SMART SOFTPLC / GATEWAY QUICK START GUIDE *(MODELS SMS4)*

Thank you for purchasing a Smart SoftPLC! This guide is for those who don't like reading user manuals and just want to get started using the product quickly.

A detailed User Manual and supporting documentation for drivers and loadable functions can be found at http://softplc.com/support/resources.

SMART SOFTPLC DEFAULTS

Firmware Revision	5.x
IP Address for Ethernet Switch ports *(SW0, SW1, SW2, SW3 on case, br0 in config file)*	192.168.1.100
Default root password	softplc
Serial Console (MicroUSB port)	Baudrate 115200 No parity, 8 data bits, 1 stop bit

SOFTWARE PROGRAMS REQUIRED

TOPDOC NexGen is the configuration, programming, and troubleshooting software for all SoftPLC's. It can be installed from the USB flash drive you received, or downloaded from our website Resource Center (http://softplc.com/support/resources).

Items marked "R" are required. "O" items are optional and may be required for certain functions or troubleshooting.

Configuration/ Programming	TOPDOC NexGen	Version 5.0 or later required for Smart SoftPLC's w/ version 5.x firmware	R
Terminal emulation program	PuTTY (Windows) minicom (Linux)	Serial port based troubleshooting - if Ethernet communication is not working	O
SSH/SFTP client program	PuTTY (Windows) ssh (Linux)	Ethernet-based troubleshooting and advanced configuration – if TOPDOC Console is not working	O

PC REQUIREMENTS FOR TOPDOC NEXGEN

Items marked "R" are required. "O" items are optional and may be required for troubleshooting.

Operating System	64-bit Windows or Ubuntu Linux	R
Available Hard Drive Space	~ 150MB	R
RAM Memory	Base memory for operating system exceeds requirement.	R
Screen Resolution	1280x1024 minimum	R
Ethernet RJ45 cable (patch or cross-over)	Used for programming/monitoring/configuration	R
Available USB 2.0 port	Used for software protection key (dongle)	R
USB 2.0 to MicroUSB cable (Cat No SPO-UCONCBL)	Used for troubleshooting/configuration when ethernet port is not available *(must be purchased separately)*	O

CONNECTING TO A SMART SOFTPLC/GATEWAY FOR THE FIRST TIME

1. Install TOPDOC NexGen and the Keylok2 driver.
2. Set your PC's Ethernet TCP/IP properties to use a fixed IP address that is on the same subnet as the default IP address of the SoftPLC (192.168.1.100) *eg: 192.168.1.2*
3. Connect an Ethernet cable from your PC's Ethernet port to one of the switch ports on the Smart SoftPLC *(SW0, SW1, SW2 or SW3)*.
4. *(Optional - if you are using Tealware I/O and want the system to auto-configure)* Insert Tealware I/O Modules into the Backplane3 Interface or Tealware Base(s). Tealware Bases must be connected to Smart LocalPorts Interface Port(s) and/or to each other using Local Expansion I/O Cables *(Cat No EXCBLx).*
5. Connect a non-powered 24vdc DC power supply *(such as our Cat No ICO-PSH1524)* to the Smart SoftPLC using the supplied 2-pin spring loaded connector. *(15W minimum supply recommended)*

CAUTION: Be careful to connect according to the marked polarity.

6. Turn on all power supplies and allow the Smart SoftPLC to boot up.
7. Start TOPDOC NexGen, click OK to login as “Default”, and close the News Box.
8. Select **PLC** from the main menu to open the PLC configuration and online functions menu.
9. Select **Detect-On-Net** to discover the PLC. If successful, click on **Save Selected** to transfer and save the SoftPLC configuration to your PC. A new PLC Def will be added to the list in the upper left called “Sm*x*”. If this was successful, continue to the next step.

   NOTE: You may need to turn off Windows or other firewalls in order for **Detect-On-Net** to operate.

   In certain Windows or VM installations, **Detect-On-Net** fails even when firewalls are set off. If this occurs, refer to the Smart SoftPLC User Guide (http://softplc.com/support/resources) for additional information.
10. Select **Edit Remotely** if you want to connect to the PLC and view the current running program (APP).

CHANGING THE ETHERNET ADDRESS

1. In the PLC window, click on your SoftPLC’s name from the list of PLC Defs. Then click on the **Network** tab to the right of the PLC name list.
2. Find the **`address`** and **`netmask`** entries for the switch port’s interface br0 and enter your new desired values in place of the displayed addresses.
3. Press **Send** *(bottom center of the screen)* to write the new address to the SoftPLC. *(It will not take effect until you restart the SoftPLC.)* Also press **Save** to copy the new settings to your PC drive.
4. **Restart the SoftPLC** using the button found in the **Startup** option, or cycle power on the SoftPLC.
5. Set your PC's Ethernet port TCP/IP properties to use a fixed IP address that is on the same subnet as the new IP address of the SoftPLC.
6. Test communications using **Detect-On-Net** or ping as before.

CONNECTING TO SOFTPLC FOR DIAGNOSTICS/PROBLEM RESOLUTION

ETHERNET CONNECTION FROM WINDOWS

1. Connect your PC to the one of the SoftPLC's Ethernet ports labeled SWx, making sure your PC and the SoftPLC are on the same subnet.
2. Click on the SoftPLC name, and select the “Remote Console” option from the PLC menu. If you cannot connect, proceed to the serial method below, or contact support@softplc.com.
3. Now you can use Console commands to view log files, edit files, search, etc. *(see last page)*

SERIAL CONNECTION FROM WINDOWS

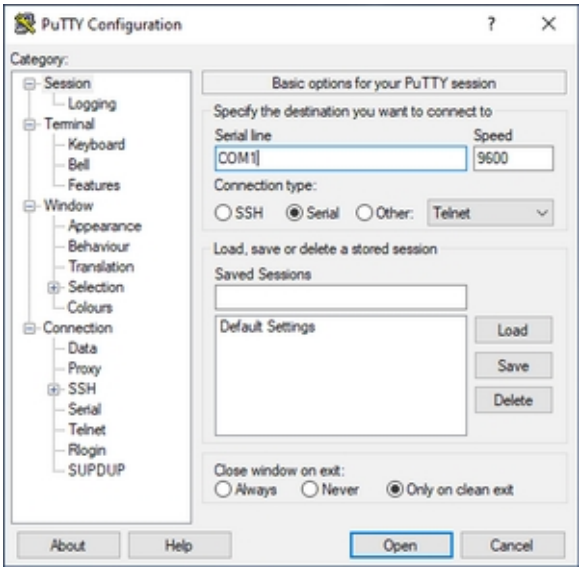
1. Using the USB 2.0 to MicroUSB cable (Cat No SPO-UCONCBL), connect your PC to the Smart SoftPLC's CON port.
2. Determine the COM port mapping for the USB 2.0 port to which you connected the cable using Windows Device Manager.
3. Start PuTTY using a “Serial” Connection Type.
4. Using SSH | Serial, set the serial line options to:

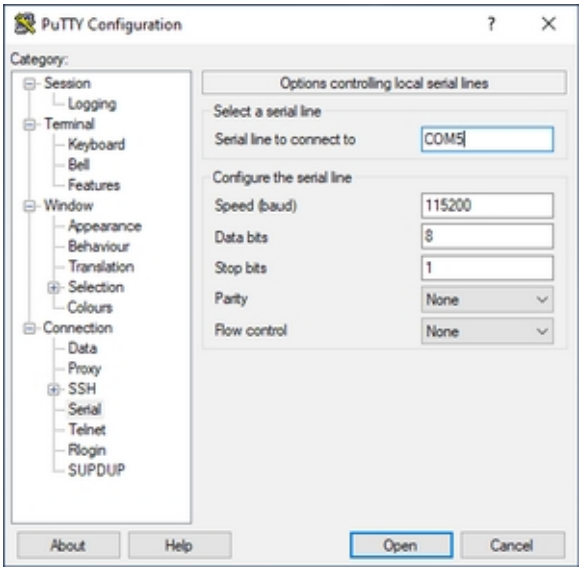
   COMx *(determined in step 2)*
   115200 baud
   8 data bits
   1 stop bit
   Parity none
   Flow Control none

5. When the console window appears, login as **`root`**, and at the prompt enter the password (default=softplc).

   NOTE: Login/Password are case sensitive.

6. Now you can use console commands to view log files, edit files, search, etc. *(see last page)*





COMMONLY USED CONSOLE UTILITIES AND COMMANDS

At the SoftPLC Console, the following tables list a few useful utilities and shell commands that can be used.

NOTE: All utilities and commands should be typed in lower case characters. File names must match character case. Linux uses the "/" rather than the "\" used in Windows for directory navigation.

less "file"	Shows contents of "file". Use Up/Down to transverse file. Press 'q' to exit.
journalctl -u softplc	Dump contents of syslog to console. View/scroll through entire syslog by appending |less to the commandline
ifconfig	List network interfaces
date MMDDhhmmCCYY.ss	Set system date and time Example: 062513222021.00 for June 25, 2021 13:22:00
nano "file"	Edit file name "file" Save: CTRL-o Exit: CTRL-x
tar [mode] [format] [file options] "file"	Lists, creates or extracts an archive file. Eg: extract bzip2: tar -xjvf filename.tar.bz2 extract gzip: tar -xzvf filename.tar.gz
apt [options] [subcommand] ["package"]	SoftPLC Package Manager. (*Requires Gateway & DNS IP's defined.) Eg:* Update package list: apt update Upgrade packages: apt upgrade Install package: apt install "packagename"
systemctl restart networking	Restart networking
systemctl restart softplc	Restart SoftPLC

cd "path"	Change to directory (ie. cd /SoftPLC/run)
ls [options]	List lies in current directory. Long format: ls -l Complete list of "ls" options: ls --help
rm "file"	Remove file with name "file"
mkdir "path"	Make new directory
which "file"	Locate executable files. Example: which ifconfig
find -name "file"	Search for a file in current directory and subdirectories. Example: find -name "NETWORK.LS
cp file1 file2	Copy file1 to file2
df	report file system disk space usage.
free	Display amount of free and used memory in the system.