

# Make it Simple, Make it *Smart*

SoftPLC provides a complete line of products that solve many of your industrial networking and control needs.

Every Smart product provides a rich set of standard functions to which you can add a host of hardware and firmware features to best meet your industrial application needs. Mix and match to suit your requirements - it's simple - it's ***Smart!***



## SoftPLC's Smart Product Family

- **Smart Netbox** – Communication Appliances  
(Switches/Routers, Media Converters, Remote Access Modems, Firewall/VPN's)
- **Smart Gateway** – Protocol Converters  
(include all functions/features of Smart Netbox products)
- **Smart Adapter** – Remote Ethernet I/O Interface  
(can include most features of Smart Netbox products)
- **Smart SoftPLC** – Programmable Automation Controllers  
(can also include all functions/features of Smart Netbox, Smart Gateway and/or Smart Adapter)

*This is a versatile platform that can be easily modified to meet OEM customer requirements.  
If you need a feature that isn't specifically listed – just ask!*



## With Smart products, you can reduce . . .

- Panel Size & Cost
  - Hardware Costs
    - Installation Time & Cost
      - Engineering Time & Cost
        - Maintenance Time & Cost
          - Spare Part Requirements

## Features of all Smart Products

- Low power ARM-based CPU with Gatecraft Linux
- Managed (4) port Ethernet Switch w/ PoE
- Four (4) RS-232 ports, (1) RS-485 port
- DIN-rail mount aluminum enclosure, panel mount option)

## Hardware Options

- Internal PSTN modem w/dial-in & dial-out
- Second RS-485 port
- (2) A-B Rio or DH+ ports
- Fiber Optic port
- PCI-104 boards, up to 3 per system
- Local Tealware I/O interface boards

## Firmware Add-ons

- Firewall / VPN
- Embedded Web Server
- Email / text message packages

## Smart Netbox - Industrial Communication Appliances

In a networked industrial controls environment, connecting devices like controllers, HMI's, computers, drives, I/O, robots, and serial process control equipment can often become a challenge. Demand for data exchange between sensors, I/O controllers, serial devices, switches, routers, and computers is ever increasing. Compatibility, physical space, cabling and security concerns all add to the difficulties, costs and complexities of typical networking equipment solutions.

SoftPLC Corporation presents Smart Netbox, a family of Industrial Communication Appliances that encompass routers, managed Ethernet switches with fiber and PoE, modems, and firewalls with VPN. You can reduce hardware and inter-component integration costs, spare parts requirements, panel size and more.



### ***A Smart Netbox can do all this. . .***

- **Managed Switch/Router with PoE**  
Routes traffic between two Ethernet networks and handles switching of packets between devices on the network.
- **Media Converter (10/100 BaseT to Fiber)**  
Fiber extends the reach of your network and provides superior noise immunity.
- **Remote Access Switch (Ethernet Land-line Modem)**  
Easily and securely access an Ethernet network from any remote location over standard telephone lines.
- **Firewall w/ VPN**  
Protects networked devices from unauthorized access, while providing secure remote and/or networked connections.

In its most basic configuration, a Smart Netbox is an industrial grade, managed Ethernet switch with both LAN and WAN interfaces to support routing functions. For simple applications, just connect power and Ethernet cables.

You can power the Smart Netbox with 12 ~ 48VDC or POE. PoE (Power-over-Ethernet) means that power for the Smart Netbox can be obtained from the Ethernet cable, if it is provided via a PoE injector on the cable.

#### **Advanced functions provide enhanced performance**

- (3) LAN and (1) WAN 10/100 Ethernet ports, RJ45
- 10/100 auto-detecting for speed & duplex (full or half)
- Automatic support for straight or crossed cables
- Auto-polarity for auto correction of crossed TXD / RXD pairs
- Optional 100 Base-FX fiber interface on one port
- NAT and Port Forwarding
- Port mirroring/monitoring/sniffing for advanced diagnostics
- VLAN for convenient traffic segregation
- Priority Queuing (QoS/CoS) per port for real-time operation
- IGMP for Multicast filtering (snooping & querying)
- Broadcast storm protection
- Extensive MIB counter management support
- Programmable rate-limiting per port
- Protocols: PPP, DHCP, TFTP, HTTP, Telnet, SSH and more

## Media Converter

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### Applications

- Extend the distance between 2 Ethernet nodes
- Convert multi-mode fiber to single-mode fiber due to upgrades or pre-existing fiber runs, or for budgetary reasons

A Smart Netbox with the optional fiber connector can be used as a media converter which allows two Ethernet devices with different physical media to communicate with each other. Additionally it allows Ethernet networks to work on longer distance runs and increase surge and noise immunity.

Multi-Mode and Single-Mode fiber ports (15km and 30km) with ST or SC style connectors are available.

## Remote Access Switch (Cat No SM-MDM)

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Adding this internal telephone modem to any Smart Netbox adds remote access capability. This powerful combination lets you easily and securely access devices an Ethernet network from any remote location over standard telephone lines.

Make program modifications, transfer updated application programs or firmware, collect data or monitor system status – without the time and costs of a site visit.

### Includes all features of the Smart Switch/Router plus

- Internal PSTN (Public Switched Telephone Network) modem w/ RJ11 connector
- Dial-in and Dial-out capabilities, including automatic dial out upon contact closure
- PPP (Point to Point Protocol) dial-up connections
- Up to 56 kbps data rates downstream
- Up to 48 kbps upstream data rate
- Automatic format and speed sensing
- Line-in use, remote hang-up detection
- Full data compression and error correction
- Digital Line Guard (DLG) protection
- Compliant with telephone systems worldwide

## Firewall/VPN

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### Features

- Stateful inspection firewall security
- Multiple VPN tunnels with fast compression & encryption
- NAT/IP Masquerading
- SYN Denial of Service
- PPTP
- DHCP/BOOTP Server and BOOTP gateway/relay
- Port Forwarding
- Blacklisting
- License for unlimited, simultaneous users
- Pre-defined configuration templates reduce install time

You can add embedded Firewall/VPN firmware to any Smart product. This adds high-end network security, protecting Ethernet-to-Ethernet and modem-to-Ethernet connections such as industrial network to business network, or industrial networks/devices connected to remote sites via the internet. Powerful security features block dangerous and/or unwanted communications from entering your network and restricts access to only authorized users.

# Smart Gateway - Protocol Converters

A Smart Gateway bridges devices on one network to devices on other networks. Each Smart Gateway is equipped with a comprehensive set of drivers, which you can mix and match with hardware configurations to meet your network bridging needs.

Smart Gateways include the strong foundation of features and functions of the Smart Netbox products.



## Features

- Configure protocols for any/all of the Smart Gateway communication ports
  - (4) 10/100 BaseT Ethernet Ports (optional fiber interface)
  - (4) Serial RS-232 ports and (6) RS-485 port
  - (1) Factory configurable port for RS-485, A-B DH+, A-B RIO, or phone modem
  - Up to (3) PCI-104 interfaces can be added
- Up to (16) different protocols can be supported simultaneously
- Hundreds of thousands of data points supported, fast throughput
- Easy configuration
- Diagnostics, real-time status monitoring
- Optional internal modem for remote access via telephone
- Programmable, supports data scaling/manipulation and many other functions
- Supports data logging

## Application Examples

- Communicate data from devices on different network types
- Data Concentrator - Collect data from multiple network types and send it to higher level system
- Ethernet Master can control many serial slave devices
- Integrate multiple master devices onto serial and Ethernet networks
- Serial Master can control Ethernet slaves
- Slave devices with hard coded ID's can be placed on different ports so a single master can control them
- Single Ethernet Master can control multiple slave networks with identical slaves

## Some Supported Protocols

- ASCII
- Modbus RTU/ASCII, Master & Slave
- Enron Modbus Master
- Modbus TCP/UDP, Master & Slave
- DF1 Full Duplex Master & Slave, Half Duplex Slave
- A-B DF1 Ethernet, Master & Slave
- Profibus Master & Slave
- DeviceNet Master & Slave
- CANopen Master & Slave

***Others are available or can be added - please just ask!***



# Smart SoftPLC - Programmable Automation Controllers

A Smart SoftPLC is an open architecture Programmable Automation Controller (PAC) which provides scalable solutions for a wide range of applications in virtually any industry. Priced to meet the needs of small I/O count machine control applications, yet with enough capacity and capability for large process control applications, it is the Smart choice!



**Every Smart SoftPLC includes our proven SoftPLC® runtime control software, which provides a powerful set of functions and features, such as:**

- Unlimited" user logic and data table memory
- Comprehensive instruction set with standard logic functions, data handling, math functions, PID, string manipulation, peer-to-peer messaging and more
- Ladder logic and data table addressing similar to Allen-Bradley PLC-5/SLC-500
- Fully documented applications, all documentation resides in the controller
- Supports user functions written in C++
- Compatible with all HMI/SCADA products
- Automated A-B Program and Documentation Conversions - SLC-500, PLC-5, PLC-2, PLC-3



Smart SoftPLC's are programmed and maintained with TOPDOC® NexGen via Ethernet. TOPDOC NexGen is available for Windows and Linux operating systems.

## Communication

All Smart SoftPLC's include an unmatched set of communication ports:

- (4) 10/100MB copper Ethernet Ports
- (1) 10/100MB Fiber Optic Ethernet port (*option*)
- (4) RS-232 serial ports, (1) RS-485 port
- (1) phone modem, RS-485 port A-B RIO, DH+ (*option*)

Industry standard protocols such as ModbusTCP, A-B Ethernet, DF1, Modbus RTU/ASCII, and others are supported.

**Smart SoftPLC's can include all features and functions of the Smart Netbox & Smart Gateway, giving you a one box solution for most of your control & communication needs!**

## I/O and System Configurations

The base Smart SoftPLC can be combined with different I/O interface cards for ultimate flexibility and expandability, tailoring the system to the application requirements, thus lowering cost and complexity.

### Local I/O



Backplane 3



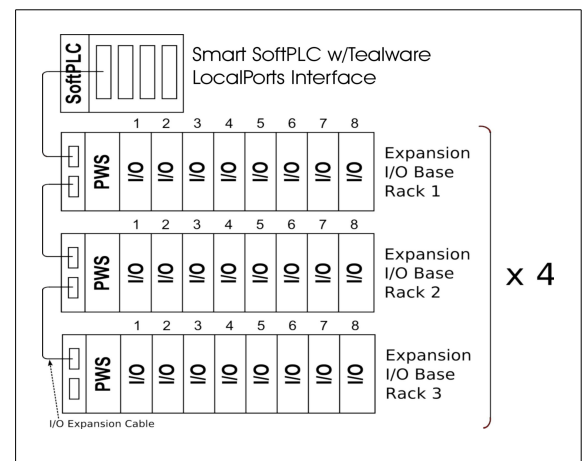
SoftPLC Corporation's Tealware™ I/O is the fast local I/O interface for Smart SoftPLC. Tealware is a modular system which allows for maximum configurability. A wide variety of discrete, analog and specialty modules are available in this robust and proven I/O system.

For small systems, a “Backplane-3” interface card allows any three Tealware modules to mount directly on top of the Smart CPU, making a very compact, yet flexible package.



LocalPorts

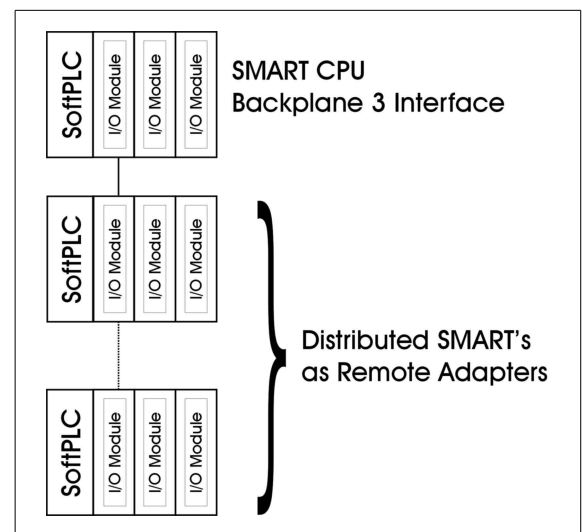
For larger systems, a “LocalPorts” daughter card provides 4 connectors to Tealware I/O expansion racks. Each connector can support 3 racks, for a total of up to twelve (12) Tealware racks. Each rack can support up to 256 digital I/O (8 modules x 32 points/module), for a maximum capacity of  $12 \times 256 = 3,072$  I/O points per CPU. The racks can reside up to 30 feet from the CPU. Even with the largest systems, the I/O scan is under 1 msec, even with a fully loaded system of 3072 points.



### Remote and Distributed I/O

A Smart SoftPLC's I/O capacity can be expanded using Smart (link) Adapters over Ethernet. Each drop can consist of up to 768 I/O points, and hundreds of drops are supported

A Smart SoftPLC can also interface to a variety of other vendor I/O systems through the included Ethernet and serial ports, or with add-on PCI-104 interface cards to networks such as DeviceNet, Profibus, and others.



# Smart I/O Adapter

A Smart Adapter can be used as an intelligent Ethernet I/O interface for Tealware I/O to any SoftPLC CPU. Additionally, a Smart Adapter can be used to provide remote serial ports, or a remote interface to other I/O systems such as Profibus or DeviceNet.

Other controllers (eg: PLC's, PAC's, RTU's or PC-based systems) that support ModbusTCP I/O can also use Smart Adapters with Tealware I/O.

## Configurations



**Backplane  
3**



The Smart Adapter with a LocalPorts interface card supports up to 3 Tealware racks (up to 768 I/O points) up to 30 feet from the Adapter



**LocalPorts**



### Available Tealware Modules

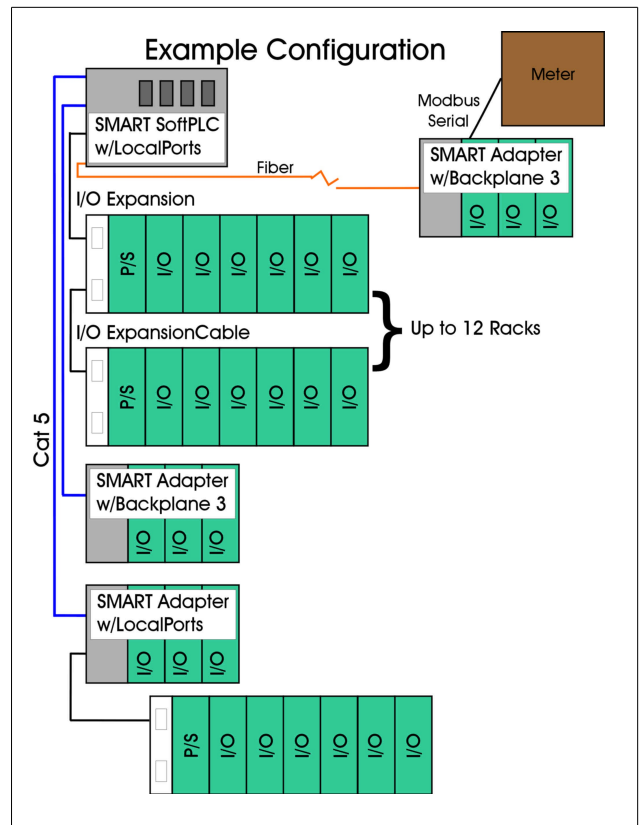
- Digital In AC/DC
- Digital Out AC/DC
- Relay Out
- Analog In
- Analog Out
- Thermocouple, RTD
- HSC
- Combo Modules

More detailed information on the Tealware I/O system can be found at <http://softplc.com/>

## Features

- Auto-configuration with Tealware I/O and SoftPLC
- Mix I/O types – Ethernet, serial, local Tealware and/or field bus I/O can be supported on a single Smart Adapter
- Combine remote serial server functionality with other I/O control
- Secure Remote I/O via embedded firewall option
- Built-in switch minimizes components at remote drops
- Priced for small drops, but can handle thousands of points per drop
- Intelligent Adapter lets you define fault states on a per point basis

The Smart Adapter with a Backplane3 interface card supports any 3 Tealware modules.



## Hardware Specifications

<b>Processor</b>	166 MHz ARM9 CPU, 32-bit
<b>User Memory</b>	63 MB RAM
<b>Removable Memory</b>	128MB Compact Flash, expandable to 8GB
<b>Operating Temperature</b>	0 to 60°C, -20 to 70°C available (storage -20 to 85°C)
<b>Humidity</b>	0-95%, non-condensing
<b>Input Voltage Range</b>	14~48 VDC or Power Over Ethernet (POE)
<b>COM Ports</b>	(3) RS-232 ports ( <i>1 w/ handshake lines</i> ) (4) 10/100BaseT Ethernet ports ( <i>w/ 2 unique host interfaces-MAC ID's</i> ) (1) Multi/Single-Mode Fiber port ( <i>optional</i> )
	<b>COM5 Port Options (factory installed):</b> RS-485, 2 wire (default) A-B RIO Master or Slave or Data Hwy Plus <b>COM6 Port Options (factory installed):</b> RS-485, 2 or 4-wire A-B RIO Master or Slave or Data Hwy Plus Phone Modem Others - <i>contact SoftPLC Corp.</i>
<b>Dimensions (HxWxD)</b>	5.75 x 6 x 1.5 in without modules (146.1 x 152.4 x 38.1 mm) 5.75 x 6 x 5.625 in. with Tealware modules (146.1 x 152.4 x 142.88 mm)
<b>Weight</b>	Approx 1-1.5 lbs (450-680g) based on options Fanless/Diskless system, Metal enclosure DIN-rail Mount, optional Panel Mount Bracket
<b>Packaging</b>	Fanless/Diskless system, Metal enclosure DIN-rail Mount, optional Panel Mount Bracket
<b>Local I/O Interfaces (only one/system)</b>	<b>Backplane3:</b> (3) Tealware™ modules <b>LocalPorts:</b> (4) connectors, each supports up to 3 Tealware racks
<b>Optional Expansion</b>	PCI-104 connector for up to 3 add-in cards
<b>Remote I/O</b>	Serial and Ethernet connections
<b>GPS Interface</b>	Embedded NTP Server
<b>Security</b>	Embedded Gatecraft™ Firewall/VPN SSH server for encrypted data transfer
<b>LED's</b>	(4) System Control, (8) Ethernet