# **VAUTOMATION DIRECT**











# Field I/O

#### Up-to-date price list

www.automationdirect.com/pricelist

#### FREE Technical Support

www.automationdirect.com/support

#### FREE Videos:

www.automationdirect.com/videos

#### FREE Documentation:

www.automationdirect.com/documentation

#### FREE CAD drawings:

www.automationdirect.com/cad







PROTOSx: Stride





( **10**-Link )



#### ▼AUTOMATIONDIRECT®

### IO-Link is the smart choice for smart I/O

#### STRIDE. Balluff. and Murrelektronik IO-Link Master Modules

Smart sensors provide a wealth of data that can be used to make processes more efficient. Rather than just the measurement data gathered by a basic sensor (position, pressure, temperature, etc.), intelligent sensors can also send information about the sensor's condition, its description, configured parameters, and performance. One powerful protocol used with smart sensor technology is IO-Link, IO-Link provides a standardized, point-to-point connection between smart devices and controllers. Typical IO-Link systems consist of one IO-Link master (the interface between IO-Link and higher-level systems that also controls data traffic between the connected IO-Link devices) and at least one IO-Link device.

#### Add rich data to sensed values:

- Flow meters include media temperature
- Proximity sensors include peak environmental variables
- Light sensors include signal degradation warnings

# **BALLUFF** MURR Stride

#### Configurable Screen interface

- · Select Balluff models feature a screen interface for simplified configuration without any software required
- · Configure IP, subnet mask. and gateway
- · Verify firmware version
- · Can be locked and illuminated red/green from the PLC

#### **Rugged Housing**

- Choose from die-cast zinc nickel-plated housing or weld proof, fully potted plastic housings
- · Sturdy 7/8" power connector
- IP65, IP67 rated

mFED-2

· Machine mountable -NO ENCLOSURE REQUIRED



**IO**-Link

**Master Modules** 

#### **Multiple Connections** for a Variety of I/O

- with true DIO functionality one module for everything: 16 DI, 16 DIO, 16 DO, 8 IOL or any combination
- Easily connect several discrete and analog signals to the IO-Link master using inexpensive M12 sensor cables
- · Intelligent supply voltage switching at pin 2 and 4
- Up to 4A per port

#### **Quick Installation**

- Installing and powering multiple modules is simple with the specifically designed for daisychaining several modules
- 4 & 5-pole cable options for any installation concept
- connections for fast data transfer
- IP IO-Link master modules support EtherNet/IP (explicit and implicit) messaging
- EtherNet/IP (explicit and implicit)
- Murrelektronik Premium EtherCAT IO-Link master module supports EtherCAT messaging, OPC UA, and MOTT (requires EoE (Ethernet over EtherCAT))

- 8 x IO-Link Class A/B master ports

- L-coded M12 power connections
- Up to 2 x 16A

#### Network with Ease

- 2 x D-coded M12, 100 Mbps Ethernet
- STRIDE and Balluff Basic EtherNet/
- Murrelektronik Premium EtherNet/ IP IO-Link master module supports messaging, OPC UA, and MQTT

#### Why IO-Link?

Traditional sensors and actuators are great for controlling and monitoring many different processes. While IO-Link devices will perform the same general function as traditional devices, they go one step further by providing a window into the device itself for insight on potential problems or possible improvements.



Extended Diagnostics. Smart devices can perform self-checks to determine if problems exist internally. Diagnostic data including sensor/actuator errors and the health of each connected IO-Link capable device is provided along with the sensed data. This allows the operator to monitor not only what values the sensor is measuring but also how well it's performing.



Reduced Downtime. The information provided by an IO-Link device can help pinpoint potential issues before they occur. For example, an IO-Link sensor could send a notification to a PLC that it is out of alignment, allowing maintenance to quickly correct the issue before any possible damage or major downtime

If an IO-Link device must be replaced, the process is simple since all of the needed sensor parameters are stored in the master and are automatically copied to the new IO-Link device once



Remote Configuration. Since identifying and configuration information is provided by each IO-Link capable sensor, operators can dynamically change a specific sensor's parameters from virtually anywhere. This is especially important for applications that require frequent system changeovers to accommodate a diverse product line. For example, in packaging applications where packaging needs vary extensively from product to product, this could allow a single sensor to be used for multiple applications with a simple configuration change.



IIoT Support. The process (temp, pressure, flow, etc.), service (device parameters, serial, numbers, etc.), and event (errors and warnings) data supplied by IO-Link devices can be routed though the IO-Link master to an upstream controller, SCADA system, or even to a cloud computing network. Making this data available to high-level systems provides a big-picture view of production as a whole and helps to facilitate plant-wide improvements.



Easy Integration. AutomationDirect EtherNet/IP-capable controllers work seamlessly with STRIDE, Balluff, and Murrelektronik I/O-Link EtherNet/IP masters. Productivity series controllers also offer downloadable task libraries that unlock easy drag-and-drop configurations for these masters and IO-Link-capable devices sold by AutomationDirect. With the supreme integration offered by AutomationDirect PLCs, IO-Link configuration and deployment time can be significantly

#### High Density Field I/O

Balluff and Murrelektronik IO-Link hubs allow several discrete analog sensors and actuators to be easily connected to an IO-Link master via a standard sensor cable. Murrelektronik hubs are for standard field I/O signals and do not transmit diagnostic information. However, Balluff hubs and the IO-Link master modules do monitor each channel for current and voltage anomalies. IO-Link hubs are an economical solution for a high-quality decentralized installation.



www.automationdirect.com/fieldIO









MURRELEKTRONIK

ETHERNET/IP OR ETHERCAT

**IO-LINK MASTER** 

PRICED AT

\$385.00



**STRIDE BASIC** 

ETHERNET/IP

**IO-LINK MASTER** 

PRICED AT

\$290.00

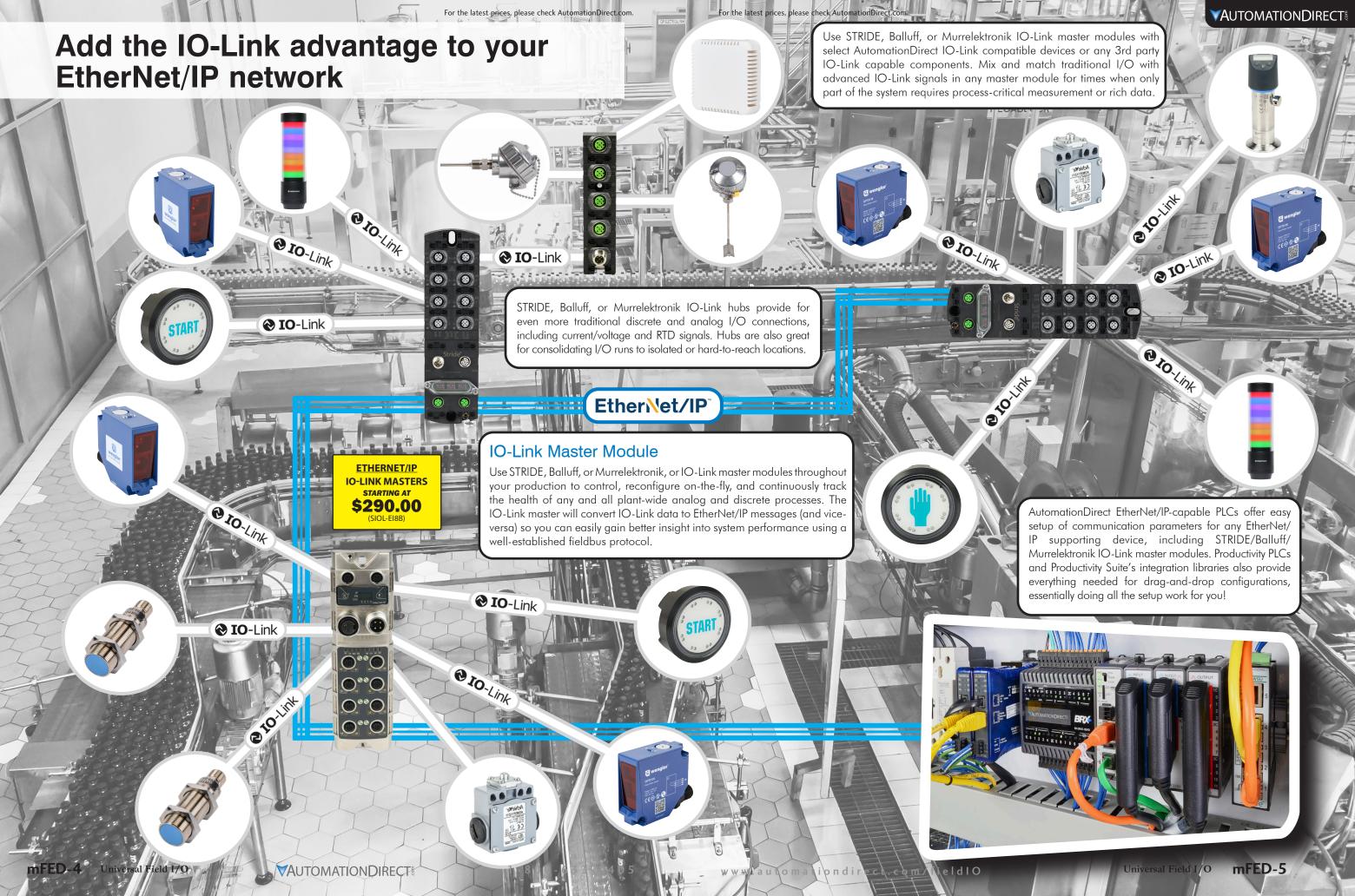
Universal Field I/O

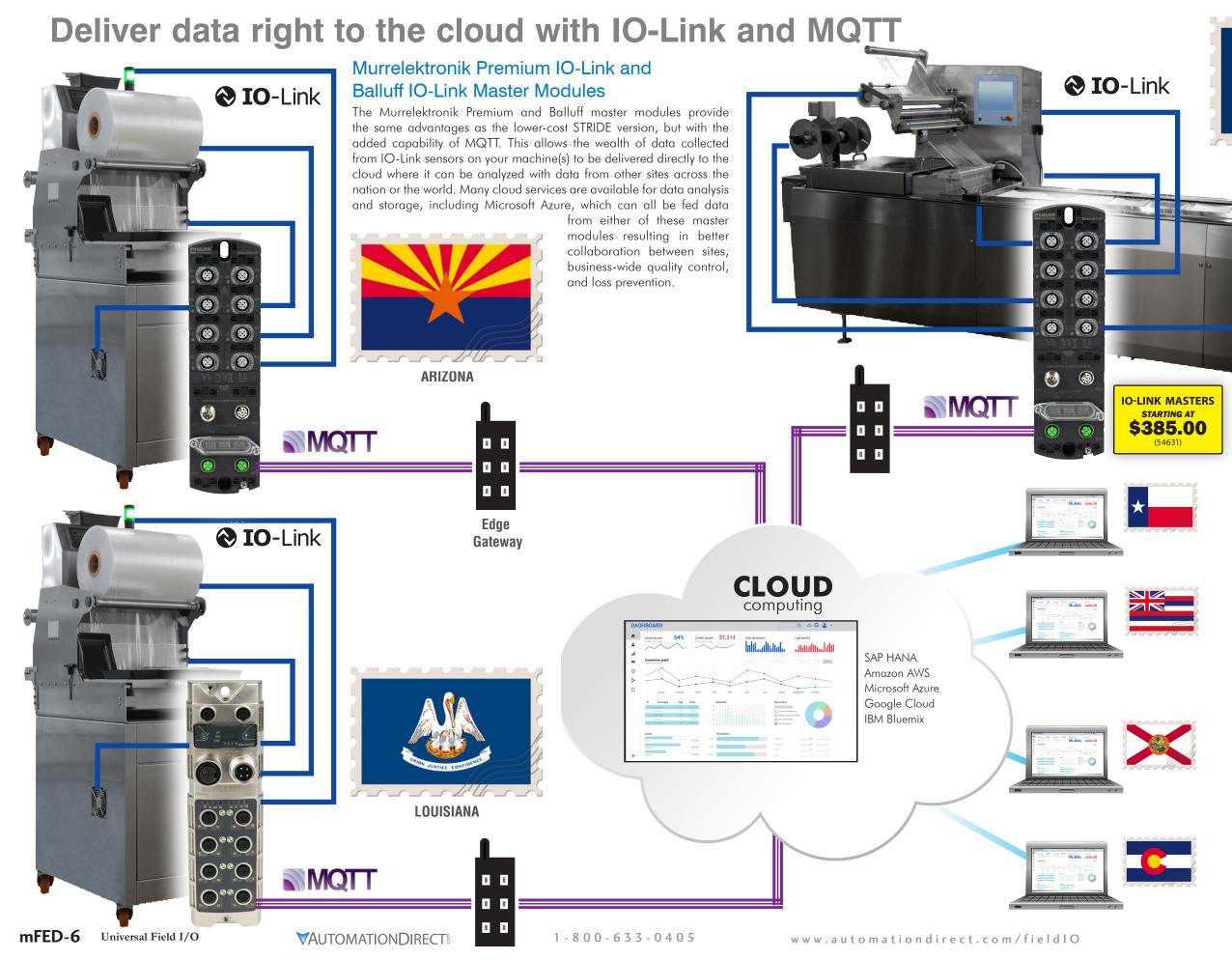
**VAUTOMATION DIRECTS** 

1 - 8 0 0 - 6 3 3 - 0 4 0 5

Universal Field I/O

mFED-3





REST API Interface

Balluff IO-Link masters also add REST
API interface to provide seamless OT/IT
merging and access real-time sensor data,
allow remote device configuration, and
gain diagnostic insights using standard web
protocols. REST API can easily integrate
existing IT systems and cloud platforms to
leverage standard HTTP and lightweight
JSONs, and instantly process data for
enhanced monitoring, analysis, and faster
decision-making. Also, configure IO-Link
devices and trigger actions remotely
to reduce downtime and streamline
maintenance.

**SOUTH CAROLINA** 

#### Stay in-the-know

Cloud networking also allows you to stay connected to your machine(s) no matter how remote. Whether it's the new install in Arizona, the problem child in Louisiana, or the redesign in South Carolina, vital personnel can stay in-the-know including technical support headquartered in Texas, the customer on vacation in Hawaii, or field engineers on start-ups in Florida and Colorado.

Universal Field I/O mFED-7

Stride Reliable field I/O from a leader in affordable industrial communication

#### Field I/O Modules

STRIDE is well known in the industrial communications realm for providing dependable communications products at extremely affordable prices. The new STRIDE Field I/O modules live up to that standard and provide an affordable solution for Modbus TCP-capable systems that need simple I/O. Any Modbus TCP device, like a PLC or HMI, can communicate with these modules over a single Ethernet connection, alleviating the expense of long I/O wire runs. Add as many or as few of the STRIDE Field I/O modules you need for easy, reliable monitoring and control of your field devices.

#### Field I/O Module Lineup:

- 16 channel discrete input (24VDC)
- 8 channel discrete input (24VDC) with 8 channel discrete output (24VDC PNP)
- 8 channel discrete input (24VDC) with 4 channel relay output (SPDT)
- 4 channel analog current/voltage input and output modules
- 8 channel analog current or voltage input modules
- RTD and thermocouple modules



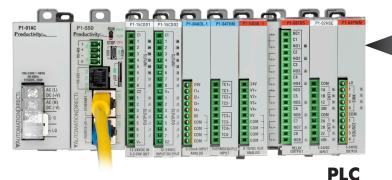
irect.com/fieldIO

**DISCRETE & RELAY** 

For the latest prices, please check AutomationDirect.com.

Discrete I/O modules allow monitoring and control of ON/OFF signals used with devices such as limit switches, sensors, pneumatic solenoid valves and indicating lights. Relay output modules allow higher AC or DC currents and are used with

power relays, pumps, motor starters and contactors. STRIDE Field I/O modules provide up to 16 discrete inputs with options for discrete and relay outputs.



#### **Modbus®** TCP/IP

ANALOG/PROCESS FIELD I/O STARTING AT \$209.00



Analog I/O modules supply the values needed for precision control of a process including level, flow, and pressure data.

> STRIDE Field I/O analog input modules are available with up to 8 current (-20 to +20 mA)or voltage (-10 to +10 VDC) inputs. Analog output modules provide four 0-20mA/0-10VDC output channels.



#### **Modbus®** TCP/IP



**TEMPERATURE FIELD INPUTS** STARTING AT **S219.00** 

#### Temperature Inputs

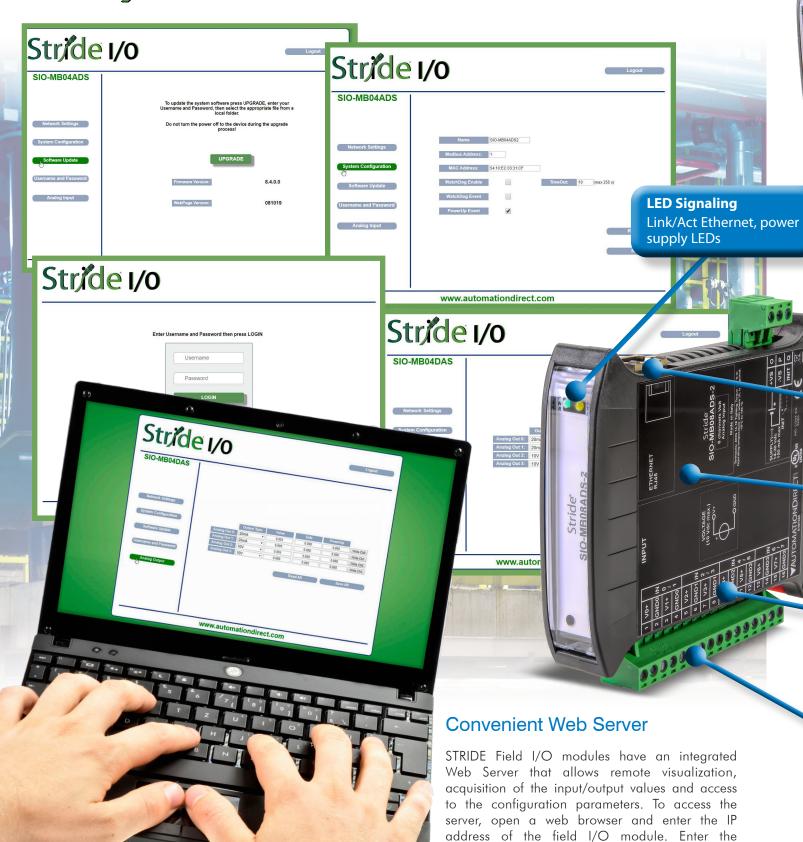
Temperature is considered to be one of the most measured industrial parameters in automation. Maintaining a specific temperature is crucial for equipment used to fabricate electronics, heat fluids, or sanitize other equipment.

> STRIDE temperature provide 4 thermocouple inputs or 4 RTD channels per module.

**Modbus®** TCP/IP



# Stride Field I/O that's truly field friendly



**VAUTOMATION DIRECT** 



STRIDE Field I/O modules are designed to handle harsh field conditions and their slim footprint allows them to easily fit in areas where space is a concern.

Great for numerous applications especially for I/O on industrial machinery, isolated or segmented processes and when equipment expansion is needed.

#### **Ethernet Interface**

10/100 Base-T, Modbus TCP Server

#### **Rugged Housing**

Housed in a tough self-extinguishing plastic enclosure with DIN rail mounting

#### **Galvanic isolation**

The device has full electrical isolation between the lines, providing protection against the effects of ground loops existing in industrial applications

**Removable Screw Terminal Connections** 

**UL listed / CE mark / EN-50022** 

#### A great I/O solution for:







and much more!

mFED-10

Username and Password and that's it. You now

can configure or monitor your I/O from anywhere.

# **PROTOS**X: Xpansion I/O for your application and every application

#### The Perfect Fit

Protos X I/O is a perfect fit for most applications, particularly where you need distributed or compact I/O. Regardless of the size, budget or demand, this product can accommodate your needs and deliver every time.

At just 12mm thick, the super thin and attractive form factor allows you to manage the overall size and cost of your mechanical design. Now you can fit more I/O into a smaller footprint (linear DIN rail space), saving you money when sourcing enclosures for new applications or making it a more attractive fit for existing ones. When compared to more traditional Field I/O, Protos X I/O saves you roughly 70% more linear DINRail space!

This practical product makes your everyday applications easier to accomplish and saves you time. The footprint allows you to install Protos X I/O on or near the equipment it is monitoring. This reduces field wiring and provides fast and reliable updates to your control system.

#### Monitor just a couple points or a couple hundred points

The Protos X I/O offers a wide selection of I/O modules, also called terminals. With densities ranging from 2 points per I/O terminal up to 16 points per terminal, you have the ability to precisely configure your control system to the exact number of points you need, eliminating overpaying for unused I/O points. You designed your system for the number of points that you need, why pay for more?

#### Communicate with the Top Industrial **Protocols**

With Serial Modbus RTU, Modbus TCP and EtherNet/IP bus couplers available, you have the freedom to connect to hundreds of control devices in our industry, including the most popular PLCs and SCADA/HMI packages. This flexibility allow each user to select the control platform that best fits the project and still save money by selecting a universal I/O product to complete the job.

#### The Signals you Need

- 2, 4, 8 and 16-point discrete I/O terminals available in a variety of signals including 24VDC, 120VAC & 240VAC
- 2, 4 and 8-point analog terminals with signal ranges of 4-20mA, +/-10VDC, 0-5/0-10VDC
- 2 and 4-channel temperature modules in both thermocouple (J and K types) and RTD (Pt100).

#### Bus Couplers

mFED-12

- PX-MOD with Serial Modbus RTU protocol
- PX-TCP1 with Ethernet Modbus TCP (single port)
- PX-TCP2 with Ethernet Modbus TCP (dual port)
- PX-EIP1 with EtherNet/IP (single port)

#### Simple Wiring

With the push-in, spring clamp wiring system on the Protos X I/O terminals, installation has never been easier. There is never a concern for over tightening or under tightening. No screw heads to fiddle with or making sure you have a screwdriver that fits. Simply strip your wire and push it in to the terminal point.

#### Power and Expansion

- 24VDC or 120-230 VAC power feed terminals let you switch voltage on the power bus
- Bus Expansion End Terminals and Couplers let you expand the system easily

Note: Either the PX-901 End terminal or PX-902 Expansion End terminal are required on every system.

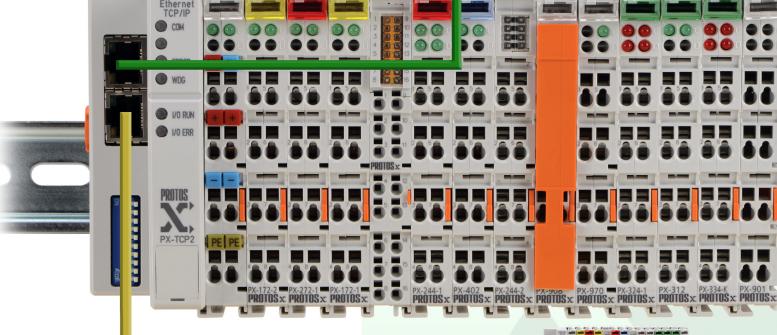


# PLC or PLC-based PAC

#### **Unique Design**

Because of the interlocking design of the terminals, the data and power buses are carried from module to module and picked up only when needed! This unique design allows the system to easily switch the module's required field power while continuing to keep the data bus intact.

This design also makes it simple to provide a specific voltage to a series of modules, like an internal jumper, supplying power from module to module.

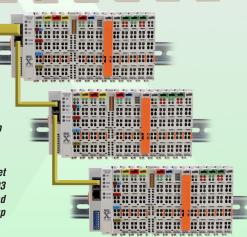


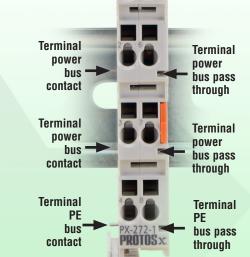
#### I/O Terminal Selection

Offering a wide variety of signals, voltage ranges and number of points, the Protos X I/O terminals make it simple to configure your system. Whether you need a couple of points or a couple hundred points, you can easily build a comprehensive I/O platform with these terminals.

Note: PX-TCP2 (shown) is expanded via the second Ethernet port included on the bus coupler. The expansion terminals are not supported.

The PX-TCP1 and PX-EIP1 bus couplers only have one Ethernet port and require the PX-902/903 expansion terminals if you need to add more than a single group or for remote terminals.





I/O Bus contacts

## The Xact I/O you need, where you need it

#### Why Remote I/O?

With the infusion of lower-cost PC technology working its The unique slim design and low cost of the Protos X I/O way into industrial controllers, PLCs and PLC-based PACs are becoming more and more powerful. Greater processing power and larger memory capacity in these controllers means that you can accomplish more with a single control system. However, the field wiring in these systems becomes increasingly expensive and difficult to manage. It's not practical to think you can control an entire logistical distribution system out of a single control cabinet ... You must network.

With distributed or remote I/O, you can localize a low-cost I/O solution on or near the equipment you're controlling and monitoring, drastically reducing your field wiring. You can keep the hundreds of control signal wires on the machine and transfer all data back to the main control panel with an off-the-shelf Ethernet or serial cable.

#### I/O Where you Need it

makes it the most practical distributed I/O available today. The ultra slender form factor makes it easy to install on or near your machine or application components. This saves you time and money by eliminating excess field wiring and speeds up troubleshooting.

The slim design also allows you to more precisely select the I/O count you need for your system. By building a system that contains the exact I/O count required and not a lot of extra, unused points, you're only paying for what you need.

This ultra-compact design makes it perfect for those applications where a typical PLC or I/O solution simply would not fit.



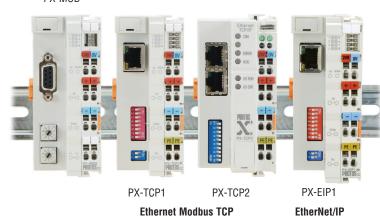
## With Xcellent options and easy configuration, the choice is clear

#### **Bus Couplers**

Protos X gets you connected with the most common protocol interfaces. Choose from the Serial Modbus RTU module, EtherNet/IP and Modbus TCP (single port with support for expansion), or our dual-port Modbus TCP interface with a built-in Ethernet switch to easily daisy-chain multiple couplers.

These common bus couplers make it easy for you to expand any system. Select the one that best connects to your control system and use our free configuration utility to configure your system. Within minutes you're ready to control this low-cost I/O.

#### Serial Modbus RTU PX-MOD



#### **Easy Configuration**

The PX-CFGSW software is designed to do exactly what you need and nothing more. This guick and easy-to-use configuration utility helps you set up the bus coupler to match the configuration of your network so you're talking in no time. The software also provides a very simple-to-read layout that identifies each terminal with:

- A Slot: the physical location of the terminal
- B Terminal Name: the part number of the terminal
- **(b)** Short Description: description of the terminal
- Long Description: more details
- Modbus Range: the Modbus Address for the terminal

#### Software Requirements

Purchase on USB drive - \$22.50

Also available for free download:

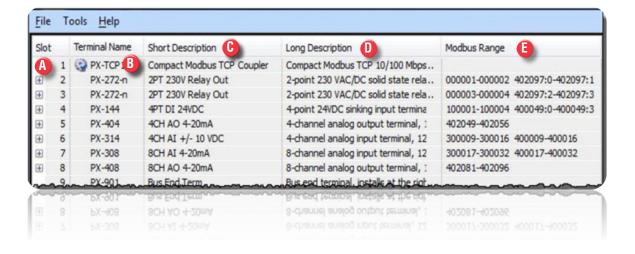
http://support.automationdirect.com/products/pxcfgsw.html

#### Operating System Compatibility

- Windows 8.1 (32 & 64 bit)
- Windows 8 (32 & 64 bit)
- Windows 7 (32 & 64 bit)
- · Windows Vista (32 & 64 bit)
- Windows XP

#### **Hardware Requirements**

- Processor: 333 Mhz (XP) 1 Ghz (Win 7 & Win 8)
- Memory: 512 Mb (XP) 1 GB RAM (32-bit) or 2 GB RAM (64-bit)(Win 7 & Win 8)
- HD Space: 300 Mb free space
- · Video: None specified



mFED-14 mFED-15 Universal Field I/O 1 - 8 0 0 - 6 3 3 - 0 4 0 5 Universal Field I/O **VAUTOMATION DIRECT** www.automationdirect.com/fieldIO

Configure your LS Electric Field I/O system with our easy-to-use selector tool!

Click to go now

# Reliable LS Electric PLC hardware for your field I/O needs

Works with any Modbus®TCP, EtherNet/IP® or EtherCAT® master device

(depending on coupler model)



#### Field I/O from a PLC Powerhouse!

LS Electric has been in the PLC and I/O business for decades and is well known for reliable control solutions. So why go anywhere else for your field I/O needs? The LS Electric bus couplers support communication with any EtherNet/IP, Modbus TCP, or EtherCAT master (depending on model) and allow I/O connections to be installed near the system being controlled. Save time and money by using remote I/O bus couplers and one single Ethernet cable run from the master device instead of multiple wire runs for each I/O point.

Use any of the bus couplers with up to 8 LS XGB PLC I/O modules including high-density 32-point discrete modules and connect numerous remote sensors, switches, pushbuttons, actuators, etc. to control-room HMIs, plant-floor PLCs, or any compatible control device.

The bus couplers feature two RJ45 Ethernet ports for fast real-time communication. The dual ports and the internal relay function allow for daisy-chaining multiple couplers without the need for additional Ethernet switches.

I/O rack configuration for BSSRT Ethernet is made simple with the bus coupler addressing tool. This software tool allows selection of I/O modules and quickly shows address registers and offsets for each I/O point. For the EtherCAT BSSCT bus coupler, ESI file can be downloaded for simple configuration in any EtherCAT master programming software.

Unit  O Byte O Word RUN			Input Refresh Size 11		11	V1.00 2023-11-14 Output Refresh Size 10	
00,			11011	2 portice			Superior Section 1
Slot No.	Module	Input Size	Output Siz	e Input Address Of	fset Outp	ut Address Offs	
•	Header	2	0	0	-		Set up your
0	XBE-DC16A	1	0	2	-		
1	XBE-TP32A	0	2	-	0		I/O configuration
2	XBF-AH04A	6	3	3	2		0.21
3	XBF-DV04C	2	5	9	5		with ease using the
<b>⊘</b> xgs							<b>Bus Coupler</b>
Slot 0	XBE-DC16A	~					Addressing
Slot 1	XBE-TP32A	~	-				
Slot 2	XBF-AH04A	~	IN/OUT	FLAG	BIT/WORD	WORD OFFSET	Tool
Slot 3	XBF-DV04C	~	100000	BF-DV04C_CH0_ERR	BIT	0	Analog Output mc Sure: Cha
Slot 4	None	~	Input )	(BF-DV04C_CH1_ERR	BIT	0.1	Analog Output module: Chan error
	None		Input )	BF-DV04C_CH2_ERR	BIT	0.2	Analog Output module: Channel 2 error
Slot 5					BIT	0.3	Analog Output module: Channel 3 error
Slot 5 Slot 6	None		Input )	BF-DV04C_CH3_ERR	UII		Analog Output module: Channel 5 error
	None None		100000	BF-DV04C_CH3_ERR	BIT	0.F	Analog output module: Module ready
Slot 6	None		Input 3		200	0.F	0. 00000 C 0. E. E. O. 00000 C 0. 0000 C 0. 00

READ STATE OF THE PARTY OF THE



Bus Couplers starting at \$199.00 I/O Modules start at \$59.00















mFED-16 Universal Field I/O

**VAUTOMATION DIRECT** 

**Modbus®TCP** 

www.automationdirect.com/fieldIO

Universal Field I/O mFED-17

OVER THE COMPETITION

# LS Electric field I/O easily supports your remote systems

#### Monitor/control numerous applications for less.

The LS Electric field I/O system has a host of I/O option modules available to handle numerous automated tasks around your plant/facility. Install low-cost bus couplers with up to 8 XGB I/O modules wherever you need automated control/monitoring. With the numerous I/O modules available, you can monitor/control several systems at once.





Stay away from the competition's overpriced field I/O systems and save thousands on your next project with LS Electric field I/O.

Bus Couplers start at \$199.00 I/O Modules start at \$59.00

#### Processing and production

A variety of analog and temperature I/O modules are available for process control functions. With these modules, you can monitor and/or control the production side of your system. Whether it's the temperature of an oven, the level of raw material in a feed hopper, or the amount of pressure being used at your filling stations, the LS Electric field I/O system has the analog modules you need.



#### High-speed conveying, tracking, and sorting

Several discrete I/O modules are available that can work hand in hand with industrial object detection devices including proximity switches, photoelectric sensors, and limit switches. These devices are used extensively in product conveying and sorting applications. High-density (32 point) models allow for over 250 ON/OFF control devices to be added to a single remote I/O rack.

High-speed counter modules (up to 500 kHz) are also available to handle the rapid pulse trains produced by belt- or shaft- mounted encoders, often used to track belt speeds and object positions.



TION DIRECT

#### Weighing systems

Weighing systems are important for many production facilities as they can be used to determine if the right amount of product has been placed in a container, if the feed tank is running out of supply, or help determine the amount of shipping cost the packaged product will incur. The XGB load cell module can be used with 3rd party load cells to get accurate weight measurements. Up to 4 load cells can be wired to a single channel with up to 2 channels total.

The Terminator Field I/O System:

**Great Features at an** 

AutomationDirect Price PC-based Controls

#### Terminator I/O

#### What is it?

Terminator I/O is one of the most practical distributed Field I/O systems you can buy. It combines the I/O points with their field terminations into a modular package to save panel space and money. With Terminator I/O, you can distribute I/O nodes close to field devices for faster and more efficient wiring and troubleshooting.

Terminator I/O was custom-designed for us by JTEKT (the same people who designed the original GE Series One PLC), a trusted name in control technology since 1983.





#### What's it got?

- Network interface modules supporting Ethernet, DeviceNetTM, and Modbus; some adapters include an on-board RS-232 serial port.
- Discrete and analog I/O modules with modular terminal bases.
- · Configuration flexibility by plugging together a network interface module with up to 16 I/O modules. Use local expansion for large I/O drops. No more confining I/O bases.
- AC or DC power supplies. For high power systems, combine multiple supplies on a single I/O set.
- Horizontal or vertical DIN-rail mounting

#### What can I do with it?

- Use Terminator I/O as robust PLC remote I/O with triple stack terminal bases and hot-swap I/O modules.
- · Add Terminator I/O to Allen-Bradley, Siemens, Modicon or GE systems for 1/2 to 1/3 the price of their comparable field I/O products.
- Use Terminator I/O as low-cost field I/O for your SCADA, PC-based control system or WinPLC™ system.

ieldhus network interface modules support Ethernet **DeviceNetTM Modbus®** 

Starting at \$375.00









replaceable fuses

Terminator I/O allows you to connect serial devices, like an operator interface panel, along with your I/O, so there's no need to purchase adapters or run additional wiring\*.

Terminator I/O includes specialty modules like our 16-channel RTD temperature module (T1F-16RTD) and the counter mo

module where needed

Modules slide into the modular terminal bases. Plug together any combination of modules and power sources for your application.

