



Features

Performance for Industrial IoT Edge Computing

- High performance fabric for simultaneous switching on all ports
- Advanced Quality of Service (QoS) features to provide guaranteed delivery of time sensitive data
 - IEEE 802.1 Time Sensitive Networking (TSN)
 - IEEE 1588v2 one-step Precision Time Protocol (PTP)
 - IEEE 802.1 Audio Video Bridging (AVB)
 - IEEE 802.1Qbb Priority Flow Control
- Eight 10/100/1000 Mbps RJ45 Ethernet ports
- Two 1000Base-X SGMII SFP ports

Integrated Security and Management Features

- 256 Entry TCAM for Deep Packet Inspection
- Supports 4096 802.1Q VLANs
- Supports 802.1D/s/w Spanning Tree Protocols
- IPv4 IGMP and IPv6 MLD snooping
- 802.1x MAC Authentication
- Three levels of 802.1Q security supported

Powered for Remote Deployment

- Redundant Wide Range 9-36V DC Inputs
- Power over Ethernet (PoE) PD 802.3at Type1 device
- Energy Efficient Ethernet PHYs reduce power consumption
- Low power with Typical Power Consumption of 6 Watts

Designed to survive Industrial Control Applications

- Fanless -40°C to +85°C Operating Temperature Range
- Optional DIN Rail Mountable
- Shock and Vibration Tested
- Long lifetime (10+years availability)

Product Description

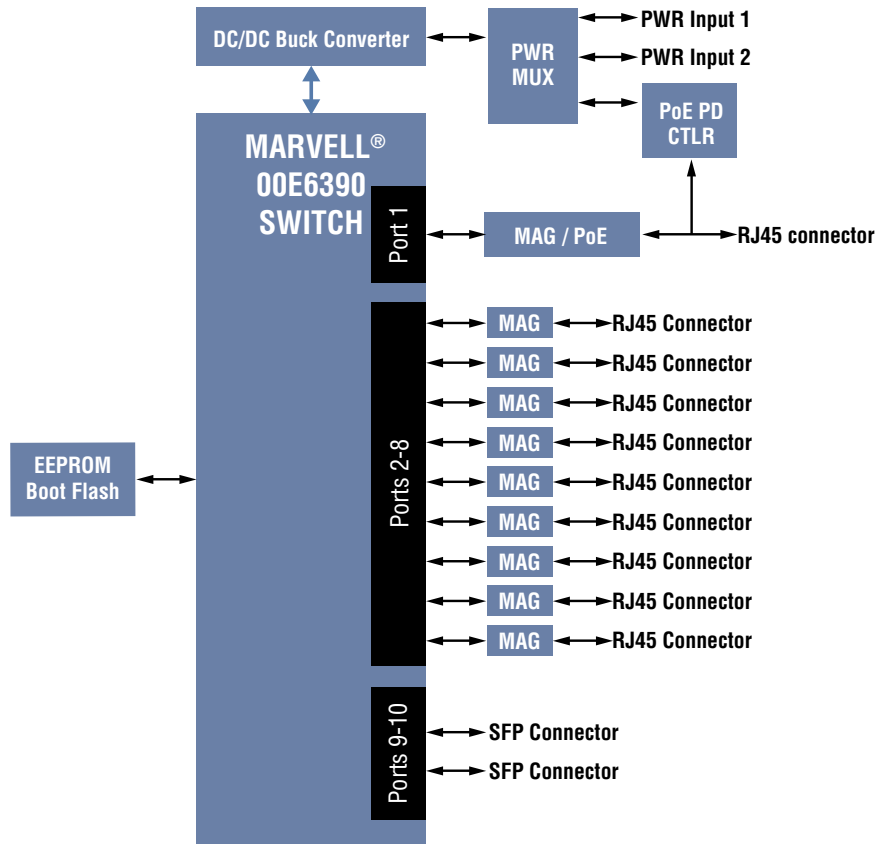
WINSYSTEMS' NET-429 network switch is designed for the harsh environments of the factory floor and provides performance for time critical industrial networks. The switch has eight 10/100/1000 Mbps RJ45 Ethernet ports plus two 1000Base-X SGMII SFP ports and redundant power inputs with Power-over-Ethernet (PoE) PD support. Enabled for the latest IEEE 802.1 standards for Quality of Service (QoS) and Time Sensitive Networking (TSN), it includes advanced prioritization and timing features to provide guaranteed delivery of time-sensitive data.

The NET-429 is based on the Marvell® Link Street® family, which provides advanced Quality of Service (QoS) features with 8 egress queues. The high-performance switch fabric provides line rate switching on all ports simultaneously while providing advanced switch functionality. It also supports the latest IEEE 802.1 Audio Video Bridging (AVB) and Time Sensitive Networking (TSN) standards. These new standards overcome the latency and bandwidth limitations of Ethernet to allow for the efficient transmission of real-time content for industrial applications. The AVB/TSN protocols enable timing sensitive streams (such as digital video, audio, or industrial control traffic) to be sent over the Ethernet network with low latency and robust QoS guarantees.

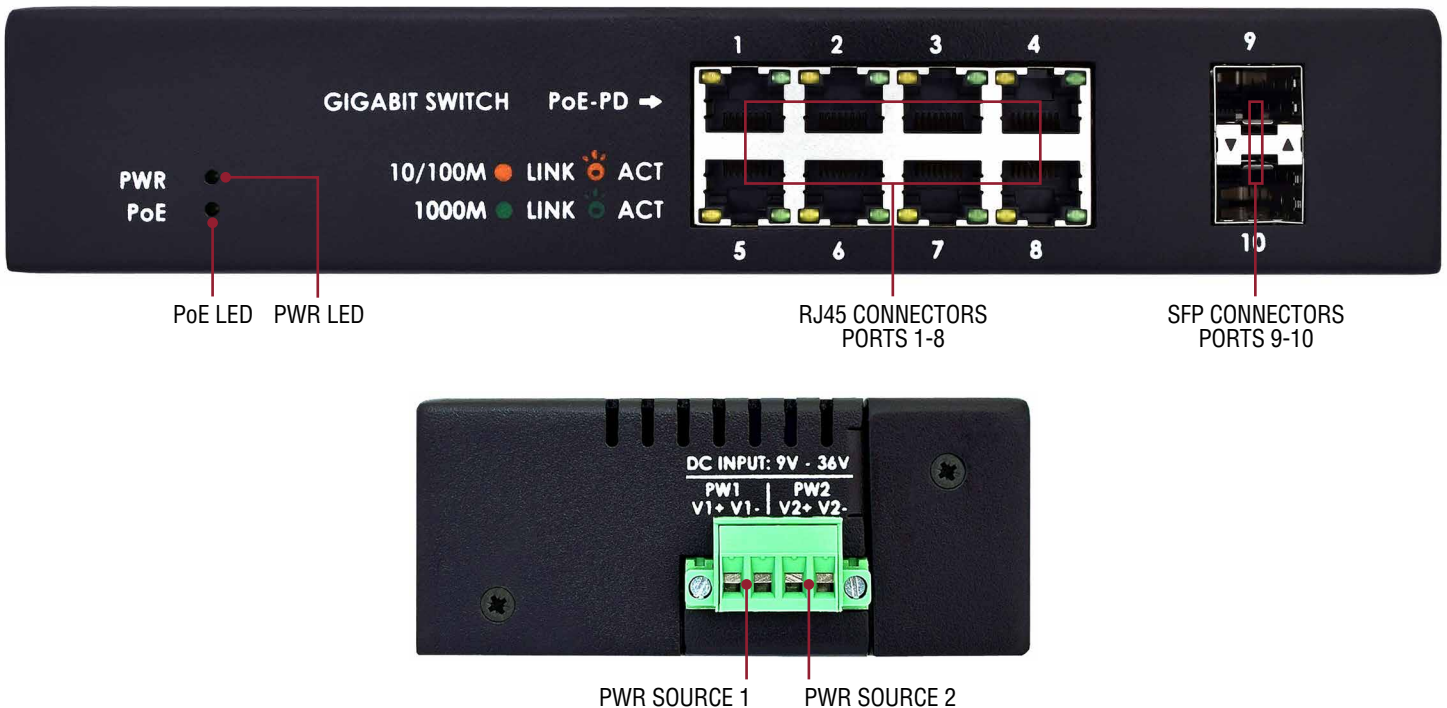
Easing the burden of deployment, the NET-429 can be powered remotely as a PoE-PD Type I device or through the two wide range 9-36V DC power inputs. All three power inputs are redundant for maximum uptime and include overload protection to prevent damage to other systems.

WINSYSTEMS also combines design elements of our broad portfolio for application specific design for OEM clients. Contact an Application Engineer to schedule a consultation of your product requirements.

Block Diagram



Connectors



NET-429

Technical Specifications

CONNECTIVITY	<ul style="list-style-type: none">• High performance, non-blocking, 10-port Ethernet Switch<ul style="list-style-type: none">– Eight 10/100/1000Mbps RJ-45 Ports with Advanced Virtual Cable Tester (VCT) diagnostic features– Two 1000Base-X SGMII SFP ports• Low power Energy Efficient Ethernet PHYs
TIME CRITICAL DATA	<ul style="list-style-type: none">• IEEE 802.1 Time Sensitive Networking (TSN) support• IEEE 802.1 Audio Video Bridging (AVB) support• Supports IEEE 1588v2 one-step PTP• Synchronous Ethernet for 1000Base-T or 100Base-TX• Cut-through switch fabric for low latency applications
QUALITY OF SERVICE (QoS)	<ul style="list-style-type: none">• QoS support with 8 traffic lanes<ul style="list-style-type: none">– IEEE 802.1P– By port– Source or Destination MAC address– IEEE 802.1Q VLAN ID– Frame Type– IPv4 Type of Service (TOS)– Differential Service– IPv6 Traffic Class• IEEE 802.1Qbb Priority Flow Control
SECURITY	<ul style="list-style-type: none">• Marvell® Link Street®-88E6390X Switch<ul style="list-style-type: none">– Integrated 200MHz microprocessor• Three levels of IEEE 802.1Q security supported• Supports 4096 802.1Q VLANs• Supports 802.1D/s/w Spanning Tree Protocols• IPv4 IGMP and IPv6 MLD snooping• IEEE 802.1x MAC Authentication
ADVANCED SWITCHING CAPABILITY	<ul style="list-style-type: none">• High performance switch fabric• Simultaneous line rate switching<ul style="list-style-type: none">– Up to 16K MAC addresses• 256 Entry TCAM for Deep Packet Inspection<ul style="list-style-type: none">– Look up to 48 or 96 bytes deep into a frame• Per port ingress rate limiting and broadcast storm prevention• Per port rate shaping
POWER	<ul style="list-style-type: none">• Three redundant power inputs for reliable operation<ul style="list-style-type: none">– Input 1 and 2: Wide Range 9-36V DC input– Input 3: PoE PD 802.3 at Type 1• Overload protection• Typical Power is 6 Watts with Max Power of 13 Watts
ENVIRONMENTAL	<ul style="list-style-type: none">• Fanless -40C to 85C Operating Temperature Range• Shock Tested per IEC-60068-2-27 @ 4G rms• Vibration Tested per IEC-60068-2-6 @ 2G rms• Mean Time Between Failure (MTBF) 224604 hours (MIL217F)
COMPLIANCE & CERTIFICATION	<ul style="list-style-type: none">• FCC Class B / CISPR Class B• CE stamp• REACH and RoHS Compliant
MECHANICAL	<ul style="list-style-type: none">• Dimensions: LxWxH = 9.17in x 4.10in x 1.72in (233mm x 104mm x 44mm)• Weight: 1.5lbs (680gr)• Optional DIN Rail Mount

Order Information

PART NUMBER	NET-429-10-00 Industrial 10 port Ethernet Switch with TSN Support
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Expansion and Customization Options

WINSYSTEMS provides a complete line of single board computers, cables, expansion cards, power supplies and solid state drives to complete your embedded computing solution.

Contact an Application Engineer or visit our website for more information.



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