

Overview

We use the term *controls* for a number of user-programmable objects that can be employed by Igor programmers to create a graphical user interface for Igor users. We call them *controls* even though some of the objects only display values. The term *windows* is sometimes used by other application programs.

Here is a summary of the types of controls available.

Control Type	Control Description
Button	Calls a procedure that the programmer has written.
Chart	Emulates a mechanical chart recorder. Charts can be used to monitor data acquisition processes or to examine a long data record. Programming a chart is quite involved.
CheckBox	Sets an off/on value for use by the programmer's procedures.
CustomControl	Custom control type. Completely specified and modified by the programmer.
GroupBox	An organizational element. Groups controls with a box or line.
ListBox	Lists items for viewing or selecting.
PopupMenu	Used by the user to choose a value for use by the programmer's procedures.
SetVariable	Sets and displays a numeric or string global variable. The user can set the variable by clicking or typing. For numeric variables, the control can include up/down buttons for incrementing/decrementing the value stored in the variable.
Slider	Duplicates the behavior of a mechanical slider. Selects either discrete or continuous values.
TabControl	Selects between groups of controls in complex panels.
TitleBox	An organizational element. Provides explanatory text or message.
ValDisplay	Presents a readout of a numeric expression which usually references a global variable. The readout can be in the form of numeric text or a thermometer bar or both.

The programmer can specify a procedure to be called when the user clicks on or types into a control. This is called the control's *action procedure*. For example, the action procedure for a button may interrogate values in PopupMenu, Checkbox, and SetVariable controls and then perform some action.

Control panels are simple windows that contain these controls. These windows have no other purpose. You can also place controls in graph windows and in panel panes embedded into graphs. Controls are not available in any other window type such as tables, notebooks, or layouts. When used in graphs, controls are not considered part of the *presentation* and thus are **not** included when a graph is printed or exported.

Nonprogrammers will want to skim only the Modes of Operation and Using Controls sections, and skip the remainder of the chapter. Igor programmers should study the entire chapter.

Modes of Operation

With respect to controls, there are two modes of operation: one mode to use the control and another to modify it. To see this, choose Show Tools from the Graph or Panel menu. Two icons will appear in the top-left corner window. When the top icon is selected, you are able to use the controls. When the next icon is selected, the draw tool palette appears below the second icon. To modify the control, select the arrow tool from the draw tool palette.

When the top icon is selected or when the icons are hidden, you are in the *use* or *operate* mode. You can momentarily switch to the *modify* or *draw* mode by pressing Command-Option (*Macintosh*) or Ctrl+Alt (*Windows*). Use this to drag or resize a control as well as to double-click it. Double-clicking with the Command-Option (*Macintosh*) or Ctrl+Alt (*Windows*) pressed brings up a dialog that you use to modify the control.