



Digitized Automation for a Changing World

Delta Industrial Ethernet Solution



Matched to Maximize

Delta Industrial Ethernet Products and Solutions (IES)

Adapting to the diversity of network communication applications, Delta's industrial Ethernet products IES Series and solutions offer an abundant selection with excellent quality in compact and durable designs. From Ethernet switches, IEEE 802.11 wireless communication, mobile wireless communication, serial device servers to protocol gateways, the IES Series ensures you precise and stable data transmission among devices. It guarantees a seamless device integration that satisfies critical system applications in industrial environments.



Ethernet Switches



TAIWAN
EXCELLENCE
2014

Tailoring to industrial applications that require highly reliable network systems, Delta's DVS series managed and unmanaged Ethernet switches provide better system performance with functions such as the redundant self-healing ring, high-end layer 2 management, and a wide-operating temperature from -40° C to 75° C.

The EMC noise immunity complies with IEC standards and attains a high level 3/4. The intuitive design of the operating interface provides users with easy access and convenience.



Wireless IEEE 802.11

Delta helps users construct a reliable industrial wireless network by the WLAN products compatible with multiple communication protocols, such as IEEE 802.11 a/n in 5GHz or IEEE 802.11 b/g/n in 2.4GHz. Adopting Multiple-input and Multiple-output (MIMO) technology enables the network bandwidth reach 450Mbps. Delta WLAN products support multiple wireless connectors, including wireless access points, and clients for easy and economical construction of wireless LANs.

The built-in 3-in-1 serial ports directly connect to industrial controllers, saving the effort and cost of cable connection. The built-in gateway for Modbus, the most common industrial communication protocol, converts Modbus Serial to Modbus TCP, seamlessly interconnecting the existing equipment with the Ethernet communication network.



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Intelligent Transportation System

The Intelligent Transportation System (ITS) integrates advanced electronic, information and sensing technologies for real-time transportation management of pedestrians, roads and traffic. The ITS effectively improves the safety, convenience, and efficiency of transportation, reducing carbon emissions from transportation and its impact on the environment, and supporting economic development.

- Freeway Traffic Flow Monitoring System
- CMS Real-Time Traffic Message Display System
- Tunnel Signal and Alarm Monitoring System
- Electronic Toll Collection System

DVS-G116W02-4GF

Managed 16-Port GbE Ethernet Switch

- GbE fiber port to enhance backbone transmission
- ONE RING Plus for network redundancy to ensure network reliability, recovery time less than 10ms
- IP40 metal case, -40° C to 75° C operating temperature



DVW-W0112-E1

IEEE 802.11 a/b/g/n/ac Wireless AP/Client/Gateway

- IEEE 802.11ac up to 867Mbps data rate
- Supports 1-port RS-232/485 to Ethernet Device Server
- ONE ROAMING, seamless roaming, recovery time between APs < 150ms
- IP40 case, -10° C to 60° C operating temperature



DVS-G008W01

Unmanaged 8-Port GbE Ethernet Switch

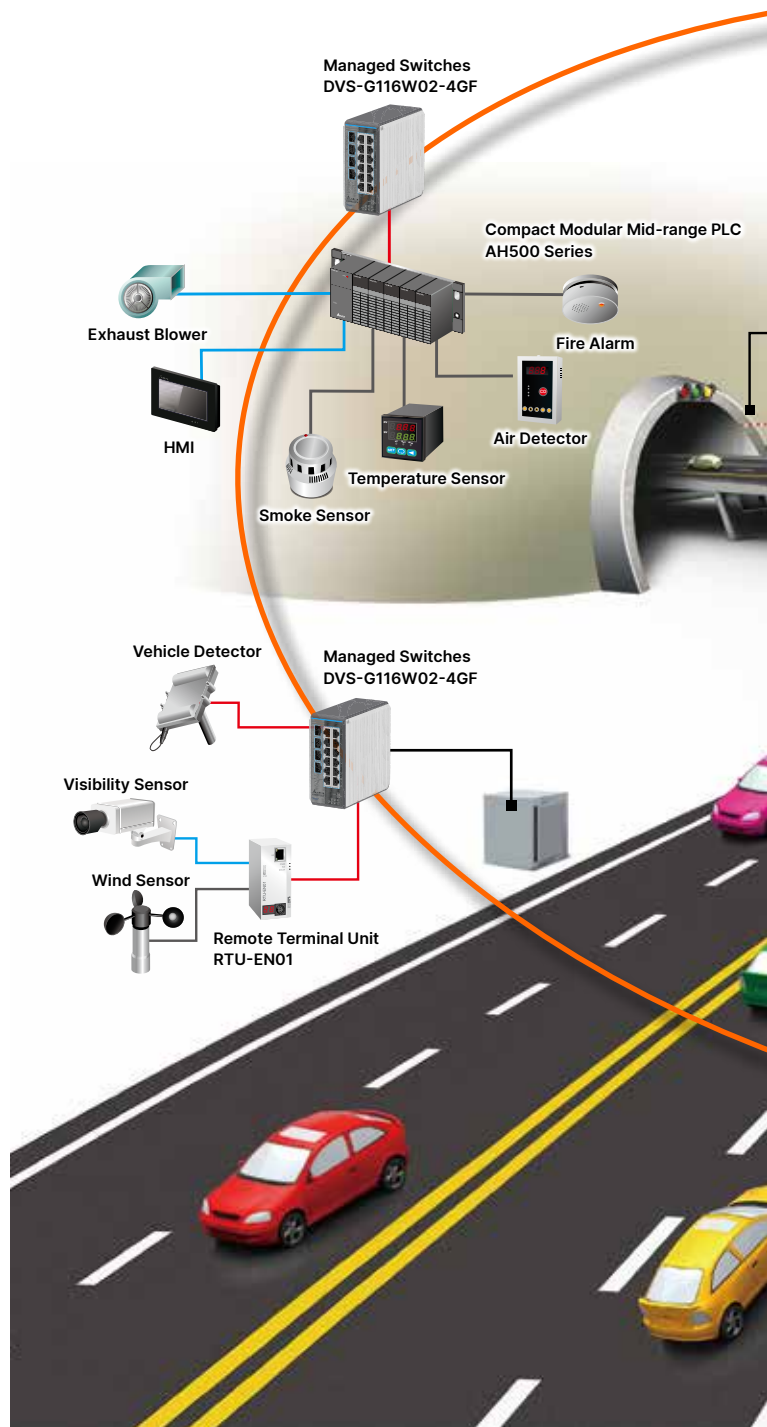
- Full GbE ports to enhance transmission bandwidth
- Jumbo frame size up to 9,216 Bytes
- IP30 metal case, -40° C to 75° C operating temperature

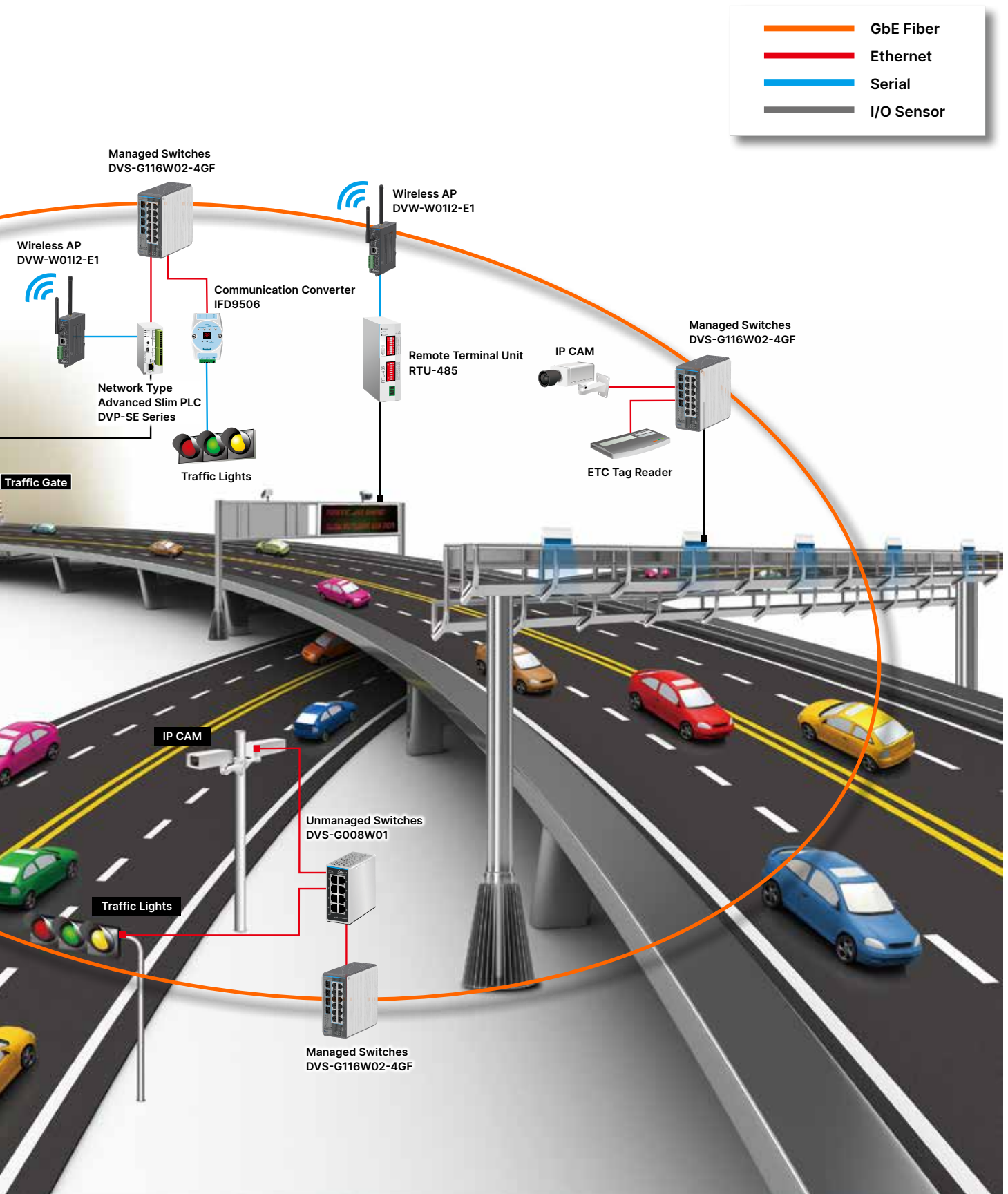


IFD9506

1-Port Modbus-to-Ethernet Converter

- RS-485 signal isolation protection
- Supports Modbus TCP protocol
- Smart on-line monitoring function





Wind Power

Wind power has emerged as an alternative energy solution in recent years. Wind power plants are typically located in remote areas, often within a vast territory. The ring network of fiber optic Ethernet is widely adopted for data transmission and management and real-time monitoring of power generation panels. These plant locations can be harsh and hazardous, with a large diurnal temperature variation. System reliability and transmission precision can only be guaranteed with highly noise-immune and durable network devices.

DVS-G116W02-4GF

Managed 16-Port GbE Ethernet Switch

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- ONE RING Plus for network redundancy to ensure network reliability, recovery time less than 10ms
- IP40 metal case, -40° C to 75° C operating temperature

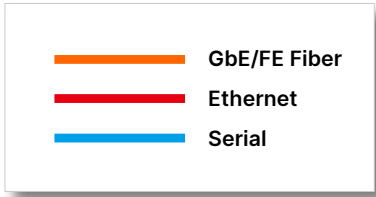


DVS-016 Series

Unmanaged 16-Port FE Ethernet Switch

- Broadcast Storm Protection
- Auto warning for link-down and power failure by relay output
- IP40 metal case, -40° C to 75° C operating temperature





Solar Power

Governments worldwide are actively seeking renewable clean energy for their electricity infrastructure in recent years. Solar power systems are one of the main programs. Most solar power plants are located in remote, vast areas of a country. The monitoring system constructed by Industrial Ethernet establishes highly stable and multiple redundant network systems for a power plant. It also facilitates real-time monitoring and continuous production by the highest generating capacity.

DVS-G112W02-4GF

- Managed 12-Port GbE Ethernet Switch
- GbE fiber port to enhance backbone transmission
- ONE RING Plus for network redundancy to ensure network reliability, recovery time less than 10ms
- IP40 metal case, -40° C to 75° C operating temperature



DVS-G408W01

PoE+ Unmanaged 8-Port GbE Ethernet Switch

- 8 10/100/1000 Base-T PoE+ (PSE) ports. Based on IEEE 802.3at standard up to 30W per port
- Auto warning by relay output for power failure
- IP30 metal case, -40° C to 70° C operating temperature



DX-3021L9

4G Cloud Router

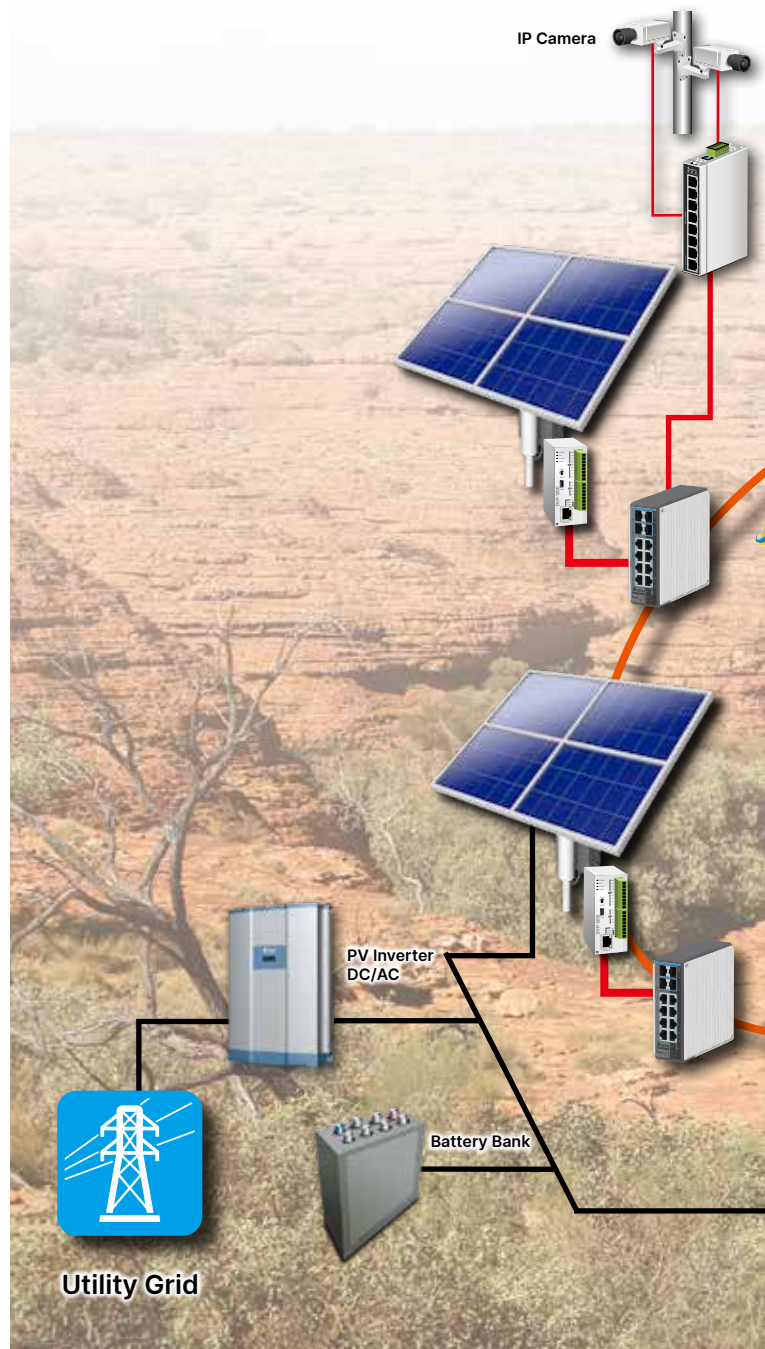
- LTE FDD / LTE TDD / DC-HSPA / UMTS / EDGE / GPRS / GSM
- Supports DIACloud Cloud Management Platform
- IP30 metal case, -20° C to 70° C operating temperature

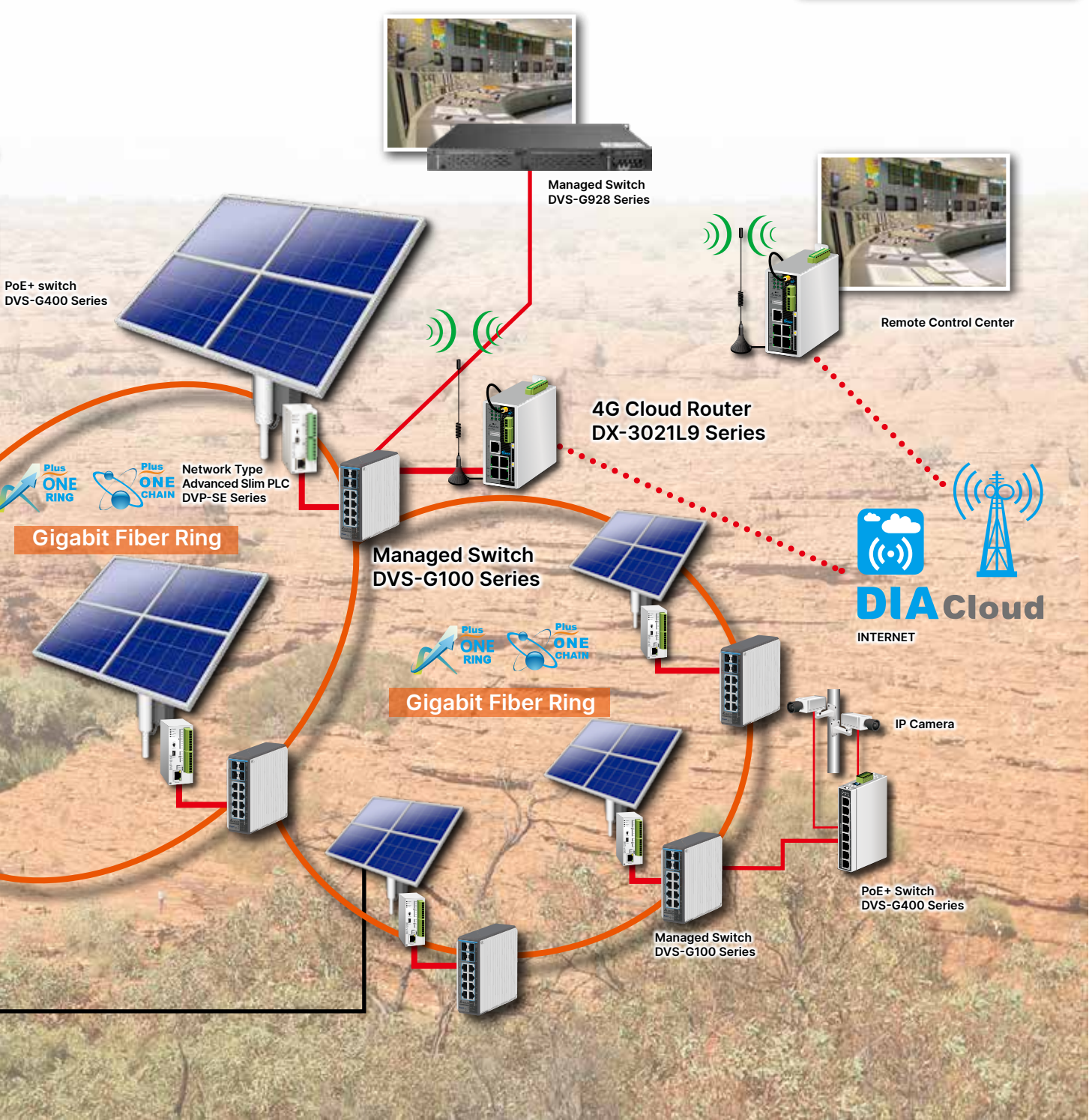
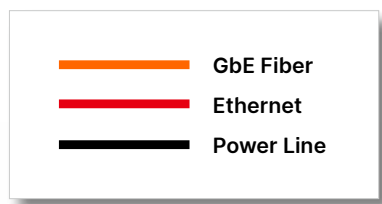


DVP-SE

Network Type Advanced Slim PLC

- Specific Solar Tracking instruction
- Program capacity: 16k steps, Data register: 12k words; Higher execution speed, LD: 0.64 μs, MOV: 2 μs
- Built-in Modbus TCP and EthernNet/IP





Automated CNC Production Line

Unmanned factories is the ultimate goal for the industrial automation. The logistics of an automated production line is an indispensable part of that goal. The use of robots, unmanned vehicles and other equipment, and data transmission and exchange via an industrial wireless network allows immediate acquisition of the status of the production line from the control room, and significantly increases the overall productivity and quality.

DVW-W0112-E1

IEEE 802.11 a/b/g/n/ac Wireless AP/Client/Gateway

- IEEE 802.11ac up to 867Mbps data rate
- Supports 1-port RS-232/485 to Ethernet Device Server
- ONE ROAMING, seamless roaming, recovery time between APs < 150ms
- IP40 case, -10° C to 60° C operating temperature



DVS-008 Series

Unmanaged 8-Port FE Ethernet Switch

- Auto MDI / MDI-X connection and negotiation speed
- IP40 case, -10°C ~ 60°C operation temperature



AH500 Series

Hot Swappable Mid-range PLC

- Utilizes 32-bit processor
- Max. I/O points:
DIO: Max. 4,352 points
AIO: Max. 544 channels
RIO: >100,000 points
- Program capacity: Max. 384k steps (1.5 MB)
- Data register (D+L): 256k words
- Excellent program execution speed:
LD instruction execution speed: 0.02 μs
- CPU built-in with fully isolated RS-232/422/485, Mini-USB, Ethernet and SDHC card slot

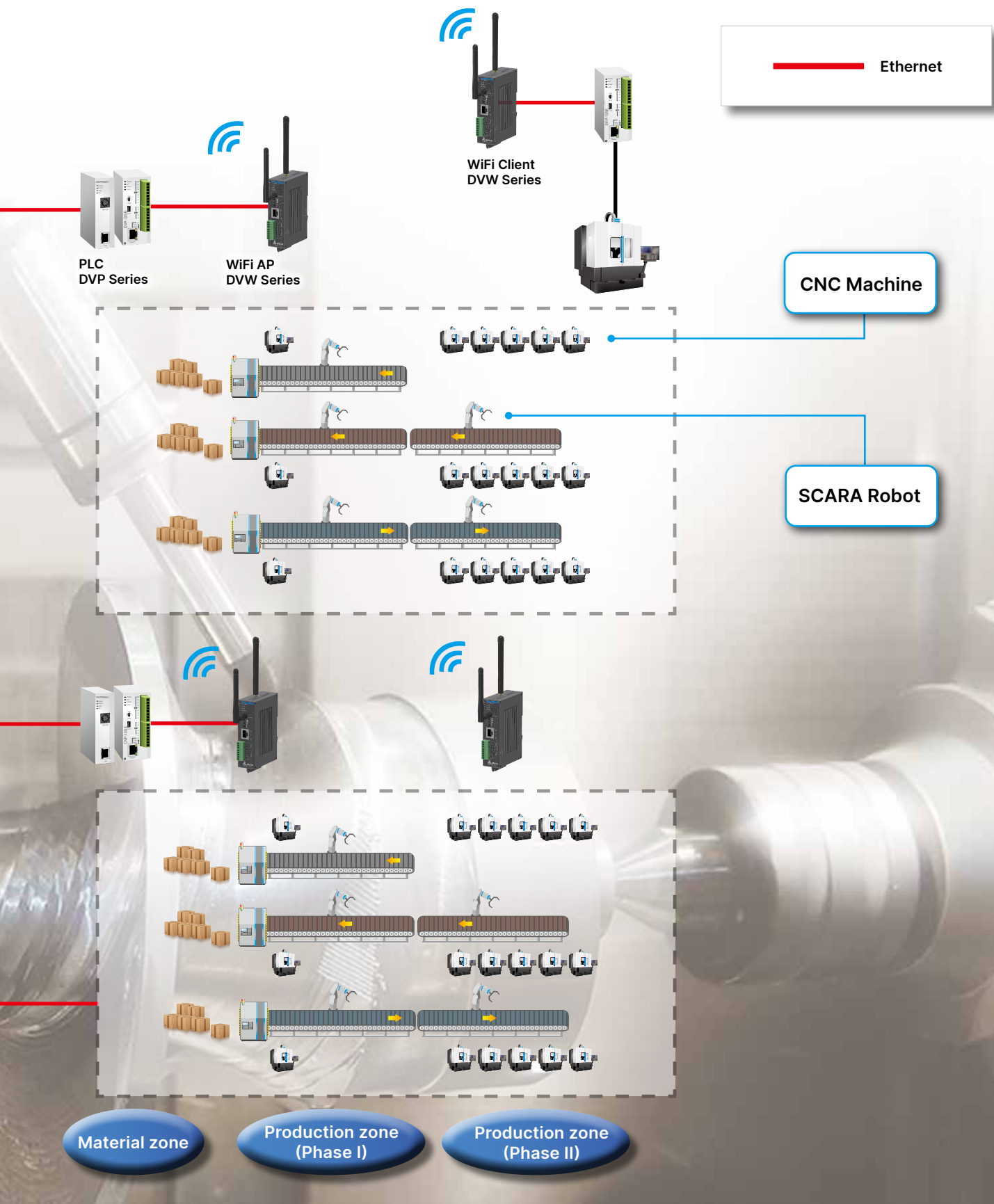


DVP-SE Series

Network Type Advanced Slim PLC

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- Program capacity: 16k steps, Data register: 12k words; Higher execution speed, LD: 0.64 μs, MOV: 2 μs
- Built-in Modbus TCP and EthernNet/IP





Ethernet Switches

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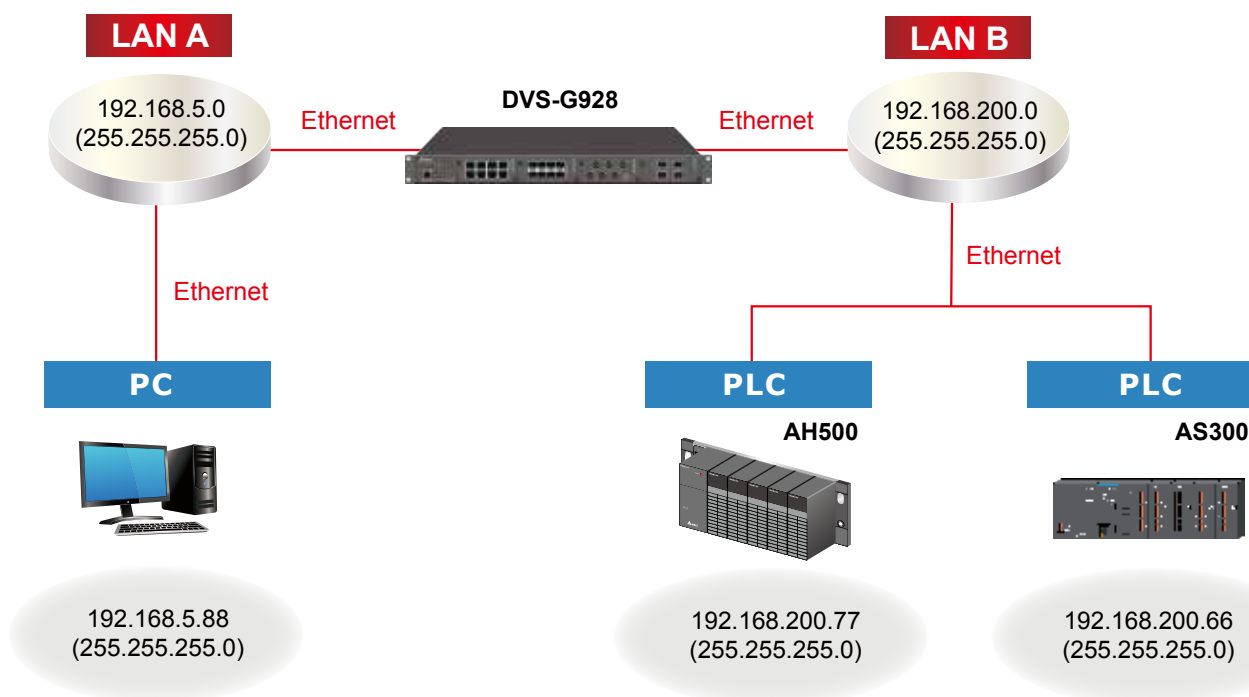
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Feature-rich Layer 2+/3 Network Management

Powerful Layer 3 Routing Performance

The Layer 3 switches route and determine network paths to correctly transmit packets to the designated IP address for exchanging data between different subnets. Handling routing packets by hardware, Delta Layer 3 switches combine the latest technology in hardware and software engineering to adapt to rugged industrial environments. With fast-processing speed as an advantage, it can achieve network transmission that is as fast as or close to wired communicating speed.



Network Redundancy Technology

IEEE published the 802.1D Spanning Tree Protocol (STP) in 1998, and in 2004 announced 802.1w Rapid Spanning Tree Protocol (RSTP), which is an enhancement to STP. These network protocols are used to construct backup paths for transmission when a link fails and are applied in network structures with requirements for high reliability. In current industrial automation and critical system applications, as the high demand for faster convergence time grows, STP and SRTP's speed, whose unit of convergence time is in seconds, becomes insufficient.

Delta thoroughly understands customers' needs from different industries. To meet the high demand for speed and reliability, Delta has introduced ONE RING and ONE CHAIN ultra-speed redundant protocols to satisfy our customers' needs, by providing faster speed and more functions than STP and RSTP. With IIoT and Industry 4.0 becoming megatrends, Delta network redundancy technology continues to evolve and optimize all the time. ONE RING Plus and ONE CHAIN Plus provide a far higher level of performance than the previous generation ONE RING and ONE CHAIN. ONE RING Plus and ONE CHAIN Plus reduce double recovery time and bring an excellent reliable and stable redundancy network.

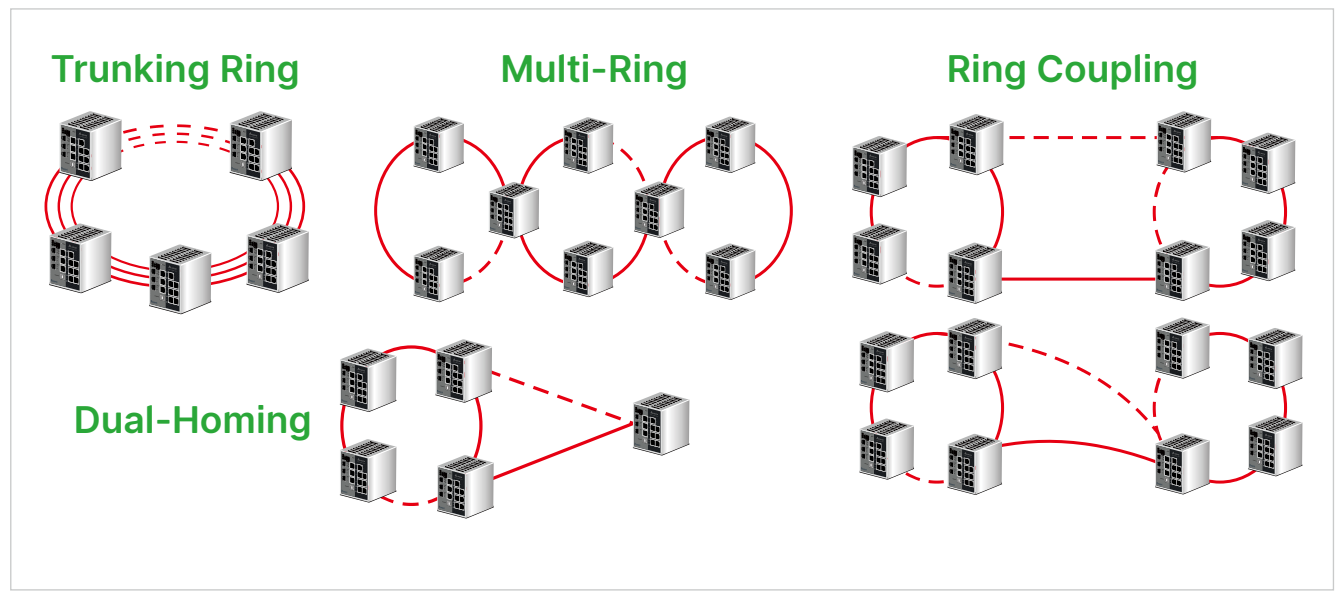
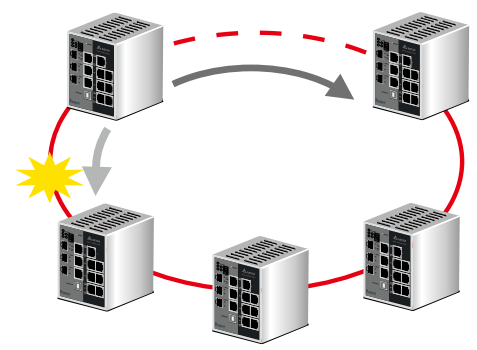




ONE RING Plus

Network self-healing brings most recovery

Delta's proprietary self-healing redundant ring technology is called ONE RING Plus. ONE RING Plus can enable redundant paths and provide self-healing recovery time of less than 10 milliseconds to ensure fluent data transmission with minimum loss when any nodes fail or meet default in a ring network. In addition, ONE RING Plus offers customers the selection of Trunking Ring, Multi-Ring, Ring Coupling, and Dual-Homing modes to satisfy their specific needs. With strong ring network functions, ONE RING Plus provides highly flexible and highly reliable network structures, which greatly save on wiring cost.



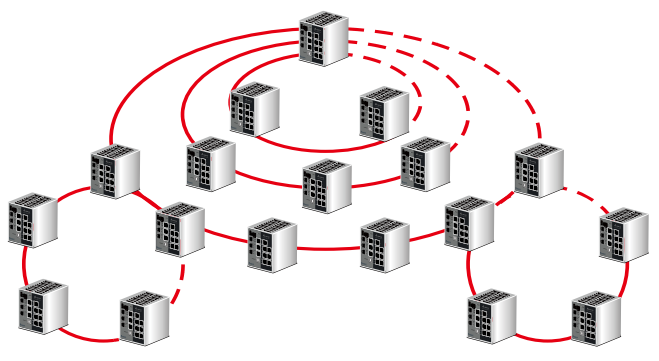
ONE CHAIN Plus

Multi-Network self-healing brings most efficiency and trust

Delta's self-healing redundant chain technology is called "ONE CHAIN Plus".

ONE CHAIN Plus is a new generation of Network Redundancy Technology with unlimited expansion functions derived from the design concept of ONE RING Plus.

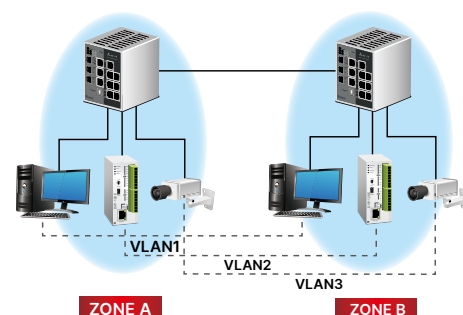
ONE CHAIN Plus is able to offer backup paths within 10 milliseconds when several network nodes fail at the same time to ensure fluent data transmission with minimum loss. Its high speed self-healing time is especially suitable for high-end automation network structures such as a Distributed Control System (DCS). ONE CHAIN Plus is compatible with other existing large Internet backbone network switches, which saves costs for wiring and for changing new switches such as equipment, labor, and time.



Advanced Network Management

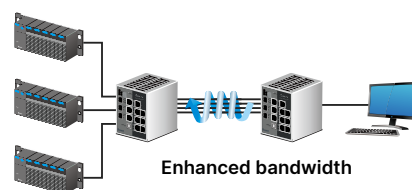
VLAN

A Virtual Local Area Network (VLAN) is a network topology configured according to a logical scheme rather than a physical layout. VLANs allow users to break up switched environments into multiple broadcast domains, and can be used to combine any collection of LAN segments into an autonomous user group that appears as a single LAN. It enhances performance by conserving bandwidth and improves security by limiting traffic to specific domains. VLANs can be created statically by hand and dynamically through GVRP.



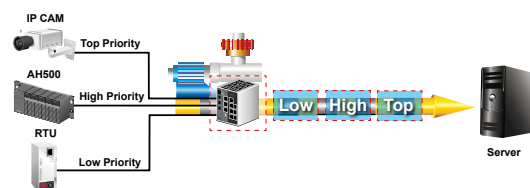
Trunking

The physical ports of a switch can be aggregated by a logical scheme into a group which forms a physical link. This link serves as a redundant path which enhances bandwidth and improves performance.



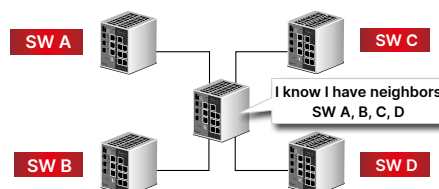
Quality of Service (QoS)

Network packet prioritization is a process which prioritizes the transmission of packets with a queue. It ensures prompt packet scheduling that is especially effective for delay-sensitive packets and audio or image transmissions with optimal quality of service.



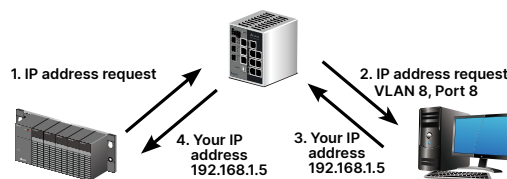
Link Layer Discovery Protocol (LLDP)

The LLDP protocol is used by network devices for advertising their identity, capabilities, and any updates to neighboring devices on an IEEE 802.3ab network. These messages are stored in SNMP MIB and can be searched through a network management system.



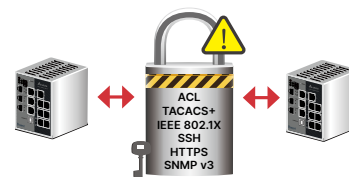
DHCP Relay Option 82 IP Assignment

DHCP Relay Option 82 delivers additional client information such as ports connected, VLAN, as well as MAC addresses to a DHCP server for more flexible IP addresses assignment.



Enhanced Network Security Management

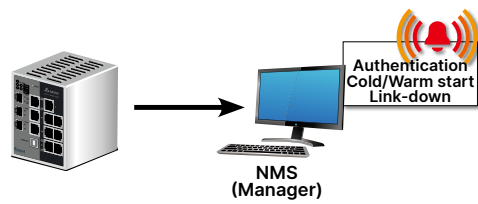
A complete set of security verification tools further ensures network security for users. Multiple protection mechanisms are incorporated in network management to protect it from unauthorized network access during operation.



Advanced Network Management

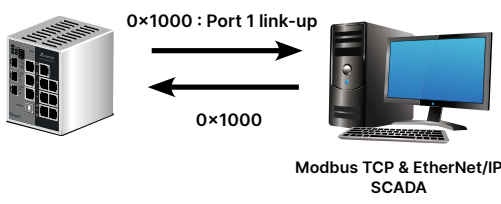
Simple Network Management Protocol (SNMP)

Delta Managed Ethernet Switches support v1, v2c and v3 versions of SNMP. For users, SNMP Trap messages allow real-time event alarms for authentication failures, cold/warm starts, link-downs, and many more.



Modbus TCP & EtherNet/IP Manager

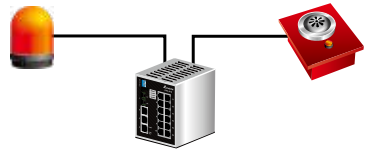
Delta Managed Ethernet Switches support Modbus TCP and EtherNet/IP protocol for easy integration with an on-site industrial network management system. Users can monitor and manage the operational status via the graphical interface of Supervisory Control and Data Acquisition (SCADA) at any time. The consistency of communication protocols helps users save big on equipment management costs.



Smart Functions Well-tailored to Your Needs

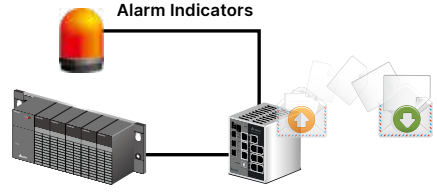
Relay Output for Event Alarms

Delta Managed Ethernet Switches have built-in relay output for event alarms. Any occurrence of preset default events and any digital inputs will trigger alarms. With real-time notification, on-site personnel can quickly diagnose and eliminate any incidents.



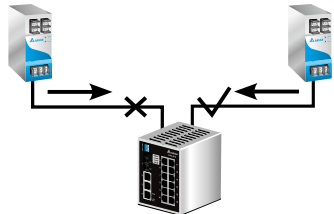
Digital Inputs

Designed for industrial environments, the DVS series industrial Ethernet switches easily connect to various industrial devices, such as PLCs or sensors. It delivers real-time alarms to users via relay output or email.



Redundant Power Inputs

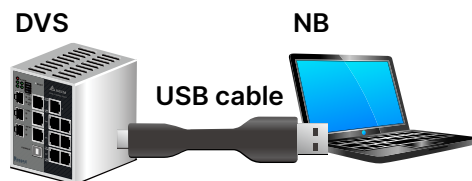
The design of dual power inputs provides excellent integration with the common dual power supply design of critical systems, or with industrial environments. It secures switches from potential power impact and provides highly-reliable and uninterrupted network transmission.



A Seamless Interconnection

USB Console Interface

A simple USB cable is all you need to carry out network management settings.



Real-time Web Display

A real-time Web display tells users the connection status of each port with indicators on a Web page. With an uninterrupted network connection, users can manage operations in remote places at any time.



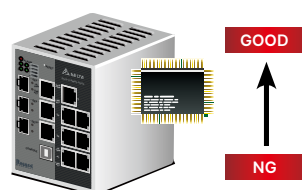
SFP DDM

Utilizing the built-in digital diagnostic monitor (DDM) function of the DVS series Industrial Ethernet Switches, users can continuously monitor the current operation status of the Delta SFP fiber transceiver and the transmission quality through a datasheet displayed on the web.

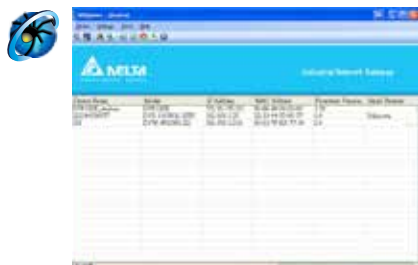


Watch Dog Timer

The hardware Watch Dog Timer restores switches from malfunctions caused by any reason, such as an incorrect network topology or a malicious network attack. It ensures switches work properly in harsh industrial environments.



CPU malfunction = 6 seconds = Auto Reset



Delta IExplorer Search Tool

IExplorer provides friendly access to search for all IES products on the network. One simple click calls up the Web page for setting software functions.

DVS-G928 Series

Layer 3 Managed Industrial 28-Port GbE Modular Rack Mount Ethernet Switches



-40~85°C



EMC LEVEL 4



FANLESS

Rugged
 ETHERNET


- IPv6 address suitable for larger network and neighbor discovery
- Layer 3 routing function allows multiple subnets in a large network to exchange data and information across a network address
- Automatic IP assignment by DHCP server for easy network construction
- DHCP relay option 82 for sending DHCP requests with clients' identities to a DHCP server
- VLAN Unaware: Supports priority-tagged frames to be received by specific IEDs
- Q-in-Q double VLAN to achieve multiple VLANs
- SNMP v1/v2c/v3 facilitates real-time remote management for network devices
- Supports EtherNet/IP and Modbus TCP protocols that facilitates the remote management by SCADA and other industrial devices
- Proprietary redundancy RING and redundancy CHAIN high-end redundancy technology adopts easy-to-build multiple ring topology, with self-healing recovery time <30 ms to ensure reliable network transmission
- STP/RSTP/MSTP for network redundancy ensures reliability
- QoS(IEEE 802.1p) and TOS/DSCP for mission-critical applications
- IEEE 802.1Q VLAN and GVRP optimize network strategy
- Advanced DoS/DDoS auto prevention
- Enhanced network security with IEEE 802.1X, TACACS+, SSH, HTTPS and SNMP v3
- IEEE 802.3ad port trunking in parallel to increase the link bandwidth
- IEEE 1588v2 PTP (Precision Time Protocol) for precise time synchronization of network
- Broadcast/Multicast/ Unknown Unicast storm control to improve transmission quality
- Loopback-Detection to avoid broadcast storms by automatically shutting down the ports over a switching loop
- Cable diagnostic to auto-detect and report potential cabling issues
- Intelligent Access Control List (ACL)
- Each port adopts the MAC address locking function to block unauthorized access
- IGMP Snooping filters and manages multicast traffic
- RMON groups 1,2,3,9(history, statistics, alarms and events) for enhanced flow management and analysis
- Port mirroring for Many-to-One ports online troubleshooting
- Versatile system file updates by TFTP, HTTPS or HTTP
- DDM diagnosis function by SFP fiber modules
- Auto warning by email, relay, Syslog & SNMP trap
- Compatible with various industrial protocols, including EtherNet/IP, Profinet, CC-LINK IE and DNP 3.0

Specifications

TECHNOLOGY

Standard Compliance

- IEEE 802.3 10Base-T
- IEEE 802.3u 100Base-T(X) and 100Base-FX
- IEEE 802.3ab 1000Base-T
- IEEE 802.3z 1000Base-X
- IEEE 802.3ae 10 Gigabit
- IEEE 802.3x Flow Control
- IEEE 802.1D Spanning Tree Protocol

- IEEE 802.1w Rapid Spanning Tree Protocol
- IEEE 802.1s Multiple Spanning Tree Protocol
- IEEE 802.1p Class of Service, Priority Protocols
- IEEE 802.1Q VLAN Tagging
- IEEE 802.1AD VLAN Q-in-Q
- IEEE 802.1X Port Authentication
- IEEE 802.3ad LACP Aggregation
- IEEE 802.1AB Link Layer Discovery Protocol

Processing Type

- Store and Forward
- IEEE 802.3x Flow control in full duplex, back-pressure flow control in half duplex

INTERFACE

Gigabit Ethernet

RJ45 Ports

- auto MDI/MDI-X, auto negotiation

SFP Ports

- 100/1000Base-SFP

M12 Ports

- A-coded 8-pin female connector; auto MDI/MDI-X, auto negotiation

Console Port

- RS-232(RJ45 connector)

Module Number

Module slots 1, 2 and 3:

- 8-Port 10/100/1000Base-T
- 8-Port 100/1000Base-SFP
- 6-Port 10/100/1000Base-T M12 modules

Module slot 4 :

- 4-Port 1000Base-SFP module

LEDs

Device:

- STATUS, PWR1, PWR2, R.M, RING, ALARM, RESET

Ports:

- 10/100/1000M (RJ45 port), LINK/ACT

Alarm Contacts (DO)

- 1 relay output (Normal open)
- 1 relay output (Normal close)
- Carry current 1A @ 24V_{DC}

Reset Button

- 1 set

PERFORMANCE AND SCALABILITY

Switching Capacity

- 128Gbps, Wired speed, Non-blocking switching fabric

Forwarding Rate

- 41.7Mpps

MAC Address Table

- 32K

Packet Buffer Memory

- 32M bits

Flash Memory

- 128M bits

DRAM Size

- 1G bits

IGMP Multicast Groups

- 128

Max. VLANs

- 4096

Quality of Service

- 8 priority queues per port

DHCP Server

- 512 IP addresses

Jumbo Frame

- 10K Bytes

MANAGEMENT

Layer 3 Routing

- RIP, VRRP v2/v3

Software

- STP/RSTP/MSTP, LACP, QoS, IGMP Snooping v1/v2/v3, IGMP Query v1/v2, GVRP, VLAN, VLAN Q-in-Q, VLAN unaware, SSH, DNS, HTTP, HTTPS, RADIUS, TACACS+, SNMP v1/v2c/v3, SNMP Traps, TFTP, RMON, LLDP, DHCP Server/Client, DHCP Relay Option 82, Telnet, Syslog, SMTP, SNTTP Server/Client, IPv6, Modbus TCP, EtherNet/IP

Security

- MAC/IP/TCP/UDP filtering, HTTPS, SSH, 802.1x, TACACS+, SNMP v3

Configuration

- Web browser, Cisco-like Telnet CLI , RJ45 console, SNMP

MIB

- MIB II, Bridge MIB, SNMP MIB, Ether-like MIB, Q-Bridge/P-Bridge MIB, IF MIB, Traceroute MIB, TCP MIB, UDP MIB, IP MIB, RMON Group 1,2,3,9, Delta Private MIB

POWER REQUIREMENTS

Input Voltage

- Installation: Rear cabling, industrial terminal block, redundant design
- 2 sets 100 to 240V_{AC} / 125 to 370V_{DC} (Tested @ 100 to 240V_{AC})

Input Current

- Max. 1.3A

Overload Current Protection

- Present, Max. input current 6.3A

Reverse Polarity Protection

- Present (V_{DC} input)

PHYSICAL

Housing

- IP30 metal case

Dimensions

- 44 mm(H) x 440 mm(W) x 325 mm (D)

Weight

- 6,600g

Installation

- 19" Rack mounting

ENVIRONMENTAL LIMITS

Operating Temperature

- -40°C to 85°C (-40 °F to 185 °F)

Storage Temperature

- -40°C to 85°C (-40 °F to 185 °F)

Ambient Relative Humidity

- 5% to 95% (non-condensing)

APPROVALS

Safety

- UL 61010, EN 62368-1, CCC (DVS-G928W01-CN)

EMI

- FCC 47 CFR Part 15 Subpart B Class A, EN 55022 (CISPR 22), EN 55032

EMS (EN 55024)

- IEC 61000-4-2 level 3, IEC 61000-4-3 level 3, IEC 61000-4-4 level 4, IEC 61000-4-5 level 3, IEC 61000-4-6 level 3, IEC 61000-4-8 level 4, IEC 61000-4-11

Electrical Substation

- IEC 61850-3, IEEE 1613

Rail Traffic

- EN 50121-4

Environmental Type Tests

Shock:

- IEC 60068-2-27

Freefall:

- IEC 60068-2-32

Vibration:

- IEC 60068-2-6

Hi-Pot:

- 1.5KV

Ordering Information

Product		Port Combination				Interface		
Model Name	Operating Temperature	Module Slot M1	Module Slot M2	Module Slot M3	Module Slot M4	DI	DO (Relay)	Power Input
DVS-G928W01	-40°C to 85°C	Select interface modules and SFP fiber transceivers				-	2	2
DVS-G928W01-CN	-40°C to 85°C	Select interface modules and SFP fiber transceivers				-	2	2

DVS-G928 series interface module



Product		Module Slot				Interface			
Model Name	Operating Temperature	M1	M2	M3	M4	10/100/1000 Base-T RJ45	10/100/1000 Base-T M12	100/1000 Base-SFP	1000 Base-SFP
DVS-G900-8GE	-40°C to 85°C	✓	✓	✓	-	8	-	-	-
DVS-G900-6GM12	-40°C to 85°C	✓	✓	✓	-	-	6	-	-
DVS-G900-8GF	-40°C to 85°C	✓	✓	✓	-	-	-	8	-
DVS-G900-4GF	-40°C to 85°C	-	-	-	✓	-	-	-	4

Optional Products

LCP Series: 100Base-FX/1000Base-X SFP Fiber Transceiver. See the LCP Series datasheets for product information.

DVS-G116 Series

Managed Industrial 12-Port GbE + 4-Port 100/1000Base-SFP Ethernet Switches



Rugged
ETHERNET



- IPv6 address suitable for larger network and neighbor discovery
- Automatic IP assignment by DHCP/BootP server for easy network construction
- DHCP relay option 82 for sending DHCP requests with clients' identities to a DHCP server
- Port-based DHCP server with IP and MAC binding makes IP maintenance much easier
- Q-in-Q double VLAN to distinguish multiple VLANs
- SNMP v1/v2c/v3 facilitates the exchange of management between network devices
- Supports EtherNet/IP and Modbus TCP protocols that facilitates the remote management by SCADA and other industrial devices
- Proprietary ONE RING Plus and ONE CHAIN Plus high end redundancy technology, easy to build multiple ring topology, self-healing recovery time < 10ms
- STP/RSTP/MSTP for network redundancy further ensures reliability
- QoS(IEEE 802.1p) and TOS/DSCP for mission-critical applications
- IEEE 802.1Q VLAN, MAC-based VLAN, IP Subnet-based VLAN, VLAN isolation and GVRP optimize network strategy
- Enhanced network security with IEEE 802.1X, TACACS+, SSH, HTTPS and SNMP v3
- Port-isolated for special security environment
- IEEE 802.3ad port trunking in parallel to increase the link bandwidth
- SNTP (simple network time protocol) for network clock synchronization
- Broadcast/Multicast / Unknown Unicast storm control improves throughput problems
- Loopback-Detection to avoid broadcast loops, and shutdown the corresponding ports automatically
- Intelligent Access Control List (ACL)
- MAC addresses locking function per port blocks unauthorized access
- IGMP Snooping and GMVP prunes multicast traffic
- RMON groups 1,2,3,9(history, statistics, alarms and events) for enhanced flow management and analysis
- CPU utilization displays the amount of work the CPU handles
- Port mirroring for Many-to-One ports online troubleshooting
- Versatile system file updates by TFTP, HTTPS or HTTP
- DDM diagnosis function by SFP fiber module
- Auto warning by email, DI, relay, Syslog & SNMP trap
- Compatible with various industrial protocols, including EtherNet/IP, Profinet, CC-LINK IE and DNP 3.0

Specifications

TECHNOLOGY

Standard Compliance

- IEEE 802.3 10Base-T
- IEEE 802.3u 100Base-T(X) and 100Base-FX
- IEEE 802.3ab 1000Base-T
- IEEE 802.3z 1000Base-X
- IEEE 802.3x Flow Control
- IEEE 802.1D Spanning Tree Protocol
- IEEE 802.1w Rapid Spanning Tree Protocol

- IEEE 802.1s Multiple Spanning Tree Protocol
- IEEE 802.1p Class of Service, Priority Protocols
- IEEE 802.1Q VLAN Tagging
- IEEE 802.1AD VLAN Q-in-Q
- IEEE 802.1X Port Authentication
- IEEE 802.3ad LACP Aggregation
- IEEE 802.1AB Link Layer Discovery Protocol

Processing Type

- Store and Forward
- IEEE 802.3x Flow control in full duplex, back-pressure flow control in half duplex

INTERFACE

Gigabit Ethernet

RJ45 Ports:

- 12 10/100/1000Base-T, auto MDI/MDI-X, auto negotiation

SFP Ports:

- 4 100/1000Base-SFP

Console Port

- RS-232 (Micro-USB connector)

LEDs

Device:

- PWR1, PWR2, R.M/CPLG.R, C.HD/C.TL, ALARM, DI

Ports:

- 100/1000M(SFP port), 10/100/1000M(RJ45 port), LINK/ACT

Digital Inputs(DI)

- 1 set
- 0~+5V is OFF
- +11V~30V is ON
- Input current 6mA Max

Alarm Contacts(DO)

- 1 relay output
- Carry current 1A @ 24V_{DC}

Reset Button

- 1 set

PERFORMANCE AND SCALABILITY

Switching Capacity

- 32Gbps, Wired speed, Non-blocking switching fabric

Forwarding Rate

- 47.61Mpps

MAC Address Table

- 8K

Packet Buffer Memory

- 4M bits

IGMP Multicast Groups

- 256

Max. VLANs

- 255

Quality of Service

- 4 priority queues per port

DHCP/BootP Server

- 1,275 IP addresses

Jumbo Frame

- 9,600 Bytes

MANAGEMENT

Software

- STP/RSTP/MSTP, LACP, QoS, IGMP Snooping v1/v2/v3, IGMP Query v1/v2, GARP, GMRP, VLAN, VLAN Q-in-Q, VLAN unaware, SSH, DNS, HTTP, HTTPS, RADIUS, TACACS+, SNMP v1/v2c/v3, SNMP Traps, TFTP, RMON, LLDP, BootP Server/Client, DHCP Server/Client, DHCP L2 Relay, DHCP Relay Option 82, DHCP Option 66/67, RARP, Telnet, Syslog, SMTP, SNTTP Server/Client, IPv6, Modbus TCP, EtherNet/IP

Security

- Port Security, HTTPS, SSH, 802.1x, TACACS+, SNMP v3

Configuration

- Web Browser, Cisco-like Telnet CLI, USB Local Console, SNMP, Modbus TCP, IEXplorer Utility

MIB

- MIB II, Bridge MIB, SNMP MIB, Ether-like MIB, Q-Bridge/P-Bridge MIB, IF MIB, Traceroute MIB, TCP MIB, UDP MIB, IP MIB, RMON Group 1,2,3,9, Delta Private MIB

POWER REQUIREMENTS

Input Voltage

- 2 sets, 12 to 48V_{DC} redundant terminal block input

Input Current

- Max. 0.58A

Overload Current Protection

- Present, Max. Input current 12A

Reverse Polarity Protection

- Present

Voltage Dips Protection Time

- Min. 10ms at 48 V_{DC}

PHYSICAL

Housing

- IP40 metal case

Dimensions

- 135 mm(H) x 65 mm(W) x 135 mm (D)

Weight

- 1,100g

Installation

- Industrial DIN-Rail and wall mounting

ENVIRONMENTAL LIMITS

Operating Temperature

- -40°C to 75°C (-40 °F to 167 °F)

Storage Temperature

- -40°C to 85°C (-40 °F to 185 °F)

Ambient Relative Humidity

- 5% to 95% (non-condensing)

APPROVALS

Safety

- UL 61010, IEC 62368-1

EMI

- FCC 47 CFR Part 15 Subpart B Class A, IEC 61000-6-4, EN 55032 (CISPR 32)

EMS [IEC 61000-6-2, EN 55024]

- IEC 61000-4-2 level 4, IEC 61000-4-3 level 3, IEC 61000-4-4 level 4, IEC 61000-4-5 level 4, IEC 61000-4-6 level 3, IEC 61000-4-8 level 4, IEC 61000-4-29

Environmental Type Tests

Cold Temperature:

- IEC 60068-2-1

Dry Heat:

- IEC 60068-2-2

Humidity:

- IEC 60068-2-30

Shock:

- IEC 60068-2-27

Freefall:

- ISTA-2A

Vibration:

- IEC 60068-2-6

Hi-Pot:

- 1.5KV

Ordering Information

Product		Port Combination			Interface		
Model Name	Operating Temperature	Combo Port 10/100/1000Base-T and 100/1000Base-SFP	100/1000 Base-SFP	10/100/1000 Base-T	DI	DO (Relay)	Power Input
DVS-G116W02-4GF	-40°C to 75°C	---	4	12	1	1	2

Optional Products

LCP Series: 100Base-FX/1000Base-X SFP Fiber Transceiver. See the LCP Series datasheets for product information.

CliQII/PMC Series: 48 V_{DC} Industrial Power Supply

DVP/CliQ/PMC Series: 12/24 V_{DC} Industrial Power Supply

DVS-G112 Series

Managed Industrial 8-Port GbE + 4-Port 100/1000Base-SFP Ethernet Switches



UL61010



-40~75°C



EMC LEVEL 4



FANLESS

Rugged
ETHERNET


- IPv6 address suitable for larger network and neighbor discovery
- Automatic IP assignment by DHCP/BootP server for easy network construction
- DHCP relay option 82 for sending DHCP requests with clients' identities to a DHCP server
- Port-based DHCP server with IP and MAC binding makes IP maintenance much easier
- Q-in-Q double VLAN to distinguish multiple VLANs
- SNMP v1/v2c/v3 facilitates the exchange of management between network devices
- Supports EtherNet/IP and Modbus TCP protocols that facilitates the remote management by SCADA and other industrial devices
- Proprietary ONE RING Plus and ONE CHAIN Plus high end redundancy technology, easy to build multiple ring topology, self-healing recovery time < 10ms
- STP/RSTP/MSTP for network redundancy further ensures reliability
- QoS(IEEE 802.1p) and TOS/DSCP for mission-critical applications
- IEEE 802.1Q VLAN, MAC-based VLAN, IP Subnet-based VLAN, VLAN isolation and GVRP optimize network strategy
- Enhanced network security with IEEE 802.1X, TACACS+, SSH, HTTPS and SNMP v3
- Port-isolated for special security environment
- IEEE 802.3ad port trunking in parallel to increase the link bandwidth
- SNTP (simple network time protocol) for network clock synchronization
- Broadcast/Multicast / Unknown Unicast storm control improves throughput problems
- Loopback-Detection to avoid broadcast loops, and shutdown the corresponding ports automatically
- Intelligent Access Control List (ACL)
- MAC addresses locking function per port blocks unauthorized access
- IGMP Snooping and GMVP prunes multicast traffic
- RMON groups 1,2,3,9(history, statistics, alarms and events) for enhanced flow management and analysis
- CPU utilization displays the amount of work the CPU handles
- Port mirroring for Many-to-One ports online troubleshooting
- Versatile system file updates by TFTP, HTTPS or HTTP
- DDM diagnosis function by SFP fiber module
- Auto warning by email, DI, relay, Syslog & SNMP trap
- Compatible with various industrial protocols, including EtherNet/IP, Profinet, CC-LINK IE and DNP 3.0

Specifications

TECHNOLOGY

Standard Compliance

- IEEE 802.3 10Base-T
- IEEE 802.3u 100Base-T(X) and 100Base-FX
- IEEE 802.3ab 1000Base-T
- IEEE 802.3z 1000Base-X
- IEEE 802.3x Flow Control
- IEEE 802.1D Spanning Tree Protocol
- IEEE 802.1w Rapid Spanning Tree Protocol

- IEEE 802.1s Multiple Spanning Tree Protocol
- IEEE 802.1p Class of Service, Priority Protocols
- IEEE 802.1Q VLAN Tagging
- IEEE 802.1AD VLAN Q-in-Q
- IEEE 802.1X Port Authentication
- IEEE 802.3ad LACP Aggregation
- IEEE 802.1AB Link Layer Discovery Protocol

Processing Type

- Store and Forward
- IEEE 802.3x Flow control in full duplex, back-pressure flow control in half duplex

INTERFACE

Gigabit Ethernet

RJ45 Ports:

- 8 10/100/1000Base-T, auto MDI/MDI-X, auto negotiation

SFP Ports:

- 4 100/1000Base-SFP

Console Port

- RS-232 (Micro-USB connector)

LEDs

Device:

- PWR1, PWR2, R.M/CPLG.R, C.HD/C.TL, ALARM, DI

Ports:

- 100/1000M(SFP port), 10/100/1000M(RJ45 port), LINK/ACT

Digital Inputs(DI)

- 1 set
- 0~+5V is OFF
- +11V~30V is ON
- Input current 6mA Max

Alarm Contacts(DO)

- 1 relay output
- Carry current 1A @ 24V_{DC}

Reset Button

- 1 set

PERFORMANCE AND SCALABILITY

Switching Capacity

- 24Gbps, Wired speed, Non-blocking switching fabric

Forwarding Rate

- 35.71Mpps

MAC Address Table

- 8K

Packet Buffer Memory

- 4M bits

IGMP Multicast Groups

- 256

Max. VLANs

- 255

Quality of Service

- 4 priority queues per port

DHCP/BootP Server

- 1,275 IP addresses

Jumbo Frame

- 9,600 Bytes

MANAGEMENT

Software

- STP/RSTP/MSTP, LACP, QoS, IGMP Snooping v1/v2/v3, IGMP Query v1/v2, GARP, GMRP, VLAN, VLAN Q-in-Q, VLAN unaware, SSH, DNS, HTTP, HTTPS, RADIUS, TACACS+, SNMP v1/v2c/v3, SNMP Traps, TFTP, RMON, LLDP, BootP Server/Client, DHCP Server/Client, DHCP L2 Relay, DHCP Relay Option 82, DHCP Option 66/67, RARP, Telnet, Syslog, SMTP, SMTP Server/Client, IPv6, Modbus TCP, EtherNet/IP

Security

- Port Security, HTTPS, SSH, 802.1x, TACACS+, SNMP v3

Configuration

- Web Browser, Cisco-like Telnet CLI, USB Local Console, SNMP, Modbus TCP, IEXplorer Utility

MIB

- MIB II, Bridge MIB, SNMP MIB, Ether-like MIB, Q-Bridge/P-Bridge MIB, IF MIB, Traceroute MIB, TCP MIB, UDP MIB, IP MIB, RMON Group 1,2,3,9, Delta Private MIB

POWER REQUIREMENTS

Input Voltage

- 2 sets, 12 to 48V_{DC} redundant terminal block input

Input Current

- Max. 0.58A

Overload Current Protection

- Present, Max. Input current 12A

Reverse Polarity Protection

- Present

Voltage Dips Protection Time

- Min. 10ms at 48 V_{DC}

PHYSICAL

Housing

- IP40 metal case

Dimensions

- 135 mm(H) x 51 mm(W) x 135 mm (D)

Weight

- 1,080g

Installation

- Industrial DIN-Rail and wall mounting

ENVIRONMENTAL LIMITS

Operating Temperature

- -40°C to 75°C (-40 °F to 167 °F)

Storage Temperature

- -40°C to 85°C (-40 °F to 185 °F)

Ambient Relative Humidity

- 5% to 95% (non-condensing)

APPROVALS

Safety

- UL 61010, IEC 62368-1

EMI

- FCC 47 CFR Part 15 Subpart B Class A, IEC 61000-6-4, EN 55032 (CISPR 32)

EMS [IEC 61000-6-2, EN 55024]

- IEC 61000-4-2 level 4, IEC 61000-4-3 level 3, IEC 61000-4-4 level 4, IEC 61000-4-5 level 4, IEC 61000-4-6 level 3, IEC 61000-4-8 level 4, IEC 61000-4-29

Environmental Type Tests

Cold Temperature:

- IEC 60068-2-1

Dry Heat:

- IEC 60068-2-2

Humidity:

- IEC 60068-2-30

Shock:

- IEC 60068-2-27

Freefall:

- ISTA-2A

Vibration:

- IEC 60068-2-6

Hi-Pot:

- 1.5KV

Ordering Information

Product		Port Combination			Interface		
Model Name	Operating Temperature	Combo Port 10/100/1000Base-T and 100/1000Base-SFP	100/1000 Base-SFP	10/100/1000 Base-T	DI	DO (Relay)	Power Input
DVS-G112W02-4GF	-40°C to 75°C	---	4	8	1	1	2

Optional Products

LCP Series: 100Base-FX/1000Base-X SFP Fiber Transceiver. See the LCP Series datasheets for product information.

CliQII/PMC Series: 48 V_{DC} Industrial Power Supply

DVP/CliQ/PMC Series: 12/24 V_{DC} Industrial Power Supply

DVS-G106 Series

Managed Industrial 4-Port GbE + 2-Port 100/1000Base-SFP Ethernet Switches



UL61010



-40~75°C



EMC LEVEL 4



FANLESS

Rugged
ETHERNET


- IPv6 address suitable for larger network and neighbor discovery
- Automatic IP assignment by DHCP/BootP server for easy network construction
- DHCP relay option 82 for sending DHCP requests with clients' identities to a DHCP server
- Port-based DHCP server with IP and MAC binding makes IP maintenance much easier
- Q-in-Q double VLAN to distinguish multiple VLANs
- SNMP v1/v2c/v3 facilitates the exchange of management between network devices
- Supports EtherNet/IP and Modbus TCP protocols that facilitates the remote management by SCADA and other industrial devices
- Proprietary ONE RING Plus and ONE CHAIN Plus high end redundancy technology, easy to build multiple ring topology, self-healing recovery time < 10ms
- STP/RSTP/MSTP for network redundancy further ensures reliability
- QoS(IEEE 802.1p) and TOS/DSCP for mission-critical applications
- IEEE 802.1Q VLAN, MAC-based VLAN, IP Subnet-based VLAN, VLAN isolation and GVRP optimize network strategy
- Enhanced network security with IEEE 802.1X, TACACS+, SSH, HTTPS and SNMP v3
- Port-isolated for special security environment
- IEEE 802.3ad port trunking in parallel to increase the link bandwidth
- SNTP (simple network time protocol) for network clock synchronization
- Broadcast/Multicast / Unknown Unicast storm control improves throughput problems
- Loopback-Detection to avoid broadcast loops, and shutdown the corresponding ports automatically
- Intelligent Access Control List (ACL)
- MAC addresses locking function per port blocks unauthorized access
- IGMP Snooping and GMVP prunes multicast traffic
- RMON groups 1,2,3,9(history, statistics, alarms and events) for enhanced flow management and analysis
- CPU utilization displays the amount of work the CPU handles
- Port mirroring for Many-to-One ports online troubleshooting
- Versatile system file updates by TFTP, HTTPS or HTTP
- DDM diagnosis function by SFP fiber module
- Auto warning by email, DI, relay, Syslog & SNMP trap
- Compatible with various industrial protocols, including EtherNet/IP, Profinet, CC-LINK IE and DNP 3.0

Specifications

TECHNOLOGY

Standard Compliance

- IEEE 802.3 10Base-T
- IEEE 802.3u 100Base-T(X) and 100Base-FX
- IEEE 802.3ab 1000Base-T
- IEEE 802.3z 1000Base-X
- IEEE 802.3x Flow Control
- IEEE 802.1D Spanning Tree Protocol
- IEEE 802.1w Rapid Spanning Tree Protocol

- IEEE 802.1s Multiple Spanning Tree Protocol
- IEEE 802.1p Class of Service, Priority Protocols
- IEEE 802.1Q VLAN Tagging
- IEEE 802.1AD VLAN Q-in-Q
- IEEE 802.1X Port Authentication
- IEEE 802.3ad LACP Aggregation
- IEEE 802.1AB Link Layer Discovery Protocol

Processing Type

- Store and Forward
- IEEE 802.3x Flow control in full duplex, back-pressure flow control in half duplex

INTERFACE

Gigabit Ethernet

RJ45 Ports:

- 4 10/100/1000Base-T, auto MDI/MDI-X, auto negotiation

SFP Ports:

- 2 100/1000Base-SFP

Console Port

- RS-232 (Micro-USB connector)

LEDs

Device:

- PWR1, PWR2, R.M/CPLG.R, C.HD/C.TL, ALARM, DI

Ports:

- 100/1000M(SFP port), 10/100/1000M(RJ45 port), LINK/ACT

Digital Inputs(DI)

- 1 set
- 0~+5V is OFF
- +11V~30V is ON
- Input current 6mA Max

Alarm Contacts(DO)

- 1 relay output
- Carry current 1A @ 24V_{DC}

Reset Button

- 1 set

PERFORMANCE AND SCALABILITY

Switching Capacity

- 24Gbps, Wired speed, Non-blocking switching fabric

Forwarding Rate

- 35.71Mpps

MAC Address Table

- 8K

Packet Buffer Memory

- 4M bits

IGMP Multicast Groups

- 256

Max. VLANs

- 255

Quality of Service

- 4 priority queues per port

DHCP/BootP Server

- 1,275 IP addresses

Jumbo Frame

- 9,600 Bytes

MANAGEMENT

Software

- STP/RSTP/MSTP, LACP, QoS, IGMP Snooping v1/v2/v3, IGMP Query v1/v2, GARP, GMRP, VLAN, VLAN Q-in-Q, VLAN unaware, SSH, DNS, HTTP, HTTPS, RADIUS, TACACS+, SNMP v1/v2c/v3, SNMP Traps, TFTP, RMON, LLDP, BootP Server/Client, DHCP Server/Client, DHCP L2 Relay, DHCP Relay Option 82, DHCP Option 66/67, RARP, Telnet, Syslog, SMTP, SMTP Server/Client, IPv6, Modbus TCP, EtherNet/IP

Security

- Port Security, HTTPS, SSH, 802.1x, TACACS+, SNMP v3

Configuration

- Web Browser, Cisco-like Telnet CLI, USB Local Console, SNMP, Modbus TCP, IEXplorer Utility

MIB

- MIB II, Bridge MIB, SNMP MIB, Ether-like MIB, Q-Bridge/P-Bridge MIB, IF MIB, Traceroute MIB, TCP MIB, UDP MIB, IP MIB, RMON Group 1,2,3,9, Delta Private MIB

POWER REQUIREMENTS

Input Voltage

- 2 sets, 12 to 48V_{DC} redundant terminal block input

Input Current

- Max. 0.58A

Overload Current Protection

- Present, Max. Input current 12A

Reverse Polarity Protection

- Present

Voltage Dips Protection Time

- Min. 10ms at 48 V_{DC}

PHYSICAL

Housing

- IP40 metal case

Dimensions

- 135 mm(H) x 51 mm(W) x 135 mm (D)

Weight

- 1,020g

Installation

- Industrial DIN-Rail and wall mounting

ENVIRONMENTAL LIMITS

Operating Temperature

- -40°C to 75°C (-40 °F to 167 °F)

Storage Temperature

- -40°C to 85°C (-40 °F to 185 °F)

Ambient Relative Humidity

- 5% to 95% (non-condensing)

APPROVALS

Safety

- UL 61010, IEC 62368-1

EMI

- FCC 47 CFR Part 15 Subpart B Class A, IEC 61000-6-4, EN 55032 (CISPR 32)

EMS [IEC 61000-6-2, EN 55024]

- IEC 61000-4-2 level 4, IEC 61000-4-3 level 3, IEC 61000-4-4 level 4, IEC 61000-4-5 level 4, IEC 61000-4-6 level 3, IEC 61000-4-8 level 4, IEC 61000-4-29

Environmental Type Tests

Cold Temperature:

- IEC 60068-2-1

Dry Heat:

- IEC 60068-2-2

Humidity:

- IEC 60068-2-30

Shock:

- IEC 60068-2-27

Freefall:

- ISTA-2A

Vibration:

- IEC 60068-2-6

Hi-Pot:

- 1.5KV

Ordering Information

Product		Port Combination			Interface		
Model Name	Operating Temperature	Combo Port 10/100/1000Base-T and 100/1000Base-SFP	100/1000 Base-SFP	10/100/1000 Base-T	DI	DO (Relay)	Power Input
DVS-G106W02-2GF	-40°C to 75°C	---	2	4	1	1	2

Optional Products

LCP Series: 100Base-FX/1000Base-X SFP Fiber Transceiver. See the LCP Series datasheets for product information.

CliQII/PMC Series: 48 V_{DC} Industrial Power Supply

DVP/CliQ/PMC Series: 12/24 V_{DC} Industrial Power Supply

DVS-103I02C-DLR

EtherNet/IP DLR Industrial 3-Port FE Ethernet Switches



- EtherNet/IP protocol supported
- Supports DLR (device-level ring) technology, self-healing recovery time < 3ms (less than 50-node)
- Designed with DI and DO to automate alarms
- 12 to 48 V_{DC} redundant terminal block power input
- -20°C to 70°C operating temperature

Specifications

TECHNOLOGY

Standard Compliance

- IEEE 802.3 10Base-T
- IEEE 802.3u 100Base-T(X)

Processing Type

- Store and Forward

INTERFACE

Fast Ethernet

RJ45 Ports:

- 3 10/100Base-T(X), auto MDI/MDI-X, auto negotiation

LEDs

Per Device:

- PWR1/PWR2, DLR, DI, ALARM

Per Port:

- LINK, ACT

DIP Switches

- Configuration for DHCP/BootP, Factory Default, DLR Enable/Disable

Digital Inputs (DI)

- 1 set
- 0~+5V is OFF
- +11V~30V is ON
- Max. input current 6mA

Alarm Contacts(DO)

- 1 relay output
- Carry current 2A@24V_{DC}

MANAGEMENT

Software

- EtherNet/IP, IGMP Snooping v1/v2, VLAN, DHCP/BootP Client

DLR Mode

- Supervisor, Ring

Configuration

- Delta EIP Builder, EtherNet/IP EDS(Electronic Data Sheet) file

Firmware Upgrade

- Web Browser

POWER REQUIREMENTS

Input Voltage

- 2 sets, 12 to 48V_{DC} redundant terminal block input

Input Current

- Max. 0.31A

Overload Current Protection

- Present, max. Input current 0.9A

Reverse Polarity Protection

- Present

PHYSICAL

Housing

- IP40 PC plastic

Dimensions

- 110 mm (H) x 28 mm (W) x 75 mm (D)

Weight

- 126g

Installation

- Industrial DIN-Rail and wall mounting

ENVIRONMENTAL LIMITS

Operating Temperature

- -20°C to 70°C (-4°F to 158°F)

Storage Temperature

- -20°C to 70°C (-4°F to 158°F)

Ambient Relative Humidity

- 5% to 95% (non-condensing)

APPROVALS

Safety

- UL 61010, IEC 62368-1

EMI

- FCC 47 CFR Part 15 Subpart B Class A, EN 55032, AS/NZS CISPR 32

EMS [IEC 61000-6-2, EN 55024]

- IEC 61000-4-2 level 3, IEC 61000-4-3 level 3, IEC 61000-4-4 level 3, IEC 61000-4-5 level 1, IEC 61000-4-6 level 3, IEC 61000-4-8 level 4, IEC 61000-4-17

Environmental Type Tests

Cold Temperature:

- IEC 60068-2-1

Dry Heat:

- IEC 60068-2-2

Humidity:

- IEC 60068-2-30

Shock:

- IEC 60068-2-27

Freefall:

- IEC 60068-2-32

Vibration:

- IEC 60068-2-6

Hi-Pot:

- 500KV

Ordering Information

Product		Port Combination	Interface		
Model Name	Operating Temperature	10/100Base-T(X)	DI	DO (Relay)	Power Input
DVS-103I02C-DLR	-20°C to 70°C	3	2	2	2

Optional Products

DVP/CliQ/PMC Series: 12/24 V_{DC} Industrial Power Supply

CliQII/PMC Series: 48V_{DC} Industrial Power Supply

DVS-G008W01 Series

Unmanaged Industrial 8-Port GbE Ethernet Switches



- Transparent transmission of VLAN tagged packets
- Auto warning by relay output for power failure
- 12 to 48 V_{DC} redundant terminal block power input with 10 to 24 V_{AC}
- Jumbo frame size up to 9,216 Bytes
- -40°C to 75°C operating temperature
- Compatible with various industrial protocols, including EtherNet/IP, Profinet, CC-LINK IE, and DNP 3.0

Specifications

TECHNOLOGY

Standard Compliance

- IEEE 802.3 10Base-T
- IEEE 802.3u 100Base-T(X) and 100Base-FX
- IEEE 802.3ab 1000Base-T
- IEEE 802.3x Flow Control

Processing Type

- Store and forward
- IEEE 802.3x flow control in full duplex, back-pressure flow control in half duplex

INTERFACE

Gigabit Ethernet

RJ45 Ports:

- 10/100/1000Base-T, auto MDI/MDI-X, auto negotiation

LEDs

Per Device:

- ALARM, PWR1, PWR2

Per Port:

- 10/100/1000M, LINK/ACT

Alarm Contacts (DO)

- 1 relay output, carry current 1.5A @ 24 V_{DC}

PERFORMANCE AND SCALABILITY

Switching Capacity

- 16Gbps, wire-speed, non-blocking switching fabric

Forwarding Rate

- 11.9Mpps

MAC Address Table

- 4K

Packet Buffer Memory

- 1.5M bits

Jumbo Frame

- 9,216 Bytes

Transparent Forwarding VLAN Tagged Packets:

- Default enabled

POWER REQUIREMENTS

Input Voltage

- 2 sets, 12 to 48 V_{DC} / 10 to 24 V_{AC} redundant terminal block input

Input Current

- Max. 0.23A

Overload Current Protection

- Present, max. input current 5A

Reverse Polarity Protection

- Present

PHYSICAL

Housing

- IP30 Metal case

Dimensions

- 95mm (H) x 40mm (W) x 100mm (D)

Weight

- 500g

Installation

- DIN-Rail and wall mounting

ENVIRONMENTAL LIMITS

Operating Temperature

- -40°C to 75°C (-40°F to 167°F)

Storage Temperature

- -40°C to 85°C (-40°F to 185°F)

Ambient Relative Humidity

- 5% to 95% (non-condensing)

APPROVALS

Safety

- UL 61010, IEC 62368-1, KC

EMI

- FCC 47 CFR Part 15 Subpart B Class A, IEC 61000-6-4, EN 55011, EN 55032 (CISPR 32), RCM

EMS [IEC 61000-6-2, IEC 61131-2, EN 55024, EN 55035]

- EN 61000-4-2 Level 3, EN 61000-4-3 Level 3, EN 61000-4-4 Level 3, EN 61000-4-5 Level 3, EN 61000-4-6 Level 3, EN 61000-4-8 Level 4

Environmental Type Tests

Cold Temperature:

- IEC 60068-2-1

Dry Heat:

- IEC 60068-2-2

Humidity:

- IEC 60068-2-78

Shock:

- IEC 60068-2-27

Freefall:

- IEC 60068-2-32

Vibration:

- IEC 60068-2-6

Hi-Pot:

- 2.25KV

Ordering Information

Product		Port Combination		Interface			Region
Model Name	Operating Temperature	Combo Port 10/100/1000Base-T and 100/1000Base-SFP	10/100/1000 Base-T	DI	DO (Relay)	Power Input	
DVS-G008W01	-40°C to 75°C	---	8	---	1	2	Worldwide
DVS-G008W01-KR	-40°C to 75°C	---	8	---	1	2	South Korea

Optional Products

DVP/CliQ/PMC Series: 12/24 V_{DC} Industrial Power Supply

CliQII/PMC Series: 48V_{DC} Industrial Power Supply

DVS-016W Series

Unmanaged Industrial 16-Port FE Ethernet Switches



- Voltage Dips protection inside, great to use in unstable power sourcing systems
- Supports IEEE 802.1p based QoS for packet forwarding precedence
- Built-in Broadcast Storm Protection
- Transparent transmission of VLAN tagged packets
- 12 to 48 V_{DC} redundant terminal block power input
- Auto warning by relay output for link-down and power failure
- Compatible with various industrial protocols, including EtherNet/IP, Profinet, CC-LINK IE and DNP 3.0

Specifications

TECHNOLOGY

Standard Compliance

- IEEE 802.3 10Base-T
- IEEE 802.3u 100Base-T(X) and 100Base-FX
- IEEE 802.3x Flow Control
- IEEE 802.1p Class of Service, Priority Protocols

Processing Type

- Store and Forward
- IEEE 802.3x flow control in full duplex, back-pressure flow control in half duplex

INTERFACE

Fast Ethernet

RJ45 Ports:

- 10/100Base-T(X), auto MDI/MDI-X, auto negotiation

LEDs

Per Device:

- ALARM, PWR1, PWR2

Per Port:

- 100M (RJ45 port), LINK/ACT

DIP Switches

- Port link-down alarm configuration

Alarm Contacts (DO)

- 1 relay output
- Carry current 2A@24V_{DC}

PERFORMANCE AND SCALABILITY

Switching Capacity

- 3.2Gbps, wire-speed, non-blocking switching fabric

Forwarding Rate

- 4.8Mpps

MAC Address Table

- 8K

Packet Buffer Memory

- 1M bits

Broadcast Storm Protection

- Default enabled

Transparent Forwarding VLAN Tagged Packets

- Default enabled

IEEE 802.1p based QoS

- Default enabled

POWER REQUIREMENTS

Input Voltage

- 2 sets, 12 to 48 V_{DC} redundant terminal block input

Input Current

- Max. 0.6A

Overload Current Protection

- Present, max. input current 3A

Reverse Polarity Protection

- Present

Voltage Dips Protection Time

- Min. 13ms at 24V_{DC}

PHYSICAL

Housing

- IP40 metal case

Dimensions

- 145.3mm (H) x 75mm (W) x 108.7mm (D)

Weight

- 490g

Installation

- Industrial DIN-Rail and wall mounting

ENVIRONMENTAL LIMITS

Operating Temperature

- -40°C to 75°C (-40°F to 167°F)

Storage Temperature

- 40°C to 85°C (-40°F to 185°F)

Ambient Relative Humidity

APPROVALS

Safety

- UL 508, EN 62368-1, IEC 61131-2

EMI

- FCC 47 CFR Part 15 Subpart B Class B, IEC 61000-6-4, EN 55022(CISPR22)

EMS [IEC 61000-6-2, EN 55024(CISPR24)]

- IEC 61000-4-2 level 3, IEC 61000-4-3 level 3, IEC 61000-4-4 level 4, IEC 61000-4-5 level 3, IEC 61000-4-6 level 3, IEC 61000-4-8 level 4, IEC 61000-4-29

Environmental Type Tests

Cold Temperature:

- IEC 60068-2-1

Dry Heat:

- IEC 60068-2-2

Humidity:

- IEC 60068-2-30

Shock:

- IEC 60255-21-2

Freefall:

- IEC 60068-2-32

Vibration:

- IEC 60068-2-6

Hi-Pot:

- 1.5KV

Ordering Information

Product		Port Combination			Interface		
Model Name	Operating Temperature	10/100 Base-T(X)	100Base-FX		DI	DO (Relay)	Power Input
			SC Connector, MultiMode, 5km	SC Connector, SingleMode, 30km			
DVS-016W01	-40°C to 75°C	16	---	---	---	1	2

Optional Products

DVP/CliQ/PMC Series: 12/24 V_{DC} Industrial Power Supply

CliQII/PMC Series: 48V_{DC} Industrial Power Supply

DVS-008W Series

Unmanaged Industrial 8-Port FE Ethernet Switches



- Voltage Dips protection inside, great to use in unstable power sourcing systems
- Supports IEEE 802.1p based QoS for packet forwarding precedence
- Built-in Broadcast Storm Protection
- Transparent transmission of VLAN tagged packets
- 12 to 48 V_{DC} redundant terminal block power input
- Auto warning by relay output for link-down and power failure
- Compatible with various industrial protocols, including EtherNet/IP, Profinet, CC-LINK IE and DNP 3.0

Specifications

TECHNOLOGY

Standard Compliance

- IEEE 802.3 10Base-T
- IEEE 802.3u 100Base-T(X) and 100Base-FX

- IEEE 802.3x Flow Control
- IEEE 802.1p Class of Service, Priority Protocols

Processing Type

- Store and Forward
- IEEE 802.3x flow control in full duplex, back-pressure flow control in half duplex

INTERFACE

Fast Ethernet

RJ45 Ports:

- 10/100Base-T(X), auto MDI/MDI-X, auto negotiation

LEDs

Per Device:

- ALARM, PWR1, PWR2

Per Port:

- 100M(RJ45 port), LINK/ACT

DIP Switches

- Port link-down alarm configuration

Alarm Contacts (DO)

- 1 relay output
- Carry current 2A@24V_{DC}

PERFORMANCE AND SCALABILITY

Switching Capacity

- 1.6Gbps, wire-speed, non-blocking switching fabric

Forwarding Rate

- 2.4Mpps

MAC Address Table

- 8K

Packet Buffer Memory

- 1M bits

Broadcast Storm Protection

- Default enabled

Transparent Forwarding VLAN Tagged Packets

- Default enabled

IEEE 802.1p Based QoS

- Default enabled

POWER REQUIREMENTS

Input Voltage

- 2 sets, 12 to 48 V_{DC} redundant terminal block input

Input Current

- Max. 0.45A

Overload Current Protection

- Present, max. input current 3A

Reverse Polarity Protection

- Present

Voltage Dips Protection Time

- Min. 13ms at 24V_{DC}

PHYSICAL

Housing

- IP40 metal case

Dimensions

- 145.3 mm (H) x 75 mm (W) x 108.7 mm (D)

Weight

- 430g

Installation

- Industrial DIN-Rail and wall mounting

ENVIRONMENTAL LIMITS

Operating Temperature

- -40°C to 75°C (-40°F to 167°F)

Storage Temperature

- -40°C to 85°C (-40°F to 185°F)

Ambient Relative Humidity

- 5% to 95% (non-condensing)

APPROVALS

Safety

- UL 508, EN 62368-1, IEC 61131-2

EMI

- FCC 47 CFR Part 15 Subpart B Class B, IEC 61000-6-4, EN 55022(CISPR22),

EMS [IEC 61000-6-2, EN 55024(CISPR24)]

- IEC 61000-4-2 level 3, IEC 61000-4-3 level 3, IEC 61000-4-4 level 4, IEC 61000-4-5 level 3, IEC 61000-4-6 level 3, IEC 61000-4-8 level 4, IEC 61000-4-29

Environmental Type Tests

Cold Temperature:

- IEC 60068-2-1

Dry Heat:

- IEC 60068-2-2

Humidity:

- IEC 60068-2-30

Shock:

- IEC 60255-21-2

Freefall:

- IEC 60068-2-32

Vibration:

- IEC 60068-2-6

Hi-Pot:

- 1.5KV

Ordering Information

Product		Port Combination			Interface		
Model Name	Operating Temperature	10/100 Base-T(X)	100Base-FX		DI	DO (Relay)	Power Input
			SC Connector, MultiMode, 5km	SC Connector, SingleMode, 30km			
DVS-008W01	-40°C to 75°C	8	---	---	---	1	2

Optional Products

DVP/CliQ/PMC Series: 12/24 V_{DC} Industrial Power Supply

CliQII/PMC Series: 48V_{DC} Industrial Power Supply

DVS-008I00C Series

Unmanaged Industrial 8-Port FE Ethernet Switches



UL61010



-10~60°C



EMC



FANLESS



- Compact size saves space in tiny areas and makes installation easy and fast
- Transparent transmission of VLAN tagged packets
- 12 to 24 V_{DC} power input
- -10°C to 60°C wide operating temperature
- IP40 Protection

Specifications

TECHNOLOGY

Standard Compliance

- IEEE 802.3 10Base-T
- IEEE 802.3u 100Base-T(X)

- IEEE 802.3x Flow Control

Process Type

- Store and Forward
- IEEE 802.3x flow control in full duplex, back-pressure flow control in half duplex

INTERFACE

Fast Ethernet

RJ45 Ports:

- 10/100Base-T(X), auto MDI/MDI-X, auto negotiation

LEDs

Per Device:

- PWR

Per Port:

- 10M/100M

PERFORMANCE AND SCALABILITY

Switching Capability

- 1.6Gbps, wire-speed, nonblocking switching fabric

Forwarding Rate

- 1.19Mbps

MAC Address Table

- 1K

Packet Buffer Memory

- 448K bits

Transparent Forwarding VLAN Tagged Packets

- Default enabled

POWER REQUIREMENTS

Input Voltage

- 12~24 V_{DC}

Input Current

- 0.12A

Overload Current Protection

- Present, max. input current 3A

Reverse Polarity Protection

- Present

PHYSICAL

Housing

- IP40 plastic case

Dimensions

- 109.1mm (H) x 38mm (W) x 88.3mm (D)

Weight

- 151.5g

Installation

- Industrial DIN-Rail mounting

ENVIRONMENTAL LIMITS

Operating Temperature

- -10°C ~ 60°C (14 °F ~ 140 °F)

Storage Temperature

- -40°C ~ 85°C (-40 °F ~ 185 °F)

Ambient Relative Humidity

- 5% ~ 95% (non-condensing)

APPROVALS

Safety

- UL 61010, BSMI

EMI

- EN 55032, EN 61000-6-4, CISPR 32, FCC Part 15B Class A, KC, RCM, BSMI

EMS

- EN 55035, EN 61000-6-2, KC, RCM, IEC 61000-4-2 ESD, IEC 61000-4-3 RS, IEC 61000-4-4 EFT, IEC 61000-4-5 Surge, IEC 61000-4-6 CS, IEC 61000-4-8 PFMF

Environmental Type Tests

Shock:

- IEC 60068-2-27

Freefall:

- ISTA 1A

Vibration:

- IEC 60068-2-6

Ordering Information

Product		Port Combination	Interface
Model Name	Operating Temperature	10/100Base-T(X)	Power Input
DVS-008I00C	-10°C ~ 60°C	8	1

DVS-005I00C Series

Unmanaged Industrial 5-Port FE Ethernet Switches



UL61010



-10~60°C



EMC



FANLESS



- Compact size saves space in tiny areas and makes installation easy and fast
- Transparent transmission of VLAN tagged packets
- 12 to 24 V_{DC} power input
- -10°C to 60°C wide operating temperature
- IP40 Protection

Specifications

TECHNOLOGY

Standard Compliance

- IEEE 802.3 10Base-T
- IEEE 802.3u 100Base-T(X)

- IEEE 802.3x Flow Control

Process Type

- Store and Forward
- IEEE 802.3x flow control in full duplex, back-pressure flow control in half duplex

INTERFACE

Fast Ethernet

RJ45 Ports:

- 10/100Base-T(X), auto MDI/MDI-X, auto negotiation

LEDs

Per Device:

- PWR
- Per Port:
- 10M/100M

PERFORMANCE AND SCALABILITY

Switching Capability

- 1 Gbps, wire-speed, nonblocking switching fabric

Forwarding Rate

- 0.74 Mbps

MAC Address Table

- 1K

Packet Buffer Memory

- 448K bits

Transparent Forwarding VLAN Tagged Packets

- Default enabled

POWER REQUIREMENTS

Input Voltage

- 12~24 V_{DC}

Input Current

- 0.084 A

Overload Current Protection

- Present, max. input current 3A

Reverse Polarity Protection

- Present

PHYSICAL

Housing

- IP40 plastic case

Dimensions

- 109.1mm (H) x 38mm (W) x 88.3mm (D)

Weight

- 125.5g

Installation

- Industrial DIN-Rail mounting

ENVIRONMENTAL LIMITS

Operating Temperature

- -10°C ~ 60°C (14 °F ~ 140 °F)

Storage Temperature

- -40°C ~ 85°C (-40 °F ~ 185 °F)

Ambient Relative Humidity

- 5% ~ 95% (non-condensing)

APPROVALS

Safety

- UL 61010, BSMI

EMI

- EN 55032, EN 61000-6-4, CISPR 32, FCC Part 15B Class A, KC,RCM, BSMI

EMS

- EN 55035, EN 61000-6-2, KC, RCM, IEC 61000-4-2 ESD, IEC 61000-4-3 RS, IEC 61000-4-4 EFT, IEC 61000-4-5 Surge, IEC 61000-4-6 CS, IEC 61000-4-8 PFMF

Environmental Type Tests

Shock:

- IEC 60068-2-27

Freefall:

- ISTA 1A

Vibration:

- IEC 60068-2-6

Ordering Information

Product		Port Combination	Interface
Model Name	Operating Temperature	10/100Base-T(X)	Power Input
DVS-005I00C	-10°C ~ 60°C	5	1

DVS-G005I00C Series

Unmanaged Industrial 5-Port GbE Ethernet Switches



- 12 to 48 V_{DC} redundant terminal block power input
- Jumbo frame size up to 10K Bytes
- -20°C to 70°C operating temperature
- Compatible with various industrial protocols, including EtherNet/IP, Profinet, CC-LINK IE, and DNP 3.0

Specifications

TECHNOLOGY

Standard Compliance

- IEEE 802.3 10Base-T
- IEEE 802.3u 100Base-T(X)
- IEEE 802.3ab 1000Base-T
- IEEE 802.3x Flow Control

Processing Type

- Store and forward
- IEEE 802.3x flow control in full duplex, back-pressure flow control in half duplex

INTERFACE

Gigabit Ethernet

RJ45 Ports:

- 10/100/1000Base-T, auto MDI/MDI-X, auto negotiation

LEDs

Per Device:

- PWR1, PWR2

Per Port:

- 10/100/1000M, LINK/ACT

PERFORMANCE AND SCALABILITY

Switching Capacity

- 10Gbps, wire-speed, non-blocking switching fabric

Forwarding Rate

- 7.44Mpps

MAC Address Table

- 8K

Packet Buffer Memory

- 1M bits

Jumbo Frame

- 10K Bytes

POWER REQUIREMENTS

Input Voltage

- 2 sets, 12 to 48 V_{DC} redundant terminal block input

Input Current

- Max. 0.3A

Overload Current Protection

- Present, max. input current 0.5A

Reverse Polarity Protection

- Present

PHYSICAL

Housing

- IP40 PC plastic

Dimensions

- 110mm (H) x 28mm (W) x 75mm (D)

Weight

- 125g

Installation

- Industrial DIN-Rail and wall mounting

ENVIRONMENTAL LIMITS

Operating Temperature

- -20°C to 70°C (-4°F to 158°F)

Storage Temperature

- -40°C to 85°C (-40°F to 185°F)

Ambient Relative Humidity

- 5% to 95% (non-condensing)

APPROVALS

Safety

- UL 61010, IEC 62368-1

EMI

- FCC 47 CFR Part 15 Subpart B Class A, IEC61000-6-4, EN 55032, AS/NZS CISPR 32

EMS [IEC61000-6-2, EN 55024]

- IEC 61000-4-2 level 3, IEC 61000-4-3 level 3, IEC 61000-4-4 level 3, IEC 61000-4-5 level 1, IEC 61000-4-6 level 3, IEC 61000-4-8 level 4, IEC 61000-4-17

Environmental Type Tests

Cold Temperature:

- IEC 60068-2-1

Dry Heat:

- IEC 60068-2-2

Humidity:

- IEC 60068-2-30

Shock:

- IEC 60255-21-2

Freefall:

- IEC 60068-2-32

Vibration:

- IEC 60068-2-6

Hi-Pot:

- 500V

Ordering Information

Product		Port Combination			Interface		
Model Name	Operating Temperature	Combo Port 10/100/1000Base-T and 100/1000Base-SFP	10/100/1000 Base-T	10/100 Base-T(X)	DI	DO (Relay)	Power Input
DVS-G005I00C	-20°C to 70°C	---	5	---	---	---	2

Optional Products

DVP/CliQ/PMC Series: 12/24 V_{DC} Industrial Power Supply

CliQII/PMC Series: 48V_{DC} Industrial Power Supply

DVS-008W00-M12 Series

Unmanaged Industrial 8-Port FE M12 IP67 Ethernet Switches



- Strong 5g resistance designs with M12 connectors for extreme vibration environment
- IP67-rated waterproof and dustproof metal housing to prevent penetrating water and micro dust ingress
- Transparent transmission of VLAN tagged packets
- 12 to 48 VDC redundant power input
- -40°C to 75°C wide operating temperature
- Compatible with various industrial protocols, including EtherNet/IP, Profinet, CC-LINK IE, and DNP 3.0

Specifications

TECHNOLOGY

Standard Compliance

- IEEE 802.3 10Base-T
- IEEE 802.3u 100Base-T(X)
- IEEE 802.3x Flow Control

Processing Type

- Store and Forward
- IEEE 802.3x Flow control in full duplex, back-pressure flow control in half duplex

INTERFACE

Fast Ethernet

M12 Ports:

- D-coded 4-pin female connector, 10/100Base-T(X), auto MDI/MDI-X, auto negotiation

LEDs

Per Device:

- PWR1, PWR2

Per Port:

- LINK/ACT

PERFORMANCE AND SCALABILITY

Switching Capacity

- 1.6Gbps, wire-speed, non-blocking switching fabric

Forwarding Rate

- 2.38Mpps

MAC Address Table

- 2K

Packet Buffer Memory

- 448K bits

Transparent Forwarding VLAN Tagged Packets

- Default enabled

POWER REQUIREMENTS

M12 Port

- 1 A-coded 4-pin male connector

Input Voltage

- 2 sets, 12 to 48 V_{DC} redundant input

Input Current

- Max. 0.156A

Overload Current Protection

- Present, max. input current 3A

Reverse Polarity Protection

- Present

PHYSICAL

Housing

- IP67 metal case

Dimensions

- 194mm (H) x 62mm (W) x 25mm (D)

Weight

- 355g

Installation

- Industrial DIN-Rail and wall mounting

ENVIRONMENTAL LIMITS

Operating Temperature

- -40°C to 75°C (-40°F to 167°F)

Storage Temperature

- 40°C to 85°C (-40°F to 185°F)

Ambient Relative Humidity

- 5% to 95% (non-condensing)

APPROVALS

Safety

- UL 61010, EN 62368-1

EMI

- FCC 47 CFR Part 15 Subpart B Class A, IEC 61000-6-4, EN 55032, EN55011, AS/NZS CISPR 32

EMS [IEC 61000-6-2, EN 55024]

- IEC 61000-4-2 level 2, IEC 61000-4-3 level 3, IEC 61000-4-4 level 3, IEC 61000-4-5 level 2, IEC 61000-4-6 level 3, IEC 61000-4-8 level 4

Environmental Type Tests

Cold Temperature:

- IEC 60068-2-1

Dry Heat:

- IEC 60068-2-2

Humidity:

- IEC 60068-2-30

Shock:

- IEC 60068-2-27

Freefall:

- IEC 60068-2-32

Vibration:

- IEC 60068-2-6

Hi-Pot:

- 1.5KV

Ordering Information

Product		Port Combination			Interface		
Model Name	Operating Temperature	Combo Port 10/100/1000Base-T and 100/1000Base-SFP	10/100/1000 Base-T	10/100 Base-T(X)	DI	DO (Relay)	Power Input
DVS-008W00-M12	-40°C to 75°C	---	---	8	---	---	2

Optional Products

DVP/CliQ/PMC Series: 12/24 V_{DC} Industrial Power Supply

CliQII/PMC Series: 48V_{DC} Industrial Power Supply

DVS-G512W01-4GF Series

IEEE 802.3 af/at PoE+ Managed Industrial 8-Port GbE (PSE)
+ 4-Port 100/1000Base-SFP Ethernet Switches



-40~70°C



EMC
LEVEL 3



FANLESS

Rugged
ETHERNET



- Based on IEEE 802.3at standard up to 30Watts per port. Backward compatible with IEEE 802.3af
- Advanced PoE management and intelligent powered device (PD) class detection
- IPv6 address suitable for larger network and neighbor discovery
- Automatic IP assignment by DHCP server for easy network construction
- DHCP relay option 82 for sending DHCP requests with clients' identities to a DHCP server
- SNMP v1/v2c/v3 facilitates real-time remote management of network devices
- Proprietary redundancy RING and redundancy CHAIN high end redundancy technologies, for multiple ring topology. Self-healing recovery time < 30ms
- IEC 62439-2 MRP (media redundancy protocol) for IEC-based redundant ring topology
- STP/RSTP/MSTP for network redundancy further ensures reliability
- QoS (IEEE 802.1p) and TOS/DSCP for mission-critical applications
- IEEE 802.1Q VLAN, Q-in-Q double VLAN, VLAN isolation and GVRP optimize network strategy
- Enhanced network security with IEEE 802.1X, TACACS+, SSH, HTTPS and SNMP v3
- IEEE 802.3ad port trunking in parallel to increase the link bandwidth
- IEEE 1588v2 PTP (Precision Time Protocol) for precise time synchronization of network
- Broadcast/multicast/unknown unicast Unicast storm control improves throughput problems
- Loopback-detection to avoid broadcast loops, and shutdown the corresponding ports automatically
- Cable diagnostic provides the mechanism to detect and report potential cabling issues
- Intelligent Access Control List (ACL)
- MAC addresses filtering function per port blocks unauthorized access
- IGMP snooping prunes multicast traffic
- Port mirroring for Many-to-One ports online troubleshooting
- DDM snooping function by SFP fiber module
- Auto warning by email, relay, Syslog & SNMP trap
- Compatible with various industrial protocols, including EtherNet/IP, Profinet, CC-LINK IE and DNP 3.0

Specifications

TECHNOLOGY

Standard Compliance

- IEEE 802.3 10Base-T
- IEEE 802.3u 100Base-T(X) and 100Base-FX
- IEEE 802.3ab 1000Base-T
- IEEE 802.3z 1000Base-X
- IEEE 802.3x Flow Control
- IEEE 802.1D Spanning Tree Protocol
- IEEE 802.1w Rapid Spanning Tree Protocol
- IEEE 802.1s Multiple Spanning Tree Protocol
- IEEE 802.1p Class of Service, Priority Protocols
- IEEE 802.1Q VLAN Tagging

TECHNOLOGY

Standard Compliance

- IEEE 802.1X Port Authentication
- IEEE 802.3ad LACP Aggregation
- IEEE 802.1AB Link Layer Discovery Protocol
- IEEE 1588v2 Clock Synchronization
- IEEE 802.3af PoE 15.4 Watts
- IEEE 802.3at PoE 30 Watts

Processing Type

- Store and Forward
- IEEE 802.3x Flow control in full duplex, back-pressure flow control in half duplex

INTERFACE

Gigabit Ethernet

RJ45 Ports:

- 8 10/100/1000Base-T, auto MDI/MDI-X, auto negotiation

SFP Ports:

- 4 100/1000Base-SFP

PoE+ Pinout:

- 1 & 2 DC +, 3 & 6 DC -

Console Port:

- RS-232 (RJ45 connector)

LEDs

Device:

- STATUS, PWR1, PWR2, R.M, RING, ALARM

Ports:

- 100/1000M (SFP port), 10/100/1000M (RJ45 port), PoE+

Alarm Contacts(DO)

- 1 relay output
- Carry current 1 A@24V_{DC}

Reset Button

- 1 set

PERFORMANCE AND SCALABILITY

Switching Capacity

- 24Gbps, Wired speed, Non-blocking switching fabric

Forwarding Rate

- 35.7Mpps

MAC Address Table

- 8K

Packet Buffer Memory

- 4M bits

IGMP Multicast Groups

- 256

Max. VLANs

- 4096

Quality of Service

- 8 priority queues per port

DHCP Server

- 253 IP addresses

Jumbo Frame

- 9,216 Bytes

MANAGEMENT

Software

- STP/RSTP/MSTP, LACP, QoS, IGMP Snooping v1/v2/v3, IGMP Query v1/v2, VLAN, SSH, DNS, HTTP, HTTPS, RADIUS, TACACS+, SNMP v1/v2c/v3, SNMP Traps, TFTP, RMON, LLDP, DHCP Server/Client, DHCP Relay Option 82, Telnet, Syslog, SMTP, SMTP Client, DoS/DDoS auto prevention, MRP, Modbus TCP

Security

- MAC/IP/TCP/UDP filtering, HTTPS, SSH, 802.1x, TACACS+, SNMP v3

Configuration

- Web Browser, Cisco-like Telnet CLI, RJ45 console, SNMP

MIB

- MIB II, Bridge MIB, SNMP MIB, Ether-like MIB, Q-Bridge/P-Bridge MIB, IF MIB, Traceroute MIB, TCP MIB, UDP MIB, IP MIB, RMON Group 1,2,3,9, Delta Private MIB

POWER REQUIREMENTS

Input Voltage

- 2 sets, 50 to 57 V_{DC} redundant terminal block input

Input Current

- Max. 5.5A (with powered device); Max. 0.26A (without powered device)

Overload Current Protection

- Present, max. input current 10A

Reverse Polarity Protection

- NOT Present

PHYSICAL

Housing

- IP30 metal case

Dimensions

- 154 mm (H) x 96.4 mm (W) x 105.5 mm (D)

Weight

- 1205 g

Installation

- DIN-Rail and wall mounting

ENVIRONMENTAL LIMITS

Operating Temperature

- -40°C to 70°C (-40°F to 158°F)

Storage Temperature

- -40°C to 85°C (-40°F to 185°F)

Ambient Relative Humidity

- 5% to 95% (non-condensing)

APPROVALS

Safety

- EN 62368-1

EMI

- FCC 47 CFR Part 15 Subpart B Class A, EN 55022 (CISPR 22)

EMS(EN55024)

- IEC 61000-4-2, IEC 61000-4-3, IEC 61000-4-4, IEC 61000-4-5, IEC 61000-4-6, IEC 61000-4-8,

Environmental Type Tests

Shock:

- IEC 60068-2-27

Freefall:

- IEC 60068-2-32

Vibration:

- IEC 60068-2-6

Hi-Pot:

- 1.5KV

Ordering Information

Product		Port Combination		Interface		
Model Name	Operating Temperature	af/at PoE+, 10/100/1000 Base-T	100/1000 Base-SFP	DI	DO (Relay)	Power Input
DVS-G512W01-4GF	-40°C to 70°C	8	4	---	1	2

Optional Products

LCP Series: 100Base-FX/1000Base-X SFP Fiber Transceiver. See the LCP Series datasheets for product information.

CliQII/PMC Series: 48 V_{DC} Industrial Power Supply

DVS-G406W01-2GF Series

IEEE 802.3af/at PoE+ Unmanaged Industrial 4-Port GbE + 2-Port 100/1000Base-SFP Ethernet Switches



-40~70°C



EMC
LEVEL 3



FANLESS

- 4 10/100/1000Base-T PoE+(PSE) ports
- Based on IEEE 802.3at standard up to 30Watts per port. Backward compatible with IEEE 802.3af
- SFP ports support 100Base-FX and 1000Base-X dual transmission speed
- Jumbo frame size up to 9K Bytes
- 50 to 57VDC redundant terminal block power input
- Auto warning by relay output for power failure
- Compatible with various industrial protocols of EtherNet/IP, Profinet, CC-LINK IE and DNP 3.0

Specifications

TECHNOLOGY

Standard Compliance

- IEEE 802.3 10Base-T
- IEEE 802.3u 100Base-T(X) and 100Base-FX
- IEEE 802.3ab 1000Base-T
- IEEE 802.3z 1000Base-X
- IEEE 802.3x Flow Control
- IEEE 802.3af PoE 15.4 Watts
- IEEE 802.3at PoE 30 Watts

Processing Type

- Store and Forward
- IEEE 802.3x Flow control in full duplex, back-pressure flow control in half duplex

INTERFACE

Gigabit Ethernet

RJ45 Ports:

- 10/100/1000Base-T, auto MDI/MDI-X, auto negotiation

PoE+ Pinout:

- 1 & 2 DC+, 3 & 6 DC-

SFP Ports:

- 100/1000Base-SFP

LEDs

Per Device:

- PWR1, PWR2, ALARM

Per Port:

- PoE, 10/100/1000M, LINK/ACT

DIP Switches

- Power failure alarm
- SFP speed

Alarm Contacts (DO)

- 1 relay output
- Carry current 1A@24V_{DC}

PERFORMANCE AND SCALABILITY

Switching Capacity

- 12Gbps, wire-speed, non-blocking switching fabric

Forwarding Rate

- 8.9Mpps

MAC Address Table

- 1K

Packet Buffer Memory

- 1M bits

Jumbo Frame

- 9,216 Bytes

POWER REQUIREMENTS

Input Voltage

- 2 sets, 50 to 57 V_{DC} redundant terminal block input

Input Current

- Max. 2.52A (with powered device); Max. 0.13A (without powered device)

Overload Current Protection

- Present, max. input current 10A

Reverse Polarity Protection

- NOT Present

PHYSICAL

Housing

- IP30 metal case

Dimensions

- 144.3 mm (H) x 26.1 mm (W) x 94.9 mm (D)

Weight

- 410g

Installation

- Industrial DIN-Rail and wall mounting

ENVIRONMENTAL LIMITS

Operating Temperature

- -40°C to 70°C (-40°F to 158°F)

Storage Temperature

- -40°C to 85°C (-40 °F to 185 °F)

Ambient Relative Humidity

- 5% to 95% (non-condensing)

APPROVALS

Safety

- EN 62368-1

EMI

- FCC 47 CFR Part 15 Subpart B Class A, EN 55022 (CISPR22)

EMS

- IEC 61000-4-2, IEC 61000-4-3, IEC 61000-4-4, IEC 61000-4-5, IEC 61000-4-6

Ordering Information

Product		Port Combination		Interface		
Model Name	Operating Temperature	af/at PoE+, 10/100/1000Base-T	100/ 1000Base-SFP	DI	DO (Relay)	Power Input
DVS-G406W01-2GF	-40°C to 70°C	4	2	---	1	2

Optional Products

LCP Series: 100Base-FX/1000Base-X SFP Fiber Transceiver. See the LCP Series datasheets for product information.

CliQII/PMC Series: 48 V_{DC} Industrial Power Supplies

DVS-G402R00-INJ Series

2 10/100/1000Base-T Industrial IEEE 802.3af/at PoE+ Injectors



- Based on IEEE 802.3at standard up to 30Watts per port. Backward compatible with IEEE 802.3af
- Dual 10/100/1000Base-T for PoE+ OUT and DATA IN
- Intelligent PoE+ overvoltage input protection
- Reverse polarity and overload current protection
- Built-in 12VDC power booster for flexible PoE deployment
- Dual power outputs design to supply more devices

Specifications

TECHNOLOGY

Standard Compliance

- IEEE 802.3 10Base-T
- IEEE 802.3u 100Base-T(X)
- IEEE 802.3ab 1000Base-T
- IEEE 802.3af PoE 15.4 Watts
- IEEE 802.3at PoE 30 Watts

INTERFACE

Gigabit Ethernet

RJ45 Ports:

- 2 10/100/1000Base-T PoE+ OUT, 2 10/100/1000Base-T DATA IN, auto MDI/MDI-X, auto negotiation

PoE+ Pinout:

- 1 & 2 DC +, 3 & 6 DC -

LEDs

Device:

- PWR

Port:

- PoE+

POWER REQUIREMENTS

Input Voltage

- 2 sets, 12 to 57 V_{DC} redundant terminal block input

Input Current

- Max. 5.5A (with powered device)

PoE+ Output Power

- Max. 600mA @ 50 V_{DC}, 30 watts per port

Overload Current Protection

- Present, max. input current 10A

Reverse Polarity Protection

- Present

PHYSICAL

Housing

- IP30 metal case

Dimensions

- 95 mm(H) x 41 mm(W) x 70 mm (D)

Weight

- 370g

Installation

- DIN-Rail and wall mounting

ENVIRONMENTAL LIMITS

Operating Temperature

- -20°C to 70°C (-4°F to 158°F)

Storage Temperature

- -40°C to 85°C (-40°F to 185°F)

Ambient Relative Humidity

- 5% to 95% (non-condensing)

APPROVALS

Safety

- EN 62368-1

EMI

- FCC 47 CFR Part 15 Subpart B Class A, EN 55022 (CISPR22)

EMS

- IEC 61000-4-2, IEC 61000-4-3, IEC 61000-4-4, IEC 61000-4-5, IEC 61000-4-6, IEC 61000-4-8

Environmental Type Tests

Shock:

- IEC 60068-2-27

Freefall:

- IEC 60068-2-32

Vibration:

- IEC 60068-2-6

Ordering Information

Product		Port Combination		Interface		
Model Name	Operating Temperature	af/at PoE+, 10/100/1000Base-T	10/100/1000Base-T	DI	DO (Relay)	Power Input
DVS-G402R00-INJ	-20°C to 70°C	2	2	---	---	2

Optional Products

DVP/CliQ/PMC Series: 12/24 V_{DC} Industrial Power Supply

CliQII/PMC Series: 48 V_{DC} Industrial Power Supply

DVS-G401R00-SPL Series

1 10/100/1000Base-T Industrial IEEE 802.3af/at PoE+ Splitters



- Based on IEEE 802.3at standard up to 30Watts per port. Backward compatible with IEEE 802.3af
- 10/100/1000Base-T for PoE+ IN and DATA OUT
- Intelligent PoE input overvoltage protection
- Reverse polarity and port isolation protection
- Power output up to 27 watts
- Dual power outputs design to supply more devices

Specifications

TECHNOLOGY

Standard Compliance

- IEEE 802.3 10Base-T
- IEEE 802.3u 100Base-T(X)
- IEEE 802.3ab 1000Base-T
- IEEE 802.3af PoE 15.4 Watts
- IEEE 802.3at PoE 30 Watts

INTERFACE

Gigabit Ethernet

RJ45 Ports:

- 1 10/100/1000Base-T PoE+ IN, 1 10/100/1000Base-T DATA OUT, auto MDI/MDI-X, auto negotiation

PoE+ Pinout:

- PD auto negotiation (1 & 2 DC +, 3 & 6 DC- or 4 & 5 DC +, 7 & 8 DC-)

LEDs

Device:

- PWR

POWER REQUIREMENTS

PoE+ Input Voltage

- 36 to 57 V_{DC}

Output Voltage

- 2 sets, 24 V_{DC} redundant terminal block

Output Current

- Max. 1.125A

Overload Current Protection

- Present, adjust by PoE power classes

Reverse Polarity Protection

- Present

PHYSICAL

Housing

- IP30 metal case

Dimensions

- 95 mm(H) x 26.1 mm(W) x 70 mm (D)

Weight

- 250g

Installation

- DIN-Rail and wall mounting

ENVIRONMENTAL LIMITS

Operating Temperature

- -20°C to 70°C (-4°F to 158°F)

Storage Temperature

- -40°C to 85°C (-40°F to 185°F)

Ambient Relative Humidity

- 5% to 95% (non-condensing)

APPROVALS

Safety

- EN 62368-1

EMI

- FCC 47 CFR Part 15 Subpart B Class A, EN 55022 (CISPR22)

EMS (EN 55024)

- IEC 61000-4-2, IEC 61000-4-3, IEC 61000-4-4, IEC 61000-4-5, IEC 61000-4-6, IEC 61000-4-8, IEC 61000-4-11

Environmental Type Tests

Shock:

- IEC 60068-2-27

Freefall:

- IEC 60068-2-32

Vibration:

- IEC 60068-2-6

Ordering Information

Product		Port Combination		Interface		
Model Name	Operating Temperature	af/at PoE+, 10/100/1000Base-T	10/100/1000Base-T	DI	DO (Relay)	Power Output
DVS-G401R00-SPL	-20°C to 70°C	1	1	---	---	2

DVS-G002I00C-TF Series

Industrial 1-Port 100/1000Base-T to 100/1000Base-SFP Media Converter



- 12 to 48 VDC redundant terminal block power input
- Supports Link fault Pass-Through (LFP)
- Jumbo frame size up to 10K Bytes
- -20°C to 70°C operating temperature

Specifications

TECHNOLOGY

Standard Compliance

- IEEE 802.3u 100Base-T(X) and 100Base-FX
- IEEE 802.3ab 1000Base-T
- IEEE 802.3z 1000Base-X
- IEEE 802.3x Flow Control

Processing Type

- Store and Forward
- IEEE 802.3x Flow control in full duplex, back-pressure flow control in half duplex

INTERFACE

Gigabit Ethernet

RJ45 Ports:

- 100/1000Base-T, auto MDI/MDI-X, auto negotiation

SFP Ports:

- 100/1000Base-SFP

LEDs

Per Device:

- PWR1, PWR2

Per Port:

- 100/1000M(RJ45 port), 100/1000M(SFP port), LINK/ACT

DIP Switch

- 100M or 1000M selection

PERFORMANCE AND SCALABILITY

Jumbo Frame

- 10K Bytes

Link fault Pass-Through

- Present

POWER REQUIREMENTS

Input Voltage

- 2 set, 12 to 48 V_{DC} redundant terminal block input

Input Current

- Max. 0.15A

Overload Current Protection

- Present, max. input current 0.5A

Reverse Polarity Protection

- Present

PHYSICAL

Housing

- IP40 PC plastic

Dimensions

- 110mm (H) x 28mm (W) x 75mm (D)

Weight

- 110g

Installation

- Industrial DIN-Rail and wall mounting

ENVIRONMENTAL LIMITS

Operating Temperature

- -20°C to 70°C (-4°F to 158°F)

Storage Temperature

- -40°C to 85°C (-40 °F to 185 °F)

Ambient Relative Humidity

- 5% to 95% (non-condensing)

APPROVALS

Safety

- UL 61010, IEC 62368-1

EMI

- FCC 47 CFR Part 15 Subpart B Class A, IEC61000-6-4, EN 55032, AS/NZS CISPR 32

EMS [IEC61000-6-2, EN 55024]

- IEC 61000-4-2 level 3, IEC 61000-4-3 level 3, IEC 61000-4-4 level 3, IEC 61000-4-5 level 1, IEC 61000-4-6 level 3, IEC 61000-4-8 level 4, IEC 61000-4-17

Environmental Type Tests

Cold Temperature:

- IEC 60068-2-1

Dry Heat:

- IEC 60068-2-2

Humidity:

- IEC 60068-2-30

Shock:

- IEC 60255-21-2

Freefall:

- IEC 60068-2-32

Vibration:

- IEC 60068-2-6

Hi-Pot:

- 500V

Ordering Information

Product		Port Combination			Interface		
Model Name	Operating Temperature	Combo Port 10/100/1000Base-T and 100/1000Base-SFP	100/1000 Base-T	100/ 1000Base- SFP	DI	DO (Relay)	Power Input
DVS-G002I00C-TF	-20°C to 70°C	---	1	1	---	---	2

Optional Products

LCP Series: 100Base-FX/1000Base-X SFP Fiber Transceiver. See the LCP Series datasheets for product information.

DVP/CliQ/PMC Series: 12/24 V_{DC} Industrial Power Supply

CliQII/PMC Series: 48V_{DC} Industrial Power Supply

LCP-GbE Series

1-Port Gigabit Ethernet SFP Fiber Transceivers



- Compliant with IEEE 802.3z
- Full duplex operation
- Supports IEEE 802.3x flow control
- DDM diagnosis function enhances transmission quality
- Duplex LC connector interface
- Hot-Pluggable for maximum flexibility
- TTL signal detection indicator
- Class 1 laser product (Compliant with EN 60825-1)
- Metal case for better EMI immunity
- Wide operating temperature

Specifications

TECHNOLOGY

Standard Compliance

- IEEE 802.3z 1000Base-X

INTERFACE

Gigabit Ethernet

- Port number: 1
- Connectors: Duplex LC

Digital Diagnostics Monitoring Function (DDM)

Basic Information

- Ethernet Compliance Code, Vendor Name, Wavelength, Distance

Enhanced Parameters

- Temperature, Supply Voltage, Transmitted Bias Current, Transmitted Power, Received Power

Note1: All Enhanced Parameters listed above include alarm and warning thresholds

Note2: DDM function is fully compatible with Delta DVS series Industrial Ethernet Switches

Fiber Optics

	1000Base-X		
	LCP-1000SX	LCP-1000LX10	LCP-1000LHX40
Cable	50/125 μ m MultiMode	9/125 μ m SingleMode	9/125 μ m SingleMode
Wavelength	850nm	1310nm	1310nm
Max. TX Power	-4dBm	-3dBm	3dBm
Min. TX Power	-9.5dBm	-9.5dBm	-3dBm
RX Sensitivity	-18dBm	-20dBm	-24dBm
Optical Budget	8.5dBm	10.5dBm	21dBm

PHYSICAL

Housing

- Metal case

Dimensions

Installation

- Hot-swappable, pluggable

ENVIRONMENTAL LIMITS

Operating Temperature

Standard Models:

- -5°C to 70°C (23°F to 158°F)

Wide Temp. Models:

- -40°C to 85°C (-40°F to 185°F)

Storage Temperature

- -40°C to 85°C (-40°F to 185°F)

Ambient Relative Humidity

- 5% to 95% (non-condensing)

APPROVALS

Safety

- UL 60950-1, EN 60950-1

Laser Eye Safety

- EN 60825-1

EMI

- FCC 47 CFR Part 15 Subpart B Class B, EN 55032

EMS

- EN 55024

Ordering Information

Product		Interface		
Standard Temperature -5°C to 70°C	Wide Temperature -40°C to 85°C	Connectors	Fiber Type	Max. Link Distance
LCP-1000SX	LCP-1000SXT	Duplex LC	MultiMode	500m
LCP-1000LX10	LCP-1000LX10T	Duplex LC	SingleMode	10km
LCP-1000LHX40	LCP-1000LHX40T	Duplex LC	SingleMode	40km

Note: The actual link distance of a particular fiber optic link depends on the optical budget, the number of connectors and splices, and cabling quantity. Please measure and verify the actual link loss values once the link is established to identify any potential performance issues.

LCP-1FE Series

1-Port Fast Ethernet SFP Fiber Transceivers

- Compliant with IEEE 802.3u
- Full duplex operation
- Supports IEEE 802.3x flow control
- DDM diagnosis function enhances transmission quality
- Duplex LC connector interface
- Hot-Pluggable for maximum flexibility
- TTL signal detection indicator
- Class 1 laser product (Compliant with EN 60825-1)
- Metal case for better EMI immunity
- Wide operating temperature



Specifications

TECHNOLOGY

Standard Compliance

- IEEE 802.3u 100Base-FX

INTERFACE

Fast Ethernet

- Port number: 1
- Connectors: Duplex LC

Digital Diagnostics Monitoring Function (DDM)

Basic Information

- Ethernet Compliance Code, Vendor Name, Wavelength, Distance

Enhanced Parameters

- Temperature, Supply Voltage, Transmitted Bias Current, Transmitted Power, Received Power

Note1: All Enhanced Parameters listed above include alarm and warning thresholds

Note2: DDM function is fully compatible with Delta DVS series Industrial Ethernet Switches

Fiber Optics

	100Base-FX		
	LCP-100MMF	LCP-100SMF30	LCP-100SMF60
Cable	62.5/125 μ m MultiMode	9/125 μ m SingleMode	9/125 μ m SingleMode
Wavelength	1310nm	1310nm	1310nm
Max. TX Power	-14dBm	-8dBm	0dBm
Min. TX Power	-20dBm	-15dBm	-5dBm
RX Sensitivity	-31dBm	-34dBm	-35dBm
Optical Budget	11dBm	19dBm	30dBm

PHYSICAL

Housing

- Metal case

Dimensions

- 8.5 mm (H) x 13.4 mm (W) x 57 mm (D)

Installation

- Hot-swappable, pluggable

ENVIRONMENTAL LIMITS

Operating Temperature

Standard Models:

- -5°C to 70°C (23°F to 158°F)

Wide Temp. Models:

- -40°C to 85°C (-40°F to 185°F)

Storage Temperature

- -40°C to 85°C (-40°F to 185°F)

Ambient Relative Humidity

- 5% to 95% (non-condensing)

APPROVALS

Safety

- UL 60950-1, EN 60950-1

Laser Eye Safety

- EN 60825-1

EMI

- FCC 47 CFR Part 15 Subpart B Class B, EN 55032

EMS

- EN 55024

Ordering Information

Product		Interface		
Standard Temperature -5°C to 70°C	Wide Temperature -40°C to 85°C	Connectors	Fiber Type	Max. Link Distance
LCP-100MMF	LCP-100MMFT	Duplex LC	MultiMode	2km
LCP-100SMF30	LCP-100SMF30T	Duplex LC	SingleMode	30km
LCP-100SMF60	LCP-100SMF60T	Duplex LC	SingleMode	60km

Note: The actual link distance of a particular fiber optic link depends on the optical budget, the number of connectors and splices, and cabling quantity. Please measure and verify the actual link loss values once the link is established to identify any potential performance issues.

IEEE 802.11 WLAN

Functions

Wireless Management	61
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Wireless AP

DVW-W01I2-E1 Series: Industrial IEEE 802.11 a/b/g/n/ac Wireless AP/Client/Gateway	65
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High-gain Antennas

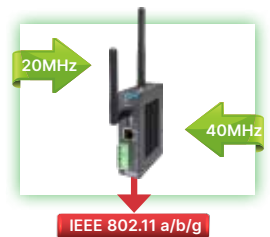
DVW-ANTRM8N-B3 Series: 2.4 & 5GHz Dual-band Omni-directional 5.5 & 8dBi High-gain Antennas	68
--	----

DVW-ANTRM7G-B3 Series: 2.4GHz Omni-directional 7dBi High-gain Antennas	69
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IEEE 802.11 WLAN

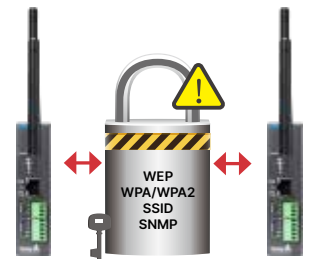
IEEE 802.11ac Technology

IEEE 802.11ac adopts the MIMO and MU-MIMO (Multi-User Multiple Input Multiple Output) technologies to enhance network throughput with better bandwidth efficiency and is compatibility with IEEE 802.11a/b/g/n. Supported bandwidths include 20 MHz, 40 MHz, and 80 MHz.



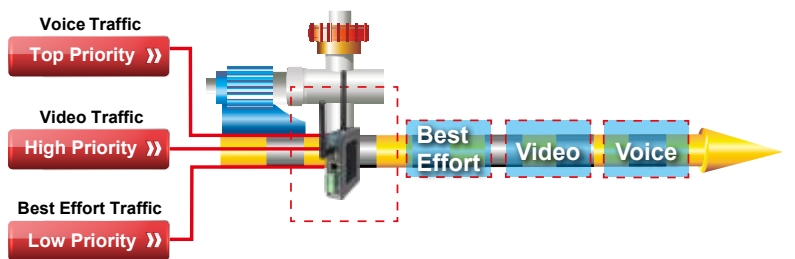
Enhanced WLAN Security Management

A complete set of security verification tools ensures the security of WLAN for users. Multiple protection mechanisms protect the network from unauthorized access.



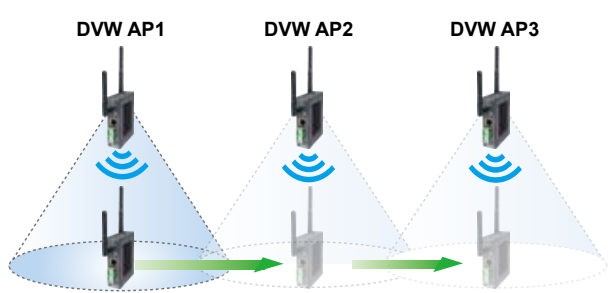
Wi-Fi Multimedia (WMM)

The Wi-Fi Multimedia (WMM) is a Wireless Quality of Service (QoS) standard that prioritizes traffic based on types of applications such as voice and image data transmission, to deliver a smooth, high-quality user experience.



Industrial-grade Fast Roaming

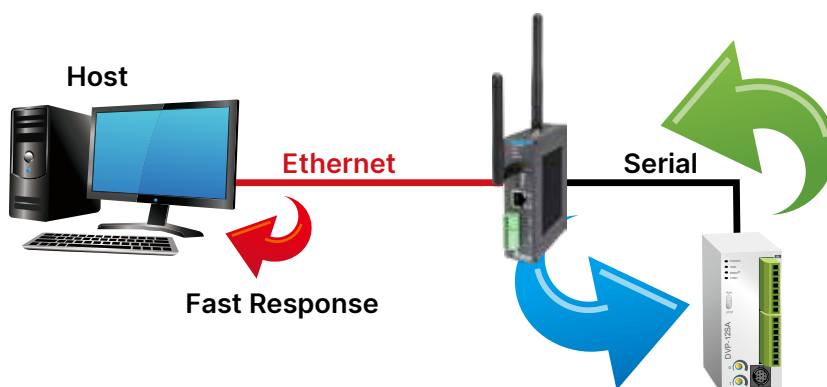
Delta's Fast Roaming technology helps users achieve quick roaming through the access points in the industrial field. This technology enables wireless devices to handover within milliseconds, creating a high-reliability wireless network, that is especially suitable for mobile applications, such as automatic guided vehicles (AGV).



Modbus Cache

Speeds up data loading time / Online real-time monitoring

The DVW Series Wireless APs provide a dynamic and constant communication between devices. Responses are given in no time when the host requests via Ethernet, which significantly improves the data rates of serial devices.



Online Real-time Monitoring

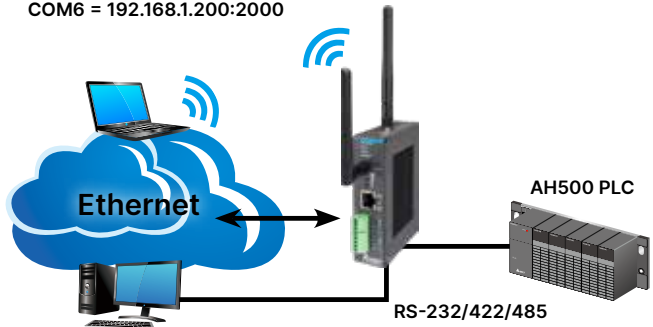
	Station Address	MODBUS (Hex.)	MODBUS (Dec.)	Present Value	Format
1	1	1000	404097	0000	Hex
2	1	1001	404098	0CEF	Hex
3	1	1002	404099	0000	Hex
4	1	1003	404100	0000	Hex
5	1	1004	404101	0000	Hex

Introduction to Serial Device Servers

Virtual COM

The virtual COM mode corresponds the serial port of a DVW Series to the COM port of a PC, providing users with direct access from a PC to serial communication devices via wired or wireless communication.

COM6 = 192.168.1.200:2000

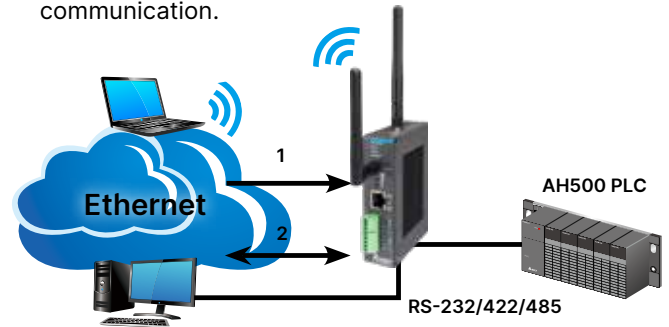


COM5 = 192.168.1.100:1000

TCP Server

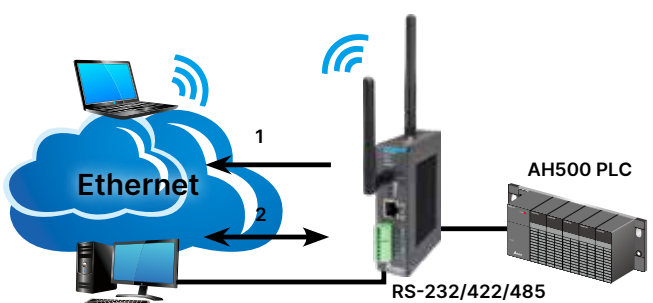
In

a TCP/IP network, each serial port has one exclusive set of IP address and TCP serial port number. When the host requests connection, a DVW Series passively receives the request for connection and conducts transmission of serial device data via wired or wireless communication.



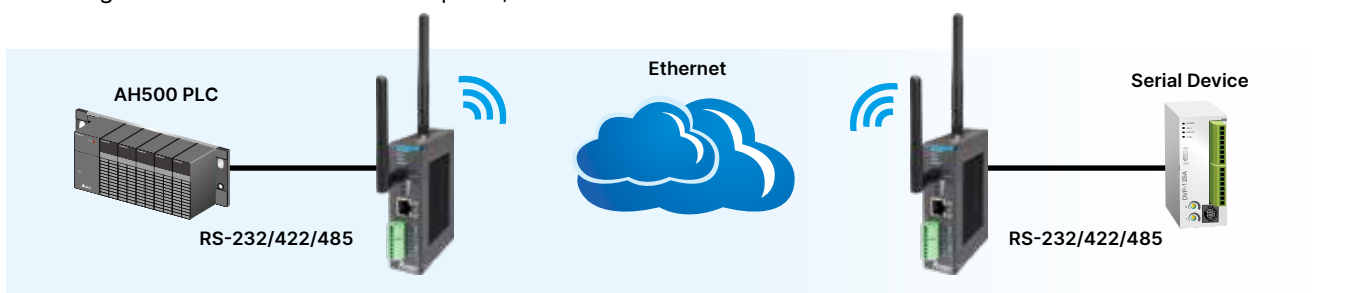
TCP Client

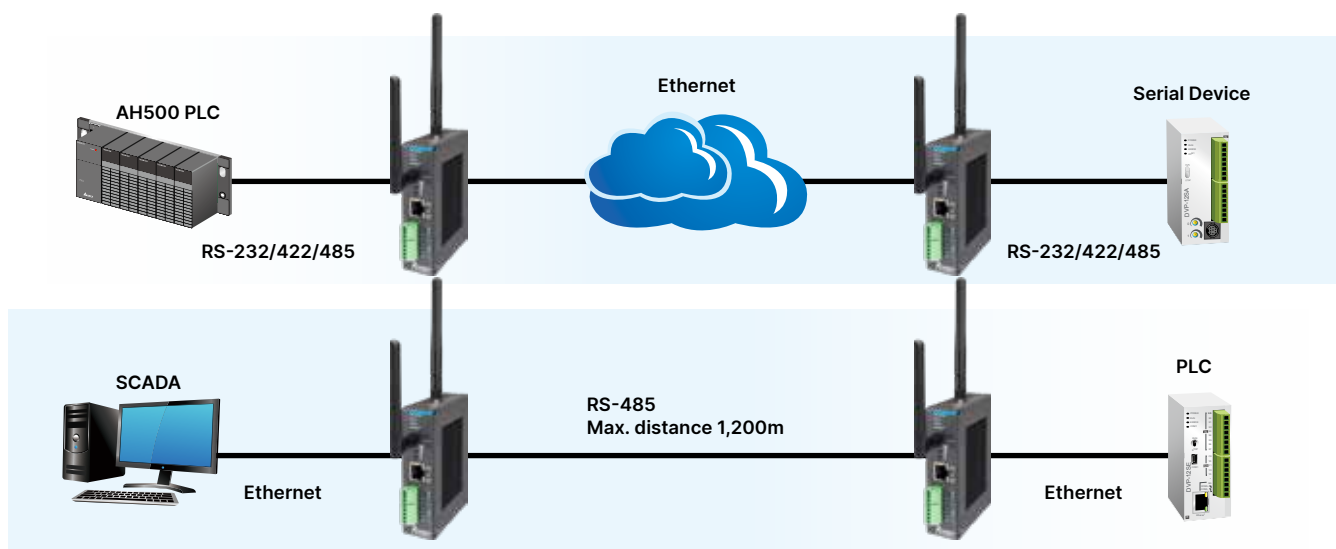
In a TCP/IP network, each serial port has one exclusive set of IP address and TCP serial port number. When a DVW Series receives the data of the serial devices connected, it actively requests the host for connection and data transmission via wired or wireless communication. The connection is cut after the data transmission is completed.



Pair Connection

Pair a DVW Series with a serial host and another with a serial device. The pairs can use the existing wired or wireless network for communication. When the distance exceeds 100m, replace the network cable with RS-485 communication for a longer transmission distance of up to 1,200m.

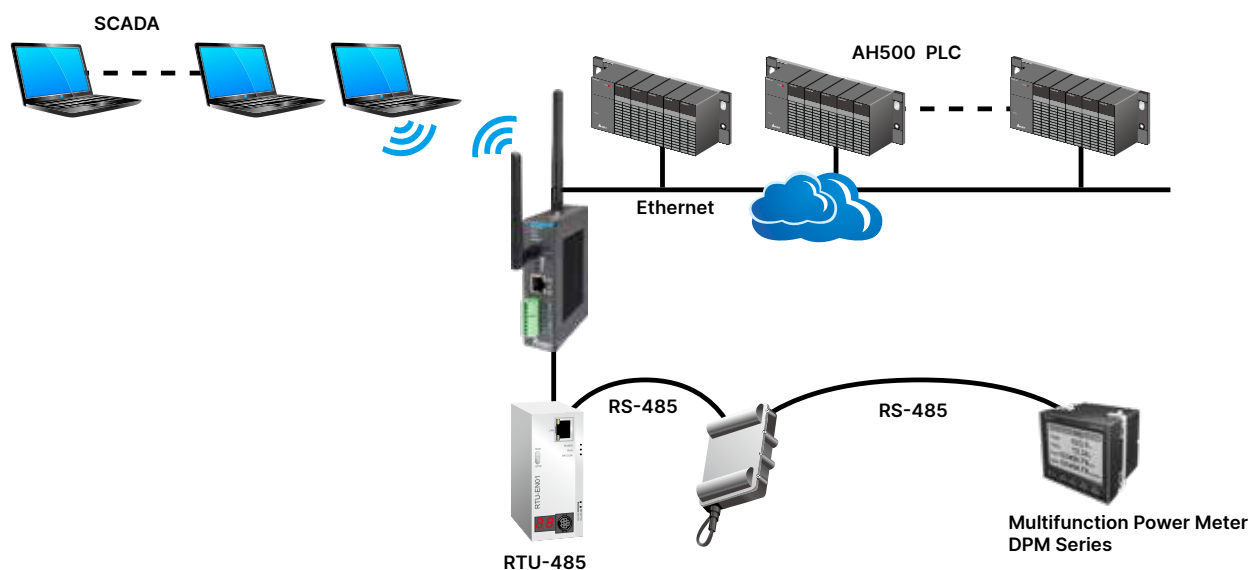




Introduction to Modbus Gateway

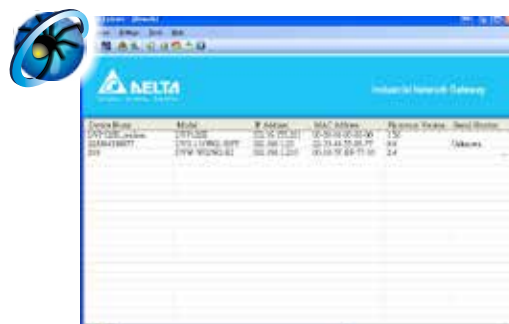
Modbus TCP/RTU Gateway

Slave devices in field can be integrated with system via wireless communication or Ethernet.



Delta IEXplorer Search Tool

IExplorer provides users with friendly access to search for all IES products on the network. One simple click calls the Web page for software function setting.



DVW-W0112-E1

Industrial IEEE 802.11 a/b/g/n/ac Wireless AP/ Client/Gateway



UL61010



FANLESS



- Compliant with IEEE 802.11ac wireless technology capable of up to 867Mbps data rate
- Compliant with IEEE 802.11n wireless technology capable of up to 300Mbps data rate
- Backward compatible with 802.11 a/b/g standard for seamless integration
- Multiple Wireless Modes: AP, Client
- 2 x 2 MIMO technology increases data rate
- Proprietary ONE ROAMING industrial-grade fast roaming, seamless roaming recovery time between APs < 150ms
- Wireless QoS(IEEE 802.11e, WMM) for video packets precedence transmission
- Enhanced wireless security: WPA-PSK / WPA2-PSK (TKIP/AES)
- Supports 2-port RS-232/485-to-Ethernet Device Server
- Built-in 2-port Modbus ASCII/RTU to Modbus TCP Gateway
- Built-in 10MB buffer memory avoids data loss once the connection is down
- DHCP/BootP server for automatic IP assignment, helping build up network easily
- SNTP (simple network time protocol) for network clock synchronization
- Supports Modbus TCP protocol for facilitating the remote management by SCADA or with other industrial devices
- CPU utilization displays the amount of work the CPU handles
- Auto warning by email, Relay

Specifications

TECHNOLOGY

Standard Compliance

- IEEE 802.11 a/b/g/n/ac Wireless LAN
- IEEE 802.11i Wireless Security
- IEEE 802.3 10Base-T
- IEEE 802.3u 100Base-T(X)
- IEEE 802.3ab 1000Base-T

Processing Type

- CSMA/CA

INTERFACE

Wireless

IEEE 802.11 a/b/g/n/ac:

- 2T2R

Antennas:

- 2 2dBi omni-directional, RP-SMA(male) connector

INTERFACE

Gigabit Ethernet

RJ45 Port:

- 1 10/100/1000Base-T, auto MDI/MDI-X, auto negotiation

Serial Communication

Serial Ports :

- 1 RS-232 (5-pin terminal block), 1 RS-485(3-pin terminal block), 2KV isolation protection

Baud Rate:

- 2400bps to 115200bps

Data Bits:

- 7, 8

Parity:

- None, Even, Odd

Stop Bits:

- 1, 2

Flow Control:

- RTS/CTS (RS-232 only)

RS-232:

- TxD, RxD, RTS, CTS, GND

RS-485:

- D+, D-, GND

LEDs

Device:

- PWR1/PWR2, DI/ALARM, Signal Strength

RJ45 Port:

- 10/100/1000M, LINK/ACT

Serial Ports:

- RS-232, RS-485

Digital Inputs (DI)

- 1 set
- 0~+5V is OFF
- +11V~30V is ON
- Input current 6mA Max.

Alarm Contacts (DO)

- 1 relay output
- Carry current 1A@24V_{DC}

Reset Button

- 1 set

Wireless RF

RF Modulation

802.11a:

- BPSK, QPSK, 16QAM, 64QAM with OFDM

802.11b:

- DBPSK, DQPSK with DSSS, CCK

802.11g:

- BPSK, QPSK, 16QAM, 64QAM with OFDM

802.11n:

- BPSK, QPSK, 16QAM, 64QAM with MIMO-OFDM

802.11ac:

- BPSK, QPSK, 16QAM, 64QAM, 256QAM with MIMO-OFDM

Frequency Band

2.412GHz ~ 5.825GHz

Operating Channels

US (FCC):

- 2.412GHz ~ 2.462GHz (11 channels)
- 5.180GHz ~ 5.240GHz (4 channels)
- 5.745GHz ~ 5.825GHz (5 channels)

EU (ETSI):

- 2.412GHz ~ 2.472GHz (13 channels)
- 5.180GHz ~ 5.240GHz (4 channels)

China (SRRC):

- 2.412GHz ~ 2.472GHz (13 channels)
- 5.180GHz ~ 5.240GHz (4 channels)
- 5.745GHz ~ 5.825GHz (5 channels)

Taiwan (NCC):

- 2.412GHz ~ 2.462GHz (11 channels)
- 5.280GHz ~ 5.320GHz (3 channels)
- 5.745GHz ~ 5.825GHz (5 channels)

Data Transmission Rates

802.11ac mode:

- up to 867Mbps

802.11n mode:

- up to 300Mbps

802.11a mode:

- 6, 9, 12, 18, 24, 36, 48, 54Mbps

802.11b mode:

- 1, 2, 5.5, 11Mbps

802.11g mode:

- 6, 9, 12, 18, 24, 36, 48, 54Mbps

RF Output Power (Max., per chain)

802.11a:

- 6Mbps to 36Mbps: 21dBm (± 1.5 dBm)
- 48Mbps: 20dBm (± 1.5 dBm)
- 54Mbps: 19dBm (± 1.5 dBm)

802.11b:

- 1Mbps to 11Mbps: 22dBm (± 1.5 dBm)

802.11g:

- 6Mbps to 24Mbps: 20dBm (± 1.5 dBm)
- 36Mbps: 19dBm (± 1.5 dBm)
- 48/54Mbps: 18dBm (± 1.5 dBm)

RF Output Power MIMO (Max., per chain)

802.11n (2.4G HT20/40):

- MCS0: 20dBm (± 1.5 dBm)
- MCS7: 18dBm (± 1.5 dBm)

802.11n (5G HT20/40):

- MCS0: 21dBm (± 1.5 dBm)
- MCS7: 19dBm (± 1.5 dBm)

802.11ac (5G HT20):

- MCS0: 21dBm (± 1.5 dBm)
- MCS8: 17dBm (± 1.5 dBm)

802.11ac (5G HT40):

- MCS0: 21dBm (± 1.5 dBm)
- MCS8: 17dBm (± 1.5 dBm)
- MCS9: 15dBm (± 1.5 dBm)

802.11ac (5G HT80):

- MCS0: 19dBm (± 1.5 dBm)
- MCS8: 16dBm (± 1.5 dBm)
- MCS9: 15dBm (± 1.5 dBm)

Receiver Sensitivity

802.11a:

- -86dBm @ 6Mbps, -85dBm @ 9Mbps, -83dBm @ 12Mbps, -83dBm @ 18Mbps, -81dBm @ 24Mbps, -78dBm @ 36Mbps, -74dBm @ 48Mbps, -73dBm @ 54Mbps

802.11b:

- -99dBm @ 1Mbps, -97dBm @ 2Mbps, -94dBm @ 5.5Mbps, -92dBm @ 11Mbps

802.11g:

- -91dBm @ 6Mbps, -91dBm @ 9Mbps, -90dBm @ 12Mbps, -89dBm @ 18Mbps, -86dBm @ 24Mbps, -81dBm @ 36Mbps, -77dBm @ 48Mbps, -75dBm @ 54Mbps

Receiver Sensitivity MIMO

802.11n (2.4G HT20):

- -92dBm @ MCS0, -72dBm @ MCS7

802.11n (2.4G HT40):

- -90dBm @ MCS0, -70dBm @ MCS7

802.11n (5G HT20):

- -89dBm @ MCS0, -71dBm @ MCS7

802.11n (5G HT40):

- -87dBm @ MCS0, -68dBm @ MCS7

802.11ac (5G HT20)

- -89dBm @ MCS0, -66dBm @ MCS9

802.11ac (5G HT40)

- -86dBm @ MCS0, -61dBm @ MCS9

802.11ac (5G HT80)

- -84dBm @ MCS0, -58dBm @ MCS9

MANAGEMENT

Software

- SSH, HTTPS, HTTP, TFTP, BootP Server/Client, DHCP Server/Client, Telnet, Syslog, ARP, Modbus TCP, SNMP

Security

Security Access:

- SSH

Wireless Security:

- 802.11i, 64/128-bit WEP, WPA-PSK / WPA2-PSK (TKIP/AES)
- SSID Broadcast: Enable/Disable

Virtual COM Drivers

- Windows 2000, Windows XP
- Windows Vista (32/64 bits)
- Windows 7 (32/64 bits)
- Windows 10 (32/64 bits)

Configuration

- Web Browser, Modbus TCP, IEXplorer utility

MIB

- MIB II, RS-232 MIB, System Group MIB, SNMP MIB, Interface Group MIB, TCP MIB, UDP MIB, IP MIB, Delta Private MIB

POWER REQUIREMENTS

Input Voltage

- 2 sets, 12 to 48V_{DC} redundant terminal block inputs

Input Current

- Max. 0.92A

Overload Current Protection:

- Present, Max. Input current 3A

Reverse Polarity Protection

- Present

PHYSICAL

Housing

- IP40 PC plastic

Dimensions

- 110 mm(H) x 28 mm(W) x 75 mm (D)

Weight

- 198g

Installation

- Industrial DIN-Rail and wall mounting

ENVIRONMENTAL LIMITS

Operating Temperature

- -10°C to 60°C (14°F to 140°F)

Storage Temperature

- -40°C to 85°C (-40°F to 185°F)

Ambient Relative Humidity

- 5% to 95% (non-condensing)

APPROVALS

Safety

- UL 61010, IEC 62368-1

EMI

- FCC 47 CFR Part 15 Subpart B Class A, IEC 61000-6-4, EN 55011, EN 55032(CISPR32), EN 301 489-1/17

EMS

[EN 301 489-1/17, IEC 61000-6-2, EN 55024(CISPR24)]

- IEC 61000-4-2, IEC 61000-4-3, IEC 61000-4-4, IEC 61000-4-5, IEC 61000-4-6, IEC 61000-4-8

RF

- EN 300 328, EN 301 893, NCC, SRRC, RCM
- FCC 47 CFR Part 15 Subpart C, E

Environmental Type Tests

Cold Temperature:

- IEC 60068-2-1

Dry Heat:

- IEC 60068-2-2

Humidity:

- IEC 60068-2-30

Shock:

- IEC 60255-21-2

Freefall:

- IEC 60068-2-32

Vibration:

- IEC 60068-2-6

Hi-Pot:

- 1.5KV

Ordering Information

Product		Port Combination			Interface			RF	Region
Model Name	Operating Temperature	10/100/1000 Base-T	RS-232	RS-485	DI	DO (Relay)	Power Input	Band	
DVW-W01I2-E1	-10°C to 60°C	1	1	1	1	1	2	US	USA, Taiwan
DVW-W01I2-E1-EU	-10°C to 60°C	1	1	1	1	1	2	EU	European Union, Australia, New Zealand
DVW-W01I2-E1-CN	-10°C to 60°C	1	1	1	1	1	2	CN	China(PRC)

NOTE: For available countries for purchase, please contact your regional sales or distributors.

Optional Products

DVP/CliQ/PMC Series: 12/24 V_{DC} Industrial Power Supply

CliQII/PMC Series: 48 V_{DC} Industrial Power Supply

DVW-ANTRM8N-B3 Series

2.4 & 5GHz Dual-band Omni-directional 5.5 & 8dBi High-gain Antennas



- 8dBi high-gain antenna to enhance wireless access performance
- Powerful magnetic base with 3 meters extended cable, RP-SMA (male) connector
- IP65 weather proof with UV resistant design, suitable for all weather conditions
- Easy installation for indoor or outdoor environments

Specifications

ANTENNA CHARACTERISTICS

Standard Compliance

Wireless Signal:

- IEEE 802.11 a/b/g/n

Typical Application:

- Indoor / Outdoor

Frequency:

- 2.4 to 2.5GHz
- 4.9 to 5.9GHz

Antenna Type:

- Omni-directional

Typical Gain:

- 5.5dBi @ 2.4GHz
- 8dBi @ 5GHz

Beam Width:

- 2.4GHz @ H: 360° / E: 60.1°
- 5.8GHz @ H: 360° / E: 21.3°

Polarization:

- Vertical

V.S.W.R:

- ≤ 2.0

Power Handling:

- 5W

Impedance:

- $50\Omega \pm 5\Omega$

PHYSICAL CHARACTERISTICS

Base

Connector:

- RP-SMA (male) for device, N-type (female) for antenna

Low-Loss Cable Length:

- 3 meters

Low-Loss Cable Type:

- CFD-200-NL

Low-Loss Cable Power Loss:

- $\leq 2.4\text{dB}$ (2.4GHz)
- $\leq 3.2\text{dB}$ (5GHz)

Radome Material:

- Brass

Radome Color:

- Black

Height:

- 44.6mm

Diameter:

- 77.4mm

Weight:

- 56g

Installation:

- Magnetic mount

Antenna

Connector:

- N-type (male)

IP Protection:

- IP65

Radome Material:

- Fiberglass, UV resistant

Radome Color:

- White

Length:

- 203mm

Diameter:

- 22.4mm

Weight:

- 86g

ENVIRONMENTAL LIMITS

Operating Temperature

- -30°C to 60°C (-22°F to 140°F)

Storage Temperature

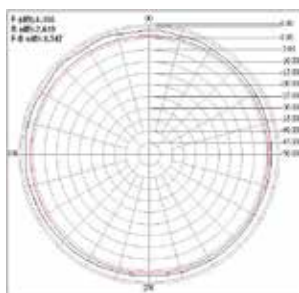
- -40°C to 85°C (-40°F to 185°F)

Ambient Relative Humidity

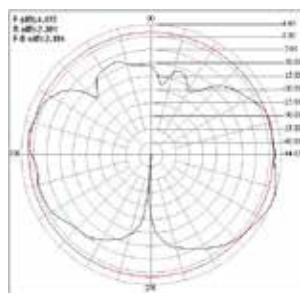
- 5% to 95% (non-condensing)

FIELD PATTERNS

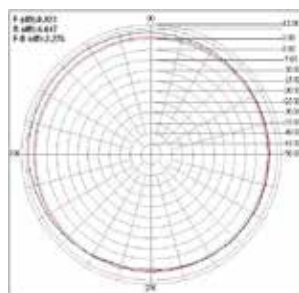
H-PLANE for 2.4GHz



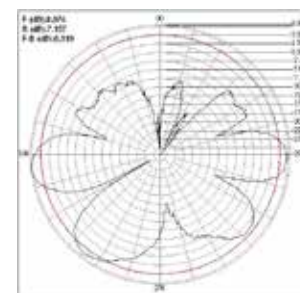
E-PLANE for 2.4GHz



H-PLANE for 5.8GHz



E-PLANE for 5.8GHz



DVW-ANTRM7G-B3 Series

2.4GHz Omni-directional 7dBi High-gain Antennas

- 7 dBi high-gain antenna to enhance wireless access performance
- Powerful magnetic base with 3 meters extended cable, RP-SMA (male) connector
- IP65 weather proof with UV resistant design, suitable for all weather conditions
- Easy installation for indoor or outdoor environments



Specifications

ANTENNA CHARACTERISTICS

Standard Compliance

- Wireless Singal:**
- IEEE 802.11 b/g/n
- Typical Application:**
- Indoor / Outdoor
- Frequency:**
- 2.4 to 2.5GHz

- Antenna Type:**
- Omni-directional
- Typical Gain:**
- 7dBi
- Beam Width:**
- H: 360° / E: 20.7

- Polarization:**
- Vertical
- V.S.W.R:**
- ≤ 2.0
- Power Handling:**
- 10W

- Impedance:**
- 50Ω±5Ω

PHYSICAL CHARACTERISTICS

Base

- Connector:**
- RP-SMA (male) for device, N-type (female) for antenna
- Low-Loss Cable Length:**
- 3 meters
- Low-Loss Cable Type:**
- CFD-200-NL
- Low-Loss Cable Power Loss:**
- ≤ 2.4dB
- Radome Material:**
- Brass

- Radome Color:**
- Black
- Height:**
- 44.6mm
- Diameter:**
- 77.4mm
- Weight:**
- 56g
- Installation:**
- Magnetic mount

Antenna

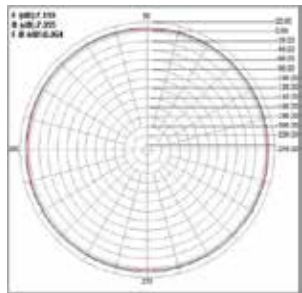
- Connector:**
- N-type (male)
- IP Protection:**
- IP65
- Radome Material:**
- Fiberglass, UV resistant
- Radome Color:**
- White
- Length:**
- 450mm
- Diameter:**
- 20mm
- Weight:**
- 180g

ENVIRONMENTAL LIMITS

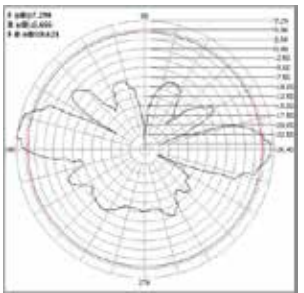
- Operating Temperature**
- -30°C to 60°C (-22°F to 140°F)
- Storage Temperature**
- -40°C to 85°C (-40°F to 185°F)
- Ambient Relative Humidity**
- 5% to 95% (non-condensing)

FIELD PATTERNS

H-PLANE



E-PLANE



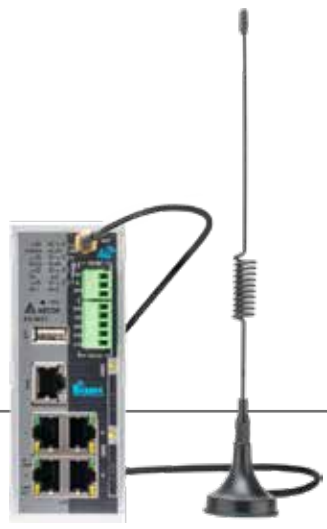
IIoT Routers

DIACloud Routers

DX-3021L9 Series: Industrial 4G/WAN DIACloud Cloud Routers	71
DX-2400L9 Series: Industrial 4G/WAN DIACloud Cloud Routers	74
DX-DX-2310LN Series: Industrial Ethernet DIACloud Cloud Routers	77

DX-3021L9 Series

Industrial 4G/WAN DIACloud Cloud Routers



- A data acquisition device connected to DIACloud cloud servers. Supports a two-way data collection channel between the devices and the cloud
- Sets up a secure tunnel between the user and the remote device via DIACloud cloud servers, without the need of additional VPN server
- Supports Modbus TCP, Modbus ASCII/RTU, Mitsubishi MC and Siemens ISO-on-TCP protocols
- Universal 4G LTE-FDD and LTE-TDD frequency bands, backward compatible with WCDMA/GSM/GPRS/EDGE 3G/2G networks
- LTE data transmission rate up to 150Mbps (downlink) / 50Mbps (uplink)
- Dual SIM dual standby technology, auto-switching between cellular operators without restarting devices
- USB port can accept 3rd-party Wi-Fi USB adapter to add WLAN interface as Wi-Fi client (only Realtek RTL8192EU driver supported)
- Automatic APN parameter matching and connection redial
- Connect to internet through cellular network or broadband interfaces. Indicates the priority of internet connectivity interfaces activated
- Various peripheral interfaces include RS-485, RS-232 and 4 LAN ports
- DI/DO built-in, users can trigger warning by specific events
- Supports upgrade of device firmware and configures automatically via USB flash drive. Users can remotely access the USB flash drive by FTP also
- Built-in RTC and supports NTP time synchronization over a network
- Firewall function: Stateful Packet Inspection (SPI), prevents denial of service (DoS) attacks, MAC address filter and IP port filter
- Supports TCP/IP, UDP, ICMP, DHCP, HTTP, DNS and SSH protocols
- Scheduled jobs are available
- Device configurations import/export
- Network data flow statistics
- Networking failure diagnostics
- Device and PLC interlocking
- Custom alarm conditions with email alerts

Specifications

TECHNOLOGY

- Standard Compliance**
- GSM/GPRS/EDGE/ UMTS/DC-HSPA+/LTE
 - IEEE 802.3 10Base-T
 - IEEE 802.3u 100Base-T(X)

INTERFACE

4G

GSM/GPRS/EDGE/UMTS/DC-HSPA+/LTE

Antennas:

- 1 2.5dBi omni-directional, SMA (male) connector, 3 meters cable with magnetic stand

Fast Ethernet

RJ45 Ports:

- WAN: 1 10/100Base-T(X), auto MDI/MDI-X, auto negotiation
- LAN: 4 10/100Base-T(X), auto MDI/MDI-X, auto negotiation

Serial Communication

Serial Ports :

- 1 RS-232 (5-pin terminal block), 1 RS-485 (3-pin terminal block), 15KV isolation protection

Baud Rate:

- 2400bps to 115200bps

Data Bits:

- 7, 8

Parity:

- None, Even, Odd

Stop Bits:

- 1, 2

Flow Control:

- RTS/CTS(RS-232 only), XON/XOFF

RS-232:

- TxD, RxD, RTS, CTS, GND

RS-485

- D+, D-, GND

USB

- USB 2.0 host, type A

LEDs

Device:

- POWER, READY, USB, DI1, DI2, DO1, DO2, Signal Strength

RJ45 Ports:

- 100M, LINK/ACT

Serial Ports:

- RS-232, RS-485

Digital Inputs (DI)

- 2 sets
- 0~+5V is OFF
- +11V~30V is ON
- Max. input current 6mA

Alarm Contacts (DO)

- 2 relay outputs
- Carry current 1A@24V_{DC}

SIM Card

- Number of SIMs: 2, SIM 25mm x 15mm
- SIM Control: 1.8V/3V

Reset Button

- 1 set

4G RF

Frequency Band:

- LTE FDD: B1, B2, B3, B4, B5, B7, B8, B12, B13, B18, B19, B20, B25, B26, B28
- LTE TDD: B38, B39, B40, B41
- UMTS: B1, B2, B4, B5, B6, B8, B19
- GSM: 850, 900, 1800, 1900MHz

Data Transmission Rates

LTE:

- LTE FDD Up link 50Mbps, down link 150Mbps
- LTE TDD Up link 30Mbps, down link 130Mbps

UMTS:

- DC-HSDPA Down link 42Mbps
- HSUPA Up link 5.76Mbps
- WCDMA Down link 384Kbps, up link 384Kbps

GSM:

- EDGE Up link 236.8Kbps, down link 296Kbps
- GPRS Up link 85.6Kbps, down link 107Kbps

RF Output Power:

- Class 4 (33dBm±2dB) @ GSM850
- Class 4 (33dBm±2dB) @ EGSM900
- Class 1 (30dBm±2dB) @ DCS1800
- Class 1 (30dBm±2dB) @ PCS1900
- Class E2 (27dBm±3dB) @ GSM850 8-PSK
- Class E2 (27dBm±3dB) @ EGSM900 8-PSK
- Class E2 (26dBm±3dB) @ DCS1800 8-PSK
- Class E2 (26dBm±3dB) @ PCS1900 8-PSK
- Class 3 (24dBm+1/-3dB) @ WCDMA bands
- Class 3 (23dBm±2dB) @ LTE-FDD bands
- Class 3 (23dBm±2dB) @ LTE-TDD bands

Receiver Sensitivity :

- -96.3dBm (10M) @ LTE B1
- -94.3dBm (10M) @ LTE B2
- -93.3dBm (10M) @ LTE B3
- -96.3dBm (10M) @ LTE B4
- -94.3dBm (10M) @ LTE B5
- -94.3dBm (10M) @ LTE B7
- -93.3dBm (10M) @ LTE B8
- -93.3dBm (10M) @ LTE B12
- -93.3dBm (10M) @ LTE B13
- -96.3dBm (10M) @ LTE B18
- -96.3dBm (10M) @ LTE B19
- -93.3dBm (10M) @ LTE B20
- -92.8dBm (10M) @ LTE B25
- -93.8dBm (10M) @ LTE B26
- -94.8dBm (10M) @ LTE B28
- -96.3dBm (10M) @ LTE B38
- -96.3dBm (10M) @ LTE B39
- -96.3dBm (10M) @ LTE B40
- -94.3dBm (10M) @ LTE B41
- WCDMA B1: -106.7dBm
- WCDMA B2: -104.7dBm
- WCDMA B4: -106.7dBm
- WCDMA B5: -104.7dBm
- WCDMA B6: -106.7dBm
- WCDMA B8: -103.7dBm
- WCDMA B19: -106.7dBm
- GSM850: -102dBm
- GSM900: -102dBm
- DCS1800: -102dBm
- PCS1900: -102dBm

MANAGEMENT**Cloud Service**

- DIACloud

Software

- SSH, DNS, HTTP, TFTP, DHCP Server/Client, Syslog, NTP, Modbus TCP, Modbus ASCII/RTU, Mitsubishi MC, Siemens ISO-on-TCP

Security

- MAC/IP/PORT filtering, SSH, SPI, Prevent denial of service (DoS) attacks

Configuration

- Web Browser, DIACom, Android/iOS App

POWER REQUIREMENTS**Input Voltage**

- 12 to 48V_{DC}, 2 pin terminal block input

Input Current

- Max. 1.4A

Overload Current Protection

- Present, Max. Input current 2.5A

Reverse Polarity Protection

- Present

PHYSICAL**Housing**

- IP30 metal case

Dimensions

- 145.3 mm (H) x 45 mm (W) x 115.7 mm (D)

Weight

- 382g

Installation

- Industrial DIN-Rail and Wall mounting

ENVIRONMENTAL LIMITS**Operating Temperature**

- -20°C to 70°C (-4°F to 158°F)

Storage Temperature

- -40°C to 85°C (-40°F to 185°F)

Ambient Relative Humidity

- 5% to 95% (non-condensing)

APPROVALS**Safety**

- UL 61010
- IEC 62368-1

EMI

- FCC 47 CFR Part 15 Subpart B Class A, IEC 61000-6-4, EN 55032, EN 55011, EN 301 489-1/52

EMS

(EN 301 489-1/52, IEC 61000-6-2, EN 55024)

- IEC 61000-4-2, IEC 61000-4-3, IEC 61000-4-4, IEC 61000-4-5, IEC 61000-4-6, IEC 61000-4-8

RF

- EN 50385
- EN 301 511
- EN 301 908-1
- NCC
- RCM

Environmental Type Tests**Cold Temperature:**

- IEC 60068-2-1

Dry Heat:

- IEC 60068-2-2

Humidity:

- IEC 60068-2-30

Shock:

- IEC 60255-21-2

Freefall:

- IEC 60068-2-32

Vibration:

- IEC 60068-2-6

Hi-Pot:

- 1.5KV

Ordering Information

Product		Port Combination			Interface			RF	Region
Model Name	Operating Temperature	10/100 Base-T(X)	RS-232	RS-485	DI	DO (Relay)	Power Input	Band	
DX-3021L9	-20°C to 70°C	5	1	1	2	2	1	Universal	Worldwide

NOTE. For available countries for purchase, please contact your regional sales or distributors.

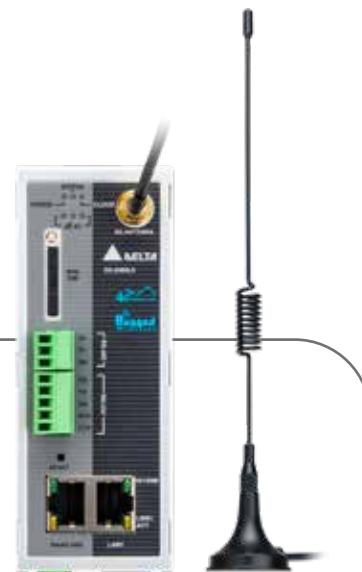
Optional Products

DVP/CliQ/PMC Series: 12/24 V_{DC} Industrial Power Supply

CliQII/PMC Series: 48 V_{DC} Industrial Power Supply

DX-2400L9 Series

Industrial 4G/WAN DIACloud Cloud Routers



- A data acquisition device connected to DIACloud cloud servers. Supports a two-way data collection channel between the devices and the cloud
- Set up a secure tunnel between the user and the remote via DIACloud cloud servers, without the need of additional VPN server
- Connect to AWS IoT MQTT Broker through MQTT protocol with Publish and subscribe pattern
- Supports Modbus ASCII/RTU, Mitsubishi MC, Siemens ISO-on-TCP and Omron FINS protocols
- Universal LTE-FDD and LTE-TDD frequency bands, backward compatible with WCDMA/GSM/GPRS/EDGE 3G/2G networks
- LTE data transmission rate up to 150Mbps(downlink) / 50Mbps (uplink)
- Automatic APN parameter matching and connection redial
- Connect to internet through 4G cellular network or WAN broadband interfaces. Indicates the priority of internet connectivity interfaces activated
- The WAN port can be configured as LAN mode
- Various peripheral interfaces include RS-485, RS-232, WAN and LAN ports
- Built-in RTC and supports NTP time synchronize over a network
- Firewall function: Stateful Packet Inspection (SPI), prevent denial of service (DoS) attacks, MAC address filter and IP/Port filter
- Support TCP/IP, UDP, ICMP, DHCP, HTTP, DNS, SSH protocols
- Built-in internal buffer memory avoids data loss when the connection is down. Data in the buffer memory can be transmitted once the connection online again
- Scheduled jobs are available
- Device configurations import/export
- Network data flow statistics
- Network failure diagnostics
- Custom alarm conditions with email alerts

Specifications

TECHNOLOGY

Standard Compliance

- GSM/GPRS/EDGE/ UMTS/DC-HSPA+/LTE
- IEEE 802.3 10Base-T
- IEEE 802.3u 100Base-T(X)

Specifications

INTERFACE

4G

GSM/GPRS/EDGE/UMTS/DC-HSPA+/LTE

Antennas:

- 1 2.5dBi omni-directional, SMA (male) connector, 3 meters cable with magnetic stand

Fast Ethernet

RJ45 Ports:

- WAN/LAN: 1 10/100Base-T(X), auto MDI/MDI-X, auto negotiation
- LAN: 1 10/100Base-T(X), auto MDI/MDI-X, auto negotiation

Serial Communication

Serial Ports :

- 1 RS-232(5 pin terminal block), 1 RS-485(3 pin terminal block), 8KV ESD, isolation protection

Baud Rate:

- 2400bps to 115200bps

Data Bits:

- 7, 8

Parity:

- None, Even, Odd

Stop Bits:

- 1, 2

Flow Control:

- RTS/CTS(RS-232 only), XON/XOFF

RS-232:

- TxD, RxD, RTS, CTS, GND

RS-485

- D+, D-, GND

LEDs

Device:

- POWER, STATUS, CLOUD, Signal Strength

RJ45 Ports:

- 10/100M, LINK/ACT

Serial Ports:

- RS-232, RS-485

SIM Slot

- Number of SIM: 1, Mini-SIM(25mm x 15mm)
- SIM Control: 1.8V/3V

Reset Button

- 1 set

4G RF

Frequency Band:

- LTE FDD: B1, B2, B3, B4, B5, B7, B8, B12, B13, B18, B19, B20, B25, B26, B28
- LTE TDD: B38, B39, B40, B41
- UMTS: B1, B2, B4, B5, B6, B8, B19
- GSM: 850, 900, 1800, 1900MHz

Data Transmission Rates

LTE:

- LTE FDD Up link 50Mbps, down link 150Mbps
- LTE TDD Up link 30Mbps, down link 130Mbps

UMTS:

- DC-HSDPA Down link 42Mbps
- HSUPA Up link 5.76Mbps
- WCDMA Down link 384Kbps, up link 384Kbps

GSM:

- EDGE Up link 236.8Kbps, down link 296Kbps
- GPRS Up link 85.6Kbps, down link 107Kbps

RF Output Power:

- Class 4 (33dBm±2dB) @ GSM850
- Class 4 (33dBm±2dB) @ EGSM900
- Class 1 (30dBm±2dB) @ DCS1800
- Class 1 (30dBm±2dB) @ PCS1900
- Class E2 (27dBm±3dB) @ GSM850 8-PSK
- Class E2 (27dBm±3dB) @ EGSM900 8-PSK
- Class E2 (26dBm±3dB) @ DCS1800 8-PSK
- Class E2 (26dBm±3dB) @ PCS1900 8-PSK
- Class 3 (24dBm+1/-3dB) @ WCDMA bands
- Class 3 (23dBm±2dB) @ LTE-FDD bands
- Class 3 (23dBm±2dB) @ LTE-TDD bands

Receiver Sensitivity :

- -96.3dBm (10M) @ LTE B1
- -94.3dBm (10M) @ LTE B2
- -93.3dBm (10M) @ LTE B3
- -96.3dBm (10M) @ LTE B4
- -94.3dBm (10M) @ LTE B5
- -94.3dBm (10M) @ LTE B7
- -93.3dBm (10M) @ LTE B8
- -93.3dBm (10M) @ LTE B12
- -93.3dBm (10M) @ LTE B13
- -96.3dBm (10M) @ LTE B18
- -96.3dBm (10M) @ LTE B19
- -93.3dBm (10M) @ LTE B20
- -92.8dBm (10M) @ LTE B25
- -93.8dBm (10M) @ LTE B26
- -94.8dBm (10M) @ LTE B28
- -96.3dBm (10M) @ LTE B38
- -96.3dBm (10M) @ LTE B39
- -96.3dBm (10M) @ LTE B40
- -94.3dBm (10M) @ LTE B41
- WCDMA B1: -106.7dBm
- WCDMA B2: -104.7dBm
- WCDMA B4: -106.7dBm
- WCDMA B5: -104.7dBm
- WCDMA B6: -106.7dBm
- WCDMA B8: -103.7dBm
- WCDMA B19: -106.7dBm
- GSM850: -102dBm
- GSM900: -102dBm
- DCS1800: -102dBm
- PCS1900: -102dBm

MANAGEMENT

Cloud Service

- DIACloud

Software

- SSH, DNS, HTTP, TFTP, DHCP Server/Client, Syslog, NTP, Modbus ASCII/RTU, Mitsubishi MC, Siemens ISO-on-TCP, Omron FINS

Security

- MAC/IP/PORT filtering, Port forwarding, SSH, SPI, Prevent denial of service (DoS) attacks

Virtual COM Drivers

- Windows Vista (32/64 bits), Windows 7 (32/64 bits), Windows 8 (32/64 bits), Windows 10 Professional (32/64 bits), Windows 10 Enterprise (32/64 bits), Windows 2008 Server (32 bits), Windows 2012 Server(64 bits)

Configuration

- Web Browser, DIACom, Android/iOS App

POWER REQUIREMENTS

Input Voltage

- 12 to 48V_{DC}, 2 pin terminal block input

Input Current

- 0.6A Max.

Overload Current Protection

- Present, Max. Input current 2.5A

Reverse Polarity Protection

- Present

PHYSICAL

Housing

- IP40 metal case

Dimensions

- 145.3 mm (H) x 45 mm (W) x 115.7 mm (D)

Weight

- 323g

Installation

- Industrial DIN-Rail and wall mounting

ENVIRONMENTAL LIMITS

Operating Temperature

- -20°C to 75°C (-4°F to 167°F)

Storage Temperature

- -40°C to 85°C (-40°F to 185°F)

Ambient Relative Humidity

- 5% to 95% (non-condensing)

APPROVALS

Safety

- UL 61010
- IEC 62368-1

EMI

- FCC 47 CFR Part 15 Subpart B Class A
- IEC 61000-6-4
- EN 55032
- EN 55011
- EN 301 489-1/52
- UKCA

EMS (EN 301 489-1/52, IEC 61000-6-2, EN 55035, UKCA)

- IEC 61000-4-2, IEC 61000-4-3, IEC 61000-4-4, IEC 61000-4-5, IEC 61000-4-6, IEC 61000-4-8

RF

- EN 50385, EN 301 511, EN 301 908-1
- NCC, UKCA

Environmental Type Tests

Cold Temperature:

- IEC 60068-2-1

Dry Heat:

- IEC 60068-2-2

Humidity:

- IEC 60068-2-30

Shock:

- IEC 60255-21-2

Freefall:

- IEC 60068-2-32

Vibration:

- IEC 60068-2-6

Hi-Pot:

- 1.5KV

Ordering Information

Product		Port Combination			Interface			RF	Region
Model Name	Operating Temperature	10/100 Base-T(X)	RS-232	RS-485	DI	DO (Relay)	Power Input	Band	
DX-2400L9	-20°C to 75°C	2	1	1	---	---	1	Universal	Worldwide

Note: For available countries for purchase, please contact your regional sales or distributors.

Optional Products

DVP/CliQ/PMC Series: 12/24 V_{DC} Industrial Power Supply

CliQII/PMC Series: 48 V_{DC} Industrial Power Supply

DX-2310LN Series

Industrial Ethernet DIACloud Cloud Routers



-20~75°C



FANLESS



- Data acquisition device connected to cloud servers. Supports a two-way data collection channel between the device and the cloud
- Sets up a secure tunnel between the user and the remote device via the cloud server, without the need of additional VPN servers
- Field bus protocols, like Modbus TCP and Modbus RTU/ASCII protocol, Mitsubishi MC, Omron FINS and Siemens TCP protocol are supported.
- Flexible connection method over WAN port, e.g. static IP, DHCP client and more
- Various peripheral interfaces include RS-485, RS-232 and 4 LAN ports
- Built-in RTC and supports NTP time synchronization over a network
- Firewall functions: Stateful Packet Inspection (SPI), Prevent Denial of Service (DoS) attacks, NAT, port triggering, port mapping, IP address filtering, MAC address filtering, URL, DHCP, DNS, DMZ filtering
- Supports TCP/IP, UDP, ICMP, DHCP, HTTP, DNS and SSH protocols
- Scheduled jobs are available
- Device configurations import /export
- Network data flow statistics
- Networking failure diagnostics
- Device and PLC interlocking
- Custom alarm conditions with email alerts
- Provide DIACloud services for secured point-to-point data transmission, or management of device configurations individually in a batch, or upgrade remotely.
- Support standard MQTT protocol, allowing the seamless integration with AWS IoT.
- Support VNC proxy which enable VNC client functions via DIACloud Web or app on mobile.

Specifications

TECHNOLOGY

Standard Compliance

- IEEE 802.3 10Base-T
- IEEE 802.3u 100Base-T(X)

INTERFACE

Fast Ethernet

RJ45 Ports:

- WAN: 1 10/100Base-T(X), auto MDI/MDI-X, auto negotiation
- LAN: 4 10/100Base-T(X), auto MDI/MDI-X, auto negotiation

Specifications

INTERFACE

Serial Communication

Serial Ports :

- 1 RS-232(5 pin terminal block), 1 RS-485 (3 pin terminal block), ± 8KV ESD protection

Baud Rate:

- 2400bps to 115200bps

Data Bits:

- 7, 8

Parity:

- None, Even, Odd

Stop Bits:

- 1, 2

Flow Control:

- RTS/CTS(RS-232 only), XON/XOFF

RS-232:

- TxD, RxD, RTS, CTS, GND

RS-485

- D+, D-, GND

LEDs

Device:

- PWR, Status, Cloud, USB Ready

RJ45 Ports:

- 10/100M LINK/ACT

Serial Ports:

- RS-232, RS-485

Reset Button

- 1 set

MANAGEMENT

Cloud Service

- DIACloud

Software

- SSH, DNS, HTTP, TFTP, DHCP Server/Client, Telnet, Syslog, NTP, Modbus TCP, Modbus ASCII/RTU, MELSEC Communication

Security

- MAC/IP/URL filtering, SSH, SPI, Prevent denial of service (DoS) attacks, Port triggering, Port mapping

Virtual COM Drivers

- Windows 7 (32/64 bits), Windows 10, Windows 11

Configuration

- Web Browser, DIACom, Android/iOS App

POWER REQUIREMENTS

Input Voltage

- 12 to 48V_{DC}, 2 pin terminal block input

Input Current

- 0.6 A

Overload Current Protection

- Present, Max. Input current 1.1A

Reverse Polarity Protection

- Present

PHYSICAL

Housing

- IP30 metal case

Dimensions

- 145.3 mm(H) x 45 mm(W) x 109 mm (D)

Weight

- 357 g

Installation

- Industrial DIN-Rail and wall mounting

ENVIRONMENTAL LIMITS

Operating Temperature

- -20°C to 75°C (-4°F to 167°F)

Storage Temperature

- -40°C to 85°C (-40°F to 185°F)

Ambient Relative Humidity

- 5% to 95% (non-condensing)

APPROVALS

Safety

- UL UL61010-1, EN 62368-1

EMI

- FCC 47 CFR Part 15 Subpart B Class A
- EN 55032

EMS (EN 55035)

- IEC 61000-4-2, IEC 61000-4-3, IEC 61000-4-4, IEC 61000-4-5, IEC 61000-4-6, IEC 61000-4-8

Environmental Type Tests

Cold Temperature

- IEC 60068-2-1

Dry Heat:

- IEC 60068-2-2

Humidity:

- IEC 60068-2-30

Shock:

- IEC 60255-21-2

Freefall:

- IEC 60068-2-32

Vibration:

- IEC 60068-2-6

Hi-Pot:

- 1.5KV

Ordering Information

Product		Port Combination			Interface			Region
Model Name	Operating Temperature	10/100 Base-T(X)	RS-232	RS-485	DI	DO (Relay)	Power Input	
DX-2310LN	-20°C to 75°C	5	1	1	---	---	1	Worldwide

Optional Products

DVP/CliQ/PMC Series: 12/24 V_{DC} Industrial Power Supply

CliQII/PMC Series: 48 V_{DC} Industrial Power Supply



Smarter. Greener. Together.

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