PointScan/446™
5-Port Industrial Ethernet Switch

Features

- **Five RJ45 10/100BaseT(x) ports**
- **Multimode fiber port (up to 2 km)**
- **Auto-detecting 10/100 Mbps operation**
- **Plug and play operation**
- **Compatible with all IEEE 802.3 Ethernet protocols**
- **Cascade switches for seamless expansion**
- **1200 VRMS Ethernet port isolation**
- **-40° to +85°C operating temperature**
- **Full certification: CE, UL 508, CSA, and DNV**
- **Compatible will all PointScan series I/O and Ethernet gateways**
- **Can be used as a standard Ethernet switch in typical network applications**
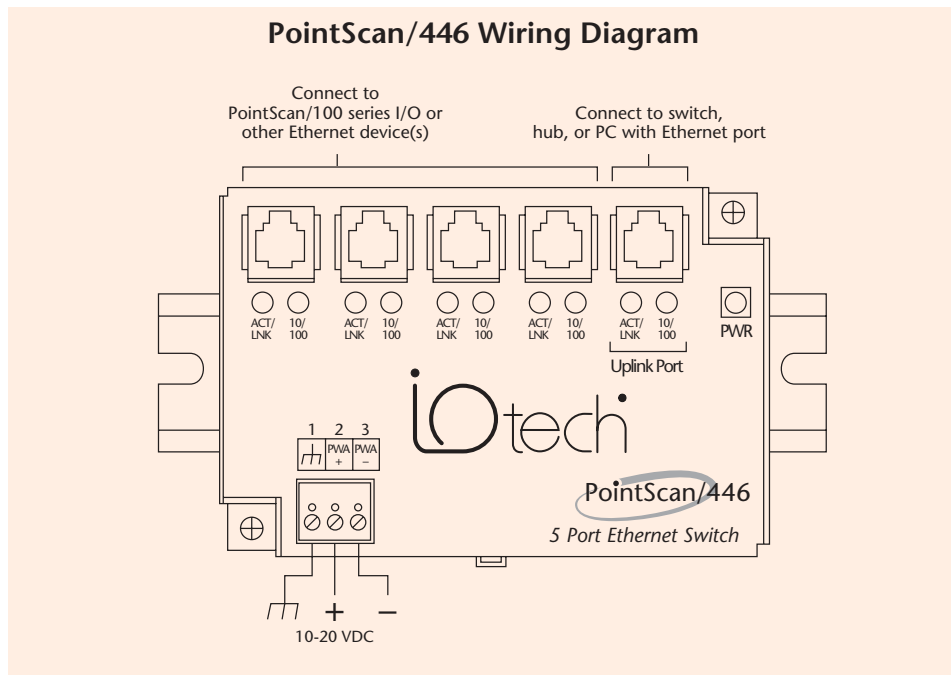
The PointScan/446™ is a ruggedized switch designed for use in high noise industrial environments. It links Ethernet devices including PLCs, workstations, and IOtech's PointScan/100™ series I/O modules, Ethernet WaveBook, Ethernet DaqBook, and Ethernet gateways to Ethernet networks.

Real-Time Performance: Simple Ethernet hubs only broadcast messages to every port and each Ethernet device must wait to establish communication, and message "collisions" and re-broadcasts compromise performance. The PointScan/446 is a intelligent device that automatically determines and remembers where an Ethernet device is located, and routes messages only through an appropriate port (with only one device transmitting packets on each wire pair). This more efficient communication eliminates collisions and delivers real-time, deterministic network performance.

Seamless Integration and Effortless Expansion: The PointScan/446 installs seamlessly into any existing Ethernet network. There are no jumpers to set and all configuration is done automatically by the module. Standard (RJ45) connectors support easy termination and the modules are 100% compatible with all IEEE 802.3 Ethernet protocols. For larger systems, these modules can be cascaded (without limit) since Ethernet switches, unlike Ethernet hubs, have no retransmission limitations.

The PointScan/446 links up to four Ethernet devices to a high-speed 10/100 Mbps Ethernet network

PointScan/446 Wiring Diagram

The 10/100 Mbps *auto speed selection* feature enhances the speed of 10 Mbyte Ethernet devices by speeding up their message transmissions to 100 Mbyte when they are passed to the higher speed Ethernet backbone.

Typical System Architecture: The PointScan/446 module can be placed right on the plant floor and interface directly with any Ethernet-compatible device. This "sub-net" is typically de-coupled, to insure maximum performance, from the office LAN and from the enterprise-wide Ethernet backbone.
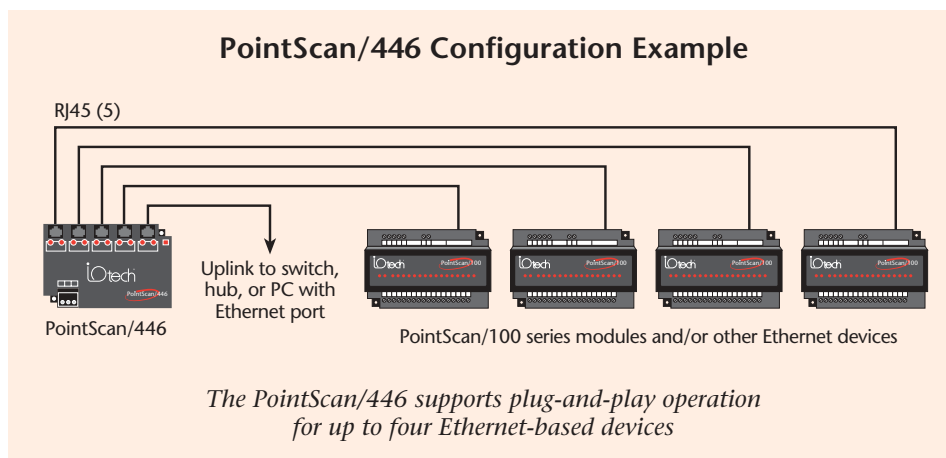
PointScan/446™
Specifications & Ordering Information

Industrially Rugged: With an extended operating temperature of -30˚ to +70˚C, and actual MTBF of over 700,000 hours, these switches will work maintenance-free in harsh environments. Additionally, DC power eliminates the need for bulky AC power supplies and minimizes safety issues.

Compact Form Factor: Commercial switches designed for office environments are large and designed to sit on desk-tops. In contrast, the PointScan/446 features a compact design and can be panel or DIN-rail mounted with no add-on hardware.

Why use a switch instead of a hub?

The common Ethernet hub simply broadcasts each message it receives to every one of its posts. Each Ethernet device also has to wait for its turn to talk to the hub, increasing the likelihood of message collisions; therefore, real-time operation is jeopardized and determinism is difficult. Alternatively, IOtech's industrial Ethernet switches automatically determine and remember where an Ethernet device is located and routes messages only through the appropriate port. This minimizes network loading and enables true deterministic communications over Ethernet.

PointScan/446 Configuration Example

RJ45 (5)

Uplink to switch, hub, or PC with Ethernet port

PointScan/446

PointScan/100 series modules and/or other Ethernet devices

The PointScan/446 supports plug-and-play operation for up to four Ethernet-based devices

Ethernet RJ45 Cable Type

Ethernet Switch STANDARD Port to	Cable Type to Use	Ethernet Switch UPLINK Port to	Cable Type to Use
PC card	Straight-thru	PC card	Cross-over
Ethernet I/O	Straight-thru	Ethernet I/O	Cross-over
PLC	Straight-thru	PLC	Cross-over
Other Ethernet enabled devices	Straight-thru	Other Ethernet enabled devices	Cross-over
Uplink port on another switch or hub*	Straight-thru*	Standard port on another switch or hub	Straight-thru
Straight-Thru Cable Wiring		**Cross-Over Cable Wiring**	
Pin 1	Pin 1	Pin 1	Pin 3
Pin 2	Pin 2	Pin 2	Pin 6
Pin 3	Pin 3	Pin 3	Pin 1
Pin 6	Pin 6	Pin 6	Pin 2

* Some Ethernet switches and hubs have a settable switch on their Uplink port that will change how the port is internally wired. Make sure this switch is set in the "To Hub/Switch (MDI)" position as opposed to the "To PC (MDI-X)" position.

Specifications

Ethernet Switch Type: Unmanaged, store and forward
RJ45 Ports: 10/100BaseT(x), shielded
RJ45 Speed: 10 Mbps or 100 Mbps, auto-negotiating
Ethernet Protocols Supported: All standard IEEE 802.3
Broadcast Storm Protection: 25% of bandwidth
Memory Bandwidth: 1.4 Gbps
Completely Compliant: IEEE 802.3 & IEEE 802.3u
Full or Half Duplex Operation: Auto-sensing
MAC Addresses Supported: 1K (automatic learning, aging, and migration)
Ethernet Isolation: 1200 Vrms 1 minute

Required Supply Voltage: 10 to 30 VDC
Power Consumption: 1.9W typical
Operating and Storage Temperature: -40˚ to +85˚C
Humidity: 5 to 95% RH, non-condensing
Flammability: UL 94V-0 materials
Electrical Safety: UL 508, CSA C22/14; EN61010-1 (IEC1010)
EMI Emissions: FCC part 15, ICES 003, EN55022, Class B
EMC Immunity: EN61326-1 (EN61000-4-2, 3, 4, 6)
Surge Withstand: IEEE-472 (ANSI C37.90)
Vibration: IEC68-2-6
Hazardous Locations: UL 1604, CSA C22.2/213 (Class 1, Div. 2), Cenelec EN50021 (Zone 2)

Ordering Information

Description	Part No.
5-port industrial Ethernet switch	PointScan/446**

For complete information on accessories and cables, visit **www.iotech.com/acc**

Related Products

** Contact factory for availability of 9-port module

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