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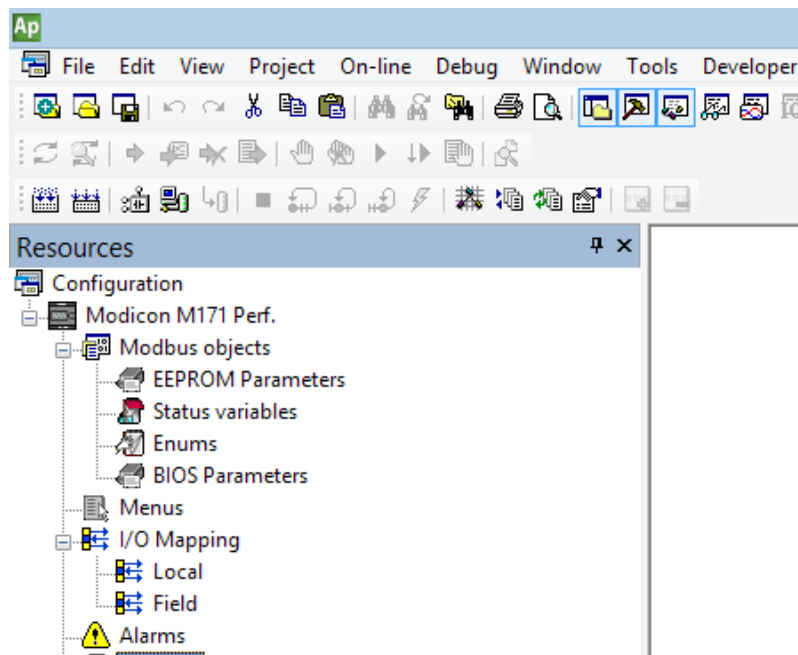
## 1. HOW TO WORK WITH WEB SITES

With SoMachine HVAC you can auto-generate web pages and download them to the target device, to simplify target configuration and parametrization using only a simple web browser.

The first preliminary step to create a web site is to create the required PLC application parameters (EEPROM parameters or Status variables), because these will be the main objects to be viewed and edited on the pages.

Web site generation is supported for various models of Modicon m171 Perf.: Display, Blind, and Flush.

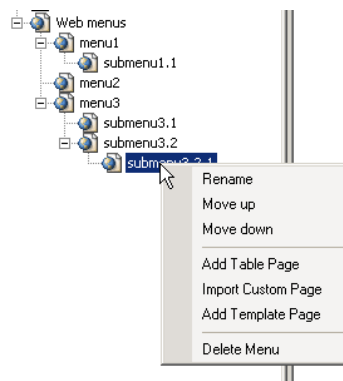
### 1.1 CREATE AND DELETE PAGES



To add one or more web pages, just do a right click on the *Web Site* node in the *Resources* tab, and then choose the type of page to add (see chapter "Web site elements" for details).

You can nest pages to build a complex tree at any depth, by right-clicking an existing page and adding another one under it.

With the same context menu you can move up and down, delete, and rename an existing page from the tree.



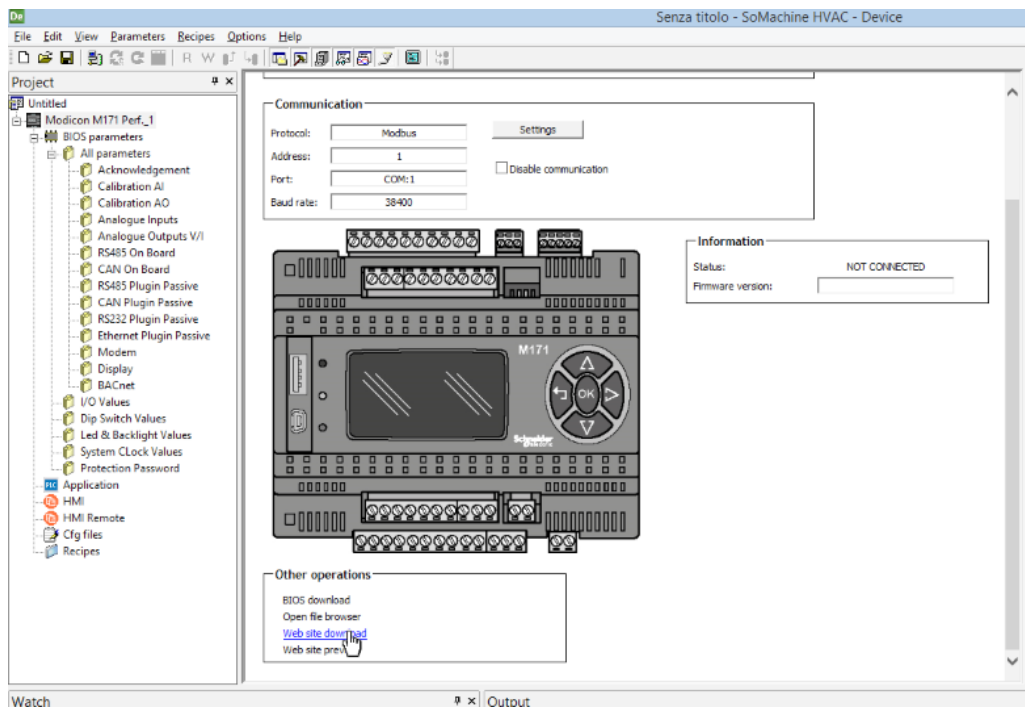
## 1.2 BUILD WEB SITE

To automatically generate the web site, select the *Build Web site* command from the *Developer* menu.

The resulting HTML pages will be placed in a folder named "web" under the Application project directory.

## 1.3 DOWNLOAD WEB SITE

To download a web site to the target device after it has been generated, launch SoMachine HVAC - Device, go to the main device page and choose *Web site download*.



The download process will be logged in the output window, as each file is downloaded a row will be printed.

## 1.4 VIEW AND PREVIEW WEB SITE

When the web site has been downloaded to target, you can view it using any web browser by entering its IP address as the URL.

For example, if the Display has been configured as 10.0.0.100, just enter in the browser `http://10.0.0.100`

you will be redirected to the first page of your web site.

You can also preview the site locally, without downloading it to target; to do this you can choose *Web site preview* in SoMachine HVAC - Device in the main page, or just open with your web browser any page in the *web* folder.

Obviously, all the pages will not "work" properly and they will be just passive, because they can not read or write anything from the device.

Most of the major web browsers have been tested (Internet Explorer 7.0+, Mozilla Firefox, Google Chrome, Opera, ...).

## 2. WEB SITE ELEMENTS

Follows the description of each page type you can add in your site, using the context menu as said before.

### 2.1 TABLE PAGE

The "Table page" is the main type of automatically generated page.

It represents a list of parameters using a tabular view, with one parameter for each row; so it can be viewed as an HTML representation of Device's grids.

**'Overview Table' Web table page**

Add   
 Remove   
 Up   
 Down

Refresh (ms):  (0=disable refresh)   
 Password:

Page title:    
 Filename:

Site template:

#	Name	Control	Label	Section	Text size	Img filename	Img X	Img Y	Enum values
1	I_INLETAIRTEMPERATURE	Text	Inlet Air Temperature	Temperatures	10				
2	I_OUTLETAIRTEMPERATURE	Text	Outlet Air Temperature		10				
3	I_INLETAIRRELATIVEHUMIDITY	Text	Inlet Air Humidity	Humidity	10				
4	I_OUTLETAIRRELATIVEHUMIDITY	Text	Outlet Air Humidity		10				
5	SP40_RH_DeHumidificationSetpoint	Text	Humidification Set		10				
6	SP50_RH_HumidificationSetpoint	Text	Dehumidification Set		10				
7	St20_ChangeOverSelectProbe	Select		Controls					
8	St00_SelectOperatingMode	Image				MODES.PNG	50	50	

For each page you can edit several global fields:

- *page name*: you can enter and edit this directly in the *Resources/Web Site* tree;
- *refresh time*: this is the refresh interval in milliseconds for the page; after this delay, the browser will read all the values again from the device. Minimum value is 500 ms, enter 0 to disable continuous refresh;
- *page title*: the main big title for the page. If not specified, the page name will be used instead;
- *password*: if specified, the browser will prompt for this password to access the page; if the user correctly inserts it, by default will be remembered for 1 hour;
- *site template*: you must select here (with the *Choose* button) the template to be used to generate this page. The selected template will determine the page structure, style and look-and-feel. Please see the chapter "Site templates" for further information;
- *filename*: this is a read-only field that will show the name of the resulting filename after the page has been generated; it can be useful if you want to edit it manually or inspect it.


Then, you can insert in the below table each parameter or status variable you want to put on the page, by clicking the *Add* icon or by drag and dropping it from *EEPROM Parameters* or *Status variables* grid directly into the Table page you want.

The grid columns are:

- *Name*: you can choose the parameter with this drop-down list, that lets you choose all the application or the BIOS parameters also;
- *Control*: this is the type of HTML control to generate (see next chapters); please note that not all control types are compatible with the source *Device type* of the parameter;

- *Label*: this is an optional longer description to be viewed for the parameter; if not entered, the *Name* will be used instead, and if you enter the empty "" string no label will be viewed at all;
- *Section*: if specified, this will be used as a table header to break the layout of the page; entering multiple Sections on different rows, you can obtain different parameter groups.

All the remaining columns are specific for each control type, and will be described separately below.

text	<input type="text" value="123"/>
select	<input type="text" value="On"/>
button	<input type="button" value="On"/> <input type="button" value="Off"/> <input type="button" value="Disabled"/>
image	
radio	<input checked="" type="radio"/> On <input type="radio"/> Off <input type="radio"/> Disabled
check	<input checked="" type="checkbox"/>

## 2.1.1 TEXT CONTROL

This is the standard text input box (in HTML `<input type="text">`); for this control you can specify in the *Text size* column the maximum number of allowed characters.

This control can be used with every *Device type*; it will inherit from its associated parameter the read-only attribute and its format (number of decimals).

## 2.1.2 SELECT CONTROL

This is the drop-down list control (in HTML `<select>`).

This control can be used with enumeratives or Boolean *Device type* only; it will inherit from its associated parameter the read-only attribute.

All the associated enumerative values will be shown in the drop-down list, unless you specify in the *Enum values* column a restrictive comma-separated list of values; for example, if the associated parameter is of type `enum1` and `enum1` has values `"0=Off,1=On,2=Disable"`, all of them will be shown, but if you specify `"0,1"` in *Enum values* only the first two will be shown in the list.

## 2.1.3 BUTTON CONTROL

This is the push button control (in HTML `<button>`).

This control can be used with enumeratives or Boolean *Device type* only; it is a write-only control, that will write to target its associated value when you click it.

All the associated enumerative values will be shown as a serie of buttons, unless you specify in the *Enum values* column a restrictive comma-separated list of values.

## 2.1.4 IMAGE CONTROL

This is the image control (in HTML `<img>`); for this control you must specify in the *Img filename* column a filename of a supported image format (all browsers support the most common ones), an image width and an image height.

This control can be used with enumeratives or Boolean *Device type* only; it is a read-only control, that will show an image associated with the value read from the target.

All the associated enumerative values will be associated with the image file, unless you specify in the *Enum values* column a restrictive comma-separated list of values.

The image file must contain all the possible images to be displayed in a single file (one above each other), and its real height must be  $Img\ Y * \text{number of values}$ .

For example, if you have three images of 64x64 each, you must join them in a single 64x192 (please note you have to enter in Application the 64x64 size).



Please note that you will have to place all the required image files manually inside the "web" folder to download them to target.

### 2.1.5 RADIO CONTROL

This is the radio buttons control (in HTML `<input type="radio">`).

This control can be used with enumeratives or Boolean *Device type* only; it will inherit from its associated parameter the read-only attribute.

All the associated enumerative values will be shown as a serie of mutually exclusive options, unless you specify in the *Enum values* column a restrictive comma-separated list of values.

### 2.1.6 CHECKBOX

This is the check box control (in HTML `<input type="checkbox">`).

This control can be used with *Boolean Device type* only; it will inherit from its associated parameter the read-only attribute.

## 2.2 CUSTOM PAGE

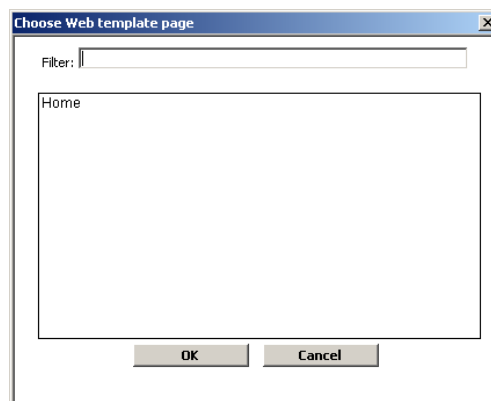
With *Custom page* you can add in your web site one or more existing web pages, that you have written separately before with your favorite HTML editor.

If you choose an HTML that is outside the "web" folder, it will be automatically copied inside when you select it.

## 2.3 TEMPLATE PAGE

With *Template page* you can add an auto-generated page that will follow a specific template.

You will be asked to choose the template to use for the new page (see "Page templates" for further information).



The usage and configuration of a template page in Application is very similar to a normal "Table page"; the global fields are the same, and the main difference is that the grid is already pre-compiled with the list of all possible fields. Each field is optional, and is rendered on the page only if it selected.

For each row, you can only select the associated parameter (*Name* column) and its *Label*; if not entered, the *Name* will be used instead, and if you enter the empty "" string no label will be viewed at all.

### 'Home' Web template page

Refresh (ms):  (0=disable refresh) Password:

Page title:  Filename:

Site template:

#	Name	Label	Control	Note
1	T_RegulationProbe	Temperature Probe	Text	Current value 1 (eg. temperature) (Numeric)
2	RH_RegulationProbe	Humidity Probe	Text	Current value 2 (eg. humidity) (Numeric)
3	SP10_T_CoolingSetpoint	Temperature Set	Text	Setpoint 1 (eg. temperature) (Numeric)
4	SP40_RH_DehumidificationSetpoint	Humidity Set	Text	Setpoint 2 (eg. humidity) (Numeric)
5	WEB_OnOff	ON/OFF	Button	Toggle ON/OFF (BOOL)
6	WEB_OnOffLed	ON/OFF status	Image	Current status for ON/OFF (Enum 0,1,2)
7	WEB_Heat	HEAT Mode Request	Button	Activate Mode1 (eg. Heat) (BOOL)
8	WEB_HeatLed	HEAT	Image	Current status for Mode1 (eg. Heat) (Enum 0,1,2)
9	WEB_Cool	COOL Mode Request	Button	Activate Mode2 (eg. Cool) (BOOL)
10	WEB_CoolLed	COOL	Image	Current status for Mode2 (eg. Cool) (Enum 0,1,2)
11	WEB_Auto	AUTO Mode Request	Button	Activate Mode3 (eg. Auto) (BOOL)
12	WEB_AutoLed	AUTO	Image	Current status for Mode3 (eg. Auto) (Enum 0,1,2)
13	WEB_TimeBands	TimeBands	Button	Toggle Mode4 (eg. TimeZones) (BOOL)
14	WEB_TimeBandsLed	TimeBands Active	Image	Current status for Mode4 (eg. TimeZones) (BOOL)
15	WEB_AlarmLed	ALARMS	Image	Current Alarms status (BOOL)



### 3. SITE TEMPLATES

A "site template" is XML-based file that determines all the rules to build and represent an auto-generated and generic web page.

By default SoMachine HVAC only installs the "Base" template with the standard Schneider look-and-feel, but the advanced users can write and use their own site templates.

All the templates must reside in the `Catalog\Modicon m171 Perf.\WebSiteTemplates` folder, and have a `.SITETEMPL` file extension.

It is made of the following sections:

- pageheader: fixed initial page header;
- tabheader: header of navigation tabs;
- tabactive: active tab open in the navigation tabs;
- tabinactive: inactive tab open in the navigation tabs;
- tabclose: tab close in the navigation tabs;
- tabfooter: footer of navigation tabs;
- menuheader: header of drop-down menus in the navigation tabs;
- menuitem: menu item open of drop-down menus in the navigation tabs;
- menuclose: menu item close;
- menufooter: footer of drop-down menus;
- sectionheader: table section header;
- param: single parameter record (table row);
- sectionfooter: table section footer;
- pagefooter: fixed page footer;
- files: supplementary files to be copied as-is.

Each section can contain some placeholder variables, that will be replaced during the HTML file generation.

Please see the `base.sitetempl` file for more information, and read the comments inside it.

#### 3.1 BASE TEMPLATE

This is default site template.

It provides:

- a tabbed navigation interface for first-level pages;
- drop-down menus under each tab for further page nesting levels;
- a Schneider logo on the top-right corner of the page;
- multiple tables sections inside the page;
- in each table the columns: *Address*, *Name*, *Value*, *Um*.

M171 Performance
Schneider Electric

### HVAC&R Solutions

**Analog inputs**

Address	Name	Value	Um
8338	High Pressure	<input type="text"/>	digit
8339	Low Pressure	<input type="text"/>	digit
8340	Evaporator exit temperature	<input type="text"/>	digit
8341	Evaporator entry temperature	<input type="text"/>	digit

**Digital inputs**

Address	Name	Value	Um
8198	Start Stop	<input type="text" value="0=External"/>	flag

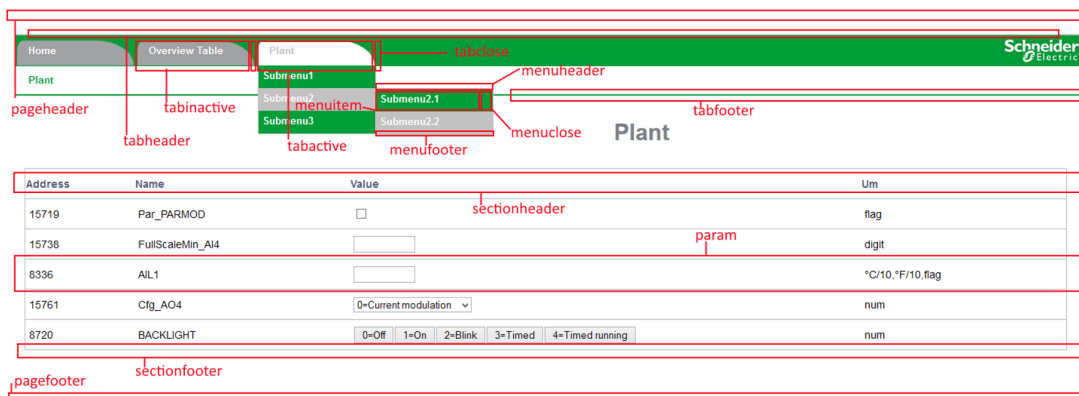
**Digital outputs**

Address	Name	Value	Um
8530	Compressor 1 command	<input type="text"/>	flag
8531	Compressor 2 command	<input type="text"/>	flag
8534	Water pump command	<input type="text"/>	flag

**Operation**

Address	Name	Value	Um
---------	------	-------	----

This is how each section of the `base.sitetempl` file is rendered in HTML:



The screenshot shows the following HTML annotations:

- Navigation Menu:**
  - `Home`, `Overview Table`, `Plant` (selected)
  - Submenu items: `Submenu1`, `Submenu2.1`, `Submenu2.2`, `Submenu3`
  - Labels: `tabclose`, `menuheader`, `tabfooter`, `tabheader`, `tabinactive`, `tabactive`, `menufooter`, `menuclose`
- Table Headers:**
  - `Address`, `Name`, `Value`, `Um`
  - Section header: `Plant`
- Table Content:**
  - Row 1: `15719`, `Par_PARMOD`, checkbox, `flag`
  - Row 2: `15738`, `FullScaleMin_A14`, , `digit`
  - Row 3: `8336`, `ALL1`, , `°C/10 °F/10,flag`
  - Row 4: `15761`, `Cfg_AO4`, dropdown menu (0=Current modulation), `num`
  - Row 5: `8720`, `BACKLIGHT`, radio buttons (0=Off, 1=On, 2=Blink, 3=Timed, 4=Timed running), `num`
- Page Elements:**
  - `pageheader` (top left)
  - `sectionheader` (above the table)
  - `param` (pointing to a value field)
  - `pagefooter` (bottom left)
  - `sectionfooter` (bottom left)

## 4. PAGE TEMPLATES

A “page template” is XML-based file that determines all the rules to build and represent a particular page, made for a particular purpose, that has a fixed number of parameters. By default SoMachine HVAC only installs the “Home” template, that is a start page for a typical Modicon m171 Perf. application, but the advanced users (with advanced knowledge of PPJS, XML, HTML) can write and use their own page templates.

All the templates must reside in the `Catalog\Modicon m171 Perf.\WebPageTemplates` folder, and have a `.PAGETEMPL` file extension.

It is made of the following sections:

- `templatedata`: these records will be inserted directly in the PPJS when adding this template page, to fill the grid;
- `extraheader`: text to be inserted in the `<head>` of the destination page: this contains the `<style>` for the page;
- `pagebody`: contents of the page body: this references the `<param>` below with the syntax `%PARAM_id%`;
- `extracgx`: text to be inserted in the destination CGX as-is;
- `params`: content for each specified parameter to be inserted in the `<pagebody>`, if used;
- `files`: supplementary files to be copied as-is.

Each section can contain some placeholder variables, that will be replaced during the HTML file generation.

Please see the `home.pagetempl` file for more information, and read the comments inside it.

### 4.1 HOME PAGE

This is a start page for a typical Modicon m171 Perf. application.

It features:

- 2 parameters for setting a value (for example a temperature setpoint) and 2 parameters for showing a read-only value (for example the current temperature);
- 1 write-only parameter for toggling the ON/OFF status, and 1 read-only parameter for reading its current status;
- 4 write-only parameters to request the activation of 4 different working modes, and 4 read-only parameters to show their status (for example HEAT, COOL, AUTO, TIME-BANDS);
- 1 read-only parameter to show the Alarms status;
- current date and time at the bottom of the page;
- a default set of images to show the various statuses.

Follows an example of a Home page for a real application:

Home Overview Table Plant Schneider Electric

Home

ON/OFF status

ON/OFF

HEAT Mode Request

COOL Mode Request

AUTO Mode Request

TimeBands

Temperature Probe 3276.3 °C

Humidity Probe -3276 %R.H.

Temperature Set 0.0 °C

Humidity Set 0 %R.H.

HEAT COOL AUTO

ALARMS

TimeBands Active

5 : 4

12 : 31