FlexiPanel

FlexiPanel Designer

User Interface design tool for FlexiPanel User Interface Servers

Summary

FlexiPanel is a generic technology for allowing one device (the *FlexiPanel Server*) to create a user interface on another device (the *FlexiPanel Client*). It provides a wireless universal remote control and monitoring facility for computer software and electronic products, eliminating the need for user interface components.

The *FlexiPanel Designer* is software to aid in the design of FlexiPanel user interfaces. The user interface may be specified and tested from within the design tool and then exported to a specific FlexiPanel Server. The controls that can be displayed are:

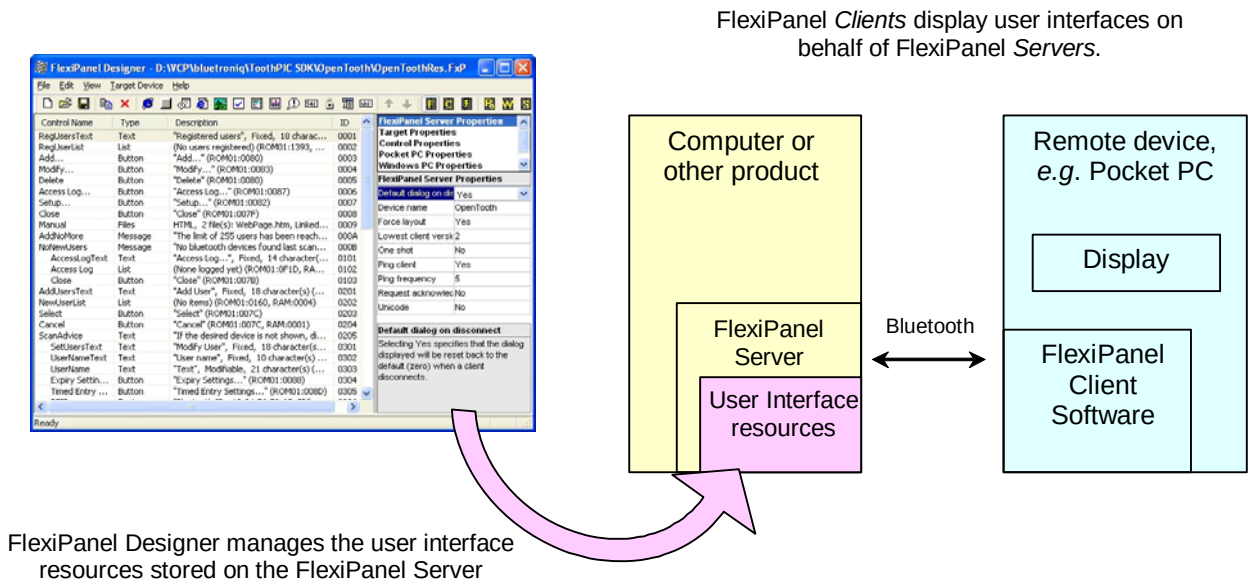
Blob	Matrix
Button	Message
Date-Time	Number
Files	Password
Image	Section
Latch	Text
List	

New for version 3.0

FlexiPanel Designer 3.0 includes the following enhancements. Items marked * may only take effect on version 3.0 clients.

- Support for Toothpick platforms including Toothpick Slave, DARC-II, Stamp Edition and MPLAB
- Multiple dialog user interfaces
- Image control which can generate a message when clicked upon*
- Message controls can send replies, e.g. *Yes / No* or *OK / Cancel**
- Disabled controls*
- Centered / right justified text controls*
- Progress bar and slider controls*
- Minimum & maximum char axis values*
- Partial update message for faster chart updates*
- Inline charts*
- Save chart data to file*

What does Designer 3.0 do?



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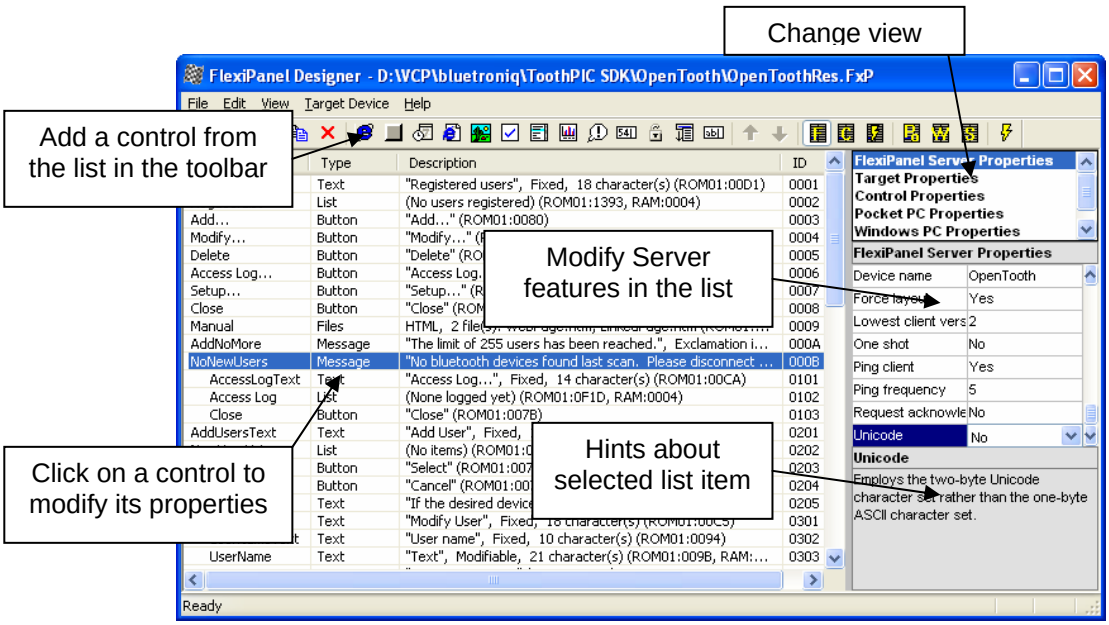
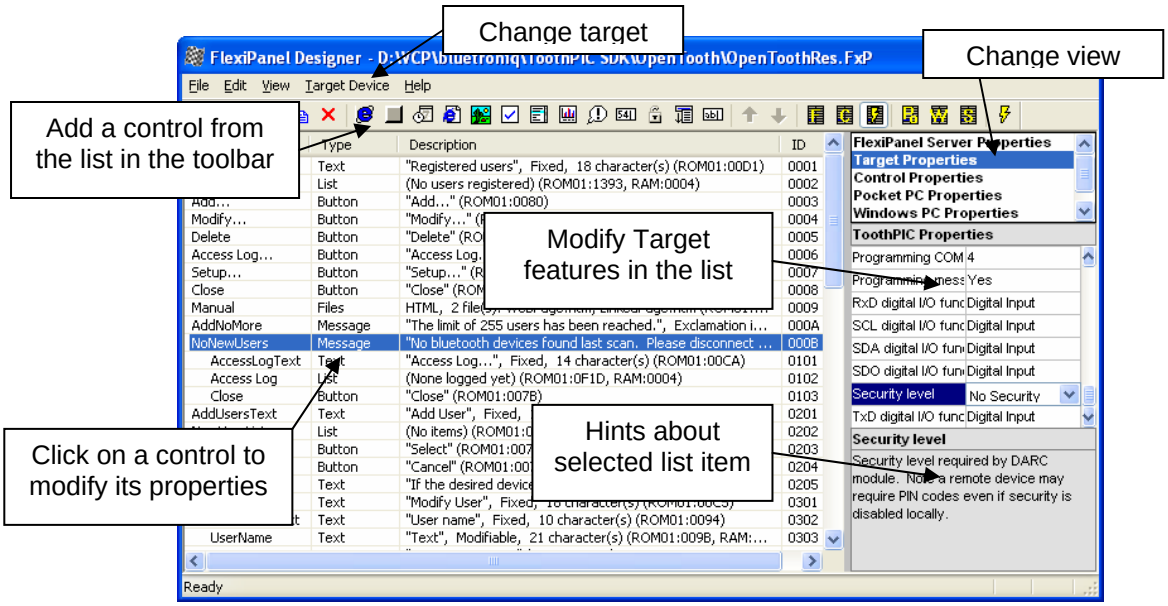
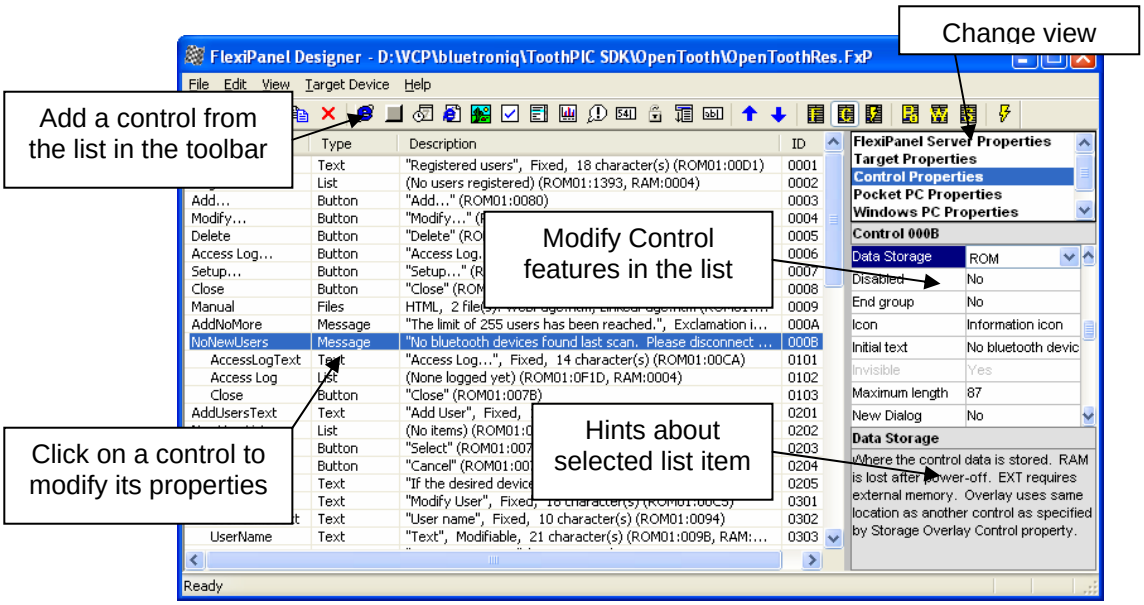
A Quick Visual Tour



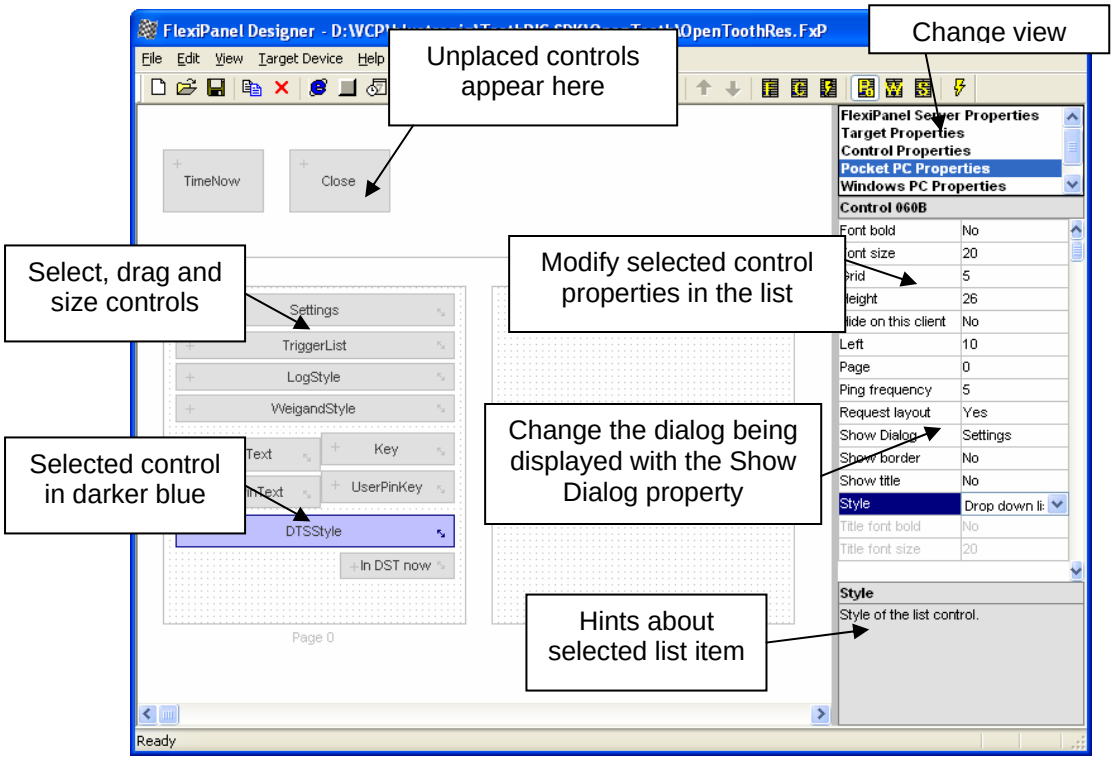
FlexiPanel Server Properties View



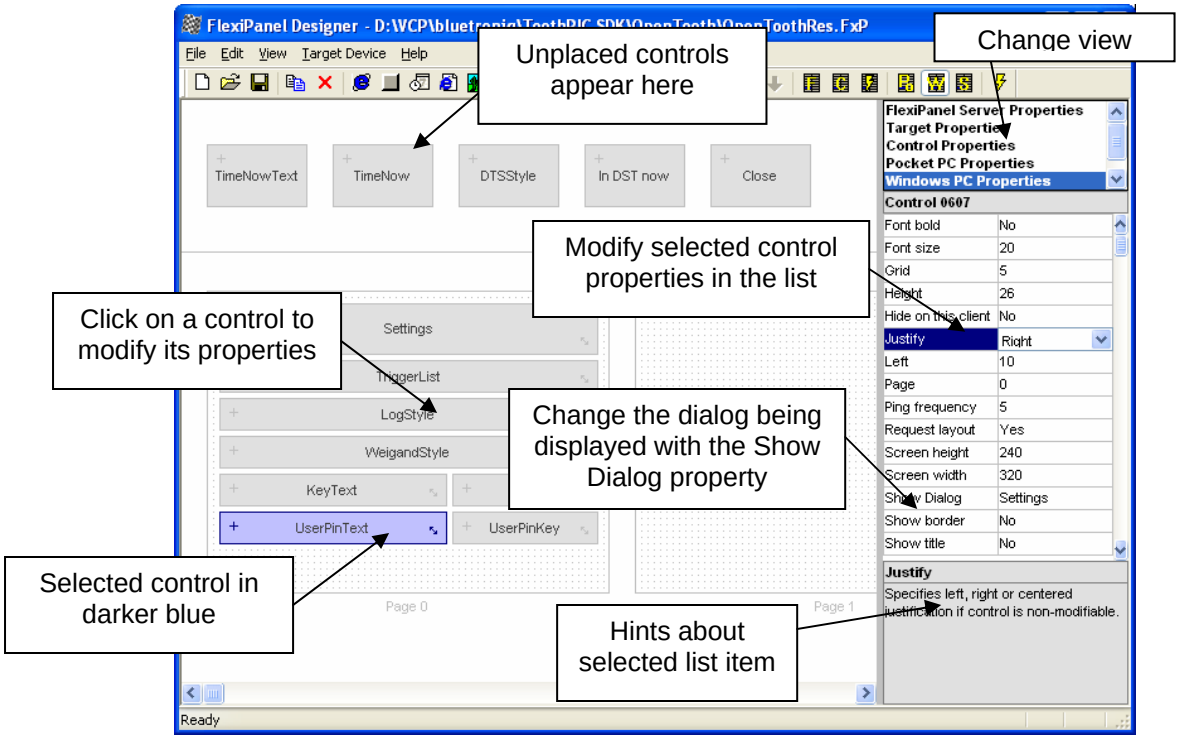
Target Properties View



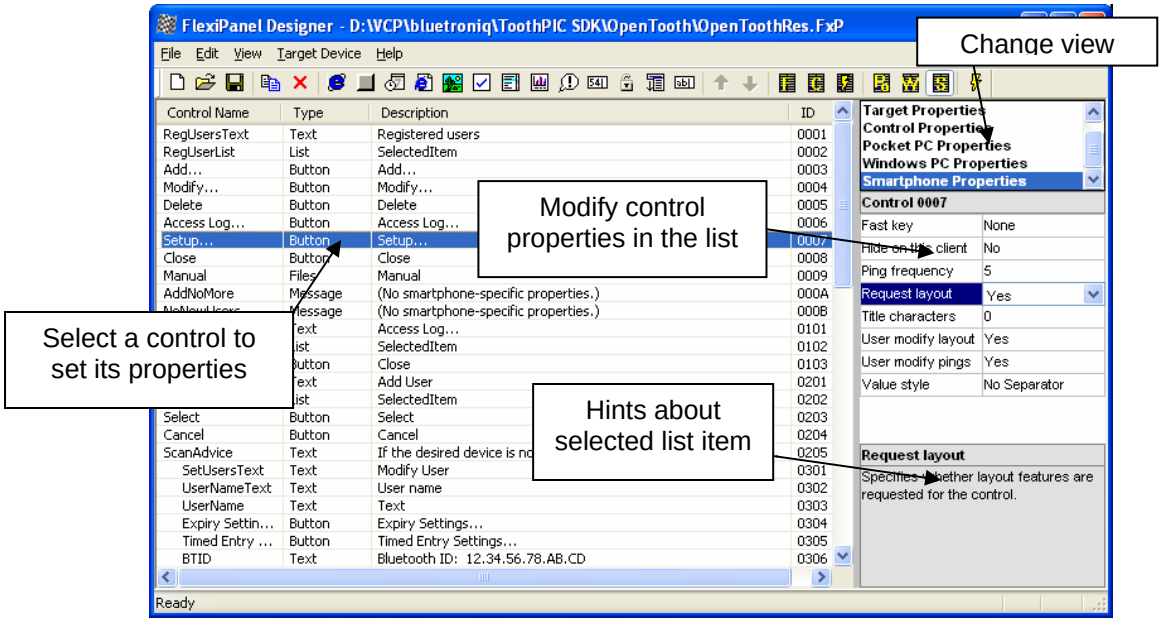
Control Properties View



Pocket PC Properties View



Windows Properties View



Smartphone Properties View

The Java phone client is not customizable and so it does not have a properties view.

Overview

Concepts

FlexiPanel Clients connect to FlexiPanel Servers. A client may connect to a server at any time. Once the connection is made, the server tells the client to display the desired user interface on its display.

The server may modify the contents and appearance of the controls at any time, and even replace the entire 'dialog' with another.

If the client modifies a control, for example pressing a button, it sends a message to the FlexiPanel Server.

Either the server or the client may choose to disconnect at any time. Additionally, the link may be dropped if the devices go out of range of each other. The state of the controls is retained by the server so that if the client reconnects, or another client connects, the user interface will be in the same state as it was when it was last modified.

Devices incorporating FlexiPanel Servers must be designed taking into account the possibility of a dropped connection. Specifically, no action should be taken which relies on a client's ability to maintain a connection. If FlexiPanel is used to operate machinery, for example, the application should provide a failsafe mode should the connection be dropped.

FlexiPanel Controls

Thirteen control types are provided by FlexiPanel. These include controls familiar to Windows users and others that are particularly appropriate for FlexiPanel technology. Not all controls are supported by all targets. In particular, support for Blob and Files controls is platform dependent.

FlexiPanel Clients are required to provide all the requested controls in some form or other. Since the user interface may vary from one FlexiPanel Client to another, the appearance is not guaranteed.

If the developer expects a device to be used in conjunction with a specific type of FlexiPanel Client (e.g. Pocket PC), it may specify those *Client Settings* in more detail; however, the user interface will still work on any FlexiPanel Client.

Generic Control Properties

All controls possess certain generic properties. These are set when the control is first specified and they may be modified at any time.

- All controls have a title, although the client may not necessarily display this.
- Some controls are either modifiable or non-modifiable. If a control is non-modifiable, the server may change its value but the client may not.
- A control may be invisible, in which case it is not accessible to the user.
- A control may request to be brought to the user's attention. If more controls are specified than can appear on the screen at once, the FlexiPanel Client will implement some kind of scrolling or paging mechanism. Such a request will ensure that the control is brought into view.
- Right-to-left text style may be requested, although it is not guaranteed that the client can fulfill this request.
- Controls may be grouped together. If possible, the client will use this information to lay out the controls in a logical manner.
- Controls have a color. If possible, the client will display the control in this color.

Blob Control

The blob (Binary Large Object) control allows client and server to pass binary objects to each other. It is intended primarily for future expansion and customization. Due to the limitations of some client devices, a client is not obliged to support all features associated with this control; some clients may simply ignore it.

In this release of FlexiPanel, the only use of the blob object is to pass the name of a URL (i.e. web page address) to the client.

Button Control

A button control registers when a button is pressed.

DateTime Control

A DateTime control stores a DateTime value, i.e. second, minute, hour, date, day-of-week, month and year.

Files Control

The files control allows the server to pass files to the client. It is only optionally supported by clients and servers.

A predefined use of the file object is to pass web pages to a client. Provided the client has a web browser, it can display the web page, even if it is not connected to the internet. This would allow the server to upload, for example, an entire instruction manual to the client. In theory, this functionality could be provided in the library but it is very port-specific and will only be provided on request.

Latch Control

A latch control stores a binary (*on/off*) value. Latches may be arranged in groups so that when one latch is turned on the others are turned off.

List Control

A list control allows one item to be selected from a list.

Matrix Control

A matrix control stores an array of numbers. These might be displayed as a table or a chart. In this release of FlexiPanel, the values are not modifiable by the client.

Message Control

A message control displays a message on request. From version 3.0, the client can display a combination of buttons such as Yes and No or OK and Cancel and it will report back to the server which button was pressed.

Number Control

A number control stores a numeric value. It is essentially a signed four-byte integer, but its decimal place may be shifted left or right in order to represent any floating-point value.

Password Control

A password control stores a password and has an open and closed state. In the closed state, the user must enter the password to set it to the open state.

In the open state, the password control may be returned to the closed state at any time.

It is possible to specify that a password may be modified by the user once the control is in the open state. A master password may also be provided.

Passwords are limited to 16 Unicode characters or 33 ASCII characters. Some remote devices can only enter the digits 0-9 in a password-style text control.

Section Control

A section control acts like a pop-up menu. Controls enclosed within a section control are only visible when the section control is opened.

Controls enclosed inside a closed section control are not transmitted to the client, thus minimizing communication time.

Text Control

The text control contains a text string. It will have a fixed maximum length, specified when the control is created.

A text control may have password style, in which case the text entered in the control is not readable by the user.

It is possible to specify that text control is intended to be the title of the following control or group of controls. If possible, the client will use this information in laying out the controls in a logical manner. Some remote devices can only enter the digits 0-9 in a password control.

Requirements

To simulate user interfaces, the computer running FlexiPanel Designer needs to be Bluetooth equipped. A FlexiPanel Client device will also be required. This can be a Bluetooth-equipped Pocket PC. The software required can be downloaded free from www.FlexiPanel.com. The client cannot be the same device as the server. FlexiPanel Designer requires Windows 2000 / Windows XP.

FlexiPanel Protocol 3.0

The communication standard used by FlexiPanel Designer 3.0 in order to communicate with clients is *FlexiPanel Protocol 3.0*. This is backwardly compatible with *FlexiPanel Protocol 2.x* except where specifically noted.

FlexiPanel Protocol 1.0 is an infrared protocol and so no attempt is made to be backward compatible with it. Every effort will be made to keep future Bluetooth FlexiPanel Protocols backwardly compatible with earlier versions.

Third Party Developers

The document *FlexiPanel Protocol 3.0* provides detailed information about the protocol for third parties who wish to develop their own servers and clients

Development of third party clients is more or less unrestricted. Developers of third party server products will need to pay a royalty to FlexiPanel Ltd.

Software Operation

FlexiPanel Designer manages the list of controls that are to be displayed. Various views are provided to control different aspects of the controls, such as how they are managed, how they appear on specific client software, etc. Once a user interface has been designed it may be simulated using a Bluetooth-equipped PC, and then programmed into a specific target such as FlexiPanel BASIC Stamp edition or DARC module.

Menu Item Tool	***Function***
File > **New**	Creates a new, blank user interface design.
File > **Open**	Opens a previously saved user interface design.
File > **Save**	Saves a user interface design.
File > **Save As…**	Saves a user interface design under a new file name.
File > **Recent Files**	Opens recently saved user interface designs.
File > **Exit**	Closes the FlexiPanel Designer application.
Edit > **Up**	Moves a control up the list of controls in the Control Properties view.
Edit > **Down**	Moves a control down the list of controls in the Control Properties view.
Edit > **Insert Blob**	Inserts a blob control.
Edit > **Insert Button**	Inserts a button control.
Edit > **Insert DateTime**	Inserts a date-time control.
Edit > **Insert Files**	Inserts a files control.
Edit > **Insert Image**	Inserts an image control.
Edit > **Insert Latch**	Inserts a latch control.
Edit > **Insert List**	Inserts a list control.
Edit > **Insert Matrix**	Inserts a matrix control.
Edit > **Insert Message**	Inserts a message control.
Edit > **Insert Number**	Inserts a number control.
Edit > **Insert Password**	Inserts a password control.
Edit > **Insert Section**	Inserts a section control.
Edit > **Insert Text**	Inserts a text control.
Edit > **Insert Copy**	Inserts a copy of the currently selected control.
Edit > **Delete**	Deletes the currently selected control.
View > **Toolbar**	Displays / hides the toolbar.
View > **Status Bar**	Displays / hides the status bar.
View > **FlexiPanel Properties**	Displays general FlexiPanel Server properties in the properties list on the right side of the screen.
View > **Control Properties**	Displays the control properties in a list.
View > **{Target} Properties**	Displays the properties relating to how the user interface is simulated. (Only shown when the Simulation target is selected.)
View > **Pocket PC Properties**	Displays the properties relating to how the user interface appears on a Pocket PC.
View > **Windows PC Properties**	Displays the properties relating to how the user interface appears on a Windows PC.
View > **Smartphone Properties**	Displays the properties relating to how the user interface appears on a SmartPhone.
Target > **Simulation**	Selects a Simulation as the target.
Target > **Serial Adapter**	Selects a FlexiPanel Serial Adapter module as the target.
Target > **BASIC Stamp Edition**	Selects a FlexiPanel BASIC Stamp Edition module as the target.
Target > **Toothpick DARC-II**	Selects a Toothpick DARC-II module as the target.
Target > **Toothpick Slave**	Selects a Toothpick Slave module as the target.
Target > **Toothpick Stamp Edition**	Selects a Toothpick Stamp Edition module as the target.

Menu Item	*Tool*	*Function*
Target > **Toothpick MPLAB**		Selects a Toothpick as the target using the MPLAB development environment.
Target > **{Program target}…**		Sends the user interface information to the target. In the case of the simulation target, a FlexiPanel server is simulated on the PC.
Help > **Troubleshooting Guide…**		Launches a web browser to show the latest Bluetooth troubleshooting information
Help > **DateTime Format Help…**		Displays a table of the codes used in date-time format strings.
Help > **About Designer...**		Shows the version of FlexiPanel Designer in use.

FlexiPanel Server Properties

Default dialog on disconnect – (Toothpick only) When a client disconnects, the server switches the displayed dialog back to the default, which starts with the first control in the control list.

Device name – The name of the device. This will appear when a client views a list of FlexiPanel devices in range and also in the title bar once the client has connected. In some clients, it is also used as a registry key to store client/server specific preferences. Consequently, the name should be unique to the device. The name will be generated at random initially; set it to your desired product name.

Force Layout – Specifies that the client should always adopt the layout recommendations provided by the server. Usually, the client will request the layout only when it first encounters the server. This allows the user to re-arrange the controls as desired. During development, it is preferable to request the layout every time. The Force Layout option achieves this by appending a unique number onto the end of the device name. This makes the client think it is encountering a new server each time. It is recommended that Force Layout is enabled throughout the development cycle and then disabled for the final product.

One Shot – Specifies that the server should immediately disconnect from the client after the user interface has been sent. Quick disconnection means that many clients may connect in an *ad-hoc* manner without blocking each other's access too frequently. This feature is for "informational" rather than "control" services, since the client will have no opportunity to send information back to the server. Specifically, there is no point in having any client-modifiable controls on the user interface.

Ping Client – Specifies that the server should check that the client is still attached.

Ping Frequency – Specifies how frequently the server should check that the client is still attached (in seconds).

Request Acknowledge – (Toothpick only) Requests acknowledgement from remote device after all to client update messages.

Unicode – Specifies Unicode text operation. If Unicode text is specified, two bytes are used to represent each text character rather than one. This allows for all character sets to be represented, although is somewhat less memory efficient. If Unicode is not specified, text should be restricted to single-byte ASCII text. Note that selecting Unicode does not guarantee that the specified characters will appear on the client, since the client may not have the relevant character set loaded. (For example, don't expect a Hungarian mobile phone to display Chinese characters.)

Lowest Client Version – Specifies the lowest version of the FlexiPanel which can understand this server and should be allowed to connect to it. Select 2 unless image controls are used or row update messages must be sent.

Control Properties

The main screen displays all the controls in a list. The list displays the control name, type, description and ID. The ID is allocated by FlexiPanel Designer and cannot be changed. The description includes, at the end, a summary of the memory storage required for this control. (In addition to the storage required for the control, a small additional amount of ROM storage will be required for other settings. The amount of the additional storage required varies from target to target.)

The Control Properties displayed in the properties list on the right of the screen will depend on the control selected and also the target device.

Multiple Dialogs

The Toothpick target allows several dialogs to be specified. These are all displayed as one long list with odd-numbered dialogs shown with their Control Names indented. To start a new dialog, inset a new control and set the *New Dialog* property to yes.

The section control has 'sub-controls' which are listed directly below the section control. These all have the text in the Type column indented. To create sections with sub controls, insert the section control and then its child controls directly below. Then go back to the section control and the *Sub Controls* property to the number of controls inside the section (including and controls inside sub-sections).

All controls

Color, Color R/G/B – Specifies whether a specific color is requested for the control. A client may or may not be able to fulfill this request. Each component (R/G/B) should be in the range 0 to 255.

Data From Pin – (Toothpick DARC-II only) specifies that the state of the control is set by the value of an input pin.

Data Overlay Control – See *Data Storage.*

Data Storage – Specifies how control data is stored:

- RAM data is lost if the server power is lost.
- ROM data is retained even without power, but the memory has a lifetime of around 100,000 writes. There are storage issues with the Stamp Programmer if the Client modifies a control with ROM storage – refer to the warning message generated.
- EE data is retained even without power, but the memory has a lifetime of around 100,000 writes.
- EXT data requires the appropriate external memory to be connected. External memory must be programmed with the correct initial values. The Toothpick MPLAB target allows you to create a `.hex` file with this data and you can then use the Wireless Field Programming to program it. Consult the Toothpick documentation for more details.
- Overlay specifies that the data should use same memory locations as the control specified by *Data Overlay Control*. Overlay controls have two main uses - for multiple references to large data controls (e.g. files, images), and multiple language renditions of the same control.

Data To Pin – (Toothpick DARC-II only) specifies that the state of the control sets the value of an output pin.

Disabled – Specifies that a control is initially disabled. (Version 3.0 clients only.)

End Group – Indicates that the control is the last of several of controls which logically form a group and should appear together in the FlexiPanel's user interface. (Refer to FlexiPanel Client documentation as to how this is interpreted, if at all.)

New Dialog – (Toothpick target only) Set to Yes to indicate that the control is the first control in a new dialog box. (Ignored if set to yes for the first control in the list.)

Right-to-Left– Requests that text be shown in Right-to-Left format (e.g. for Arabic script). There is no guarantee that a FlexiPanel Client will be able to comply with the request.

Start Group – Indicates that the control is the first of several of controls which logically form a group and should appear together in the FlexiPanel's user interface. (Refer to FlexiPanel Client documentation as to how this is interpreted, if at all.)

Title – Title of the control. The control title is used in three ways:

- Within FlexiPanel Designer, to refer to the control.
- As the control's title, if this is displayable by the client.
- By some controls, for example the text in a button control.

Visibility / *Visibility password* – Specifies that a control is only visible when a specific password control is unlocked.

Blob controls

Currently a Blob control may only be used to send a URL (i.e. a web address) to a client device.

Some servers do not support this control. Some clients may ignore this control.

URL – Specifies the web address to seek.

Button controls

There are no specific settings for the Button control.

Date-Time controls

Format string – Specifies how the date / time is displayed. The text is displayed as written, after substituting the following:

%H%	Hour, 24 hour format.
%HH%	Hour, 24 hour format, 2 digits always.
%h%	Hour, 12 hour format.
%hh%	Hour, 12 hour format, 2 digits always.
%m%	Minute.
%mm%	Minute, 2 digits always.
%s%	Second.
%ss%	Second, 2 digits always.
%d%	Date.
%dd%	Date, 2 digits always.
%ddd%	Day of week, three characters.
%dddd%	Day of week.
%M%	Month number.
%MM%	Month number, 2 digits always.
%MMM%	Month, three characters.
%MMMM%	Month.
%yy%	Year, 2 digits only.
%yyyy%	Year.
%t%	A for AM, P for PM.
%tt%	AM or PM.

This substitution table is also shown when *Help > Date-Time Format Help* is selected from the menu.

Initial … value – The value control assumes at start-up.

Modifiable – Specifies whether any of the elements of the Date-Time control are modifiable.

Modify hour – The hour value specifically is modifiable by the client.

Modify minute – The minute value specifically is modifiable by the client.

Modify second – The second value specifically is modifiable by the client.

Modify date – The date value specifically is modifiable by the client.

Modify weekday – The weekday value specifically is modifiable by the client.

Modify month – The month value specifically is modifiable by the client.

Modify year – The year value specifically is modifiable by the client.

Real time clock – The server should tie this control's value to its real time clock. (Not all servers support this.) On the Stamp Programmer, the real time clock updates the client device only every 5 seconds.

Files controls

The Files control passes files from the server to the client. Some servers do not support this control. Some clients may ignore this control.

Hint – Selecting *HTML* specifies that the first file sent should be opened up in a web browser.

Files – Compiles the list of files to be sent to the client. Double-click to activate this control. To select multiple files, you will need to hold down the Ctrl or Shift keys while clicking on the filenames.

Latch controls

Initially on – If selected, the latch is *On* when initialized.

Radio button – If selected, the latch forms part of a radio button group. In a radio group, turning on one latch will turn off all others.

Radio group – If the user presses a radio button, all other latches with the same Radio Group number will automatically be turned off. Pressing a radio button more than once has no effect.

Reset Button – If the user presses a reset radio button, all other latches with the same Radio Group number will automatically be turned off. The reset button itself, however, never appears to be in the *On* state.

List controls

List Items – The items to appear in the list, separated by semicolons.

Initial selection – The item selected at start-up (zero-based).

Matrix controls

The matrix control stores data as a two-dimensional array of integers and displays them in a table or as a chart. Large values and non-integer values are represented by shifting the decimal point of the value displayed.

Cell decimal format – *Floating point* will show as many decimal places as required to display the value. *Fixed Point* will show the number of decimal places specified by *Decimal Places*. *Exponent* displays the same value in exponential format (*i.e.* 4×10^6 is represented as 4.000e06). *Shortest* selects the shortest of these formats.

Cell decimal places – Specifies how many digits are shown after the decimal point.

Cell decimal shift – Specifies how to translate the internally stored integer into the value seen by the user. If the integer value is *456*, a shift of *0* would represent it as *456*, a shift of *2* would represent it as *45600*, a shift of *–2* would represent it as *4.56*.

Cell format string – Allows text to be placed before and after the numeric value when displayed in a table or on the axis. *%%* in the format string will be replaced by the numeric value. For example, if 5.*67* was the value and *d=%%cm* was the format string, *d=5.67cm* would be displayed.

Cell storage – Specifies how many bytes are used to store the integer. *1-byte* displays values on the range -128 to +127. *2-byte* displays values in the range -32768 to +32767. *4-byte* displays values in the range -2147483648 to +2147483647.

Column titles – The names of the columns, separated by semicolons.

Max rows – The maximum number of rows in the matrix.

X-axis type – The properties associated with each row. Four X-axis types are possible, and the remaining properties are enabled depending on the X-axis type:

List – The rows appear in sequence, with no extra information associated with them.

XY – Each row is associated with a numeric value. If shown in a chart, this is where the data is plotted relative to the X-axis.

Row decimal format – *Floating point* will show as many decimal places as required to display the row value. *Fixed Point* will show the number of decimal places specified by *Decimal Places*. *Exponent* displays the same value in exponential format (*i.e.* 4×10^6 is represented as 4.000e06). *Shortest* selects the shortest of these formats.

Row decimal places – Specifies how many digits are shown after the decimal point.

Row decimal shift – Specifies how to translate the internally stored integer into the row value seen by the user. If the integer value is *456*, a shift of *0* would represent it as *456*, a shift of *2* would represent it as *45600*, a shift of *–2* would represent it as *4.56*.

Row format string – Allows text to be placed before and after the row value when displayed in a table or on the axis. *%%* in the format string will be replaced by the numeric value. For example, if 5.*67* was the value and *d=%%cm* was the format string, *d=5.67cm* would be displayed.

Row storage – Specifies how many bytes are used to store the row value. *1-byte* displays values on the range -128 to +127. *2-byte* displays values in the range -32768 to +32767. *4-byte* displays values in the range -2147483648 to +2147483647.

Labels – Each row has a text label.

Row labels – The text labels of the rows, separated by semicolons.

DateTime – Each row represents a moment in time.

Row date-time format – Specifies how the row value is displayed. The text is displayed as written, after substituting the following:

%H%	Hour, 24 hour format.
%HH%	Hour, 24 hour format, 2 digits always.
%h%	Hour, 12 hour format.
%hh%	Hour, 12 hour format, 2 digits always.
%m%	Minute.
%mm%	Minute, 2 digits always.
%s%	Second.
%ss%	Second, 2 digits always.
%d%	Date.
%dd%	Date, 2 digits always.
%ddd%	Day of week, three characters.
%dddd%	Day of week.
%M%	Month number.
%MM%	Month number, 2 digits always.
%MMM%	Month, three characters.
%MMMM%	Month.
%yy%	Year, 2 digits only.

%yyyy% Year.
%t% A for AM, P for PM.
%tt% AM or PM.

This substitution table is also shown when *Help* > *Date-Time Format Help* is selected from the menu.

Message controls

The text of the message may be modified by the server, so only one message control is needed to display all the possible messages required.

Initial text – The text of the message at start-up.

Maximum length – The number of characters to allocate for storage including a zero terminator character.

Icon – The icon to display along with the message. Depending on the client, this information may or may not be used.

Response buttons – The response buttons to be displayed along with the message. (Select None for 2.x compatibility.)

Number controls

All numbers are stored internally as integers. Very large numbers and non-integer numbers are represented by shifting the decimal place as appropriate.

Decimal format – Floating point will show as many decimal places as required to display the value. *Fixed Point* will show the number of decimal places specified by *Decimal Places*. *Exponent* displays the same value in exponential format (*i.e* 4×10^6 is represented as 4.000e06). *Shortest* selects the shortest of these formats.

Decimal places – Specifies how many digits are shown after the decimal point.

Decimal shift – Specifies how to translate the internally stored integer into the value seen by the user. If the integer value is *456*, a multiplier of *0* would represent it as *456*, a multiplier of *2* would represent it as *45600*, a multiplier of *–2* would represent it as *4.56*.

Format string – Allows text to be placed before and after the numeric value. *%%* in the format string will be replaced by the numeric value. For example, if 5.*67* was the value and *d=%%cm* was the format string, *d=5.67cm* would be displayed.

Initial value – Value at power-up.

Maximum limit / value – If selected, the client will not permit the user to enter a value greater than the value specified.

Minimum limit / value – If selected, the client will not permit the user to enter a value less than the value specified.

Modifiable – If selected, the value may be modified by the user.

Password controls

Passwords are limited to 16 characters (not including zero terminator. Typically, mobile phones can only enter the digits 0-9 in a password control.

Close on disconnect – If selected, automatically closes the password control when the client disconnects.

Password – Initial password. When the control is initially created, the password is “0000”.

Master Password – If specified, provides a permanent, non-modifiable alternate password. Leave blank for no master password. When the control is initially created, there is no master password.

Modifiable – If selected, the password may be changed by the user.

Section controls

A section control’s child controls are hidden until the section is opened. Child controls of a section control must be placed immediately after it in the control list and will be indicated by an indented entry in the ‘Type’ column of the control list.

Close on disconnect – Closes the section automatically between one client disconnecting and another connecting.

Initially open – Specifies that the section is open when the user interface first starts up.

Sub-controls – The number of child controls in this section, including any sub-sections contained inside.

Text controls

Initial text – The text that initially appears in the text control.

Maximum length – The amount of storage required for the control, including a zero terminator character (i.e. number of characters in the line of text plus one). If Unicode mode is used, this value refers to the number of characters rather than the number of bytes.

Modifiable – If selected, the client may modify the text.

Password – If the control is modifiable, selecting *Password* will obscure the entered text (*e.g.* as a series of bullets or asterisks). Some remote devices can only enter the digits 0-9 in a password-style text control.

Target Properties

The Target Properties displayed will depend on the target selected.

Simulation target

COM port – Specifies the COM port used by Bluetooth to accept connections from other devices (the 'Local Devices' COM port).

FlexiPanel BASIC Stamp Edition target

Please note the FlexiPanel BASIC Stamp Edition the 10-pin SIL module. The 28-pin DIL device is the Toothpick Stamp Edition.

CTS pin – Specifies the Stamp I/O pin connected to the CTS pin on the module. If the module is in the AppMod slot, this will be pin 6.

Connect pin – Specifies that the Mode pin is an output indicating when a client device is connected.

Data pin – Specifies the Stamp I/O pin connected to the Data pin on the module. If the module is in the AppMod slot, this will be pin 12.

RTS pin – Specifies the Stamp I/O pin connected to the RTS pin on the module. If the module is in the AppMod slot, this will be pin 8.

Rx pin – Specifies the Stamp I/O pin connected to the RxD pin on the module. If the module is in the AppMod slot, this will be pin 4.

Stamp Type – The type of BASIC Stamp connected to the module.

Straight Thru mode – Specifies that the Mode pin is an input requesting Straight Thru mode. Consult the module documentation for details.

Tx pin – Specifies the Stamp I/O pin connected to the TxD pin on the module. If the module is in the AppMod slot, this will be pin 2.

Serial Adapter target

Programming COM port – The Bluetooth COM port on the computer running Designer which will be used to connect to the DARC module to program it. This is the COM port used for making outgoing connections (the 'Client Applications') COM port. This is not necessarily the same COM port as specified for Simulations, which accepts incoming connections.

Programming messages – Specifies whether message boxes should be shown if programming is successful. If disabled, error messages will still be shown.

Rewrite enable – Allows the DARC module to be re-programmed. This is recommended during development. When a product is released, rewrite should be disabled to prevent 'hacking'. If rewrite is disabled, only the factory reset pin (if enabled) may be used to re-program the module.

Toothpick DARC-II target

{pin} digital I/O function – Whether the pin is configured for digital input or output, or, in the case of CCP pins, PWM output. Disabled if the pin is configured for analog I/O.

AN2 analog I/O function – Whether the pin is configured for analog input or as a negative voltage reference for other analog inputs. If not used as a voltage reference, the reference will be the power ground rail which may be noisy.

AN3 analog I/O function – Whether the pin is configured for analog input or as a positive voltage reference for other analog inputs. If not used as a voltage reference, the reference will be the power rail which may be noisy.

Analog inputs – How many pins are configured for analog I/O.

Input refresh rate – How frequently input values are polled.

On error – What to do if an error occurs.

Parallel I/O x function – Specifies multiple digital pins shall comprise binary parallel input or output. Additionally, the pins must also be correctly configured as digital inputs or outputs.

PWM period – Specifies the PWM period in PWM base time units.

PWM base time units – Specifies the base time units of the PWM pulse generator. Note that the *PWM period* is in base time units (range 1 to 256), the duty cycle is in quarter base time units (range 0 to 1023).

PIN Code – Specifies the Bluetooth authentication pin.

Programming COM port – The Bluetooth COM port on the computer running Designer which will be used to connect to the DARC module to program it. This is the COM port used for making outgoing connections (a.k.a. 'Client Applications') COM port. This is not necessarily the same COM port as specified for Simulations, which accepts incoming connections.

Programming messages – Specifies whether message boxes should be shown if programming is successful. If disabled, error messages will still be shown.

Security Level – Specifies whether authentication and encryption are used.

Toothpick Slave target

Programming COM port – The Bluetooth COM port on the computer running Designer which will be used to connect to the DARC module to program it. This is the COM port used for making outgoing connections (the 'Client Applications') COM port. This is not necessarily the same COM port as specified for Simulations, which accepts incoming connections.

Programming messages – Specifies whether message boxes should be shown if programming is successful. If disabled, error messages will still be shown.

Toothpick Stamp Edition target

Please note the Toothpick Stamp Edition the 28-pin DIL module. The 10-pin SIL device is the FlexiPanel BASIC Stamp Edition.

CTS pin – Specifies the CTS Stamp input pin connected to the RTS output pin on the Toothpick. The default is P11, allowing direct connection on the Board of Education, BS2p Demo Board and the Toothpick Industrial board.

Data pin – Specifies the Stamp input pin connected to the Data output pin on the Toothpick. The default is P10, allowing direct connection on the Board of Education, BS2p Demo Board and the Toothpick Industrial board.

Programming COM port – The Bluetooth COM port on the computer running Designer which will be used to connect to the Toothpick Stamp Edition module to program it. This is the COM port used for making outgoing connections (a.k.a. 'Client Applications') COM port. This is not necessarily the same COM port as specified for Simulations, which accepts incoming connections.

Programming messages – Specifies whether message boxes should be shown if programming is successful. If disabled, error messages will still be shown.

RTS pin – Specifies the Stamp RTS output pin connected to the CTS input pin on the Toothpick. The default is P9, allowing direct connection on the Board of Education, BS2p Demo Board and the Toothpick Industrial board.

Reset pin – Specifies the Stamp I/O pin connected to the reset pin on the Toothpick (optional). The default is P4, allowing direct connection on the Board of Education, BS2p Demo Board and the Toothpick Industrial board.

Rx pin – Specifies the Stamp input pin connected to the TxD output pin on the Toothpick. The default is P6, allowing direct connection on the Board of Education, BS2p Demo Board and the Toothpick Industrial board.

Stamp Type – The type of BASIC Stamp connected to the module.

Straight Thru mode – Specifies that the Mode pin is an input requesting Straight Thru mode. Consult the module documentation for details.

Tx pin – Specifies the Stamp output pin connected to the RxD input pin on the Toothpick. The default is P2, allowing direct connection on the Board of Education, BS2p Demo Board and the Toothpick Industrial board.

Toothpick MPLAB target

Programming messages – Specifies whether message boxes should be shown if programming is successful. If disabled, error messages will still be shown.

Pocket PC Properties

The Pocket PC Properties controls the appearance of the user interface on Pocket PC devices. The main screen displays the control layout. The selected control is shown shaded.

During development, remember to select Force Layout in the FlexiPanel Server Properties. Any changes you make will then be immediately visible on the client without the need to select Load Recommended Layout.

If a control's position is unspecified, it appears on the upper portion of the screen. To specify the position of a control, click on the 'plus' portion of the control and drag it to the desired position on the page in the lower portion of the screen. You can also size the control by dragging on the double-arrow portion of the control.

To aid layout, it is suggested you use the layout grid feature. To hide a control, simply place it off-screen (e.g. below the page pane).

Section and Password controls can make other controls appear and disappear. Therefore they have a 'displayed state' property which shows or hides the controls as appropriate. They also have separate position and size properties for their open and closed states.

Message controls are not shown.

Axis limits – Specifies whether axis limits are specified.

Displayed state – For section or password controls, specifies whether it is displayed in its open or closed state. This may make other controls appear or disappear. This property has no effect on the appearance on the actual client device, just on the screen layout.

Font bold – Specifies whether the control text should be bold.

Font size – Specifies the control font size, in points.

Grid – Specifies the grid to which dragged controls will be anchored. Enter 0 for no grid. This is a global property which is applied to all controls when they are dragged.

Height – Specifies the height of the control in pixels.

Height (open) – Specifies the height of a section or password control in its open state.

Hide on this client – Specifies that the control should not be displayed on Pocket PC. (It will still be displayed in the FlexiPanel Designer Pocket PC Properties view.)

Horizontal align – Specifies the alignment of an image control

Justify – Specifies the justification of a text control

Left – Specifies the left edge position of the control in pixels, relative to the left screen edge.

Left (open) – Specifies the left position of a section or password control in its open state.

Grid – Specifies the grid to which dragged controls will be anchored. Enter 0 for no grid. This is a global property which is applied to all controls when they are dragged.

Page – Specifies the page on which a control appears. Enter -1 to make it appear on all pages.

Page (open) – Specifies the page for a section or password control in its open state.

Ping frequency – Specifies that the client should ping the server every few seconds as specified. Enter 0 for no pings. This is a global property which is applied to the whole user interface, not just the selected control.

Request layout – Specifies whether Pocket PC layout features are requested for this control. If this property is switched from the Yes state to the No state, all control layout properties will be lost.

Show border – Specifies whether a border is requested for this control.

Show dialog – If multiple dialogs are defined, allows you to switch between them.

Show title – Specifies whether the control title is requested for this control.

Style – Specifies how the control is displayed. Applies to Date-Time, Latch, List, Matrix, Number and Text controls.

Title font bold – Specifies whether the title text should be bold.

Title font size – Specifies the title font size, in points.

Top – Specifies the height of the control in pixels.

Top (open) – Specifies the height of a section or password control in its open state.

User modify layout – Specifies that the user may override the server's control layout preference. This is a global property which is applied to the whole user interface, not just the selected control.

User modify pings – Specifies that the user may override the server's ping settings. This is a global property which is applied to the whole user interface, not just the selected control.

Vertical align – Specifies the alignment of an image control

Width – Specifies the width of the control in pixels.

Width (open) – Specifies the width of a section or password control in its open state.

X axis max – Specifies the maximum for the X axis.

X axis min – Specifies the minimum for the X axis.

Y axis max – Specifies the maximum for the Y axis.

Y axis min – Specifies the minimum for the Y axis.

Windows PC Properties

The Windows PC Properties controls the appearance of the user interface on Windows PC devices. The main screen displays the control layout. The selected control is shown shaded.

During development, remember to select Force Layout in the FlexiPanel Server Properties. Any changes you make will then be immediately visible on the client without the need to select Load Recommended Layout.

If a control's position is unspecified, it appears on the upper portion of the screen. To specify the position of a control on the 'plus' portion of the control and place it in the desired position on the page pane in the lower portion of the screen. You can also size the control by dragging on the double-arrow portion of the control.

To aid layout, it is suggested you use the layout grid feature. To hide a control, simply place it off-screen (e.g. below the page pane).

Section and Password controls can make other controls appear and disappear. Therefore they have a 'displayed state' property which shows or hides the controls as appropriate. They also have separate position and size properties for their open and closed states.

Message controls are not shown.

Axis limits – Specifies whether axis limits are specified.

Displayed state – Specifies whether a section or password control is displayed in its open or closed state. This may make other controls appear or disappear. This property has no effect on the appearance on the actual client device, just on the screen layout.

Font bold – Specifies whether the control text should be bold.

Font size – Specifies the control font size, in points.

Grid – Specifies the grid to which dragged controls will be anchored. Enter 0 for no grid. This is a global property which is applied to all controls when they are dragged.

Height – Specifies the height of the control in pixels.

Height (open) – Specifies the height of a section or password control in its open state.

Hide on this client – Specifies that the control should not be displayed on Windows clients. (It will still be displayed in the FlexiPanel Designer Windows Properties view.)

Horizontal align – Specifies the alignment of an image control

Justify – Specifies the justification of a text control

Left – Specifies the left edge position of the control in pixels, relative to the left screen edge.

Left (open) – Specifies the left position of a section or password control in its open state.

Grid – Specifies the grid to which dragged controls will be anchored. Enter 0 for no grid. This is a global property which is applied to all controls when they are dragged.

Page – Specifies the page on which a control appears. Enter -1 to make it appear on all pages.

Page (open) – Specifies the page for a section or password control in its open state.

Ping frequency – Specifies that the client should ping the server every few seconds as specified. Enter 0 for no pings. This is a global property which is applied to the whole user interface, not just the selected control.

Request layout – Specifies whether Windows layout features are requested for this control. If this property is switched from the Yes state to the No state, all control layout properties will be lost.

Screen width – Specifies the width of the drawing area of the client application program.

Screen height – Specifies the height of the drawing area of the client application program.

Show border – Specifies whether a border is requested for this control.

Show title – Specifies whether the control title is requested for this control.

Title font bold – Specifies whether the title text should be bold.

Style – Specifies how the control is displayed. Applies to Latch, List, Matrix, Number and Text controls.

Title font size – Specifies the title font size, in points.

Top – Specifies the height of the control in pixels.

Top (open) – Specifies the height of a section or password control in its open state.

User modify layout – Specifies that the user may override the server's control layout preference. This is a global property which is applied to the whole user interface, not just the selected control.

User modify pings – Specifies that the user may override the server's ping settings. This is a global property which is applied to the whole user interface, not just the selected control.

User modify size – Specifies that the user may modify the client application screen size. This is a global property which is applied to the whole user interface, not just the selected control.

Vertical align – Specifies the alignment of an image control

Width – Specifies the width of the control in pixels.

Width (open) – Specifies the width of a section or password control in its open state.

X axis max – Specifies the maximum for the X axis.

X axis min – Specifies the minimum for the X axis.

Y axis max – Specifies the maximum for the Y axis.

Y axis min – Specifies the minimum for the Y axis.

Smartphone Properties

The Smartphone Properties display is similar to the Control Properties display except the description is replaced by a description of the Smartphone features.

On the Smartphone, the controls will appear in a list in the same order as specified on the Control Properties.

All controls

Fast key – Specifies a keypad key as a fast way of accessing the control.

Hide control – Specifies that the control should not appear in the control list on the Smartphone platform.

Ping frequency – Specifies that the client should ping the server every few seconds as specified. Enter 0 for no pings. This is a global property which is applied to the whole user interface, not just the selected control.

Request layout – Specifies whether Smartphone properties are requested for this control. If this property is switched from the Yes state to the No state, all control layout properties will be lost. *This item must be selected to enable many of the others.*

Title characters – Specifies the number of characters of the control title which are to be displayed in the control list on the Smartphone.

User modify layout – Specifies that the user may override the server's control layout preference. This is a global property which is applied to the whole user interface, not just the selected control.

User modify pings – Specifies that the user may override the server's ping settings. This is a global property which is applied to the whole user interface, not just the selected control.

Value style – Specifies the characters to display between the control title and the control value in the control list.

List controls

Style – Specifies how the list may be modified. Spinning allows the user to click through list items without opening the control first. Looping allows the spin to loop from last entry back to the first and vice versa.

Message controls

Message controls do not have any specific Smartphone properties

Number controls

Style – Specifies how the number may be modified. Spinning allows the user to increment / decrement the value without opening the control first.

Matrix controls

Axis limits – Specifies whether axis limits are specified.

Style – Specifies how the matrix is displayed.

X axis max – Specifies the maximum for the X axis.

X axis min – Specifies the minimum for the X axis.

Y axis max – Specifies the maximum for the Y axis.

Y axis min – Specifies the minimum for the Y axis.

Java Phone Properties

The current release of FlexiPanel Client for Java phones does not have any client-specific properties.

Target Devices

The Target Devices menu allows the target device to be selected. It also allows the user interface to be sent to that target device. Items marked * appear only when the relevant target is selected.

Simulation – The target is the FlexiPanel Server simulator in FlexiPanel.

Serial Adapter – The target is a FlexiPanel Serial Adapter (RS232 or TTL level) module.

BASIC Stamp Edition – The target is a FlexiPanel Basic Stamp Edition module.

Toothpick DARC-II – The target is a Toothpick module running DARC-II firmware.

Toothpick Slave – The target is a Toothpick module running Toothpick Slave firmware.

Toothpick Stamp Edition – The target is a Toothpick module running Toothpick Stamp Edition firmware.

Toothpick MPLAB – The target is a Toothpick programmed using the MPLAB development environment.

****Simulate now*** – The Designer application acts as a FlexiPanel Server itself to simulate the user interface. See the section Simulating User Interfaces.

****Program Serial Adapter…*** – Programs a serial adapter connected via Bluetooth.

****Create BASIC programming code…*** – Creates the required BASIC programming code to program the FlexiPanel Basic Stamp Edition module via the BASIC Stamp.

****Program DARC-II…*** – Programs the DARC-II by wireless field programming.

****Program Toothpick Slave…*** – Programs the Toothpick Slave by wireless field programming.

****Program Toothpick Stamp Edition…*** – Programs the Toothpick Stamp by wireless field programming. Also creates a BASIC file of sample code for the BASIC Stamp.

****Create C Code…*** – Creates C code for importing into MPLAB. Also creates a `.hex` file for wireless field programming of external memory data.

Simulating User Interfaces

Once a user interface has been designed it may be simulated on a Bluetooth equipped Windows computer.

To set up simulations on a particular Windows computer, set the *Target Device* to be *Simulation.* The *Simulation Properties* will appear in the right-hand properties list Select the correct Bluetooth COM port for incoming connections in the box provided.

To simulate a user interface, select *Simulate Now…* from the *Target Device* menu. The *Simulating FlexiPanel…* dialog box appears (Figure 1). If a FlexiPanel Client device now connects to the computer, the user interface will appear.

Last Message – The last notification message sent by the FlexiPanel Server to the application.

Client Data – The contents of the last Client Data message sent by the FlexiPanel Server to the application. In certain situations such as pressing a radio button, several Client Data messages may be sent in quick succession; only the last will be shown.

Dialog – Selects which dialog is displayed.

Update Control Data – Sends updated data for all controls except button, files and matrix controls. The section and password controls will be updated with the same values. All others will be changed slightly.

Show Messages Boxes – Press to make all message box controls appear, if any.

End Simulation – Press to end the simulation.

Targeting BASIC Stamp Edition

Once a user interface has been designed it may be programmed into a FlexiPanel BASIC Stamp Edition module. The module will then perform all the tasks of a FlexiPanel Server and will retain all control settings for the BASIC Stamp.

The FlexiPanel BASIC Stamp Edition module is programmed as follows:

1. FlexiPanel Designer creates BASIC Stamp source code to program the module. See for example Figure 4. Note the extra sample code provided at the end of the file. It shows how the BASIC Stamp should read and write from the FlexiPanel module once the user interface has been programmed.

2. The source code is downloaded to a BASIC Stamp using the BASIC Stamp Editor. A FlexiPanel BASIC Stamp Edition should be connected to the BASIC Stamp.

3. When the program runs, the BASIC Stamp writes the user interface specification into the module. After a few seconds, the BASIC Stamp Editor will confirm the process is complete writing *Acknowledge: ROM* to the Debug Terminal (Figure 2). If the message does not appear, programming failed. (Try removing and reapplying the power.)

4. The user interface will be retained by the FlexiPanel BASIC Stamp Edition module until it is re-programmed, even after power-off.

5. The BASIC Stamp is programmed with the necessary code to interact with the user interface and perform its intended tasks.

The documentation for the FlexiPanel BASIC Stamp contains the example AllControlsDemo that shows the process in detail and uses most controls available to the BASIC Stamp.

The FlexiPanel Module has the following limitations:

- Only BS2, BS2e, BS2sx and BS2p BASIC Stamps are supported.
- Files Control is not supported.
- Real Time Clock is not supported.
- Ping functionality must be enabled.
- User Interface ROM space is limited to around 1780 bytes. This limitation is actually a limitation of the BASIC Stamp used to program the FlexiPanel module. It is sufficient for approximately 24 controls. This is also about the limit of what the BASIC Stamp can practically use during normal operation while retaining sufficient spare programming space to achieve a useful task.

To prepare for programming FlexiPanel BASIC Stamp Edition modules, select *BASIC Stamp Edition* from the Target Device menu. The *BASIC Stamp Properties* will appear in the right-hand properties list. Set the BASIC Stamp type and select what you would like the *Mode* pin to do. Also specify which module pins are connected to which Stamp I/O pins. If you are using the AppMod slot, you can keep the default values.

To create BASIC Stamp source code to program the module (*i.e.* step 1 above) select *Create BASIC programming code…* from the *Target Device* menu. The *Storage Summary* dialog box appears (Figure 3), followed by a dialog box prompting for a file name for the source code file to be created. Select a file name and press OK. A file will be created which may then be read into the BASIC Stamp Editor (*i.e.* step 2 above).

Refer to the BASIC Stamp Edition documentation for further information and examples.

Targeting Serial Adapters

Once a user interface has been designed it may be programmed into a Serial Adapter. Programming takes place via the Bluetooth link and therefore requires Designer to run on a computer which has a Bluetooth radio.

The FlexiPanel Serial Adapter modules are programmed as follows:

1. Select *Program Serial adapter* from the *Target Device* menu.

2. The *Storage Summary* dialog box appears (Figure 3).

3. If necessary, manually create an outgoing serial connection to the module using the computer's Bluetooth Manager. Whether this step is necessary or not depends on the Bluetooth driver.

4. Press OK to program the Serial module. For a full 8192-byte program, this may take ten seconds or so. If programming was successful, a *Programming succeeded* message will be generated. If programming fails, Designer will time-out after about 20 seconds and generate an error message.

Refer to the Serial module documentation for further information and examples.

Targeting Toothpick DARC-II

Once a user interface has been designed it may be programmed into a DARC-II. Programming takes place via the Bluetooth link and therefore requires Designer to run on a computer which has a Bluetooth radio.

DARC-II modules are programmed as follows:

1. Select *Program DARC-II* from the *Target Device* menu.

2. The *Storage Summary* dialog box appears (Figure 3).

3. Power up the DARC-II module with the button held down so that the LEDs flash simultaneously

4. If necessary, manually create an outgoing serial connection to the DARC-II using the computer's Bluetooth Manager. Whether this step is necessary or not depends on the Bluetooth driver.

5. Press OK to program the DARC-II module.

Refer to the DARC-II module documentation for further information and examples.

Targeting Toothpick Slave

Once a user interface has been designed it may be programmed into a Toothpick Slave. Programming takes place via the Bluetooth link and therefore requires Designer to run on a computer which has a Bluetooth radio.

Toothpick Slave modules are programmed as follows:

1. Select *Program Toothpick Slave* from the *Target Device* menu.

2. The *Storage Summary* dialog box appears (Figure 3). If your user interface uses a lot of RAM, check that the storage requirements do not interfere with the message stack size you will be using. (See Toothpick Slave documentation.)

3. Power up the Toothpick Slave module with the button held down so that the LEDs flash simultaneously

4. If necessary, manually create an outgoing serial connection to the Toothpick Slave using the computer's Bluetooth Manager. Whether this step is necessary or not depends on the Bluetooth driver.

5. Press OK to program the Toothpick Slave module. The LEDs will flash alternately until programming is complete.

Refer to the Toothpick documentation for further information and examples.

Targeting Toothpick Stamp Edition

Once a user interface has been designed it may be programmed into a Toothpick Stamp Edition. Programming takes place via the Bluetooth link and therefore requires Designer to run on a computer which has a Bluetooth radio.

Toothpick Stamp Edition modules are programmed as follows:

1. Select *Program Toothpick Stamp Edition* from the *Target Device* menu.

2. The *Storage Summary* dialog box appears (Figure 3). If your user interface uses a lot of RAM, check that the storage requirements do not interfere with the message stack size you will be using. (See Toothpick Stamp Edition documentation.)

3. A *Save As* dialog box appears. Save the BASIC file. This file contains sample BASIC code for you to use when programming the Stamp. Most importantly, it contains constants which may change as you insert, delete or move controls in the user interface control list. Each time you modify the controls, you should copy the new constants (between the ====== lines) into your BASIC code.

4. Power up the Toothpick Stamp Edition module with the button held down so that the LEDs flash simultaneously

5. If necessary, manually create an outgoing serial connection to the Toothpick Stamp Edition using the computer's Bluetooth Manager. Whether this step is necessary or not depends on the Bluetooth driver.

6. Press OK to program the Toothpick Stamp Edition module. The LEDs will flash alternately until programming is complete.

Refer to the Toothpick Stamp Edition documentation for further information and examples.

Targeting Toothpick MPLAB

Once a user interface has been designed it may be programmed into a DARC-II. Programming takes place via the Bluetooth link and therefore requires Designer to run on a computer which has a Bluetooth radio.

The Toothpick MPLAB modules are programmed by generating .c and .h files which are included in the MPLAB project. In addition, a .hex file is created if external memory needs to be programmed with FlexiPanel User Interface information.

1. Select *Create C Code* from the *Target Device* menu.

2. The *Storage Summary* dialog box appears (Figure 3). Press OK.

3. Select a file name for the .c file.

4. Select a file name for the .h file.

5. Select a file name for the .hex file if required.

Refer to the Toothpick documentation for further information and examples.

Figures

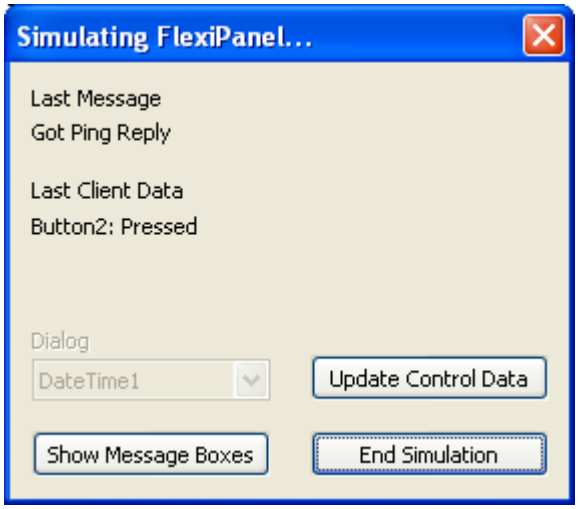


Figure 1 – Dialog Shown During Simulation

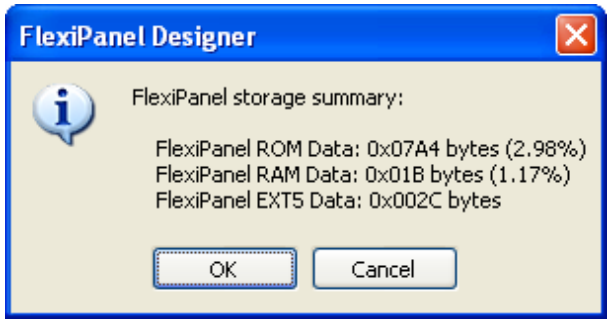


Figure 3 – FlexiPanel Storage Summary

(Figure 4 obsolete)

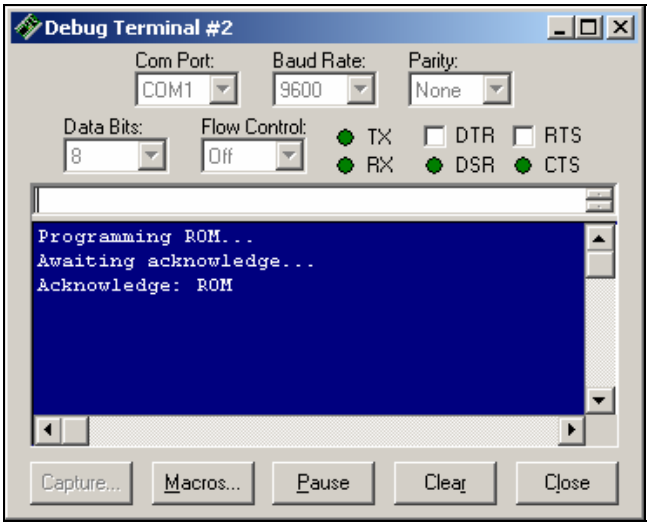


Figure 2 – Programming a FlexiPanel BASIC Stamp Edtion module

```
'-----------------------------------------------------------------------------------------
'
'  FxP FlexiPanel.bs2
'
'  BS2 code for programming FlexiPanel control panel
'
'  Created at 15:24:30 on 3/27/04
'
'-----------------------------------------------------------------------------------------

'  Initialization

'{$STAMP BS2}

'-----------------------------------------------------------------------------------------

'  Data

ROMData DATA $01, $00, $00, $00, $00, $00, $46, $6C, $65, $78, $69, $50, $61, $6E, $65, $6C
                  {Many rows of data like this}
        DATA $01, $91, $00, $00, $00, $00, $00, $00, $00, $00, $00, $00, $00, $00, $00, $00

'-----------------------------------------------------------------------------------------

' Variables

cdata   VAR     BYTE
ack     VAR     BYTE(3)
i       VAR     WORD


'-----------------------------------------------------------------------------------------

' Start of code

' Initialize Serial Port

        DIR2  = 1    ' Tx to FxP (SEROUT output from Stamp)
        OUT2  = 1    ' Initialize Tx as high
        DIR6  = 0    ' CTS from FxP  (SEROUT flow control input to Stamp)
        DIR4  = 0    ' Rx from FxP (SERIN input to Stamp)
        DIR8  = 1    ' RTS to FxP   (SERIN flow control output from Stamp)
        OUT8  = 1    ' Initialize RTS as high
        DIR12 = 0    ' Data from FxP (SERIN input to Stamp)

'  Wait 50 ms for FxP to initialize; if you use pullup resistors on CTS/Rx this is not needed

        pause 50

'  Program ROM

        debug "Programming ROM...", CR
        serout 2\6, 32, [$81, $06]
        for i = 0 to $5F
            read ROMData+i, cdata
            serout 2\6, 32, [cdata]
        next
        debug "Awaiting acknowledge...", CR
        serin  4\8, 32, [STR ack\3]
        debug "Acknowledge: ", STR ack\3, CR


'  Finished

        stop
```

Figure 4 – FlexiPanel BASIC Stamp Edtion programming script. (Continues…)

```
'-----------------------------------------------------------------------------------------

'  The following constants will be useful:

        TxPin   con     2       ' Transmit pin (from stamp)
        RxPin   con     4       ' Receive pin (to Stamp)
        CTSPin  con     6       ' Transmit flow control pin (input to Stamp)
        RTSPin  con     8       ' Receive flow control pin (output from Stamp)
        DataPin var     IN12    ' Data ready pin (input to Stamp)
        BaudM   con     32      ' Baud mode

        GetData con     $01      ' Get control data command
        SetData con     $02      ' Set control data command
        SetRow  con     $06      ' Set a row of matrix data command
        AddRow  con     $07      ' Append a row of matrix data command
        GetMod  con     $03      ' Get modified control command
        ShowMsg con     $04      ' Show message command
        ID_Text1 con $01      ' Text1 control ID

'-----------------------------------------------------------------------------------------

'  Use the following sample code to set up the Stamp I/O
'
'       DIR2  = 1    ' Tx to FleixPanel (SEROUT output from Stamp)
'       OUT2  = 1    ' Initialize Tx as high
'       DIR6  = 0    ' CTS from FleixPanel  (SEROUT flow control input to Stamp)
'       DIR4  = 0    ' Rx from FleixPanel (SERIN input to Stamp)
'       DIR8  = 1    ' RTS to FleixPanel   (SERIN flow control output from Stamp)
'       OUT8  = 1    ' Initialize RTS as high
'       DIR12  = 0    ' Data from FleixPanel (SERIN input to Stamp)

'-----------------------------------------------------------------------------------------

'  Use the following sample code to read the text of the 'Text1' text control:
'
'       text  VAR     BYTE(10)
'
'       serout TxPin\CTSPin, BaudM, [GetData, ID_Text1]
'       serin  RxPin\RTSPin, BaudM, [STR text\10]


'  Use the following sample code to set the text of the 'Text1' text control:
'
'       serout TxPin\CTSPin, BaudM, [SetData, ID_Text1, STR text\10]

'  All strings must be zero terminated!
'  Note that all 10 bytes must be read or written each time, even if you don't need them all


'-----------------------------------------------------------------------------------------


'  Use the following sample code to see if any controls have been modifed by client
'  substituting for [] as appropriate
'  (returns $00 if no controls have been modified, otherwise the ID of a modified control):
'
'       modctl   VAR     BYTE
'
'       serout TxPin\CTSPin, BaudM, [GetMod]
'       serin  RxPin\RTSPin, BaudM, [modctl]


'-----------------------------------------------------------------------------------------
```

Figure 4 – FlexiPanel BASIC Stamp Edtion programming script. (Continued)

Note the commented out sample code automatically provided for the user interface.

FlexiPanel Designer Development Kit

The FlexiPanel Designer development kit is comprised of the following files:

- The `Designer.exe` application.
- This documentation, *Designer.pdf*.

Revision History

The table below details the revisions that have been made to FlexiPanel Designer from version 2.0.

Version	***Date***	***Detail***
2.0	23 Mar 2004	Initial release
	26 Apr 2004	Client profiles added to simulation
		Smartphone client profiles added
	28 Apr 2004	AckData function added to Stamp target
	28 Apr 2004	RAM storage error if more than 0x100 bytes allocated – corrected
	28 Apr 2004	Spurious debug message if ROM storage used – removed
2.3	07 Jul 2004	Properties list area added, client layout screens added.
	09 Jul 2004	Properties list general properties not updating when user makes changes – corrected.
	10 Jul 2004	DARC module / Stars 'n' Stripes module programming added
	11 Jul 2004	Copied controls can't be laid out in PPC / Win - corrected.
	18 Jul 2004	Matrix XY and Labels styles showing each other's properties – corrected
	04 Aug 2004	Properties list resizing wrongly after main window sized – corrected
	16 Aug 2004	Frequency input on DARCpins D0-D3 added.
	14 Sep 04	Default Ping interval increased to 5 seconds.
		Stamp pin values sticking on 15 when modified – corrected
	15 Sep 04	Checksum infrastructure added
		Unique name on startup and New
		Force Layout on by default
		Update Control Data feature added to simulation
	18 Sep 04	AddRow memory error for XY chart if more than one column - corrected
	25 Oct 04	Crashing on double-click in drag & drop mode – corrected
	16 Dec 04	Improved drag & drop mode – selected control on top
3.0.00001	18 Dec 04	Image control added; matrix control can generate response; more number control options; matrix row update messages; matrix controls rendered inline.
3.0.00004	13 Apr 05	Toothpick Slave, Toothpick DARC-II, Toothpick MPLAB targets supported.
3.0.00005	19 Jun 05	Toothpick Stamp Edition target supported.
		Bona fides added to wireless field programming
	12 Nov 05	List control *SetUp* macro error corrected
4.0.0	12 Jan 07	ToothPIC name change to Toothpick

Contact Details

Technical Information

FlexiPanel Designer is owned and developed by FlexiPanel Ltd.

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