User Interface Controls

Documentation for User Interface Module

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User Interface Controls   1

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1.1 Introduction

The UIM allows you to construct feature-rich applications with intuitive, easy-to-use front ends by creating Origin templates with embedded interactive data control and display objects. Each type of object is designed for a particular data display or control task. The objects are programmed using LabTalk.

1.2 UIM Objects

The UIM toolbar is used to create UIM control and indicator objects. To display the UIM toolbar, select **Edit:Button Edit Mode**. The UIM control and indicator objects are described in the following table.

Table 1.1: UIM Control and Indicator Objects

Object	Description
Bitmap Buttons (BBUTN)	Bitmap Buttons provide the capability to use icons in a user interface. They can be linked to LabTalk script files. The graphic image displayed in each button is defined by a bitmap file. Standard graphic images are 32 by 32 pixels, but larger or smaller square or rectangular icons can be designed.
Check Box Controls (CHECK)	Check Boxes are used to control the ON/OFF status of up to 20 items in a row or column. Items which are ON (activated) are shown by a check in a box or by a lighted LED indicator. Clicking a box or indicator toggles it ON or OFF. Items can also be controlled by other object scripts. Check Boxes can display a decimal number in binary or return the current state as a decimal number.
Combination Box (COMBOX)	The Combination Box allows you to create a drop-down list within your Origin interface. This object is set up and operated entirely with LabTalk methods and properties.
Gauge Indicator (GAUGE)	The Gauge Indicator provides a way to show the current value of a variable. It uses a rotating pointer on a curved scale that represents the variable's range. As with the other indicators, the scale can show different levels or limits as colored segments.

Object	Description
Horizontal Bar Indicators (HBAR) 	Horizontal Bar Indicators show the current value of a variable by a colored bar within a horizontal scale. The scale is calibrated with the minimum, maximum, and intermediate values of the variable. Any levels and/or limits can be indicated by different colors. The numerical value of the variable is also shown in a value window under or over the bar, and a spin button can be attached to it for local control. Clicking the value window can initiate an action defined in the script.
Value Lists (LIST) 	Value Lists are used to select one value from a list of up to 20 preset values or text strings for a single variable. Clicking the up or down arrow in its spin button box selects the previous or next value in the list, which appears in its window. The value can also be selected by other objects via their scripts.
List Box (LSTBOX) 	The List Box allows you to create a list of options to choose from within your Origin interface. The List Box is the only object which allows you to choose more than one option at a time.
Radio Buttons (RADIO) 	Radio Buttons are used to select one specific item out of 2 to 20 related items. Clicking the spot next to the item's name selects it, shown by lighting its spot, and deselects the formerly selected item. Each item can run a LabTalk script when selected.
Movable Scale (SCALE) 	The Movable Scale is a valuable tool for use in Origin graph windows. It provides a small scale with the same units as the main graph scale which can be moved around on the graph to make accurate measurements of an area of interest. If the main graph scale is nonlinear, the Movable Scale size changes to agree with the X and Y values of the main scale at its location.

Object	Description
Spin Buttons (SPIN) 	Spin Buttons are used to increment or decrement a value by a preset amount, up to preset maximum and minimum limits. They are also incorporated into other UIM objects, where they may increment or decrement a value or step through a list. They are activated by clicking on the up or down arrow box.
Status Controls (STATUS) 	Status Controls are used to display numbers, text, or logical states. Clicking in a hotspot, the location where an item's content is displayed, can either be used to initiate an action for that item via the associated script or to directly enter information. Both the type of display and the data shown can be changed by other objects via LabTalk scripts.
Strip Chart Indicators (STRIP) 	Strip Charts combine a vertical bar indicator with a continuously scrolling record of the variable's recent values. Different levels or limits within the variable's range can be indicated by different colors, which carry over in the variable trace. The numerical value of the variable can also be shown in a window under the bar, and a spin button can be attached to it for local control. Clicking in the value window can initiate an action defined in the script.
Text Buttons (TBUTN) 	Text Buttons are used to provide up to 20 labeled buttons. Clicking a button selects that item, indicated by a recessed appearance while the mouse button is pressed. When the mouse button is released, the attached script can identify the button and initiate its action.
Vertical Bar Indicators (VBAR) 	Vertical Bar Indicators display the current value of the variable as a colored bar within a vertical scale whose height represents the variable's range. Different levels or limits within the variable range can be indicated by different colors. The numerical value of the variable is also shown in a value window under the bar, and a spin button can be attached to it for local control. Clicking in the value window can initiate an action defined in the script.

1.2.1 Creating Objects

To create, place, and size a UIM object:

1) Select **Edit:Button Edit Mode** to enter the editing mode. The UIM toolbar displays.

2) Click on the button associated with the desired UIM object.

3) Drag the mouse pointer diagonally in an empty area of an Origin child window. A rectangle is drawn defining the area.

4) Release the mouse button to display the selected object in the rectangle, with its name in the upper-left corner.

5) Drag the object to place it where desired.

6) To size the object, click on the object to expose its control handles. Drag on a control handle to modify the object's size. The top and bottom handles control the object's height. The side handles control its width. The corner handles control both height and width.

7) Click outside of the object. It is de-selected and its border disappears.

8) Select **Edit:Button Edit Mode** to exit the editing mode. The UIM toolbar and object name disappear.

1.2.2 Naming Objects

The name of an object is only visible in Button Edit Mode. It is used in LabTalk scripts to interrogate or alter the object.

A name appears in the upper-left corner of an object when in Button Edit Mode. By default, this is the object's type, followed by a number if there is another control or indicator object of the same type in the project. It is often helpful to rename objects to reflect their function in the project. For example, 'StatsParams' rather than 'Status 7'. This clarifies the meaning of scripts attached to other objects which refer to 'StatsParams'.

To rename an object:

1) Enter Button Edit Mode if not in the editing state.

2) Click on the object to select it. A border displays around the object.

3) Select **Format:Label Control** to open the Label Control dialog box.

4) Highlight the name in the Object Name text box and then type in a
    new name.

5) Click OK to close the dialog box. The new name displays in the
    object.

1.2.3 Customizing Objects

Once a control or indicator object has been created, it can be customized
for its specific application. This involves selecting and specifying the
various parameters it uses in the dialog boxes associated with it.

Overview of the UIM Dialog Boxes

*Most of the options which
can be set in dialog boxes
are also script accessible
through object properties.
For shared properties, see
page 20. For object-specific
properties, see "1.5 UIM
Objects Reference Guide"
on page 39.*

Dialog boxes are used to customize UIM objects to fit specific
situations. The UIM Object dialog box controls the title of the object,
determines its basic visual parameters, and provides access to the other
dialog boxes. The Control Titles dialog box specifies how many items
are associated with the object, their labels, and the label format.
Different Select Values dialog boxes specify how many values and/or
text strings are included and their contents.

The various dialog boxes used by the UIM objects are listed in the
following table.

Table 1.2: UIM Object Dialog Boxes

Object Name	Double -click	Click on the Titles button	Click on the Values button	Click on the Special button	Click on the More button
BBTUN	UIM Object	Bitmap Control Titles		Bitmap Buttons Control	
CHECK	UIM Object	Control Titles	Select Values 1	Check Box Object	
COMBOX	No dialog box control				
GAUGE	UIM Object			Advanced Gauge	
HBAR	UIM Object	Control Titles	Select Values 4	Indicator Object	
LIST	UIM Object	Control Titles	Select Values 1	List Object	
LSTBOX	No dialog box control				
RADIO	UIM Object	Control Titles	Select Values 2		

Object Name	Double-click	Click on the Titles button	Click on the Values button	Click on the Special button	Click on the More button
SCALE	Scale Object				
SPIN	UIM Object	Control Titles	Select Values 3		
STATUS	UIM Object	Control Titles		Status Object	
STRIP	UIM Object	Control Titles	Select Values 5	Indicator Object	Strip Chart Object
TBUTN	UIM Object	Control Titles		Bitmap Buttons Control	
VBAR	UIM Object	Control Titles	Select Values 4	Indicator Object	

The UIM Object Dialog Box

The UIM Object dialog box is used by most UIM control and indicator objects, although not all sections are used by every object. This dialog box also provides access to the Titles and any Values and/or Special dialog boxes for an object.

The UIM Object dialog box controls an object's general appearance.

The UIM Object dialog box controls the object's title, background appearance, size of border and control gaps, colors, arrangement of multiple items and their labels, and the type, size, and appearance of all characters.

To open the UIM Object dialog box:

1) Select **Edit:Button Edit Mode**. The UIM toolbar displays.

2) Click on the desired button in the UIM toolbar and then click-and-drag an area in the worksheet to create the object.

3) Double-click on the object to open the UIM Object dialog box.

Figure 1.1: The UIM Object Dialog Box
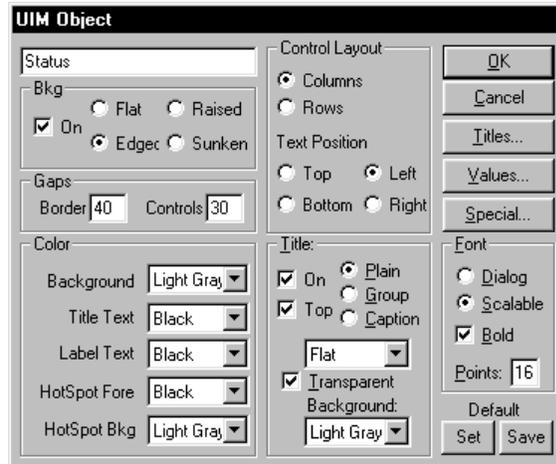
Changing the Title

The object's title appears in the upper-left corner of the UIM Object dialog box. By default, this is the type of object.

1)   Highlight the current title in the text box and type in a new title.

2)   Click OK to close the dialog box.

Note: The title is not the name of the object. The title is a visible tag for the user, controlled by the Title group. The name is only visible in Button Edit Mode. It specifies the object for reference by LabTalk scripts.

Changing the Background

The Bkg group controls the appearance of the object. The background can be off (making the components float in the window) or one of Origin's colors. When the background is on, the object can appear *flat* or *edged* with a fine black line, or with *raised* or *sunken* edges.

1)   Select the On check box to display a background color.

2)   Select the Flat radio button to display the object flat on the background. Select the Edged radio button to display a black border around the object. Select the Raised radio button to cause the object to appear displayed above the background surface. Select the

Sunken radio button to cause the object to appear displayed below the background surface.

Changing the Spacing

The Gaps group controls the amount of space in the border and between the items. Settings are in percentage of the font's point size.

Figure 1.2: Changing the Object Spacing
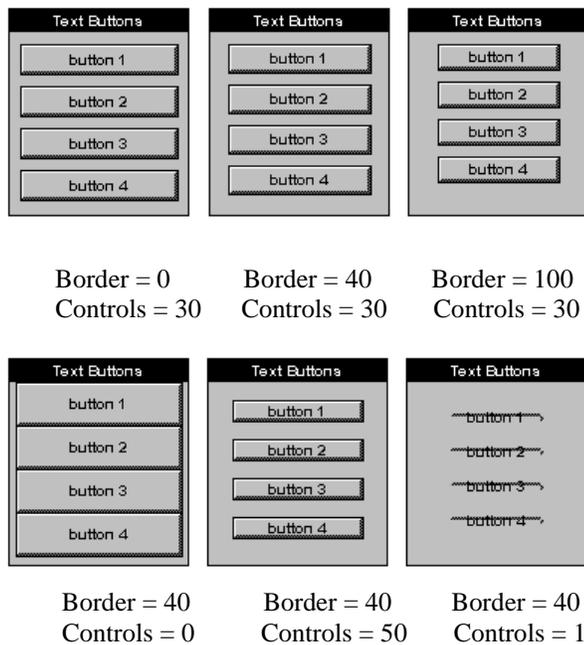
The default Border and Controls Gaps depend on the specific type of object.

Border = 0   Border = 40   Border = 100
Controls = 30   Controls = 30   Controls = 30

Border = 40   Border = 40   Border = 40
Controls = 0   Controls = 50   Controls = 100

1)   Highlight the value in the Border text box and type a new value.

2)   Highlight the value in the Controls text box and type a new value (0 to ~300).

Changing the Colors

Each type of object uses these settings differently. For more information, see "1.5 UIM Objects Reference Guide" on page 39.

The Color group of the UIM Object dialog box controls the colors of the object. Any of the defined colors can be chosen for the Background, Title Text, Label Text, Hotspot Fore (foreground), and Hotspot Bkg (background). Select the desired color from the associated drop-down list.

Changing the Layout

The layout of the Text Buttons and Bitmap Buttons objects is set in the Special dialog box.

The Control Layout group determines how the items are arranged in the object and where their labels are located. Items can initiate an action and/or have their contents (text, value, or color) changed. Each item consists of a hotspot and a label. The items can be arranged in a column or in a row, and the labels can be placed above, below, or to either side of the item.

Figure 1.3: Changing the Object Layout

| Columns | Columns | Columns | Columns |
| Top | Bottom | Left | Right |

| Rows | Rows | Rows | Rows |
| Top | Bottom | Left | Right |
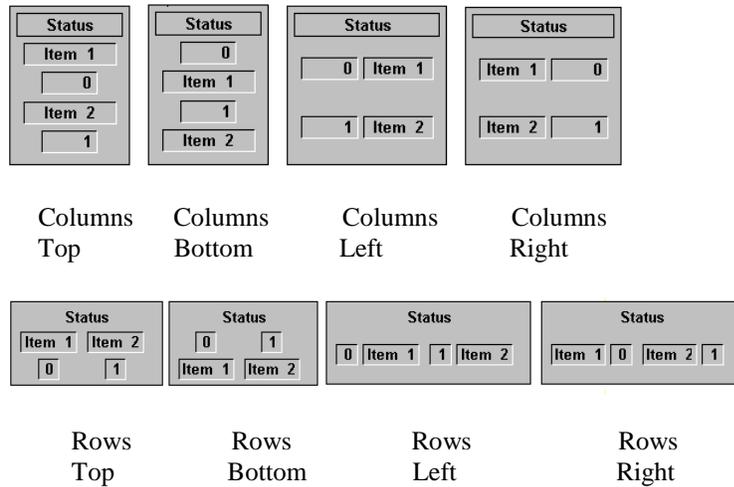
Table 1.3: Object Layout Settings

| Select this...	To...
Columns radio button	Place multiple items in a column.
Rows radio button	Place multiple items in a row.
Top radio button	Place labels above their items.
Bottom radio button	Place labels under their items.
Left radio button	Place labels to the left of their items.
Right radio button	Place labels to the right of their items.

Changing the Title's Appearance and Location

When set as a button, a script can be set to run when a user clicks on the title. For more information, see page 26.

The Title group of the UIM Object dialog box determines where and in what form the object title appears. It can be left off or displayed *plain*, as a *group*, or as a *caption*. *Group* is used to show that all the items are related. This is useful in multi-object tools. *Caption* provides different appearances, either sunken, raised, flat, or as a window or a button. *Window* provides the object with an area for moving the object around within an Origin window when Button Edit Mode is off. *Button* makes the title a hotspot that can be clicked to initiate an action defined in the associated script. When the title is flat, sunken, or raised, its transparent background can be turned off and colored.

Figure 1.4: Changing the Title's Appearance
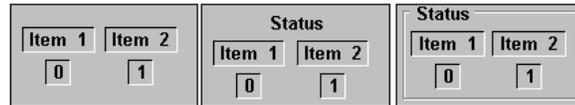
Title Off   Title On - Plain   Title On - Group
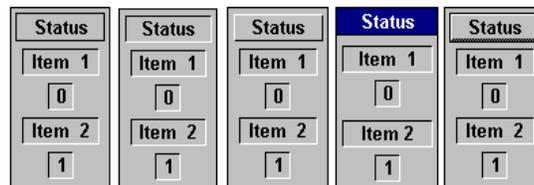
Flat   Sunken   Raised   Window   Button

Table 1.4: Title Settings

Select this...	To...
On check box	Display the object title.
Top check box	Display the object title above the items.
Plain radio button	Have the title appear flat on the background surface.
Group radio button	Group the items with the title.
Caption radio button	Emphasize the title. The associated drop-down list is available to select the desired background type.

Select this...	To...
Transparent Background check box	Display the title area using the same color as the object background. The title area's color can be selected from the associated drop-down list when this option is not selected. (Note: Only titles which have been set to Flat, Sunken or Risen can have their colors set in this way.)

Note: When the Title is set to Button mode, it will set the **index** property to 0 when clicked.

Changing the Font

The Font group in the UIM Object dialog box selects one of two fonts: scalable (the default selection) or dialog. Either font can be bold (the default selection) or normal (bold off). The point size can be set from 1 to 400 points.

Figure 1.5: Changing the Font Setting
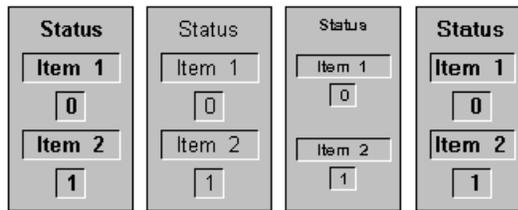
        Dialog   Scalable   Scalable   Dialog
   16 pt, bold   16 pt, plain   12 pt, bold   16 pt, bold

Table 1.5: Font Settings

Perform this...	To...
Select the Dialog radio button.	Specify a heavier font (MS San Serif by default). Or select the Scalable radio button to specify a narrower font (Arial by default).
Select the Bold check box.	Bold characters.
Type a new value in the Points text box.	Change the point size.

Changing the Default Settings

The Default group allows you to change the default settings for each
UIM object.

To change the default settings for an object type:

1)   Create an object of the desired type.

2)   Double-click on the object to open the UIM Object dialog box.

3)   Set all the dialog box options to the desired settings.

4)   Click OK to close the UIM Object dialog box. The object updates to
     reflect the settings in the UIM Object dialog box. Make note of any
     additional changes required.

5)   Double-click on the object to re-open the UIM Object dialog box.

6)   Change any additional dialog box settings as desired.

7)   Click Set to alter the default settings for the current type of object.
     This will change the default settings to the present settings for this
     Origin session only. This includes the settings in all of the object
     dialog boxes. For example, you can make the default check box
     have 5 items with new default names and blue LED displays.

8)   Click Save to alter the default settings for the current type of object.
     This will change the default settings to the present settings for this
     Origin session and future Origin sessions. The default settings are
     saved in an *OBJECT*.ODO file.

To return to the original default settings:

Delete the *.ODO file to
reset an object's defaults.

1)   Delete the *OBJECT*.ODO file. *OBJECT* is the object type. For
     example, to return the Check Box object defaults to the original
     Origin settings, delete CHECK.ODO. The next time Origin is
     started, the CHECK object dialog box default values will have
     changed to the original default values.

Changing the Default UIM Object Fonts

To change the default fonts:

1)   Using a text editor, open the ORIGIN.INI file located in the Origin
     software folder.

2)   Add the following section and lines to the ORIGIN.INI file,
      substituting the desired fonts for Times New Roman and Symbol.

[UimFont]
Default=Times New Roman
Scalable=Symbol

3)   Save the ORIGIN.INI file.

4)   Restart Origin.

The Control Titles Dialog Box

The Control Titles dialog box is opened by clicking the Titles button in
the UIM Object dialog box. This dialog box is used to specify how many
items are associated with the object and/or to assign labels to them. It
also determines how the labels will display (plain or boxed) and their
location (left, centered, or right justified) in the label area.

Figure 1.6: The Control Titles Dialog Box

To change the item titles:

1) Click on the Titles button to open the Control Titles dialog box.

2) Type a new number in the Total Items text box. The number of items in the list box reflects this change.

3) Click on the desired Item # in the list box. The selected item's label appears in the upper text box.

4) Type a new label name in this text box.

5) Repeat the previous two steps for each additional label.

6) Select the Plain radio button to ensure that labels appear flat on the background surface. Alternatively, select the Boxed radio button to have the labels appear within a box.

7) Select the Left radio button to ensure left justification, Center for center justification, or Right for right justification.

8) Click OK (twice) to close both dialog boxes.

The Select Values Dialog Box

The Select Values dialog box is opened by clicking the Values button in the UIM Object dialog box. This dialog box is used to store numerical values which appear in the object's value windows, or hotspots. Values can be whole integers or decimals of up to 30 digits. All items can be accessed and changed by LabTalk scripts in the associated object or other objects.

Different UIM objects have varying numbers of items depending on their functions. Additionally, they use different versions of the Select Values dialog box.

Table 1.6: Items in the Select Values Dialog Box

UIM Object	Number	Description
CHECK	≤ 20	Binary Item Values (ON/OFF).
HBAR	3	Current Value, Maximum & Minimum.
LIST	≤ 20	Item Values.
RADIO	1	Choice (number of selected item).
SPIN	4	Current Value, Maximum, Minimum, Step Size.

UIM Object	Number	Description
STRIP	4	Current Value, Maximum, Minimum, Width.
VBAR	3	Current Value, Maximum & Minimum.

The value of the nth field in a Status, Check, List, or Spin object can be set with a script of the syntax **ObjName.Vn=x;** *For example,* **Check.V3=1;** *checks the 3rd field in the Check object.*

LIST and CHECK objects can store up to 20 numerical values. Only the first 10 can be specified in the Select Values dialog box. The remaining properties must be established by LabTalk scripts. STATUS and GAUGE have their own special dialog boxes in which all values can be set. RADIO only has one numeric property (**Choice**). The SPIN, STRIP, VBAR, HBAR, and GAUGE objects store the current value of the Origin variable plus the maximum and minimum values that establish their bounds. The SPIN object also has a **StepSize** parameter that sets the amount of change and the STRIP object has a **Width** parameter that sets the history display time in seconds.

To set the number of numeric items in a CHECK or LIST object:

1) Double-click on the object to select it and open the UIM Object dialog box.

2) Click the Values button to open the Select Values dialog box.

3) Highlight the value in the Max text box and type the desired new maximum number of items.

To specify the type and size of the numeric items:

1) Select the Integer check box to specify integer values. Otherwise, decimal values are displayed.

2) Highlight the value in the Digits text box and type the desired new maximum number of digits value.

3) Highlight the value in the Decimal text box and type the desired new number of places after the decimal point value. Note: The Integer check box must be cleared.

To enter or change the item values:

1) Click an empty value text box or highlight a value in the text box.

2) Type the new value in the text box.

3) Press TAB or click on the next item. The insertion mark moves to the next box.

4) Repeat this procedure for every item to be changed.

5) Click OK to close the Select Values dialog box.

6) Click OK to close the UIM Object dialog box. The object updates with the changes.

The Special Dialog Boxes

A number of UIM objects have additional dialog boxes for customizing the object. These dialog boxes are opened by clicking the Special button in the UIM Object dialog box.

For more information on these dialog boxes, see "1.5 UIM Objects Reference Guide" on page 39.

1.3 Programming

UIM control and indicator objects can be programmed to handle object-associated tasks interactively, by using LabTalk scripts.

1.3.1 LabTalk Scripts

UIM control and indicator objects are more than graphic objects visible on a screen or software objects in memory. They have LabTalk scripts associated with them that define a specific task or tasks which are to be performed when the script is activated.

A LabTalk script can be initiated by various actions:

• Objects can be set to run when Origin first starts or an Origin window is created or activated, or when a window is de-activated or closed.

• Objects can be set to run when the object or window is redrawn to update the image, or when an event or a change occurs in real-time.

• Objects can be set to run when an object is moved and/or sized. This typically occurs when the window the object is on is altered, or when the object is part of a click-and-drag interface.

- UIM control and indicator objects have graphic images with hotspots that can be clicked by a mouse. Their scripts run when the mouse button is released (a Button Up event).

LabTalk operates with object methods and properties. Methods are things that can be done to or with an object, such as updating its graphic image. LabTalk method statements take arguments and perform operations which are directly related to an object. Properties are specific attributes of an object, such as the color of a push button or the label of an item. LabTalk property statements set a particular object attribute or return its current value.

1.3.2 Methods

All UIM control and indicator objects share four object methods:

Run( )   **Click(*n*)**   **Draw(local)**   **Draw(global)**

Run( )

Do not confuse this with the **run.file( )** *and* **run.section( )** *methods, which execute script from a *.OGS script file. For more information, see page 27.*

The **Run( )** method runs an object's script file. For example, if there is an object named **radio**, then executing:

Radio.run( );

runs the script in the radio object's Label Control dialog box.

Click(*n*)

The **Click(*n*)** method simulates clicking an object's hotspot, with *n* specifying the sequence number of the hotspot, either a value window or a button, which is to be clicked.

To click a hotspot on another object, use this syntax: **WinName!ObjName.Click(*n*)**

For example, if there is a radio object with the default name **radio**, then executing:

radio.click(2);

from the object's Label Control dialog box produces the same result as clicking the second hotspot on the object.

Draw(local)

The **Draw(local)** method redraws only the parts of an object that represent its current values. For example, executing:

vbar.draw(local);

redraws only the bar graphic in the VBAR indicator.

Executing:

check.draw(local);

redraws only the check boxes in the CHECK object.

Draw(global)

Draw(global) *can be*
abbreviated as **draw( )**.

The **Draw(global)** method redraws the entire object on the screen. It is
most useful after an object's appearance is changed. For example, if the
maximum value of a vertical bar indicator with the default name **VBAR**
is changed, executing:

vbar.draw(global);

redraws the entire object with the new settings.

1.3.3 Properties

A property either sets or returns a value or a text string associated with an
object. Each UIM object has its own specific properties, but there are
some properties which all objects share.

Within an object script, the
object's properties can be
accessed using **this.***property*
notation.

Note that when writing scripts within the Label Control dialog box of an
object, the object's properties can be accessed with the syntax
this.*property*. For example, a Radio object could have its title changed
when the second choice in the object is selected with the following
script in the Radio object's Label Control dialog box.

if (this.choice==2)   this.caption$=Devices;

Numeric Properties

Numeric properties are set by LabTalk scripts using statements with the syntax:

Note that a period separates the object name from the property.

objName.Property=number;

where

objName is the name of a specific object,

Property is a valid numeric property for the type of object, and

number is a numeric value.

The current value of a numeric property is obtained by a similar LabTalk script, but the value after the equal sign is not specified. For example, entering the following in the Script window:

radio.Choice=

returns **RADIO.CHOICE=3**

if item 3 is selected (the last radio button clicked) in a RADIO control object.

*Use **$( )** substitution notation whenever you want to use the numeric value of a property, variable, or expression within a script.*

Another way of obtaining a current value of an item is to use the following LabTalk script:

type -a "Item number $(radio.choice) is selected.";

which obtains the numeric value of the property, substitutes it for the expression, and types it in the Script window.

Text Properties

Text properties are designated by a **$**, which indicates the property is a text string. They can be set by LabTalk scripts using the syntax:

*If **$** is not specified after the text property name, the property will not be recognized.*

objName.Property$=text

where

objName is name of a specific object,

Property is a text operator for the type of object, and

text is a text string.

The current contents of a text property can be obtained and displayed by a 2-line LabTalk script using the syntax:

%Z=objName.Property$;
type -b "The property is %Z";

For example, to display the text string held in the third field of a Status object, use the script:

%A=Status.V3$;
type -a "The 3rd string is %A.";

1.3.4 Shared Properties

All UIM control and indicator objects share the following properties. Other properties common to all graphical Origin objects are discussed in the LabTalk Help file.

Properties List

ObjName.=

The properties list can only be viewed for an object which already exists in the project.

Typing the object name followed by a period and an equal sign in the Script window, and then pressing ENTER, results in all the object's properties displaying in the Script window. Specific properties are listed first, followed by shared properties, and then Origin properties.

Auto

ObjName.Auto=0/1

Use this property to disable automatic object redraw.

The **Auto** property determines how and when a specified object is redrawn. When turned on (set to 1) by a LabTalk statement, Origin redraws the object whenever the current value changes. If turned off (set to 0), the object must be redrawn manually, using its dialog boxes, after a change has been made. The default value is 1, so it is only necessary to edit this property when manual control is desired.

Caption$

The title of an object is for display purposes only. It can also be changed in the UIM Object dialog box.

The **Caption$** property is used to change the title of the specified object. For example,

ObjName.Caption$=NewName

replaces the old or default title with the text string *NewName*.

Colors

There are various color properties which are shared by all objects. Colors are set via the sequence number of the color in the drop-down

color lists. *objName***.HotFore=7;** sets the object's foreground hotspot color to the seventh color from Origin's color drop-down lists.

Note: The color function can be used to automatically substitute the appropriate color number. This function uses the format *objName***.HotFore=color(red);**

HotFore

Set/Get the foreground hotspot color number.

HotBkg

Set/Get the background hotspot color number.

For example,

this.HotBkg=7;

or

this.HotBkg=color(yellow);

sets the background hotspot color of the object to yellow.

LabelText

Set/Get the label text color number.

TitleText

Set/Get the title text color number.

BackGround

Set/Get the object's background color number.

E*n* (Enable)

Use this property to disable an individual hotspot.

This property allows a hotspot to be disabled/enabled. By default, all hotspots are active and thus:

*Object***.E*n*=1;**

To deactivate a hotspot, use *Object***.E*n*=0;**

In the deactivated state it is impossible to click the hotspot.

Event

This property indicates when specific Windows events affect an object, such as a change in focus from one item within an object to another. This property may only be used within the Label Control dialog box of the object, with the Script, Run After drop-down list set to All Events.

Table 1.7: Supported Events

Supported Events	this.Event	this.Index
Button up	1	Item that was clicked.
Kill focus on an item	20	Item containing caret.
Set focus on an item	21	Item containing caret.
Left button down	22	Item the event occurred on.
Left button double-click	23	Item the event occurred on.
Left button up	24	Item the event occurred on.
All other events	0	Item the event occurred on.

For example, if a user clicked on a Status object item and changed its value, the following script would update the project based on the new value. Note that this script does not actually check to see if the value has been changed. It runs whenever a user performs a full single click on an item. This Status object allows the user to modify the active column.

```
if (this.Event==20) {
    switch (this.index)
    {
    case 1:
            // Update column format based on this value.
            wks.col.format=this.V1;
            break;
    case 2:
            // Set column to X,Y,Error Bar, etc.
            wks.col.type=this.V2;
            break;
```

```
case 3:
        // Change column name to string in item
        wks.col.name$=this.v3$;
        break;
    }
}
```

Index

This property is used in scripts to identify which hotspot or button was clicked.

The **Index** property indicates which item in an object has been affected by a Windows action. When the Script, Run After drop-down list is set to Button Up, this indicates which item or hotspot on an object has been clicked. When the drop-down list is set to All Events, it indicates the item which was affected by the last action. For more information, see the Supported Events table in the previous section.

All UIM objects have at least one item or hotspot that can be clicked. **this.index=1** indicates the first item in the object, **this.index=2** indicates the second item in the object, etc.

Note that *objName*.**index=0** is reserved for the title of an object which has been set up as a button.

The following script prints the label on a clicked Text Button to an Attention dialog box. The Script, Run After drop-down list should be set to Button Up and the script should be typed in the Label Control dialog box. You do not need to include the comments.

Alternatively, you could use **TBUTN.index==0** *or simply* **index==0**.

```
if (this.index==0) {type -b "You clicked the title.";}
else
{
    %A=this.L$(this.index)$; //Get button label.
    type -b %A;  //Type label to an Attention Box.
}
```

Item

Use this property to affect an individual hotspot.

The **Item** property is a shared property of all objects which have discrete items including STATUS, CHECK, RADIO, LIST, TBUTN, BBUTN, LSTBOX and COMBOX.

The **Item** property sets/gets the number of the current item. The current item will be affected by all properties which would normally affect the *n*th item. For example, the following script disables the third item of the Radio object. Note that the *n* is not needed (**radio.E***n*) once the item has been set.

Radio.item=3;

Radio.E=0;

Note: If *ObjName*.**item** is set to zero, properties will affect *all* of the object's items.

NumItems

This property indicates the number of items in an object.

The Status object has the ability to resize itself to accommodate a changing number of items through the **ResizeNow** *property.*

This is a shared property of all objects which have discrete items including STATUS, CHECK, RADIO, LIST, TBUTN, BBUTN, LSTBOX and COMBOX.

The property sets/gets the number of items that are displayed/stored. For the LIST object, this number depends on whether the list is numeric or alphanumeric. If you change the number of items, the object changes to show the new number of boxes.

TextSize

Set/Get the font size of the object.

Position

These properties can be used to find the position of an object or to move the object. They can be used to recover an object which was dragged off the edge of a window.

X

Set/Get the X axis coordinate of the center of the object.

Y

Set/Get the Y axis coordinate of the center of the object.

1.3.5 Specific Properties

Each UIM control and indicator object also has its own specific properties. Some of these are listed in the following tables. For a full explanation, see "1.5 UIM Objects Reference Guide" on page 39.

Table 1.8: UIM Object Properties

Property	STATUS	CHECK	RADIO	LIST	SPIN
V*n*	√	√		√	√
V*n*$	√		√		
Item*n*	√	√	√		
Item*n*$	√				
L*n*$	√	√	√	√	√
Name	√	√	√		
Name$	√			√	
Choice			√	√	√
Bits		√			

Property	TBUTN	BBUTN	COMBOX	LSTBOX
V*n*			√	√
V*n*$			√	√
Item*n*				
Item*n*$				
L*n*$	√	√		
Name				
Name$				
Choice			√	√
Bits				

Property	SPIN	VBAR	HBAR	STRIP	GAUGE
Value	√	√	√	√	√
Max	√	√	√	√	√
Min	√	√	√	√	√
Inc	√				
Time				√	

1.3.6 Entering and Editing Scripts

The scripts associated with UIM objects can be saved either in the object's associated Label Control dialog box and/or in LabTalk script files.

Using the Label Control Dialog Box

UIM control and indicator objects are standard software objects which can be cut, copied, and pasted. When the object's script file is attached in the Label Control dialog box, an object that is copied and pasted into a window functions exactly like the original.

To attach a script to an object:

1) Select **Edit:Button Edit Mode**. This menu command opens the UIM toolbar.

2) Click on the desired object. A border displays around the object with control handles.

3) Select **Format:Label Control**. The Label Control dialog box opens with the object's name listed and Button Up selected (by default) from the Script, Run After drop-down list.

If a script already exists for the object, its contents will appear in the text box at the bottom of the dialog box. The Label Control dialog box can be resized to enhance the display of this script. Existing scripts can be edited by normal editing procedures. Additional scripts can be added by scrolling down to the end of the last line and typing them in.

If no script exists, one can be created by clicking anywhere in the lower text box and then typing the script in line by line, using LabTalk methods and properties.

Numeric values or text strings for an object's items are stored and accessed through the object's properties by statements using the syntax

For more information, see "1.5 UIM Objects Reference Guide" on page 39.

objName.Property

or

WinName!objName.Property

if the object is in a different Origin window.

Each type of object has specific properties. For example, a RADIO object has only one specific property (**Choice**), which is equal to the sequential number of the selected button.

When writing LabTalk script in an object's Label Control dialog box text box, "**this**" may be used instead of the object's name. For example, the first value of an object named "**Status3**" can be obtained using:

VarName=This.V1   instead of   **VarName=Status3.V1**

Script, Run After Options

The Script, Run After mode can be read or set using the **script** *property. For example,* **check.script=14;** *sets the check object's mode to the 14th option, All Events.*

None:	Do not execute the script.
Button Up:	Click a hotspot or a button to execute the script.
Moved:	Move the object to execute the script. This option makes the object movable and sizable, but not clickable.
Sized:	Change the object size to execute the script. This option makes the object movable and sizable, but not clickable.
Moved or Sized:	Move or change the object size to execute the script. This option makes the object movable and sizable, but not clickable.
Redrawn:	Execute the script when the object is redrawn.
Real-Time:	Execute the script when a real-time event occurs. These events are typically generated from DDE data transfer or from a Data Acquisition module.
Window Create:	Execute the script when the object's window opens.
Window Close:	Execute the script when the object's window closes.
Window Activate:	Execute the script when the object's window becomes active.
Window Deactivate:	Execute the script when the object's window becomes inactive.
New Selection:	Execute the script when the unselected object is clicked.
Before Save:	Execute the script immediately before saving the project.
Axes Rescale:	Execute the script when the graph axes rescale.

For more information, see "Event" on page 22.

All Events:	Execute the script when any of the events except Moved or Sized occur. Many of these events will alter the **Event** and **Index** properties, which can be used in conditional statements to act based on the specific event.

Using an Origin Script File

LabTalk script files (*.OGS files) are text files containing LabTalk scripts. In the *.OGS file, (optional) sections are separated by lines with the following syntax:

[*SectionName*]

When a UIM object script is saved in a *.OGS file, the script is run by adding the following lines to the object's Label Control dialog box:

run.file(*FileName*) // Method to execute the entire script file.
run.section(*FileName*, *SectionName*)
// Method to execute only the specified section of the script file.

*To create a *.OGS file:*

1) Open Code Builder, click the New button on the Standard toolbar, and then select LabTalk Script File in the New File dialog box. Select the Origin software folder for the save location and click OK to create the file.

2) Enter the desired LabTalk script in the file. To ensure that a UIM object executes only a section of script in the file, use the [*SectionName*] syntax described above.

3) Re-save the script file.

4) Open the UIM object's Label Control dialog box and add the **run.file(*FileName*)** or **run.section(*FileName*, *SectionName*)** statements described above.

1.4 Examples

The following examples illustrate how to set up a control or indicator object and program it with a LabTalk script in the object's Label Control dialog box.

1.4.1 Status Panel

For more information on the Status object, see "1.5.10 Status : Status" on page 88.

This example illustrates the process of creating and programming a simple control object that displays the sum of two numbers when clicked. It uses a Status object with two items that display the numbers in sunken value boxes and a title in a raised button. The numbers can be changed by clicking in their value boxes and entering new values. To find the sum, click on the Sum button.

Figure 1.7: Sample Status Panel
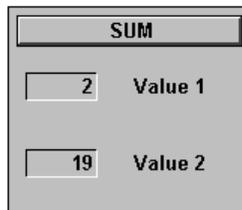
To set up the Status object:

1) Start Origin.

2) Select **Edit:Button Edit Mode**. The UIM toolbar displays.

3) Click on the Status button .

4) Drag a box in a blank area of the worksheet window - outside of the worksheet cells but within the window. The Status object displays. You can resize the object by clicking on the object to expose its control handles, and then dragging a control handle until the object is the desired size.

5) Double-click on the object to open the UIM Object dialog box.

The title is displayed on the top of the object.

6) Change Status to **SUM** in the top left text box.

7) Select the Caption radio button in the Title group.

8) Select Button from the associated drop-down list. The dialog box should appear as follows:

Figure 1.8: Editing the UIM Object Dialog Box
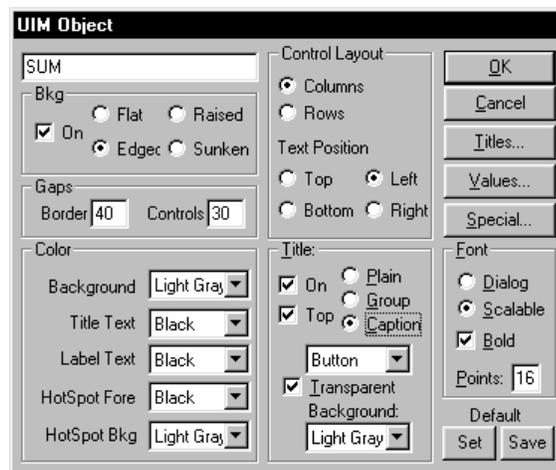
9) Click Special to open the Status Object dialog box.

10) Type **2** in the Number of Properties text box.

11) Click on item 1 in the items list.

12) In the Name text box in the Current Property group, change item 1 to **Value 1**.

13) Type a value (for example, **2**) for Value 1 in the Value text box in the Data group.

14) Click on item 2 in the items list.

15) In the Name text box in the Current Property group, change item 2 to **Value 2**.

Turning Edit Control on will allow users to alter the values by clicking on the item and typing a new value.

16) Type a value (for example, **19**) for Value 2 in the Value text box in the Data group.

17) Click All On in the Edit Control group. The dialog box should appear as follows:

Figure 1.9: Editing the Status Object Dialog Box
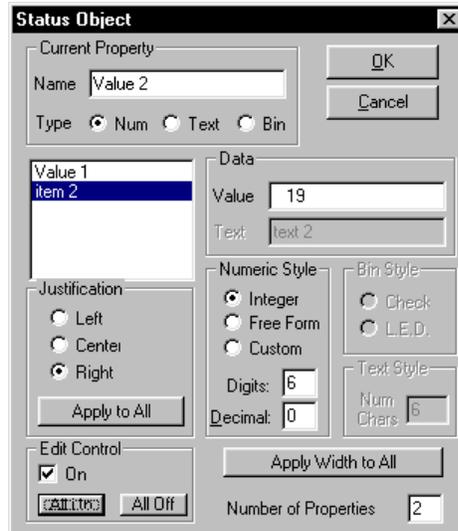
18) Click OK to close the Status Object dialog box.

19) Click OK to close the UIM Object dialog box and update the object with all the changes.

Figure 1.10: Status Panel on Worksheet
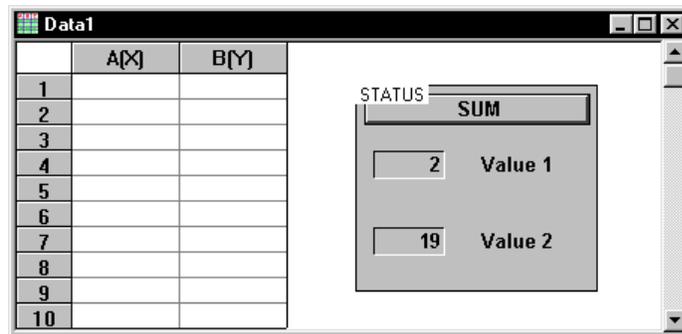
To attach a script to the object:

1) Click on the Status object to select it.

2) Select **Format:Label Control** to open the Label Control dialog box.

3) In the Object Name text box, change the object name from Status to **test**.

4) Type the following script into the large text box at the bottom of the Label Control dialog box. The borders of the box can be extended by dragging them if necessary.

__this.index__==0 indicates that the object's title was clicked.

```
if (this.index == 0) {
type -b "The sum is $(test.v1+test.v2)";}
```

5) Select Button Up from the Script, Run After drop-down list. This option will execute the script when the SUM button on the object is clicked.

6) Click OK to close the Label Control dialog box.

7) Select **Edit:Button Edit Mode** to deselect the edit mode.

To sum the values displayed on the object:

1) Click the SUM title button to add the numbers currently displayed in the object's value windows. The sum of the values displays in an Attention dialog box.

2) Click in a value window to change the value, then click the SUM title button again.

1.4.2 Custom Bitmap Control

For more information on the Bitmap Button Object, see "1.5.1 Bitmap Button: BBUTN" on page 40.

In this example you will create a custom control object with 4 bitmapped graphic images and link a LabTalk script to it. The example uses the BBUTN object which can display up to 20 custom control buttons whose images are defined in bitmap files. If the specified bitmap files do not exist, then the bitmap file name replaces them. The standard size is 32 X 32 pixels (a pixel is a single dot on the screen). Larger buttons can be created, but if larger bitmaps are used, fewer buttons can be stored. All bitmaps *must* be of the same size and 16 color images. Windows-provided bitmaps are used in this example.

To set up the BBUTN object:

1) Start Origin.

2) Select **Edit:Button Edit Mode**. The UIM toolbar appears.

3) Select the Bitmap Button and drag a box in the worksheet. The Bitmap Button object displays.

4) Double-click on the object to open the UIM Object dialog box.

5) Clear the On check box in the Titles group. This disables the Bitmap's title bar.

6) Click on the Titles button to open the Bitmap Control Titles dialog box.

7) Type **4** in the Total Items text box. This text box controls how many items (buttons) are in the object. The default value is 8, but up to 20 can be included.

8) Click in the top (highlighted) line of the label list. The cursor becomes active in the top text box.

9) Click Browse. This action opens the File Open dialog box.

10) Make your Windows folder active. Select STRAW MAT.BMP (or an alternative bitmap file) and click OK.

11) Click on the line below STRAW MAT.BMP in the label list box. The cursor becomes active in the top text box.

12) Enter TRIANGLES.BMP following the procedure for STRAW MAT.BMP.

13) Enter the TILES.BMP and BUBBLES.BMP files in the same way.

14) Click OK to close the Bitmap Control Titles dialog box.

The images on the buttons will rescale along with the object.

15) Click OK to close the UIM Object dialog box and implement the changes.

To attach a script to the BBTUN object:

1) Click on the object to select it.

2) Select **Format:Label Control** to open the Label Control dialog box.

3) Select Button Up from the Script, Run After drop-down list. This option will execute a script when a button in the object is clicked.

4) Type the following script into the large Script box at the bottom of the box. **bbutn.L*n*$** is a property which returns the *n*th bitmap file name. **Index** returns the number of the button which was clicked.

   %A=bbutn.l$(index)$;
   type -b "You pressed the %A button!";

5) Click OK to close the Label Control dialog box and display the new BBUTN object.

To use the BBUTN object:

1) Select **Edit:Button Edit Mode**. This menu command turns off the editing mode and closes the UIM toolbar.

2) Click the buttons to see the message in the attention box indicating which bitmap was pressed.

1.4.3 Creating a Tool to Import Files into a Worksheet

For more information on the FUM, see Chapter 6, "File Utilities".

In this example, you will create a tool which uses the FUM's **file** object. The tool's buttons will read a file of comma delimited values into the active Origin worksheet. When you are finished with the example, the tool will appear as follows.

Figure 1.11: Tool to Import Files
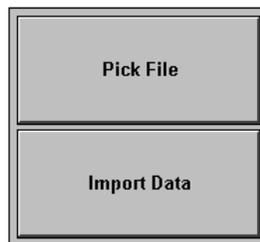
To create a Text Button object:

1) Start Origin.

2) Select **Edit:Button Edit Mode**. This menu command opens the UIM toolbar for creating UIM objects.

3) Click on the TBUTN button in the UIM toolbar. The button appears depressed during the clicking action, but does not stay depressed.

4) Click on an empty area in the Origin worksheet. Hold the mouse button down and drag a rectangular box. Release the mouse button. The Text Button object displays.

5) To change the size and shape of the Text Button object, click on the object to select it. Click and drag on a control handle. Click off the object, but in the Origin worksheet, to de-select the object.

To change the Text Button's appearance:

1) Double-click the object to open the UIM Object dialog box.

2) In the Title group, clear the On check box to turn off the title display. (This action will turn off the Text Buttons title bar.)

3) Click on the Titles button to open the Control Titles dialog box.

4) Type **2** in the Total Items text box.

5) Click on the highlighted region in the large text box. This action activates the cursor in the top text box.

6) Type **Pick File**. This text displays in the top text box.

7) Click below the highlighted region in the large text box. This action activates the cursor in the top text box. Additionally, Pick File displays in the first line of the large text box and is now designated as the label for the first button.

8) Type **Import Data** to set the label for the second button.

Figure 1.12: Editing the Control Titles Dialog Box
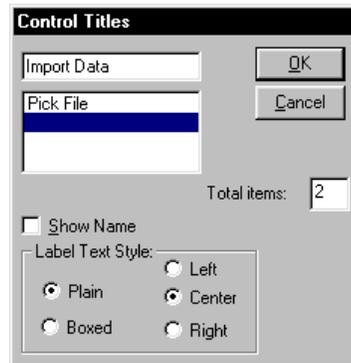
9)   Click OK to close the Control Titles dialog box.

10) Click OK to close the UIM Object dialog box.

The object now looks the way we want it to. However, it cannot perform
any actions. UIM objects cannot perform actions unless they have a
script attached.

To attach a script to the object:

1)   Click on the object to select it.

2)   Select **Format:Label Control** to open the Label Control dialog box.
      The Label Control dialog box is used to prepare an object to run a
      LabTalk script.

3)   Select Button Up from the Script, Run After drop-down list. This
      option will run the script entered in this dialog box whenever one of
      the text buttons is clicked on.

4)   Type the following script into the large script box at the bottom of
      the Label Control dialog box. (You don't have to put in the
      comments.) If necessary, the borders of the dialog box can be
      extended by dragging them.

*this.***Index** *holds the number of the clicked button.*

```
if (this.index == 1)          getfile *.dat;
// If the 1st button is clicked, the Open dialog box opens.
// The file name is automatically stored in %A.
if (this.index == 2)
{ // If second button is clicked ...
   hFile=file.open(%A);
   // Use a FUM method to open the selected file.
   loop (num, wks.ncols, 12)      wks.AddCol();
   // Add columns to the active worksheet until it has 12.
   // The import file has 12 cols.
   loop (row, 1, 8)
   { // Loop to read 8 rows of data.
            tokensread=file.readrow(data1,12);
            if (tokensread<=0)      break;
            // If the readrow method is not working, stop.
   }
   file.close(); // Close the file.
}
```

5) Click OK to enter the script file and close the Label Control dialog box.

For more information on the FUM file methods and properties, see Chapter 6, "File Utilities". For information on loading a user-defined DLL, see Chapter 7, "Advanced Technical Information".

To use the object:

1) Select **Edit:Button Edit Mode** to turn off the edit mode.

2) You can now try out the example. Click on the Pick File button. This action opens the Open dialog box.

3) Select FUM1.DAT from the TUTORIAL folder and click Open.

4) Click on the Import Data button. Columns are added to the worksheet and the data is imported.

1.4.4 Demonstration Project

Origin/OriginPro contains a demonstration project which demonstrates how UIM control and indicator objects can be used to create an application.

To open the Demonstration project:

1) Select **File**:**Open** to open the Open dialog box.

2) Select UIM.OPJ in the \SAMPLES\UIM folder.

3) Click Open. The demonstration program is loaded and its Actions window displays.

To operate the UIM.OPJ demonstration project:

1) Select the Start radio button in the Main Control object to activate the project. Two numeric values are generated randomly. These are displayed in the two strip charts.

2) Select the Chart 1 or Chart 2 check box in the Check Box object to switch an individual strip chart on or off.

3) Click on the Status Box's title button to read the current timer interval (the interval between the generation of new random numbers).

4) Click in the Status Box's Timer Interval text box to enter a new timer interval.

5) Select the Stop radio button in the Main Control object to deactivate the project.

6) Click on the Clock Bitmap button to generate a single random number event. Repeat to see the values accumulate in a strip chart.

The Demonstration Project is a learning tool as well as a simple demonstration of an Origin project using UIM control and indicator objects. The scripts behind the Main Control, Status Box, and Clock object can be viewed to see how they were programmed using LabTalk. When beginning to create your own scripts controlling UIM objects, you may want to base them on the scripts in this project.

To see the scripts attached to the demonstration objects:

1) Select **Edit:Button Edit Mode**. The UIM toolbar displays.

2) Click on the desired object. A border with control handles displays around the selected object.

3) Select **Format:Label Control**. The Label Control dialog box opens with the LabTalk script in the lower Script text box.

4) Click OK to close the Label Control dialog box.

5)   Select **File:Close** to quit the demonstration program.

1.5 UIM Objects Reference Guide

In the following section each UIM object is discussed individually including dialog boxes and object properties.

Shared properties are properties which all UIM objects have in common.

For information about shared properties, see "1.3.4 Shared Properties" on page 20. Shared properties have a large effect on the execution of the UIM objects. For information on how to make UIM objects interact in an application, refer to the sample project UIM.OPJ in the samples folder. The project is reviewed in "1.4.4 Demonstration Project" on page 37.

1.5.1 Bitmap Button: BBUTN

Default Name: BBUTN

Introduction

For the buttons to run a script, select Button Up from the Script, Run After drop-down list in the Label Control dialog box.

The Bitmap Button object provides multiple buttons on which up to 20 bitmap pictures can be displayed. If the bitmap files specified do not exist, the bitmap file name replaces them. The standard size is 32 X 32 pixels (pels). Larger buttons can be created, but if larger bitmaps are used, fewer buttons can be displayed. The bitmap files are specified in the **Control Titles** list and can be modified through the **BBUTN.L***n***$** property. All bitmaps *must* be 16 color images of the same size.

Note: If your images appear corrupted, see "Troubleshooting creating a BBUTN object" on page 45.

Use

The BBUTN object provides a visually pleasing way of getting input from a user. Instead of the user clicking on text, they can click on an icon. An example of the use of the BBUTN object is the UIM toolbar. The UIM.OPJ project uses a bitmap button object to run a data display application. To see the script, open UIM.OPJ and ALT+double-click on the clock.

Dialog Box Control

The UIM Object Dialog Box

Independent

Title Bar	Default or user-defined title, displayed in the title bar.

Bkg

On	Determines whether or not the object's background is visible.
Flat	Determines whether or not the object is flat with no edge.
Raised	Determines whether or not the object has a raised appearance.

Edged	Determines whether or not the object has an edge.
Sunken	Determines whether or not the object has a sunken appearance.

Gaps

Border	Controls the distance between the edge of the object and the buttons.
Control	Controls the distance between the buttons.

Color

Background	Controls the background color of the object outside of the buttons.
Title Text	Controls the color of the title.
Label Text	Not applicable.
HotSpot Fore	Not applicable.
HotSpot Bkg	Controls the color of the buttons outside of the bitmap image.

Control Layout

Columns	Not applicable. Use the Special dialog box to arrange buttons.
Rows	Not applicable. Use the Special dialog box to arrange buttons.

Text Position

Not applicable.

Title

On	The title will be displayed when this check box is selected.
Top	Determines the position of the title. The title can be above (selected) or beside the object (cleared).
Group	Select to have the object displayed with the group style.
Plain	This is the default option.
Caption	Selecting Caption gives you the following options: Sunken, Risen, Flat, Window, and Button. Choosing one of the first three options allows you to select a color for the background of the title. To do so, clear the Transparent Background check box and select a color from the drop-down list. Selecting the Transparent Background check box sets the color to the current background color. Selecting Window from the Caption drop-down

list sets the title as a Windows title bar. Selecting Button sets the title to act as a button. Its index value is 0. In the last two cases you have no control over the background color of the title. However, the foreground text color is still selectable.

Font

Dialog	Select to use the dialog box font (which is scaleable).
Scaleable	Select to use an alternate font.
Bold	Select for bold.
Points	Set font size.

Default

Set	Click on the Set button to alter the default settings for the current type of object to the current settings (for this Origin session only).
Save	Click on the Save button to permanently alter the default settings for the current type of object to the current settings. The defaults will be saved in an BBUTN.ODO file. To return to the original defaults, delete the BBUTN.ODO file.

The Bitmap Control Titles Dialog Box

The Bitmap Control Titles dialog box is selected by clicking on the Titles button in the UIM Object dialog box. The 16 color *.BMP files to be displayed on the bitmap buttons are specified here.

Note that the first time the *.BMP files are specified in this dialog box, the images they hold are loaded into the BBUTN object. After this, the *.BMP files do NOT need to be present. A saved BBUTN object within a template or tool will contain its own images.

Independent

Browse Button	Open the File Open dialog box to select the bitmap files.
Total Items	Sets the number of bitmap buttons.

To use the Bitmap Control Titles dialog box:

1) Type the number of buttons you want in the Total Items text box.

2) Click on a space to choose a file for that button.

3) Click on the Browse button to use the Open dialog box to find the files you want to display. If you type in file names, do not include the .BMP extension. If the bitmap is not in the Origin folder, the full path must be designated as part of the file name.

4) Once you have picked a file, click on the next space to choose the next file for that button.

The Bitmap Buttons Control Dialog Box

The Bitmap Buttons Control dialog box is opened by clicking on the Special button in the UIM Object dialog box.

Independent

Buttons per Column Sets the number of buttons per column.

Square	Select for square buttons. Does not affect the bitmap scaling.
Script Editable	Select to make script changes to the Control Titles list affect the appearance of the BBUTN object.

Scaling

UnScaled	The bitmap is displayed at its original resolution.
Full	The bitmap is scaled to completely fill the button.
Integer	The default setting. The bitmap is scaled by an integer amount, causing no distortion. However, if the BBUTN object is too small, the bitmap is displayed as a fully scaled bitmap.
XY Integer	The bitmap is scaled by integer amounts along the X and Y axes separately.

Display Mode

Push Button	Display bitmaps as buttons. Selection is restricted to one bitmap at a time.
Radio Button	Display bitmaps as buttons. Selection is restricted to one bitmap at a time. Button appears depressed when selected.
Check Button	Display bitmaps as buttons. Button selection is not restricted.
Animation	Display bitmaps as buttons. Only one bitmap is visible at a time. Bitmap selection increments each time the button is clicked.
Radio Page	Display bitmaps as tabs. Selection is restricted to one tab at a time.

Properties

Table 1.9: Bitmap Button LabTalk Properties

Property	Description
Bbutn.L*n*$	Set/Return the nth bitmap file listed in the Bitmap Control Titles list.
Bbutn.NumItems	Set/Return the number of bitmaps to be displayed.
Bbutn.EditableOn	Sets the Script Editable field. If **Bbutn.EditableOn** is set to 1, script changes in **Bbutn.Ln$** will change the BBUTN pictures.

Example Script

1) Double-click on the object after creating it to open the UIM Object dialog box.

2) Select the Caption radio button in the Title group of the UIM Object dialog box.

3) Select Button from the associated drop-down list.

4) Click OK to close the dialog box.

5) ALT+double-click on the object to open the Label Control dialog box. Enter the script as indicated below, select Button Up from the Script, Run After drop-down list, and then click OK. Note: **index** holds the number of the clicked button.

This script allows the user to pick a new *.BMP image for the clicked button.

```
if (index>0)
{
    type -b Warning: Choose bitmaps of the same size!;
    GetFileName *.bmp;          // Open dialog box opens.
    %B=%[%A,L'.'];       // Get rid of .bmp extension.
    this.EditableOn=1; // Script editable on.
    this.l$(index)$=%b;// Assign file name to button.
};
```

The following script opens a worksheet or graph from your own template, and imports a data file into the active worksheet. This BBUTN object must have 3 buttons, and the Script, Run After drop-down list must be set to Button Up.

These commands open a worksheet or graph window from the My* template and name it Import or Display.

```
if (index==1) window -t data MyWks Import;
if (index==2) window -t plot MyGraph Display;
if (index==3)
{
    GetFileName *.dat;  //Open Open dialog box for *.dat files
    open -w %B%A;   //Open chosen ASCII file.
}
```

Troubleshooting creating a BBUTN object

Creating your own Bitmap Buttons object can be difficult. A number of mistakes can prevent the image from appearing, or can cause it to be corrupted. If you are having these problems, open each of the files in Paintbrush or another graphics package and confirm the following points.

- The file names and paths have been correctly specified in the Bitmap Control Titles dialog box, *without* the .BMP extension.

- All specified image files are .BMP files.

- All images are saved as 16 color files. Many graphics packages automatically create or convert images to 256 color.

- Each image is 32 x 32 pels (pixels) or smaller.

- All images are exactly the same size. If one image is 32 x 32 and another is 33 x 33, one or more of the images will be corrupted.

1.5.2 Check Box: CHECK

Default Name: CHECK

Introduction

A Check Box object graphically displays the status of up to 20 items arranged in either rows or columns. Each item is represented by a hotspot, an area where the state of the item is shown, and can be changed by using the mouse.

The CHECK object shows the On/Off state of items.

The state can be toggled by clicking on the item.

The items displayed in the CHECK object have 2 states, ON or OFF, which can be displayed via checks or L.E.D. display. The ON state is defined by a value of 1 (or any positive value), and the OFF state by a value of 0. ON is also defined as being greater than 0 and OFF as being less than 0. Clicking on a box (when not in Button Edit Mode) toggles the state of that box. LabTalk can also be used to control the status of each item.

Two examples of CHECK objects are shown below, using the check display and the L.E.D. display.

Figure 1.13: Check Objects
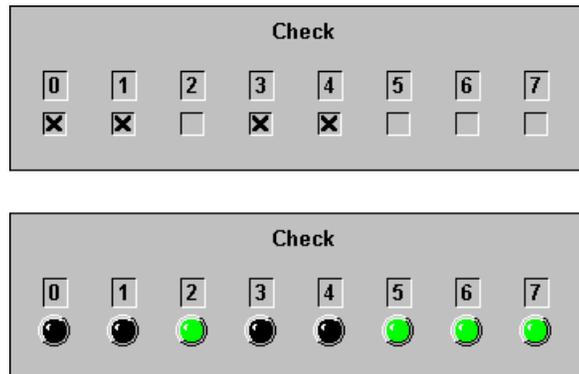
In this example, boxes labeled 0, 1, 3, and 4 are defined as being ON. Thus, the value returned by the property

CHECK.*n*=

would be 1 if n = 0, 1, 3, 4, and 0 for the others.

Uses

A Check object is used for data flow control in the UIM.OPJ application. The object controls if data is displayed in 0, 1, or 2 strip charts.

The CHECK object is a simple object, yet it can be used as a powerful tool in controlling the flow of operation in a project. It can be used to:

• Choose from a list of independent options.

• Dynamically control the flow of data in an active project.

• Display the status of flags being used by a project.

• Display or read binary numbers using the **Check.Bits** property to set or read a binary number to or from decimal.

• Display the results of any independent On/Off options.

Dialog Box Control

The UIM Object Dialog Box

Independent

Title Bar	Default or user-defined title, displayed in the title bar.

Bkg

On	Determines whether or not the object's background is visible.
Flat	Determines whether or not the object is flat with no edge.
Raised	Determines whether or not the object has a raised appearance.
Edged	Determines whether or not the object has an edge.
Sunken	Determines whether or not the object has a sunken appearance.

Gaps

Border	Controls the distance between the outer edge of the object and the items.
Controls	For the CHECK object, the effect is the same as Border above.

Color

Background	Controls the background color of the object.
Title Text	Controls the color of the title.
Label Text	Controls the color of the labels.
HotSpot Fore	Controls the check or L.E.D. ON color.

HotSpot Bkg	Controls the background color in the check box or the OFF state of the L.E.D.

Control Layout

Columns	Select to arrange the check boxes in columns.
Rows	Select to arrange the check boxes in rows.

Text Position

Top	Select to position the text above the check boxes.
Bottom	Select to position the text below the check boxes.
Left	Select to position the text to the left of the check boxes.
Right	Select to position the text to the right of the check boxes.

Title

On	The title is displayed when this check box is selected.
Top	Determines the position of the title. The title can be above (selected) or beside the object (cleared).
Plain	This is the default option.
Group	Select to have the object displayed with the group style.
Caption	Selecting Caption gives you the following options: Sunken, Risen, Flat, Window, and Button. Choosing one of the first three options allows you to select a color for the background of the title. To do so, clear the Transparent Background check box and select a color from the drop-down list. Selecting the Transparent Background check box sets the color to the current background color. Selecting Window from the Caption drop-down list sets the title as a Windows title bar. Selecting Button sets the title to act as a button. Note: The index number of the Title button is 0.

Font

Dialog	Select to use the dialog box font (which is scaleable).
Scaleable	Select to use an alternate font.
Bold	Select for bold.
Points	Set font size.

Default

Set	Click on the Set button to alter the default settings for the current type of object to the current settings (for this Origin session only).
Save	Click on the Save button to permanently alter the default settings for the current type of object to the current settings. The defaults will be saved in a CHECK.ODO file. To return to the original defaults, delete the CHECK.ODO file.

The Control Titles Dialog Box

The Control Titles dialog box is opened by clicking on the Titles button in the UIM Object dialog box.

Use this dialog box to control the number of check boxes, the layout and their names. The named items may be set and accessed from LabTalk to control their associated check boxes.

Independent

Total Items	Sets the number of items.
Show Name	Not applicable.

Text Style

Plain	Label text is not boxed.
Boxed	Label text is boxed (default).
Left	Label text is left justified.
Center	Label text is centered (default).
Right	Label text is right justified.

To use the Control Titles Dialog Box:

1) Type the number of check boxes in the Total items text box (must be < 20).

2) Click on the item you wish to rename.

3) Enter the desired text.

4) Repeat until you have the desired names for each item.

5) Select the text style in the Label Text Style group.

6) Click OK to return to the UIM Object dialog box.

The Select Values Dialog Box

The Select Values dialog box is opened by clicking on the Values button in the UIM Object dialog box.

The default Select Values dialog box designates only 2 check boxes. This number can be changed here or in the Controls dialog box. To alter the number of check boxes in the Select Values dialog box, enter the desired number (must be less than 20) in the Max text box.

The first 10 check boxes are visible and changeable in this dialog box. The others have to be accessed via LabTalk using either:

Check.V*n*=   or   **Check.*ItemNamen*=**

If the value is designated as greater than 0, a check or L.E.D. ON results. If the value is 0, the result is no check or an L.E.D. OFF state. Click OK to save your settings.

Independent

Integer	Select for integer format, clear for free format.
Digits	The number of digits to be displayed before the decimal point.
Decimal	The number of digits to be displayed after the decimal point.
Max	The number of check boxes; must be less than 20.
1, 2, ... n, ..., 10	The current value of the nth check box.

The Check Box Object Dialog Box

The Check Box Object dialog box is opened by clicking on the Special button in the UIM Object dialog box.

Box Check Style

Cross	Check styling is set to cross.
L.E.D.	Check styling is set to L.E.D.

Properties

Table 1.10: Check Box LabTalk Properties

Property	Description
Check.V*n*	Set/Return the value of the nth property: 1 for checked or 0 for unchecked.
Check.L*n*$	Set/Return the nth item name. Item names are displayed next to boxes. Note the default name is **item*n***.
Check.N*n*$	Set/Return the control name for the nth item. Used when creating a tool which interfaces with a DLL.

Property	Description
Check.*ItemName*	Set/Return 1 for checked or 0 for unchecked for the specified item. The default item name is **item***n*. Item names can be set with **check.L***n***$** or in the Control Titles dialog box.
Check.Bits	Checks/ Converts according to binary equivalent of value, the LSB (least significant bit) is the left check box.

Check.V*n*

Allows access to the nth item of the CHECK object.

The CHECK item values are not limited to 1 or 0, though the display only has two states; ON for an item > 0, OFF for <= 0. After a mouse click, the value will be 0 or 1.

To set the value of the fourth item use:

Check.V4=1;

To test the value of the third item use:

variable=Check.V3;

or

Check.v3=;

Check.ItemName

Check.*ItemName* offers an alternative way of accessing properties.

item*n* is the default item name for the CHECK object. For example, if you create a CHECK object with 8 items, by default, they are given item names **item1**, **item2**, ..., **item8**.

To access the fifth item use

Check.item5;

which is equivalent to

Check.V5;

You are not limited to having default item names such as **item*n***. If you have specified a name, it can be used to access the item value. For example, **Check.header** could be equivalent to **Check.V5**. Changing item names is discussed below.

Check.L*n*$

If properties are being accessed in scripts, appropriate item names can avoid confusion. For example, **Output.header** *is more meaningful than* **Check.item3***.*

This is used to change the nth item name. An example is given below:

Check.L5$=A New Fifth

This changes the fifth item name from **Object 5** to **A New Fifth**.

Check.N*n*$

This is used to change the control name for the nth item. This is only used when interfacing a tool with a DLL or other Origin object.

Check.Bits

This property can be used to read the binary CHECK object state as a decimal number.

Used to display a decimal number as a binary number and to interpret the current state of the CHECK object as a binary number and return this as a decimal value. For example:

Check.Bits=177;

results in the following CHECK object displaying (to achieve this you need to start with a CHECK object with 8 check boxes, and the check style set to L.E.D.).

Figure 5.14: Sample Check Object
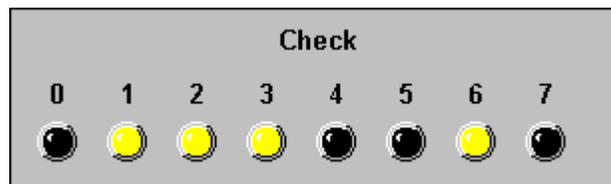
The Least Significant Bit is on the left hand side.

Example Script

ALT+double-click on the object to open the Label Control dialog box.
Enter the script as indicated below, select Button Up from the Script, Run
After drop-down list, and then click OK.

When a box is clicked, this script tests to see if the first or second item
was turned on. If it was, it opens an attention box saying so.

The statement determines
which item was clicked.

The **if** *statements check if*
the item was turned on.

```
switch (index) {
case 1: // Check box 1 was clicked
        if (this.v1==1) {
         type -b First Option Switch is checked!;
         };
       break;
case 2: // Check box 2 was clicked
       if (this.v2==1) {
       type -b Second Option Switch is checked!;
        };
        break;
};
```

The following script will work for a Check object with any number of
items.

If **check.Vn**>*0, the item is*
ON.

```
if (check.V$(index)>0) type -b Item $(index) is on.;
```

1.5.3 Combination Box: COMBOX

Default Name: COMBOX

Introduction

The combination box object allows you to create a drop-down list within your user interface. Since the drop-down list is not scaleable, it can not be placed on a graph window. To allow the user to select more than one item at once, see "1.5.6 List Box: LSTBOX" on page 70.

The COMBOX below allows the user to choose between four data display options.

Click on the arrow to open the drop-down list.
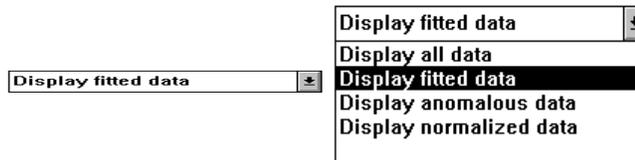
Script Control

This object is controlled exclusively through LabTalk scripts.

Properties

Table 1.11: Combination Box LabTalk Properties

Property	Description
Combox.Choice	Set/Return the index of current the selection.
Combox.NumItems	Get the number of items. If set to less than the current number of items, extra items are deleted. Setting to 0 deletes all items. If set to greater than the current number of items, blank strings are added.
Combox.S	Set/Return the numeric value of the current selection.
Combox.S$	Set/Return the string value of the current selection. If set to blank (combox.S$=""), delete the current selection.
Combox.V	Add a new item and set the numeric value.

Property	Description
Combox.V$	Add a new item and set the string value.
Combox.Vn	Set/Return the numeric value of the nth item.
Combox.V$n$$	Set/Return the string value of the nth item. If set to blank (V5$=""), delete the item.
This.Event	Indicates the Windows event which has just occurred. This property may only be used in the Label Control dialog box, with Script, Run After set to All Events. See the table below for a list of supported events.

Supported Events:	this.Event
Combox is no longer active.	20
Combox becomes active.	21
Left button down.	22
Left button double-click.	23
Left button up.	24

Methods

Table 1.12: Combination Box LabTalk Methods

Method	Description
Combox.Add(*string* [,*ctrl*])	Add *string* to the combination box if it is not already in the combox. If the optional *ctrl* = 1, then always add the string.
Combox.Del([*position*])	Delete the selected item. If a *position* is specified, then delete the item in that position.
Combox.Ins(*string* [,*ctrl*], [*position*])	Insert *string* to the combox before the specified *position*. If *ctrl* == 1, then do not check if *string* is already in the combox. If *position* is not specified, append *string* to the end of the combox.
Combox.Reset( )	Empty a combination box.

Creating a Combox Object

To create a Combox object:

1) Select **Edit:Button Edit Mode** to open the UIM toolbar and enter
   Button Edit Mode.

2) Click on the Combox button and drag a rectangular area out on a
   worksheet window. Release the mouse button.

3) Select **Edit:Button Edit Mode** to close the UIM toolbar and exit
   Button Edit Mode.

Controlling the Display in the Combox

1) Select **Window:Script Window** to open the Script window. Type
   the following script into the Script window.

   COMBOX.v$=One;

   COMBOX.v$=Two;

   COMBOX.v$=Three;

   The COMBOX now contains these three items in its drop-down list.
   To view these items, click on the COMBOX drop-down arrow.

2) Now enter the following script in the Script window.

   COMBOX.v2$=2nd

   View the change in the second item of the COMBOX by clicking on
   the COMBOX drop-down arrow.

3) You can also use a vector assignment operator to assign the
   worksheet column names as items in the drop-down list. For
   example, enter the following script in the Script window.

   COMBOX.v$ #= wks.cname$

   View the change by clicking on the COMBOX drop-down arrow.

4) Select one of the items in the COMBOX so that it displays as the
   selection in the drop-down list. Then enter the following script in
   the Script window.

   %A=combox.v$(combox.choice)$;

   type -b You selected $(combox.choice)...\r\nwhich is %A.;

1.5.4 Advanced Gauge: GAUGE

Default Name: GAUGE

Introduction

The Gauge object has no hotspots unless the Caption radio button is selected (in the UIM Object dialog box) and set to Button.

A Gauge object provides a dynamic graphical representation of its value property in the form of a gauge. The value can be changed using LabTalk. Three Gauge objects with different settings are displayed below.

Figure 1.15: Sample Gauge Objects

Dialog Box Control

The UIM Object Dialog Box

Independent
Title   User-defined title, displayed in the title bar.

Bkg
On   Determines whether or not the object's background is visible.

Flat   Determines whether or not the object is flat with no edge.

Raised   Determines whether or not the object has a raised appearance.

Edged   Determines whether or not the object has an edge.

Sunken   Determines whether or not the object has a sunken appearance.

Gaps

Border   Controls the distance between the edge of the
                object and the items within.

Control   Same as Border. Border + Control is the total
                distance between the edge of the object and items
                within.

Color

Background   Controls the background color of the object.

Title Text   Controls the color of the title.

Label Text   Controls the color of the labels.

HotSpot Fore   Not applicable.

HotSpot Bkg   Not applicable.

Control Layout

Not applicable.

Text Position

Not applicable.

Title

On   The title is displayed when this is selected.

Top   Controls the position of the title, above or beside
                the object.

Plain   The default option.

Group   Select to display the object with group style.

Caption   Selecting Caption allows the following options:
                Sunken, Risen, Flat, Window, and Button.
                Selecting one of the first three options allows you
                to select a color for the background of the title. To
                do so, clear the Transparent Background check
                box and select a color from the drop-down list.
                Selecting the Transparent Background check box
                sets the color to the current background color.
                Selecting Window from the Caption drop-down
                list sets the title as a Windows title bar. Selecting
                Button sets the title to act as a button. Note: The
                index number of the Title button is 0.

Font

Dialog   Select to use the dialog box font (a scaleable font).

Scaleable   Select to use an alternate font.

Bold   Select for bold.

Points	Set font size.

Default

Set	Click on the Set button to alter the default settings for the current type of object to the current settings (for this Origin session only).
Save	Click on the Save button to permanently alter the default settings for the current type of object to the current settings. The defaults will be saved in an GAUGE.ODO file. To return to the original defaults, delete the GAUGE.ODO file.

The Control Titles Dialog Box

Not applicable.

The Select Values Dialog Box

Not applicable.

The Advanced Gauge Dialog Box

The Advanced Gauge dialog box is opened by clicking on the Special button in the UIM Object dialog box.

Gauge Type

These settings control the basic appearance of the Gauge object. The number indicates the number of degrees the gauge will cover. Direction indicates the orientation of the gauge.

180 Left

180 Right

270

90 Left

90 Right
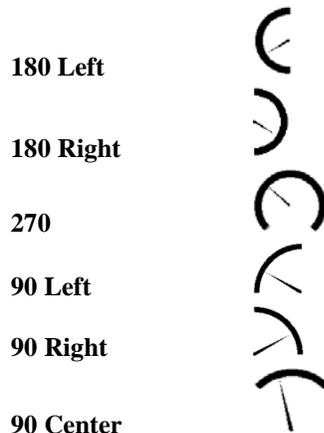
90 Center

Ortho	Use simple pointer with 90 Center gauge.
Bar Width	The width of the gauge bar, in points.

Label Cntrl

On   Select to create a text label on the gauge. The text is specified in the associated text box. By default, the label will be near the hub of the gauge.

X Pos   Horizontal position of the label, in % of gauge width from the left.

Y Pos   Vertical position of the label, in % of gauge height from the top.

Pointer Type

Simple   Line pointer.

Triangle   Rounded pointer which narrows to a point.

Color list   Select the desired pointer color. Note that the pointer color is inverse, so the displayed color will not be exactly what was selected.

Tick Cntrl

Numbers On   Display numeric tick labels.

Maj   Select to display the specified number of major ticks. Tick increments are automatically calculated.

Min   Select to display the specified number of minor ticks between each major tick. Tick increments are automatically calculated.

Size % of Text Major tick size in % of text size. Font size is specified in the UIM Object dialog box.

Ticks Out   Select to display ticks on the outside of the gauge curve.

Thick Ticks   Select to display thick major ticks.

Space Cntrl

Left   Distance between the left edge of the object and the left edge of the gauge, in % of object size.

Top   Distance between the top of the object and the top of the gauge, in % of object size.

Right   Distance between the right edge of the object and the right edge of the gauge, in % of object size.

Bottom   Distance between the bottom edge of the object and the bottom edge of the gauge, in % of object size.

Range Cntrl

Max   Maximum value to be displayed on the gauge.

Min	Minimum value to be displayed on the gauge.

Marker Cntrl

Max	Lowest value to be included in the "maximum" region of the gauge. Each region can be set to a different color in the Color Cntrl group.
Min	Highest value to be included in the "minimum" region of the gauge. Each region can be set to a different color in the Color Cntrl group.

Num Cntrl

Digits	Maximum number of digits to be displayed in the tick labels.
Decimals	Number of digits displayed to the right of the decimal point in tick labels.

Color Cntrl

> Max Marker	Color to be used for the "maximum" region, defined in the Marker Cntrl group.
Normal	Color to be used for the "normal" region, between the Max Marker and Min Marker. These are defined in the Marker Cntrl group.
< Min Marker	Color to be used for the "minimum" region, defined in the Marker Cntrl group.

Properties

Table 1.13: Gauge LabTalk Properties

Property	Description
Gauge.Value	Current value.
Gauge.Max	Maximum scale value.
Gauge.Min	Minimum scale value.
Gauge.LabelOn	Set = 1 to enable display of the label text defined with **gauge.label$**.
Gauge.Label$	Text of gauge label.
Gauge.LabelXpos	Horizontal position of the label, in % of gauge width from the left.
Gauge.LabelYpos	Vertical position of the label, in % of gauge height from the top.
Gauge.GaugeType	0=180 Left; 1=180 Right; 2=270; 3=90 Left; 4=90 Right; 5=90 Center.

Property	Description
Gauge.BarWidth	Width of the gauge bar, in points.
Gauge.PointerType	0 = simple line pointer; 1 = triangle pointer.
Gauge.PointerColor	Number of the pointer color in the color list. To set, use the **color**( ) function. For example: **gauge.PointerColor=color(red);**
Gauge.MajTickOn	Set=1 to turn on major tick display; 0 to disable.
Gauge.MajTickNum	Number of major ticks.
Gauge.MinTickOn	Set=1 to turn on minor tick display; 0 to disable. Cannot be displayed if **gauge.MajorTickOn=0**.
Gauge.MinTickNum	Number of minor ticks between each set of major ticks.
Gauge.TickSize	Size of major ticks, in % of text size.
Gauge.TickOut	Set=1 to display ticks on the outside of the gauge curve; 0 for inside.
Gauge.NumDisplayOn	Set=1 to display tick labels; 0 to disable.
Gauge.SpaceLeft	Distance between the left edges of the object and left edge of the gauge, in % of the object width.
Gauge.SpaceRight	Distance between the right edges of the object and the gauge, in % of the object width.
Gauge.SpaceTop	Distance between the top edges of the object and the gauge, in % of the object height.
Gauge.SpaceBottom	Distance between the bottom edges of the object and the gauge, in % of the object height.
Gauge.ThreshMax	Lowest value in the "maximum" region.
Gauge.ThreshMin	Highest value in the "minimum" region.
Gauge.GaugeDigits	Maximum number of digits in the tick labels.
Gauge.GaugeDecimals	Number of digits to the right of the decimal place to display in the tick labels.
Gauge.LowColor	Number of the "minimum" region (see **gauge.ThreshMin**) color. To set, use **gauge.HiColor=color(red);**
Gauge.HiColor	Number of the "maximum" region (see **gauge.ThreshMax**) color.
Gauge.DefColor	Number of the "normal" region color.

Example Script

Make the gauge title a button by selecting the Caption radio button in the Title group of the UIM Object dialog box. Select Button from the associated drop-down list. Enter the following script and select Button

Up from the Script, Run After drop-down list in the Label Control dialog box and click OK.

```
this.max=10;          // Set the range.
this.min=0;           // Set the minimum value.
this.threshmax=8;     // Set the maximum range.
this.threshmin=1;     // Set the minimum range.
this.draw();          // Redraw the altered gauge.
repeat 50
{
     this.value=rnd()*10;   // Display 50 random values.
}
```

Click on the gauge title to run the script. This script changes the Gauge settings and then sets its current value 50 times. The gauge automatically updates to display each value, resulting in an animated data display.

1.5.5 Horizontal Bar: HBAR

Default Name: HBAR

Introduction

Defined color ranges for the HBAR allow you to see the state of any variable at a glance.

The Horizontal Bar object displays the current value of its value property. The value can be changed using LabTalk or HBAR's own spin buttons.

An HBAR object with a range of 100 to 200 is shown below, with spin buttons activated.

Figure 1.16: Sample Horizontal Bar Object
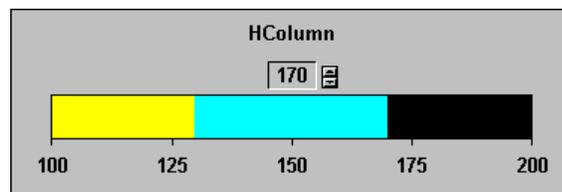
Uses

The HBAR object differs from VBAR only in that it is horizontal and therefore suited to those tasks which require a horizontal display. Of course, you may have as many HBAR's, VBAR's, Gauges and Strip Charts in a project as you desire.

Dialog Box Control

The UIM Object Dialog Box

Independent

Title   User-defined title, displayed in the title bar.

Bkg

On	Determines whether or not the object's background is visible.
Flat	Determines whether or not the object is flat with no edge.
Raised	Determines whether or not the object has a raised appearance.
Edged	Determines whether or not the object has an edge.
Sunken	Determines whether or not the object has a sunken appearance.

Gaps

Border	Controls the distance between the edge of the object and the items within.
Control	Same as Border above. Border + Control is the total distance between the edge of the object and items within.

Color

Background	Controls the background color of the object.
Title Text	Controls the color of the title.
Label Text	Controls the color of the labels.
HotSpot Fore	Controls the color of the value text.
HotSpot Bkg	Controls the background color of the value display box.

Control Layout

Not applicable.

Text Position

Not applicable.

Title

On	The title will be displayed when this check box is selected.
Top	Controls the position of the title, above or beside the object.
Plain	The default option.
Group	Select to display the object with group style.
Caption	Selecting Caption allows the following options: Sunken, Risen, Flat, Window, and Button. Choosing one of the first three options allows you to select a color for the background of the title. To

do so, clear the Transparent Background check box and select a color from the drop-down list. Selecting the Transparent Background check box sets the color to the current background color. Selecting Window from the Caption drop-down list sets the title as a Windows title bar. Selecting Button sets the title to act as a button. Note: The index number of the Title button is 0.

Font

Dialog	Select to use the dialog box font (a scaleable font).
Scaleable	Select to use an alternate font.
Bold	Select for bold.
Points	Set font size.

Default

Set	Click on the Set button to alter the default settings for the current type of object to the current settings (for this Origin session only).
Save	Click on the Save button to permanently alter the default settings for the current type of object to the current settings. The defaults will be saved in an HBAR.ODO file. To return to the original defaults, delete the HBAR.ODO file.

The Control Titles Dialog Box

Not applicable.

The Select Values Dialog Box

The Select Values dialog box is opened by clicking on the Values button in the UIM Object dialog box.

Independent

Current	The current value for the HBAR object.
Max	The greatest value allowed.
Min	The smallest value allowed.
Integer	Select for integer format. Clear for free format.
Digits	Designate the number of digits before the decimal point when displaying the value text.
Decimal	Designate the number of digits after the decimal point when displaying the value text.
Max (on the right)	Not applicable.
4, 5, ... n, ..., 10	Not applicable.

The Indicator Object Dialog Box

The Indicator Object dialog box is opened by clicking on the Special button in the UIM Object dialog box.

Layout

Tick Size	The size of the tick as a percentage of the text size.
Right Gap	The distance between the horizontal bar and the bottom edge of the object as a percentage of the object's box height. This is useful in positioning the spin buttons when they are selected.
Bar Size	The width of the bar as a percentage of the object's height.
Txt Move	The distance between the values text and the center of HBAR's indicator bar as a percentage of the object's height. Neglecting to designate this distance will cause the buttons to be positioned within the bar thus rendering them useless. This option has a default value of 0. An appropriate value for use with spin buttons is 35%.

Ticks

Digits	The number of digits before the decimal point when displaying the tick labels.
Decimal	The number of digits after the decimal point when displaying the tick labels.
Number of ticks	The number of ticks to be placed on the object.

Ticks Label Style

Plain	Tick labels are plain styled.
Boxed	Tick labels are boxed.
Left	Tick labels are left justified.
Centered	Tick labels are centered.
Right	Tick labels are right justified.

Color

Num Levels	The number of levels to be used.
Bkg	The color behind the bar.
1-Color List	The color to be used for the lower limit up to the first limit.
2-Color List	The color to be used for ranges from: min to ((max-min) /1000) x Level start value
2-Number Box	Level Start value, which must be: greater than the previous value, less than following value, or between 0 and 1000.

Figure 1.17: Setting Up the Levels

The appropriate level colors are displayed on the bar up to and including the current value. The Bkg color is displayed on the bar at all points greater than the current value.
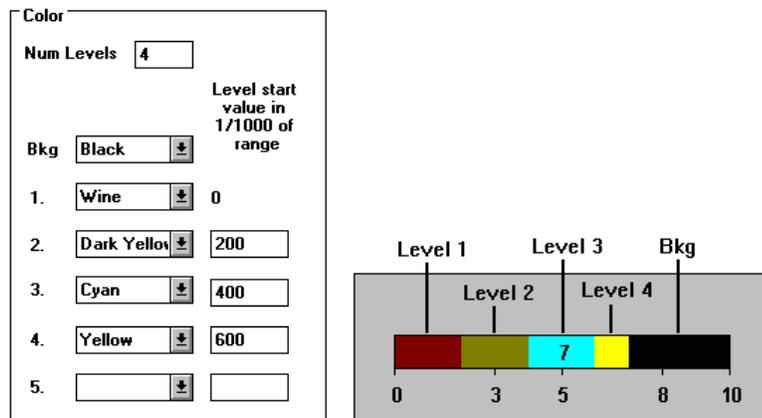
Spin Button

On	Select to use the spin buttons.
Step Size	The amount the present value will be incremented or decremented when an arrow is pressed.

The More Dialog Box

Not applicable.

Properties

Table 1.14: Horizontal Bar LabTalk Properties

Property	Description
HBar.Value	Current value.
HBar.Max	Maximum scale value.
HBar.Min	Minimum scale value.
HBar.Inc	Increment value.

Example Script

Select the Caption radio button in the Title group of the UIM Object dialog box. Select Button from the associated drop-down list. Enter the following script and select Button Up from the Script, Run After drop-down list in the Label Control dialog box and click OK.

```
this.max=10;
this.min=0;
this.draw();  // Redraw to update the displayed object
repeat 50
{ // Loop 50 times to set 50 values.
this.value=rnd()*10; // Set HBAR's value to a random #.
}
```

Click on the title button to run the script. This script simulates a flow of real-time data to the HBAR.

1.5.6 List Box: LSTBOX

Default Name: LSTBOX

Introduction

List Box is the only UIM object which allows the user to select more than one item at once.

The List Box object provides a list of strings for the user to select one or more choices. Since the List Box is not rescalable, it can not be placed on a graph window.

Script Control

Properties

Table 1.15: List Box LabTalk Properties

Property	Description
Lstbox.An	Set/Return the selection state of the nth item. 0 = not selected, 1 = selected.
Lstbox.Choice	Set/Return the current selected item.
Lstbox.In	Return the index of the nth selected item. Set to 0 to unselect n^{th} selected item.
Lstbox.MultSel	Set/Return multiple selection mode. 0 = off, 1 = basic, 2 = extended. Basic mode lets the user toggle each selection on/off by clicking. Extended enables SHIFT+click and CTRL+click selection.
Lstbox.NumItems	Set/Return the number of items. If set to less than the current number of items, extra items are deleted. Set to zero to delete all items. If set to greater than the current number of items, blank strings are added.
Lstbox.NumSels	Return the number of selected items. Set to 0 to unselect all selected items.
Lstbox.Sn	Set/Return the numeric value of the nth selected item.
Lstbox.Sn\$	Set/Return the string value of the nth selected item.
Lstbox.Vn	Set/Return the numeric value of the nth item.
Lstbox.Vn\$	Set/Return the string value of the nth item.

Property	Description
This.Event	Number indicating a Windows event. See the table below. This property may only be used in the Label Control dialog box of the object. Set Script, Run After to All Events.
Lstbox.Index	Number of the item involved in an event. See the table below for more information.

Supported Events:	this.Event	this.Index
Object de-selected	20	Last selected item.
Item selected	21	Item containing caret.
Left button down	22	Item the event occurred on.
Left button double-click	23	Item the event occurred on.
Left button up	24	Item the event occurred on.

Methods

Table 1.16: List Box LabTalk Methods

Method	Description
Lstbox.Add(*string*[,*cntrl*])	Add *string* to LSTBOX if not already in listbox. If cntrl is 1 then always add string.
Lstbox.CopyAll(*NewLB*[,*cntrl*][,*position*])	Copy all items from *NewLB* that are not already in LSTBOX listbox into LSTBOX listbox. If cntrl is 1 then copy all always. Use *position* to specify where items are to be inserted. If *position* == 0 or is not specified, strings are inserted before the current selection (**Lstbox.Choice**).
Lstbox.CopySel(*NewLB*[,*cntrl*][,*position*])	Similar to CopyAll except that it copies only selected items.
Lstbox.Del([*position*])	Delete all selected items. If item is specified, delete only the specified item.
Lstbox.Ins(*string*[,*cntrl*][,*position*])	Insert *string* item into specified *position* in the listbox if it is not already there. If cntrl == 1, always add. If position is not specified, append string to end.

Method	Description
Lstbox.MoveAll(*NewLB*[,*cntrl*][,*position*])	Similar to CopyAll except all items are removed from the source listbox.
Lstbox.MoveSel(*NewLB*[,*cntrl*][,*position*])	Similar to MoveAll except moves only selected items.
Lstbox.Reset( )	Empty a listbox.
Lstbox.Shift(*offset*)	Move the current selected item up or down the number of items specified in offset.

Creating a List Box Object

To create a List Box object:

1) Select **Edit:Button Edit Mode** to open the UIM toolbar and enter Button Edit Mode.

2) Click on the LSTBOX button and drag a rectangular area out on a worksheet window. Release the mouse button.

3) Select **Edit:Button Edit Mode** to close the UIM toolbar and exit Button Edit Mode.

Controlling the Display in the List Box

1) Select **Window:Script Window** to open the Script window. Type the following script into the Script window.

    LSTBOX.v$=One;

    LSTBOX.v$=Two;

    LSTBOX.v$=Three;

    The LSTBOX now displays these three items.

2) Now enter the following script in the Script window.

LSTBOX.v2$=2nd

Notice the change in the second item of the LSTBOX.

3) You can also use a vector assignment operator to assign the worksheet column names as items in the LSTBOX. For example, enter the following script in the Script window.

LSTBOX.v$ #= wks.cname$

The column names now display in the LSTBOX.

4) Select one of the items in the LSTBOX. Then enter the following script in the Script window.

%A=LSTBOX.v$(LSTBOX.choice)$;

type -b You selected $(LSTBOX.choice)...\r\nwhich is %A.;

1.5.7 Radio: Radio

Default Name: Radio

Introduction

To allow a user to toggle the on/off state of more than one item, "1.5.2 Check Box: CHECK" on page 46.

A RADIO object allows the user to select from a number of named choices. Only one item can be active at a time.

This choice can be accessed with LabTalk script using the **Radio.Choice** property. This returns the position of the current choice. An example of a RADIO object with 5 items is included below.

Figure 1.18: Sample Radio Object
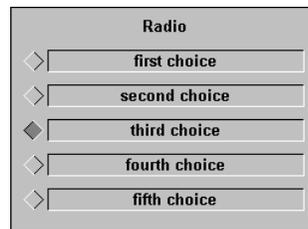
Since the third item is selected, the value of **Radio.Choice** is 3. This could be set using the following script:

Radio.Choice=Radio.thirdchoice;

Notice that there is no space left between the words "third" and "choice". This command is the same as:

Radio.Choice=3;

An alternate way of changing the current choice is by clicking on the desired item.

Uses

The RADIO object has only one active choice and so it is ideally suited to controlling tasks which have a definite set of exclusive states.

A RADIO object is used in the UIM.OPJ application to start and stop the flow of data through the project. To see the script used to control this, open UIM.OPJ and ALT+double-click on the Main radio object.

Dialog Box Control

The UIM Object Dialog Box

Independent

Title Bar	Default or user-defined title, displayed in the title bar.

Bkg

On	Determines whether or not the object's background is visible.
Flat	Determines whether or not the object is flat with no edge.
Raised	Determines whether or not the object has a raised appearance.
Edged	Determines whether or not the object has an edge.
Sunken	Determines whether or not the object has a sunken appearance.

Gaps

Border	Controls the distance between the outer edge of the object and the items.
Controls	For the RADIO object, the effect is the same as Border above.

Color

Background	Controls the background color of the object.
Title Text	Controls the color of the title.
Label Text	Controls the color of the labels.
HotSpot Fore	Controls the selected radio button color.
HotSpot Bkg	Controls the unselected radio button color.

Control Layout

Columns	Select if you wish the check boxes to be arranged in columns.
Rows	Select if you wish the check boxes to be arranged in rows.

Text Position

Top	Select to position the text above the check boxes.
Bottom	Select to position the text below the check boxes.
Left	Select to position the text to the left of the check boxes.
Right	Select to position the text to the right of the check boxes.

Title

On	The title will be displayed when this check box is selected.
Top	Determines the position of the title. The title can be above (selected) or beside the object (cleared).
Group	Select to have the object displayed with the group style.
Plain	This is the default option.
Caption	Selecting Caption gives you the following options: Sunken, Risen, Flat, Window, and Button. Choosing one of the first three options allows you to select a color for the background of the title. To do so, clear the Transparent Background check box and select a color from the drop-down list. Selecting the Transparent Background check box sets the color to the current background color. Selecting Window from the Caption drop-down list sets the title as a Windows title bar. Selecting Button sets the title to act as a button. The index number of the Title button is 0.

Font

Dialog	Select to use the dialog box font (a scaleable font).
Scaleable	Select to use an alternate font.
Bold	Select for bold.
Points	Set font size.

Default

Set	Click on the Set button to alter the default settings for the current type of object to the current settings (for this Origin session only).
Save	Click on the Save button to permanently alter the default settings for the current type of object to the current settings. The defaults will be saved in an

RADIO.ODO file. To return to the original
defaults, delete the RADIO.ODO file.

The Control Titles Dialog Box

The Control Titles dialog box is opened by clicking on the Titles button
in the UIM Object dialog box.

Use this dialog box to control the number of check boxes, the layout, and
their names. The named items may be set and accessed from LabTalk to
control their selection state.

Independent

Total items:	Sets the number of titles.
Show Name	Not applicable.

Text Style

Plain	Label text is not boxed.
Boxed	Label text is boxed (default).
Left	Label text is left justified.
Center	Label text is centered (default).
Right	Label text is right justified.

To use the Control Titles Dialog Box:

1) Type the number of check boxes in the Total items text box (must be
    < 20).

2) Click on the item you wish to rename.

3) Enter the desired text.

4) Repeat until you have the desired names for each item.

5) Select the desired text style from the Label Text Style group.

6) Click OK to return to the UIM Object dialog box.

The Select Values Dialog Box

Click on the Values button in the UIM Object dialog box to access the
Select Values dialog box.

This dialog box has one active field, the Choice field. This is the current
choice and has the same value as **Radio.Choice**.

Properties

Table 1.17: Radio LabTalk Properties

Property	Description
Radio.Choice	Selected item number.
Radio.*ItemName*	Returns the position of *ItemName* in the list. This is used with **Radio.Choice**. The default item name is **item***n*.
Radio.NumItems	Set/Return the number of items in the RADIO object.
Radio.L*n*$	Sets n^{th} item name. Item names are displayed next to radio buttons. By default **Radio.L***n***$**=**Item***n*.

Example Script

Enter the following script and select Button Up from the Script, Run After drop-down list in the Label Control dialog box and click OK.

To access the choice property from the Script window or another object, use **radio.choice***.*

```
switch (this.choice)
{
case 1:
  type -b First option chosen;
  break;
case 2:
  type -b Second option chosen;
  break;
}
```

1.5.8 Scale: SCALE

Default Name: SCALE

Introduction

This object provides information about the scale in a graph window.

The scale object provides an accurate scale which dynamically sizes itself to reflect the scale at its current position on the graph. For example, on a log-log graph the scale object shrinks as you move it to the right.

A log-log graph with two identical scale objects at different positions is displayed below.

Figure 1.19: Sample Scale Object

A Scale object can be set to execute a script providing the user with more information when it is moved on a graph.
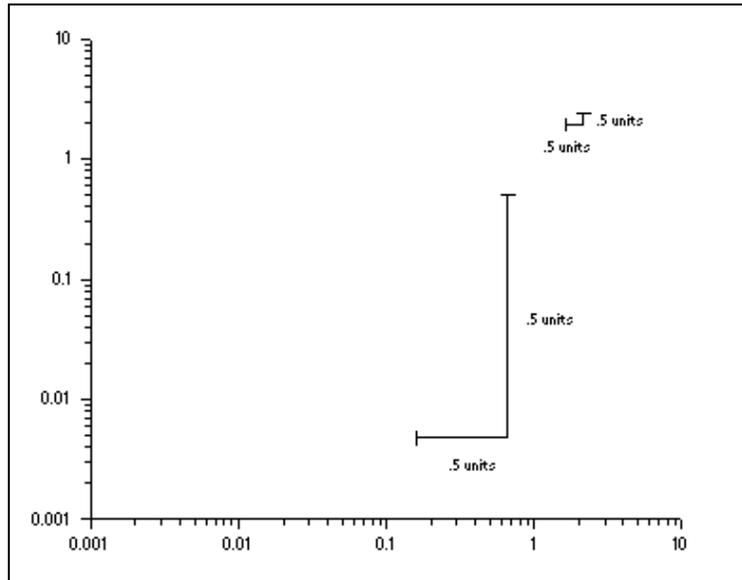
Dialog Box Control

The Scale Object Dialog Box

The SCALE object has only one dialog box. It is accessed by double-clicking on the object.

Axis Titles

The positioning of the titles should correspond to the positioning of the scales.

X Title	This is centered within the object box's horizontal plane.
Above	Orients the X title above the X scale axis.
Below	Orients the X title below the X scale axis.
Y Title	This is centered within the object box's vertical plane.
Left	Orients the Y title to the left of the Y scale axis.
Right	Orients the Y title to the right of the Y scale axis.

X Scale

OFF	No X scale will be displayed.
Top	X axis scale is placed on top of the SCALE object.
Middle	X axis scale is placed in the middle of the SCALE object.
Bottom	X axis scale is placed at the bottom of the SCALE object.

Y Scale

OFF	No Y scale will be displayed.
Left	Y scale is placed to the left of the SCALE object.
Middle	Y scale is placed in the middle of the SCALE object.
Right	Y scale is placed to the right of the SCALE object.

X Range

Sets the length of the X axis scale which corresponds with its range regardless of where it is placed. The X range is a free format number.

Y Range

Sets the length of the Y scale.

Color

Sets the color of the scale object.

Line Width

Sets the width of the scale lines to be drawn.

X Ticks

Major-Above	Major tick is above the X scale axis.
Major-Below	Major tick is below the X scale axis.
Minor-Above	Minor tick is above the X scale axis.
Minor-Below	Minor tick is below the X scale axis.
Number	The number of major ticks to be displayed. The number of minor ticks will be one less than the number of major ticks.

Y Ticks

Major-Left	Major tick is to the left of the scale's Y axis.
Major-Right	Major tick is to the right of the scale's Y Axis.
Minor-Left	Minor tick is to the left of the scale's Y Axis.
Minor-Right	Minor tick is to the right of the scale's Y Axis.
Number	The number of major ticks to be displayed. The number of minor ticks will be one less than the number of major ticks.

Gaps

X to Edge	Sets the distance between the scale's X axis and the top or bottom edge of the object, depending on title position. This distance is a percentage of the object box's height. If the X scale is set to the middle, this has no effect.
X to Axis	Sets the distance between the X title and the scale's X axis as a percentage of the object box's height.
Y to Edge	Sets the distance between the scale's Y axis and either the left or right edge of the object, depending on title position. This distance is a percentage of the object box's width. If the Y scale is set to the middle, this has no effect.
Y to Axis	Sets the distance between the Y title and the scale's Y axis as a percentage of the object box's width.

Font

Dialog	Select to use the dialog box font.
Scaleable	Select to use a scaleable font.
Bold	Select for bold format.
Points	Sets the font size.

Properties

Table 1.18: Scale LabTalk Properties

Property	Description
Scale.XRange	Sets/returns the X range.
Scale.YRange	Sets/returns the Y range.
Scale.L1$	Sets the title of the X range.
Scale.L2$	Sets the title of the Y range.

Example Script

Select Button Up from the Script, Run After drop-down list in the Label
Control dialog box. Enter the following script in the associated script
box and click OK.

scale.xrange=x3;

scale.yrange=y3;

scale.l1$=$(scale.xrange);

scale.l2$=$(scale.yrange);

plot -c;

This script sets the length of the X and Y branches of the object and
changes the title of each to that length. For this code to work properly,
SCALE needs to be in its default settings.

1.5.9 Spin Button: SPIN

Default Name: SPIN

Introduction

Set the minimum and maximum to 0 to specify an unlimited range.

A SPIN object displays a value next to up and down arrows which can be used to increment the value in preset amounts. The value is defined within certain ranges. The Max, Min, Inc (increment amount) and Value are all accessible by LabTalk.

An example of a SPIN object is shown below.

Figure 1.20: Sample Spin Object

Uses

The SPIN object offers a means of controlling the value of a single variable.

There are many situations in which it is desirable to change the value of a variable by a fixed amount in either a positive or negative direction. For example, if you have designed a simulation of bacterial growth and you wish to control how many cycles the simulation is to be run, you could do this via LabTalk.

The increment amount and ranges can be controlled through dialog boxes or LabTalk.

To choose from a list of numbers without a fixed mathematical relationship, see "1.5.13 Value List: LIST" on page 108. You can also use this object to choose from a list of text items.

To provide a drop-down list, see "1.5.3 Combination Box: COMBOX" on page 54.

If you want to be able to select more than one item at once, see "1.5.6 List Box: LSTBOX" on page 70.

Dialog Box Control

The UIM Object Dialog Box

Independent

Title Bar   Default or user-defined title, displayed in the title bar.

Bkg

On   Determines whether or not the object's background is visible.

Flat   Determines whether or not the object is flat with no edge.

Raised   Determines whether or not the object has a raised appearance.

Edged   Determines whether or not the object has an edge.

Sunken   Determines whether or not the object has a sunken appearance.

Gaps

Border   Controls the distance between the outer edge of the object and the items.

Controls   For the SPIN object, the effect is the same as Border above.

Color

Background   Controls the background color of the object.

Title Text   Controls the color of the title.

Label Text   Controls the color of the text inside the value box.

HotSpot Fore   Not applicable.

HotSpot Bkg   Not applicable.

Control Layout

Not applicable.

Text Position

Top   Select to position the spin buttons above the value box.

Bottom   Select to position the spin buttons below the value box.

Left   Select to position the spin buttons to the left of the value box.

Right   Select to position the spin buttons to the right of the value box.

Title

On	The title will be displayed when this check box is selected.
Top	Determines the position of the title. The title can be above (selected) or beside the object (cleared).
Group	Select to have the object displayed with the group style.
Plain	This is the default option.
Caption	Selecting Caption gives you the following options: Sunken, Risen, Flat, Window, and Button. Choosing one of the first three options allows you to select a color for the background of the title. To do so, clear the Transparent Background check box and select a color from the drop-down list. Selecting the Transparent Background check box sets the color to the current background color. Selecting Window from the Caption drop-down list sets the title as a Windows title bar. Selecting Button sets the title to act as a button. Note: The index number of the Title button is 0.

Font

Dialog	Select to use the dialog box font (a scaleable font).
Scaleable	Select to use an alternate font.
Bold	Select for bold.
Points	Set font size.

Default

Set	Click on the Set button to alter the default settings for the current type of object to the current settings (for this Origin session only).
Save	Click on the Save button to permanently alter the default settings for the current type of object to the current settings. The defaults will be saved in an SPIN.ODO file. To return to the original defaults, delete the SPIN.ODO file.

The Control Titles Dialog Box

The Control Titles dialog box is opened by clicking on the Titles button in the UIM Object dialog box.

Independent

Total Items	Not applicable.
Show Name	Select to display the name shown in the text box.

Text Style

Plain	Value display text is not boxed (do not use).
Boxed	Value display text is boxed (default).
Left	Value display text is left justified.
Center	Value display text is centered (default).
Right	Value display text is right justified.

The Select Values Dialog Box

The Select Values dialog box is opened by clicking on the Values button in the UIM Object dialog box.

Independent

Current	The current value for the SPIN object.
Step Size	The amount of the current value should be incremented (up arrow) or decremented (down arrow).
Max	The greatest value allowed.
Min	The smallest value allowed.
Integer	Select for integer format, clear for free format.
Digits	The number of digits before the decimal place to be displayed.
Decimal	The number of digits after the decimal place to be displayed.
Max (on the right)	Not applicable.
5, 6, ... n, ..., 10	Not applicable.

The Special Dialog Box

Not applicable.

Properties

Table 1.19: Spin LabTalk Properties

Property	Description
Spin.Value	Current value.
Spin.Max	Maximum value.
Spin.Min	Minimum value.
Spin.Inc	Increment value.

To remove the maximum and minimum bounds, set **spin.max** and **spin.min** to zero.

Example Script

Double-click on the object after creating it, and select the Caption radio button in the Title group of the UIM Object dialog box. Select Button from the associated drop-down list. Click OK to close the dialog box.

Select Button Up from the Script, Run After drop-down list in the Label Control dialog box. Enter the following script in the associated script box and click OK.

If the title is clicked, **index** *will be set to 0.*

A similar script can be used to initialize any object.

if (this.index==0)
{// Remove upper and lower bounds, set the increment.
        this.max=0;
        this.min=0;
        this.inc=2;
}
if (this.value==54) {type -b Now at 54}

Click the title button to execute the script.

1.5.10 Status : Status

Default Name: STATUS

Introduction

The STATUS object is a multi-functional object which allows you to store and display up to 20 numbers, strings, and logical items. These various types of data can be mixed on one object. On a worksheet you can allow the direct entry of text and numbers when a field is clicked.

The following example STATUS object displays nine items: two text strings, three numeric, and four logical.

Figure 1.21: Sample Status Object
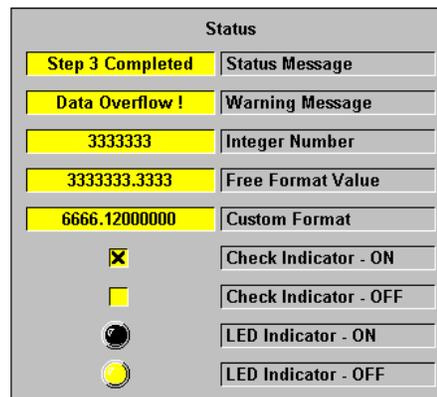
Turn the edit property on to allow users to modify the contents of an item by clicking on it.

These items may be accessed by LabTalk, by dialog box control, or via interaction with the user. In the latter method a field needs to have its edit property set on. The user then clicks and directly enters the data. If the item is a logical operator, the state will be changed by a mouse click.

The non-displayed data for each item can also be used, though only one may be displayed.

The output boxes are hotspots. When clicked, these either allow direct data entry or return an index which may be interpreted by a LabTalk script placed behind the object.

Dialog Box Control

The UIM Object Dialog Box

Independent

Title Bar	Default or user-defined title, displayed in the title bar.

Bkg

On	Determines whether or not the object's background is visible.
Flat	Determines whether or not the object is flat with no edge.
Raised	Determines whether or not the object has a raised appearance.
Edged	Determines whether or not the object has an edge.
Sunken	Determines whether or not the object has a sunken appearance.

Gaps

Border	Controls the distance between the outer edge of the object and the items.
Controls	For the STATUS object, the effect is the same as Border above.

Color

Background	Controls the background color of the object.
Title Text	Controls the color of the title.
Label Text	Controls the color of the labels.
HotSpot Fore	Controls the text and numeric value color, check and L.E.D. ON color.
HotSpot Bkg	Controls the background color in the display box or the OFF state of the L.E.D.

Control Layout

Columns	Select if you wish the items to be arranged in columns.
Rows	Select if you wish the items to be arranged in rows.

Text Position

Top	Select to position the label text above the display boxes.
Bottom	Select to position the label text below the display boxes.
Left	Select to position the label text to the left of the display boxes.
Right	Select to position the label text to the right of the display boxes.

Title

On	The title will be displayed when this check box is selected.
Top	Determines the position of the title. The title can be above (selected) or beside the object (cleared).
Group	Select to have the object displayed with the group style.
Plain	This is the default option.
Caption	Selecting Caption gives you the following options: Sunken, Risen, Flat, Window, and Button. Choosing one of the first three options allows you to select a color for the background of the title. To do so, clear the Transparent Background check box and select a color from the drop-down list. Selecting the Transparent Background check box sets the color to the current background color. Selecting Window from the Caption drop-down list sets the title as a Windows title bar. Selecting Button sets the title to act as a button. The index number of the Title button is 0.

Font

Dialog	Select to use the dialog box font (a scaleable font).
Scaleable	Select to use an alternate font.
Bold	Select for bold.
Points	Set font size.

Default

Set	Click on the Set button to alter the default settings for the current type of object to the current settings (for this Origin session only).
Save	Click on the Save button to permanently alter the default settings for the current type of object to the

current settings. The defaults will be saved in an STATUS.ODO file. To return to the original defaults, delete the STATUS.ODO file.

The Control Titles Dialog Box

The Control Titles dialog box is opened by clicking on the Titles button in the UIM Object dialog box. Although it can be used to set item names for the STATUS object, all of its functions are duplicated in the Status Object dialog box.

The Select Values Dialog Box

Not applicable.

The Status Object Dialog Box

The Status Object dialog box is opened by clicking on the Special button in the UIM Object dialog box. This dialog box replaces the Control Titles and Select Values dialog boxes. It allows the entering and formatting of text and numeric data.

The Status Object dialog box allows the control of all 20 items.

Text, numeric or logical data can be stored, though for each specific item only one may be displayed. Select the desired item to be edited from the list and enter the data type (default is numeric). Format and enter your data. To store this information, either click OK or choose another item to edit.

If you wish to change the number of properties, you need to enter the desired number, then click on the item list.

Current Property

Name	The current item's name, to be displayed next to the value box. Item names can also be set in the Control Titles dialog box.
Num	Current item is of type numeric.
Text	Current item is of type text.
Bin	Current item is of type binary.

List

Contains a list of all the present items. Select the item you wish to edit.

Justification

Left	Current value display is left justified.
Center	Current value display is centered.
Right	Current value display is right justified.

Apply to All	Click on this button to apply your current text formatting to all items of this STATUS object.

Edit Control

On	Select if you wish the current item to have direct edit. This means you can directly enter text or numbers but you cannot then use this hotspot to send an index to a script. Edit On is not relevant for binary mode.
All On	Click on this button to set direct edit for all properties.
All Off	Click on this button to remove direct edit for all properties.

Data

Value	The numeric value for this item.
Text	The text string for this item.

Numeric Style

Integer	The data conversion is of integer type.
Free Form	The data conversion is free form. This means that decimal places will be displayed if needed. For more accurate control, choose Custom.
Custom	Allows you to define the number of places to be displayed after the decimal place.
Digits	The number of digits to be displayed (max is 30).
Decimal	The number of digits to be displayed after the decimal place. Maximum is 17, although the accuracy is also dependent on the number of digits before the decimal place due to internal storage limitations.

Bin Style

Check	Current binary item is of type Check.
L.E.D.	Current binary item is of type L.E.D.

Text Style

Number of Characters	The number of characters to be displayed (maximum is 30).

Apply Width to All

If the current style is numeric, then the Digits field is used to set the width of all items.

If the current style is text, then the Number of Characters field sets the width.

Independent

Number of properties	The number of items you wish this status object to store.

Properties

Table 1.20: Status LabTalk Properties

Property	Description
Status.Vn	Sets/Returns the value stored in the nth item of the status object.
Status.Vn\$	Sets/Returns the text string stored in the nth item of the status object.
Status.*ItemName*	Sets/Returns the value stored in the *ItemName* item.
Status.*ItemName*\$	Sets/Returns the text string stored in the *ItemName* item.
Status.Ln\$	Sets the nth item name. Item names are displayed next to boxes. The default name is **item$n$**.
Status.Dn	Sets/Returns the number of digits for the nth value.
Status.Cn	Sets/Returns the number of characters for the nth value.
Status.Tn	Sets/Returns the type of the nth value (numeric, text, binary check or binary L.E.D.).
Status.An	Sets/Returns the direct edit item for the nth value.
Status.Nn\$	Sets/Returns the control name for the nth item.
Status.Numitems	Controls the number of status boxes to be displayed.
Status.Resizenow	Set to 1 to immediately rescale the object to the ideal height for the number of items and control gap setting.

Status.V*n*$

Allows access to the nth text string stored in the STATUS object.

To set the text string for fourth item use:

Status.V4$=The Fourth Item

To read a text string stored in the third item use:

For large strings use the **status.cn** *property to change the item box width.*

%a=Status.V3$;

%a=;

The text strings are limited to 50 characters.

Status.*ItemName*$

Status.*ItemName* offers an alternative way of accessing text strings stored in items.

*Item**n** is the default item name for the Status object.*

To read the fifth item use:

%A=Status.item5$**   This is equivalent to **%A= Status.V5$

If you have changed the default item names in the Status Object dialog box or with the **status.L*n*$** property, use the name you created to access the values. For example, **%A=status.NumPts**.

Status.L*n*$

Allows access to the name of the nth item, as displayed next to its value box. For example:

Status.L5$=Trial#;

Status.D*n*

This property sets/gets the number of digits set for the nth value. This is only meaningful for numerical values.

Status.C*n*

This property sets/gets the number of characters set for the nth value. This is only meaningful for text values.

Status.T*n*

This property sets/gets the type of the nth value. 0 is numerical, 1 is text, 2 is binary check display, and 3 is binary LED display.

Status.A*n*

This property sets/get the direct edit status of the nth item. If an item is directly editable, the user can directly enter text or numbers but cannot then use this hotspot to send an index to a script. Edit on is not relevant for binary mode. When this property is 0, the default, the value cannot be directly edited. 1 means that the field is editable.

Status.N*n*$

This is used to change the control name for the nth item. This is only used when interfacing a tool with a DLL or other Origin object.

Status.Resizenow

This property is used to change a Status object to the appropriate height for its number of items.

This property immediately rescales the height of the status object. It will not continue to automatically rescale, so must be called each time. Width is not affected. This property is only effective in column layout with text positioned to the left or right. To rescale, set **Status.Resizenow=1**.

For example, this property could be part of a script to automatically change the status object if new columns are added to the associated worksheet.

```
Status.Auto=0;  // Turns off the auto redraw.
Status.NumItems=%(Q events,@#);
// Sets the # of items to the number of columns in
// the "Q events" worksheet.
Status.Auto=1;  // Will redraw at next event.
Status.Resizenow=1;
// Alter height to accommodate new items.
```

Status.Name*n*, Status.Numitems

Same as for the CHECK object.

Example Scripts

Enter the following script and select Button Up from the Script, Run After drop-down list in the Label Control dialog box and click OK.

If an item is clicked, prompt the user to select a data file to open for more information.

```
switch (index) {
case 1:
        GetFileName c:\data\gb_dat*.*;
        open -w %B%A;
        break;
```

```
case 2:
    GetFileName c:\data\ct_dat*.*;
    open -w %B%A;
    break;
case 3:
    GetFileName c:\data\mm_dat*.*;
    open -w %B%A;
    break;
default:
    type -b No information is available at this time;
    break;
}
```

The next script uses the **Event** property to sense when an item has been clicked and then unclicked. In a Status object with editable fields, the user may have altered the value. This script would alter the active column properties based on the Status object values. This script must be entered in the Label Control dialog box and All Events should be selected from the Script, Run After drop-down list.

```
if (this.Event==20)
{
    switch (this.index)
    {
    case 1:  // Update column format based on this value.
            wks.col.format=this.V1;
            break;
    case 2:  // Set column to X,Y,Error Bar, etc.
            wks.col.type=this.V2;
            break;
    case 3:  // Change column label to string in item.
            wks.col.name$=this.V3$;
            break;
    }
}
```

1.5.11 Strip Chart: STRIP

Default Name: STRIP

Introduction

*A Strip chart's **value** can be changed using LabTalk or the chart's own spin buttons.*

This object provides a continuously scrolling strip chart which presents its **value** property over time. A strip chart object with a range of -10 to 10, with spin buttons activated, is displayed below.

Figure 1.22: Sample Strip Chart Object
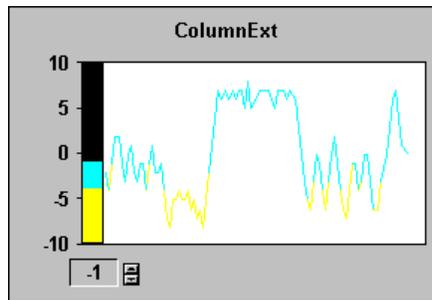
Uses

Like its physical laboratory namesake, the strip chart is ideal for the display of data when a ranged value display is needed and a previous history is also required. How much of a past history is displayed is controlled by the user via LabTalk or dialog boxes.

For more information on this project, see page 37.

The UIM.OPJ project uses two strip charts to display real-time data. To see the script which updates the strip charts, open UIM.OPJ and ALT+double-click on the clock.

Dialog Box Control

The UIM Object Dialog Box

Independent

Title	User-defined title, displayed in the title bar.

Bkg

On	Determines whether or not the object's background is visible.
Flat	Determines whether or not the object is flat with no edge.
Raised	Determines whether or not the object has a raised appearance.
Edged	Determines whether or not the object has an edge.
Sunken	Determines whether or not the object has a sunken appearance.

Gaps

Border	Controls the distance between the outer edge of the object and the items.
Control	Same as Border above. Border + Control is the total distance between the edge of the object and items within.

Color

Background	Controls the background color of the object.
Title Text	Controls the color of the title.
Label Text	Controls the color of the labels.
HotSpot Fore	Controls the color of the value text.
HotSpot Bkg	Controls the background color of the value text box.

Control Layout

Not applicable.

Text Position

Not applicable.

Title

On	The title will be displayed when this check box is selected.
Top	Determines the position of the title. The title can be above (selected) or beside the object (cleared).
Group	Select to have the object displayed with the group style.
Plain	This is the default option.
Caption	Selecting Caption gives you the following options: Sunken, Risen, Flat, Window, and Button. Choosing one of the first three options allows you to select a color for the background of the title. To do so, clear the Transparent Background check box and select a color from the drop-down list. Selecting the Transparent Background check box sets the color to the current background color. Selecting Window from the Caption drop-down list sets the title as a Windows title bar. Selecting Button sets the title to act as a button. The index number of the Title button is 0.

Font

Dialog	Select to use the dialog box font (a scaleable font).
Scaleable	Select to use an alternate font.
Bold	Select for bold.
Points	Set font size.

Default

Set	Click on the Set button to alter the default settings for the current type of object to the current settings (for this Origin session only).
Save	Click on the Save button to permanently alter the default settings for the current type of object to the current settings. The defaults will be saved in an STRIP.ODO file. To return to the original defaults, delete the STRIP.ODO file.

The Control Titles Dialog Box

Not applicable.

The Select Values Dialog Box

The Select Values dialog box is opened by clicking on the Values button in the UIM Object dialog box.

Independent

Current	The current value for the STRIP object.
Max	The greatest value allowed.
Min	The smallest value allowed.
Width	The amount of past history of values displayed in the strip chart, in seconds.
Integer	Select for integer format. Clear for free format.
Digits	Designate the number of digits before the decimal point when displaying the value text.
Decimal	Designate the number of digits after the decimal point when displaying the value text.
Max (on the right)	Not applicable.
4, 5, ... n, ..., 10	Not applicable.

The Indicator Object Dialog Box

The Indicator Object dialog box is opened by clicking on the Special button in the UIM Object dialog box.

Layout

Tick Size	The size of the tick as a percentage of the text size.
Right Gap	The strip chart size as a percentage of the object box's width.
Bar Size	The width of the bar as a percentage of the object's height.
Txt Move	The distance between the values text and the bottom edge of the object as a percentage of the height of the object.

Ticks

Digits	The number of digits before the decimal point when displaying the tick labels.
Decimal	The number of digits after the decimal point when displaying the tick labels.
Number of ticks	The number of ticks to be placed on the object.

Ticks Label Style

Plain	Tick labels are plain styled.
Boxed	Tick labels are boxed.
Left	Tick labels are left justified.
Centered	Tick labels are centered.
Right	Tick labels are right justified.

Color

Num Levels	The number of levels to be used.
Bkg	The color behind the bar.
1-Color List	The color to be used for the lower limit up to the first limit.
2-Color List	The color to be used for ranges from:
	min to ((max-min) /1000) x Level start value
2-Number Box	Level Start value, which must be: greater than the previous value, less than following value, or between 0 and 1000.

Spin Button

On	Select to enable the spin buttons.
Step Size	The amount the present value will be incremented or decremented when a spin button arrow is pressed.

The Strip Chart Dialog Box

The Strip Chart Object dialog box is opened by clicking on the More button in the Indicator Object dialog box.

Color

Buffer Size	Not applicable.
Bkg	The background color of the strip chart.

Properties

Table 1.21: Strip Chart LabTalk Properties

Property	Description
Strip.Value	Current value displayed.
Strip.Max	Maximum scale value.
Strip.Min	Minimum scale value.
Strip.Inc	Increment value.
Strip.Time	Time axis range in seconds.

Example Script

Enter the following script and select Button Up from the Script, Run After drop-down list in the Label Control dialog box and click OK. The script will run when a user clicks the strip chart value box.

This script prompts the user to enter a time axis range. It then sets the time and value range, redraws the object, and feeds the object 50 random values.

```
// User enters a new time axis range in a dialog box.
getnumber -s (Time Axis Range) NewTime;
this.time=NewTime;
this.max=15; this.min=0;
this.draw(); // Redraw the object to show changes.
// Give the chart 50 random values.
repeat 50
{
        this.value=rnd()*10;
}
```

1.5.12 Text Button: TBUTN

Default Name: TBUTN

Introduction

Any UIM object's hotspots can return an index number in the same way as the TBUTN buttons.

The TBUTN object provides multiple labeled buttons which return an index value when pressed. Use this value and a simple LabTalk script as a menu system or to perform a group of like (or dislike) operations. An example of a TBUTN object with four labeled buttons is shown below. By default, the buttons are not labeled. They can be labeled in the Control Titles dialog box or with a LabTalk script.

Figure 1.23: Sample Text Button Object

Dialog Box Control

The UIM Object Dialog Box

Independent

Title Bar	Default or user-defined title, displayed in the title bar.

Bkg

On	Determines whether or not the object's background is visible.
Flat	Determines whether or not the object is flat with no edge.
Raised	Determines whether or not the object has a raised appearance.
Edged	Determines whether or not the object has an edge.
Sunken	Determines whether or not the object has a sunken appearance.

Gaps

Border   Controls the distance between the outer edge of the
                    object and the items.

Control   Controls the distance between the text buttons.

Color

Background   Controls the background color of the object.

Title Text   Controls the color of the title.

Label Text   Controls the color of the. text on the text buttons.

HotSpot Fore   Not applicable.

HotSpot Bkg   Controls the background color of the text button.

Control Layout

Not applicable.

Text Position

Not applicable.

Title

On   The title will be displayed when this box is
                    selected.

Top   Determines the position of the title. The title can
                    be above (selected) or beside the object (cleared).

Group   Select to have the object displayed with the group
                    style.

Plain   This is the default option.

Caption   Selecting Caption gives you the following options:
                    Sunken, Risen, Flat, Window, and Button.
                    Choosing one of the first three options allows you
                    to select a color for the background of the title. To
                    do so, clear the Transparent Background check
                    box and select a color from the drop-down list.
                    Selecting the Transparent Background check box
                    sets the color to the current background color.
                    Selecting Window from the Caption drop-down
                    list sets the title as a Windows title bar. Selecting
                    Button sets the title to act as a button. The index
                    number of the Title button is 0.

Font

Dialog   Select to use the dialog box font (a scaleable font).

Scaleable   Select to use an alternate font.

Bold   Select for bold.

| Points | Set font size. |

Default

| Set | Click on the Set button to alter the default settings for the current type of object to the current settings (for this Origin session only). |
| Save | Click on the Save button to permanently alter the default settings for the current type of object to the current settings. The defaults will be saved in an TBUTN.ODO file. To return to the original defaults, delete the TBUTN.ODO file. |

The Control Titles Dialog Box

The Control Titles dialog box is opened by clicking on the Titles button in the UIM Object dialog box.

This dialog box determines the text which appears on the buttons of the TBUTN object. The section Text Styles refers to this text.

Independent

| Total items: | Sets the number of buttons. |
| Show Name | Not applicable. |

Text Style

Plain	Button text is not boxed (default).
Boxed	Button text is boxed.
Left	Button text is left justified.
Center	Button text is centered (default).
Right	Button text is right justified.

To use the Control Titles Dialog Box:

1) Type the desired number of buttons in the Total items text box.

2) Click in the space within the large text box of the button you wish to name.

3) Enter the desired text.

4) Repeat until you have the desired names for each item.

5) Select the desired text style from the Label Text Style group.

6) Click OK to return to the UIM Object dialog box.

The Bitmap Buttons Control Dialog Box

The Bitmap Buttons Control box is opened by clicking on the Special button in the UIM Object dialog box.

Independent

Buttons per Column Sets the number of text buttons per column.

Square   Check for square text buttons.

Script Editable   Not applicable.

Scaling

Not applicable.

Display Mode

Push Button	Display text as buttons. Selection is restricted to one button at a time.
Radio Button	Display text as buttons. Selection is restricted to one button at a time. Button appears depressed when selected. Display the selected button using the Hotspot Fore drop down list selection in the Color group of the UIM Object dialog box.
Check Button	Display text as buttons. Button selection is not restricted. Display the selected button(s) using the Hotspot Fore drop down list selection in the Color group of the UIM Object dialog box.
Animation	Display text as buttons. Only one button is visible at a time. Text selection increments each time the button is clicked.
Radio Page	Display text as tabs. Selection is restricted to one tab at a time.

Properties

Table 1.22: Text Button LabTalk Properties

Property	Description
TButn.L$n$$	Sets/Returns the text displayed on the nth button.
TButn.Numitems	Sets/Returns the number of Text buttons to be displayed.

Example Script

Double-click on the object after creating it, and select the Caption radio button in the Title group. Select Button from the Caption drop-down list. Enter the following script and select Button Up from the Script, Run After drop-down list in the Label Control dialog box and click OK.

if (this.index==0)
{

If the title is clicked, open a dialog box for the user to specify the number of text buttons they want.

       getnumber -s (Number of Buttons) num;
       // Open a dialog box to choose # of buttons.
       this.numitems=$(num);
       // Set the new number of buttons.
       loop(i, 1, num)
       {

Then allow them to enter a new label for each button.

           getstring (Enter some text) (Name$(i)) Text;
           // Make the assignment to the buttons.
           this.l(i)=%b;
       };
// Update the object.
this.draw();
};

If a button is clicked, type its number and text to an attention box.

if (index>0)
{
%A=this.L$(index)$; // Put text into %A.
type -b Button # $(index), %A;
}

1.5.13 Value List: LIST

Default Name: LIST

Introduction

If the Spin object's spin buttons are deactivated, a choice from the object's options can still be made through LabTalk.

The LIST object allows you to select and display one choice from a list of numbers or words. This choice can be controlled from LabTalk or by using spin arrows to move up and down the list. An example of a LIST object is shown below.

Figure 1.24: Sample List Object

Uses

The List object allows a user to choose one option from a list of numbers or text strings.

Like the SPIN object, the LIST controls the values of a single variable and so is ideally suited to single variable control situations. It differs from the SPIN object in that the user chooses from a list of options, so there does not need to be a fixed mathematical relationship between the options. For example, the choices for states could be -13, 7, 92, 11, 10202, and 3, as listed in the Select Values dialog box. The LIST object could be used to manipulate a variable in a simulation model, to show situations in which interesting events occur. The LIST object can also allow the user to choose from a list of text options as listed in the Control Titles dialog box.

To provide the user with a drop-down list, "1.5.3 Combination Box: COMBOX" on page 54. If you want the user to be able to select more than one item at once, see "1.5.6 List Box: LSTBOX" on page 70 or "1.5.2 Check Box: CHECK" on page 46.

Dialog Box Control

The UIM Object Dialog Box

Independent

Title Bar	Default or user-defined title, displayed in the title bar.

Bkg

On	Determines whether or not the object's background is visible.
Flat	Determines whether or not the object is flat with no edge.
Raised	Determines whether or not the object has a raised appearance.
Edged	Determines whether or not the object has an edge.
Sunken	Determines whether or not the object has a sunken appearance.

Gaps

Border	Controls the distance between the outer edge of the object and the items.
Controls	For the STATUS object, the effect is the same as Border above.

Color

Background	Controls the background color of the object.
Title Text	Controls the color of the title.
Label Text	Not applicable.
HotSpot Fore	Controls the color of the Name and Value texts.
HotSpot Bkg	Controls the background color of the Name and Value boxes.

Control Layout

Not applicable.

Text Position

Not applicable.

Title

On	The title will be displayed when this check box is selected.
Top	Determines the position of the title. The title can be above (selected) or beside the object (cleared).
Group	Select to have the object displayed with the group style.
Plain	This is the default option.
Caption	Selecting Caption gives you the following options: Sunken, Risen, Flat, Window, and Button. Choosing one of the first three options allows you to select a color for the background of the title. To do so, clear the Transparent Background check box and select a color from the drop-down list. Selecting the Transparent Background check box sets the color to the current background color. Selecting Window from the Caption drop-down list sets the title as a Windows title bar. Selecting Button sets the title to act as a button. The index number of the Title button is 0.

Font

Dialog	Select to use the dialog box font (a scaleable font).
Scaleable	Select to use an alternate font.
Bold	Select for bold.
Points	Set font size.

Default

Set	Click on the Set button to alter the default settings for the current type of object to the current settings (for this Origin session only).
Save	Click on the Save button to permanently alter the default settings for the current type of object to the current settings. The defaults will be saved in an LIST.ODO file. To return to the original defaults, delete the LIST.ODO file.

The Control Titles Dialog Box

The Control Titles dialog box is opened by clicking on the Titles button in the UIM Object dialog box.

Independent

Total items:	Controls the number of strings to be stored.
Show Name	Select to display the name shown in the Special dialog box.

Text Style

Plain	Value display text is not boxed (do not use).
Boxed	Value display text is boxed (default).
Left	Value display text is left justified.
Center	Value display text is centered (default).
Right	Value display text is right justified.

The Select Values Dialog Box

The Select Values dialog box is selected by clicking on the Values button in the UIM Object dialog box.

Independent

Integer	Select for integer format, clear for free format.
Digits	The number of digits before the decimal place to be displayed.
Decimal	The number of digits after the decimal place to be displayed.
Max	Controls the number of values in the list.
1, 2, ... n, ..., 10	The current value of the nth value in the value list.

The List Object Dialog Box

The List Object dialog box is opened by clicking on the Special button in the UIM Object dialog box.

Independent

Object Texts	Select to use the strings in the Control Titles dialog box.
Object Values	Select to use the numbers in the Select Values dialog box.
Spin Arrows	Select to use the spin arrows.
Object Name:	Controls the name displayed when Show Name is enabled in the Control Titles dialog box.

Properties

Table 1.23: List LabTalk Properties

Property	Description
List.Vn	Sets/Returns the nth selectable value in the Control Values list.
List.Ln\$	Sets/Returns the nth selectable text in the Control Values list.
List.*text*\$	Set/Returns the Select Values number at the position of the text in the Control Titles.
List.Choice	Sets/Returns the Current position in the list.
List.Numitems	Sets/Returns the number of properties of the current display type.

Example Script

Double-click on the object after creating it, and select the Caption radio button in the Title group. Select Button from the Caption drop down list. Enter the following script and select Button Up from the Script, Run After drop-down list in the Label Control dialog box and click OK.

Prompt the user for new values if the title is clicked.

```
if (this.index==0){
    loop (i,1,$(list.numitems)) {
    getnumber -s Item number $(i) this.v$(i); };
    type -b The values list is changed!;
    this.draw();  // Update the displayed object
}
```

1.5.14 Vertical Bar: VBAR

Default Name: VBAR

Introduction

*The VBAR object automatically displays its **value** property.*

The VBAR object displays the current value of its **value** property in a value box and on a Vertical Bar. The value can be changed using LabTalk or VBAR's own spin buttons.

A VBAR object with a range of -10 to 10 with spin buttons activated is shown below.

Figure 1.25: Sample Vertical Bar Object
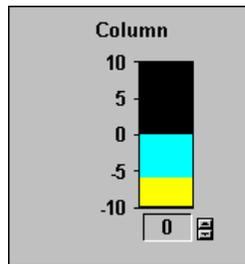
Uses

VBAR provides user-specified level color coding.

There are many times when it is important to monitor the status of a specific variable or data input. VBAR provides a visual way of doing this.

The VBAR can be used in any application which needs a non-graphed graphical output.

VBAR is one of 4 graphical display objects, all of which are well suited to real time display of value data. The others are Horizontal Bar, Gauge, and Strip Chart.

Dialog Box Control

The UIM Object Dialog Box

Independent

Title	User-defined title, displayed in the title bar.

Bkg

On	Determines whether or not the object's background is visible.
Flat	Determines whether or not the object is flat with no edge.
Raised	Determines whether or not the object has a raised appearance.
Edged	Determines whether or not the object has an edge.
Sunken	Determines whether or not the object has a sunken appearance.

Gaps

Border	Controls the distance between the outer edge of the object and the items.
Controls	Same as Border above. Border + Control is the total distance between the edge of the object and items within.

Color

Background	Controls the background color of the object.
Title Text	Controls the color of the title.
Label Text	Controls the color of the labels.
HotSpot Fore	Controls the check color the value text.
HotSpot Bkg	Controls the background color of the value text.

Control Layout

Columns	Not applicable.
Rows	Not applicable.

Text Position

Top	Not applicable.
Bottom	Not applicable.
Left	Not applicable.
Right	Not applicable.

Title

On	The title will be displayed when this check box is selected.
Top	Determines the position of the title. The title can be above (selected) or beside the object (cleared).

Group	Select to have the object displayed with the group style.
Plain	This is the default option.
Caption	Selecting Caption gives you the following options: Sunken, Risen, Flat, Window, and Button. Choosing one of the first three options allows you to select a color for the background of the title. To do so, clear the Transparent Background check box and select a color from the drop-down list. Selecting the Transparent Background check box sets the color to the current background color. Selecting Window from the Caption drop-down list sets the title as a Windows title bar. Selecting Button sets the title to act as a button. The index number of the Title button is 0.

Font

Dialog	Select to use the dialog box font (a scaleable font).
Scaleable	Select to use an alternate font.
Bold	Select for bold.
Points	Set font size.

Default

Set	Click on the Set button to alter the default settings for the current type of object to the current settings (for this Origin session only).
Save	Click on the Save button to permanently alter the default settings for the current type of object to the current settings. The defaults will be saved in an VBAR.ODO file. To return to the original defaults, delete the VBAR.ODO file.

The Control Titles Dialog Box

Not applicable.

The Select Values Dialog Box

The Select Values dialog box is opened by clicking on the Values button in the UIM Object dialog box.

Independent

Current	The current value for the VBAR object.
Max	The greatest value allowed.
Min	The smallest value allowed.
Integer	Select for integer format. Clear for free format.

Digits	Designate the number of digits before the decimal point when displaying the value text.
Decimal	Designate the number of digits after the decimal point when displaying the value text.
Max (check box)	Not applicable.
4, 5, ... n, ..., 10	Not applicable.

The Indicator Object Dialog Box

The Indicator Object dialog box is opened by clicking on the Special button in the UIM Object dialog box.

Layout

Tick Size	The size of the tick as a percentage of the text size.
Right Gap	The distance between the bar and the right edge of the object, as a percentage of the object's width. This is needed when the spin button option is selected.
Bar Size	The width of the bar as a percentage of the object's height.
Txt Move	The distance between the values text and the bottom edge of the object as a percentage of the height of the object.

Ticks

Digits	The number of digits before the decimal point when displaying the tick labels.
Decimal	The number of digits after the decimal point when displaying the tick labels.
Number of ticks	The number of ticks to be placed on the object.

Ticks Label Style

Plain	Tick labels are plain styled.
Boxed	Tick labels are boxed.
Left	Tick labels are left justified.
Centered	Tick labels are centered.
Right	Tick labels are right justified.

Color

Num Levels	The number of levels to be used.
Bkg	The color behind the bar.
1-Color List	The color to be used for the lower limit up to the first limit.
2-Color List	The color to be used for ranges from: min to ((max-min) /1000) x Level start value
2-Number Box	Level Start value, which must be: greater than the previous value, less than following value, or between 0 and 1000.

Spin Button

On	Select to enable the spin buttons.
Step Size	The amount the present value will be incremented or decremented when a spin button is pressed.

The More Dialog Box

Not applicable.

Properties

Table 1.24: Vertical Bar LabTalk Properties

Property	Description
VBar.Value	Current value.
VBar.Max	Maximum scale value.
VBar.Min	Minimum scale value.
VBar.Inc	Increment value.

Example Script

Enter the following script and select Button Up from the Script, Run After drop-down list in the Label Control dialog box and click OK.

This script will set the VBAR's range and simulate sending 50 data points to the object when the value window is clicked.

```
this.max=10;
this.min=0;
this.draw();  // Update the displayed object
repeat 50
{
        this.value=rnd()*10;
}
```

Click on the value display box to run the script.