



Application note

Display script
with WebdynSunPM

Introduction

This application note describes how to configure the WebdynSunPM product for a display of production values on a billboard and how to retrieve the values by webservice.

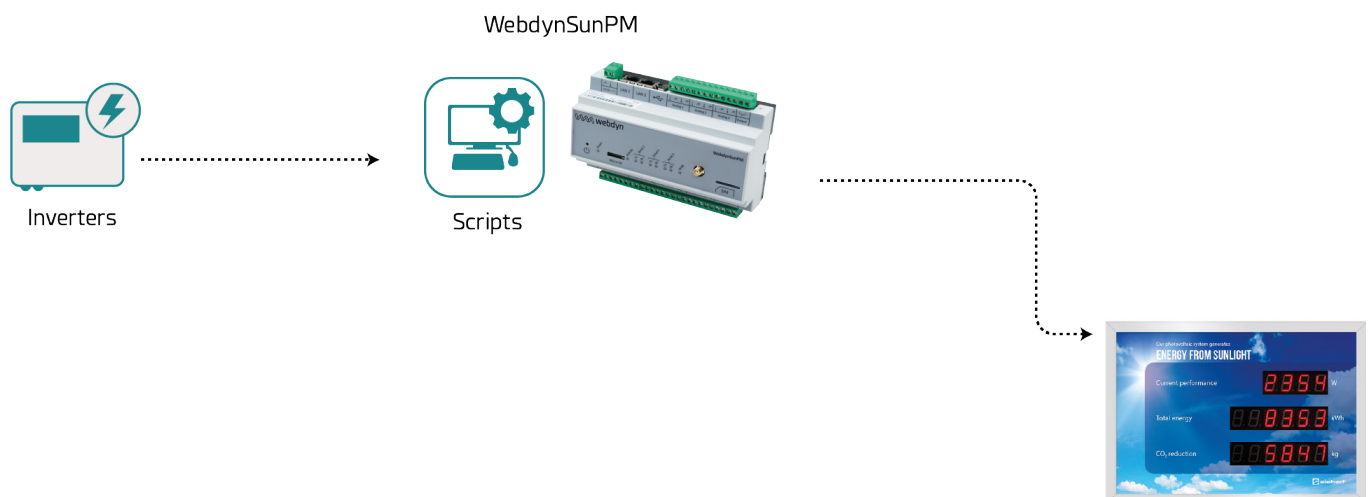
Expression of needs

A solar production site uses a fleet of inverters whose power, energy, carbon and factor information of power (Cos Phi) will have to be read and communicated to a large format display.

Synoptic

Production control is carried out locally via a LUA scenario that:

- Analyzes the power of the site.
- Analyzes energy production.
- Analyzes the power factor (Cos Phi)
- Calculate the carbon value
- Displays power, power output, carbon value, power factor (Cos Phi) on a large format display.



Requirements

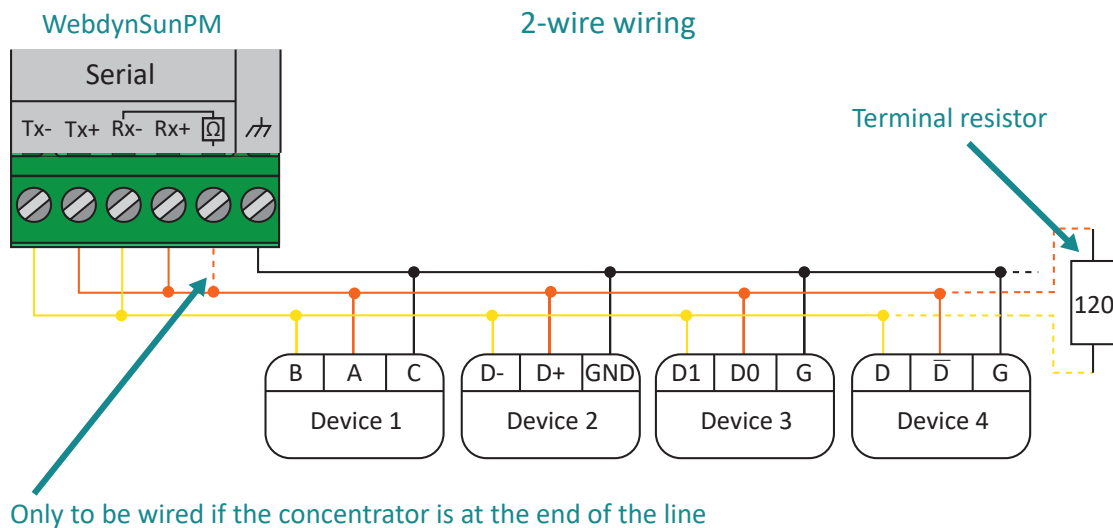
To use, understand and/or configure the display script, it is essential to have:

- A WebdynSunPM
- A functional installation including inverters, a parameterized WebdynSunPM hub and a large format display
- The last updated user manual of the WebdynSunPM,
- The LUA user guide of the WebdynSunPM available.

Typical wiring

2-wire RS485 cabling (Half-Duplex):

This is the most common way to use the RS485 standard. Only one pair of wires is used for transmitting and receiving data. Several devices are linked as buses, as shown in the following figure. Different RS485 devices use different notations to indicate the correct form of differential communication pair connection. The following figure shows some of the notations used.



LUA Script

The script must be adapted according to your site and equipment. You can import the script through the web interface (see chapter 3.2.3.1: “Script” of the WebdynSunPM manual) or by the remote server (see chapter 3.1.2.1.4: “File “_scl.ini”” and chapter 4.1.6: “”SCRIPT scripts” of the WebdynSunPM manual).

Script log files are available on the hub. It can be useful to use them to follow the evolution of the display script. (See chapter 4.1.8.2: “script logs” of the WebdynSunPM manual).

Parameters has filled in (“Script args” on the product web interface):

- Coefficient for carbon calculation (default 0.7)
- Maximum power of the site in kW

The commissioning stages

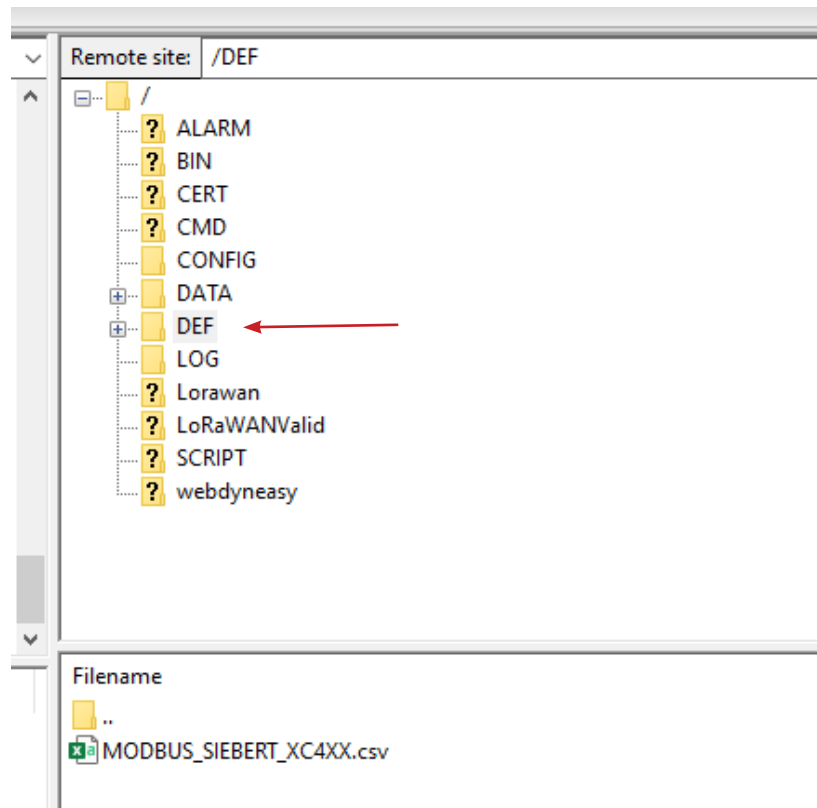
- Addition of inverters
- Addition of the display (the display will always have a red status on the Home page because we only write on it)
- Adding tags in the UPS definition file* (see below the tags)
- Adding tags in the viewer definition file*
- Setting of the display. Make sure you have correctly set the display (Modbus Communication)
- Added the script + starting the script (See in the magnifying glass if the script does not start for more information)
- See if the values are displayed correctly on the display

**Some definition files are present in the gateway with tags.*

Configuration according to the installation

A tag allows for each equipment the identification of a variable. It is therefore necessary to set them for each of the inputs that will be used, as well as the variables allowing the on/off control of the inverters.

Equipment tags are written in . CSV of the DEF file



It is imperative to respect the following naming:

UPS category type: Inverter (Cell B1 of the definition file)

- Register tag of the variable Pac power in kW: Watts
- Register tag of the variable Eac total energy in kWh): WattHours
- Register tag of the variable PwrFactor power factor: CosPhi

	A	B	C	D	E	F	G
1	modbusR	Inverter	HUAWEI	V3			
68	67	3	32067	U16		Volt L2 to 3_Ubc	
69	68	3	32068	U16		Volt L3 to 1_Uca	
70	69	3	32069	U16		Volt 1_Ua	
71	70	3	32070	U16		Volt 2_Ub	
72	71	3	32071	U16		Volt 3_Uc	
73	72	3	32072	I32		Current1_Ia	
74	73	3	32074	I32		Current2_Ib	
75	74	3	32076	I32		Current3_Ic	
76	75	3	32078	I32		Active power peak of current day	
77	76	3	32080	I32		Active power	Watts
78	77	3	32082	I32		Reactive_power	
79	78	3	32084	I16		Power factor	CosPhi
80	79	3	32085	U16		Frequency	
81	80	3	32086	U16		Inverter efficiency	
82	81	3	32087	I16		Cabinet temperature	
83	82	3	32088	U16		Insulation resistance	
84	83	3	32089	U16		Device status	
85	84	3	32090	U16		Fault code	
86	85	3	32091	U32		Startup time	
87	86	3	32093	U32		Shutdown time	
88	87	3	32106	U32		Energy_total	WattHours
89	88	3	32114	U32		Energy yield of current day	

Example of a Huawei UPS definition file:

Display Name: **Display**

- Register tag of the variable display Pac power in watt: **Pac-Tag**
- Register tag of the Eac energy display variable in watts / hour: **Eac-Tag**
- Register tag of the Carb display variable: **Carb-Tag**
- Register tag of the display variable PwrFactor: **PwrFactor-Tag**

Example of a Siebert display definition file with instantaneous power display and cumulative energy:

modbusRTU	Other	SIEBERT	XC4XX						
1	3	1	U32_W		Puissance instantanée	Pac-Tag	1	0	4
2	3	3	U32_W		Energie journalière		1	0	4
3	3	5	U32_W		Energie cumulée	Eac-Tag	1	0	4

Unit of values recorded

Active power in kW

Total energy in kWh

Power factor (Cos Phi) between 0 and 1

Carbon coefficient between 0 and 1

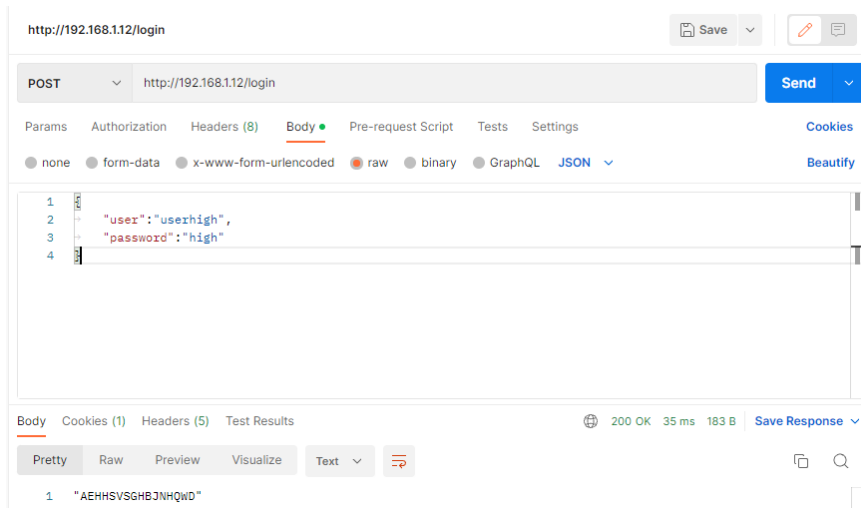
If the values recorded by the inverter are in Watts it will be necessary to change the coefficient A (Column H of the definition file).

For example, it will be necessary, in the case of an inverter with an active power raised in Watts with a coefficient A = 1, modified the value of the coefficient A to have values in kW or A = 0.001

Remote Action (Postman)

It is possible to retrieve the total power and energy values via a POST request via an application like POSTMAN.

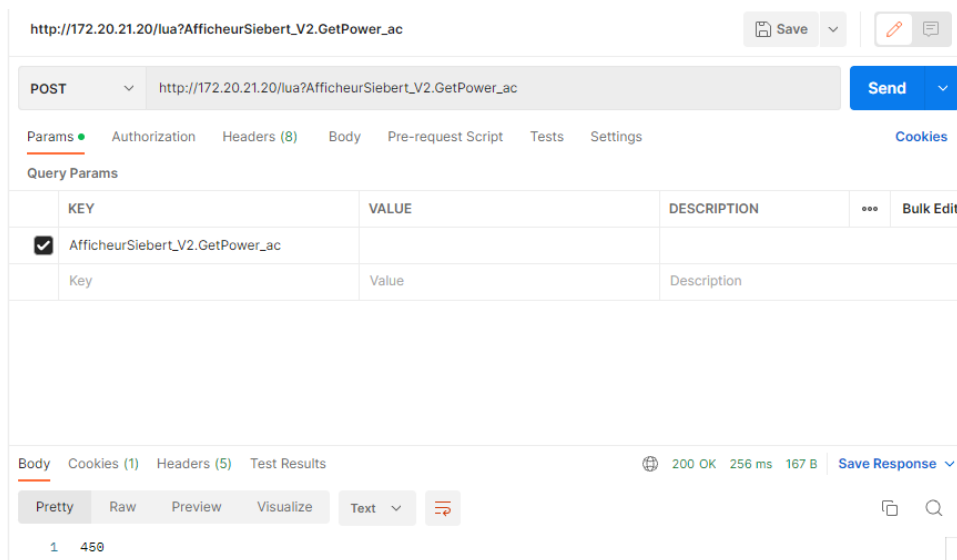
To do this, you must first create a session and retrieve a cookie.



In the example above, a session is opened on a gateway whose IP address is the default address of a WebdynSunPM is 192.168.1.12. Once the link is filled in (<http://192.168.1.12/login>), you must enter the login and password in the “Body” tab to access the session (by default login = userhigh and the password = high).

Once the message is sent, a cookie is then retrieved that will last only one minute before having to resend the request for a new session.

To be able to retrieve the data that goes on the display:



Use the link to the script in a second POST request:

http://172.20.21.20/lua?AfficheurSiebert_V3.GetPower_ac

With `http:// "gateway IP address"/lua?"script name"."function name"`.

For more information, see the documentation "WebdynSunPM Lua User Guide"

The different functions that can be used with this script are as follows:

`GetPower_ac`: Recovers the cumulative power of the inverters in Watts.

`GetEnergy_ac`: Recovers the total energy in Watts/hour.

`GetPwrFactor_ac`: Retrieves the power factor of the inverters (Cos Phi)

`Display`: The above three values as well as the carbon value.



Webdyn cannot be held responsible for any damages caused by the use of a script.