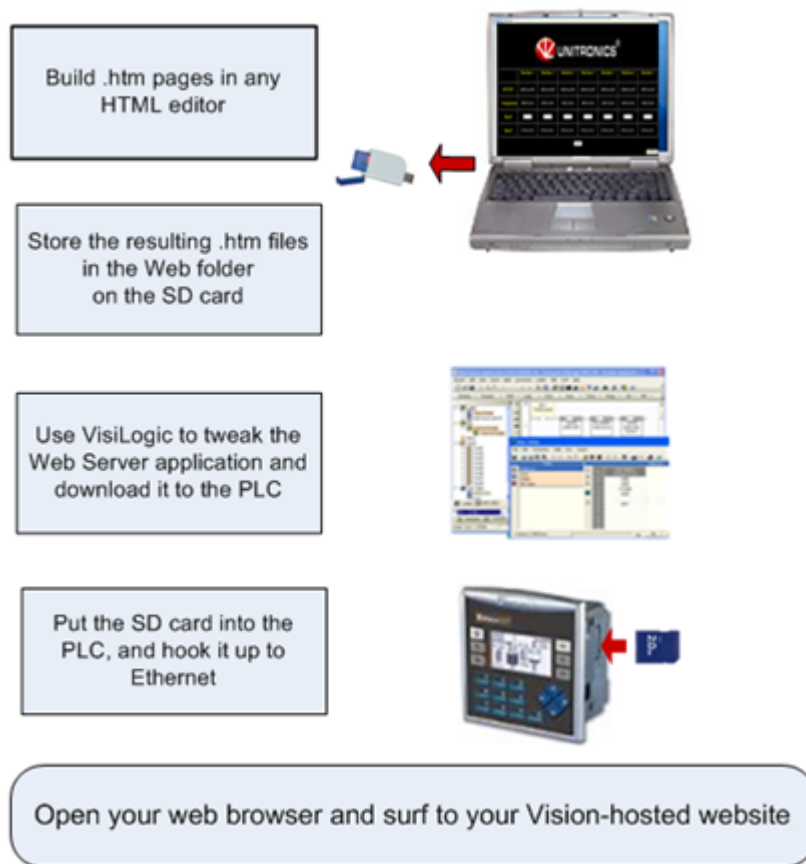# Enhanced Vision PLC WebServer

14/5/09

Enhanced Vision PLCs installed with Ethernet cards can host Web pages.

This document shows you how to enable the PLC to host complex Web pages by following the process shown below.

This method does **not** use the built-in Webserver utility.

Note that more than one user attempting to access a page hosted by the PLC at the exact same time may cause a Page Not Found error.

What you need:

- An Enhanced Vision comprising an Ethernet card
- The VisiLogic application Enhanced PLC Webserver.vlp

- An SD card, formatted with Unitronics' SD Manager utility
- An HTML editor such as Microsoft FrontPage
- If the PLC is to be accessible via Internet, the PLC must be connected to the Internet and have a fixed IP
  If the PLC is to be accessible via Intranet, a router should be used to assign an IP address

Creating the Webpages

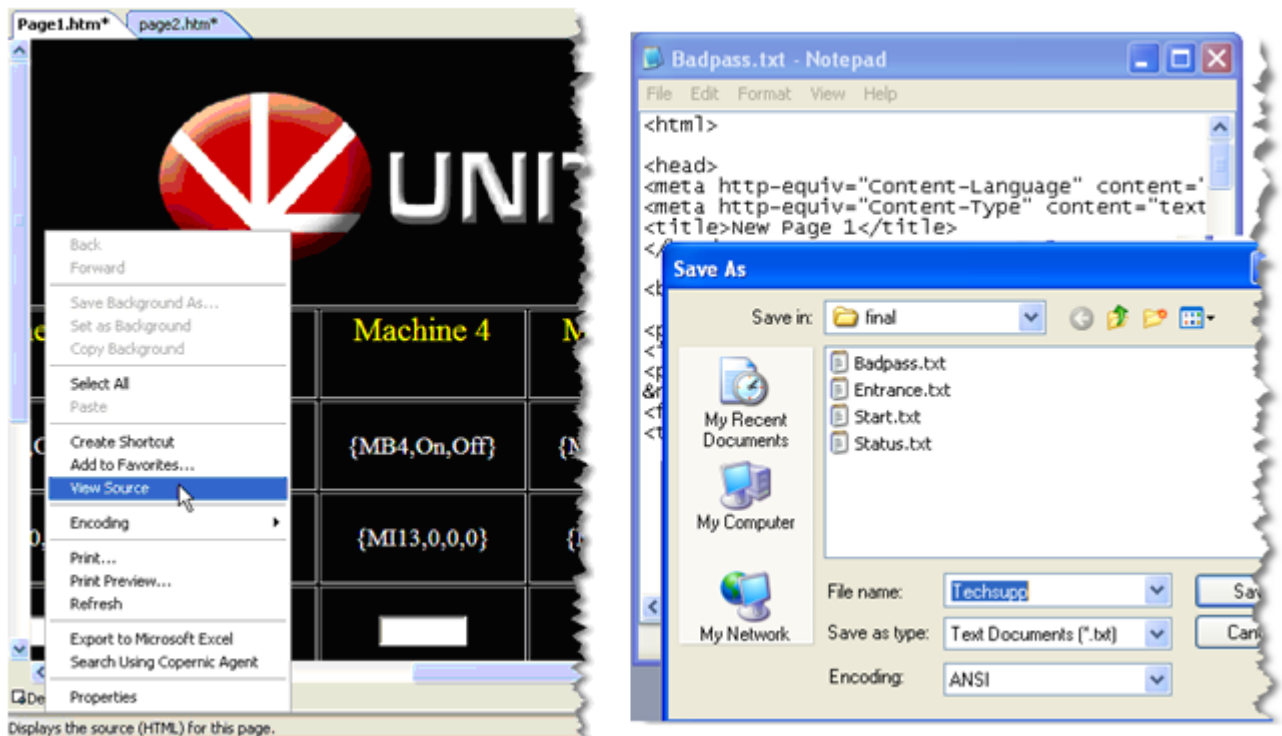1. Build your web pages using the HTML editor, including the desired colors, fonts, links to other sites, and scripts.

2. When you are done designing the pages in your HTML editor, create an .htm file.

You can do this by:

   a. Viewing the page in a web browser.

   b. Right-clicking the page and selecting View Source from the drop-down menu. The source code will open in Notepad.

   c. Copy/save the HTML code into a .txt file.

   d. Save this file as an .htm file.

3. If your page displays operand data, run it through the HTML Compiler to adjust the fields, as described in the section Displaying Operand Values.

4. Using the page name conventions described below, save the compiled pages in the SD card's Web folder.

> **Page Names**
> All pages must use the extension .htm. The name of the page may not exceed 8 characters, for example aardvark.htm.
>
> ---
>
> **Home Page**
> You must name the home page Start.htm.
>
> ---
>
> **Extra 'code'**
> Some HTML editors insert extraneous tags. Note that this can cause problems; if your pages do not display correctly, check the code.

Displaying Operand Data

You can:

- Display both register and binary values
- Display timer values
- Display strings from the String Library
- Send values to operands and strings

To include operands, create a field in your web page using the conventions shown in this section. Supported data types include MI, SI, ML, XL, SL, DW, XW, SW, and MB, SB, XB, IB (input), OB (output), and T (timers)

You can control how the operand value is displayed by using the format in the following examples. Note that you must use square brackets **[ ]** to 'open' and 'close' the field in the exact format shown in this section.
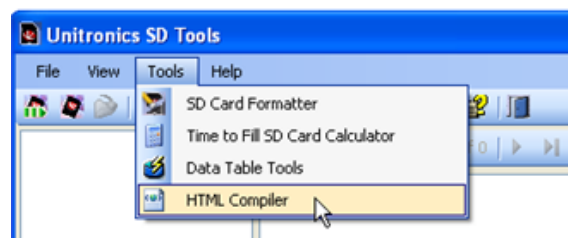
The VisiLogic application streams data in packets that are 512 bytes long.

Note that an operand value may be 'chopped' off. This occurs when the 'open' [square bracket appears—but the end of the packet arrives before the 'close'] square bracket.
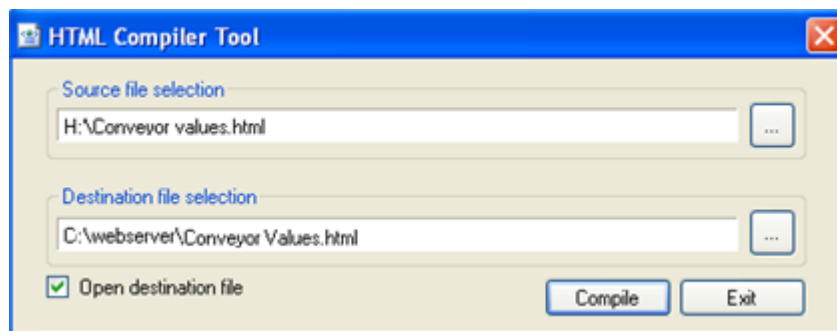
If this happens, the value that is displayed will be corrupted; for example, it may be displayed as [**% o.

To avoid this, run your .htm pages through the SD Manager utility: HTML Compiler.

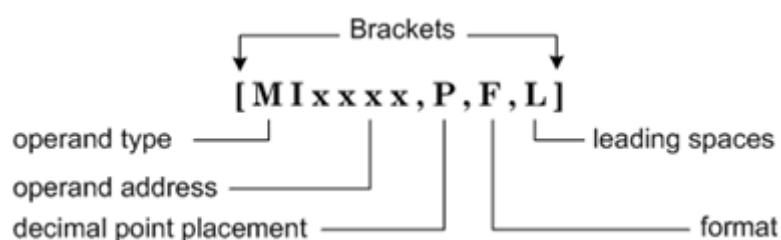1. Open SD Manager, then click the Tools menu and select HTML Compiler.

2. Navigate to the Source .htm file, select a destination file, and click Compile.

3. Test pages that display operand data by downloading them to the SD Card, running the application and viewing them in a web browser.

Registers

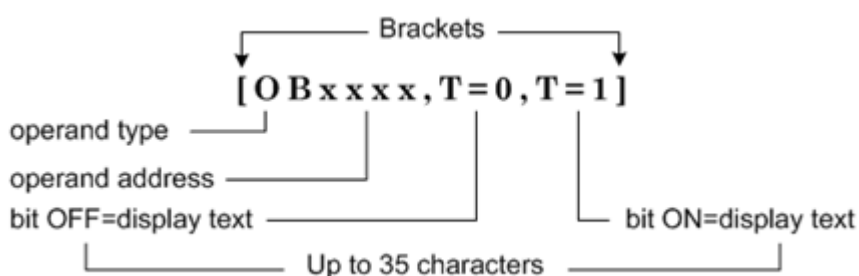Supported register types are MI, SI, ML, XL, SL, DW, XW, and SW. This example shows how to format an MI.

Operand type	MI, SI, ML, XL, SL, DW, XW, and SW
Operand address	
Decimal point placement	0-9, where: 0=no point , 1 is in the first tens place, 2 in the second tens place, etc.
Format	F=format 0= unsigned decimal value, 1= decimal value with - sign, 2= =/-, 3=hexadecimal
Leading spaces	L= leading space 0=none 1 = one leading space, 2= leading spaces

Boolean

Supported bit operand types are MB, SB, XB, IB (input), and OB (output). The following example is based on an Output
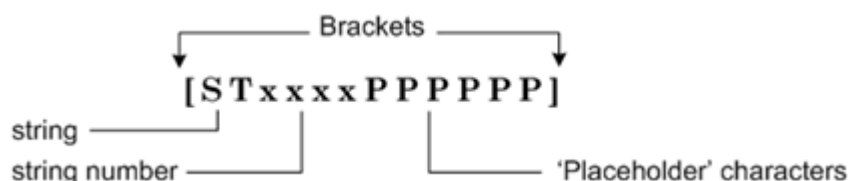
You can show text according to the status of the binary operand.

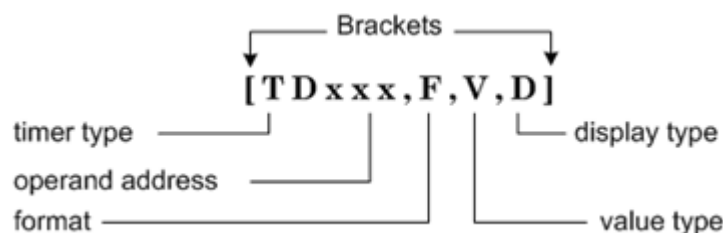| Operand type	MB, SB, XB, IB (input), and OB (output)
Operand address	
OFF text	When the bit is OFF, this is the text displayed (up to 35 characters)
ON text	When the bit is ON, this is the text displayed (up to 35 characters)

String Library

You can show strings from the current String Library.

Type	ST
String number	This is the Lumber of the string in the current Text Library
Placeholder characters	You must include a 'placeholder' character for each character in the string; for example, in order to display String 1, Hello World! you would construct the field ST1PPPPPPPPPPPP.

Timers

You can show timer values.

Timer type	TD, TE, and TA
Operand address	
Format	0=SS, 1=MM, 2=SS.hh, 3=MM:SS, 4=HH:MM, 5=HH.SS.hh, 6=HH.MM:SS.hh
Display type	R=time remaining, E= time elapsed
Value type	P=preset value, C=current value

Operand Data and Refresh Rates

Vision users are accustomed to data that is displayed and refreshed in 'real time', as in online Test Mode. It is important to remember that the PLC webserver page is similar to an ordinary Internet web page. The webpage can be set to refresh automatically, however you should not set the refresh rate to be faster than every 10 seconds in order to avoid page overload.

To set a refresh rate, include the following line in the metadata at the beginning of the page:

<META HTTP-EQUIV="REFRESH" CONTENT="x">,

where 'x' refers to seconds.

Images

There are two methods of showing images on your web page:

- The recommended method is to host the images on a server and display them via a link in your html code.
- You can also place images in the SD card's Web folder. Please note that attempting to host more than a single image per page can result in the images not loading correctly. However, if the PC browser application is defined to use a proxy server, the proxy server will cache the images and will generally enable them to display correctly.

Preparing the VisiLogic application

The VisiLogic application functions as a 'black box' program block except for:

- TCP/IP Init function
  This enables you to customize the Ethernet settings for your application.
- Data Tables
  You must sustomize the Address Table to allow the webpage users to submit data via a form.
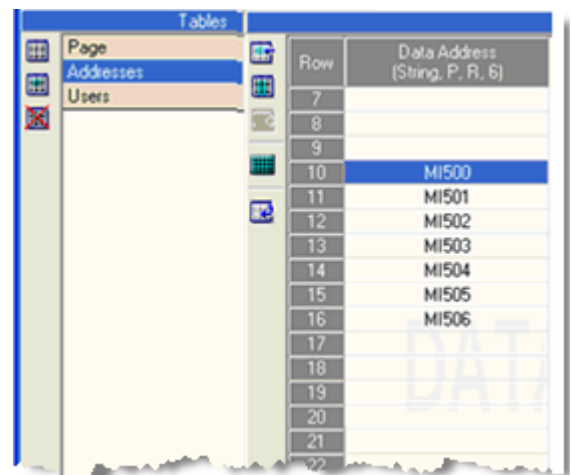
There are separate applications available for V570, V350, and V130.

1. Open the VisiLogic application Enhanced PLC Webserver.vlp. Note that all of the subroutines are locked, except for the first subroutine of the Main module, which contains the TCP/IP Init function.

2. Open the TCP/IP Init function, and enter the PLC's IP address, and the Gateway device address. You can also edit the PLC name.

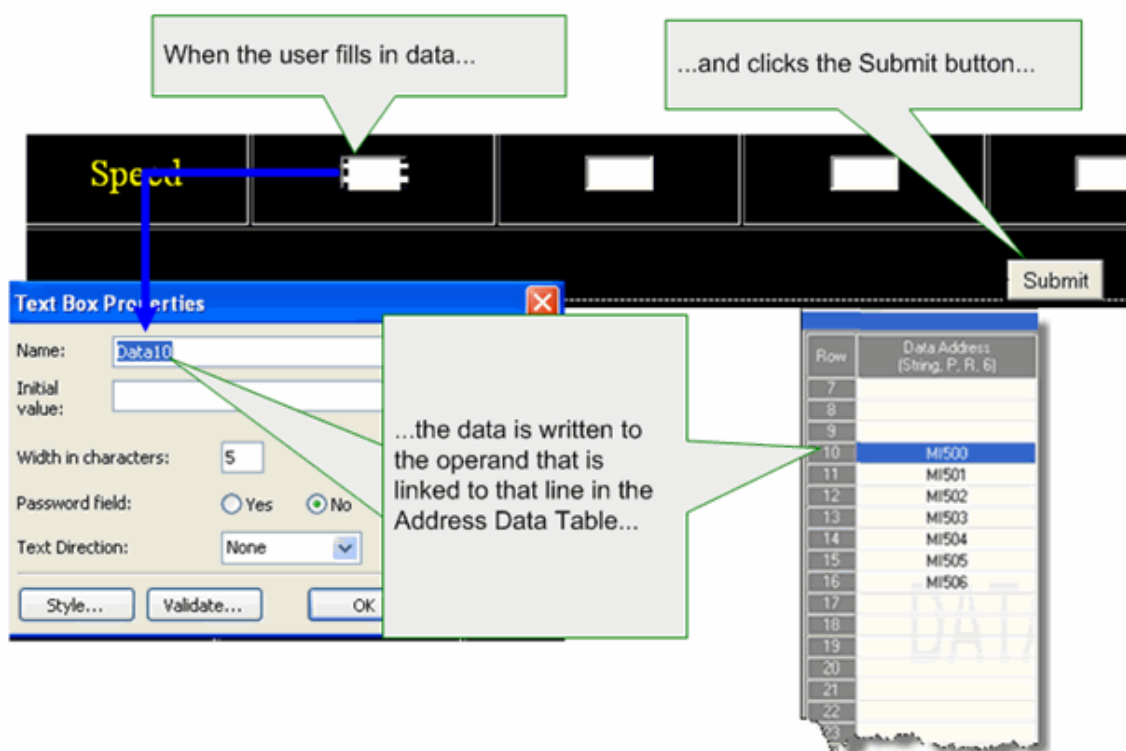3. Edit the 'Addresses' Data Table to enable data submission.

In the Data Table, lines 2-998 may be linked to operands.

When you design the webpage, you can enable a viewer to enter data in a field, and then send that data to the PLC by clicking a Submit button.

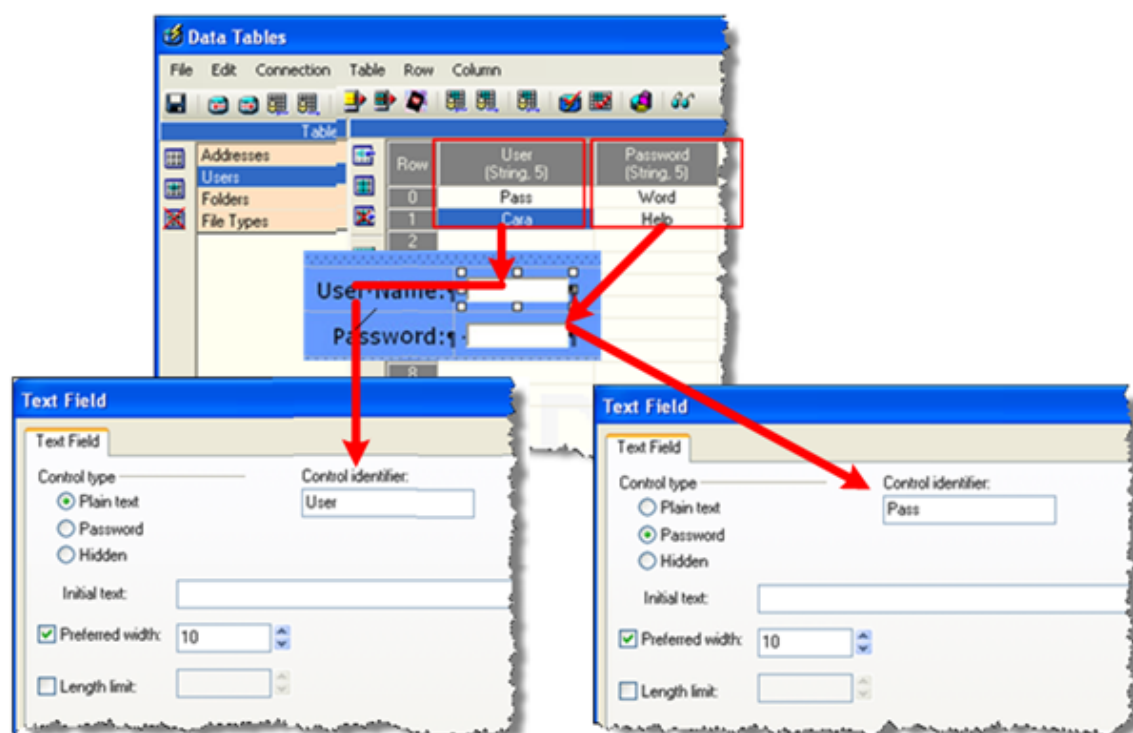To do this, name the fill-in field DataXX, where x stands for the Data Table row.

If your application requires a password:

1. Edit the 'Users' Data Table to enable data submission.

In the User column, enter the user names. In the Password column enter the password itself; notice that both user name and password are limited to 5 characters.

2. The password is controlled in the application by XB33; turn this on to require a password.

3. Place the SD Card in the PLC.

4. Download the VisiLogic application Enhanced PLC Webserver.vlp to the PLC

When the PLC is powered up and connected to the Internet, the PLC will be able to serve the web pages.

Passwords

To apply a password to your site, you must create a separate page and name it Entrance.htm

You must also include a page that will be shown if the user enters an incorrect password. You must name this page Badpass.htm.

- Passwords and User Names must be exactly 5 characters long.

- Passwords and User Names are case-sensitive.

By default, once you have applied a password, the application will request this password each time the user:

- Accesses a new page hosted in the PLC
- Enters or modifies data on a page

If you want to avoid this, you can edit the HTML of page links, data entry field submit buttons.

To stop the application from asking for a password when the user submits data to a form, add the following string to the form code:
`<input type="hidden" name=User value="[ST20,ppppp]"><input type="hidden" name=Pass value="[ST21,ppppp]">`

The code shown below is for a data submission form. The added string is shown in bold red letters.

```
<form method="GET" action="/">

<p><font face="Verdana"> ML10 </font>

<input type="hidden" name="/Web/Operand2.htm" value="1"><input type="text" name="Data10" value=[ML10,0,0,0] size="10"><input type="hidden" name=User value="[ST20,ppppp]"><input type="hidden" name=Pass value="[ST21,ppppp]"> <input type="submit" value="Write" name="B1"></p>

</form>
```

This code prevents the application from requiring a password when the user clicks Write.

To stop the application from asking for a password when the user submits data to a form, add the following string to the hyperlink code:

"&User=[ST20,ppppp]&Pass=[ST21,ppppp]"

The code shown below is for a hyperlink. The added string is shown in bold red letters to the form code

```
<p align="left"><font size="10"><a
href="/Web/Start.htm&User=[ST20,ppppp]&Pass=[ST21,ppppp]">

HOME</a></font></p>
```


This code prevents the application from requiring a password when the user clicks Home to jump to another page.