TPS-1

GUI Configuration Tool

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Introduction

The objective of this document is to show you of how to use PC TPS-1 GUI Configuration Tool. Since the typical configuration method involves several of software, it is quite difficult to use during production. In mass production stage, factory may need a simple and user friendly tool. Thus, we have developed PC TPS-1 GUI Configuration Tool. The TPS-1 GUI Configuration Tool is used to configure TPS-1 with default image, so the process of configuration can be simplified. In this document, the PC GUI TPS Configuration Tool will be explained.

Target Device

TPS-1

Contents

1. Overview

To configure TPS-1 with typical method, the software tools below are involved.

- Terminal program (e.g. HyperTerminal)
- TPS Configurator
- TFTP server (e.g. tftp32)

The procedure of typical TPS-1 configuration is quite complicated, and it is not convenient for production. In order to simplify the TPS-1 firmware download and configuration procedure, default image, FS_PROG.exe and TPS-1 GUI Configuration Tool are used. Default image, FS_PROG.exe and TPS-1 GUI Configuration Tool are explained below.

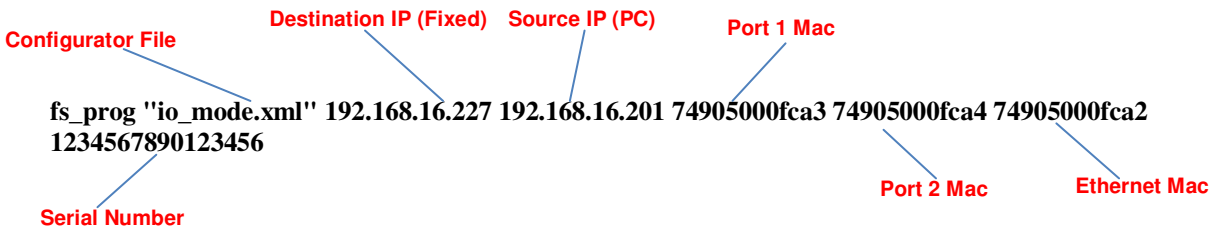
Default image

In the package of TPS Development Toolkit V.1.2.0.201, there is a file called DEFAULT_IMAGE.hex. DEFAULT_IMAGE.hex contains the necessary firmware of TPS-1, so we don't need to use serial port and TFTP server to download the firmware to TPS-1 board during production. The serial flash need to be programmed with DEFAULT_IMAGE.hex by programmer before mounted.

Since there is no configuration in DEFAULT_IMAGE.hex, TPS-1 cannot be used as Profinet IO without configuration. We need to configure the TPS-1 by software tool (e.g. FS_PROG.exe) via RJ45 interface.

FS_PROG.exe

FS_PROG.exe is a key component of TPS configurator. It can be executed in DOS environment. With FS_PROG.exe program, the TPS-1 configuration can be sent by a script file (batch file). The following is an example of sending the TPS-1 configuration by FS_PROG.exe in DOS.



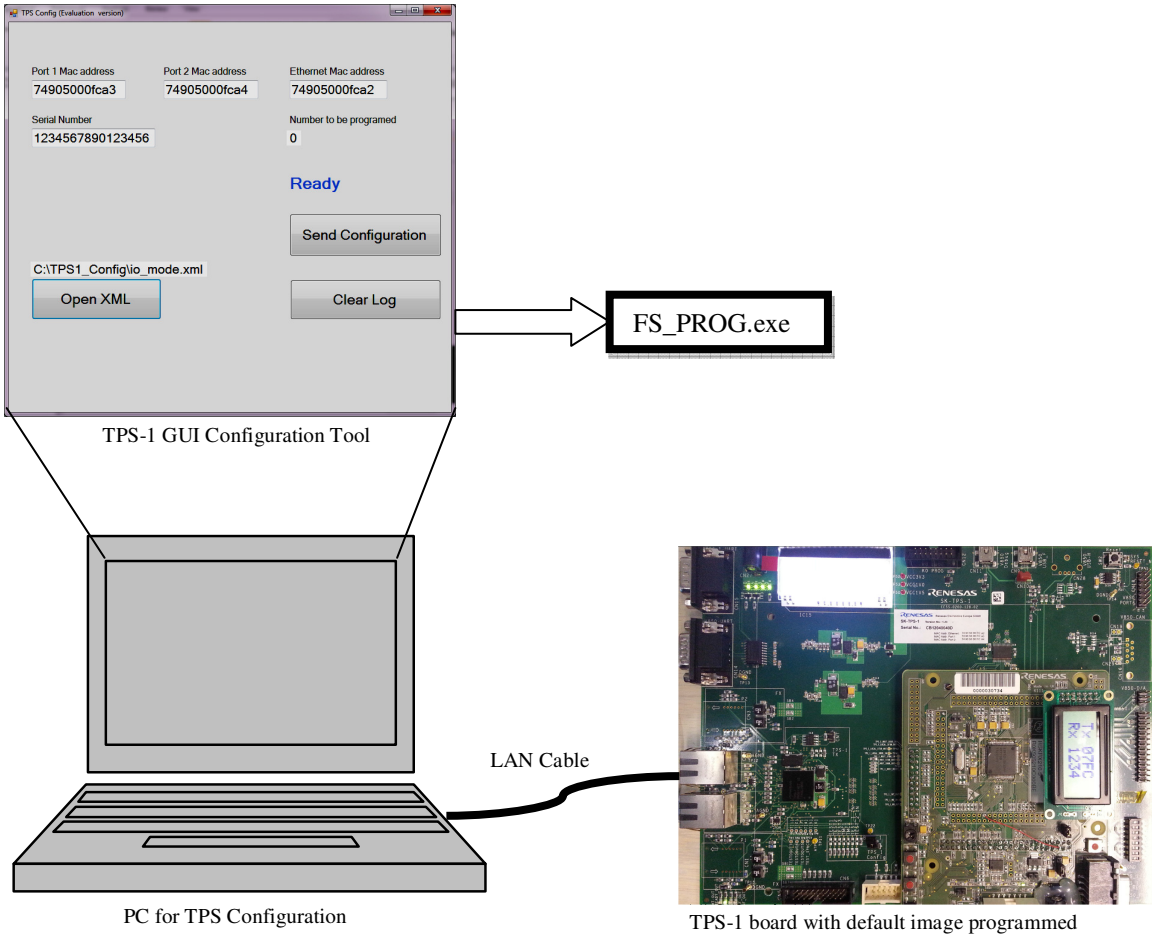
The parameters are described as below:

Parameter name	Meaning
Configurator file	Path and filename of TPS configurator file.
Destination IP	IP address of TPS-1. The IP address of default image is set as 192.168.16.227
Source IP	IP address of Host PC for configuration
Port 1 Mac	MAC address of port1. It should be unique in each device.
Port 2 Mac	MAC address of port2. It should be unique in each device.
Ethernet Mac	MAC address of Ethernet. It should be unique in each device.
Serial Number	Serial Number of the device. It should be unique in each device.

TPS-1 GUI Configuration Tool

FS_PROG.exe is executed under DOS environment. It is not convenient for production. Thus, we develop a TPS-1 GUI Configuration Tool which utilizes FS_PROG.exe for configuration. Parameters in TPS-1 GUI Configuration Tool will pass to FS_PROG.exe. TPS-1 GUI Configuration Tool is written in VB express 2010.

Before configuration, the external SPI flash of TPS-1 board needed to be programmed with default image first. After that, TPS-1 GUI Configuration Tool can be used to configure the TPS-1 settings via LAN cable. The figure below shows the configuration platform using TPS-1 GUI Configuration Tool.



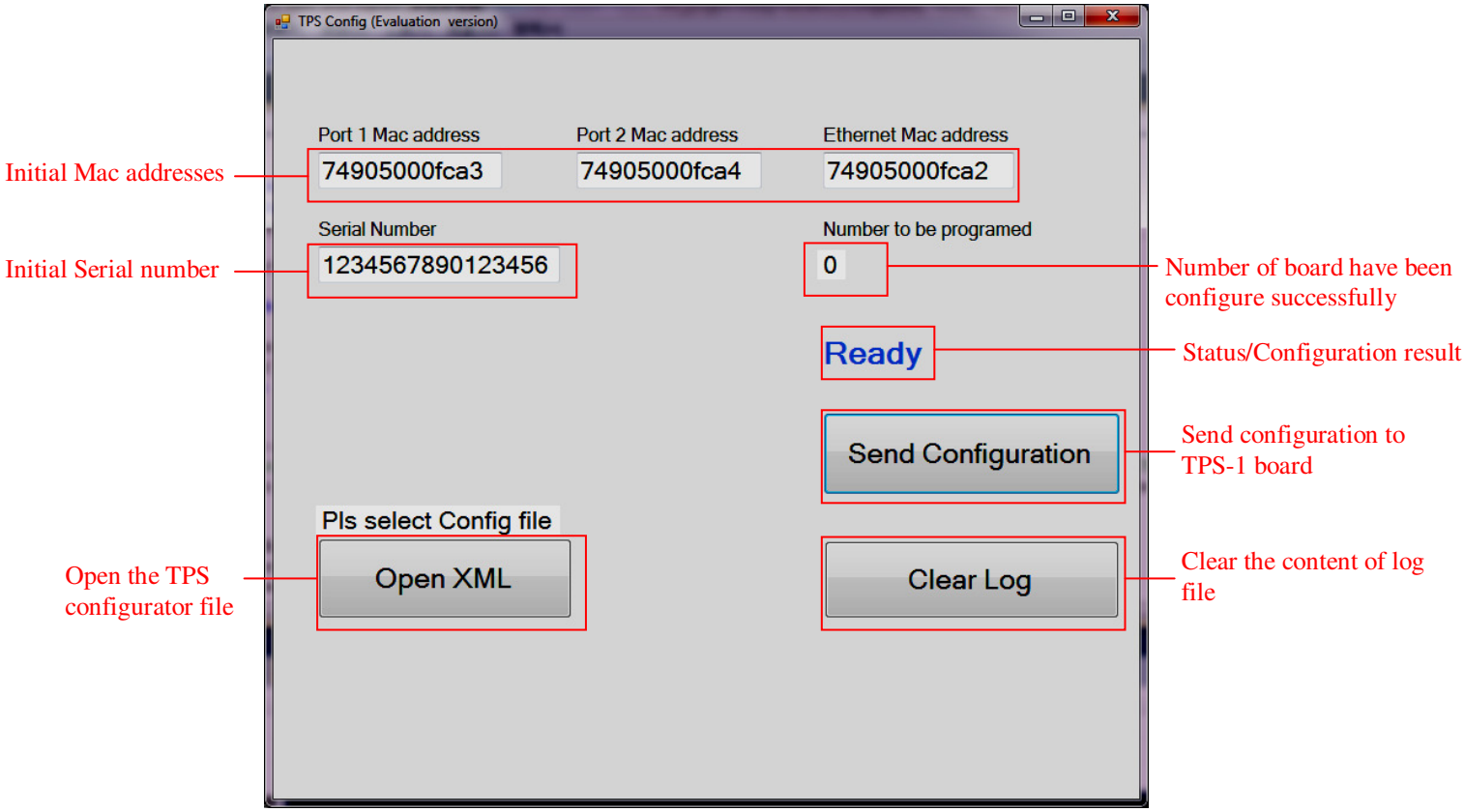
2. TPS-1 GUI Configuration Tool

TPS-1 GUI Configuration Tool utilize FS_PROG.exe to configure TPS-1. It provides a user friendly GUI interface, so it make configuration during production more convenient.

TPS-1 GUI Configuration Tool have the below features:

- Set initial MAC address
- Set initial serial number
- Increase MAC address and serial number by one automatically
- Record the configuration history in .csv format

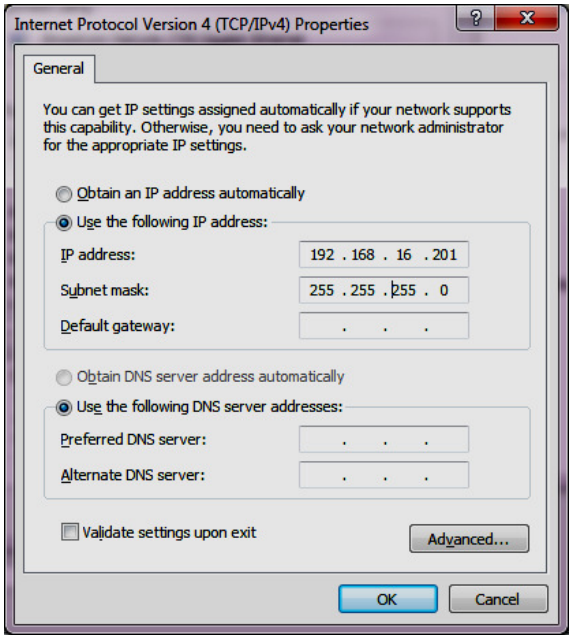
The following figure explains the user interface of TPS-1 GUI Configuration Tool.



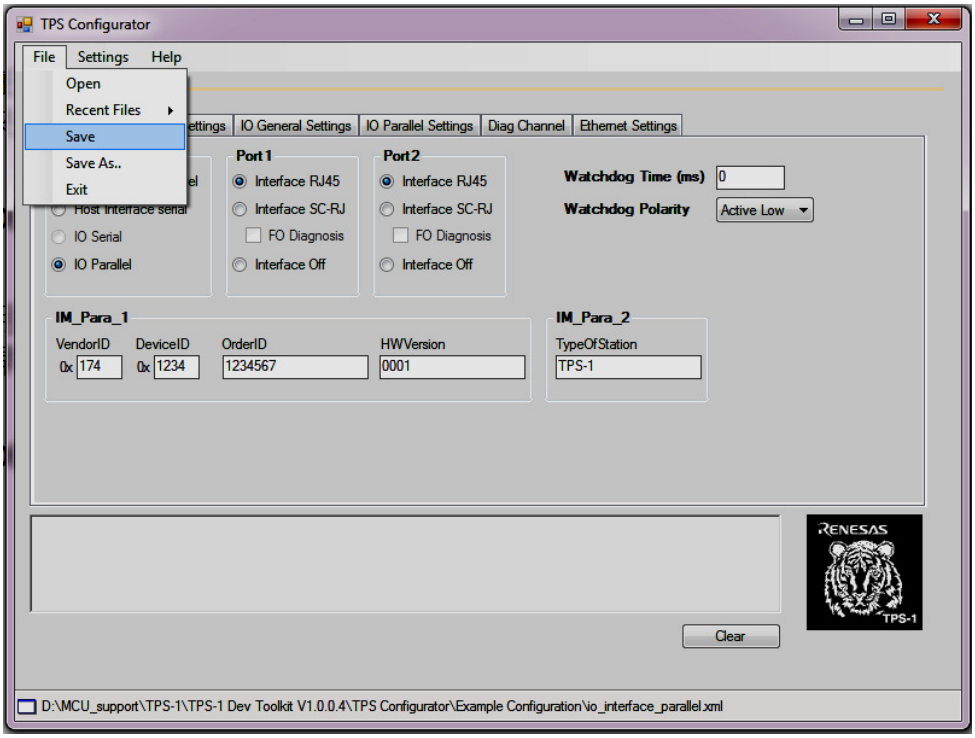
2.1 Procedure of configure TPS-1

After programmed the external SPI flash with default image, we can follow the procedure below to configure TPS-1.

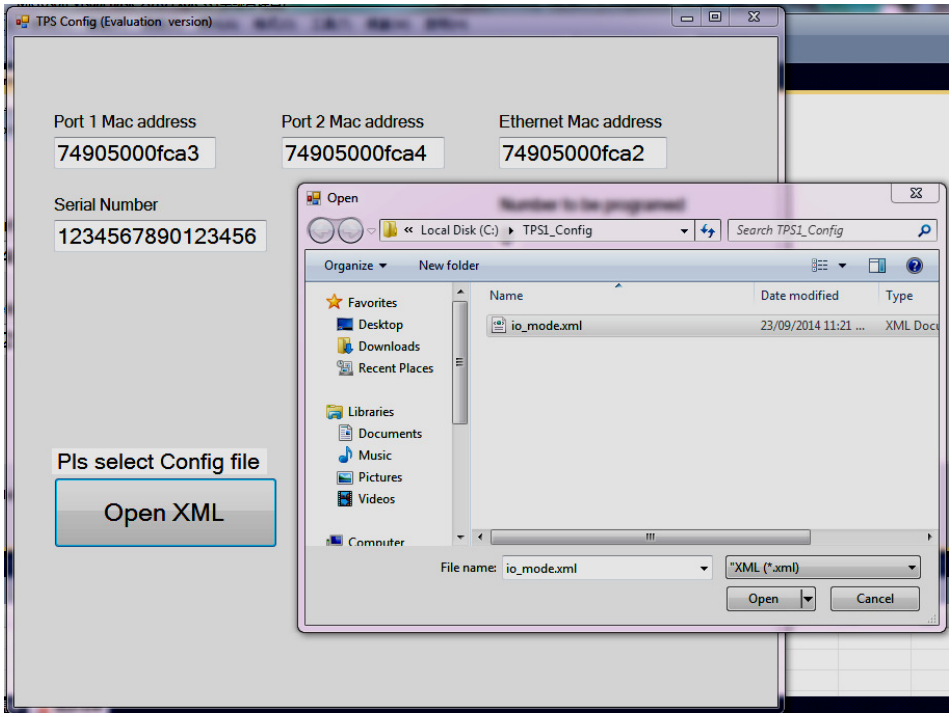
1. Set the IP address of PC to 192.168.16.201



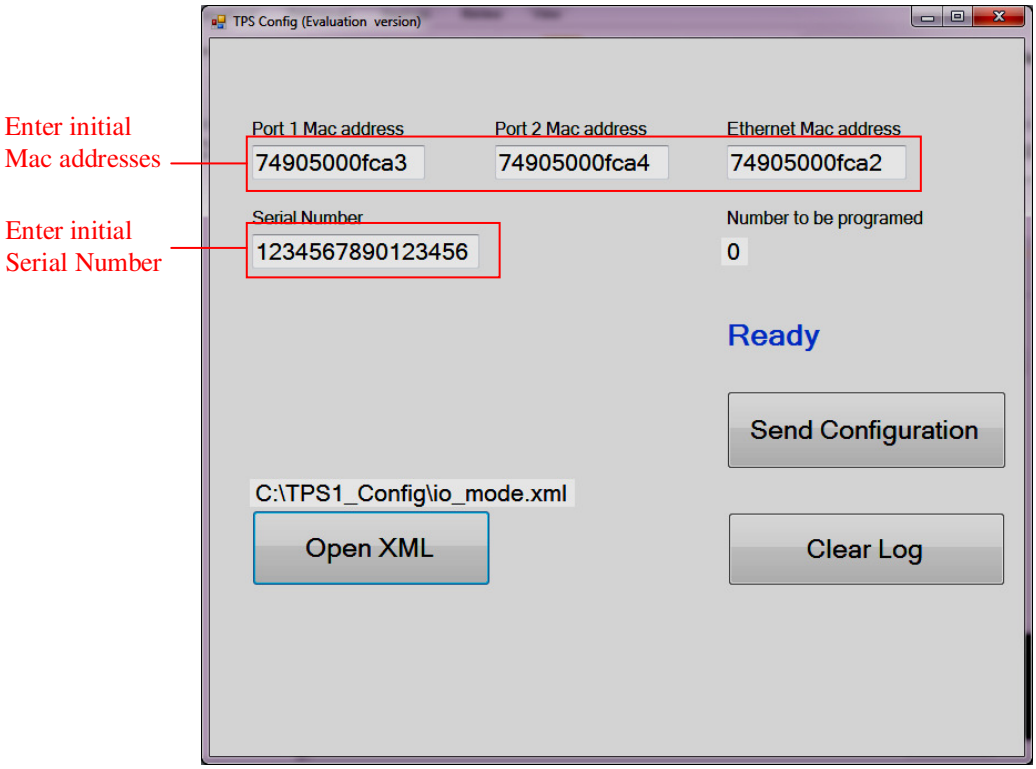
2. Open TPS Configurator and enter the parameters for configuration, and save the xml file. (Note: MAC addresses and Serial number will be overwritten by TPS-1 GUI Configuration tool)



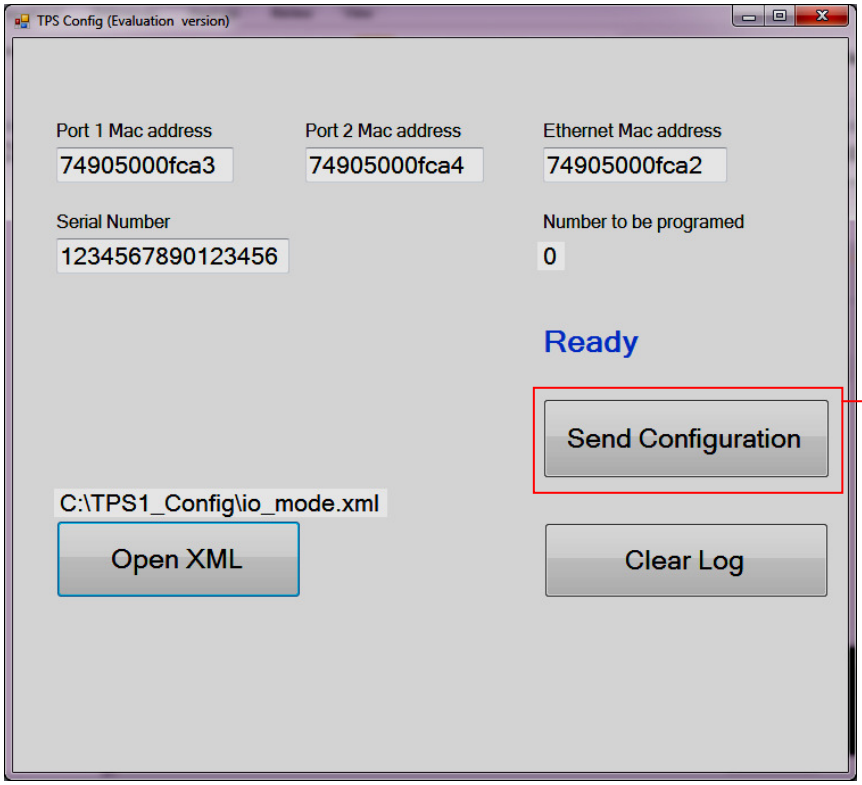
3. Click the **Open XML** button to open the xml file of TPS configurator from TPS-1 GUI configuration tool. (Note: the path cannot contains any space)



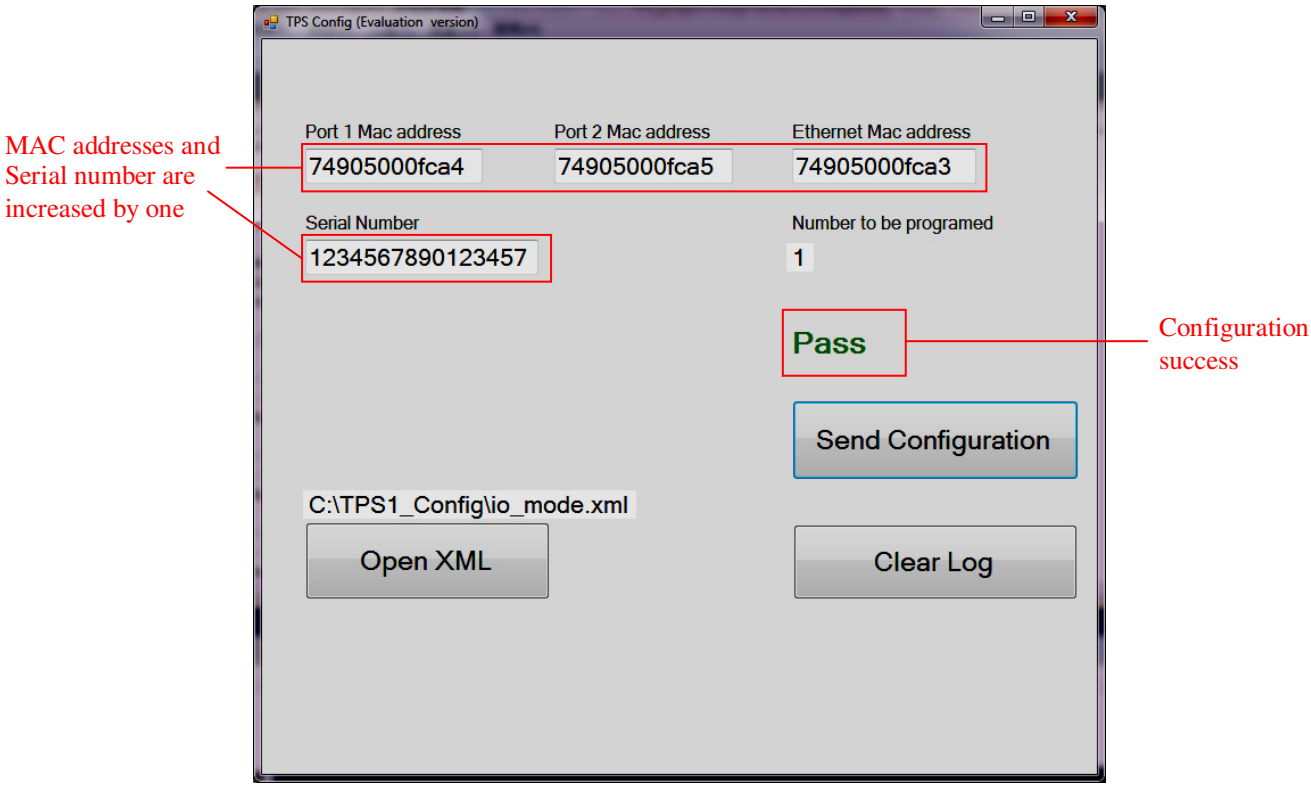
4. Set the initial MAC address and serial number.



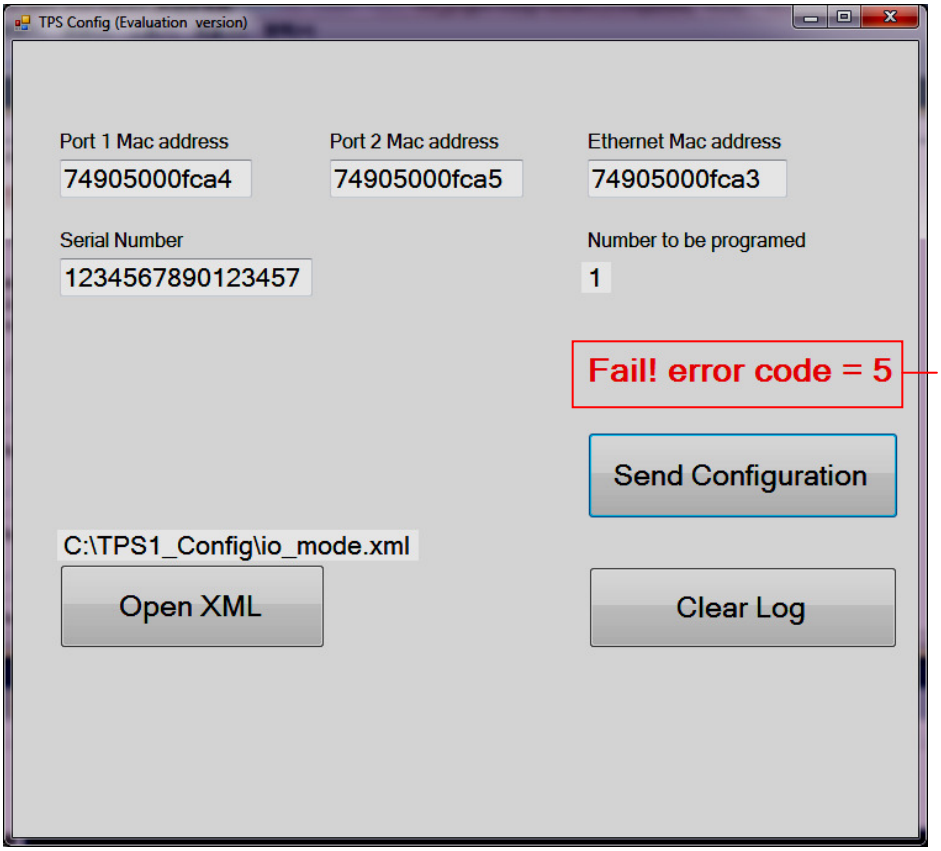
5. Connect the PC and TPS-1 target board (SPI flash programed with default image) with LAN cable. Click **Send configuration** button to configure TPS-1.



If configuration success, MAC addresses and Serial Number will be increased by one automatically for next board.



If configuration fail, MAC addresses and Serial Number will not be increased. Failure meassge and error code will be displayed.



The histroy of TPS configuration is recorded in **C:\TPS1_Config\TPS1_log.csv**. The TPS1_log.csv file contains MAC addresses, serial number and time. The following is the content of TPS1_log.csv.

	A	B	C	D	E
1	**Mac1**	**Mac2**	**Mac_Ether**	**Serial Number**	**Time**
2	74905000fca3	74905000fca4	74905000fca2	1234567890123451	25/09/2014 9:19
3	74905000fca6	74905000fca7	74905000fca5	1234567890123452	28/10/2014 14:10
4	74905000fca9	74905000fcaa	74905000fca8	1234567890123453	29/10/2014 15:19
5	74905000fcac	74905000fcad	74905000fcab	1234567890123454	30/10/2014 11:25
6					

2.2 Error Code

The following are the error codes of configuration failure.

Error Code	Meaning
0x00000001	"FS_PROG Error: unknown."
0x00000002	"FS_PROG Error: invalid count of arguments."
0x00000003	"FS_PROG Error: invalid xml configuration file."
0x00000004	"FS_PROG Error: invalid destination IP address."
0x00000005	"FS_PROG Error: invalid source IP address."
0x00000006	"FS_PROG Error: invalid MAC address for port 1."
0x00000007	"FS_PROG Error: invalid MAC address for port 2."
0x00000008	"FS_PROG Error: invalid MAC address for ethernet port."
0x00000009	"FS_PROG Error: invalid serial number"
0x00000010	"Socket error occurred while sending the configuration."
0x00000011	"No response (Socket Error 10060)"
0x00000012	"Error in configuration content."
0x00000013	"Response and destination IP differ."
0x00000014	"Invalid response received."
0x00000015	"Connection reset by peer (SocketError 10054)."
0x00000020	"Configurations data were rejected by the device.
0x00000021	"CRC error. Saving the new device configuration failed."
0x00000022	"At least one data block could not be interpreted / processed by device."

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Revision Record

		Description	
Rev.	**Date**	**Page**	**Summary**
1.00	March 20, 2015	—	First edition issued

General Precautions in the Handling of MPU/MCU Products

The following usage notes are applicable to all MPU/MCU products from Renesas. For detailed usage notes on the products covered by this manual, refer to the relevant sections of the manual. If the descriptions under General Precautions in the Handling of MPU/MCU Products and in the body of the manual differ from each other, the description in the body of the manual takes precedence.

1. Handling of Unused Pins

   Handle unused pins in accordance with the directions given under Handling of Unused Pins in the manual.

   — The input pins of CMOS products are generally in the high-impedance state. In operation with an unused pin in the open-circuit state, extra electromagnetic noise is induced in the vicinity of LSI, an associated shoot-through current flows internally, and malfunctions occur due to the false recognition of the pin state as an input signal become possible. Unused pins should be handled as described under Handling of Unused Pins in the manual.

2. Processing at Power-on

   The state of the product is undefined at the moment when power is supplied.

   — The states of internal circuits in the LSI are indeterminate and the states of register settings and pins are undefined at the moment when power is supplied.
   In a finished product where the reset signal is applied to the external reset pin, the states of pins are not guaranteed from the moment when power is supplied until the reset process is completed. In a similar way, the states of pins in a product that is reset by an on-chip power-on reset function are not guaranteed from the moment when power is supplied until the power reaches the level at which resetting has been specified.

3. Prohibition of Access to Reserved Addresses

   Access to reserved addresses is prohibited.

   — The reserved addresses are provided for the possible future expansion of functions. Do not access these addresses; the correct operation of LSI is not guaranteed if they are accessed.

4. Clock Signals

   After applying a reset, only release the reset line after the operating clock signal has become stable. When switching the clock signal during program execution, wait until the target clock signal has stabilized.

   — When the clock signal is generated with an external resonator (or from an external oscillator) during a reset, ensure that the reset line is only released after full stabilization of the clock signal. Moreover, when switching to a clock signal produced with an external resonator (or by an external oscillator) while program execution is in progress, wait until the target clock signal is stable.

5. Differences between Products

   Before changing from one product to another, i.e. to a product with a different part number, confirm that the change will not lead to problems.

   — The characteristics of an MPU or MCU in the same group but having a different part number may differ in terms of the internal memory capacity, layout pattern, and other factors, which can affect the ranges of electrical characteristics, such as characteristic values, operating margins, immunity to noise, and amount of radiated noise. When changing to a product with a different part number, implement a system-evaluation test for the given product.

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