Remote Power Controller (RPC-XXX) User Manual v1.1

2nd-Nombember-2018

CosPan

Revision History

Revision	Date	Description
v1.0	2018-09-28	First Release Version (Integrated version)
v1.1	2018-11-02	add NIS(Network Information Setup)

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COSPAN reserves the right to make changes and improvements to its product without providing notice.

Notice to Users

When a system failure may cause serious consequences, protecting life and property against such consequences with a backup system or safety device is essential. The user agrees that protection against consequences resulting from system failure is the user's responsibility.

This device is not approved for life-support or medical systems.

Changes or modifications to this device not explicitly approved by COSPAN will void the user's authority to operate this device.

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1. Introduction

■ Overview of remote power controller (RPC-XXX)

RPC-XXX, which is a Remote Power control and monitoring system, can provide electric power to the connected electric devices and allow them to be switched ON and OFF remotely. It has one input power and distributes the input power to multiple outputs in parallel which can be turned ON and OFF respectively.

RPC-XXX model products are classified by the user's electric systems such as DC, single phase AC, and three phases AC and the number of power outlets.

· RPC-DC2 : less than 5A DC power consumption with terminal block outlet connection type .

· RPC-SP2T(E) : less than 5A(20A) AC power consumption with terminal block outlet
                connection type.

· RPC-SP2, SP4, SP4D, SP6 : less than 30A single phase AC power consumption with
                standard outlet connection type.

· RPC-SP4R, SP8 : less than 30A single phase AC power consumption with IEC-13 socket
                outlet connection type.

· RPC- TP1, TP100 : three phases AC power consumption with terminal block outlet
                connection type.

RPC-XXX can be used to many application parts such as smart factory system, smart city, automation of manufacturing system, and lighting system for saving electric power energy and the initial countermeasure to solve hanging problem through hard-reset for rebooting system rapidly and safely without visiting and manual operation.

■ Specifications of RPC-XXX - 1

	RPC-DC2	RPC-SP2T(-e)	RPC-SP1	RPC-SP35	RPC-SP2	RPC-SP4
Input Voltage	~ 48VDC	110 ~ 240VAC (Single Phase)				
Input Current	~ 10A	~ 10A(-e:20A)	~ 10A	~ 35A	~ 20A	~ 30A
Input connection	Terminal block		IEC-C14	Terminal block		
Number of outlet	2		1		2	4
Output Voltage	Same as the input voltage					
Output current per each outlet	~ 5A	~ 5A(-e:15A)	~ 10A	~ 35A	~ 10A	~ 10A
Total output current	~ 10A	~ 10A(-e:20A)	~ 10A	~ 35A	~ 20A	~ 30A
Output connection	Terminal block		Standard outlet	Terminal block	Standard outlet	
Measure the output current per each outlet	X		O			
Display the total output current	X		O			
Number of DC contactor	X		3	X	3	
RS-232	X		O	X	O	
Case size (WxBxH)	160x94x30mm		240x115x70mm	271x112x82mm	332x114x70mm	420x145x80mm
AC-DC adapter	O		X			

■ Specifications of RPC-XXX - 2

	RPC-SP4D	RPC-SP6	RPC-SP8	RPC-PDU	RPC-TP1	RPC-TP100
Input Voltage	110 ~ 240VAC (Single Phase)				380VAC (3P4W)	440VAC (3P3W)
Input Current	~ 15A x 2ea	~ 30A	~ 30A	~ 20A x 2ea	~ 30A	~ 100A
Input connection	IEC-C14 x 2ea	Terminal block		Wire	Wire	Terminal block
Number of outlet	4 (2x2Group)	6	8	16 (8x2Group)	1	1
Output Voltage	Same as the input voltage					
Output current per each outlet	~ 10A	~ 10A	~ 10A	~ 20A (IEC-C19) ~ 15A (IEC-C13)	~ 30A	~ 100A
Total output current	~ 15A x 2Group	~ 30A	~ 30A	~ 20A x 2Group	~ 30A	~ 100A
Output connection	Standard outlet	Standard outlet	IEC-C13	IEC-C19 x 4ea IEC-C13 x 12ea	Standard outlet	Standard outlet
Measure the output current per each outlet	O	O	X	X	O (Phase to Neutral)	O (Phase to Phase)
Display the total output current	product : X Web UI : O	O			X	
Number of DC contactor	2	2	3	X	6	X
RS-232	X	O	O	X	O	X
Case size (WxBxH)	400x98x75mm	440x160x87mm (19" 2U size)	440x151x44mm (19" 1U size)	1570x85x82mm	340x215x136mm	312x149x187mm
AC-DC adapter	X					O

코 스 팬

■ **The characteristics of RPC-XXX**

The characteristics of RPC-XXX are

▷ Monitoring features in real time

    · Status of switch on/off per each outlet

    · Status of voltage on/off per each outlet

    · Total output current or current per each outlet

    · Integrated temperature sensor data

▷ Control switch on/off per each outlet

▷ Electrical safety functions

    · Electrical fuse per each output

    · Warning message display on web UI at maximum output current

    · Shut-down output power automatically at over maximum output current

▷ Auto-switch on ouptput power through setting switch off time

▷ Control DC contactor

2. Precautions and Installation

■ Precautions

· Well-informed of the user manual before operating RPC-XXX

· Do not drop or subject the device to impact.

· Keep away from harsh environments including humid and dusty areas.

· Do not handle power plug and adapter with wet hands.

· Do not attempt to disassemble the device, unless modifications have been approved
  by COSPAN.

■ Installation location

RPC-XXX should be installed indoors, or in cabinet, or box to protect against external environments and fixed on the wall or floor using screw or bolt.

■ Electrical connection

▷ The input power of RPC-DC2 should be connected to DC power source which has higher power capacity than the total output consumption of RPC-DC2 and make sure the polarity of DC power.

▷ Input connection of RPC-XXX should be connected using the power cord which is provided by COSPAN Co, and the other RPC-XXX which are not provided power cord in product package should be connected to the Load side of MCCB or ELB in distribution panelboard using power cable with appropriate power capacity by user. The MCCB or ELB must have higher power capacity than the total output power consumption of RPC-XXX and make sure Live, Neutral, and Ground terminal.

▷ RPC-TP1 and TP100 with three phases electric power system should be connected correctly to R, S, T, and N phase terminal between product input connector and the load side of MCCB in distribution panelboard.
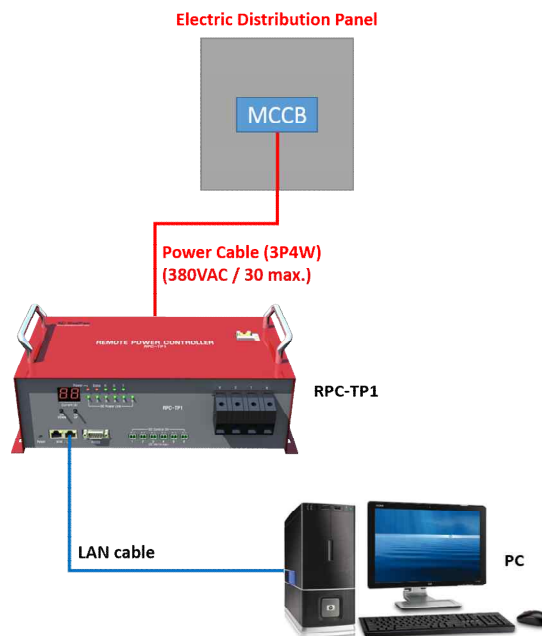
▷ RPC-DC2
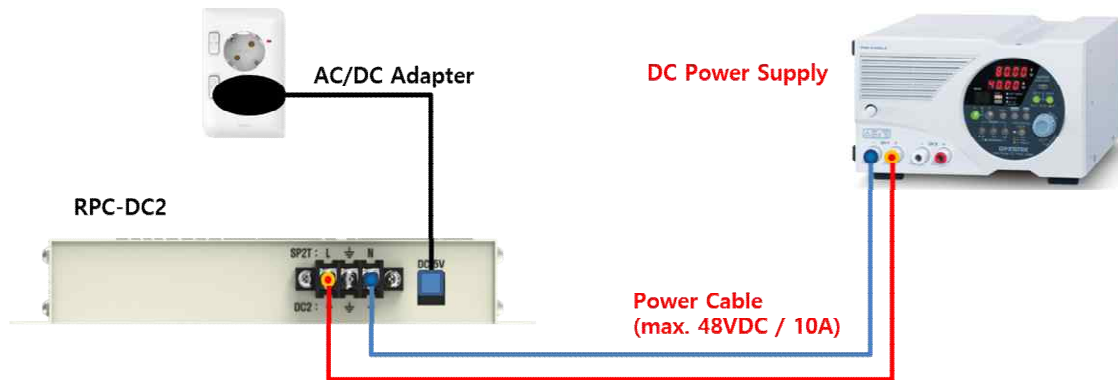
▷ RPC-SP2
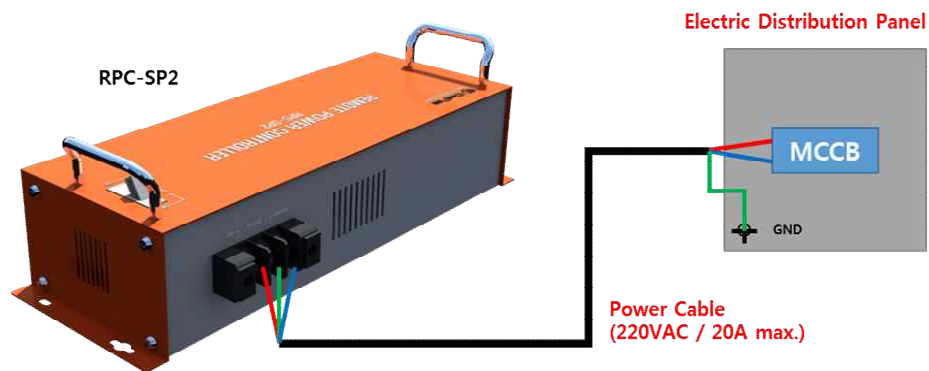
▷ RPC-TP1

3. How to use RPC-XXX

■ **Network Configuration and access to RPC-XXX using Network Information Setting tool(NIS)**

▷ NIS(Network Information Setup) is the free software provided by COSPAN for user to set up network information and access to Web UI of RPC-XXX through web browser. It is also useful to find out the IP address of RPC-XXX when the user can not remember it.

▷ Note : Do not connect the electric devices to RPC-XXX before completion of configuration.

① Connect the power cord or power cable between RPC-XXX and electric power source and switch on the main switch.

② Connect the each end of RJ-45 cable to LAN ports of RPC-XXX and your computer respectively. RJ-45 cable is included in the package. (Figure 3-1)
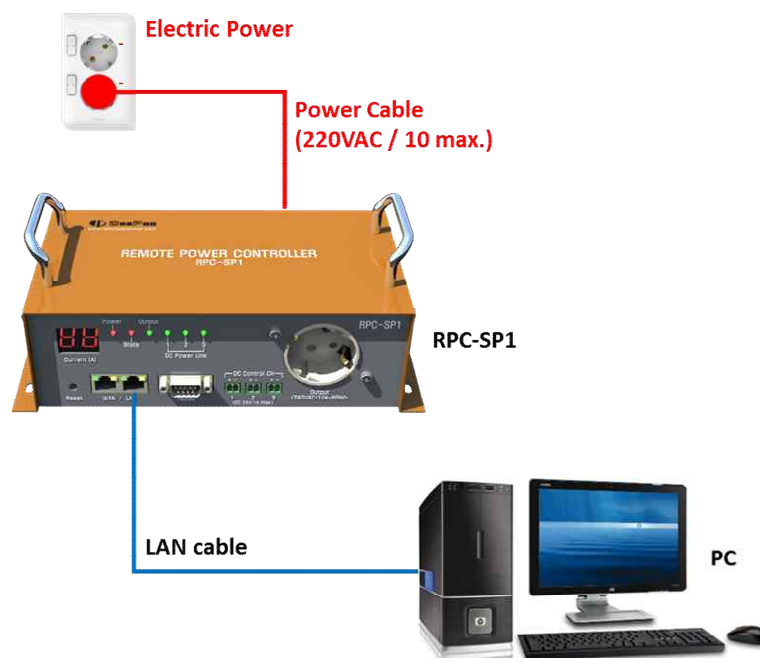

Figure 3-1. Example (Connection between RPC-SP1 and user's PC for network setting)

③ Install the NIS on your computer (Microsoft .Net Framework 4.5 version may be installed on your computer first for the NIS installation.)

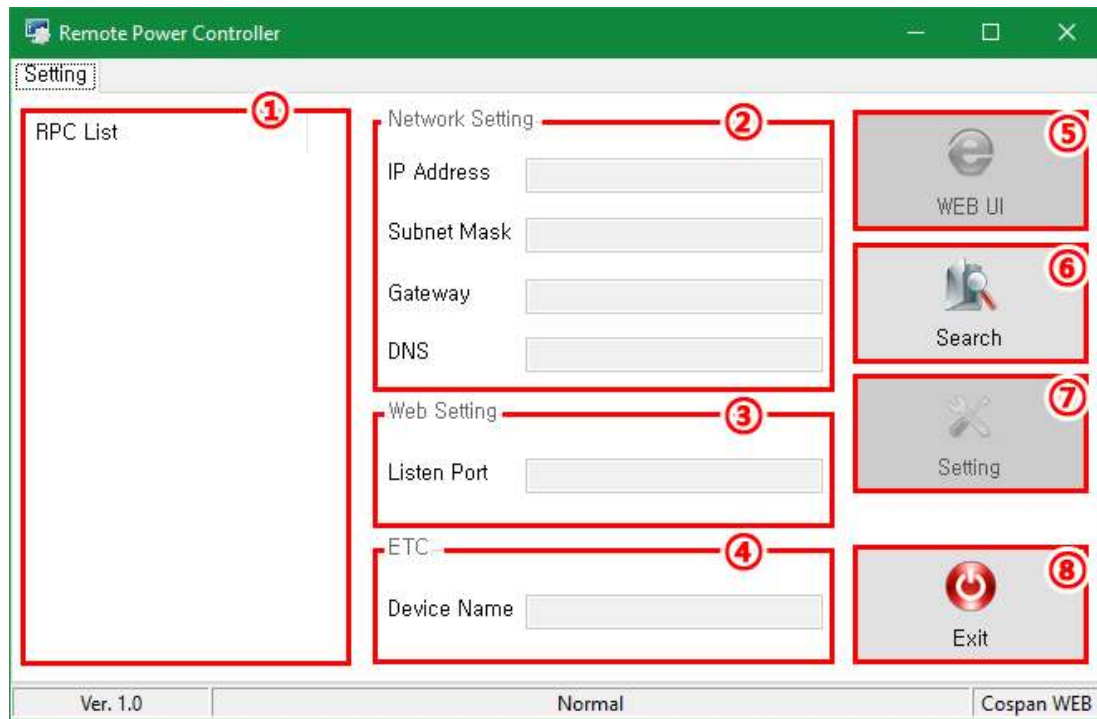④ Run NIS as click "Remote Power Controller" in "COSPAN" group on the window program menu.

Figure 3-2. NIS (Network Information Setup)

No	Function	Description
①	RPC list	MAC addresses of RPC-XXX connected in the same network.
②	Network Setting	Network information of RPC-XXX having the MAC address selected in the "RPC list" function.
③	Web Setting	Setting a web server port number.
④	ETC	Setting a installation place information of RPC-XXX.
⑤	Web UI	Run a web browser and connect to the selected RPC-XXX.
⑥	Search	Search the RPC-XXX connected in the same network.
⑦	Setting	complete all information setting.
⑧	EXIT	Close the management tool

⑤ Click "search" button(⑥) for searching the RPC-XXX connected to your computer.

⑥ MAC address of the RPC-XXX connected to your computer is displayed in the "RPC List" function(①) and the default network information is displayed when the MAC address is selected. (Figure 3-3)
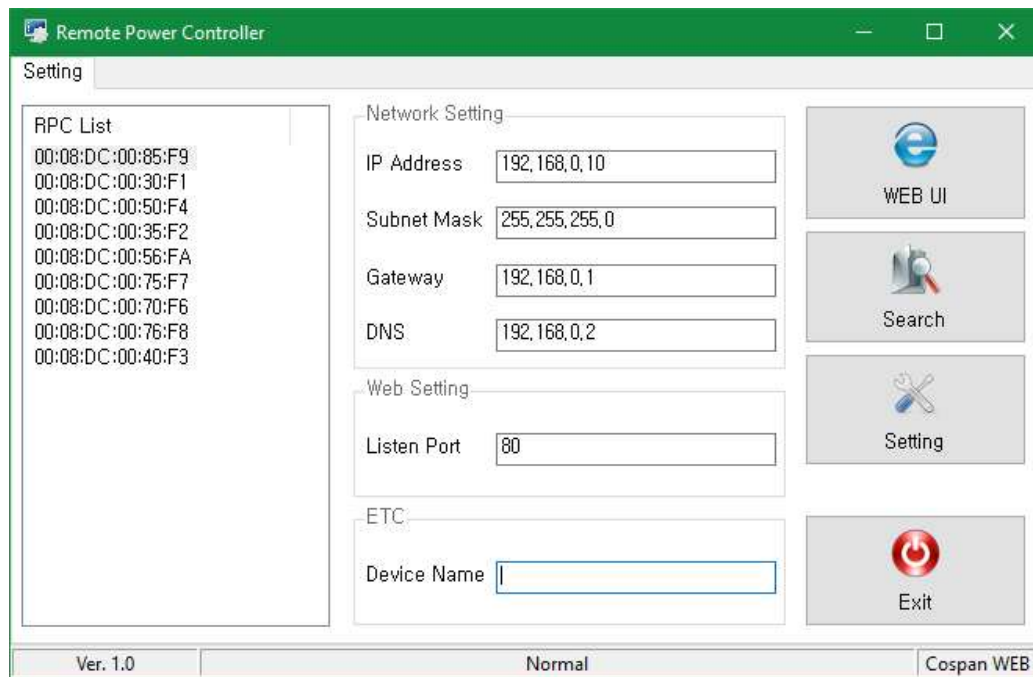

Figure 3-3. Default MAC address and network information

⑦ Change network information to your own IP Address, Subnet Mask, Gateway, DNS for operating in your network and "Web server port number" in the "Web setting" menu if you use your own port. Set the installation place of your RPC-XXX in the "ETC-Location" menu.

⑧ Click "Setting" button(⑦) to save changed information, and then click "Search" button(⑥) again. All information you changed is displayed.

▷ ※ If all network information is correct for your network connection, web browser will be run and the embedded web UI of your RPC-XXX will be open when you click "WEB UI" button (⑤).

■ **Network Configuration and access to RPC-XXX using embedded web UI (User Interface)**

▷ Note : User can connect to RPC-XXX and set the network information using the embedded web UI if the NIS is not available.

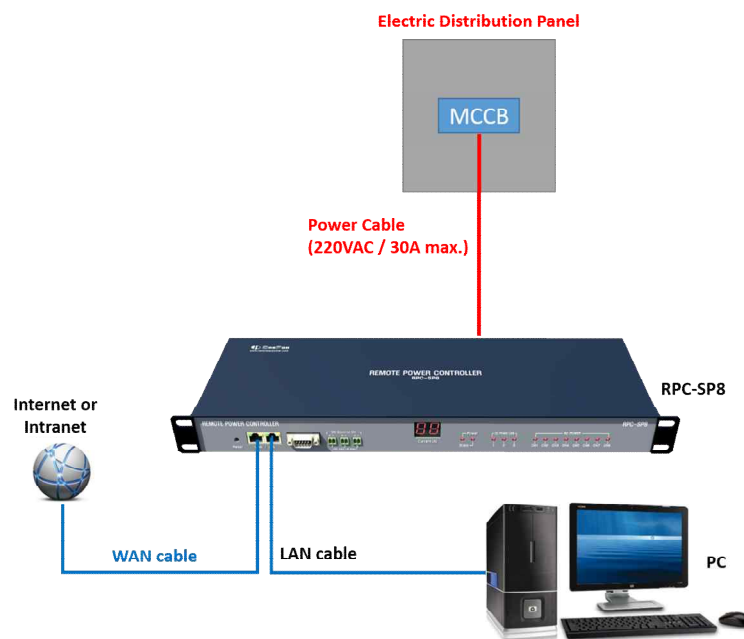① Connect the each end of RJ-45 cable to LAN ports of RPC-XXX and your computer respectively.

Figure 3-5. Example (Connection between RPC-SP8 and user's PC for network setting)

② Run web browser(ex. Internet Explorer, Google chrome)

③ Type the default IP address in web browser and connect to the embedded web UI of RPC-XXX. (Default IP address is http://192.168.0.10)

▷Note : A, B, and C class IP address of RPC-XXX and your computer should be same for connecting to the embedded web UI.
  ex) RPC-SP2 (IP:**192.168.0**.10) - PC (IP:**192.168.0**.56) : connection OK
       RPC-SP2 (IP:**192.168.0**.10) - PC (IP:**192.254.3**.123) : No connection

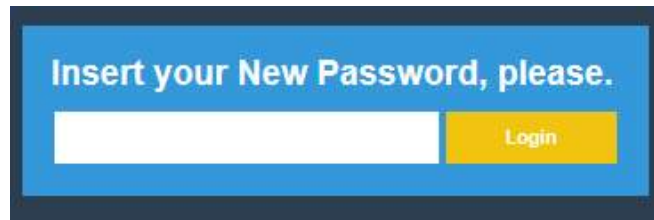④ The new window appears to type your own password.

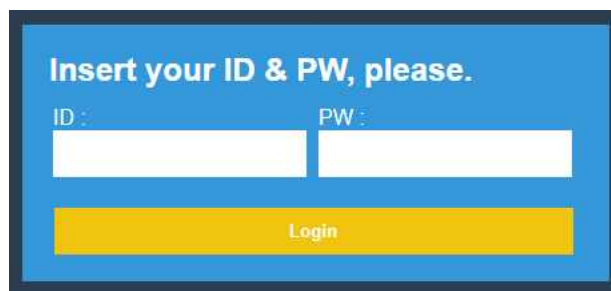Figure 3-6(a). The window for password typing of RPC-XXX

Figure 3-6(b). The window for selecting ID and password typing of RPC-XXX

※ As show in figure 3-6(a) and (b), RPC-XXX has two kinds of login functions.

※ Note : The default ID and password

　　　- ID : admin

　　　- PW : 0000 (4 figures of Arabic numeral)

⑤ Type the default ID and password and click "Login" button.

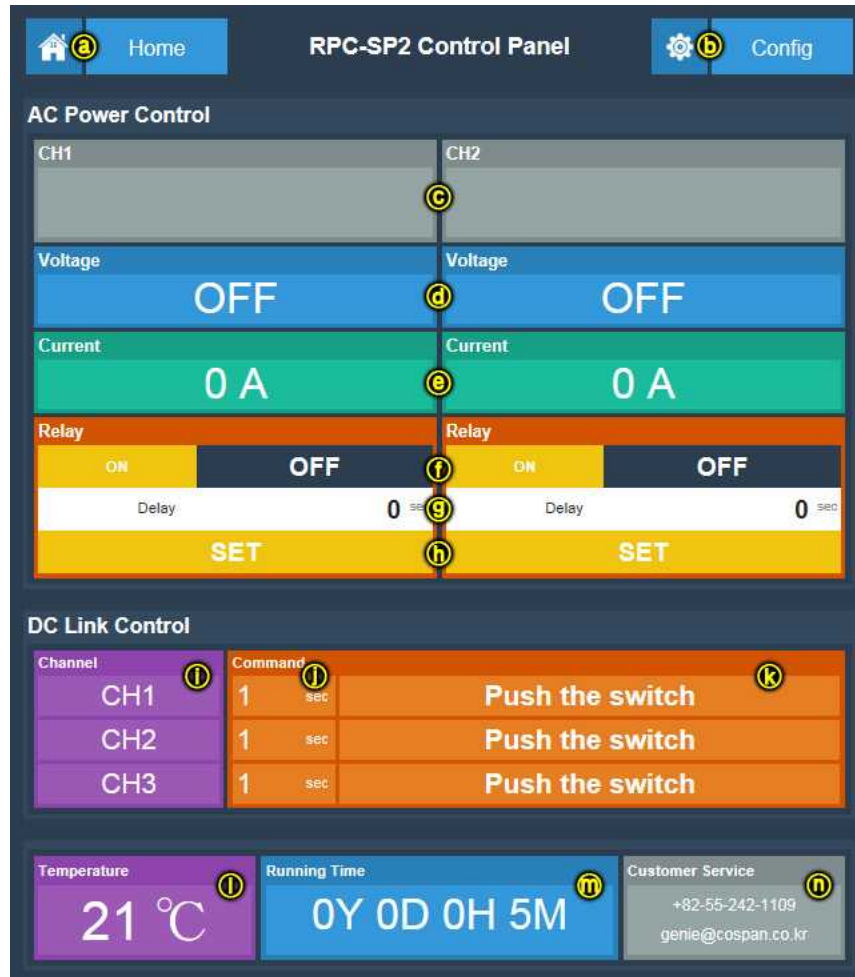⑥ The main window of embedded web UI will be appeared and shows the status of your RPC-XXX.

Figure 3-7. Example (The Main Window of embedded web UI of RPC-SP2)

No	Description	No	Description
ⓐ	Move to main web UI	ⓗ	Saving the switching off time
ⓑ	Move to Config network web UI	ⓘ	Channel number of DC contactor
ⓒ	Name of each power outlet	ⓙ	Closing time of DC contactor
ⓓ	Electric Voltage status of power outlet	ⓚ	Control command of DC contactor
ⓔ	Current of each power outlet	ⓛ	Integrated temperature sensor data
ⓕ	- Switch ON/OFF power outlet - Switching status of power outlet	ⓜ	Running time of RPC-SP2
ⓖ	Switching off time	ⓝ	Customer Service information

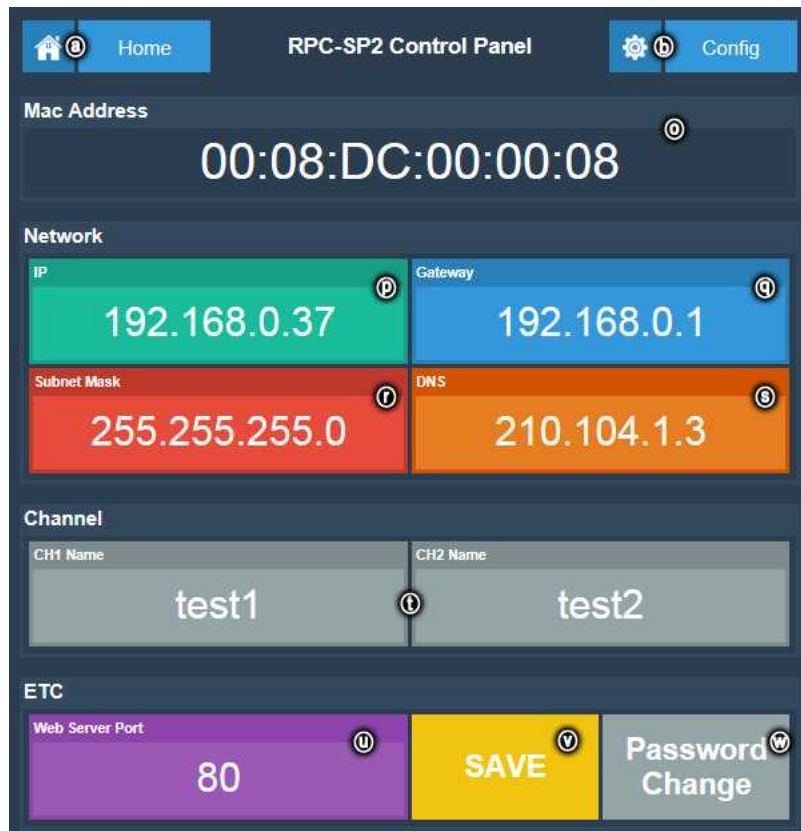⑦ Click the "Config" button(ⓑ) in the Main window for network setting of RPC-XXX.

Figure 3-8. Example (The Main Window of embedded web UI for network setting of RPC-SP2)

No	Description	No	Description
ⓞ	Mac Address	ⓣ	Outlet name
ⓟ	IP address	ⓤ	Web Server Port
ⓠ	Gateway	ⓥ	Save all network information
ⓡ	Subnet Mask	ⓦ	Move to "Password Change" function
ⓢ	DNS Server		

※ The structure, contents, functions, and use of web UI are similar and almost same even though RPC-XXX has different number of outlet and other electrical features.

⑧ Type the user's network IP(ⓟ), Subnet Mask(ⓡ), Gateway(ⓠ), DNS Server (ⓢ), Web Server Port(ⓤ), outlet name(ⓣ). And then click the "SAVE" button(ⓥ) to complete network setting.

※ Note

- The default Web Server Port(ⓤ) is "80".

- In case of using the changed Web Server Port(ⓤ), type the network IP and web server port number in the web browser to connect to the embedded web UI of your RPC-XXX as the following example.

  (ex. Using the Web Server Port of 12000 : http://192.168.0.36:12000)

- When you can not remember your own port number, User can check using NIS.

■ Accessing to RPC-XXX and control outlet power
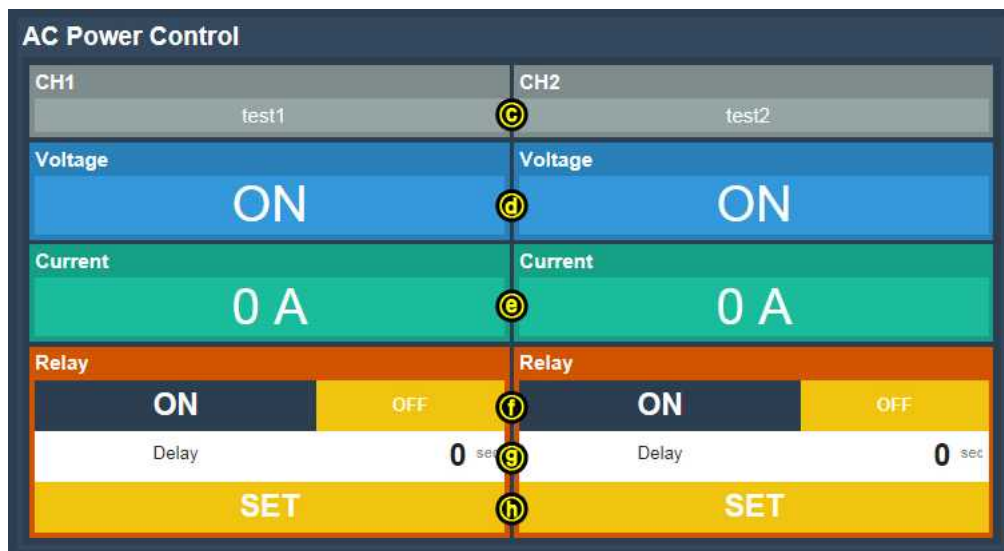
① Access to the Web UI (refer to page 14)

Figure 3-9. Example (embedded web UI of switch ON/FF outlet of RPC-SP2)

No	Description	No	Description
ⓒ	Name of each power outlet	ⓕ	- Switch ON/OFF power outlet - Switching status of power outlet
ⓓ	Electric Voltage status of power outlet	ⓖ	switching off time
ⓔ	Current of each power outlet	ⓗ	Saving the switching off time

※ The structure, contents, functions, and use of web UI are similar and almost same even
   though RPC-XXX has different number of outlet and other electrical features.

② Click "ON" or "OFF" button (ⓕ) to complete the switch ON/OFF outlet power to control
   ※ The button background color is black in switch status(ⓕ) shows switch position of your
      RPC-XXX.
   Ex) Both switches of channel are ON position in Figure 3-9.
      - RPC-SP2 has two AC Power Control channels.
      - **Voltage :** the Electric voltage state of power outlet with sensor.

- **Current :** current of each power outlet

- **Relay :** switch ON/OFF command and switch state

※ Note : when you use Internet explorer web browser and there no change of status of switch and voltage and current are displayed as "………", you should change internet option of web browser as following

Internet option --> General --> browsing history --> settings --> temporary internet files --> everytime I visit the webpage --> OK --> access again

■ Auto-switch ON

Each power outlet can be switched ON automatically in a specific time period after switch OFF using the Auto-Switch ON function.

① type the switching off time(ⓖ) in the main window of the embedded web UI.

· The switching off time "0" means that the "Auto-Switch ON function" is not activated.

· The switching off time can be set 0 to 99 sec.

② Click the "Set" button(ⓗ) for saving.

※ Note

The "Auto-Switch ON function" is not activated in case of setting the switching off time when the power outlet is switched off.

The function will be activated as the following process.

- Switch ON manually ----> Switch OFF manually ----->

The "Auto-Switch ON function" is activated after set time elapse.

■ The "Auto-Switch ON function" is not activated in case of shutting down automatically by over maximum setting current value of RPC-XXX.

■ Control DC contactor

The Control DC I/O contactor performs function as DC starting switch control such as power on switch of computer.

Figure 3-10 shows one example of applications using control DC I/O contactor function of RPC-SP1
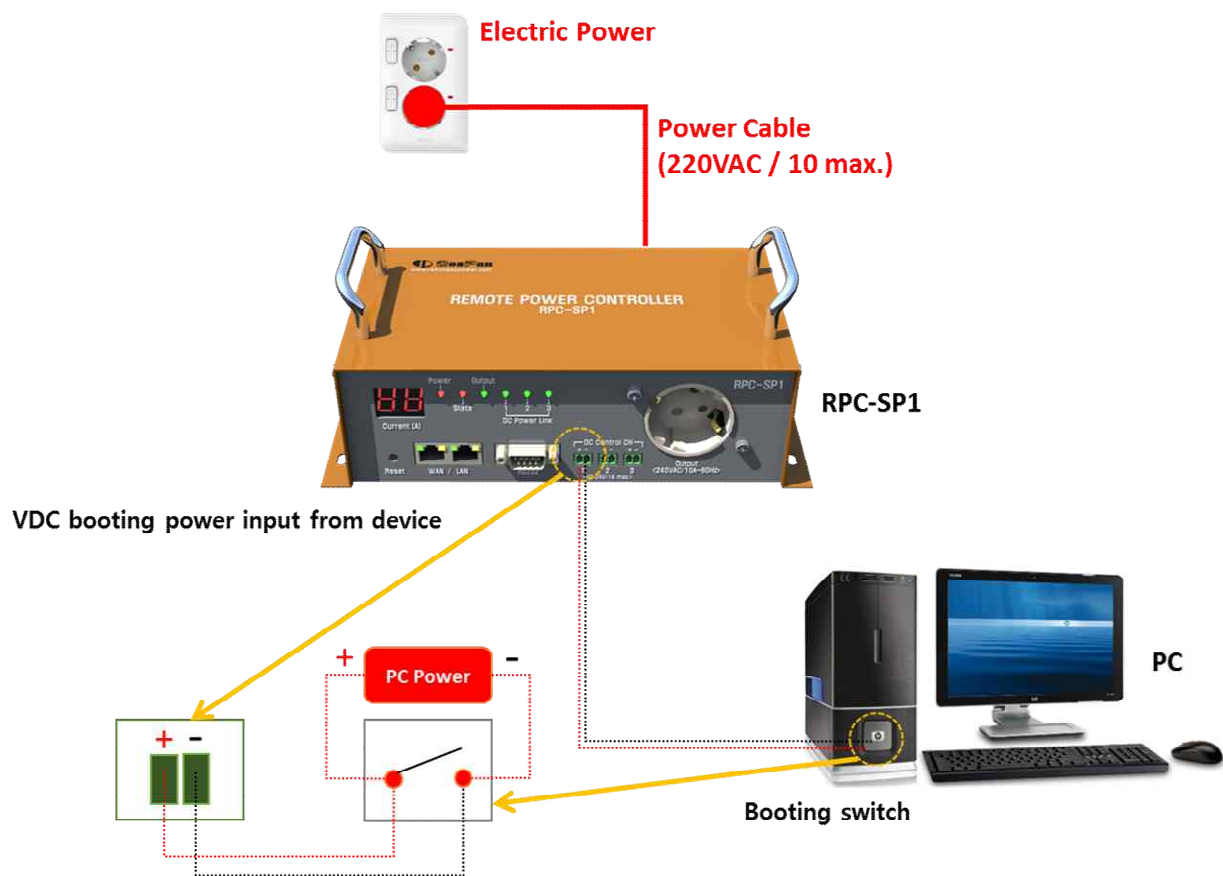

Figure 3-10. Schematic of control starting switch of computer remotely using DC I/O contactor function of RPC-SP1

Figure 3-11. Web UI for control DC contator

No	Description	No	Description
ⓘ	Channel number of DC contactor	ⓚ	Control command of DC contactor
ⓙ	Closing time of DC contactor		

① Set the switch closing time(ⓙ) of contactor channel to control and click the "Push the switch" button.

※ It makes same effect as user pushes the starting button of computer directly.

■ Changing the access password

The user can change the default access password to their own password in the main window(Figure 3-8).

- 4 to 8 figures of Arabic numeral, alphabet, and Arabic numeral + alphabet are available for the new password.

※ **Warning :   User can not connect to RPC-XXX without corresponding password.**

Contact to "COSPAN" when you lost the password.

① Click the "Change Password" menu(ⓦ) in the main window of the embedded web UI. The new window will be displayed for changing password as the following figure 3-8.
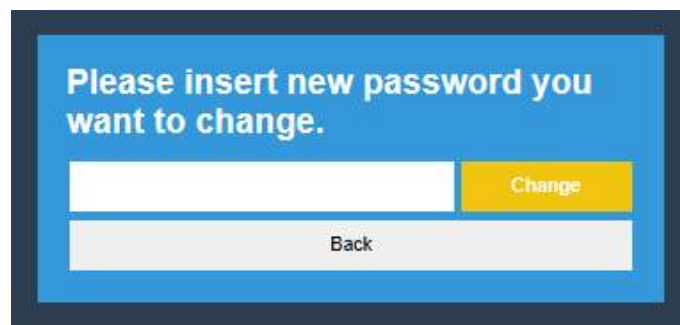
Figure 3-12. The window for changing password

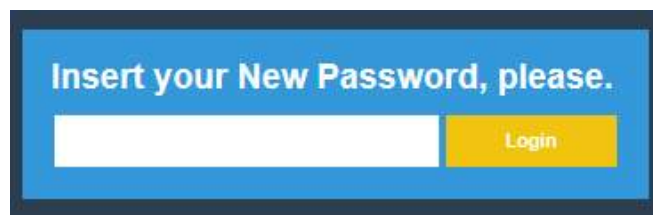② Type the new password and click the "Change" button. The window will be displayed to confirm the new password.

Figure 3-13. The window to confirm the new password

③ Type the new password and click the "Login" button. The main window of embedded web UI will be displayed.

■ Set the name of power outlet channel

The RPC-XXX can define each power outlet channel name so that user can control each device correctly connected to each outlet.

① As shown in figure 3-8, each channel name can be defined at "Config" menu in web UI. Type the name of each outlets at the "Channel"(ⓣ).

Figure 3-14. Before and after setting outlet channel name

② Click the "SAVE"(ⓥ) button.

③ Access to web UI again and user can find the defined outlet channel name in the main web UI window.

Appendix : Warranty

1. General Warranty Policy

COSPAN warrants that the Product shall conform to and perform in accordance with published technical specifications and the accompanying written materials, and shall be free of defects in materials and workmanship, for the period of time herein indicated, such warranty period commencing upon receipt of the Product.

This warranty is limited to the repair and/or replacement, at COSPAN's discretion, of defective or non-conforming Product, and COSPAN shall not be responsible for the failure of the Product to perform specified functions, or any other non-conformance caused by or attributable to: (a) any misapplication or misuse of the Product; (b) failure of Customer to adhere to any of COSPAN's specifications or instructions; (c) neglect of, abuse of, or accident to, the Product; or (d) any associated or complementary equipment or software not furnished by COSPAN.

Limited warranty service may be obtained by delivering the Product to COSPAN or to the international distributor it was purchased through and providing proof of purchase or receipt date. Customer agrees to insure the Product or assume the risk of loss or damage in transit, to prepay shipping charges to COSPAN, and to use the original shipping container or equivalent.

2. Limitation of Liability

EXCEPT AS EXPRESSLY PROVIDED HEREIN, COSPAN MAKES NO WARRANTY OF ANY KIND, EXPRESSED OR IMPLIED, WITH RESPECT TO ANY EQUIPMENT, PARTS OR SERVICES PROVIDED PURSUANT TO THIS AGREEMENT, INCLUDING BUT NOT LIMITED TO THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. NEITHER COSPAN NOR ITS DEALER SHALL BE LIABLE FOR ANY OTHER DAMAGES, INCLUDING BUT NOT LIMITED TO DIRECT, INDIRECT, INCIDENTAL, SPECIAL OR CONSEQUENTIAL DAMAGES, WHETHER IN AN ACTION IN CONTRACT OR TORT (INCLUDING NEGLIGENCE AND STRICT LIABILITY), SUCH AS, BUT NOT LIMITED TO, LOSS OF ANTICIPATED PROFITS OR BENEFITS RESULTING FROM, OR ARISING OUT OF, OR IN CONNECTION WITH THE USE OF FURNISHING OF EQUIPMENT, PARTS OR SERVICES HEREUNDER OR THE PERFORMANCE, USE OR INABILITY TO USE THE SAME, EVEN IF COSPAN OR ITS DEALER HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES. IN NO EVENT WILL COSPAN OR ITS DEALERS TOTAL LIABILITY EXCEED THE PRICE PAID FOR THE PRODUCT.

3. Hardware Product Warranty Details

WARRANTY PERIOD: COSPAN warranties embedded hardware Product for a period of one (1) year, and external hardware Product for a period of three (3) or five (5) years according to the Product type.

WARRANTY PROCEDURE: Upon return of the hardware Product COSPAN will, at its option, repair or replace Product at no additional charge, freight prepaid, except as set forth below. Repair parts and replacement Product will be furnished on an exchange basis and will be either reconditioned or new. All replaced Product and parts become the property of COSPAN. If COSPAN determines that the Product is not under warranty, it will, at the Customers option, repair the Product using current COSPAN standard rates for parts and labor, and return the Product at no charge in or out of warranty.

WARRANTY EXCLUSIONS: Damages caused by
- Accidents, falls, objects striking the COSPAN product,
- Operating the Product in environments that exceed COSPAN's temperature and
  humidity specifications,
- Power fluctuations, high voltage discharges,
- Improper grounding, incorrect cabling,
- Misuse, negligence by the customer or any other third party,
- Failure to install or operate the product (s) in accordance to their SENA User Manual,
- Failure caused by improper or inadequate maintenance by the customer or any other   third party,
- Floods, lightning, earthquakes,
- Water spills,
- Replacement of parts due to normal wear and tear,
- Hardware has been altered in any way,
- Product that has been exposed to repair attempts by a third party without COSPAN's   written consent,
- Hardware hosting modified COSPAN Software, or non-COSPAN Software, unless
  modifications have been approved by COSPAN.

4. Software Product Warranty Details

WARRANTY PERIOD: COSPAN warranties software Product for a period of one (1) year.

WARRANTY COVERAGE: COSPAN warranty will be limited to providing a software bug fix or a software patch, at a reasonable time after the user notifies COSPAN of software non-conformance.