SoftPLC PAC's & Gateways: Universal Features

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Overview & General Specifications

Universal Features, Variable Hardware

SoftPLC PAC's (Programmable Automation Controllers) and Gateways are industrial CPU's that embed the SoftPLC control software. Therefore, all SoftPLC based systems have the same rich set of features and functions, regardless of hardware model. Some of these are:

- Reliable, deterministic solution for both process and machine control
- High speed application execution
- "Unlimited" memory for user logic and data table
- Ladder logic and data table addressing similar to Allen-Bradley PLC-5/SLC-500/MicroLogix
- All user application documentation resides in the SoftPLC controller
- Interfaces to I/O systems and other devices from hundreds of vendors
- Online run-mode programming and I/O forcing
- Simultaneously supports numerous communication protocols - ethernet, serial and industrial networks
- Compatible with any HMI/SCADA product & OPC servers
- Supports user add-on functions and drivers written in C++
- Data Logging / Recipes
- Embedded web server *(option)*
- Email/Text messaging *(option)*

Capacity/Specifications

The specifications below apply to the embedded SoftPLC control software. Actual upper limits *(eg: number/type of ports, memory)* may vary by hardware model.

- ~100M rungs of ladder logic
- ~100M data table elements
- Over 16K digital I/O points plus unlimited analog *(may be limited by I/O bus or hardware)*
- 16 different I/O or device drivers can be used simultaneously
- Supports up to 32 COM ports
- Supports up to 32 communication network channels

Programming & Configuration

All SoftPLC's are programmed, configured and maintained with TOPDOC NexGen. One TOPDOC NexGen license is included with the first purchase of a SoftPLC PAC or Gateway.

Operation, Architecture & Performance

The SoftPLC runtime control software can be thought of as the “firmware” in SoftPLC Controllers and Gateways. SoftPLC provides deterministic control, which means for a given application and set of hardware, you will see a consistent scan time.

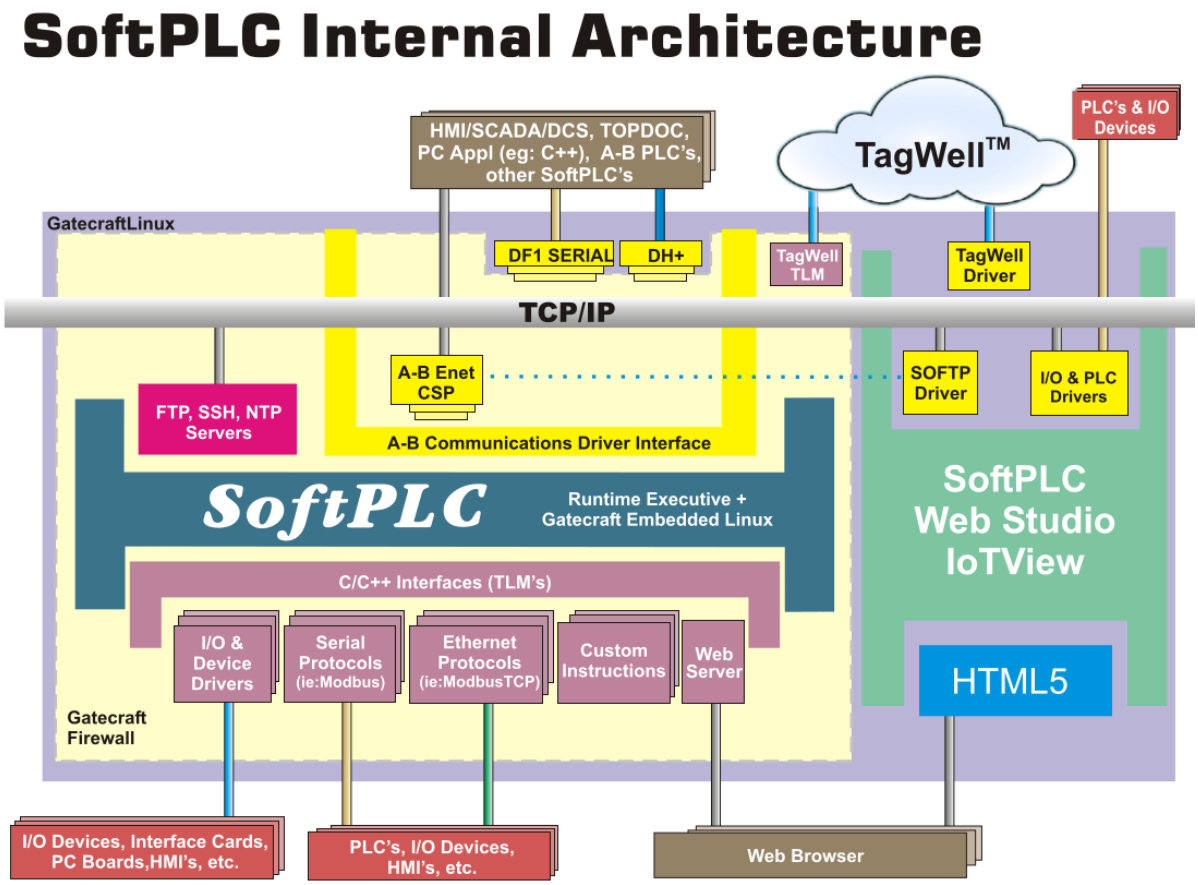
When the system powers up, SoftPLC will automatically load the configured drivers and add-on modules, then run a specified user application program. SoftPLC simultaneously runs the logic, processes network and I/O communications through the configured ports, and runs other processes such as the optional web server, user loadable functions, and the firewall. SoftPLC typically has a synchronous scan cycle – it reads input data, executes the user logic program, and updates output data. *(Some I/O drivers are written such that the I/O and program scan are asynchronous.)*

Internal Architecture

SoftPLC is an embedded software "kernel" that runs headless - the hardware requires no fragile or operator-dependent components such as a monitor or user input device *(eg: keyboard, mouse)*. Unlike many "PC-based" control software products, SoftPLC doesn’t put your system at risk by running on an office platform like Windows or Windows “band-aids” - there is no need to be concerned about “the blue screen of death”, or other applications running in the computer causing the controller to become non-deterministic or to fail.

SoftPLC Controllers are designed to run 365 days a year, 24 hours per day – and do!

SoftPLC runs on Gatecraft™ Linux, which is an embedded Linux operating system distribution developed by SoftPLC Corporation. Using Linux as a platform provides benefits such as background logging of critical operations, support for open communication standards *(eg: SSH, SFTP, MQTT, PPP, SNMP)*, and the ability to utilize the work of the vast network of software developers in the Linux community.



Most SoftPLC users require no knowledge of Linux - the operating system is transparent. Users interact with SoftPLC through TOPDOC NexGen software only *(much like users of Rockwell Logix controllers have no knowledge/need to use the underlying O/S in those systems)*.

In technical jargon, SoftPLC is a non-preemptive, multi-tasking, 64-bit kernel.

Operating Modes

SoftPLC has 4 operating modes, which are user controlled via TOPDOC NexGen or through an optional hardware keyswitch *(provided on some controller models)*:

- Program/Remote Program – Communications are active, but logic and I/O scan are not
- Run/Remote Run – Normal operation
- Remote Test – Communications, logic and input scan are active, but output scan is not
- Fault – *(Normally caused by user logic errors.)* Communications are active, but logic and I/O scan are not

SoftPLC provides true online run-mode programming. There is no "compile" process - no need to stop the machine/process to edit program logic.

Performance

Throughput performance *(scan time)* is based on the controller model, I/O bus(es) and hardware; the number of optional processes running; as well as the application program instruction mix.

In general, SoftPLC scan times are faster than proprietary PLC's and PAC's. Most applications on 400MHz or faster SoftPLC CPU's program scan is less than 1 msec. If extremely fast performance is required, this can easily be achieved by proper hardware selection and application design.

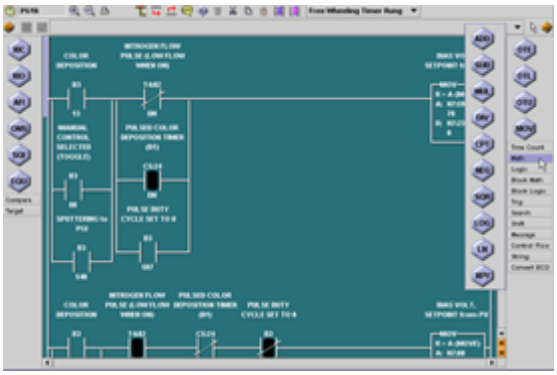
Scan Time Comparison to A-B PLC-5 (*except where noted otherwise)*

Note: These examples compare against PLC-5/SLC-500 since the logic is directly convertible *("apples to apples" comparison)*.

A-B PLC	Smart/NeoPAC (480MHz)	Hardbook (1.5GHz)	Comment
235ms	17ms	1.5ms	40698 words, 15590 DataTable
29ms	23ms	1.5ms	1820 rungs, 64 DataTable files
0.6µs	1.5µs	0.03µs	Rung with XIC + OTE
352µs	4.7µs	0.067µs	Rung with MUL using Floats
56ms	2ms		SLC-5/04
230ms	8ms		100K ladder program
Not Possible		7ms	>10K rungs + 1M data table words
42ms	1ms		Program had 35 PID loops - SoftPLC executed every scan, PLC-5 PID execution was staggered

Logic & Programming

SoftPLC controllers are programmed, maintained and configured with TOPDOC® NexGen, which is available for both Windows and Linux. TOPDOC NexGen runs on a PC and connects to the SoftPLC via Ethernet.



SoftPLC's are programmed in industry standard ladder logic. In fact, SoftPLC's logic is modeled after the Allen-Bradley PLC-5/SLC-500/MicroLogix style of ladder. So anyone who has ever used an A-B PLC has very little learning curve to program or troubleshoot a SoftPLC-based system. Existing A-B PLC programs can be converted to run in a SoftPLC. Most programs import 95% or better with our automated conversion utilities.

SoftPLC application programs can be huge! Ladder programs can contain up to 9,998 program files of up to 10,000 rungs each, arranged as a main program with subroutines.

Instruction Set

Base Instruction Set

SoftPLC's comprehensive set of ladder instructions are a superset of the Allen-Bradley PLC-5 and SLC-500. In fact, they are similar enough that an existing PLC-2/PLC, PLC-5, SLC-500, or PLC-3 program and documentation can be easily converted, then loaded into SoftPLC. Standard ladder instructions include:

- Contacts, Coils & Branching
- Timers/Counters
- Data Comparisons/Moves
- Math & Logical Operations
- Shift Registers/Sequencers
- Jumps, Subroutines, For/Next
- ASCII String Functions
- Specials (PID, Peer-to-Peer Messages, Diagnostics)

Details on SoftPLC's instruction set can be found in the TOPDOC NexGen help system.

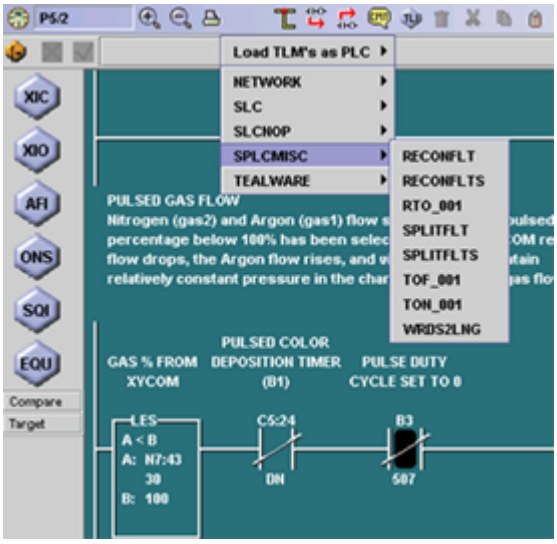
Loadable Instructions (TLI's)

The SoftPLC instruction set is user extensible through the use of loadable functions called TLM's *(TOPDOC Loadable Modules)*, which are created with the SoftPLC Programmer's Toolkit. A single TLM can contain any number of individual instructions, called TLI's (TOPDOC Loadable Instructions), and up to 16 TLM's can be loaded simultaneously, allowing a SoftPLC to support hundreds of additional instructions.

TLM's can also be interfaces to devices, calculations, data handling functions, database interface functions, and more - the possibilities are virtually endless! We provide a number of instruction TLM's, many of which are free. Some of these are:

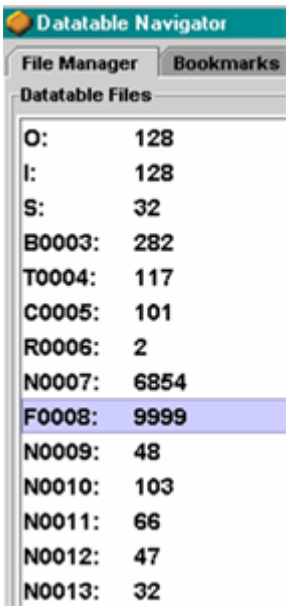
- COMGENIUS - useful for general purpose ASCII or Modbus communications to/from RS-232, -422 or -485 devices through SoftPLC's COM ports
- SENDMAIL - instructions used to send email/text messages (including attachments)
- Instructions for event or time driven data logging (LOGDATA, LOGGER)
- Bi-directional communications to SoftPLC's Remote Management Platform, TagWell™
- Instructions to communicate to other vendor's devices *(eg: motion controller boards, bus level I/O)*
- Industry/application specific instructions to solve specific needs *(eg: CONVEYOR instruction for part sorting/tracking applications)*

TOPDOC NexGen dynamically learns about any configured TLI's from SoftPLC. These instructions are displayed on the screen like other standard ladder logic instructions, complete with instruction and parameter names, customized by the instruction designer (not simply as "Custom Routine", "Parameter A", " Parameter B", etc.)



TLI's are even integrated into TOPDOC's editing menu system! TLI's you select to use appear in the pull-down menu system for program editing: both on-line and off-line.

Data Table



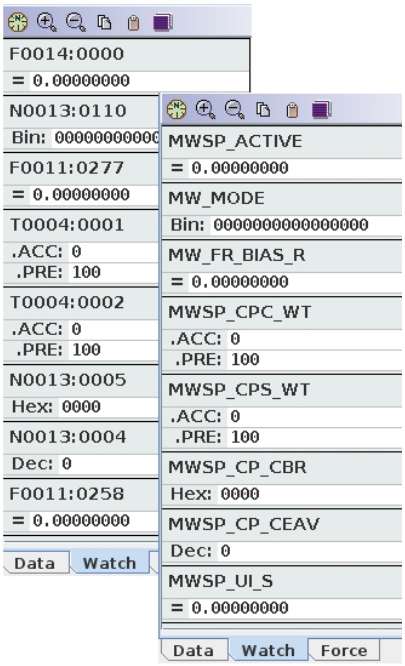
SoftPLC's data table can be configured with up to 9997 files of 10000 elements each *(9997 files of 10,000 elements per file, plus 16K I/O tables and a SoftPLC Status file)*. Data table files can be user configured to store inputs, outputs, binary (bits), integers, timers, counters, floating point, strings, PID blocks, peer-peer Message blocks, and Block Transfer blocks *(for use specifically with A-B RIO)*. The Status file contains controller information such as scan time, operating mode, fault codes, date & clock values, and more.

SoftPLC's data table addressing mimics that of the A-B PLC-5/SLC-500/MicroLogix which means: * Users familiar with A-B PLC's have little or no learning curve * Operator Interface products (HMI/SCADA) can communicate with SoftPLC using the vendor's A-B PLC drivers * Other products can communicate with SoftPLC using the vendor's A-B PLC drivers *(scales, robots, drives, etc.)*

Every data table element can be accessed within the ladder logic, as well as be viewed/manipulated manually from TOPDOC's data table editor. Non-consecutive data table elements that are frequently used together can be assembled into "Watch-Lists", which are stored in the SoftPLC.

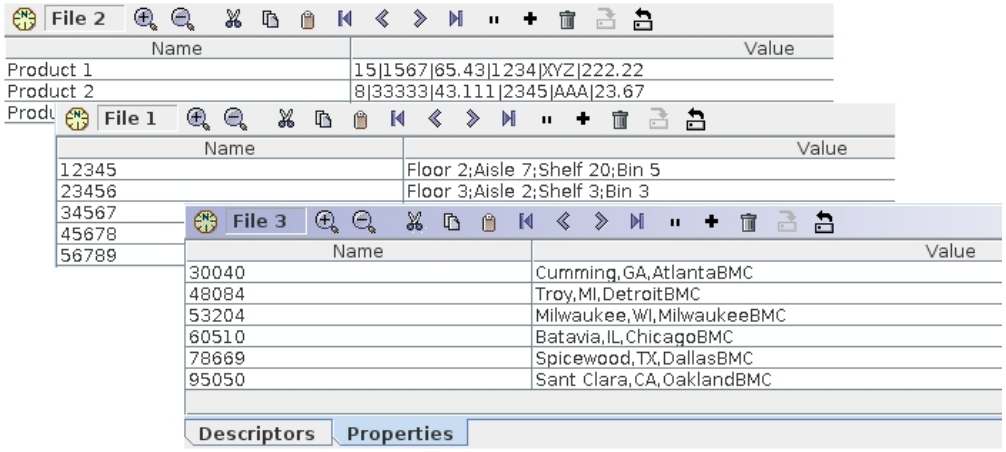
Tagname (Symbolic) Programming

Once Tagnames have been created for data table elements, TOPDOC NexGen supports programming, editing, searching, and other functions by Tagname or address. Tagnames and Descriptors can be created/edited in an external editor (such as a spreadsheet program) and then pasted into TOPDOC, making it easy to reuse Tagnames between an HMI/SCADA database and TOPDOC/SoftPLC.



Internal Database

SoftPLC is the only controller which offers this powerful and useful capability, which we call "Property Tables." You can configure a database in SoftPLC that loads and resides in RAM memory when it is running. The database consists of keyed tables that can store data such as recipes or location of goods in a warehouse. Up to 10,000 tables can be created. Ladder logic instructions provide the ability to retrieve records and use the data in your application logic.



As a RAM memory resident database, Property Tables allow crucial process data to be accessed in one or two high speed program scans, rather than having to wait for the data to come from an external source (eg: another computer or controller) through a communications network. Property Tables open the door to a whole host of cost savings by minimizing the software engineering and hardware required to store and manage the data, as well as reducing the processing time of moving data from one location to another. Having the data in the SoftPLC can also eliminate the need for an IT department to manage the hardware, software, and communications for a separate database.

Application Documentation

SoftPLC application files (APP's) include not only logic and data table but also **all** program documentation. APP's reside in the SoftPLC. You never experience the problem of going online to an installed SoftPLC and not having the latest documentation, or having to separately maintain and backup program and documentation files. APP documentation includes:

- Tagnames (20 character short description)
- Address Descriptors (long description)
- Rung Comments
- Program File Comments/Tags, Data Table File Comments/Tags, APP Comment
- Program Sections (hot links to specific rungs within a subroutine)
- Watch Lists (non-consecutive data table views)
- Bookmarks (user configured ladder rungs and data table address hotlinks)

I/O Capabilities

SoftPLC Corporation offers a modular I/O product line called Tealware™. However, as an open architecture product, SoftPLC controllers can also be connected to I/O systems and devices from hundreds of vendors.

SoftPLC's communicate to I/O devices and networks through the use of loadable software I/O drivers (TLM's). SoftPLC I/O drivers, like user-defined instructions, can be developed with the SoftPLC Programmer's Toolkit.

Drivers exist for most popular I/O systems, including:

- Tealware™
- ModbusTCP
- Ethernet/IP™
- Modbus Serial RTU/ASCII
- Allen-Bradley Remote I/O *(1771, Block (1791), Flex (1794), SLC-500 (1746), etc.)*
- Industrial Fieldbuses *(eg: Profibus, DeviceNet, Interbus, CAN, and more)*

SoftPLC's maximum I/O capacity is 8192 Digital Inputs plus 8192 Digital Outputs plus unlimited Analog I/O. I/O forcing is independently controllable for all digital inputs and outputs. There is no limit to the analog I/O capacity. What's more, you can load up to 16 different I/O drivers simultaneously, allowing a single SoftPLC system to utilize a mix of different communication interfaces and vendor I/O systems.

For Allen-Bradley Remote I/O, Block Transfer is supported for special modules or other devices that can connect to the RIO link *(e.g.: drives, operator interfaces)*. For some other I/O systems, custom ladder instructions (TLI's) are included with the driver for communication troubleshooting, network tuning, or support of special modules *(e.g.: multiplexer or positioning cards)*.

SoftPLC also supports an optional keyswitch driver, allowing your SoftPLC to support local operating mode control, in addition to the standard remote mode control from TOPDOC NexGen.

Motion Control

SoftPLC provides a number of options for motion control. Simple control can be accomplished via I/O modules or serial connections using COMGENIUS. For more complex, multi-axis control, SoftPLC can interface to motion controllers using Ethernet, SERCOS, Profibus and others.

Additional interfaces are possible through the use of the SoftPLC Programmer's Toolkit. For example, PC-based motion cards can be installed in certain SoftPLC Controllers, with TLI's used to communicate tuning, scaling, trajectory, and velocity data over the backplane, and to send data to each axis on an event-driven or timed basis.

Networking & Communications

All SoftPLC's support these communication protocols:

- Ethernet/IP™
- A-B TCP/IP Ethernet
- ModbusTCP/UDP Ethernet
- Modbus Serial
- DF1 Serial
- ASCII
- MQTT

Other protocols, such as Data Highway Plus (DH+), are available via added hardware interfaces. Additional protocols can be developed via the SoftPLC Programmer's Toolkit.

These communication channels support:

- access to SoftPLC's data table for HMI/SCADA or other products that perform operator interface, data acquisition, etc.
- peer-to-peer communications between SoftPLC's or to A-B PLC's/PAC's
- TOPDOC® NexGen uses Ethernet for online editing, program upload/download, and SoftPLC configuration

Multiple computer applications or other PLC's may be accessing SoftPLC from any one or combinations of these channels at the same time. Broad area or plant-wide solutions are easily implemented with SoftPLC's powerful networking capabilities - at much less cost and greater transmission rates than traditional PLC solutions.

Operator Interface Options

Use Your Favorite HMI/SCADA Products!

Any product with PLC-5/SLC-500 data table access can communicate seamlessly with SoftPLC. This includes products such as Wonderware, PanelView, and many others. You can also use OPC via server products that support the A-B PLC-5, such as Kepware or Matrikon. Applications developed in Visual Basic, Visual C++ or other languages that can access PLC-5 data tables are also an option. SoftPLC supports data table access commands which are a super-set of Allen-Bradley's DH+ command set.

If an A-B PLC-5/SLC-500 driver is not available, then you can easily use Ethernet/IP, ModbusTCP or Modbus RTU protocol with SoftPLC.

If you're still searching for an HMI/SCADA product, our SoftPLC Web Studio products might be just what you're looking for. Or, if your needs are simple, the embedded SoftPLC Web Server might just do the trick!

SoftPLC Embedded Web Server

The SoftPLC Web Server *(SPZ-WEB)* is a software option that can be added to any SoftPLC® controller or gateway and provides HTTP services. The SoftPLC Web Server supports standard technologies like HTML, Java Script, C++ and more. Any modern web browser can be used with the SoftPLC Web Server, and any HMTL development tool can be used to develop the web pages for SoftPLC (including text editors).

The web pages reside in the SoftPLC, normally on the flash disk. This includes the HTML source, images (eg: *.jpg, *.png), and even sound or video files.

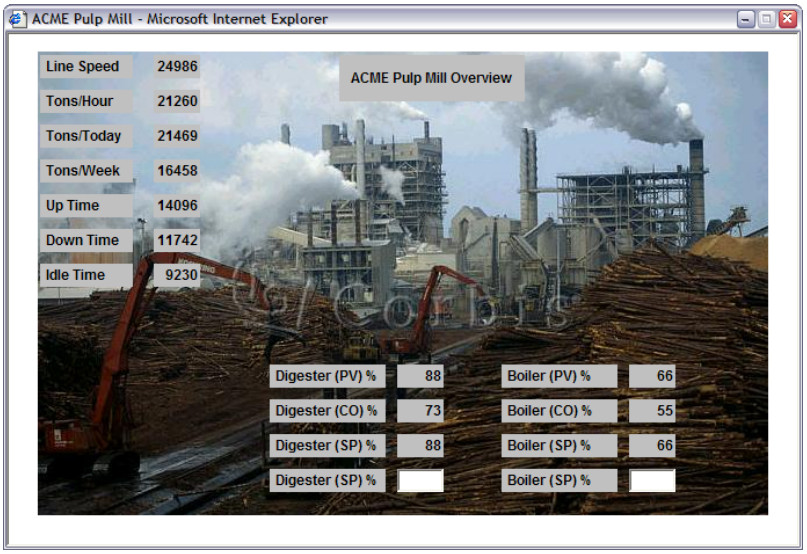
Included with the SoftPLC Web Server license is a Webpage Developer Toolkit that includes a number of widgets you can use on your web pages to display/change live bit states and data table values *(eg: buttons, pilot lights, bar graph, trend, etc.)*. SoftPLC also offers web page development services if you prefer to not create your own.

Features

- No specific HTML editor required
- Use any web browser (including browsers for tablets or smart phones)
- Multiple web servers supported in a single SoftPLC
- No licensing required for any number of browser clients
- Multiple browser clients per page supported simultaneously (maximum effective number determined by network connection type/speed, and speed/memory of SoftPLC CPU)
- The Web Server task can be allocated only a small, fixed slice of SoftPLC time, ensuring SoftPLC remains a deterministic controller

Applications

Applications for SoftPLC's Web Server are limited only by your imagination. The three most common uses are:



Operator Interface

Rather than purchasing a dedicated HMI or SCADA license for each system/user, create web pages to display production data or machine status, or to allow operators to make changes to

machine operating parameters or select recipes. These pages can then be viewed on any web browser. Useful for both local in-plant as well as remote access over the internet. Equip your SoftPLC system with a wireless/bluetooth interface, and access the system without needing modems/connections!

- No per user license fees - many browsers can connect simultaneously from any station on the network
- No software licensing fees or annual support/upgrade costs
- Nothing needs to be installed on the client system
- Minimal hardware requirements, the viewing station only needs to support a web browser - use any PC, tablet, or phone
- SoftPLC supports multiple web sites to separate pages viewed by job function, etc.

System Documentation

SoftPLC controllers have tremendous storage capacity. This makes it inexpensive and easy to store all the system documentation and tools you may need to maintain the machine/process right in the controller! A web page with a menu of documentation choices can easily be created for user access to virtually everything needed to maintain the equipment.

- User manuals you create, or those from equipment vendors
- CAD Drawings
- Bill of materials, I/O Lists
- Troubleshooting flowcharts
- Program documentation, Logic printouts
- Software programs/utilities to configure equipment
- Photos or even video clips

View Data Logs/Reports

With its huge memory and storage capacity, SoftPLC can easily become a data-logger and report generation system. For example, you could use the LOGGER or LOGDATA ladder instruction(s) to save time-stamped process values to a file in CSV, XML, TXT or other formats. This file can then be viewed from a web page.

TagWell Cloud-based Web Pages

Web pages developed for the SoftPLC embedded Web Server are nearly identical to those that would reside in TagWell, minimizing development effort for systems that support both local browsing and remote cloud-based access.

Troubleshooting

Troubleshooting a SoftPLC system is familiar to users of traditional PLC's. TOPDOC NexGen includes online monitoring and troubleshooting features like Watch Windows, I/O forcing, and runtime fault analysis. I/O drivers include instructions and data table reporting for communication faults and status, which are available to the ladder logic or an HMI.

SoftPLC itself also has a comprehensive log file that provides configuration error messages, and other detailed fault information.

SoftPLC's also include an SFTP server which provides easy remote maintenance of files in the SoftPLC CPU from other computer systems. Over any TCP/IP connection *(including the internet)* you can:

- View/edit SoftPLC configuration and log files
- Remotely start/stop the SoftPLC, Web Server or other tasks
- Upload/download user application files, web pages, documentation
- Upload/download SoftPLC program files/drivers *("firmware" updates)*
- and more!

SoftPLC Toolkit

The SoftPLC Programmer's Toolkit (PTK) is used to develop custom software in C or C++ to interface with SoftPLC.

The most common use of the PTK is for development of TLM's (TOPDOC Loadable Modules). TLM's run in the SoftPLC environment *(eg: ladder instructions, device drivers, protocols)*. Functions included in the PTK can also be used in programs that want to send/receive data to/from SoftPLC's data table from another computer.

You can create packages so that your TLM's can be easily installed/maintained into many SoftPLC's.

Most of SoftPLC's I/O drivers and protocols are TLM's, as are the many add-in instructions, provided and supported by SoftPLC Corp.

The PTK includes a description of SoftPLC's API *(Applications Program Interface)*, example source code, "helper" functions you can use to link your code to SoftPLC, detailed documentation, and software development tools such as compilers, linkers, etc.

Requirements

- x86-based Linux OS (eg: Ubuntu 18.04 or later)
- minimum 900 mbytes free disk space
- minimum 500 mbytes of RAM
- Internet access (some links are outside the installation)
- a programmer's text editor of your choosing

SoftPLC Corporation can develop TLM's for you. Contact us to discuss your needs. We may already have a TLM that performs the function, or have something similar that can be quickly modified.

Resources

Demo/Evaluation Software

TOPDOC NexGen

Download latest TOPDOC NexGen release. Without a USB hardware dongle, the download is a demo version that allows offline editing without save capability. Ladder programming and detailed product use information are in the product help system.

This ZIP file is password protected, email support@softplc.com for access. (Note that Windows unzip no longer supports passwords and you will need a 3rd party utility, ie: 7zip.)

TOPDOC NexGen Installation Guide

It is **strongly recommended** that you download and read this guide prior to installing TOPDOC NexGen.

Video

What is a SoftPLC? *(6 min video)* Provides an overview of SoftPLC and how unique SoftPLC® is - not a PLC, not PC-based control software Download or Watch on YouTube.

Manuals

SoftPLC/TOPDOC Reference Guide

Includes SoftPLC installation & configuration, communications driver setup, and describes how SoftPLC operates.

Add-on Features

SoftPLC Web HMI User Manual

User manual for creating animated web pages for the SoftPLC Web Server and TagWell web pages.

SendMail User Manual

User manual for the SENDMAIL TLM which provides the capability for SoftPLC to send SMTP emails or text messages.

I/O Drivers & Communication Protocols

Proprietary Protocols

Smart Tealware Local I/O Driver User Manual

Local Tealware I/O driver for use with Smart SoftPLC's equipped with a Backplane3 or LocalPorts interface. Includes a "HZ" TLI which enables use of the Tealware High Speed Counter Module *(Cat No HSC11)* for frequency inputs.

SoftPLC RIO Master Driver User Manual

User manual for the A-B RIO Master TLM, which works in conjunction with Smart or NeoPAC SoftPLC's equipped with an SPO-BH internal bluehose interface. Allows SoftPLC to control A-B RIO drops, and for a SoftPLC/Gateway to use block transfer commands over RIO to communicate to PanelViews, drives or other devices on the network.

SoftPLC RIO Slave/Adapter Driver User Manual

User manual for the A-B RIO Slave/Adapter TLM, which works in conjunction with Smart or NeoPAC SoftPLC's equipped with an SPO-BH internal bluehose interface. Allows a SoftPLC/Gateway to act as multiple A-B RIO drops.

Ethernet Protocols

Ethernet/IP (ETHERIP.TLM) Driver User Manual

User manual for SoftPLC's Ethernet/IP driver. Can be used to enable SoftPLC as an Adapter (Target) to receive data from an Ethernet/IP Master, or for SoftPLC to act as an Ethernet/IP Scanner (Originator) to I/O or devices such as drives.

ModbusTCP Master Driver User Manual

SoftPLC's ModbusTCP Master supports most Modbus commands on TCP/IP and UDP/IP and can be used with Tealware I/O via a Smart Adapter, or with other vendor's ModbusTCP compatible I/O systems and devices.

ModbusTCP Slave User Manual

The ModbusTCP Slave driver implements the slave (or server) side of the ModbusTCP protocol, and supports most Modbus commands on TCP/IP and UDP/IP. It may be used to talk with a SCADA/HMI system or for peer-to-peer communication between controllers on an ethernet.

Serial Protocols

Modbus Serial Master User Manual

SoftPLC's Modbus RTU/ASCII Master supports most Modbus commands to devices such as I/O, drives, motion controllers, etc. on serial RS-232, RS-485, or RS-422 links.

Modbus Serial Slave User Manual

Serial Modbus RTU Slave driver allows SoftPLC to participate in master-slave communications, such as an operator interface or peer-to-peer between intelligent devices, over serial RS-232, RS-485, or RS-422 links.

Ladder Instruction TLM's (TLI's)

Calculations, Logic Functions

SLC TLM User Guide

SLC-500 instructions for SoftPLC beyond the standard PLC-5 instruction set *(includes ABS, ABSI, DCO, DDV, ENC, SCP, SCL, SQCW, SQCF, SWP, and NoOp stubs for instructions that have no exact equivalent, for conversion purposes).*

SPLCMISC User Guide

A collection of TLI's, see the linked PDF for a complete list. Includes convert 16 bit integer to float and vice versa, Timers accurate to 1 msec (0.001 time base), Absolute Value, Minimum, Maximum, and Modulus instructions.

Data Logging, Recipe Functions

Logger TLM User Manual

Instructions which enable SoftPLC to log data to CSV files and to copy a logfile to an alternative location, such as a USB memory stick or network drive.

Download LOGDATA TLM & User Manual

Instructions which enable SoftPLC to log data to a binary file. Useful for high-speed/high-volume data logging. Includes a utility to convert the log file to ASCII on a Windows PC, so the data can be imported into a database or spreadsheet.

DTDISK User Manual

Instructions which allow the saving (write to disk) and loading (read from disk) of a block of data table words to/from a text file or a compressed binary file. Useful to periodically save/restore values in event of powerloss, machine shutdowns, or for recipes.

Communications

COMGENIUS User Manual

COMGENIUS.TLM is a set of ladder instructions which enable SoftPLC to perform general purpose ASCII communications to/from serial devices on RS-232/485/422 networks on up to 32 COM ports. Includes example of how to implement a simple Modbus RTU Master protocol. Includes powerful string handling functions to support communication with robots, drives, motion controllers, RFID readers, and other serial devices.

TagWell User Manual

User manual for the TLM that can send data table (tag) values to SoftPLC's TagWell remote management platform.

A-Series Driver User Guide

This TLM implements serial TLI's to communicate to A-Series I/O modules (Advantech ADAM 4000 and compatibles). Although many A-Series modules support Modbus or ModbusTCP communications, others support only the proprietary protocol implemented with this TLM.

ICO7000 TLM User Guide

Driver TLI's for ICP-DAS Series 7000 I/O modules which use the proprietary DCON serial protocol rather than Modbus. Zip file includes TLM and manual.