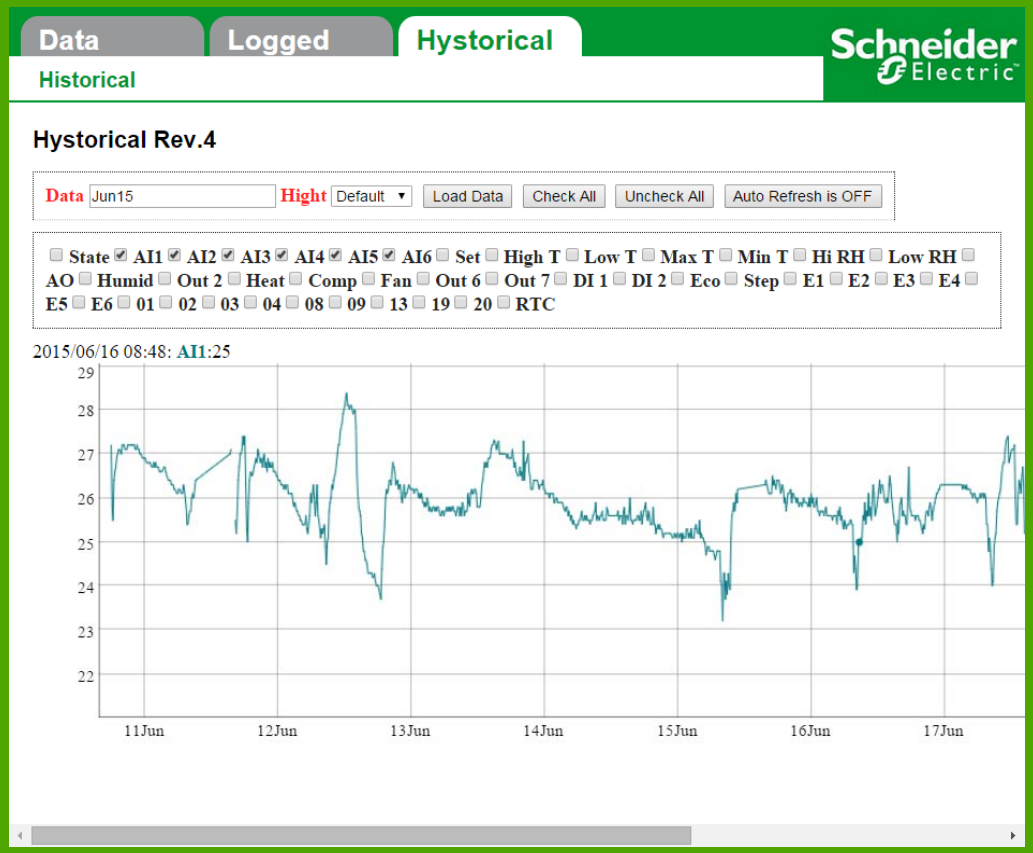
AVD HOW TO

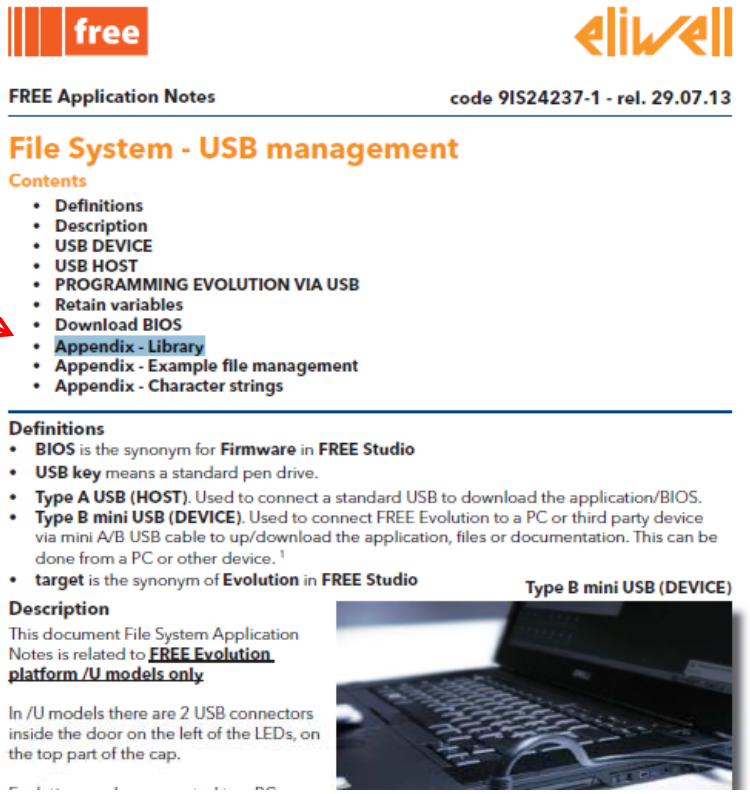
Use of Data Logger demo application



File system function overview

For a quick detail information about the **fs_iec library functions** reference to the document:
9IS24237-1_FileSystem_ApplicationNotes_EN_29.07.13.pdf **- Appendix - Library**

- sys_F_CLOSE
- sys_F_EOF
- sys_F_FILELENGTH
- sys_F_REMOVE
- sys_F_ROPEN
- sys_F_WOPEN
- sys_F_WOPENA
- sys_FA_READ
- sys_FA_WRITE
- sys_FM_READ
- sys_FM_WRITE



free

eliwell

FREE Application Notes **code 9IS24237-1 - rel. 29.07.13**

File System - USB management

Contents

- **Definitions**
- **Description**
- **USB DEVICE**
- **USB HOST**
- **PROGRAMMING EVOLUTION VIA USB**
- **Retain variables**
- **Download BIOS**
- **Appendix - Library**
- **Appendix - Example file management**
- **Appendix - Character strings**

Definitions

- **BIOS** is the synonym for **Firmware** in **FREE Studio**
- **USB key** means a standard pen drive.
- **Type A USB (HOST)**. Used to connect a standard USB to download the application/BIOS.
- **Type B mini USB (DEVICE)**. Used to connect FREE Evolution to a PC or third party device via mini A/B USB cable to up/download the application, files or documentation. This can be done from a PC or other device. [1]
- **target** is the synonym of **Evolution** in **FREE Studio**

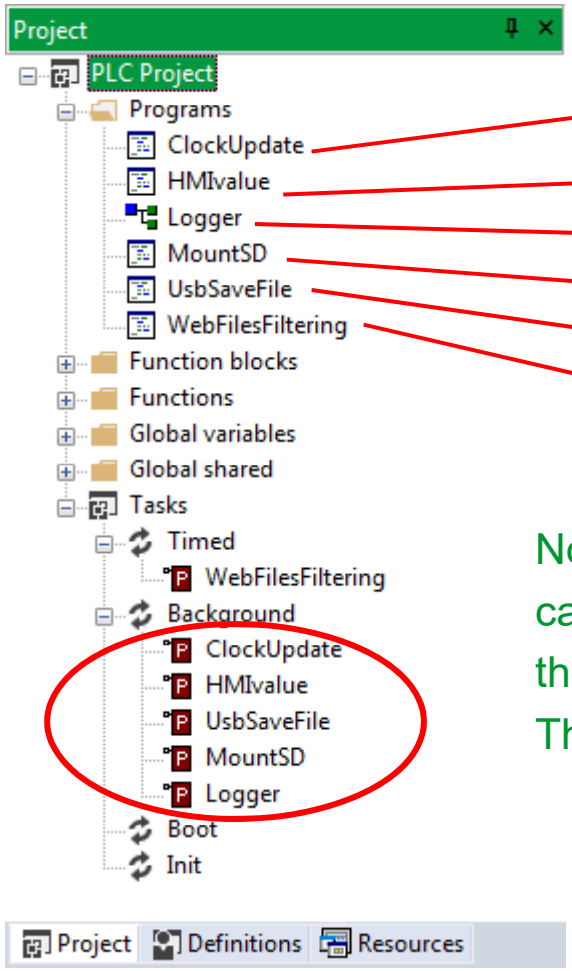
Description

This document File System Application Notes is related to **FREE Evolution platform /U models only**

In /U models there are 2 USB connectors inside the door on the left of the LEDs, on the top part of the cap.

Type B mini USB (DEVICE)

Data Logger Demo PLC-Programs



RTC clock Update utility (Optional)

HMI Value utility (Optional)

Data Collection and File management program

Utility to mount and remove SDcard in safety

Save the logged file base on a selected period

Load/Clear extension list for listable file from Web browser

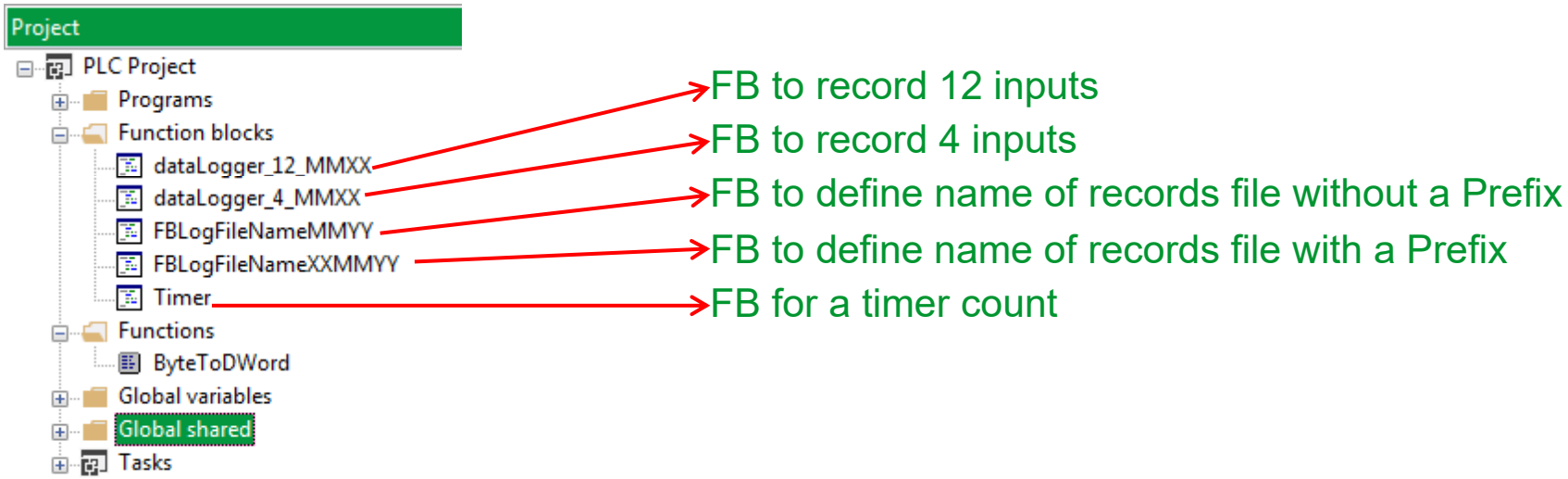
Note: The Demo application program **DataLoggerDemo_Rev10.zip** can be used to import to an exiting application the logging programs, the status variable and parameters.

The logging program shall be called in the Background task as in the Demo application.

Data Logger Demo FB imports

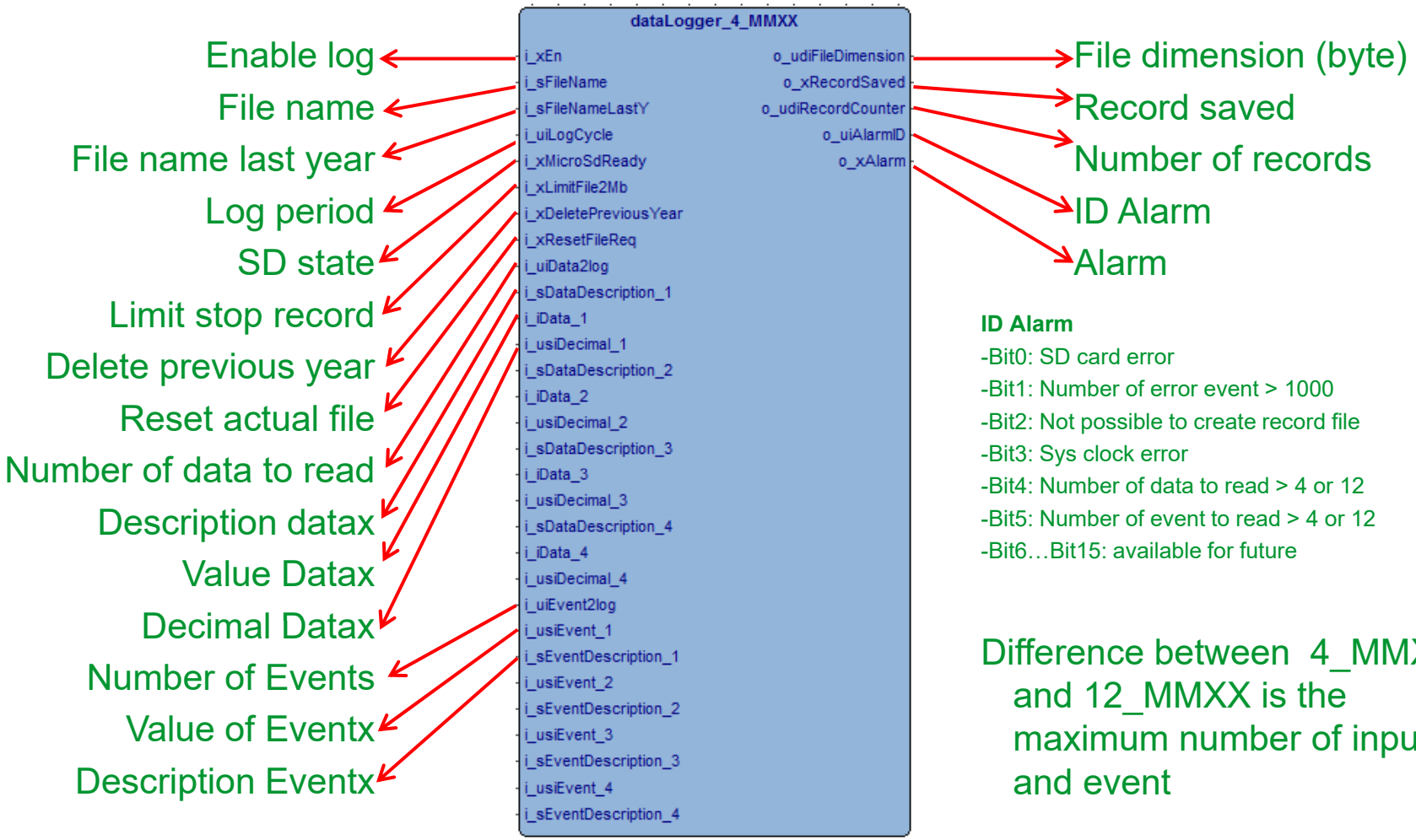
Import also following Functional Block:

- Data record
- Filename definition



FB DataLogger_4_MMXX /12_MMXX

dataLogger_4_MMXX / dataLogger_12_MMXX



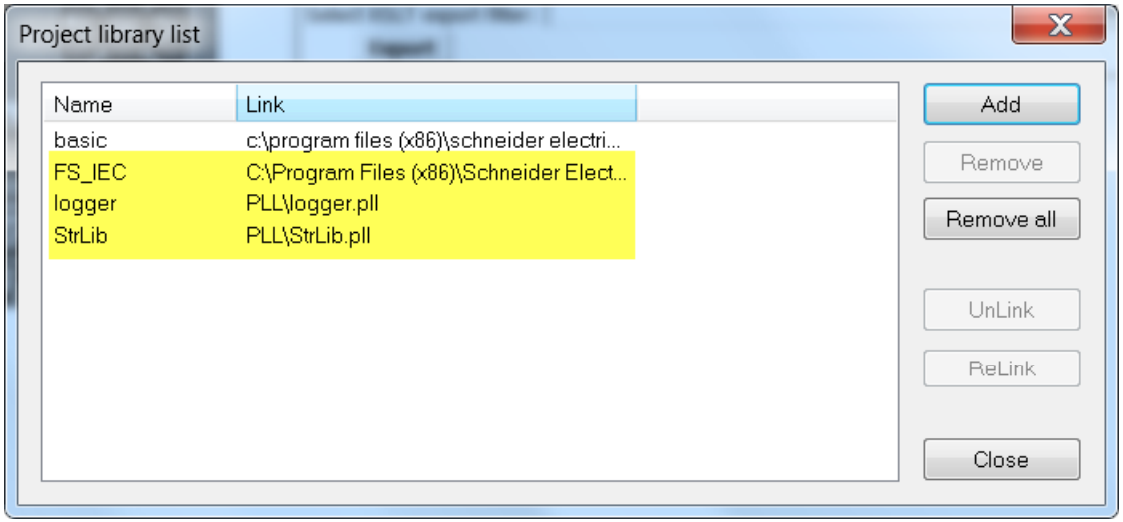
ID Alarm

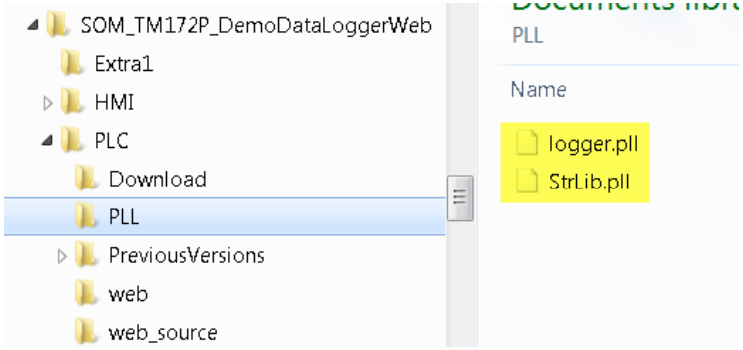
-Bit0: SD card error
-Bit1: Number of error event > 1000
-Bit2: Not possible to create record file
-Bit3: Sys clock error
-Bit4: Number of data to read > 4 or 12
-Bit5: Number of event to read > 4 or 12
-Bit6…Bit15: available for future

Difference between 4_MMXX and 12_MMXX is the maximum number of input and event

Data Logger Demo Upgrade of Logger V2

To add the data Logger option in your exiting application, add first the highlighted libraries



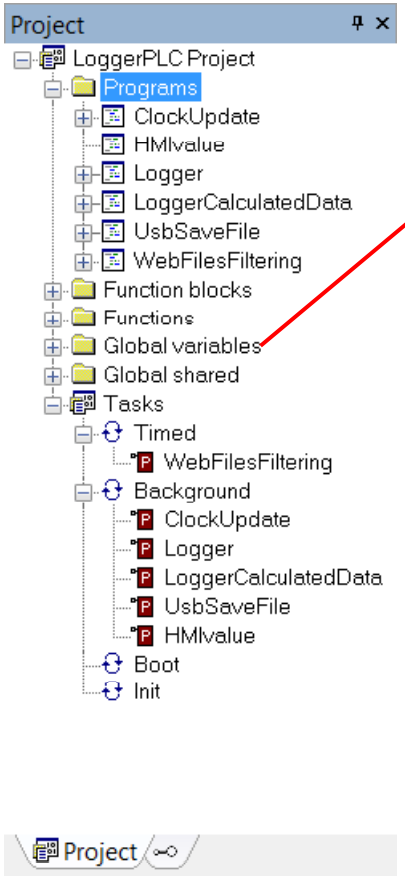


If You have already import to an existing project a previous release of the data logger demo
You have to replace the Logger program with the new one of the **DataLoggerDemo_Rev10.zip**.

Remember to connect the logger data array with your application data
and also change the file header string.

Data Logger Demo PLC-Global Variable

Import the Data Logger demo global variables



	Name	Type	Address	Group	Array	Init value	Attribute	Description
1	SD_YET_MOUNTED	UINT	Auto	Ungrouped_vars	No	8	CONSTANT	
2	SD_UNSAFE_REMOVED	UINT	Auto	Ungrouped_vars	No	1	CONSTANT	
3	SD_RUNNING	UINT	Auto	Ungrouped_vars	No	4	CONSTANT	
4	SD_RETRY	UINT	Auto	Ungrouped_vars	No	7	CONSTANT	
5	SD_RELEASE_SD	UINT	Auto	Ungrouped_vars	No	6	CONSTANT	
6	SD_READY_TO_MOUNT	UINT	Auto	Ungrouped_vars	No	2	CONSTANT	
7	SD_READY	UINT	Auto	Ungrouped_vars	No	3	CONSTANT	
8	SD_NOT_PRESENT	UINT	Auto	Ungrouped_vars	No	0	CONSTANT	
9	SD_INSERT_SD	UINT	Auto	Ungrouped_vars	No	5	CONSTANT	

Data Logger Demo PLC-Parameter

PLC Parameter table

To integrate the data logger in Your existing application import all the parameter from the demo application

EEPROM Parameters

Add Remove Recalc

#	Address	Name	Device type	Application type	Size	Default value	Min	Max	Scale	Offset	Unit
1	16384	LogEnable	Boolean	BOOL		False			1	0	
2	16385	LogCycle	Unsigned 16-bit	UINT		60			1	0	Sec
3	16386	LogCycle2	Unsigned 16-bit	UINT		120			1	0	Sec
4	16387	DescriptionData1	String	STRING	12	AI 1			1	0	
5	16394	DescriptionData2	String	STRING	12	AI 2			1	0	
6	16401	DescriptionData3	String	STRING	12	AI 3			1	0	
7	16408	DescriptionData4	String	STRING	12	AI 4			1	0	
8	16415	DescriptionData5	String	STRING	12	AI 5			1	0	
9	16422	DescriptionData6	String	STRING	12	AI 6			1	0	
10	16429	DescriptionData7	String	STRING	12	AI 7			1	0	
11	16436	DescriptionData8	String	STRING	12	AI 8			1	0	
12	16443	DescriptionData9	String	STRING	12	AI 9			1	0	
13	16450	DescriptionData10	String	STRING	12	AI 10			1	0	
14	16457	DescriptionData11	String	STRING	12	AI 11			1	0	
15	16464	DescriptionData12	String	STRING	12	AI 12			1	0	
16	16471	DescriptionEvent1	String	STRING	12	Event 1			1	0	
17	16478	DescriptionEvent2	String	STRING	12	Event 2			1	0	
18	16485	DescriptionEvent3	String	STRING	12	Event 3			1	0	
19	16492	DescriptionEvent4	String	STRING	12	Event 4			1	0	
20	16499	DescriptionEvent5	String	STRING	12	Event 5			1	0	
21	16506	DescriptionEvent6	String	STRING	12	Event 6			1	0	
22	16513	DescriptionEvent7	String	STRING	12	Event 7			1	0	
23	16520	DescriptionEvent8	String	STRING	12	Event 8			1	0	
24	16527	DescriptionEvent9	String	STRING	12	Event 9			1	0	
25	16534	DescriptionEvent10	String	STRING	12	Event 10			1	0	
26	16541	DescriptionEvent11	String	STRING	12	Event 11			1	0	
27	16548	DescriptionEvent12	String	STRING	12	Event 12			1	0	
28	16555	EnableData1	Boolean	BOOL		True			1	0	
29	16556	EnableData2	Boolean	BOOL		True			1	0	
30	16557	EnableData3	Boolean	BOOL		True			1	0	

Log parameter

Label of data inside records file. Header file is updated with this labels after a power on and a creation file

Data Logger Demo PLC-Parameter

PLC Parameter table

To integrate the data logger in Your existing application import all the parameter from the demo application

EEPROM Parameters

Add Remove Recalc

#	Address	Name	Device type	Application type	Size	Default value	Min	Max	Scale	Offset	Unit
26	16541	DescriptionEvent11	String	STRING	12	Event 11			1	0	
27	16548	DescriptionEvent12	String	STRING	12	Event 12			1	0	
28	16555	EnableData1	Boolean	BOOL		True			1	0	
29	16556	EnableData2	Boolean	BOOL		True			1	0	
30	16557	EnableData3	Boolean	BOOL		True			1	0	
31	16558	EnableData4	Boolean	BOOL		True			1	0	
32	16559	EnableData5	Boolean	BOOL		True			1	0	
33	16560	EnableData6	Boolean	BOOL		True			1	0	
34	16561	EnableData7	Boolean	BOOL		True			1	0	
35	16562	EnableData8	Boolean	BOOL		False			1	0	
36	16563	EnableData9	Boolean	BOOL		False			1	0	
37	16564	EnableData10	Boolean	BOOL		False			1	0	
38	16565	EnableData11	Boolean	BOOL		False			1	0	
39	16566	EnableData12	Boolean	BOOL		False			1	0	
40	16567	MinValLog1	Signed 16-bit	INT		10			1	0	°C
41	16568	MaxValLog1	Signed 16-bit	INT		90			1	0	°C
42	16569	MinValLog2	Signed 16-bit	INT		5			1	0	°C
43	16570	MaxValLog2	Signed 16-bit	INT		40			1	0	°C
44	16571	MinValLog3	Signed 16-bit	INT		-250			1	0	°C
45	16572	MaxValLog3	Signed 16-bit	INT		-180			1	0	°C
46	16573	StartMonth	Unsigned 8-bit	USINT		1	1	12	1	0	
47	16574	Startyear	Unsigned 8-bit	USINT		15		99	1	0	
48	16575	EndMonth	Unsigned 8-bit	USINT		1	1	12	1	0	
49	16576	Endyear	Unsigned 8-bit	USINT		16	Startyear	99	1	0	

Enable read

Min and Max to records allarm

Start/End date for USB saving

Data Logger Demo PLC-Status Variable

To integrate the data logger in Your existing application import all the Status Variable from the demo application

#	Add...	Name	Device type	Applic...	Default value	Min	Max
1	8960	Data1	Signed 16-bit	INT			
2	8961	Data2	Signed 16-bit	INT			
3	8962	Data3	Signed 16-bit	INT			
4	8963	Data4	Signed 16-bit	INT			
5	8964	Data5	Signed 16-bit	INT			
6	8965	Data6	Signed 16-bit	INT			
7	8990	SaveUsb	Boolean	BOOL	False		
8	8992	seconds	Unsigned 8-bit	USINT	0	0	59
9	8993	minutes	Unsigned 8-bit	USINT	0	0	59
10	8994	hours	Unsigned 8-bit	USINT	0	0	23
11	8995	dayweek	Unsigned 8-bit	USINT	0	0	6
12	8996	daymonth	Unsigned 8-bit	USINT	1	1	31
13	8997	month	Unsigned 8-bit	USINT	1	1	12
14	8998	year	Unsigned 8-bit	USINT	12	0	99
15	8999	sysclockupdate	ClockEnum	USINT	Current Clock		
16	9021	UsbStatus	Unsigned 8-bit	USINT			
17	9022	SavingInProgress	Boolean	BOOL	False		
18	9023	SaveOk	Unsigned 16-bit	UINT			
19	9024	SaveFailed	Unsigned 16-bit	UINT			
20	9025	SavePercent	Unsigned 16-bit	UINT			
21	9026	SavingAllowed	Boolean	BOOL	False		
22	9027	LoggingError	Boolean	BOOL	False		
23	8966	FileDimension	Unsigned 32-bit	UDINT			
24	8968	TotalRecordE2retain	Unsigned 32-bit	UDINT			

HMI data value

USB utility

RTC Upgrade value

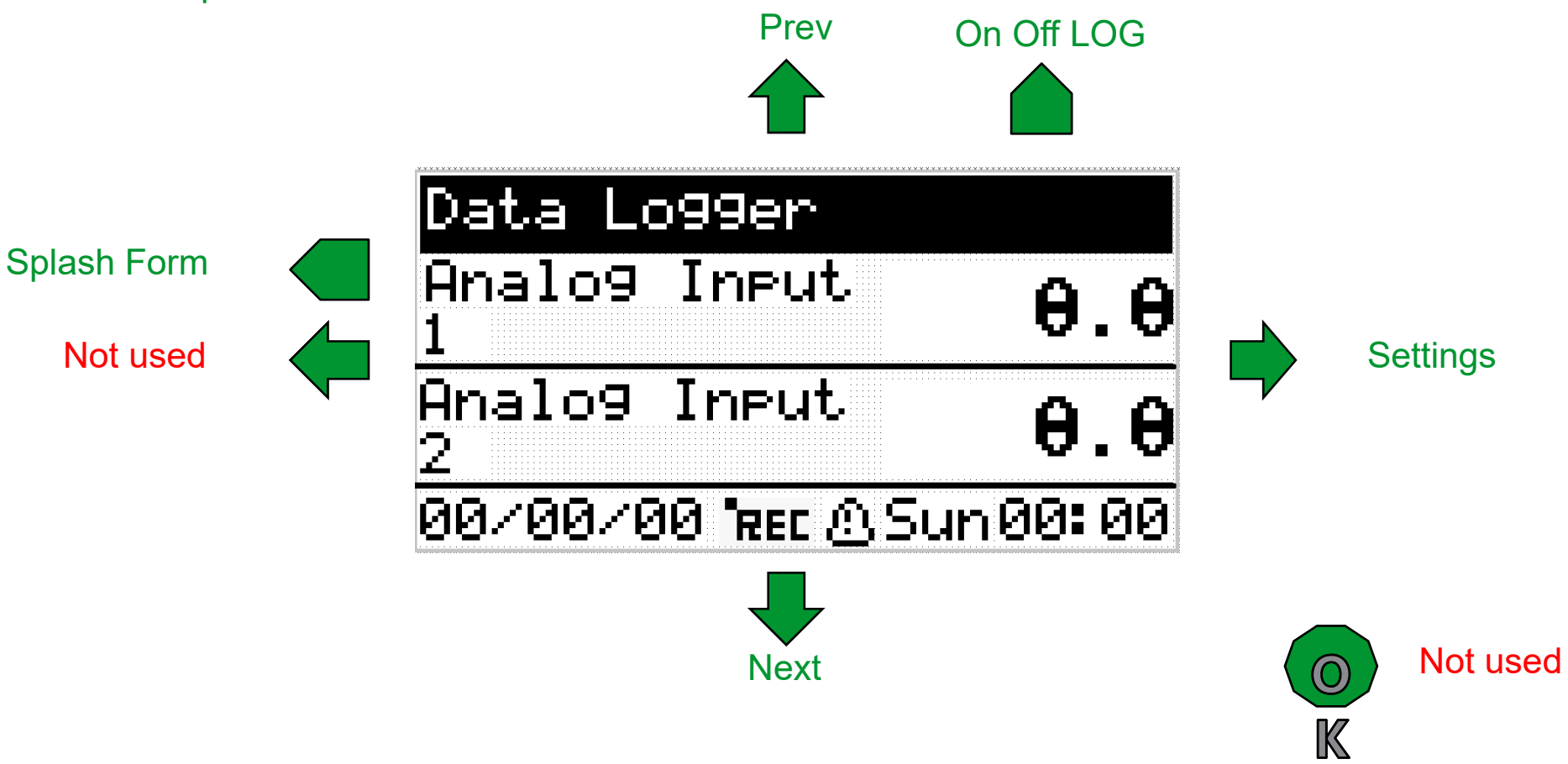
USB utility

Log info

Data Logger demo application HMI

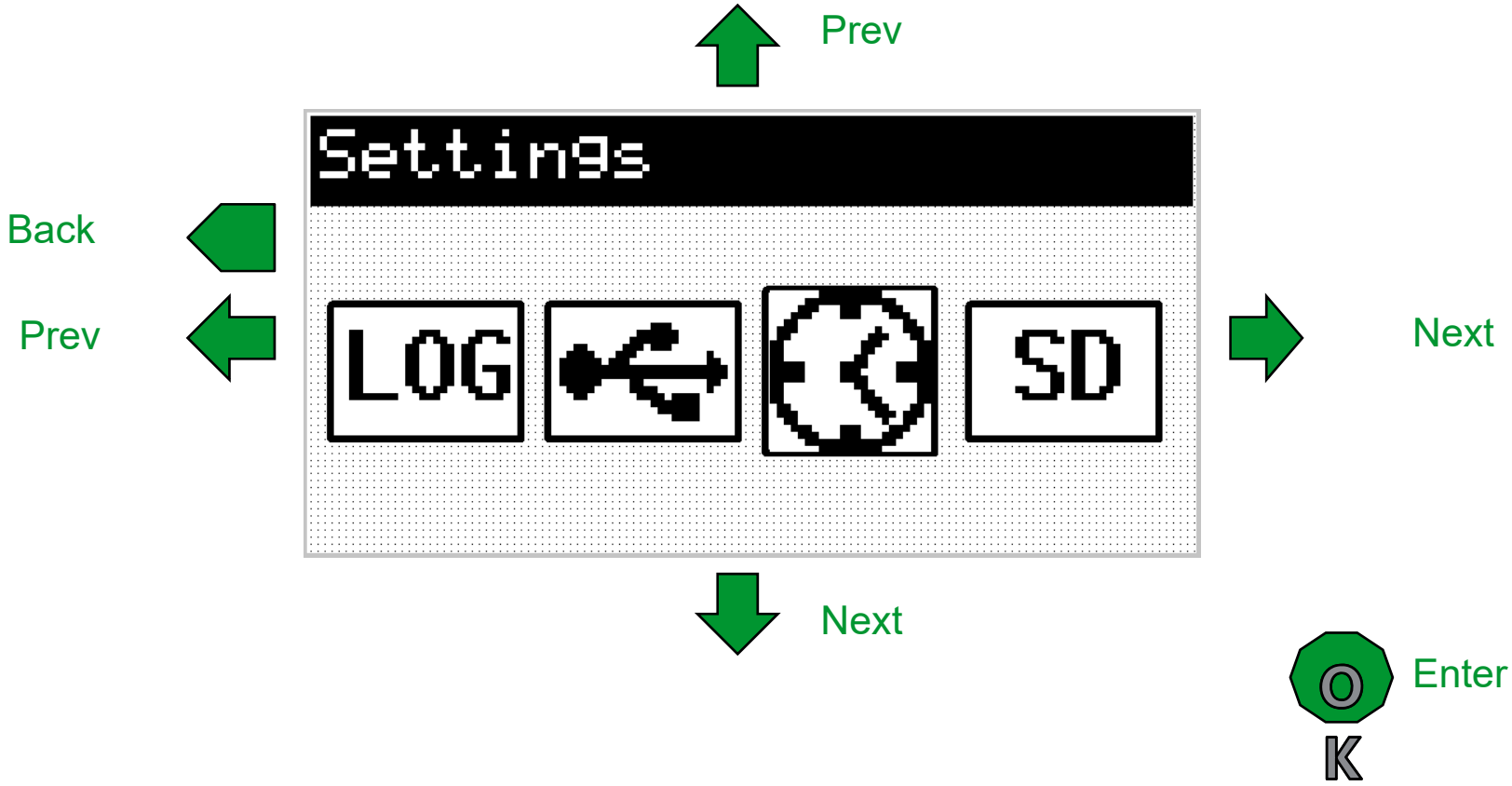
Data Logger Demo HMI-Form main

Main Form Options



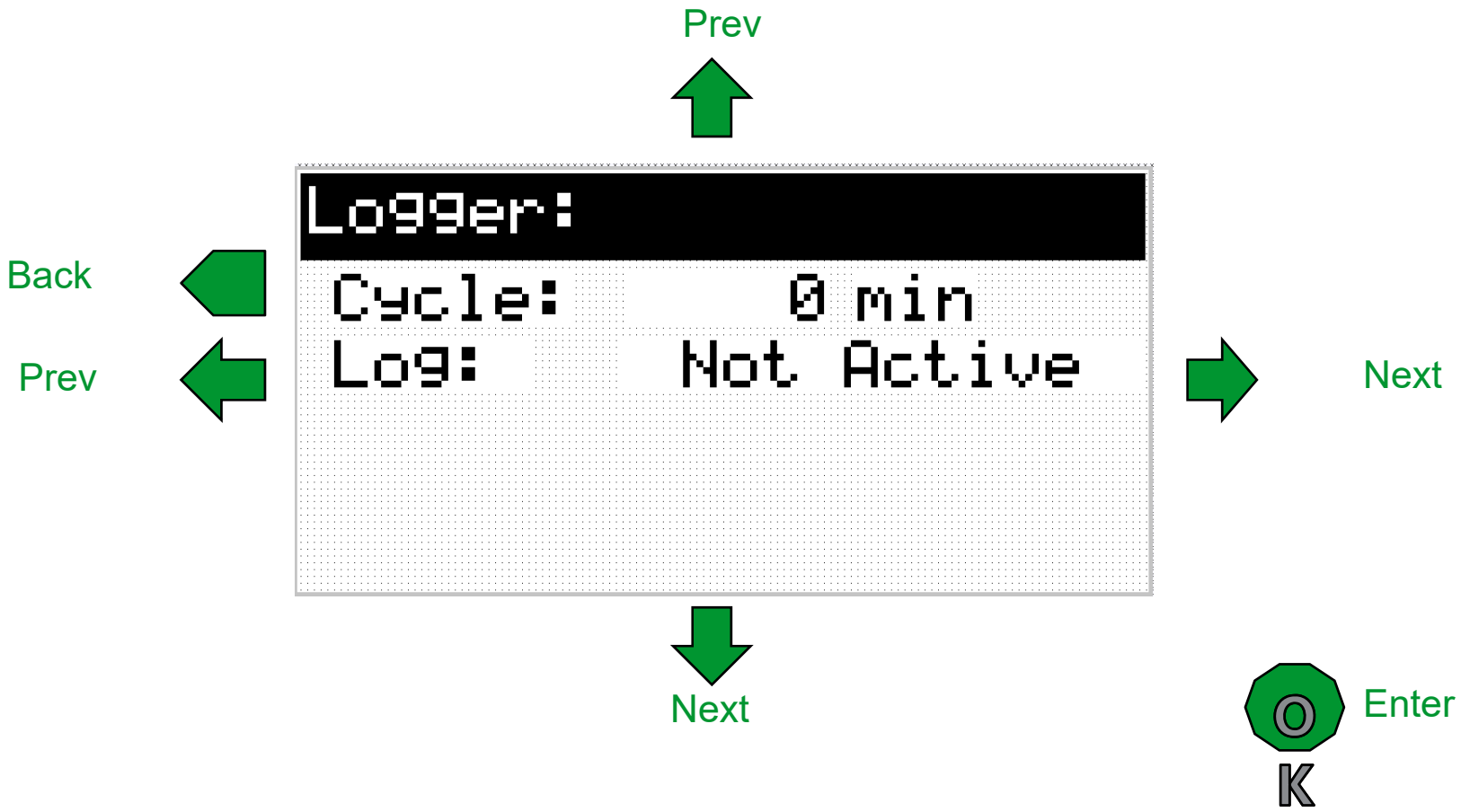
Data Logger Demo HMI-Form Settings

Settings Form Options: Log settings, USB export, RTC and microSD



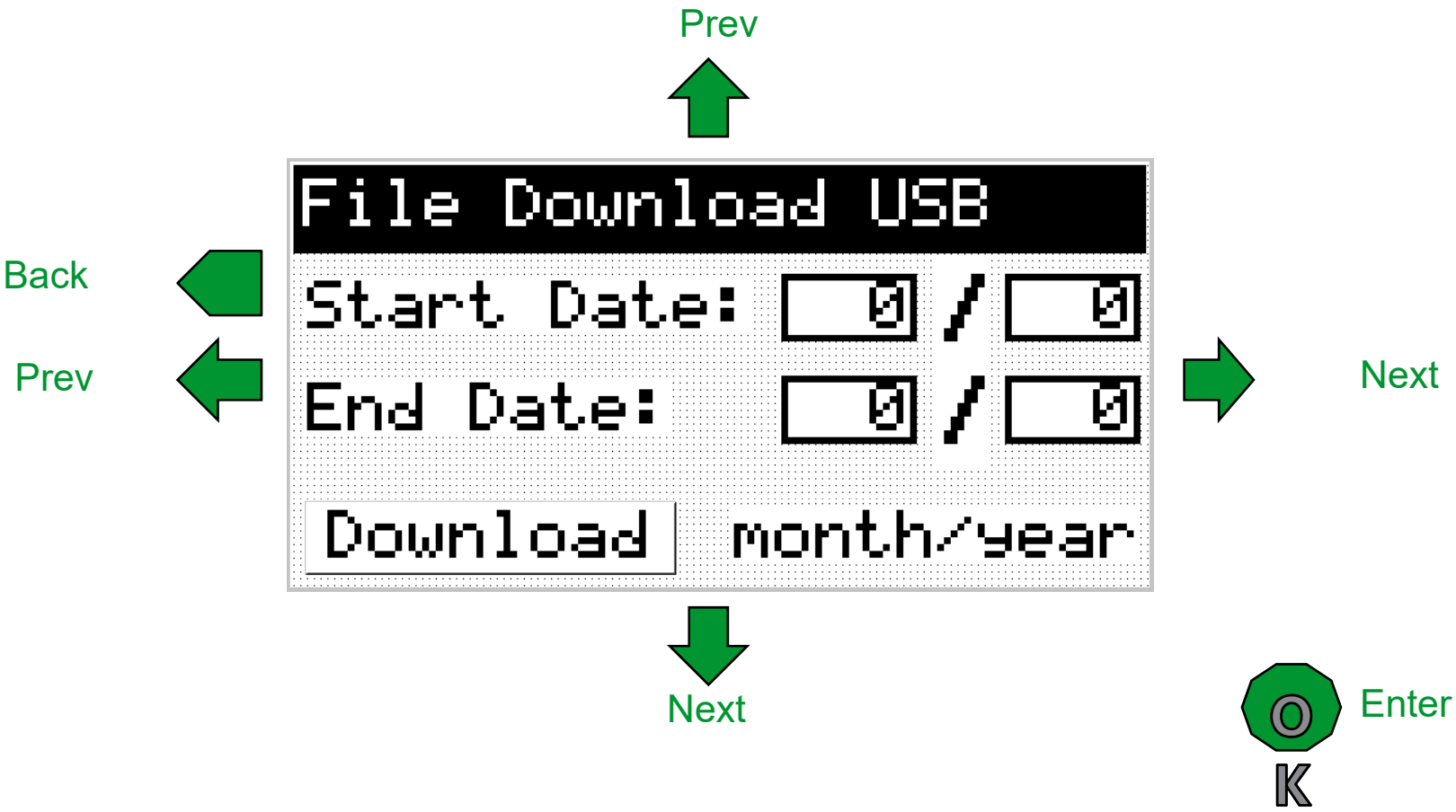
Data Logger Demo HMI-Form Logger

Logger Form Options



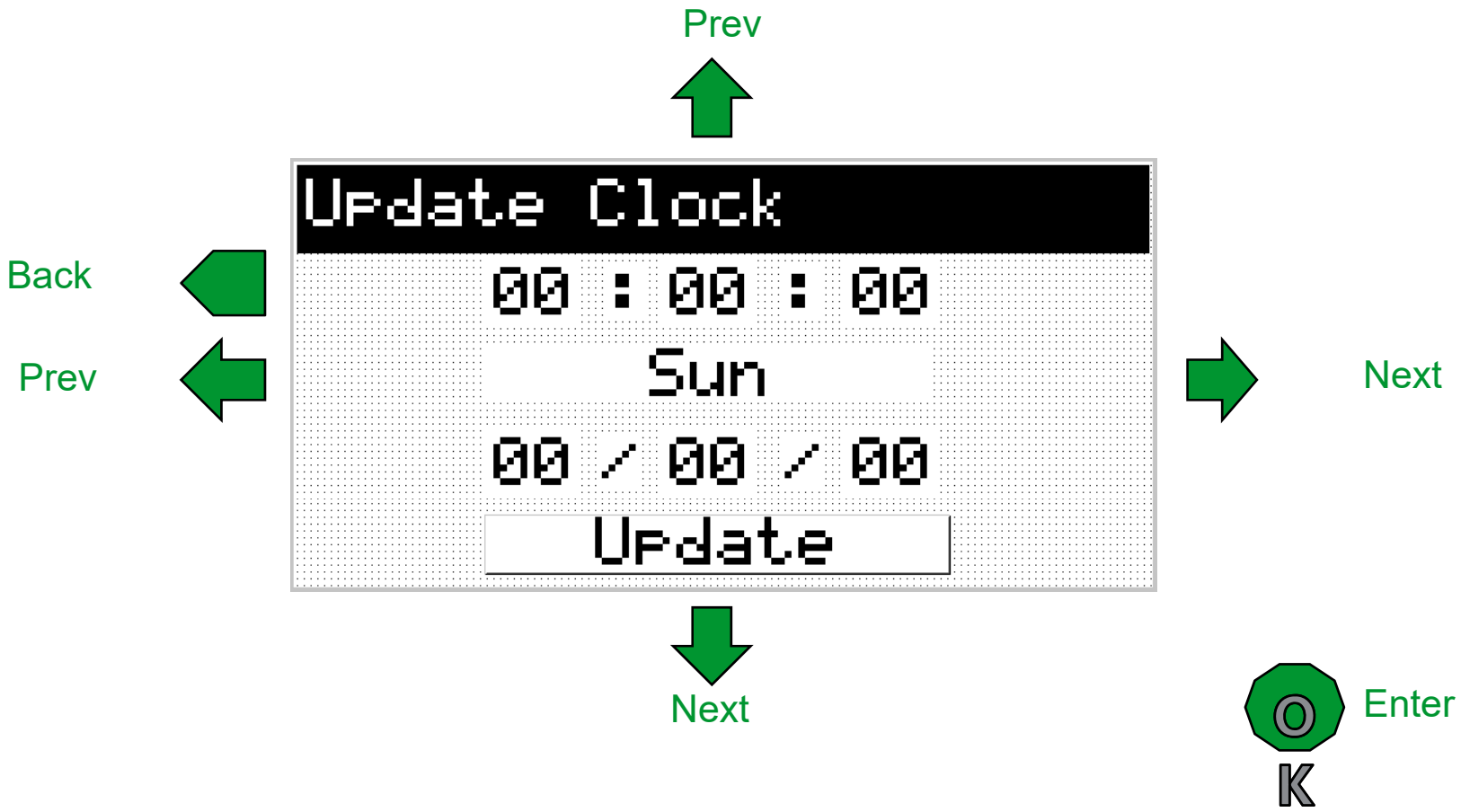
Data Logger Demo HMI-Form Download USB

Download USB Form Options



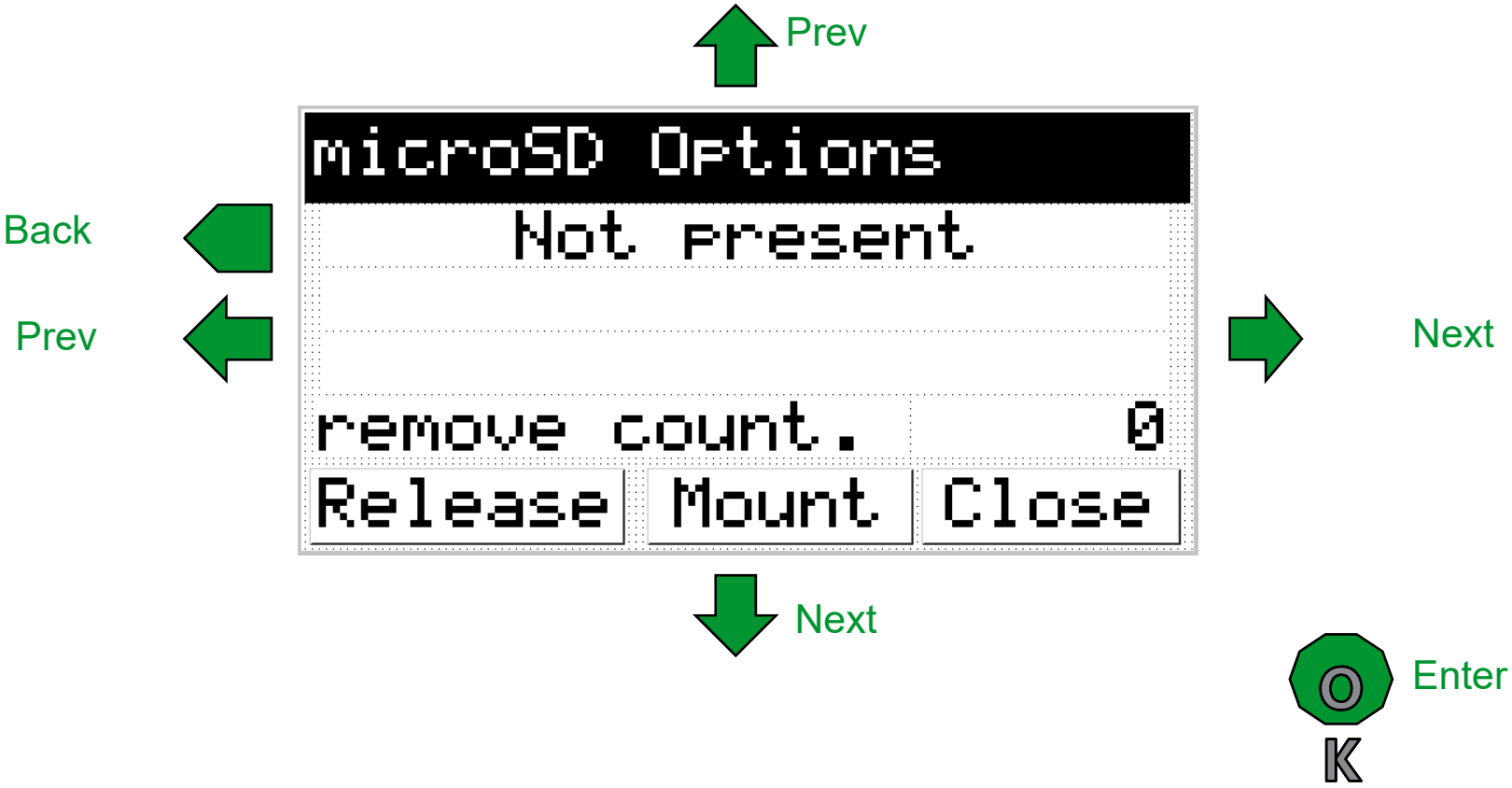
Data Logger Demo HMI-Form Update Clock

Update Clock Form Options



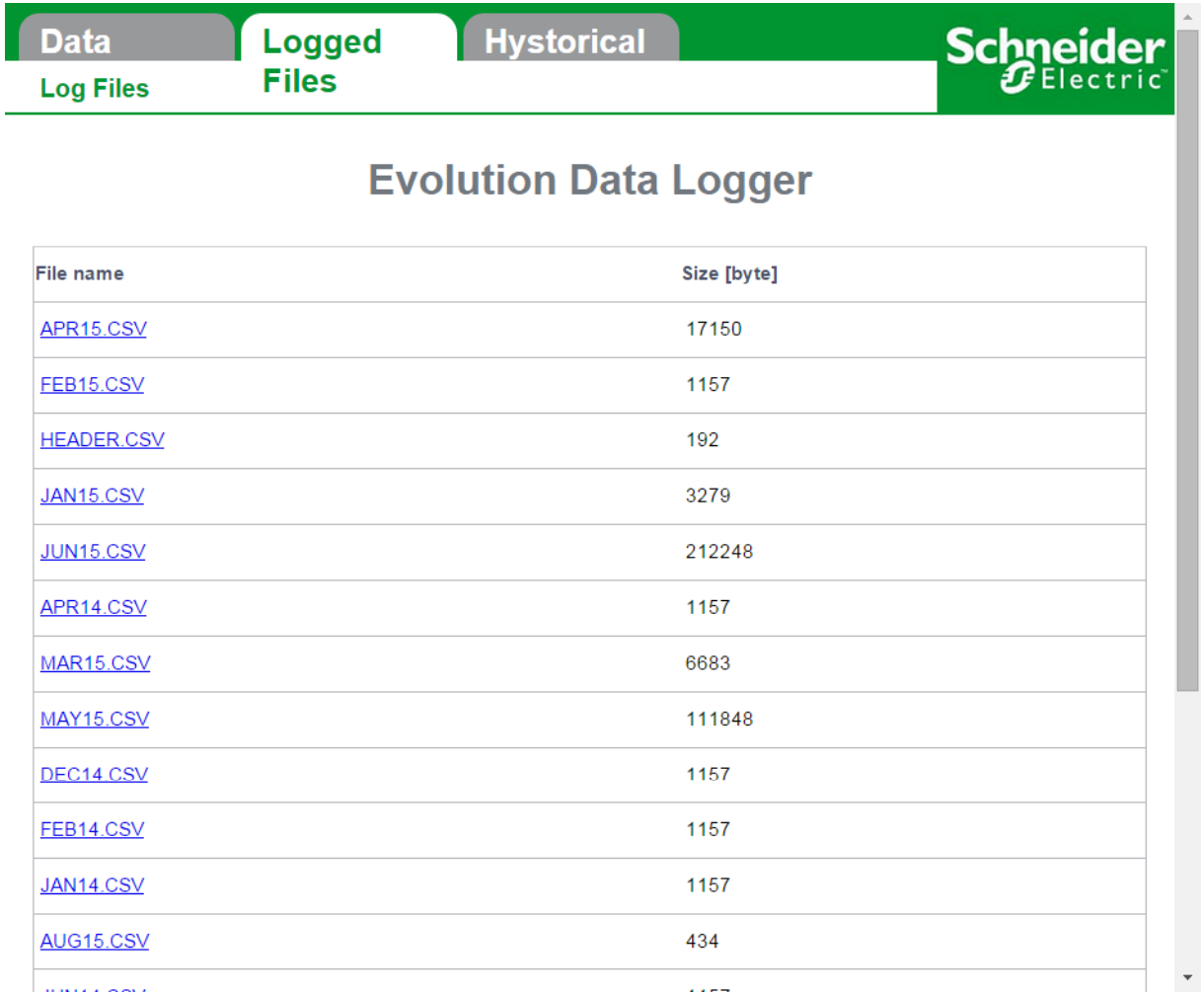
Data Logger Demo HMI-MicroSD manager

This form will be automatically show in case of plug in/out of the microSD.



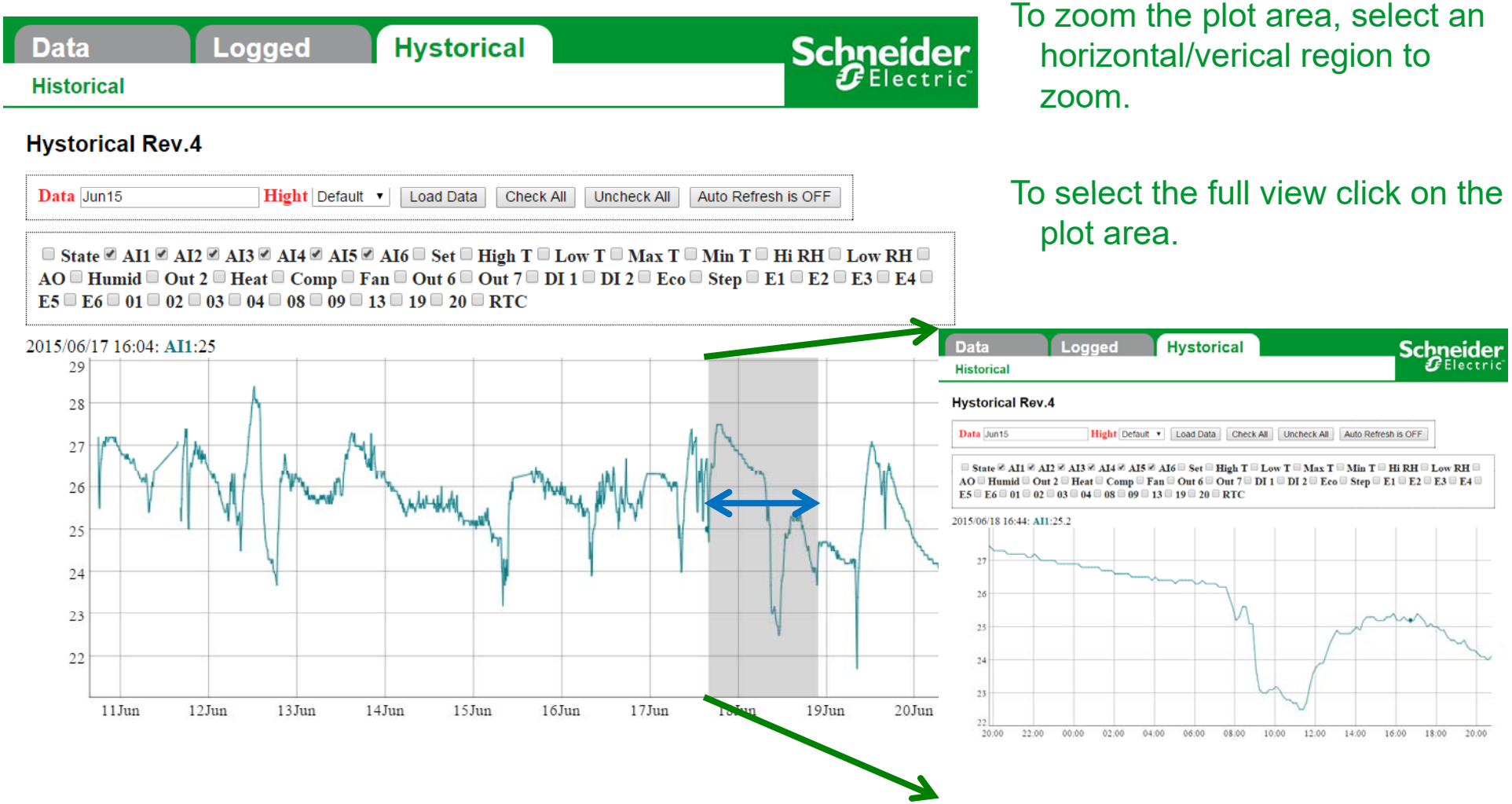
Data Logger demo Web Server

Data Logger Demo WEB



Click to download the logged file

Data Logger Demo WEB Zoom



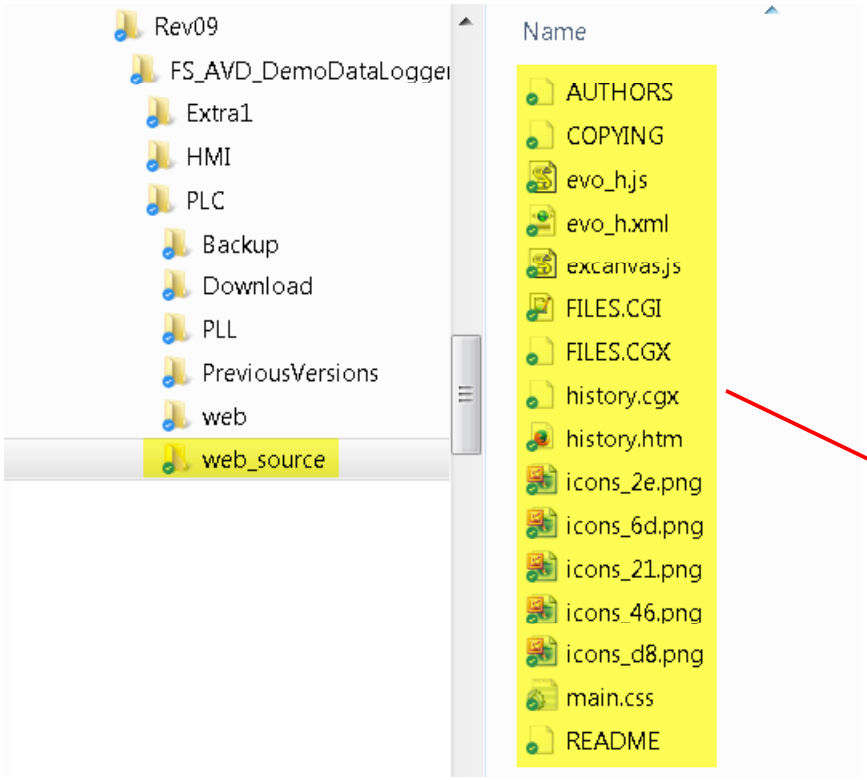
To zoom the plot area, select an horizontal/verical region to zoom.

To select the full view click on the plot area.

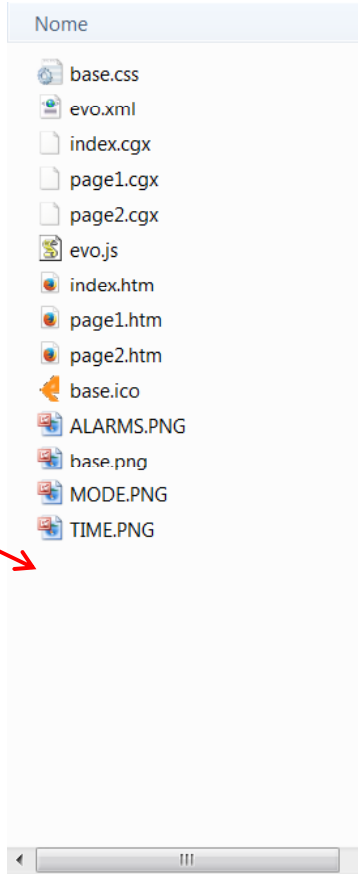
Data Logger integration to existing application

Copy the selected file from the “web_source” folder of the demo project to the existing Web application

Demo Logger



Existing application



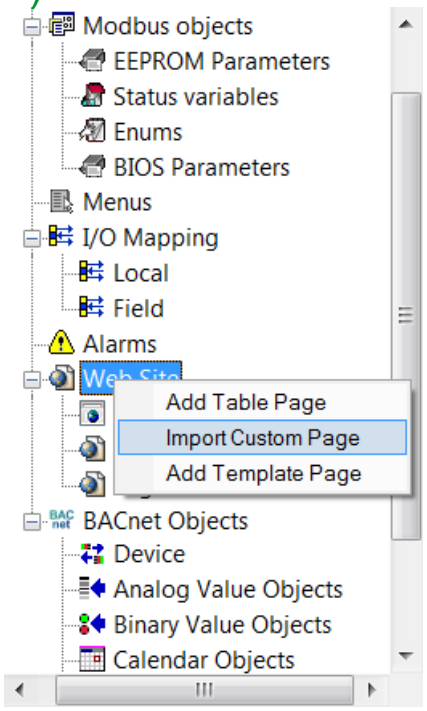
Data Logger integration to existing application

1), 2) Import the custom pages “FILES.CGI” and “history.htm”

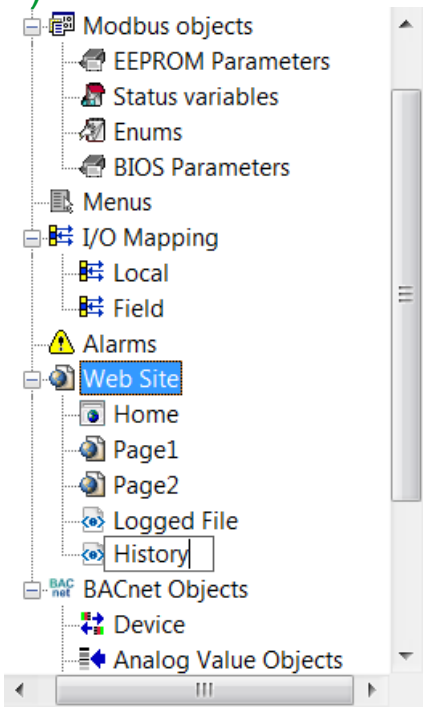
3) Select the file from the folder “web_source”.

4) Build the web site. And download it from Device.

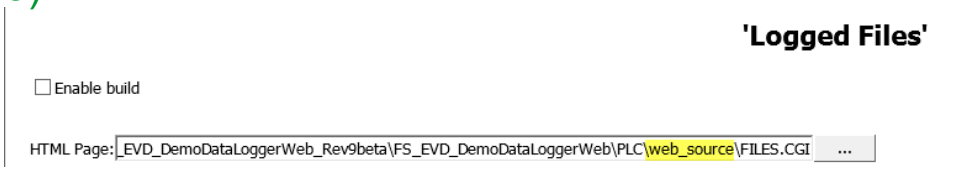
1)



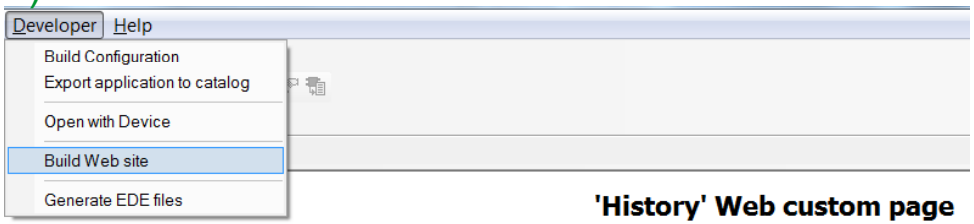
2)



3)



4)



Data Logger integration to existing application

Copy from an automatically generate page like Index.html the navigation menu structure into the two custom page “FILES.CGI” and “history.htm”

```
<body>

    <ul class="menu">
        <li class="tabmenu tabmenu_on"><a href="#">Home</a>  </li>
        <li class="tabmenu tabmenu_off"><a href="page1.htm">Page1</a>  </li>
        <li class="tabmenu tabmenu_off"><a href="page2.htm">Page2</a>  </li>
        <li class="tabmenu tabmenu_off"><a href="files.cgi">Logged File</a>  </li>
        <li class="tabmenu tabmenu_off"><a href="history.htm">History</a>  </li>
    </ul>
    <div class="menubottom">Home</div>

    <p class='title'>CUSTOMER NAME</p>

    <form action='index.htm' method='get' id='form1' name='form1' onsubmit='return false'>
    <div class='pagebody'>
```

The tag “tabmenu” has to be modifyed according with current page (eg. If “history.html” it sould be set to _on and the other to _off)

```
<ul class="menu">
    <li class="tabmenu tabmenu_on"><a href="#">Home<
    <li class="tabmenu tabmenu_off"><a href="page1.h
```

Thanks