# A-B DH+/RIO Gateways

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# Overview

SoftPLC's DH+/RIO Gateways are the optimal migration solution for users of Allen-Bradley PLC's:


- Up to 3 "blue-hose" channels - any mix of DH+, RIO Scanner/Master, RIO Adapter/Slave
- Up to sixteen (16) different user-selectable protocols supported simultaneously
- Hundreds of thousands of data points supported in each Gateway
- Extremely fast data throughput, highly optimized drivers
- Diagnostics, real-time status monitoring on each communication network
- Supports user logic for data manipulation *(eg: scaling, averaging, comparisons)*, scheduling, alarm handling, peer-to-peer messaging, and many other functions
- and much more!

SoftPLC Gateways are configured using TOPDOC NexGen - included free with your first Gateway purchase!

# Available Protocols

All SoftPLC Gateways can be user configured to load up to 16 simultaneous protocols of any mix. The currently available protocols are listed below, others can be added by SoftPLC Corp. or by users with the SoftPLC Programmer's Toolkit. Please contact us for a quote if you are interested in a protocol not listed.

SoftPLC Gateway ports and protocols are configured with TOPDOC NexGen, included free with your first Gateway purchase. Communication drivers are configured with an easy to use editor that includes a sample template. Many drivers also report status to data table diagnostic registers that are available to HMI's, other connected devices, email messages/reports, etc.

**Protocols implemented via Ethernet Ports**

- Ethernet/IP Adapter *(Slave or Server)* and Scanner *(Master or Client)*
- A-B DF1 Ethernet (CSP) Master *(Client)* and Slave *(Server)*
- Modbus TCP/UDP Master *(Client)* and Slave *(Server)*
- MQTT
- Enron ModbusTCP Master *(Client)*

**Protocols implemented via Serial Port(s)**

- A-B DF1 Serial Full Duplex Master/Slave
- A-B DF1 Half Duplex Slave
- ASCII *(COMGENIUS)*
- Modbus Serial RTU/ASCII, Master and Slave
- CAN/J1939* *(currently Smart SoftPLC v2 only)*

**Protocols implemented via "blue hose" port(s)***

- A-B RIO Master *(Scanner)*
- A-B RIO Slave *(Adapter)*
- A-B Data Highway Plus (DH+)

* *These protocols require factory installed hardware.*

# Protocols by Model

| Protocol | NeoPAC (SNG2-x) | Smart (SMG4-x) | Hardbook (HBx) |
|---|---|---|---|
| A-B Data Highway Plus (DH+) | Y | Y | n/a |
| A-B RIO Master (Scanner) | Y | Y | n/a |
| A-B RIO Slave (Adapter) | Y | Y | n/a |
| | *All BlueHose protocols require SPO-BH* | | |
| A-B DF1 Ethernet (CSP/PCCC) Master (Client) | Y | Y | Y |
| A-B DF1 Ethernet (CSP/PCCC) Slave (Server) | Y | Y | Y |
| A-B DF1 Full Duplex Peer-Peer | Y | Y | Y |
| A-B DF1 Half Duplex Slave | Y | Y | Y |
| | *All DF1 protocols require SPO-USB232KIT* | | |
| ASCII (COMGENIUS) | Y | Y | Y |
| Modbus Serial Master | Y | Y | Y |
| Modbus Serial Slave | Y | Y | Y |
| | *ASCII or Modbus Serial requires* | | |
| | *SPO-485 or SPO-USB485KIT* | | |
| EthernetIP Master (Scanner) | Y | Y | Y |
| EthernetIP Slave (Adapter) | Y | Y | Y |
| Modbus TCP/UDP Master (Client) | Y | Y | Y |
| Modbus TCP/UDP Slave (Server) | Y | Y | Y |
| Enron ModbusTCP Master | Y | Y | Y |
| MQTT | Y | Y | Y |
| CAN/J1939 | n/a | Y | n/a |
| | *(SMS2-x only w/ SM-CAN6)* | | |

# SoftPLC Gateway Models

All SoftPLC Gateways provide a base set of features, the differences are primarily in the number/type of communication ports. Detailed information and specifications on all standard models can be found here: SoftPLC Multi-Function Gateways.

For "bluehose" RIO/DH+ gateways, we offer 2 models - Smart Gateways and NeoPACs.

SoftPLC Gateways are, in reality, SoftPLC controllers. For more details on advanced features, additional hardware/firmware options and available accessories, refer to SoftPLC Controller Models and universal SoftPLC features.

## Smart Gateways

A Smart Gateway has a base set of features, to which you can add both hardware and firmware options. Smart Gateways are factory assembled with your selected options, then undergo a system-level test prior to shipment.


+ All Smart Gateways include this base set of communication ports:

+ * 4-port GB managed Ethernet switch with two Ethernet interfaces (MAC ID's) to support routing and firewall functions * (1) stand-alone GB Ethernet port * (1) RS-485 port * (2) USB ports

+ For very low cost, up to 3 factory installed communication port options can be added to support:

+ * Allen-Bradley "blue-hose" *(RIO Master/Scanner, RIO Slave/Adapter, or DH+)* * RS-485, isolated, 2-wire *(configurable protocols)*

+ Our online store provides an easy configuration menu, or we're happy to help you in selecting the options you need. Please feel free to contact us for assistance.

# NeoPAC Gateways

A NeoPAC Gateway has a base set of features, to which you can add both hardware and firmware options. NeoPAC Gateways are factory configured with your selected options, then undergo a system-level test prior to shipment.


+ NeoPACs provide these standard communication ports:

+ * (1) GB Ethernet port * (2) USB ports

+ For very low cost, up to 2 factory installed communication port options can be added to support:

+ * Allen-Bradley "blue-hose" *(RIO Master/Scanner, RIO Slave/Adapter, or DH+)* * RS-485, isolated, 2-wire *(configurable protocols)*

+ Our online store provides an easy configuration menu, or we're happy to help you in selecting the options you need. Please feel free to contact us for assistance.

# Drive Gateways

Both Smart and NeoPAC Gateways are available with customized firmware to make replacement of A-B RIO VFD's (drives) with Ethernet drives extremely easy. Embedded web pages in the SoftPLC Gateway are used to specify parameters, then the SoftPLC auto-configures the communication drivers, parameter mapping, scaling, etc. to support installation of the new drive without any changes to the A-B PLC logic/configuration.

For example, some of the web pages for the Siemens Drive Gateways are shown below.

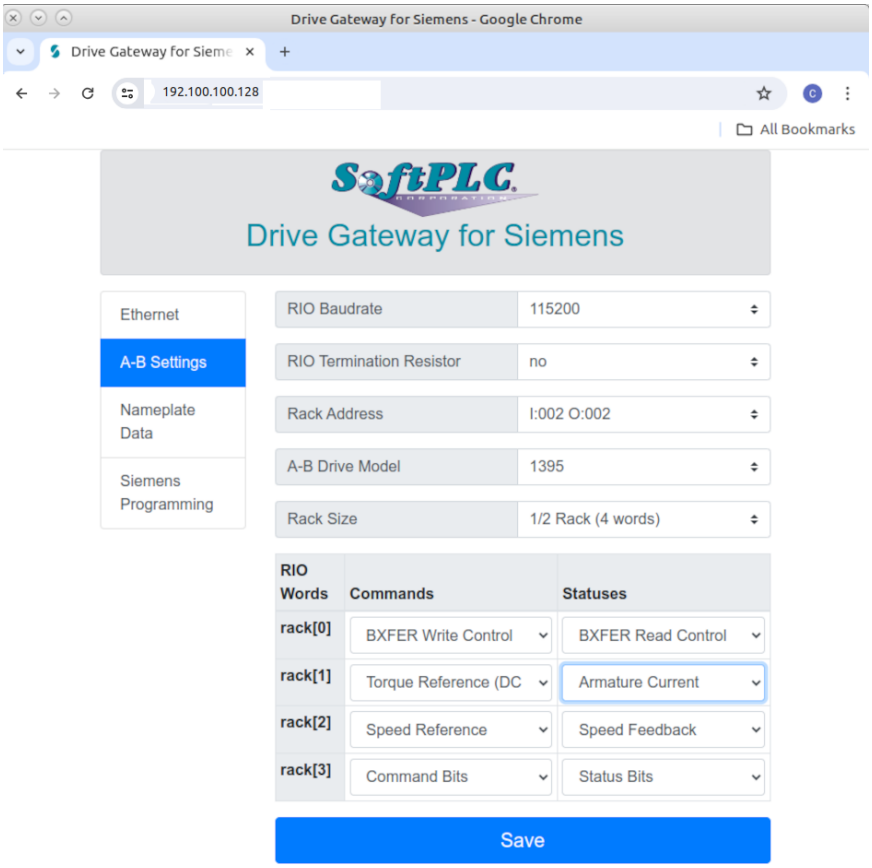



*Figure 1. Siemens Drive Gateway RIO Settings*

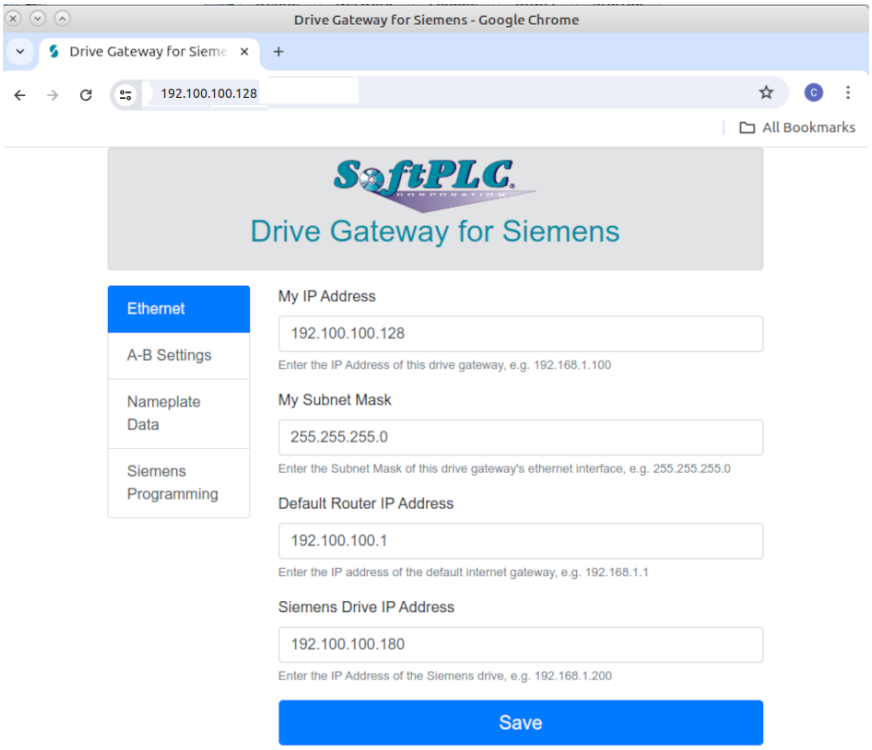



*Figure 2. Siemens Drive Gateway Ethernet Settings*

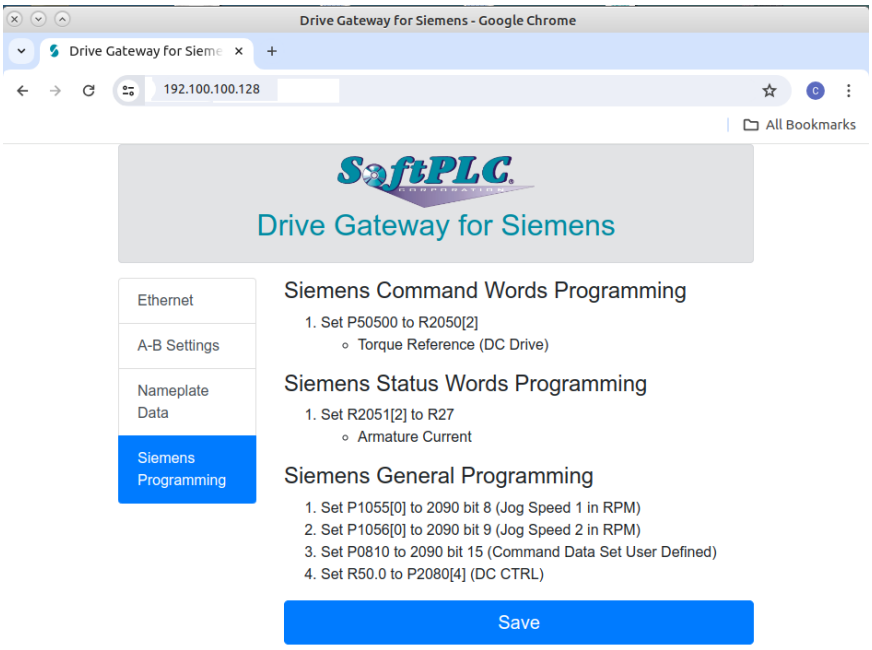



*Figure 3. Siemens Drive Gateway  Drive Programming Settings*

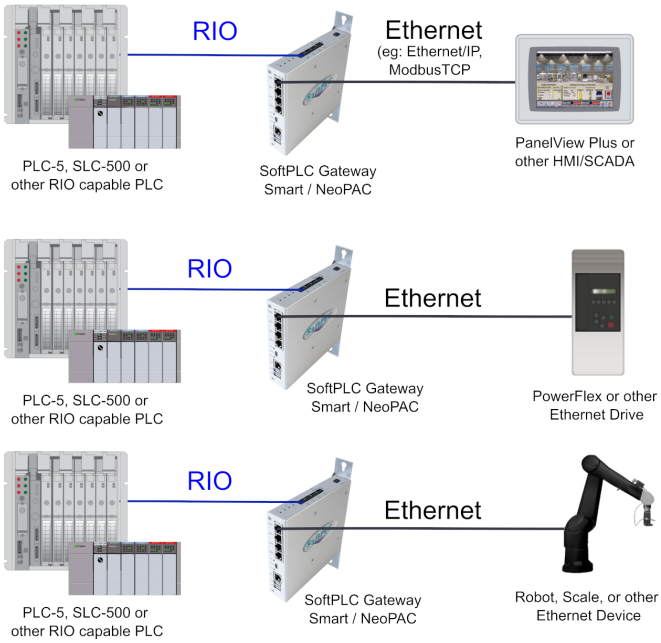
# DH+/RIO Gateway Applications

SoftPLC DH+/RIO Gateways can help in many ways, especially for phased migrations in replacing or upgrading legacy PLC's, HMI's, Drives, Robots/Scales/Valves, DCS controllers, and I/O, while leaving other portions of the control system in place.

These Gateways can also be used in place of obsolete A-B/Rockwell Automation products to support legacy equipment.

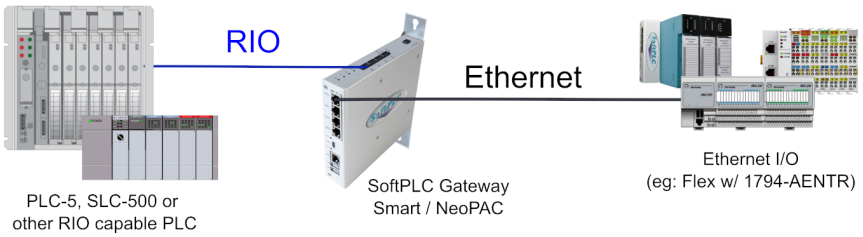
The following examples are just a few of the applications for SoftPLC Gateways.

## RIO Applications



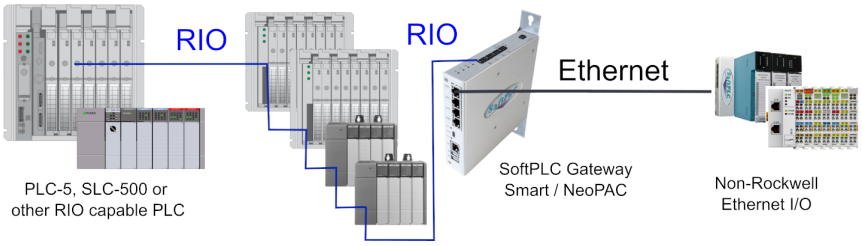

**Upgrade HMI's, drives, or other devices on A-B Remote I/O networks without changing the A-B PLC logic or hardware!**

- No changes to PLC logic/configuration required
- Replace old HMI's, drives, robots, scales, etc. with new equipment from nearly any vendor
- Gateway can act as RIO Master (Scanner) and/or RIO Slave (Adapter) simultaneously
- Configurable for 1/4, 1/2, 3/4 and full rack addressing
- Supports block transfers
- Supports upgrading up to 32 RIO devices per RIO network
- Supports multiple "blue-hose" networks of any mix *(RIO Scanner/Adapter and/or DH+)*
- Supports conversion to multiple Ethernet and/or serial protocols simultaneously
- Supports PLC-5, SLC-500, PLC-3, PLC-2/PLC, Pyramid Integrator or ControlLogix Processors with RIO interface modules



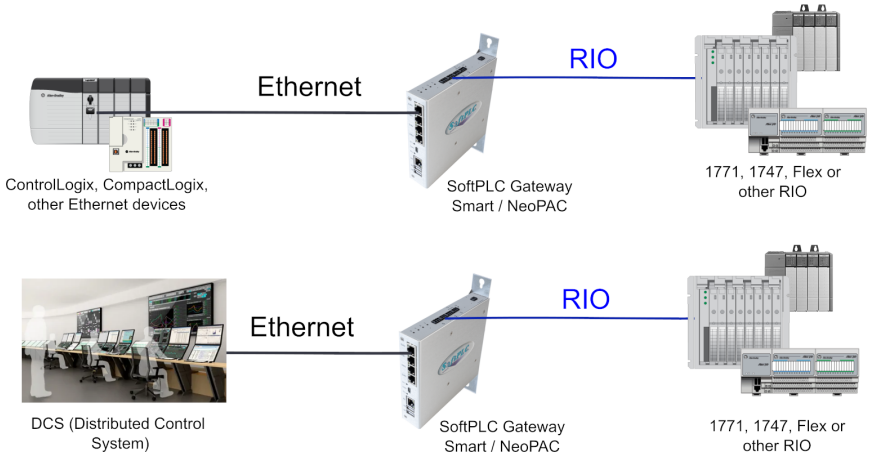

**Allow legacy PLC's to communicate to Ethernet or other I/O *(eg: Flex 1794-AENTR, or other vendor's products)***

- SoftPLC Gateway can appear as up to 32 RIO adapters per network
- Supports up to 3 RIO networks, and all baud rates *(57.6, 115.2 and 230 Kbaud)*
- Supports block transfers
- Can be used when replacing obsolete 1794-ASB Flex Adapters




**Add I/O on another bus to an A-B PLC *(eg: ModbusTCP, Ethernet/IP, SoftPLC's Tealware, Modbus serial)***

- Replace obsolete third-party or side-car modules *(eg: ProSoft Modbus module, 1771-ENET)*
- Transistion from Rockwell I/O products to another vendor for future PLC replacement



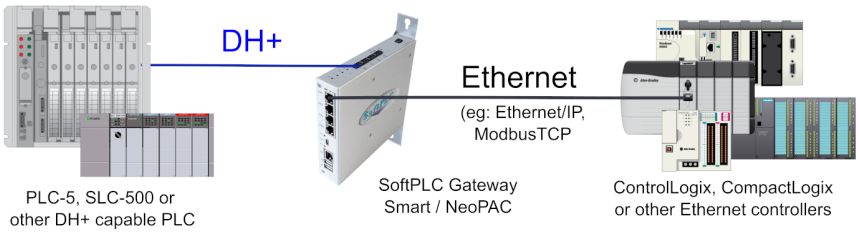

**Connect existing RIO to new PAC or DCS**

(1) Replace a legacy A-B PLC with a ControlLogix or CompactLogix PAC, without having to replace existing I/O & cabling or purchase expensive I/O conversion kits. Can be a substitute for obsolete 1756-RIO/DHRIO.

(2) Replace a legacy A-B PLC with a new DCS or controller from another vendor *(eg: Siemens, Schneider, Delta-V, ABB, etc.)*

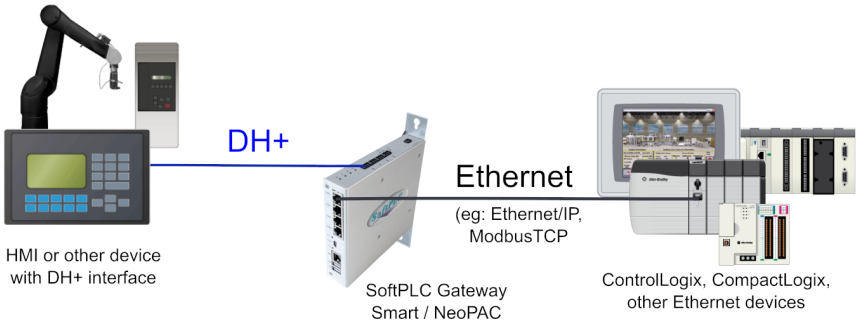
- Supports all blue-hose RIO systems and devices *(eg: 1771, 1746/1747 (SLC-500), Flex, scales/valves, drives, HMIs, robots, etc.)*
- Supports block transfer to intelligent A-B modules and devices
- Supports up to 32 adapters per blue-hose network
- Supports up to 3 RIO networks, and all baud rates *(57.6, 115.2 and 230 Kbaud)*
- Supports 1/4, 1/2 and full rack devices

# DH+ Applications



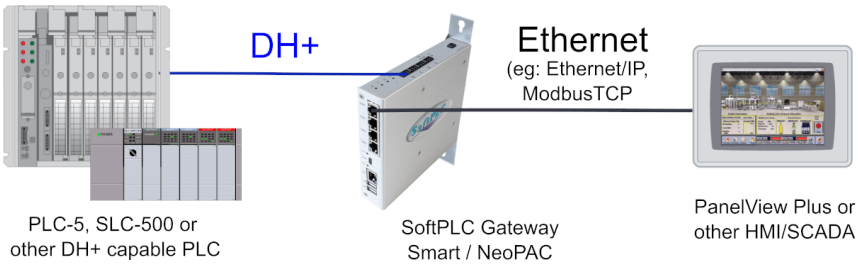

**Communicate between legacy PLC's and Ethernet capable Controllers**

- Communicate between new A-B controllers and PLC-5/SLC-500 using Messaging
- Communicate between new controllers of a different vendor and PLC-5/SLC-500 on DH+
- Supports changing individual PLC's without disturbing legacy PLC's or DH+ cabling
- Add new controllers without disturbing legacy PLC hardware



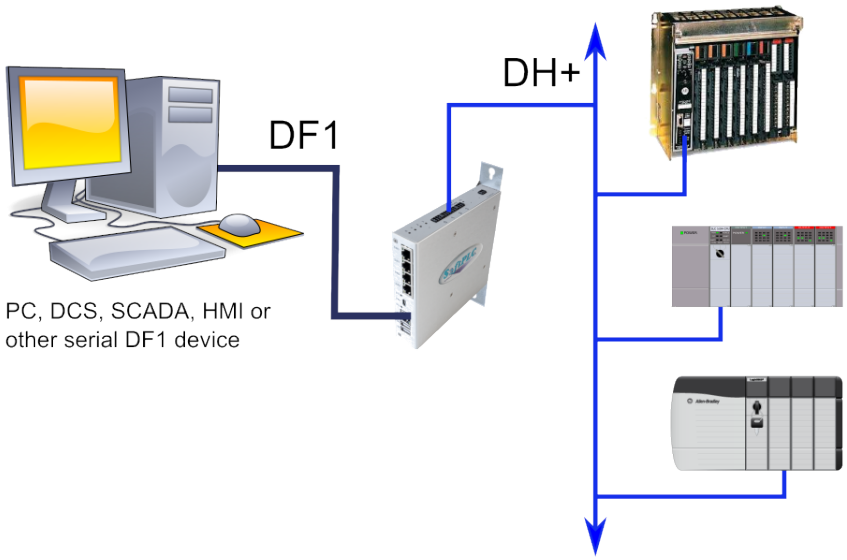

**Communicate between legacy DH+ Devices and Ethernet/Serial Devices**

- Communicate between legacy devices on DH+ *(eg: drives, robots, HMI's)* to new controllers or HMI's on Ethernet (or serial) networks
- Communicate between DH+ devices and controllers of a different vendor



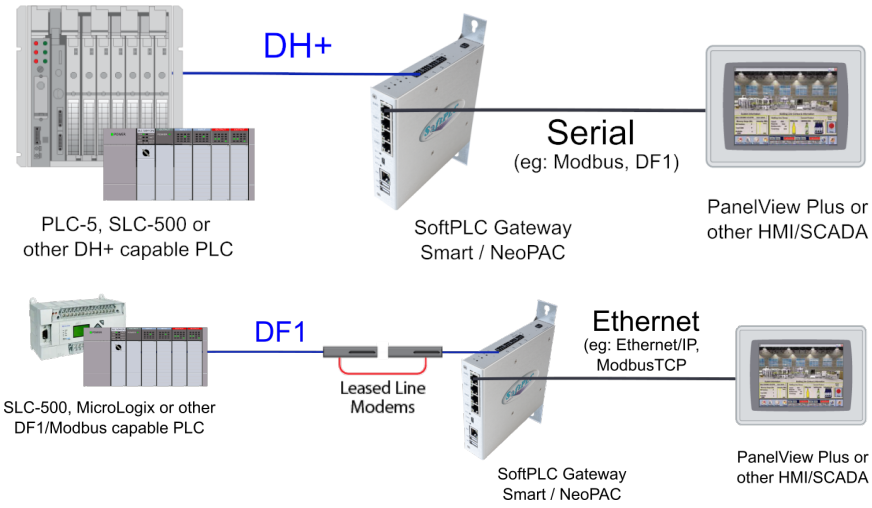

**Upgrade HMI's, Drives, or other DH+ Devices**

- No changes to PLC logic/configuration required
- Replace old DH+ based HMI's, drives, robots, scales, etc. with new equipment from nearly any vendor
- Supports upgrading up to 63 DH+ devices per DH+ network
- Supports multiple DH+ networks (3 on Smart Gateway and 2 on NeoPAC Gateway)
- Supports multiple Ethernet and serial networks for new devices
- Supports PLC-5, SLC-500, PLC-3, PLC-2/PLC, Pyramid Integrator or ControlLogix Processors with DH+ interface modules




**Replace obsolete DH+/DF1 interfaces**

- Bridge devices between DF1 serial and DH+ networks *(alternative to Allen-Bradley 1770-KF2B or 1771-KE/KF modules)*




- Bridge devices between DF1 serial (or Modbus) and Ethernet networks *(alternative to Allen-Bradley 1761-NET-ENI)*

# Compare

With Rockwell Automation discontinuing all products* that supported "blue-hose" communications, customers with RIO/DH+ interface needs have limited options to support existing installations or to do partial migrations.

SoftPLC Gateways provide the most comprehensive, and value-priced options:

- More ports
- More devices/data points supported per network
- More protocol options in the same hardware
- Better communication throughput
- More comprehensive network diagnostics
- Easy and more flexible data mapping between protocols
- Lower cost

Compare SoftPLC vs ProSoft RIO/DH+ Gateways.

- Discontinued products include PLC's *(eg: PLC-5, SLC-5/04)*, RIO/DH+ scanner modules *(eg: 1756-RIO/DHRIO, 1747-SN), RIO Adapters _(eg: 1771-ASB, 1747-ASB, 1794-ASB)*, PC interfaces *(eg: 1784-PKTX)*, VFD interfaces *(eg: 20-COMM-R)*, and others.

# Resources

## Data Sheets

**SoftPLC Gateways Brochure**

Overview of all SoftPLC Gateway features, hardware options, and example applications.

**Smart Gateway Data Sheet**

Hardware features and specifications for the Smart Gateway.

**SoftPLC NeoPAC Data Sheet**

Features/specifications of SoftPLC NeoPACs.

**Available Protocols**

Table of available protocols/requirements for each model SoftPLC Gateway.

**SoftPLC Gateways Brochure**

Feature/function comparison of A-B RIO/DH+ Gateways, SoftPLC vs ProSoft.

## Media, Papers, Articles

**A-B Control System Migrations *(~16 min video)***

Download or Watch on YouTube

**A-B Migrations *(~13 min Podcast)***

Listen

**Drives Upgrade**

SoftPLC Siemens Drive Gateway Success Story

**SoftPLC Gateways**

Slide show highlighting features of SoftPLC Gateway products.

**Clipboards are out! Protocol Gateways help make IoT efficient, accurate and low cost.**

Whitepaper that describes a variety of gateway solutions to tie multi-vendor equipment into cloud-based data acquisition and analytics applications.

## Manuals

**Smart Quick Start Guide**

Quick start communication configuration and troubleshooting guide for Smart family products.

**NeoPAC Quick Start Guide**

Quick start communication configuration and troubleshooting guide for NeoPAC family products.

### Smart SoftPLC A-B Remote I/O Scanner Driver TLM

Describes the installation, usage, and functionality of the Allen-Bradley Remote I/O (RIO) Scanner driver for Smart SoftPLC's internal SM-ABRIOM interface.

### Smart SoftPLC A-B Remote I/O Adapter Driver TLM

Describes the installation, usage, and functionality of the Allen-Bradley Remote I/O Slave TLM, which enables a Smart SoftPLC to emulate remote racks on an Allen-Bradly Remote I/O network via its internal SM-ABRIOA interface.

### Smart SoftPLC A-B Remote I/O Adapter Driver TLM

Describes the installation, usage, and functionality of the Allen-Bradley Remote I/O Slave TLM, which enables a Smart SoftPLC to emulate remote racks on an Allen-Bradly Remote I/O network via its internal SM-ABRIOA interface.

### SoftPLC Ethernet/IP™ TLM

Describes the installation, usage, and functionality of the Ethernet/IP driver for SoftPLC, enabling it to be a both a master/scanner and slave/adapter on one Ethernet/IP network.

### Panelview Ethernet to SoftPLC

Application note describes how to configure Panelview Plus to SoftPLC Ethernet communications.