

What is PHPoC Debugger?

PHPoC Debugger

PHPoC Debugger is a software used for development and management of PHPoC Products. It is required to install this program before using PHPoC.

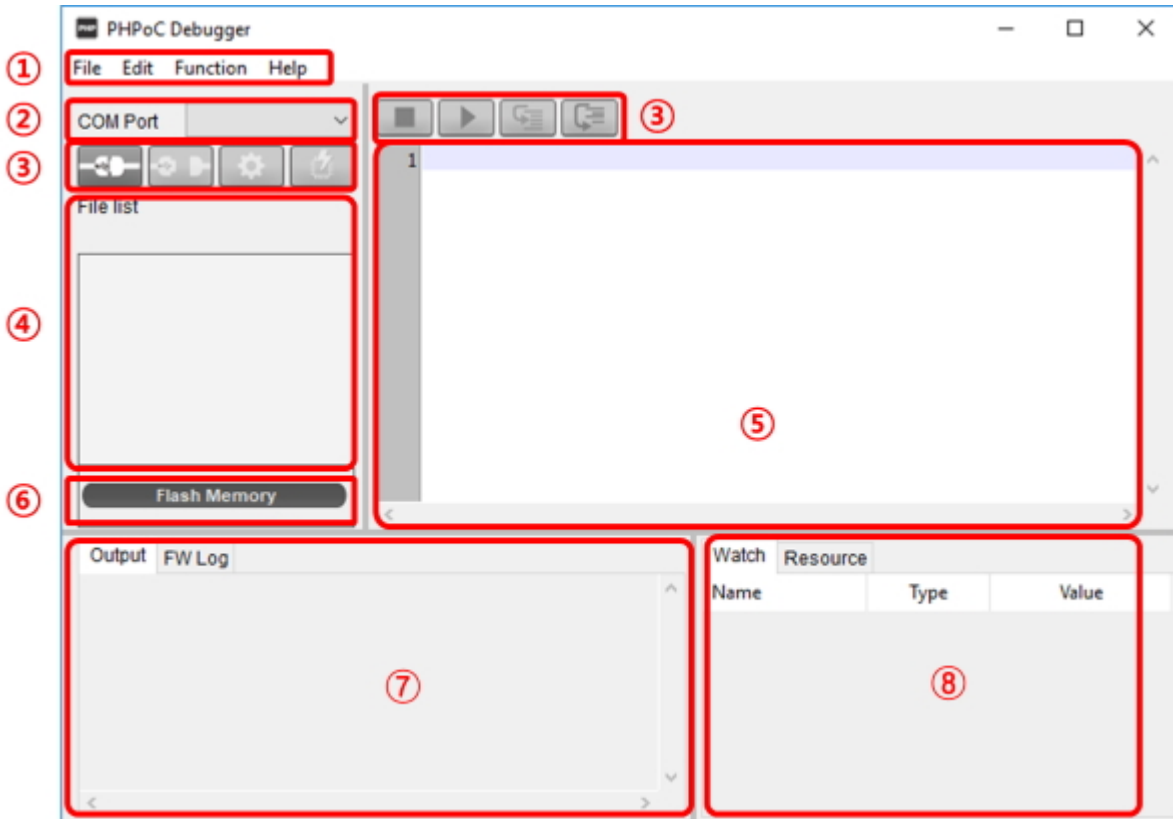
- [Go to Download PHPoC Debugger](#)

Features of PHPoC Debugger

- Upload files from local PC to PHPoC
- Save files which are in PHPoC to local PC
- Edit files stored in PHPoC
- Debug PHPoC scripts
- Monitor PHPoC's resources
- Configure PHPoC's parameters
- Upgrade Firmware of PHPoC
- Support Platform: MS Windows

User Interface

User Interface



1. Menu bar

Menu	Sub menu	Description
File	New	Create a new php file
	Upload a poc file	Upload a poc format file
	Save selected file(s)	Save selected files in file list to local PC
	Save a poc file	Save all files in file list to local PC (.poc)
Edit	Undo	Undo the latest job
	Redo	Redo the latest job undone
	Cut	Cut the selected text and copy it to the clipboard
	Copy	Copy the selected text to the clipboard
	Paste	Paste text from the clipboard
	Select all	Select all texts
	Find	Find the specified text
	Find Next	Find the next text by down direction
	Find Previous	Find the next text by up direction
	Change	Replace the specified text with given text
	Preferences	Program preference
Function	System information	Product/Firmware, Flash files, IP Address, Wireless LAN, ARP/NDC Table, PDB Net
	Smart expansion board information	Smart expansion board information and Check for updates menu
	View error log	PHP, Firmware, SYS/Stdout tx
	Reboot a product	Reboot a product
	Firmware Debug mode	Enable/disable Firmware debugging mode
	PHP Debug mode	Enable/disable PHP debugging mode
	Font	Change font
	Language	Change language
	Software information	Information about PHPoC Debugger and Check for update button
help	Debugger manual(online)	Go to PHPoC debugger manual page
	PHPoC manual(online)	Go to manual page of phpoc.com
	Forum	Go to PHPoC forum









- Preferences

Menu	Sub menu	Description
View	View margin	Show/hide margin
	View line number	Show/hide line number on margin
	View current line	Enable/disable current line emphasis
	Line ratio	Set line space: 100, 120, 150, 200, 300
	Tab size	Set tab size: 1, 2, 4, 8, 16
Action of file add	Internal editor	Use the internal editor
	External editor	Use an external editor
	Ask	Show select option every time
Backup path		Path of backup files and log files
Initialization	Enter initialization mode	Set product to initialization mode
Updating the Debugger	Automatically check	Check for the updates every time debugger runs
mDNS service subtype		mDNS service subtype

2. COM PORT





Part for choosing a virtual USB COM port

3. Buttons

Button	Description
	Connect to PHPoC product
	Disconnect from PHPoC product
	Configure environmental values of PHPoC product
	Upload files on [File list] to PHPoC product
	Stop running PHPoC codes
	Run/pause PHPoC codes
	Run line by line
	Run procedure by procedure

4. File list

List of files saved PHPoC product or to be uploaded.

Icon	Description
	Synchronized files
	Files on PHPoC product before synchronization
	Files on local PC before synchronization
	Synchronized files on local PC for external editors

The following menus will be popped up when right clicking on file list area.

Menu	Description
Run	Run the script selected immediately
Change the filename	Modify a file name
Delete	Delete files on the list
File information	Show the information of a selected file
New	Create a new php file
Add	Add files from local PC
Change firmware	Upload the firmware selected to PHPoC

5. Editor

Showing and editing contents of selected file on the file list. The following menus will be popped up when right clicking on editor area.

Menu	Description	Shortcut
Toggle Breakpoint	Set / Unset break point on current line	F9
Remove All Breakpoints	Unset all break points on current file	Shift+F9
Step Into	Run line by line	F11
Step Over	Run procedure by procedure	F10
Run to the current line	Run and pause before executing the current line	-
Cut	Cut the selected codes and copy it to the clipboard	Ctrl+X
Copy	Copy the selected codes to the clipboard	Ctrl+C
Paste	Paste codes from the clipboard	Ctrl+V
Select all	Select all codes	Ctrl+A

6. Flash memory size

This shows currently available or in-use space on flash memory of PHPoC product.

7. Output / FW Log

This window is for displaying standard output and F/W log messages. The following menus will be popped up when right clicking on the windows.

Menu	Description
Delete all logs	Clear screen buffer
Copy	Copy the selected log to the clipboard
Auto scroll	Set / Unset auto scroll
Delete logs at run time	Clear screen buffer every time the script runs
Save logs	Save the log in the Output window and FW Log window as a file in the Backup path.

8. Watch / Resource

This window is for checking run time variable information and system resources. The following menus will be popped up when right clicking on the watch window.

Menu	Description
Add	Add a variable
Modify	Modify a name of the selected variable
Delete	Delete the selected variables
Delete all	Delete all variables
Detail	Create a new window for detailed information

Installation

1. Downloading PHPoC Debugger

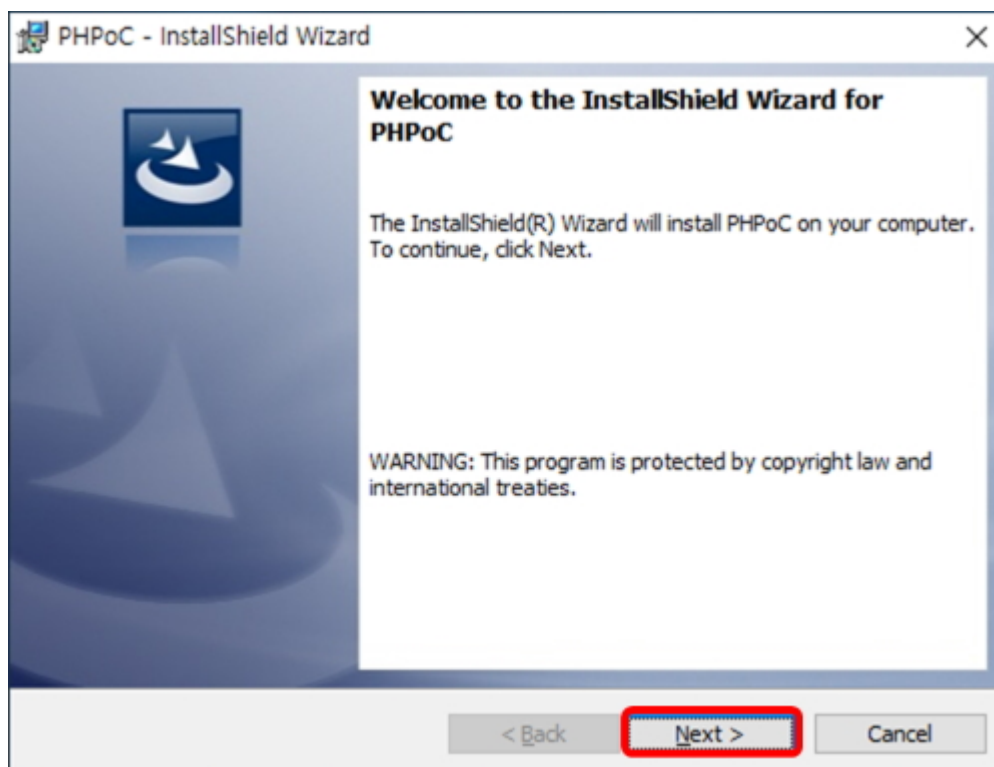
Download PHPoC Debugger on the link below.

- [Go to the Download Page](#)

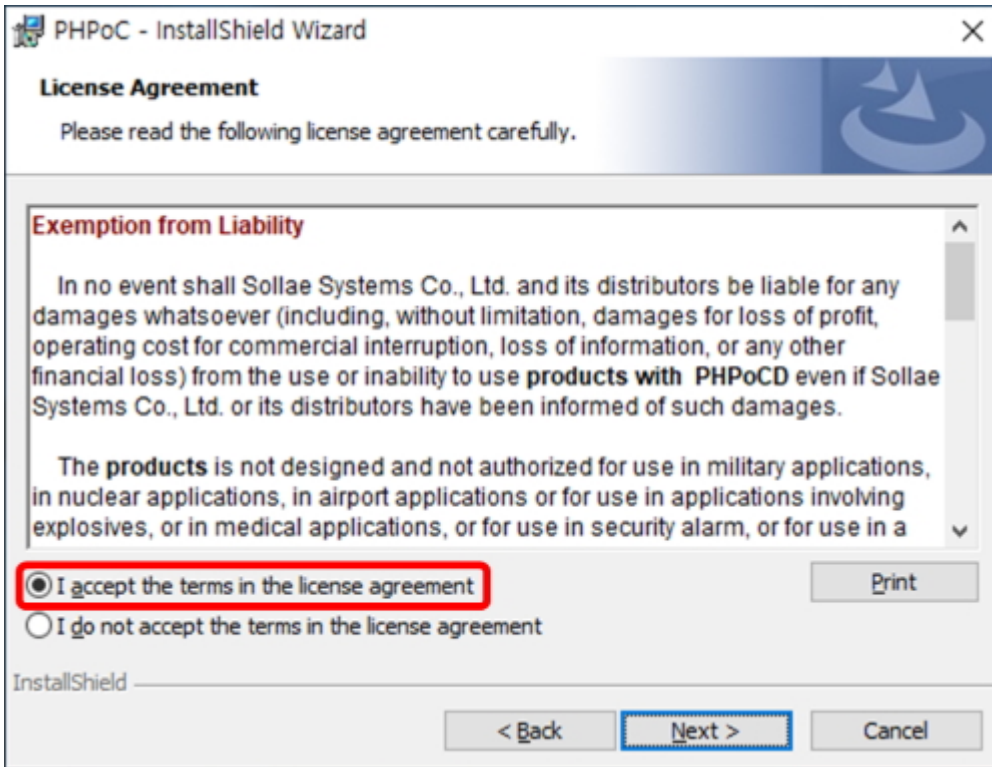
2. Running the Installation File

Unzip and run the installation file.

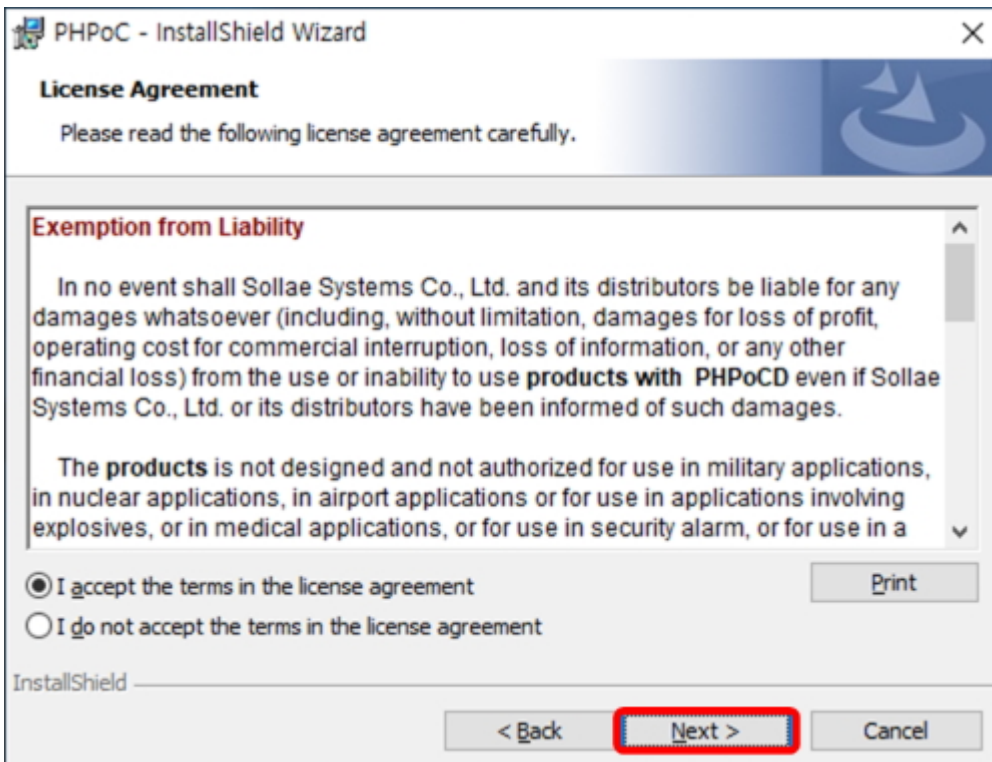
3. Press the "Next" button.



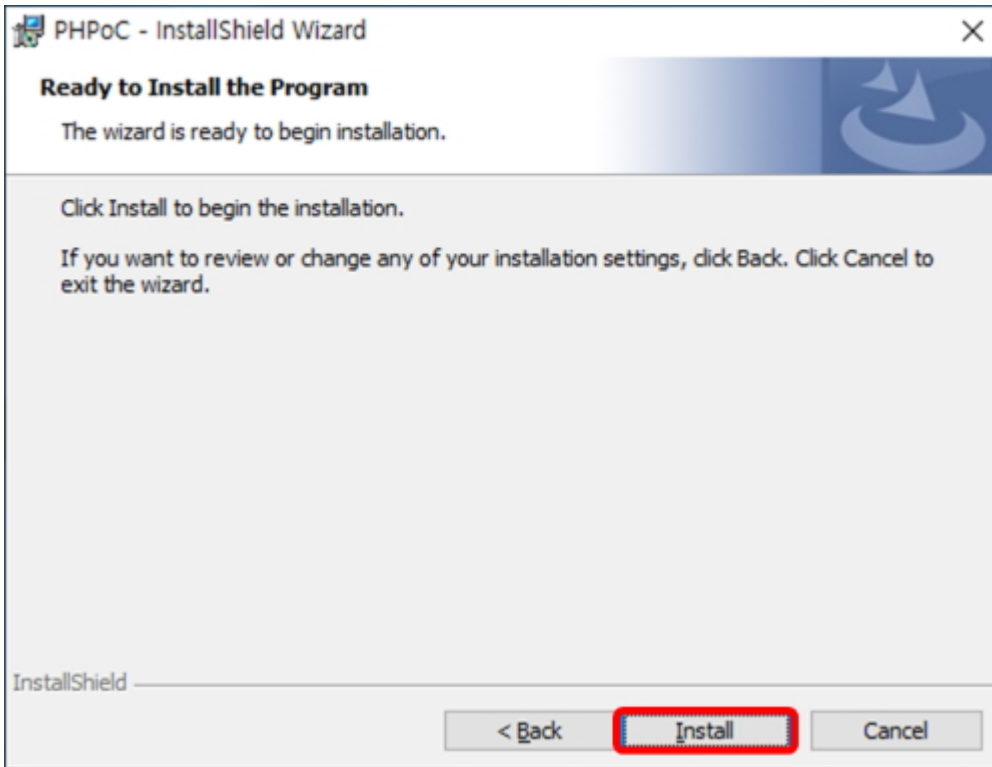
4. Select the "I accept the terms in the license agreement" option.



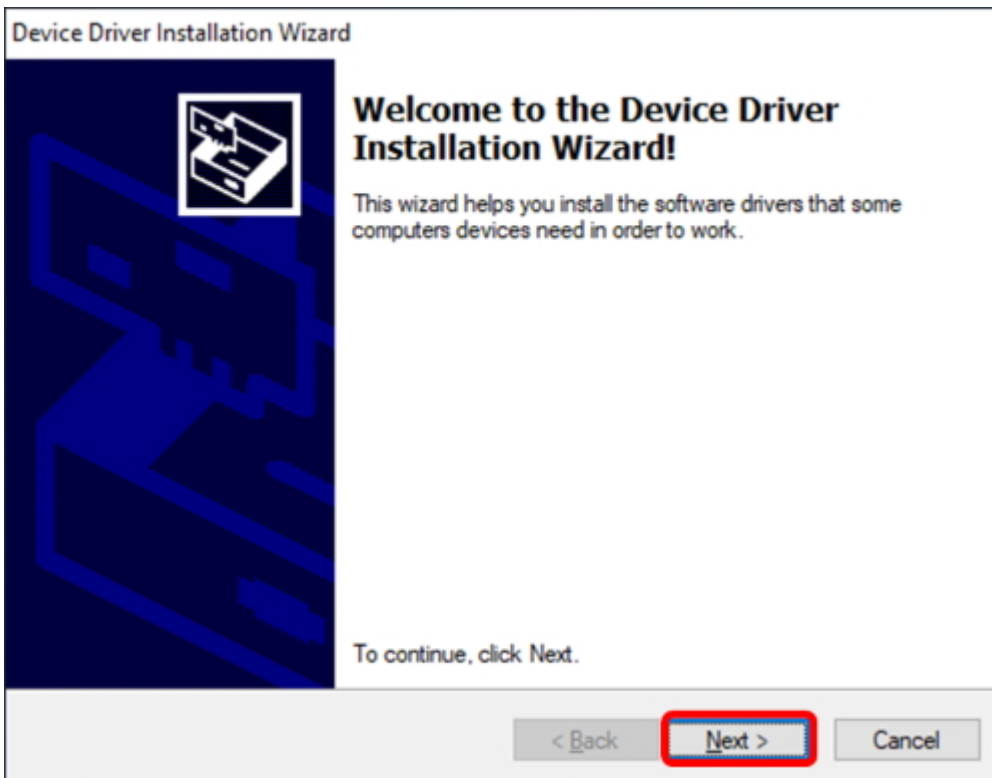
5. Press the "Next" button.



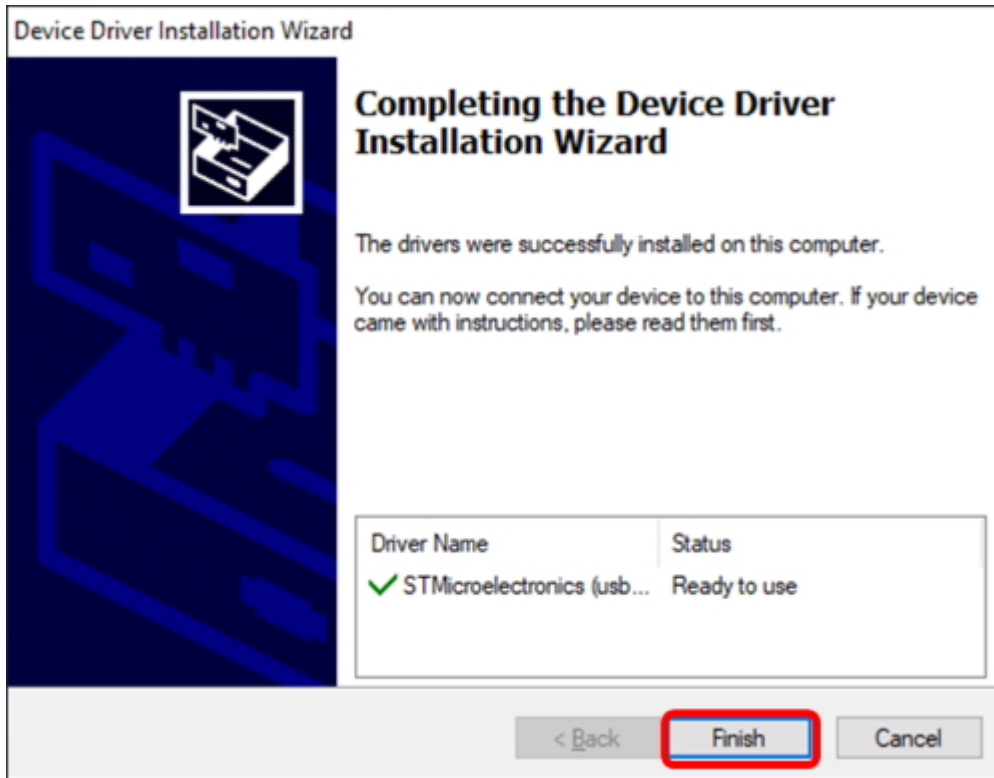
6. Press the "Install" button.



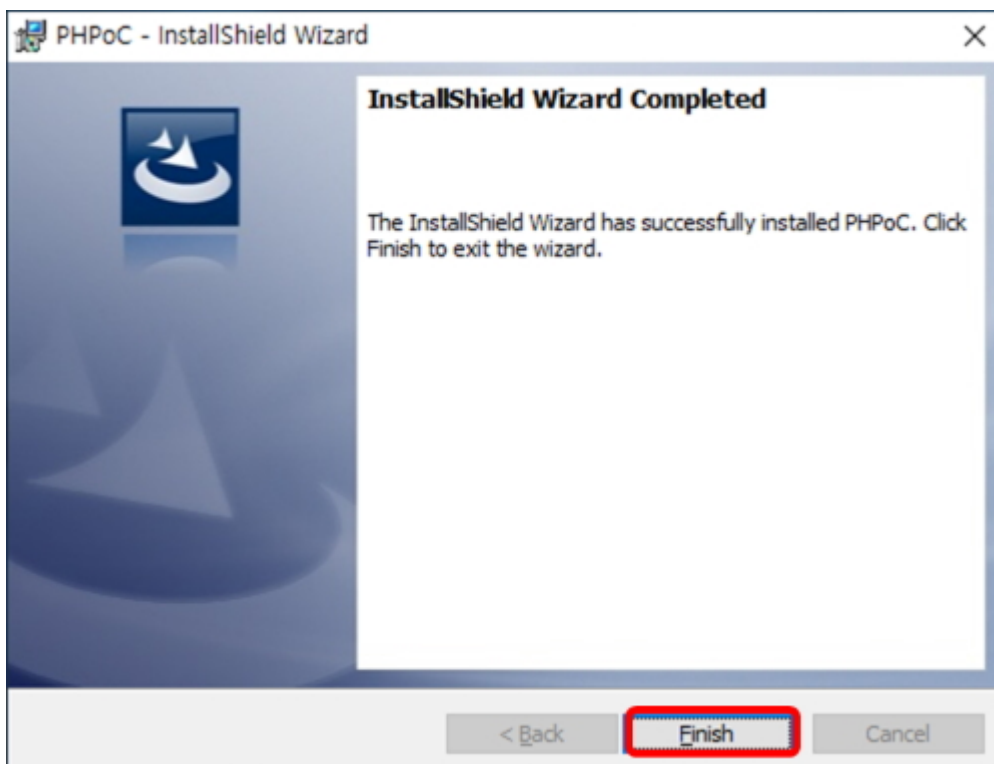
7. Press the "Next" button.



8. Press the "Finish" button.



9. Press the "Finish" button.



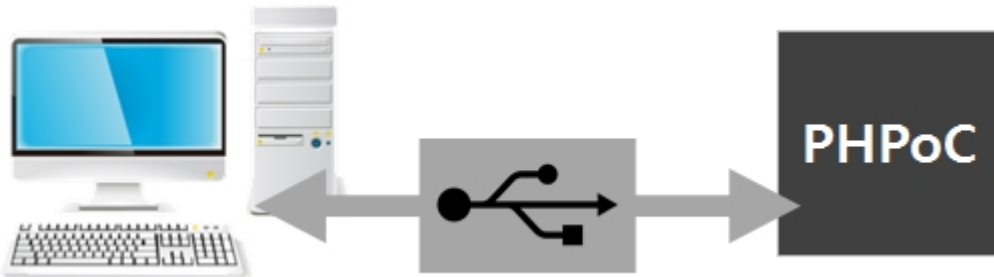
Preparation

1. Install the PHPoC Debugger



Download and install PHPoC Debugger referring to the [Installation](#) chapter.

2. Connect the PHPoC to PC

Connect the device port of PHPoC to your PC via a USB cable.



3. Run the PHPoC Debugger

Select connected COM PORT and press connect () button. If USB is successfully connected, connect button will be inactivated and disconnect button () will be activated

※ If the USB connection can be disconnected due to unexpected external noise such as static electricity. In this case, you will show the message "It is disconnected from the product. Do you want to connect to it again?" and it will try to connect it again when pressing the "YES" button.

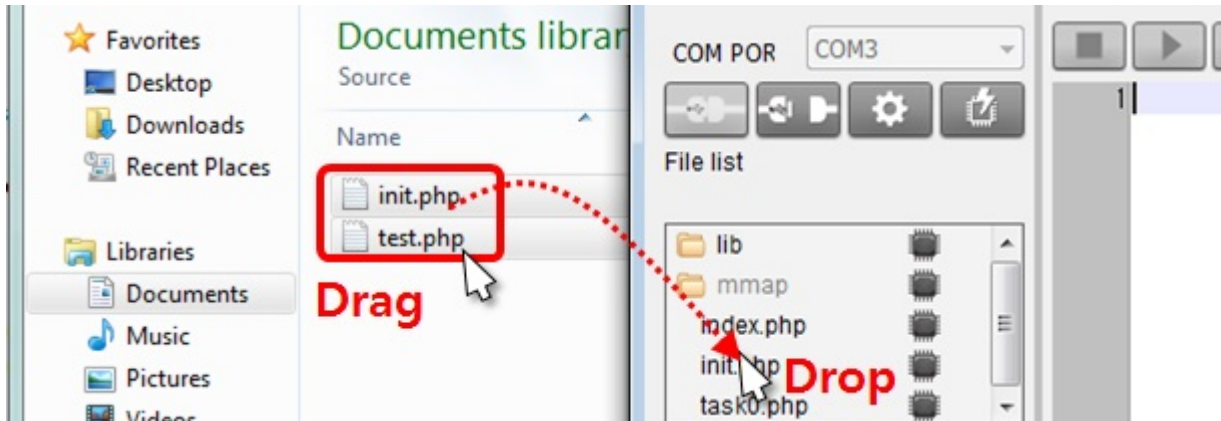
Uploading Files to PHPoC

Php files in local PC can be uploaded to PHPoC.

How to Add Files to File list

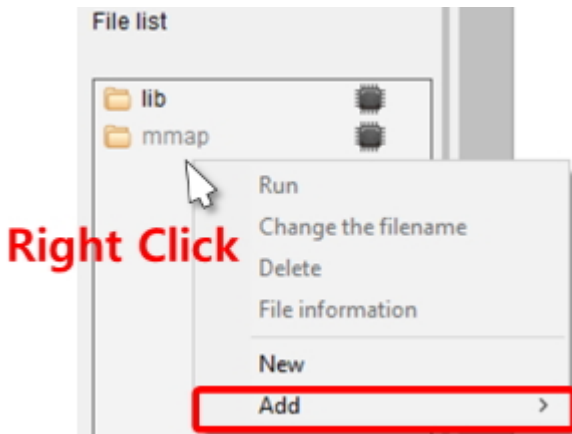
- Drag & Drop

Select and drag files on Window explorer to file list box and drop them.





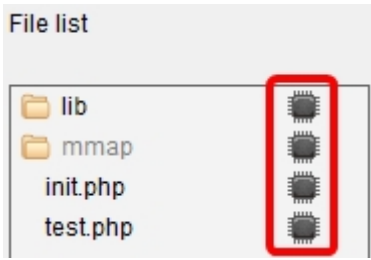
- Add menu

If you click [Add] after right-clicking in the file list box, a window for selecting files will be created. Selected files on the windows will be added to the file list



Upload files

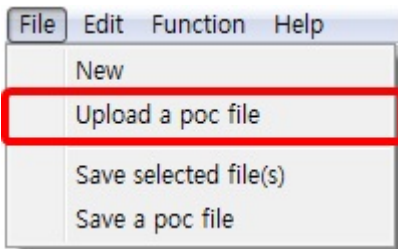
Files in the file list will be uploaded to P4S-341 by clicking upload () button. If the uploading is completed, both files on the file list and in P4S-341 are synchronized and the icons are changed to ()



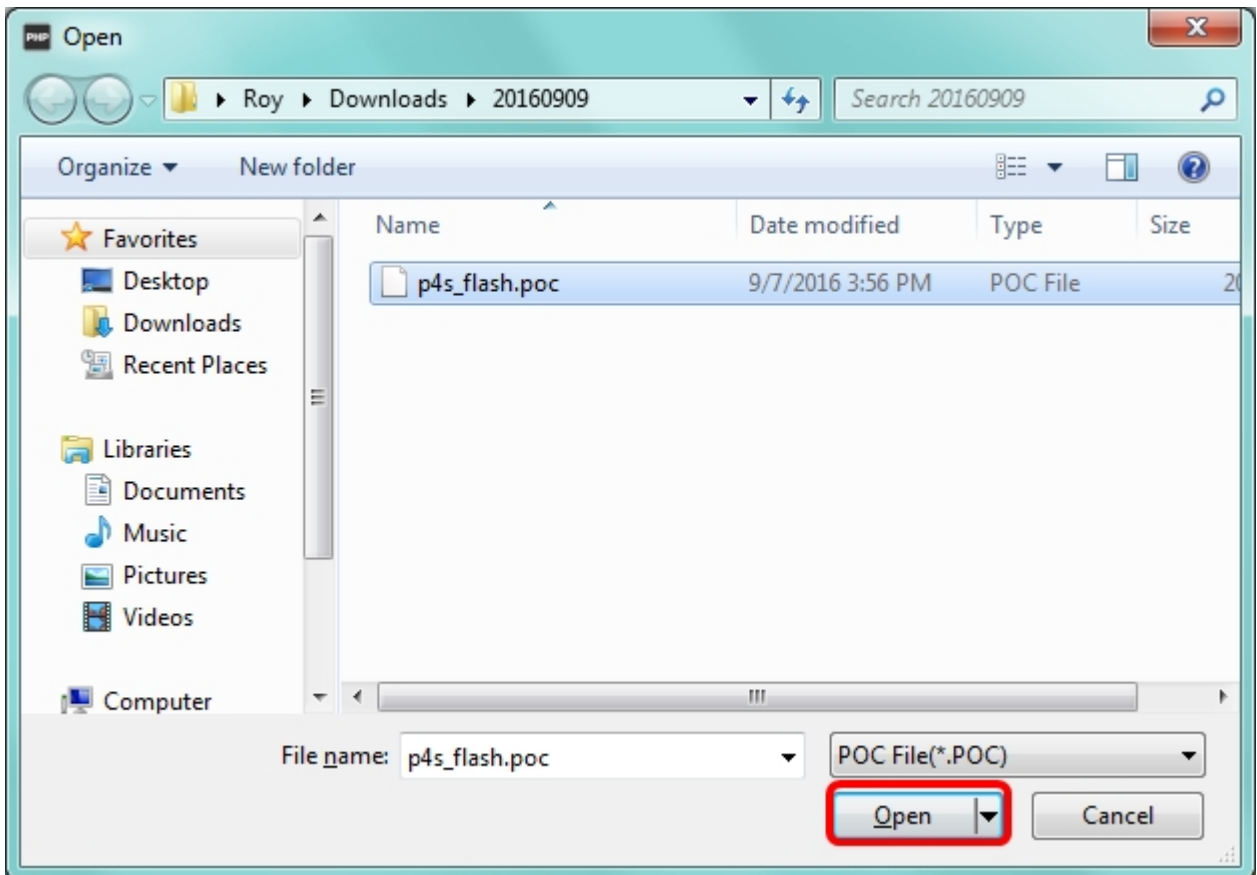
Upload an Integrated File(.poc)

You can upload an integrated file (.poc) with procedures below.

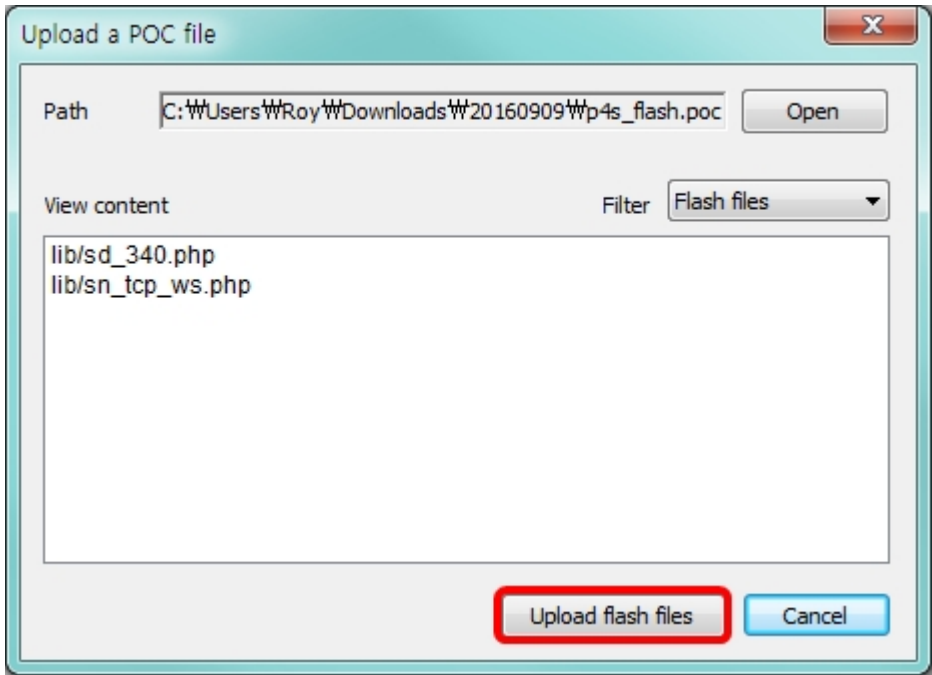
1. Click [File] > [Upload a poc file] menu.



2. Click [Open] after selecting a poc file.

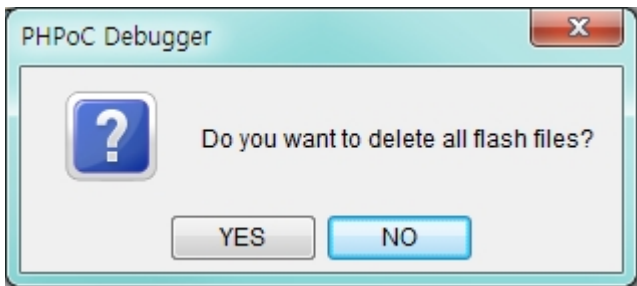


3. Click [Upload flash files] button.

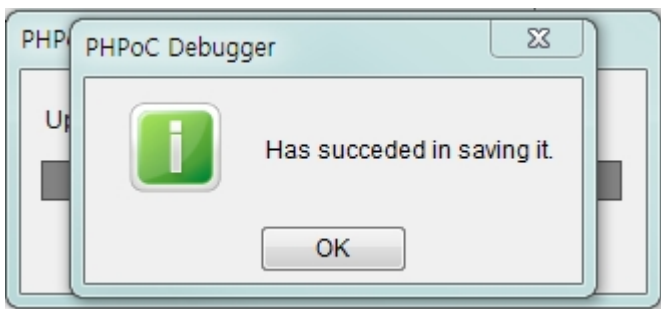


4. Choose yes or no about deleting existing flash files.

※ Caution: If you choose [Yes], all flash files stored in PHPoC are deleted.



5. Click [OK] to finish upload a poc file



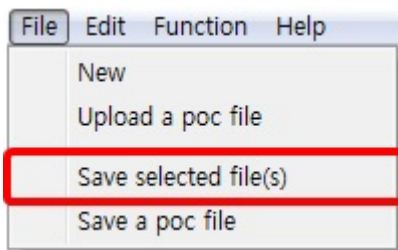
Downloading Files to PC

Downloading Files to PC

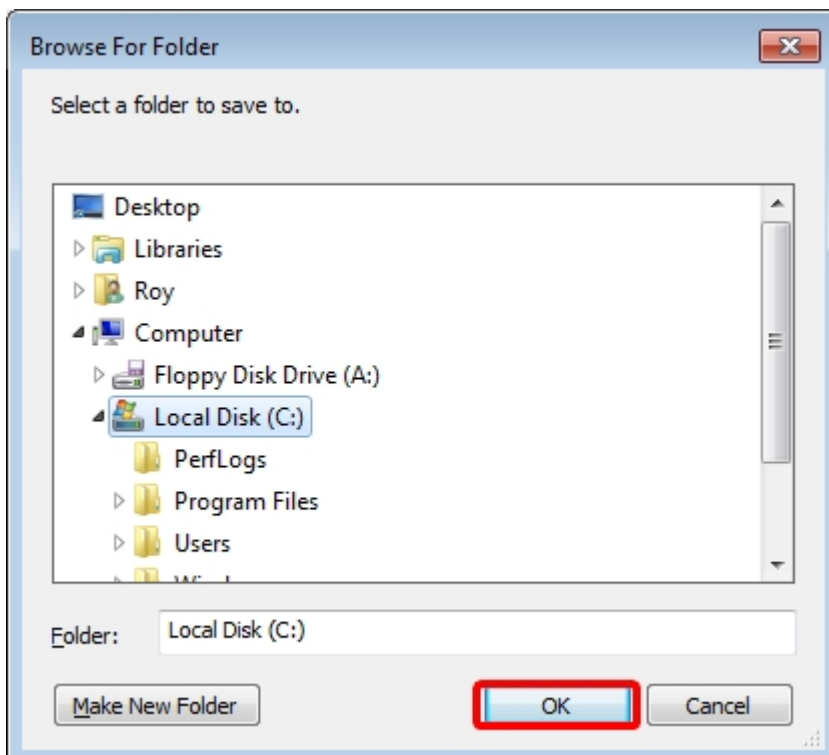
1. Select files in file list



2. Click [File] > [Save selected file(s)] menu on menu bar

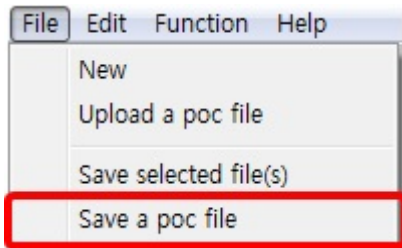


3. Choose a path and click [OK] button.

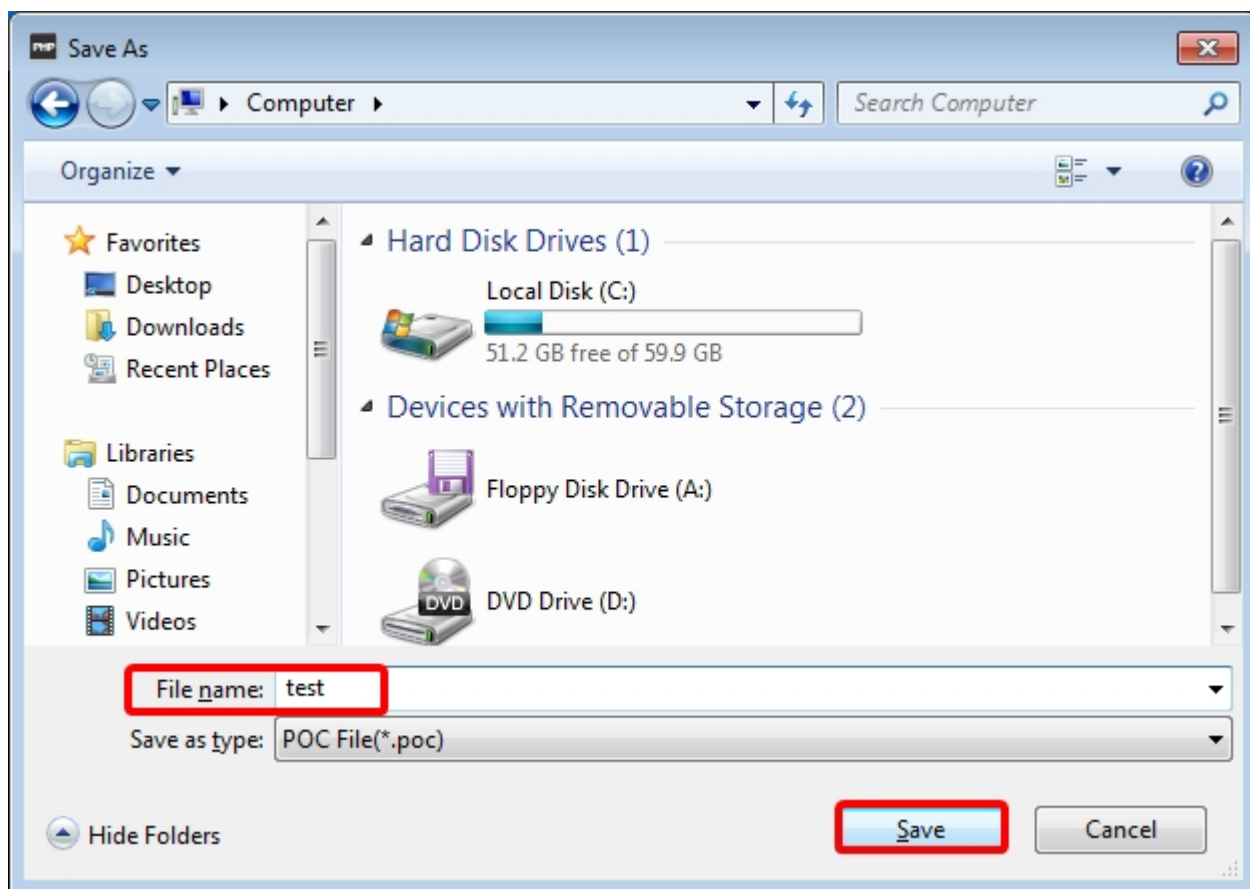


Save as a Integrated file (.poc)

When you want to save all files on the file list as a single file, use [Save a poc file] menu.



".poc" is filename extension. Input filename and click [Save] button.



Practice

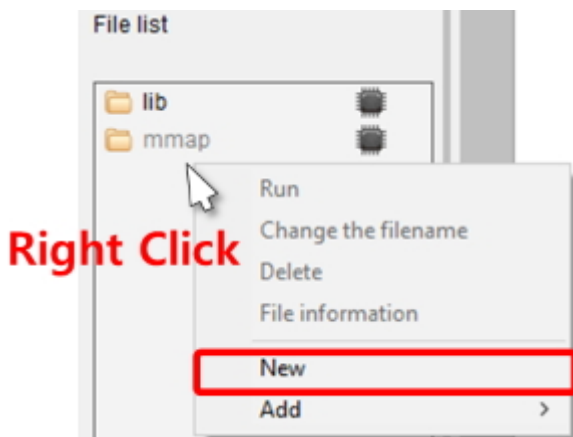
Create init.php

Notice : Operation of PHPoC

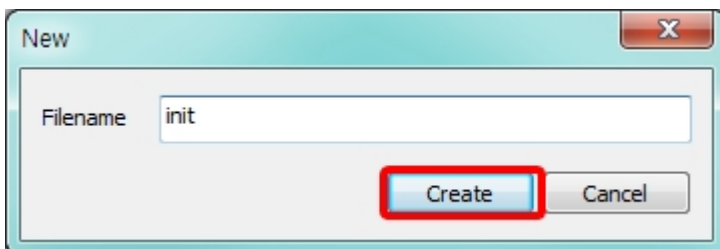
PHPoC searches init.php file after booting. If PHPoC fails to find a file named init.php, it does not run any code. Therefore, you need to make or upload init.php to the file system of PHPoC.

You can write main scrip to init.php but PHPoC runs the file only once. If you wants to run their code more than once, write the main script in another file and load the file by using "php" command of system function. A file loaded by system function is repeatedly run even execution is ended.

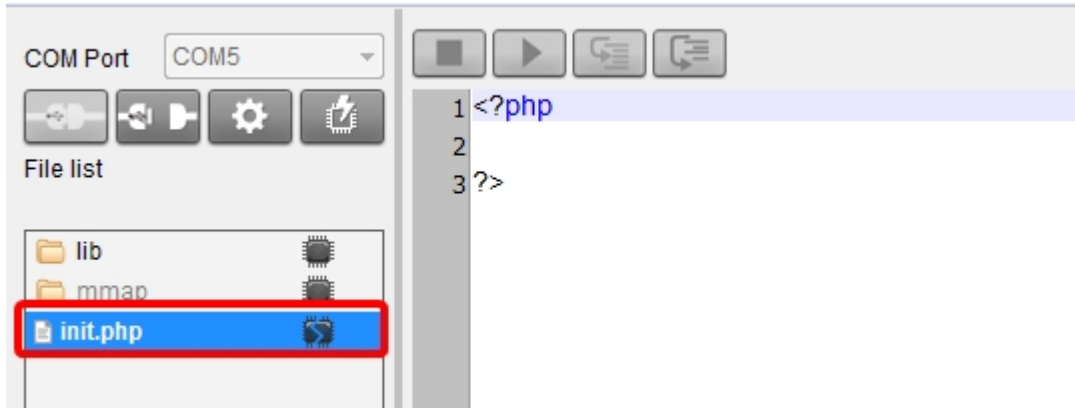
- Click file list with the right button of your mouse and select [New] menu.



- Input "init" into the file name box.






- Select init.php file in the file list.



- Input the following command lines into the editor.

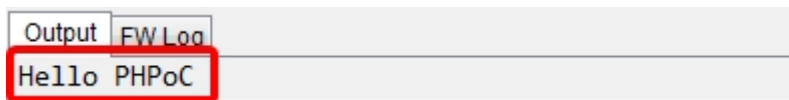
```


1 <?php
2 echo "Hello PHPoC\r\n";
3 ?>
    
```

- Click upload button ().
- After PHPoC finishes uploading files, icon will be changed. ( → )

Execute Scripts

PHPoC automatically runs a script when it boots up or uploads file system. You can find the result in the Output window of PHPoC Debugger.



※ If [PHP debug mode] option of PHPoC Debugger is enabled, PHPoC does not execute a script automatically. You can manually run the script by clicking the Run button. ()

Using PSP Examples

PHPoC Support Package (PSP) contains libraries and example codes. This package is provided to help you use PHPoC conveniently. Before starting test run, download it in your local PC.

- [Go to the Download Page](#)

Choosing an Example

PSP contains many examples using various sensors. Choose an example you are interested in and upload the files to PHPoC. There are three categories.

- basic task examples

These examples require uploading both "init.php" and "task0.php".

- web task examples

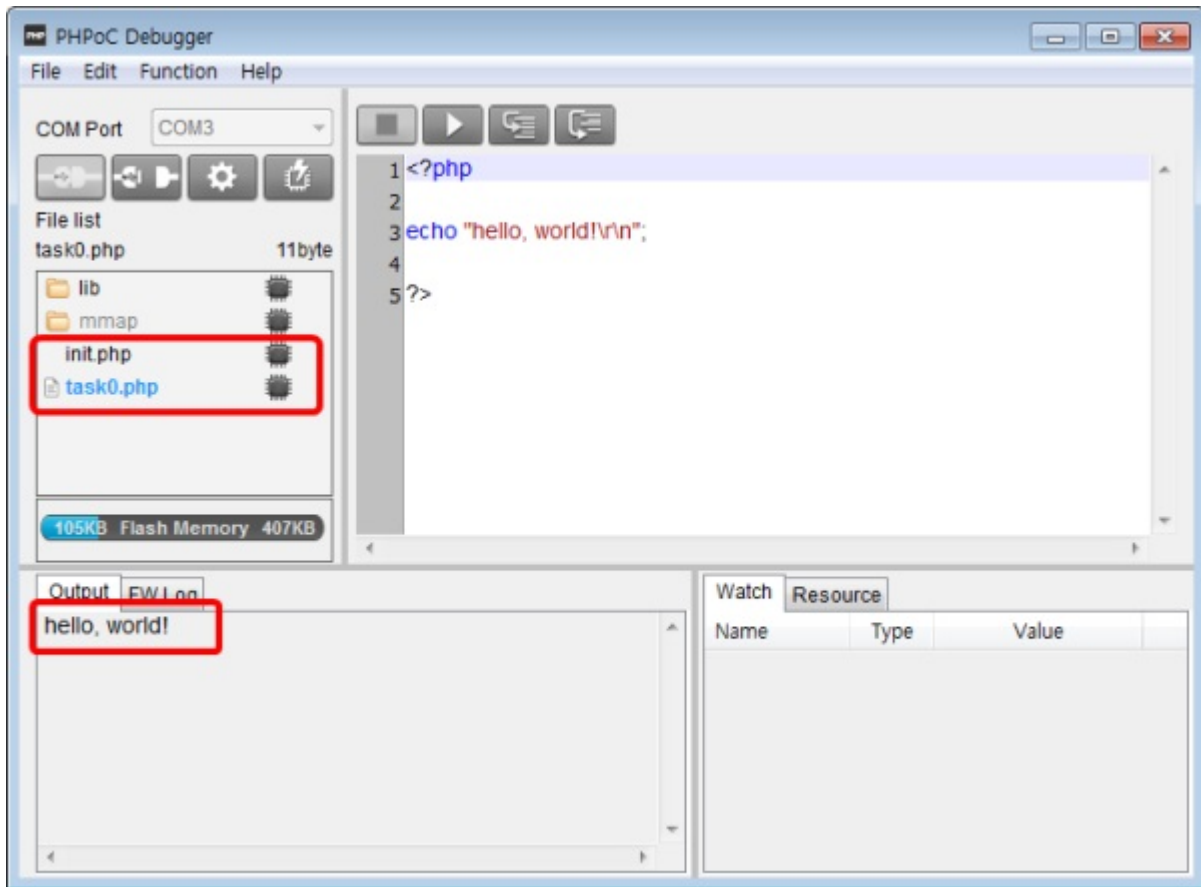
These examples require uploading "index.php" and a set of image files if there are any.

- both basic and web task examples

These examples require uploading "init.php", "task0.php" and "index.php" including a set of image files if there are any.

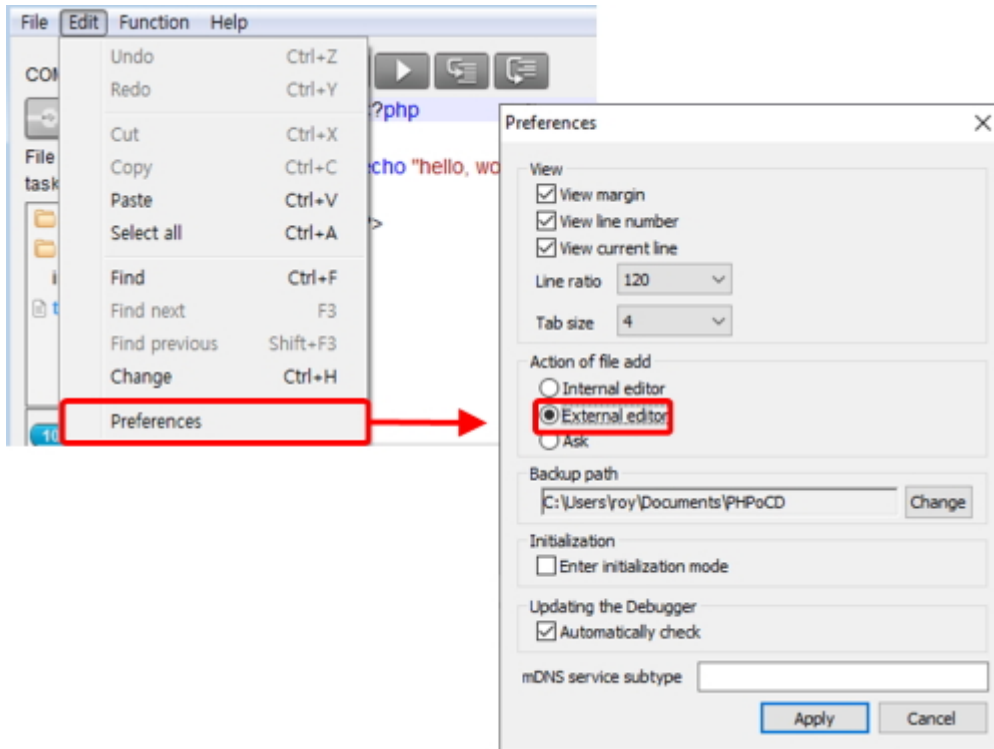
Using Examples

- Find and upload 00.hello example in the p4s/01.php_task folder.
- You can find a result message right after uploading the files.

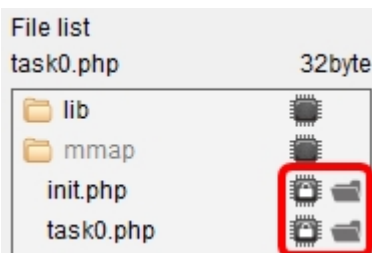


Using an External Editor

In case that you do not want to use PHPoC Debugger's internal editor but external editor, just set [External editor] option of [action of file add] item on preferences window.

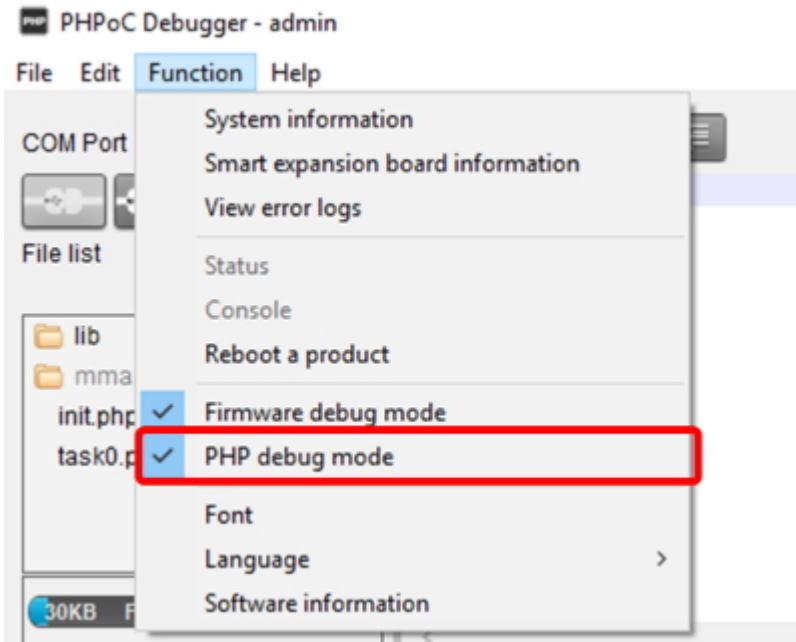


When you upload php files with this option, the lock icons below will be shown on the synchronized files. Files with this icon cannot be modified by internal editor of PHPoC Debugger but external editors.

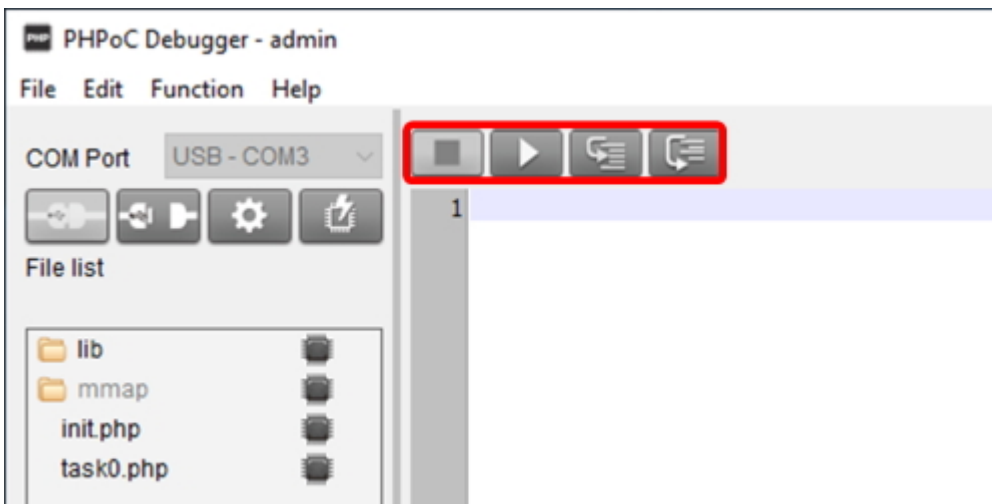


Debugging PHP

PHPoC provides run-time debugging function. Buttons for debugging are enabled when you check the PHP debug mode option in PHPoC Debugger. In this mode, you can set break points or check values of variables at every code line.



Once the PHP Debug Mode is activated, debugging buttons are available. You can debug your script with this buttons through the [Watch] window.



Simple Tutorial

1. Activate the PHP Debug Mode.
2. Write the following code on init.php and upload it.

```
<?php
$var_int = 1;
$var_str = "abc";
$var_arr = array(1, 2);
?>
```

3. Clicking the right button on your mouse and select [Add] menu.
4. Enter "var_int" in the textbox as a name of variable and click [Add] button.
5. Add the following variables in the same way.

- var_str
- var_arr
- var_arr[0]
- var_arr[1]

6. Check values of variables in the [Watch] window while running the script line-by-line using Step-In(F11) button.

Watch	Resource		
Name	Type	Value	
\$var_int	INT	1	
\$var_str	STR[3]	abc	
\$var_arr	?	?	
\$var_arr[0]	INT	1	
\$var_arr[1]	INT	2	

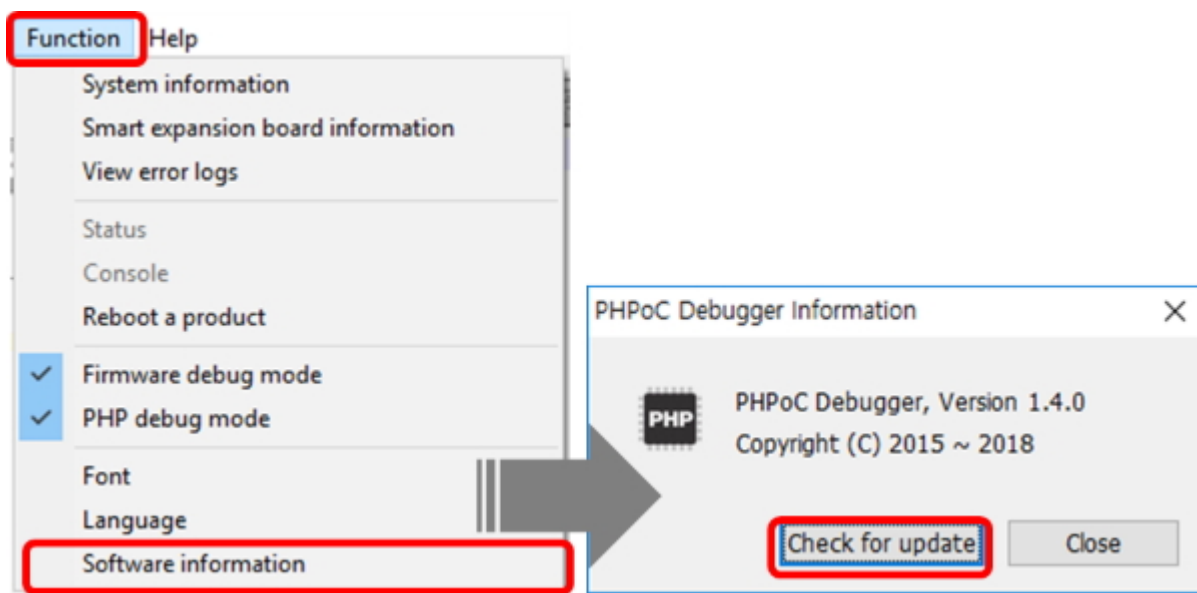
※ Caution: In the case of a variable which is an array, key has to be specified with name of array to watch the value

Online Upgrade

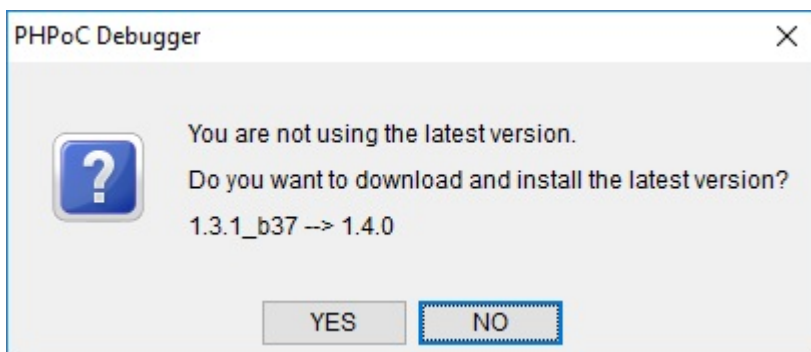
You can check the updates for PHPoC debugger if the PC is connected to the Internet. This function checks whether the currently running PHPoC debugger is the latest version. If it is not the latest version, you can upgrade the debugger online.

Check for updates manually

Select the [Function] > [Software information] on the menu bar. You can check updates by pressing the [Check for update] button.

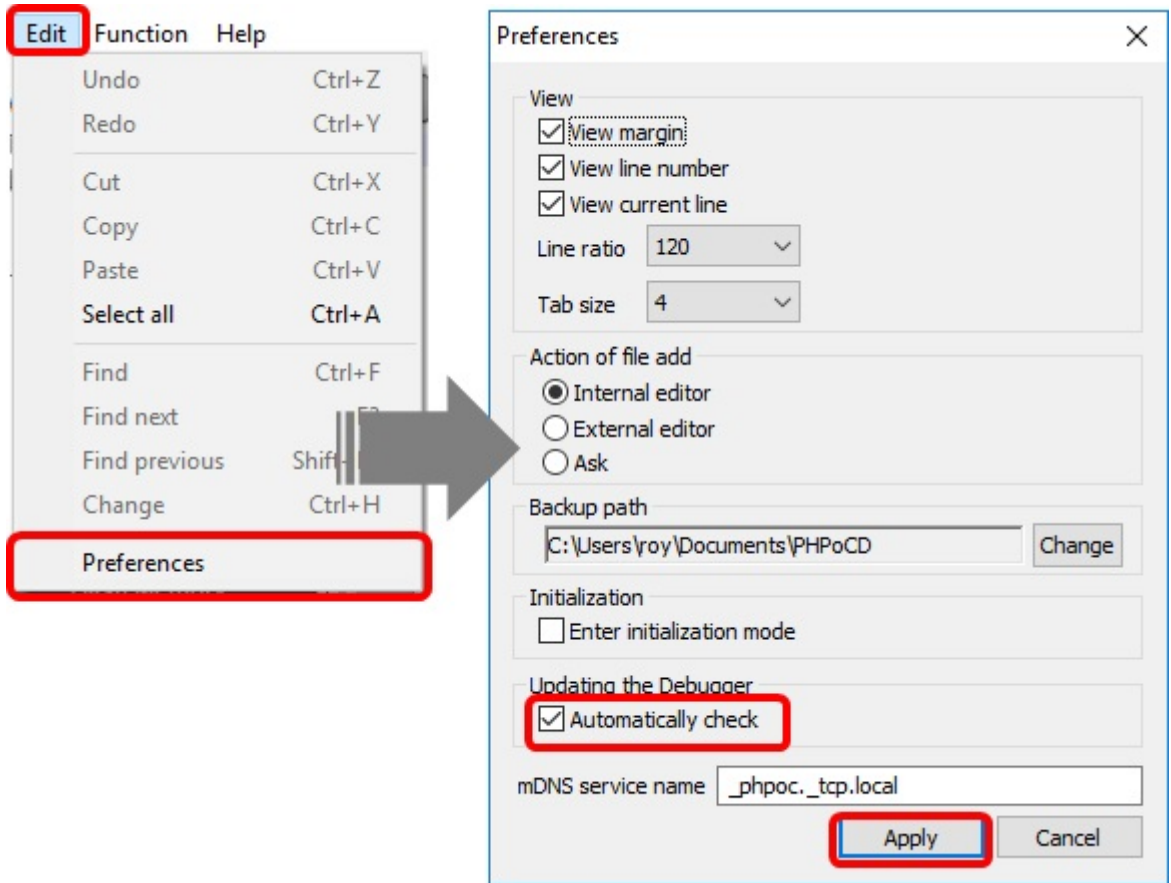


If you are not using the latest version, you can upgrade to the latest version.

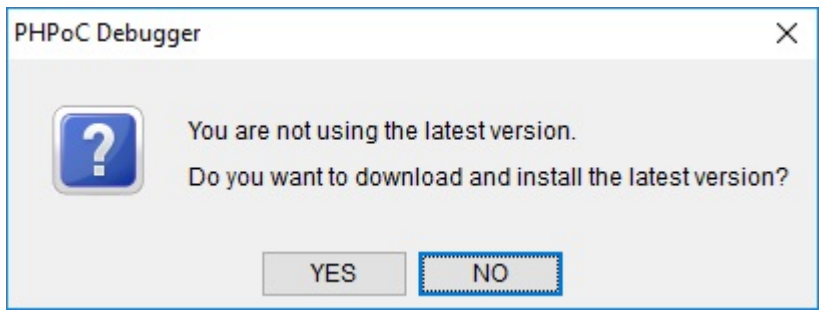


Check for updates automatically

Select the [Edit] > [Preferences] on the menu bar then [Preferences] window will pop up. Check the [Automatically check] in the [Updating the Debugger] section and press the [Apply] button.



After that, PHPoC debugger checks updates online every time you run it. The following notification window will pop up if there is a new update.

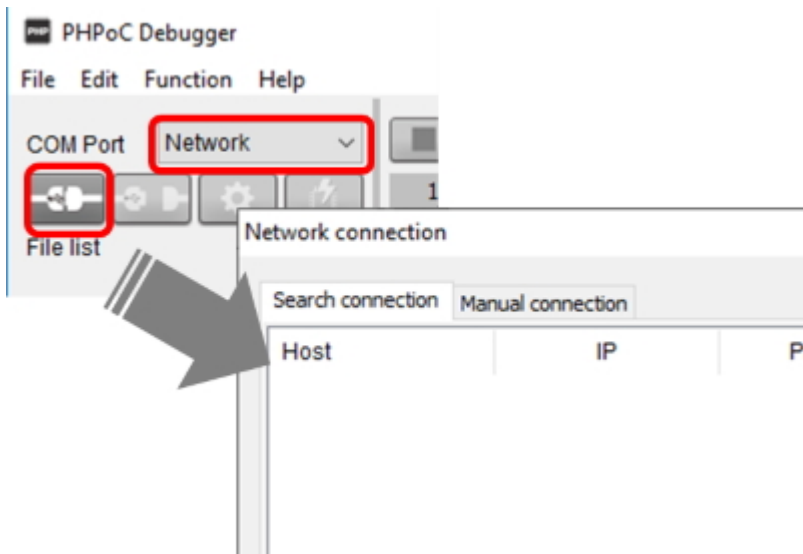


Connection via Network

The connection via network function is to connect the PHPoC debugger and the product via the network instead of the USB cable. Even you connect your product via network, you can use almost all of the functions such as product settings, script editing and debugging. For using the connection via network function, the product is required to be setting related to the function.

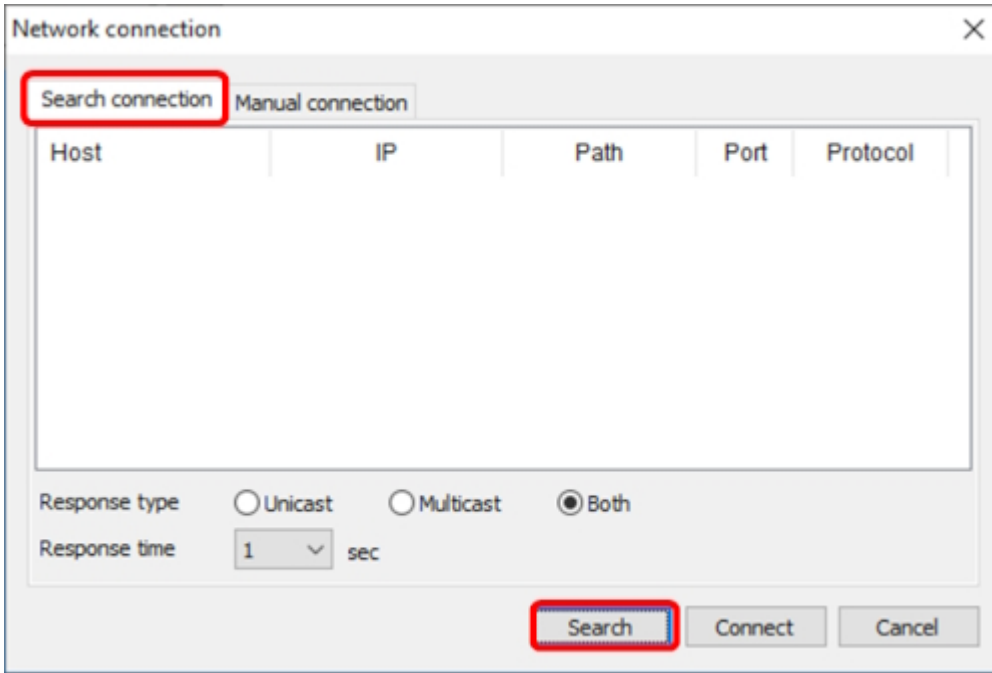
※ How to set up the connection via network for PHPoC products

Select COM Port as [Network] and click Connect() button then you can see the Network Connection window.



Search Connection

If the PHPoC product is on a local network, you can use the Search connection function. This function searches for products on the local network and connects to the products found. If you click the [Search] button in the Network connection window, all the PHPoC products on the local network will be searched.



- Response Type
You can select the response type when the response packet is sent by the PHPoC product that received the search packet.

Response Type	Description
Unicast	sends a unicast response packet to the PC that sent the search packet
Multicast	sends a multicast response packet to all hosts in the Multicast group.
Both	carries on both types

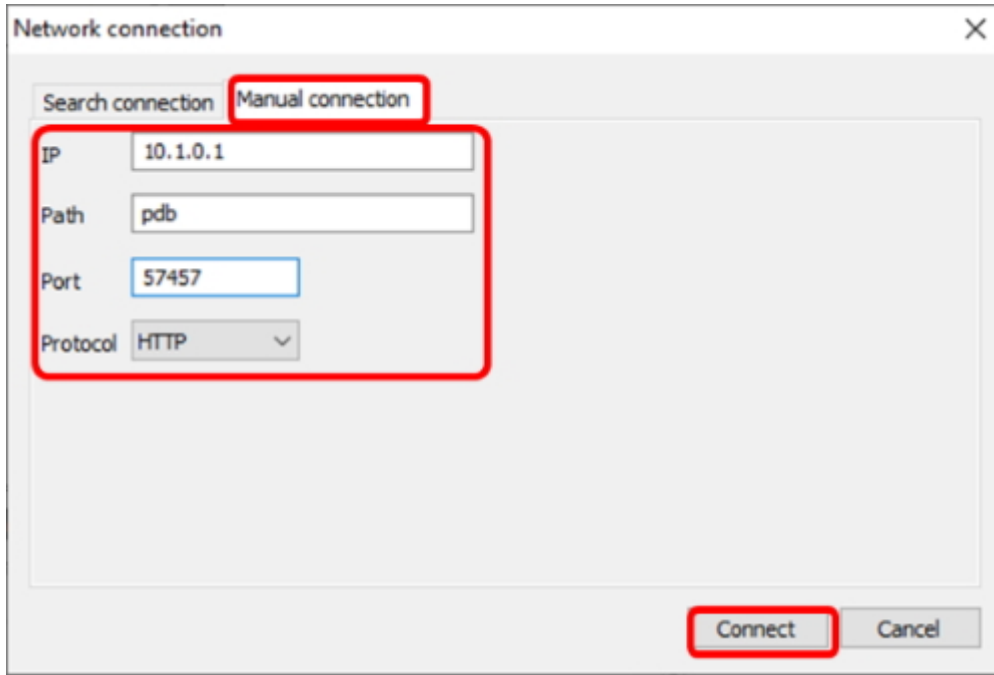
- Response Time
Depending on network environment, you can increase response latency by adjusting this value if the response packet is delayed and the discovery fails. You can choose from 1, 2, 4, or 8 seconds.

Select the product and click [Connect] button to try remote connection immediately.

Manual Connection

This function connects directly to your product after filling the items which are required to connection via network. Press the [Connect] button after inputting the IP address, URI path, port and selecting protocol on the Manual connection tab.

※ It is recommended to enable the Remote debugger option in the product settings for using this function.



- Address
This is the IP address of the product.
- URI Path
This is the URI Path of the product. This value is fixed to "pdb" if the Remote debugger option is activated to the product.
- Port
This is the port for connection via network. This value is fixed to "57457" if the Remote debugger option is activated to the product.
- Protocol
This is the protocol for remote connection. Select HTTP if the product's remote connection protocol is pdb-ws, or HTTPS if pdb-wss.

Restrictions



In contrast with USB connection, there are some restrictions with the connection via network.

Division	Network (HTTP)	Network (HTTPS)	USB
Configuring Password	Not available	Available (except for the admin password)	Available
Uploading F/W	Not available	Not available	Available
Managing Certificates	Not available	Available	Available

Settings

All parameters including an IP address can be configured through PHPoC Debugger.

Setting Steps

1. Connect PHPoC product to PC via USB.
2. Run PHPoC Debugger.
3. Click the connect button() after choosing the right COM port.
4. After then, click configuration () button.
5. Configure parameters.
6. Click the [Save] button to save the configuration.

※ Note: You can also set PHPoC products via [Connection via network](#).

Setting Parameters

Tab	Category	Parameter
IP Address	IPv4	IP address type - Obtain an IP automatically
		IP address type - Use static IP address
		IP Address
		Subnet mask
		Gateway IP address
		IP address type - Obtain DNS server address automatically
		DNS server IP address
	IPv6	IPv6 - Enable / Disable IPv6
		IP address type - Obtain an IP automatically
		IP address type - Use static IP address
		EUI - MAC Address / Random
		IPv6 address and Prefix
		Gateway IPv6 address
		Obtain DNS server address automatically
DNS server address		
Wireless LAN	Basic Settings	WLAN - Enable / Disable WLAN
		WLAN Topology - Infrastructure / Soft AP
		Search AP / Search channel
		Channel
		SSID
		Internal Antenna / External Antenna
		Advanced Settings
	Security	Shared Key
		802.1X: EAP-TTLS / PEAP

Advanced	Time	Set RTC time	
	Password	Password (ID: admin, pdbuser, setup)	
	Certification	Type - Host / Client / Root CA	
		Write certificate	
		Write signed certificate from certification authorities	
		Read the certificate form a product	
	Network	Delete the certificate form a product	
		Local LAN name server	
		Service discovery	
		Network debugger	
		Secure network debugger	
		Remote debugger	

Setting Passwords


If you set a password for the product, you must enter the password when connecting the product via USB or network. There are three default accounts for the PHPoC product, and you can set a password for each account.

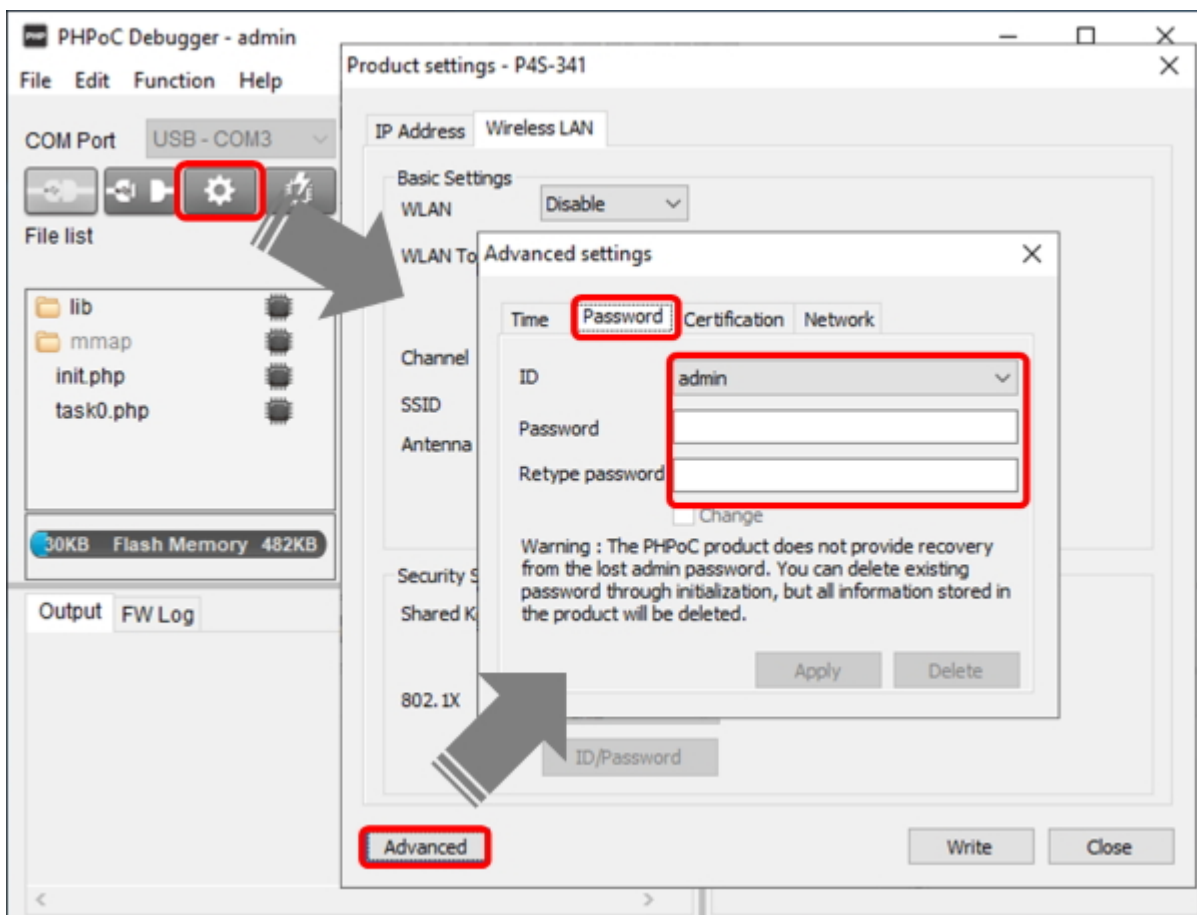
ID	Name	Authority	Password management
admin	administrator	developer authority + setting the connection via network	all accounts
pdbuser	developer	end-user authority + accessing the file system, debugging, managing the certification	pdbuser, end-user
setup	end-user	setting and monitoring products	-

※ Caution: PHPoC does not support restoration when you forget your password. In that case, you can delete the password by using [Device Initialization](#) but all settings and files are also deleted.

How to set up

Creating a password

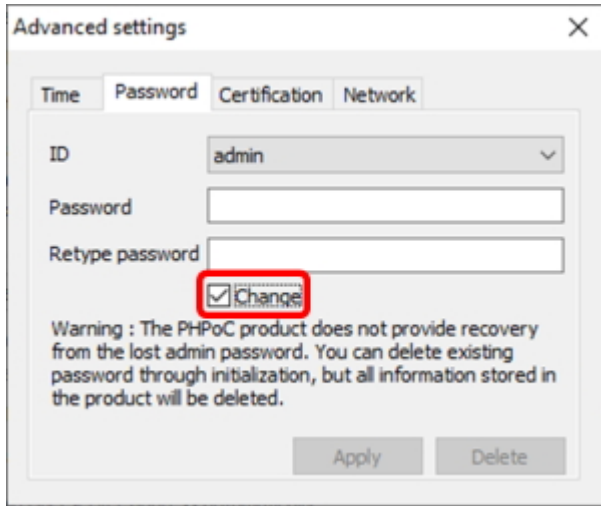
Connect your PHPoC product and click the Setup() button. Click the [Advanced] button on the Product settings window and select the [Password] tab. Then you can set a password to each account.



Passwords can be from 8 to 32 letters, numbers, special characters or a combination of these.

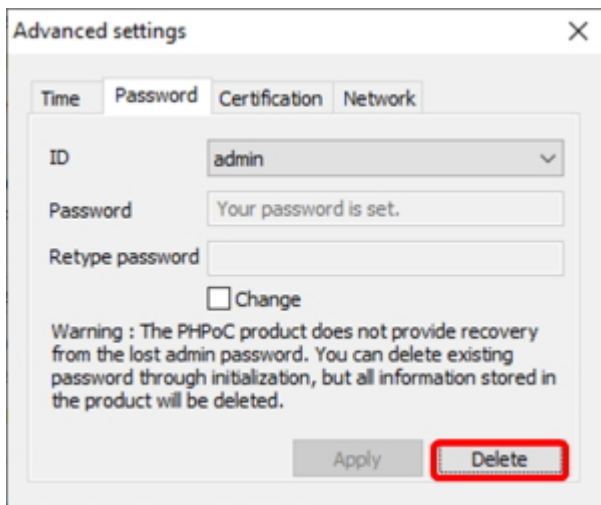
Changing a password

To change the set password, select the account, check the [Change] option, and enter the password to be changed in [Password] and [Retype Password].



Deleting a password

To delete the set password, select the account and click the [Delete] button.

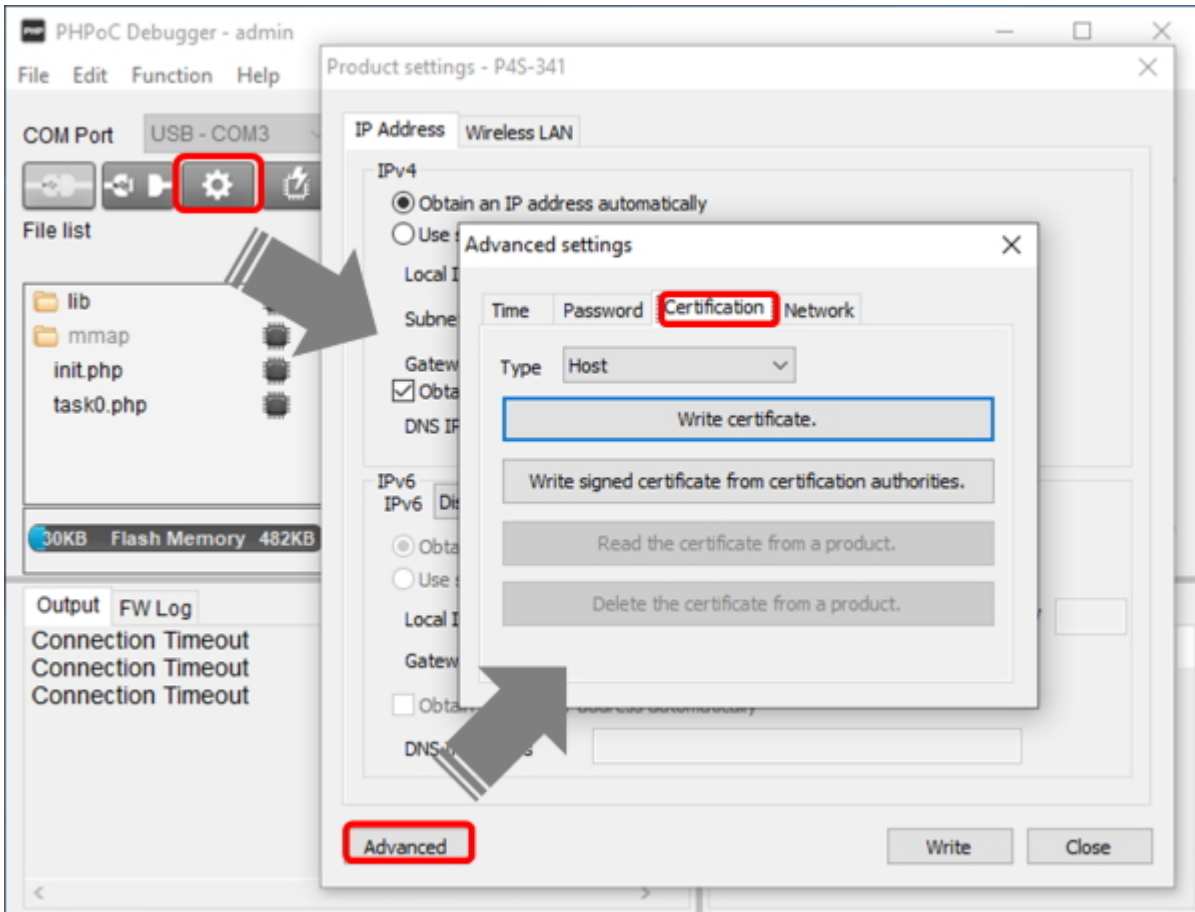


※ Caution: If you connect to the product via USB, you need to set the password for the administrator account (admin) first in order to set the password for the developer (pdbuser) or end-user (setup) account.

Managing Certificates

The certificate is required to use the secure communication function of PHPoC. There are three types of certificates: Host, Client, and Root CA.

Connect a PHPoC to the PHPoC debugger and select [Certification] tab on [Settings] > [Advanced] menu. Choose a type of certificate and click a menu to run.



Write certificate

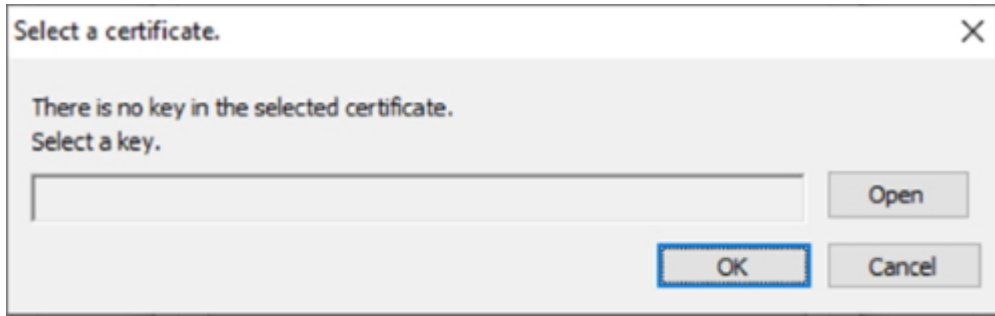
This menu creates a certificate and stores it to PHPoC.

Write signed certificate from certification authorities

This menu stores a certificate issued by the other certification authority to PHPoC. Click the [Open] button to select the certificate and save it.

If there is a password in the certificate, a window for entering the password will pop up.

If there is a separate key file with the certificate, the window to load the key file will pop up.



Read the certificate from a product

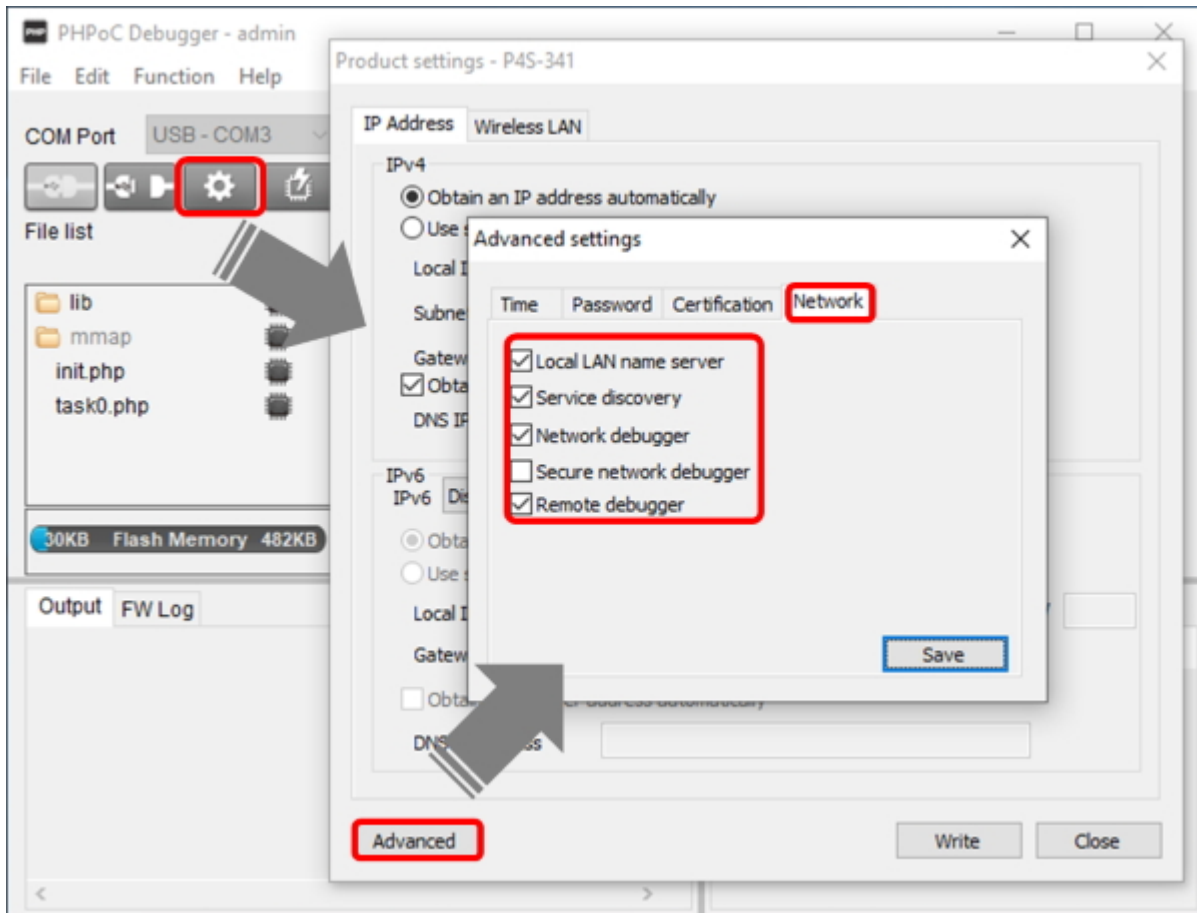
This menu shows the certificate currently stored in PHPoC.

Delete the certificate from a product

This menu is for delete the certificate stored in PHPoC.

Setting Remote Connection

Connect your PHPoC product and click the Setup(⚙️) button. Click the [Advanced] button on the Product settings window and select the [Network] tab; then you can set the four options for remote connection.



- Local LAN name server
This enables mDNS function. You need to set this option to use searching function in local network of PHPoC debugger.
- Service discovery
This enables searching function. You need to set this option to use searching function in local network of PHPoC debugger.
- Network debugger
This enables remote connection. You need to set this option both to use searching function and network connection by PHPoC debugger. The protocol for connection via network is set to pdb-ws if you set this option without setting the [Secure remote debugger] option.
- Secure remote debugger
This enables encrypted remote connection. You need to set this option both to use searching function and encrypted network connection by PHPoC debugger. The protocol for connection via network is set to pdb-wss if you set this option.

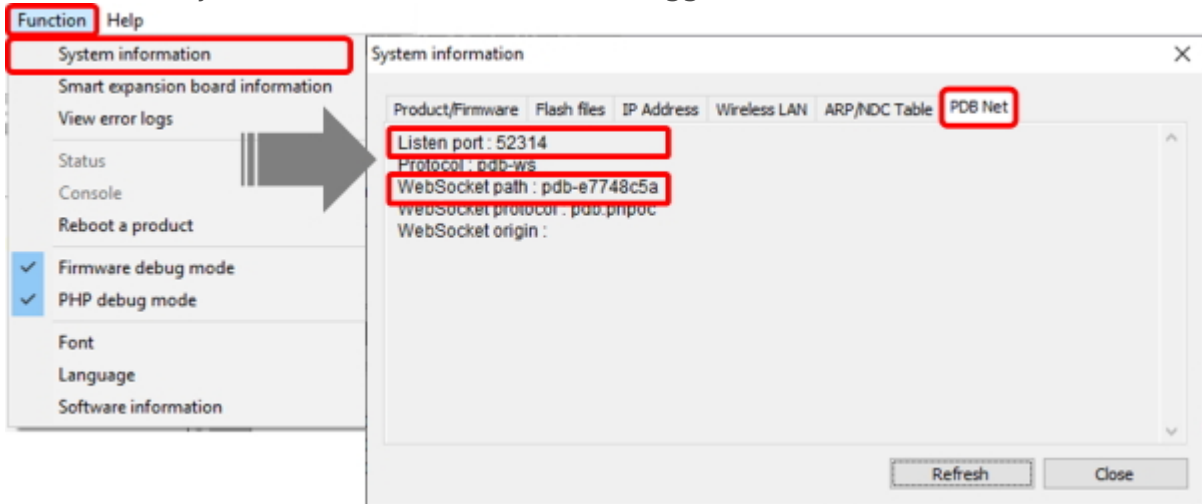
※ Note: You must [set a password](#) for at least one account in order to make a network connection using the secure network debugger(pdb-wss).

- Remote debugger

Check this option if you want to use a manual connection. When this option is activated, Path and Port are fixed as follows.

Division	Port	Path
Remote debugger is activated	57457	pdb
Remote debugger is inactivated	product's default	product's default

※ You can find the product's default values of Port and Path from the [PDB Net] tab of [function] > [System information] in PHPoC debugger's menu bar.



Upgrading Firmware


New firmware can be released when adding functions or fixing bugs. If you are using old firmware, you can upgrade it to new one. PHPoC Debugger provides both online and manual upgrade.

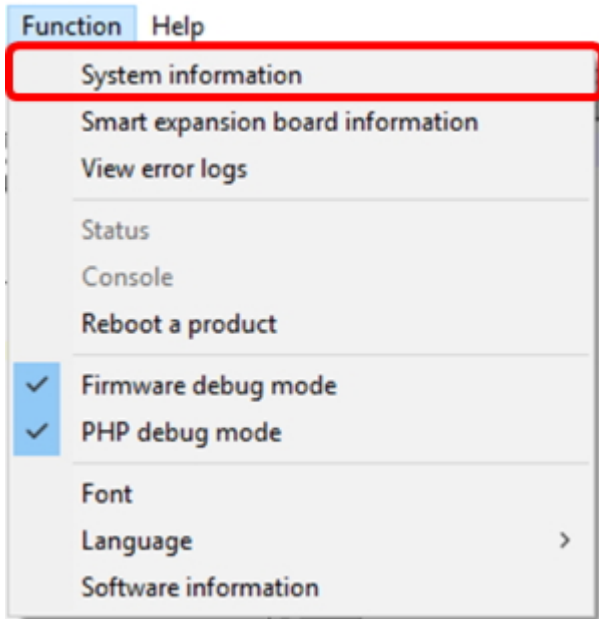
- [Online Upgrade](#)
- [Manual Upgrade](#)

Online Upgrade

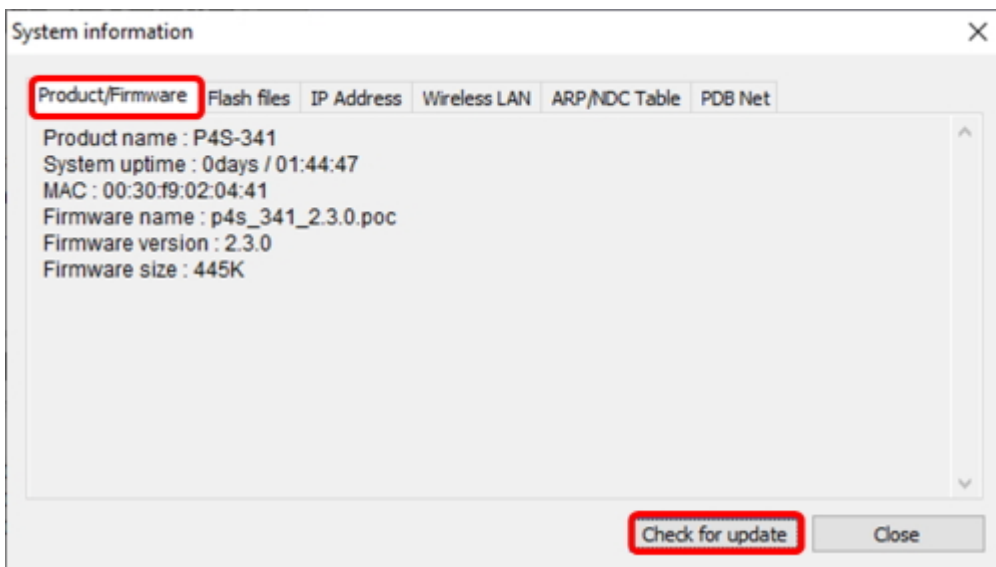
You can upgrade firmware online if your PC is connected to the Internet.

Procedure

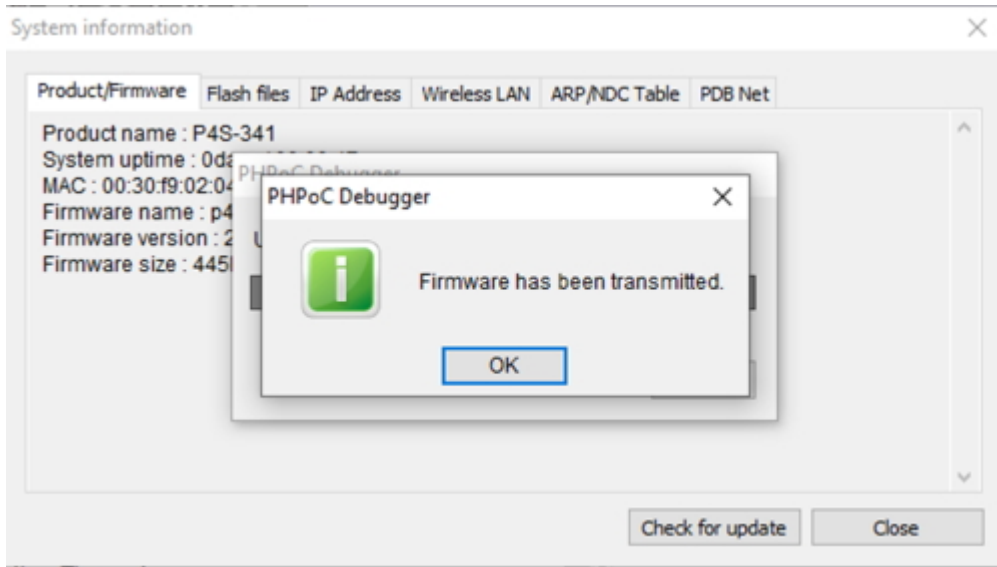
1. Connect PHPoC product to your PC via a USB cable.
2. Run PHPoC Debugger and click connect () button after choosing the right COM port.
3. Click the [Function] > [System information] menu.



4. Select the [Product/Firmware] tab and click the [Check for update] button on the System information window.



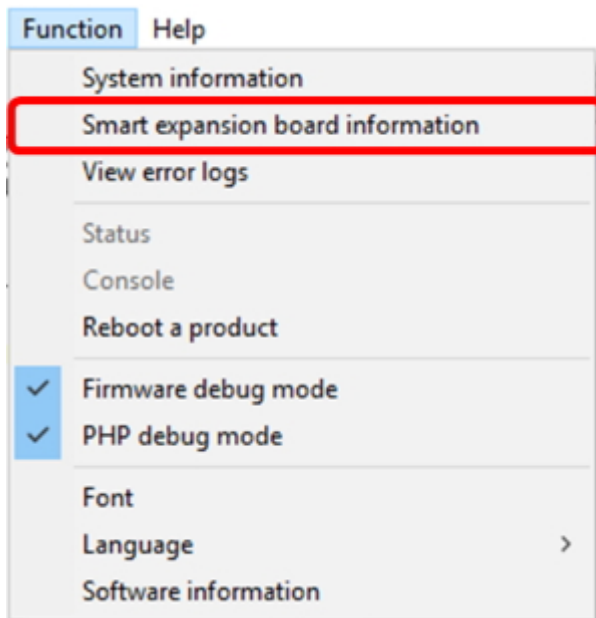
5. Click [OK] after uploading F/W is finished.



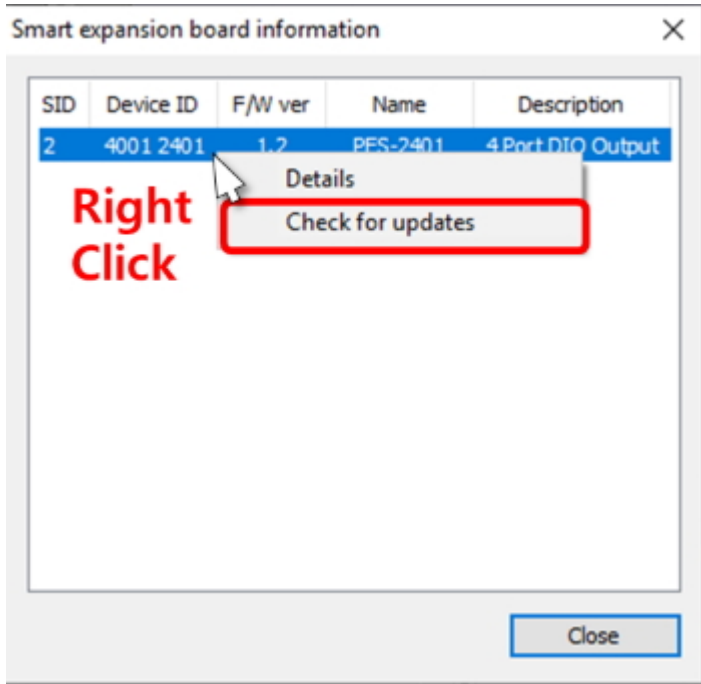
Upgrading F/W of Smart Expansion Boards

You can upgrade firmware of smart expansion boards if they are connected to your PHPoC board.

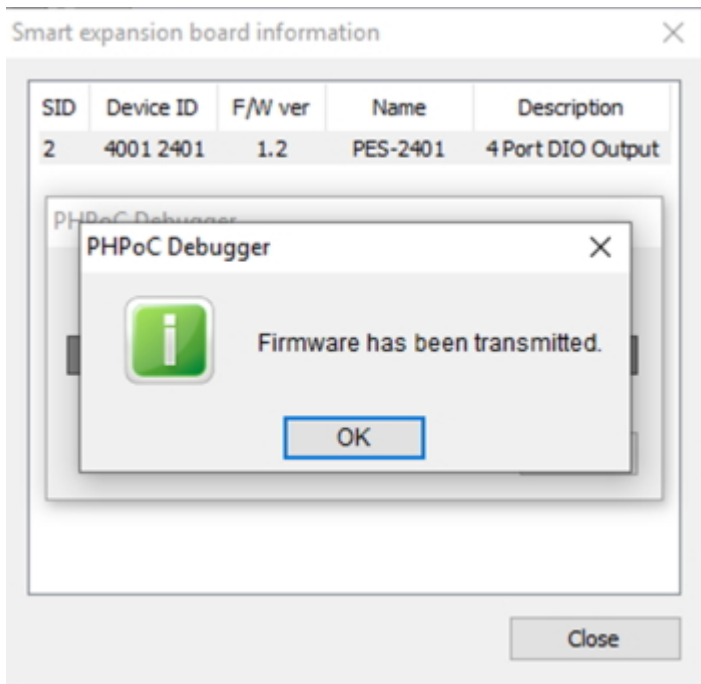
1. Connect PHPoC board with smart expansion boards to your PC via a USB cable.
2. Run PHPoC Debugger and click connect () button after choosing the right COM port.
3. Click the [Function] > [Smart expansion board information] menu.



- On the [Smart Expansion Board Information] window, right-click the product and select the [Check for Updates].



- Click [OK] after uploading F/W is finished.



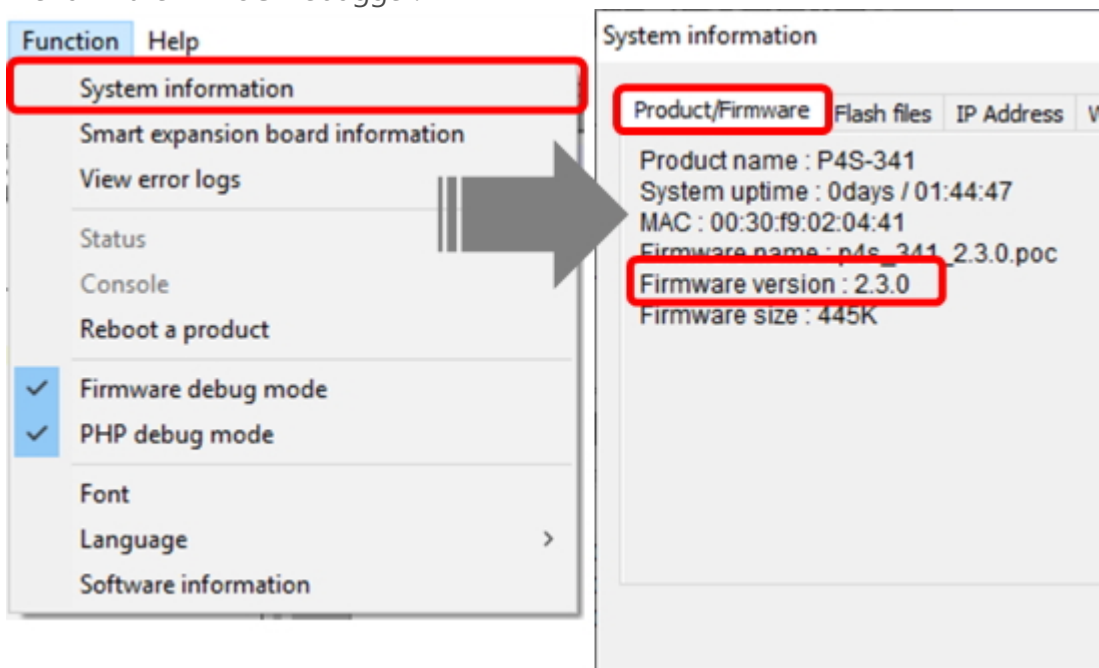
Manual Upgrade

Checking the Version of F/W

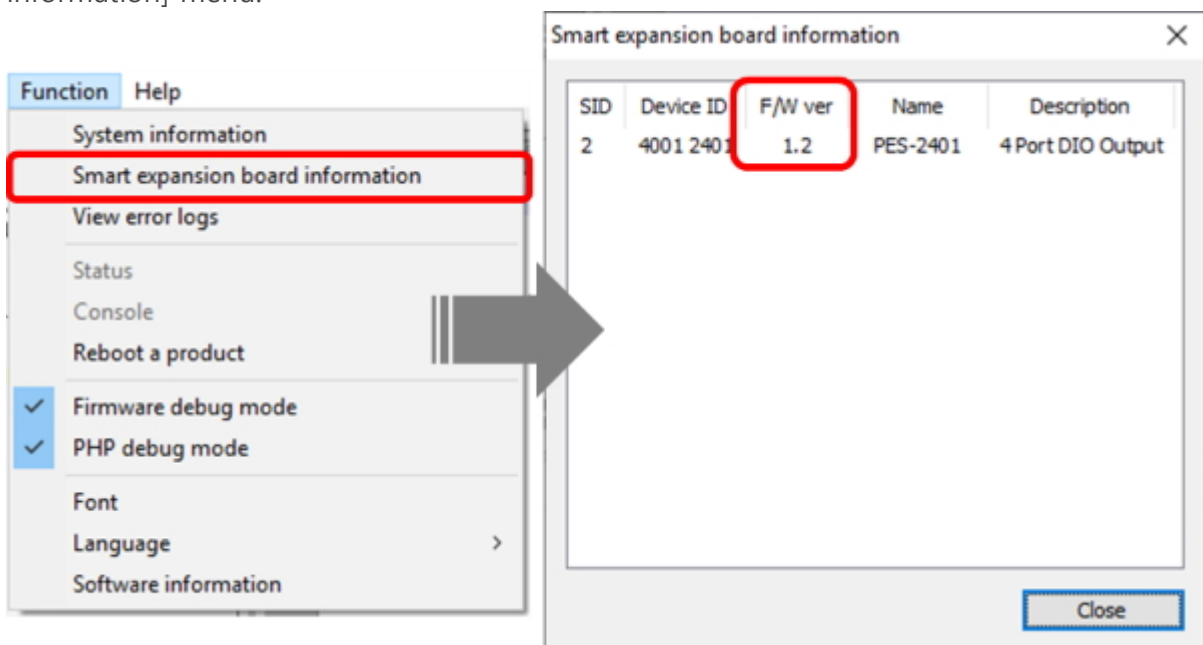
Check the current version of F/W before upgrading it.

- Checking the current version of F/W

You can check it on the [Product/Firmware] tab from the [Function] > [System information] menu in the PHPoC Debugger.




For a smart expansion board, you can check it in [Function] > [Smart expansion board information] menu.

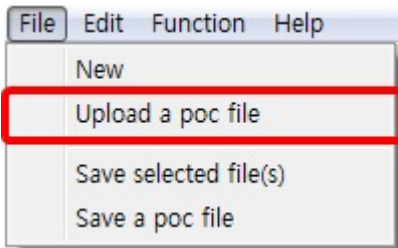


- Checking the latest version of F/W

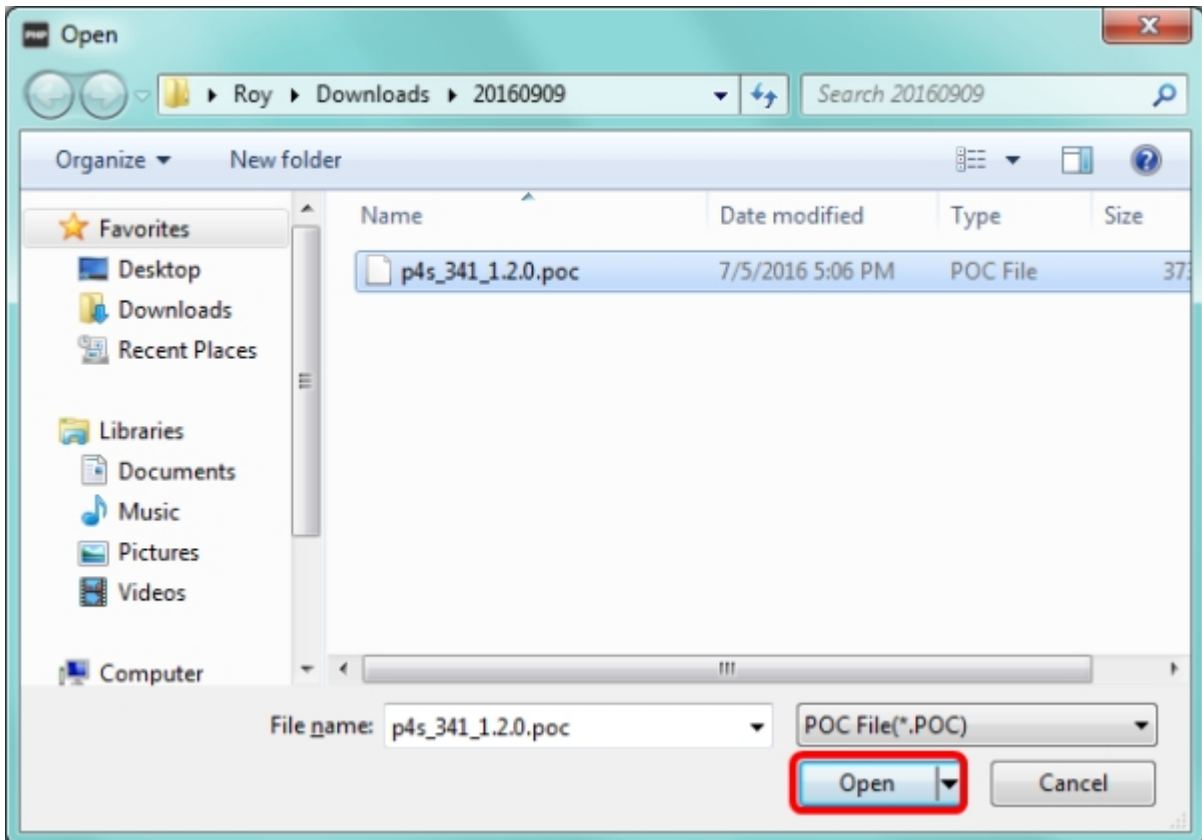
You can check the latest version of F/W on [download page on phpoc.com](#).

Procedure

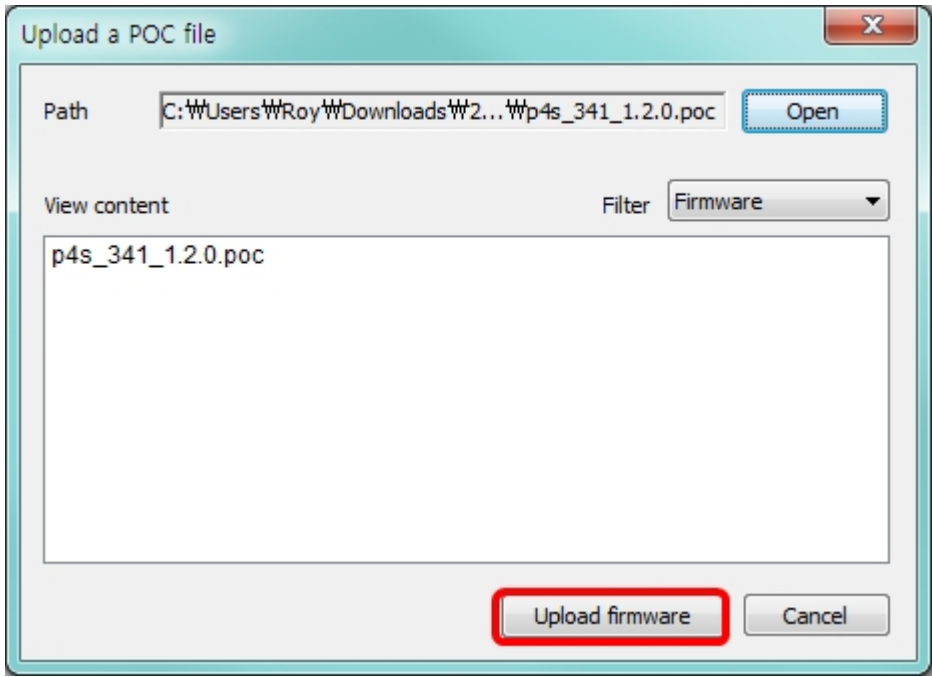
1. Download the latest F/W file.
2. Connect PHPoC product to your PC via a USB cable.
3. Run PHPoC Debugger and click connect () button after choosing the right COM port.
4. Click the [File] > [Upload a poc file] menu.



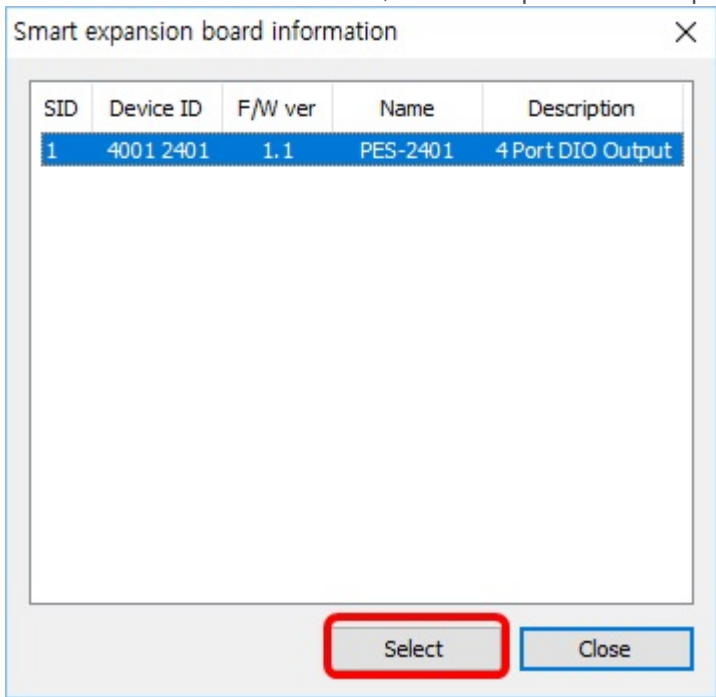
5. Select the F/W file and click the [Open] button.



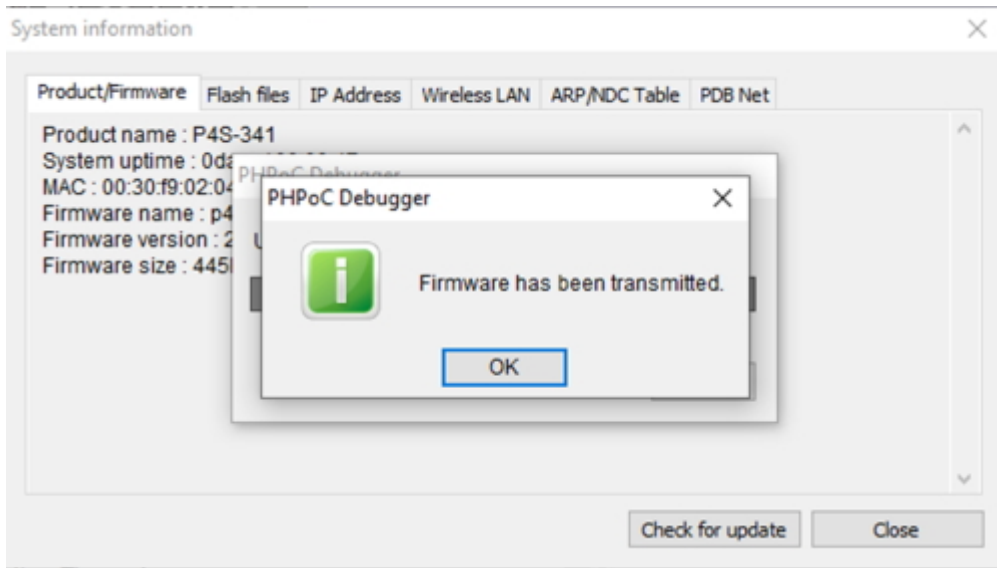
6. Click the [Upload firmware]/[Upload Slave] button.



For a smart extension board, click the product to upload and press the [Select] button.



7. Click [OK] after uploading F/W is finished.



Device Initialization

Device Initialization makes all settings of your PHPoC product including a password initialize to default. Furthermore, all files stored in flash memory are deleted as well as certificate. Because of this, you have to backup your files before doing the device initialization.

- Device Initialization Procedure

Step	Action	Product State	STS LED
1	Run PHPoC Debugger	-	-
2	Set PHPoC to initialization mode(Use [Edit]>[Preferences] menu on PHPoC Debugger)	Enter Initialization mode after reboot	Blink rapidly
3	Keep pressing the function button over 10 seconds	Preparing initialization	Blink very rapidly
4	Check STS LED after 10 seconds	Initialization ready	Off
5	Release the function button right after the STS is OFF.(※ If you don't release the button within 2 seconds, the state go back to the step 3)	Progressing initialization	On
6	Rebooting automatically	Initial state	Off