

IEEE 488

APPLICATION BULLETIN

CUSTOMIZING THE EZ ZONE TEMPERATURE PLATE WEBPAGE IN ICS'S 8099 ETHERNET INTERFACE

INTRODUCTION

ICS's 8099 Ethernet to Modbus RTU Interface includes a WebServer with HTML pages that allow a user to configure its network settings with a standard web browser such as Firefox, Internet Explorer, Netscape etc. While this capability simplifies configuring the 8099, it does not let a user use the 8099 to control anything.

To overcome this problem, ICS has generated several prototype webpages that let a user use the 8099 to control a Modbus device. This application note deals with a webpage that is targeted to a Temperature Plate controlled by a Watlow EZ Zone Controller. The prototype webpage can be adopted to various product configurations or to other products that use the Watlow EZ Zone controller. The Watlow EZ Zone Controller can be replaced with another Modbus RTU controller by customizing the 8099's firmware.

The purpose of this Application Note is to describe the prototype EZ Zone Temperature Plate webpage and to show how it can be modified for various product configurations.

PROTOTYPE TEMPERATURE PLATE PAGE

The prototype Temperature Plate webpage is shown in Figure 1. The page displays current Temperature and Auxiliary Temperature readings and lets the user enter a setpoint value for the plate temperature. All values are in floating point format so the decimal points are automatic. The user can also set two output control registers that may be used to turn Plate functions off and on. Table 1 lists the EZ Zone registers used in the Temperature Plate Page and the associated html variables. The Function descriptions relate to Figure 1.

The Temperature Plate webpage uses generic substitution variables, like `%EZinput1%`, in the html code to display the process values from the Watlow controller. CGI variables, like `EZinput1sp`, are set to a value which is in turn written to the associated EZ Zone register. Radio button controls are displayed checked or blank. The Radio Button CGI variable, like `EZdout5`, is set to a value of On or Off. The html substitution variables, `%EZdout5on%` or `%EZdout5off%` are returned as checked or blank.

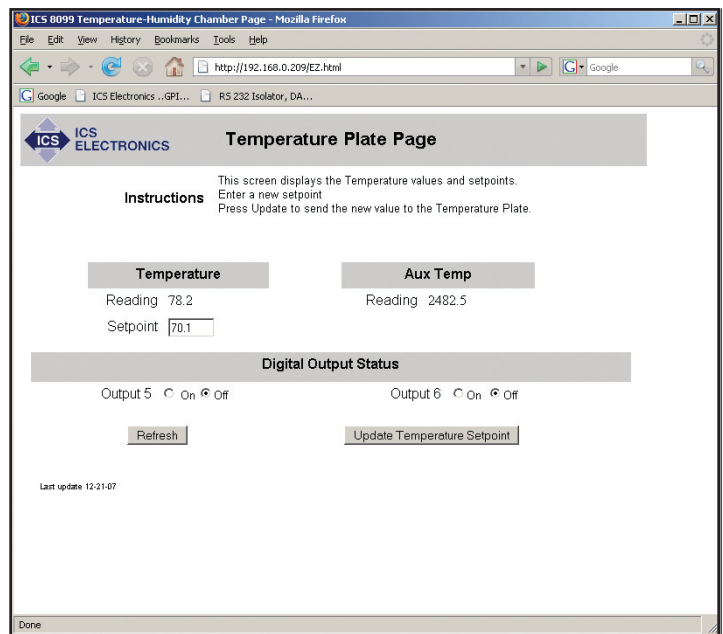


Figure 1 Prototype 8099 Temperature Plate Webpage

The form has two buttons, Refresh and Submit. Refresh causes all substitution variables to be read and served back to the client. Submit causes the Webserver to write any changed CGI values out to the Watlow Controller and then to read the substitution variables to refresh the page.

The 8099's Webserver does not do any error checking so the user must check his own values before clicking the Submit button. If the Webserver encounters any problems, it displays a general error page, 500.html, that lists the possible errors. They are:

1. 8099 is busy with a client application. (Network links have preference over the Web server links)
2. EZ Zone response error or communication failure.
3. Parameter out of range.
4. Command not supported by the EZ Zone.

The user will have to make the necessary corrections and re-Submit the Temperature Plate webpage when the 8099 is available.

TABLE 1 Webpage Variables and EZ Zone Register List

HTML Variable	EZ Zone Register	Function (On the prototype EZ page)
%EZinput1%	360	Current Temperature Rdg
%EZinput1sp%	2160	Temperature Setpoint Rdg
EZinput1sp	2160	Temperature Setpoint CGI
%EZinput2%	440	Current Aux Temperature Rdg
%EZdout5on%	1012	Control #5 On Rdg
%EZdout5off%	1012	Control #5 Off Rdg
EZdout5	1012	Control #5 CGI
%EZdout6on%	1042	Control #6 On Rdg
%EZdout6off%	1042	Control #6 Off Rdg
EZdout6	1042	Control #6 CGI

```

<tr>
  <td height="44">&nbsp;</td>
  <td valign="top"><div align="center">
<inputname="reset" type="button" onclick="MM_goToURL('parent','EZ.html');return document.MM_returnValue" value="Refresh" />
  &nbsp;</div></td>
<td>&nbsp;</td>
  <input type="hidden" name="chain" value="EZ.html" />
  <td valign="top"><div align="center"><input type="submit" name="Submit" value="Update" /></div></td>
<td>&nbsp;</td>
</tr>

```

Figure 2 Submit and Update Button html code

Changing the EZ.html page name requires two changes to the html code that deals with the Refresh and Submit buttons. See Figure 2 above. Replace EZ in the Refresh button code with the name of the new page. Also replace the *chain* value EZ.html with the new page name. This lets the webserver return an updated copy to the browser.

Change the page title and appearance to match any changes made to the index page. Add the product name or model number and any directions the user might need for using the page.

Any html process variable or setpoint that is not being used can be deleted. The Webserver ignores any deleted variables. The remaining controls can be relabeled and relocated as desired. The html variable names must match those in Table 1 to control the corresponding EZ Zone register.

It is possible to create multiple control pages, one for each product. However, the OEM user has to be aware of the 8099's space limitation for html pages and not exceed its 63 kbyte limit when uploading pages and graphics. That is why grouping multiple similar products on one page is a better idea since it saves space. The 8099 html pages and graphic in the download currently use 36 kbytes¹. Another strategy is to create a page per product and then only install the page for the product being shipped.

INDEX PAGE CHANGES

Figure 3 shows the 8099's modified index page with a button that links to the prototype EZ page. The button should be relabeled to call out the OEM's EZ control page. The button can also be repositioned to another location. The OEM can add multiple buttons if there are multiple control pages. Figure 4 shows the html code for the button.

Replace the 'EZ.html' in 'goToURL()' with the name for the new EZ control page. This must be the same name used when uploading the new EZ control page to the 8099. Replace the 'EZ PAGE' in 'value="EZ PAGE"' with a descriptive name for the new control page. i.e.'Model XYZ Temp Plate Control Page' The value name is the label on the button that links to your EZ control page.

Note 1 Measure file sizes with Windows Explorer on a PC. MAC OSX shows minimum 4 kbyte file sizes which is misleading.

MODIFYING THE TEMPERATURE PLATE PAGE

The prototype Temperature Plate Webpage is titled EZ.html. EZ.html is a standard html page that can be modified by Dreamweaver or by any html editing software. The prototype EZ.html and the 500.html error pages can be downloaded from the Application Note page on ICS's website. The download includes a modified index page with a link to the EZ page, the remaining 8099 pages and the VXI11_html utility.

The 8099 is shipped with a standard index page that does not include the link to the EZ page. The user should upload the modified EZ index page to the 8099 and try out the prototype EZ.html page before making any changes. Follow the directions in AB80-5 for using the VXI11_html utility and uploading pages to the 8099. In a standard 8099, the EZ prototype page may also be accessed by entering '/EZ.html' after the url for the index page into your browser. The url with the default ip address is: 192.168.0.254/EZ.html

GENERAL PAGE CHANGES

Application Note AB80-5 deals with making general appearance changes to the standard html pages such as replacing ICS's logo, changing the displayed page titles, page colors and text changes. Note that the names of the error and index pages cannot be changed. The OEM can remove the serial settings from the config.html page if these are to be hidden from the end user. The network settings are required by the LXI Specification and should remain available to the end user.

If you use Dreamweaver, group all of the html pages into a folder and create a new site for your product(s). You only need to enter the local info for the product site.

EZ PAGE CHANGES

The OEM may want to create a control page that is unique to each model or product. Several products or models can be grouped on one page if they have similar functions and use similar controls. In either case, save the prototype EZ.html page with a new name to avoid confsion with the prototype page.

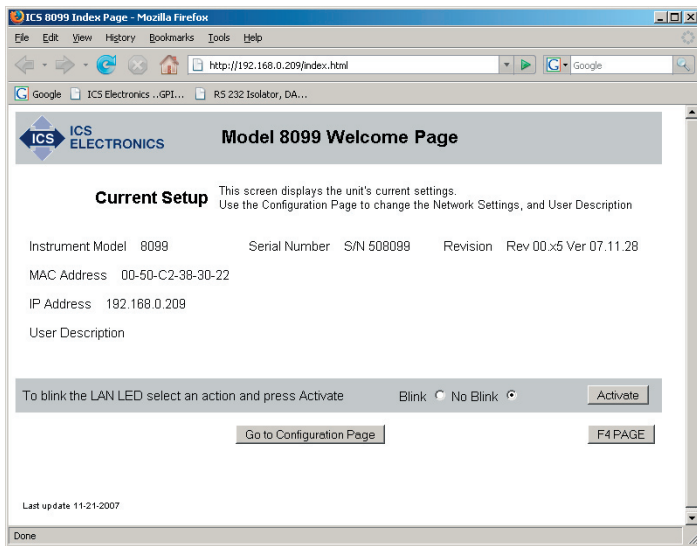


Figure 3 8099 Index Page

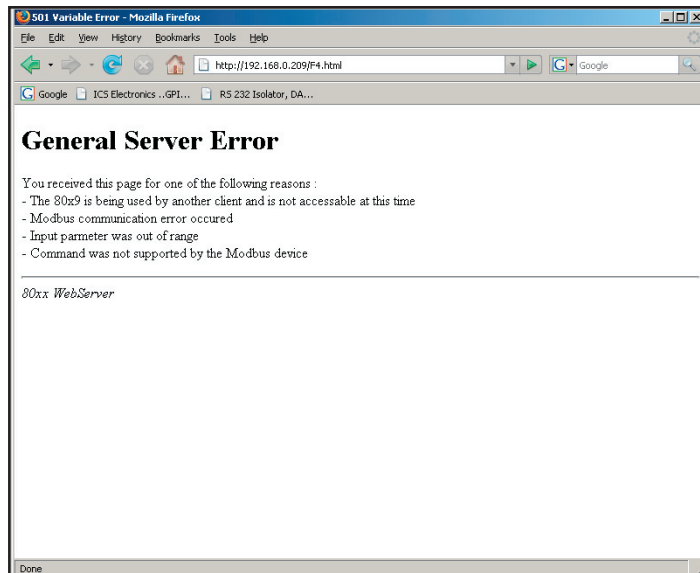


Figure 5 500.html Error Page

```
<td >
<input name="Submit" type="submit" onclick="MM_
goToURL('parent','EZ.html');return document.MM_returnValue"
value="EZ PAGE" />
</td>
```

Figure 4 EZ Link Button html Code

To add additional buttons simply copy the code and place it where desired on your webpage. Modify the new button code as described above for the existing EZ Zone button.

In Dreamweaver, it is easier to draw a layout cell where you want to place the button and use the Insert menu to select Form>Button. Relabel the button as described above. Highlight the button and use the Behaviors Panel + button to add a 'Go To URL' behavior to the button. When the Go To URL Panel opens, browse to select the appropriate webpage.

500 ERROR PAGE CHANGES

Figure 5 shows the 500.html Error Page. This page may not be renamed and must be included in the html upload with the EZ control page. The 500.html page appearance can be changed to match the other pages. The 500.html Error page reports when the 8099 is busy with another client application, when there are Modbus communication problems, variable range errors or an unsupported command has been attempted. The two frequent errors causes are when the 8099 is still linked to another client such as VXI11_kybd and cannot respond to the browser or when the serial link to the EZ Zone is not working due to an open cable or power being turned off.

UPLOAD PAGES WITH ICS'S VXI11_html UTILITY

Use ICS's VXI11_html utility to upload the modified files to the 8099 as described in Application Bulletin AB80-5. Copy the modified files into the directory with the VXI11_html utility. Be sure to include the 404.html, 501.html and index.html pages. When you

run the VXI11_html utility it prefills the file list with these files which are needed by the 8099 webservice. Enter the remaining file names by placing a file name in the Add File text box and pressing the Add File button. The file name is then added to the FileList box. This step is repeated until all .html, .gif and .jpg files are listed in the FileList box. Include the 8099 config.html, confirm.html and reboot.html pages unless they have been deleted or renamed. Press the Save to Flash button to upload the files to the 8099.

When the upload is complete, press Reboot to restart the 8099 and you are ready to test the uploaded HTML pages in the 8099 Interface with different web browsers². Repeat the editing, uploading and testing cycle until you are satisfied with the results.

SUMMARY

This application note has described how an OEM can modify the 8099's prototype EZ Zone Temperature Plate webpage to control Temperature Plates or other temperature controlling products that incorporate a Watlow EZ Zone Controller. The OEM can create a page per product or group several products on one page.

This Application Note has also shown how to modify the index page to link to the new control page and how to add buttons to the index page to link to the new control page(s).

Note 2 The current version of Firefox (2.0.0.11) does not always generate the correct cgi instructions when you press Activate or Update. Test with IE and other browsers.