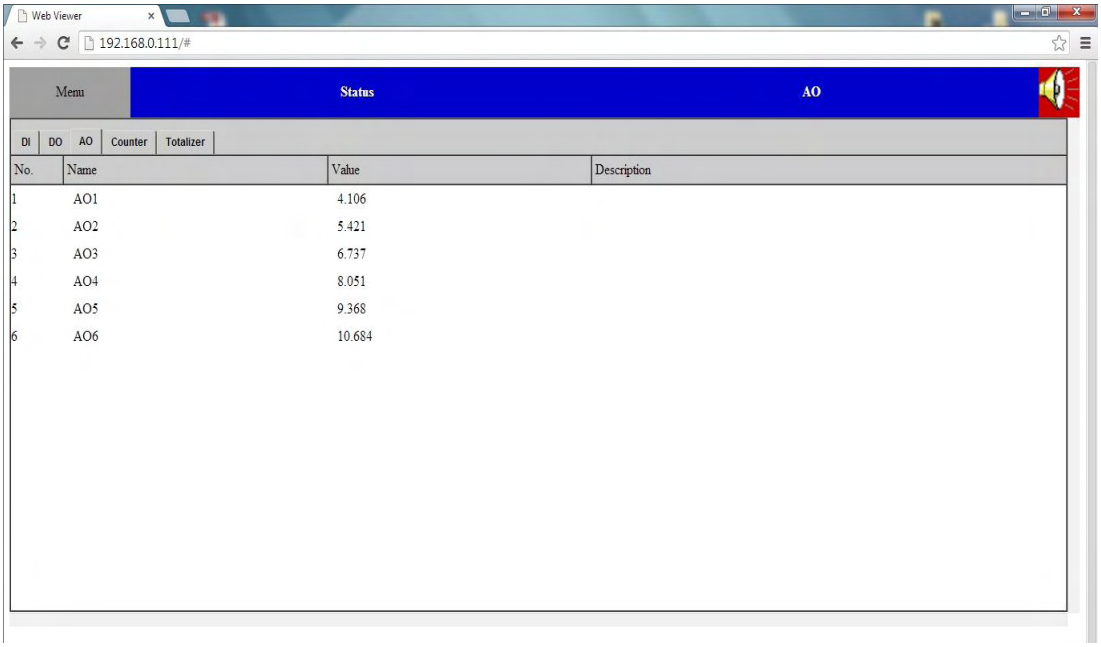
By Pressing DI you can view the status of the Digital Inputs



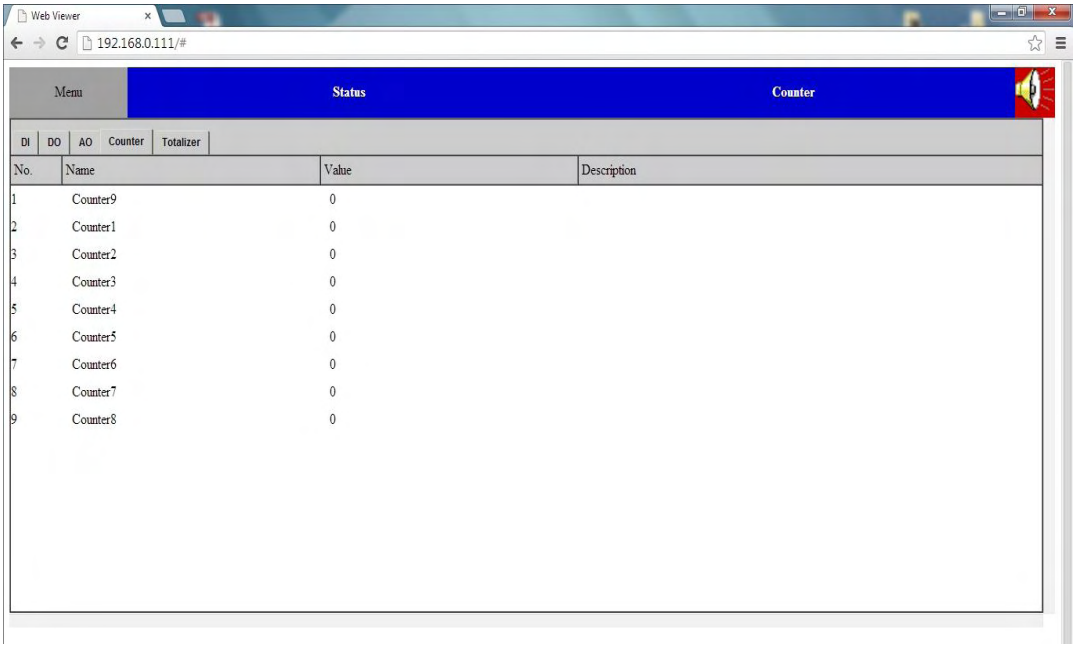
By Pressing DO you can view the status of the Digital outputs



By Pressing AO you can view the status of the Analog Outputs



By pressing Counters you can view the status of the counters



By Pressing Totalizers you can view the status of the totalizers.