Automation for a Changing World

Delta Industrial Ethernet

www.deltaww.com

Smarter. Greener. Together.

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, WDS, 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.

Table of Contents

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-110W02-3SFP

Managed 10-Port Ethernet Switch

- ► GbE fiber port to enhance backbone transmission
- ► STP/RSTP/MSTP for network redundancy to ensure network reliability
- ► IP40 metal case, -40°C to 75°C operating temperature

DVW-W02W2-E2

IEEE 802.11 a/b/g/n Wireless AP

- ► IEEE 802.11n up to 450Mbps data rate
- ► Supports 2-port RS-232/422/485 to Ethernet Device Server
- ► IP40 metal case, -40°C to 75°C operating temperature

DVS-G008I00A

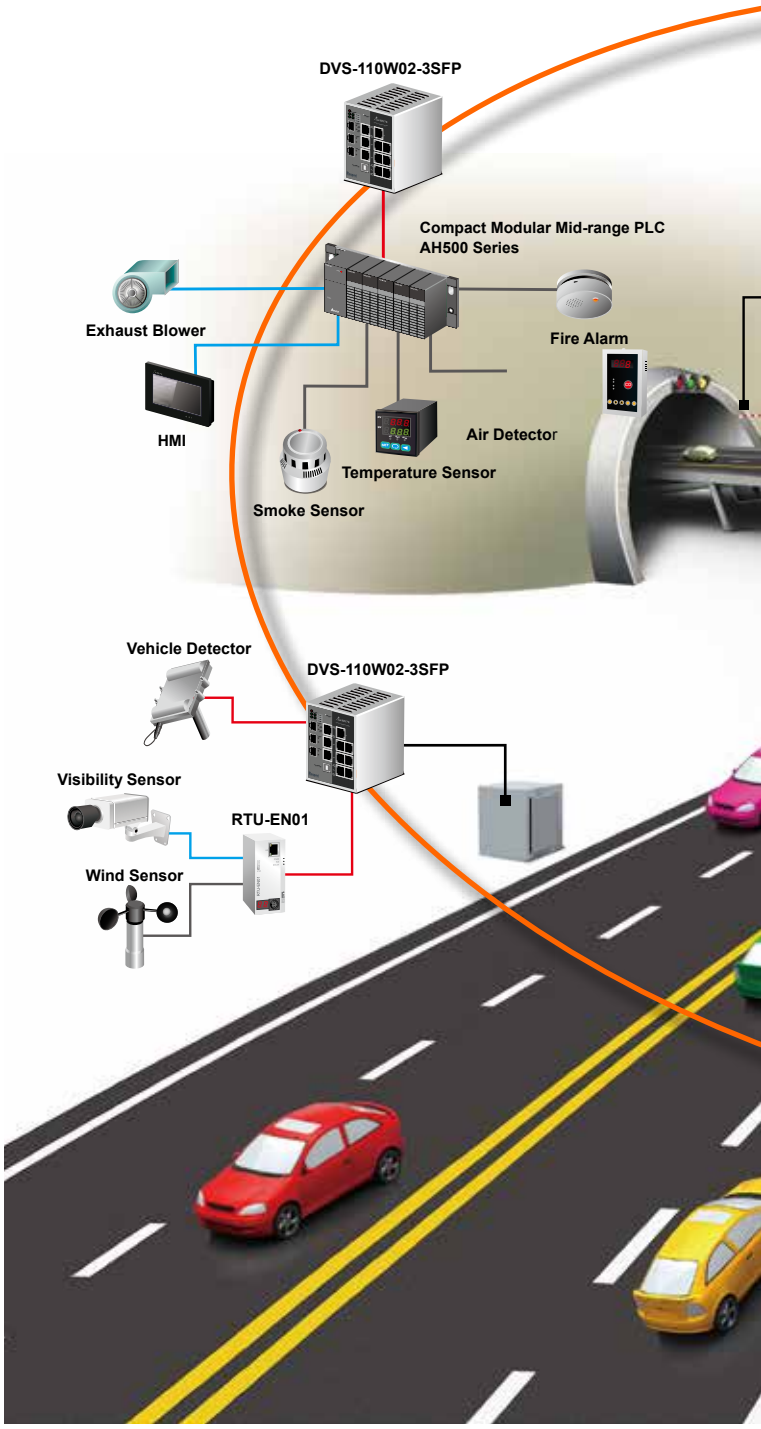
Unmanaged 8-Port FE Ethernet Switch

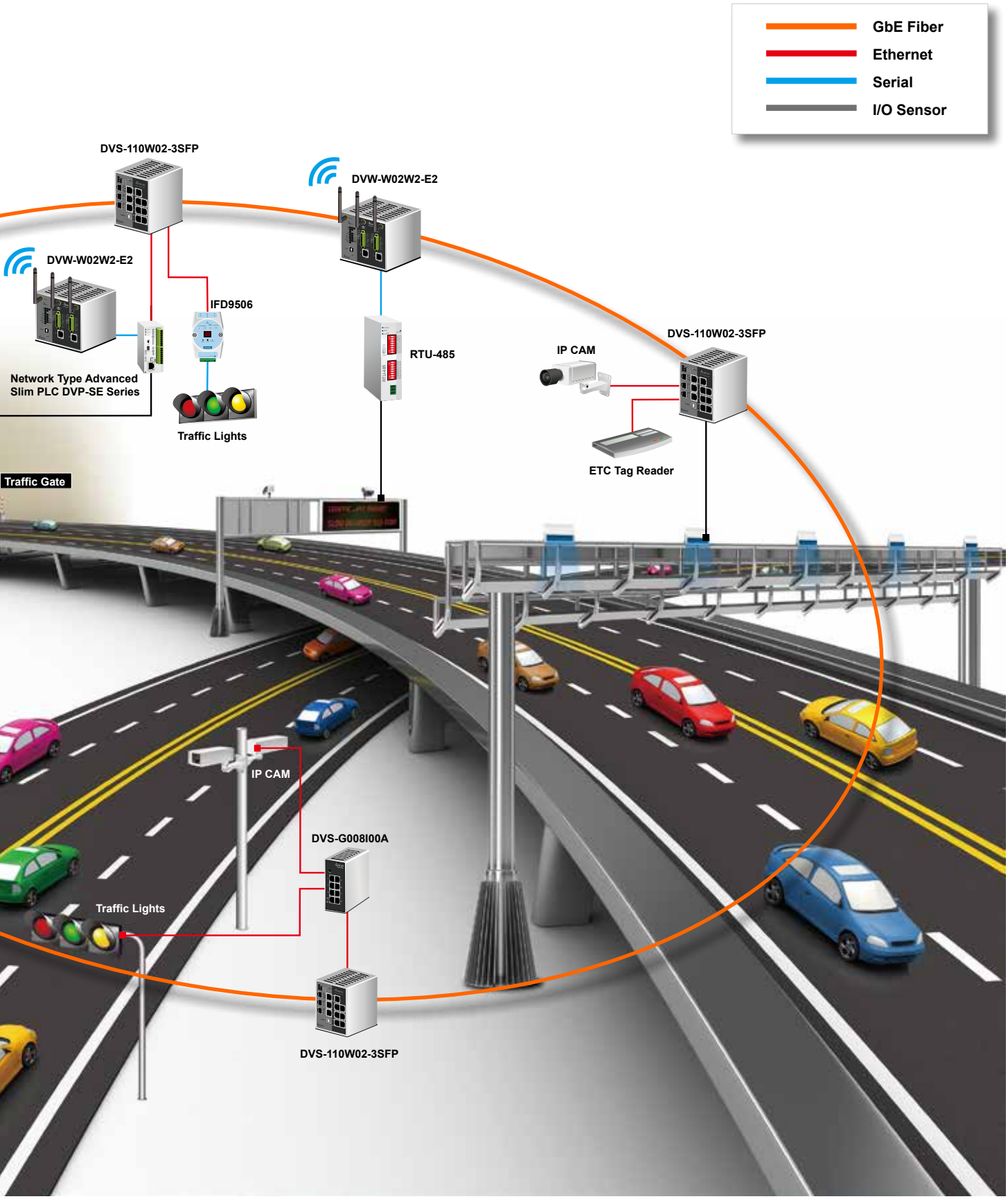
- ► Full GbE ports to enhance transmission bandwidth
- ► Jumbo frame size up to 9216 Bytes
- ► IP40 metal case, -10°C to 60°C operating temperature

IFD9506

1-Port MODBUS-to-Ethernet Converter

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




GbE Fiber
Ethernet
Serial
I/O Sensor
DVS-110W02-3SFP
DVW-W02W2-E2
DVW-W02W2-E2
IFD9506
Network Type Advanced
Slim PLC DVP-SE Series
Traffic Lights
RTU-485
IP CAM
DVS-110W02-3SFP
ETC Tag Reader
Traffic Gate
IP CAM
DVS-G008I00A
Traffic Lights
DVS-110W02-3SFP

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-110W02-3SFP

Managed 10-Port Ethernet Switch

- GbE fiber port to enhance backbone transmission
- STP/RSTP/MSTP for network redundancy to ensure network reliability
- 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


GbE/FE Fiber
Ethernet
Serial
DVS-016W01-MC01
Hot Swappable
Mid-range PLC
AH500 Series
DVS-110W02-3SFP
Network Type Advanced Slim PLC
DVP-SE Series
DVS-110W02-3SFP
DVS-110W02-3SFP
DVS-110W02-3SFP
Rectifiers
RTU-EN01
Inverters

RGV Intelligent Warehouse Carriage Automation System

Wireless signal transmission technology can be applied in various areas. Delta's DVW series matches with Leaky CoaXial Cable (LCX or Radiating Cable) to transform Wi-Fi into stable extension signals which can surround objects, walls, pillars, and transmit signals to every corner of the production line, enhancing Ethernet communication accessibility. They also offer high-speed real-time process capability. When applying the Delta DVW series and LCX to Rail Guided Vehicle (RGV) systems, they can assist factory operators carry materials, which enhances working efficiency and security for maintenance personnel.

- Industrial wireless warehouse automation and underground communication engineering
- Wireless radio wave communication systems for rail transport and tunnel engineering
- Provides automation and wireless communication solutions between floors in the same building

DVW-W02W2-E2

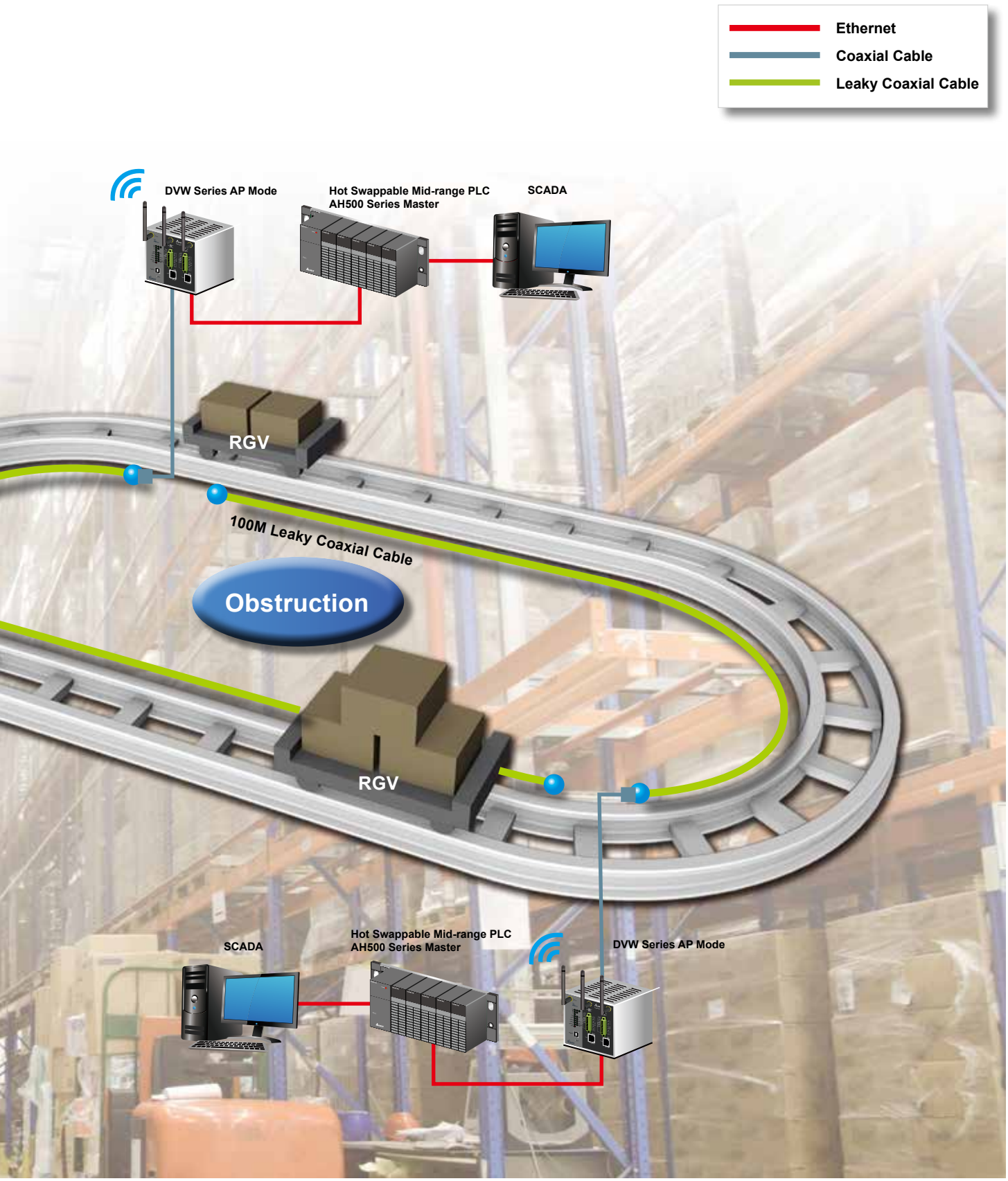
IEEE 802.11 a/b/g/n Wireless AP

- IEEE 802.11n up to 450Mbps data rate
- Supports 2-port RS-232/422/485 to Ethernet Device Server
- IP40 metal case, -40 to 75°C operating 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. 384 k steps (1.5 MB)
- Data register (D+L): 256 k 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


Ethernet
Coaxial Cable
Leaky Coaxial Cable
DVW Series AP Mode
Hot Swappable Mid-range PLC
AH500 Series Master
SCADA
RGV
100M Leaky Coaxial Cable
Obstruction
RGV
SCADA
Hot Swappable Mid-range PLC
AH500 Series Master
DVW Series AP Mode

Solar Power

Governments worldwide actively seek 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-108W02-2SFP

Managed 8-Port Ethernet Switch

- GbE fiber port to enhance backbone transmission
- ONE RING, ONE CHAIN for rapid network redundancy to ensure network reliability , recovery time less than 20ms
- 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-2100RW

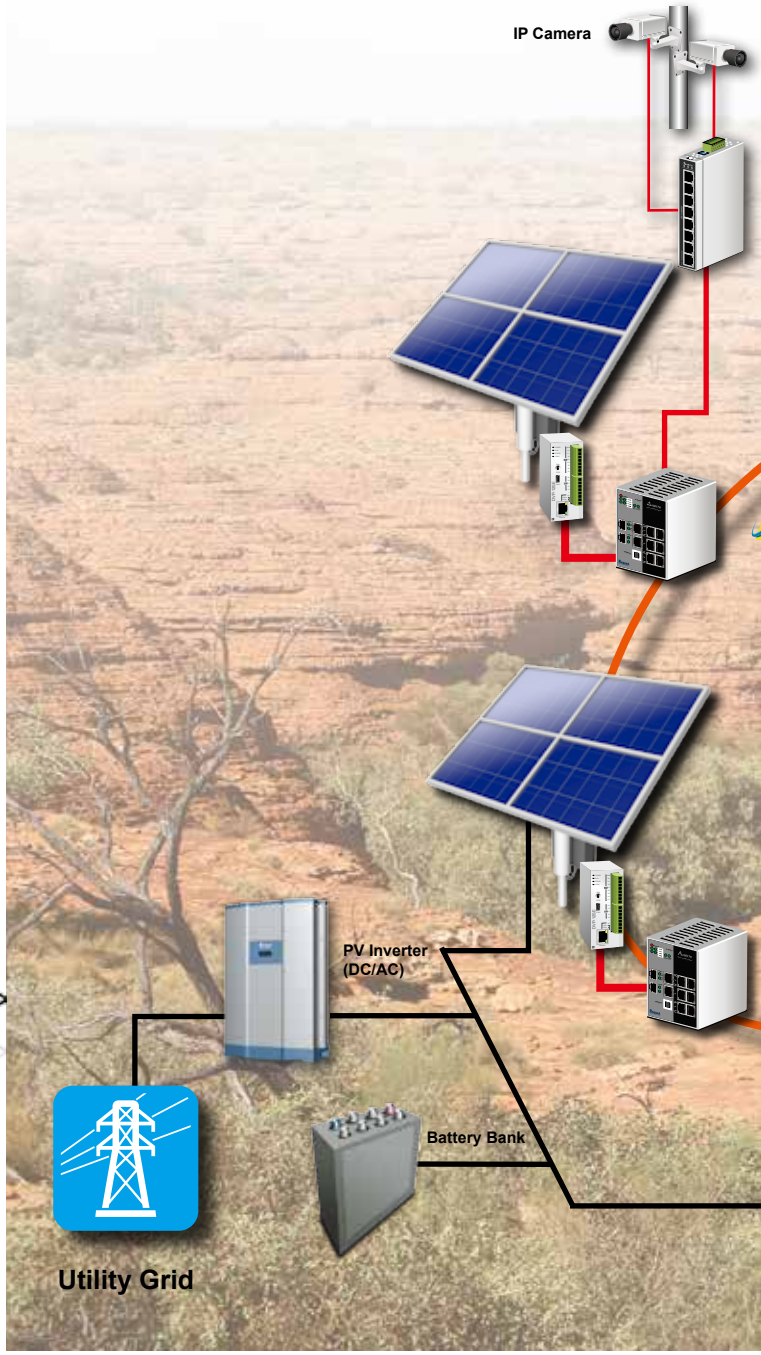
3G Cloud Router

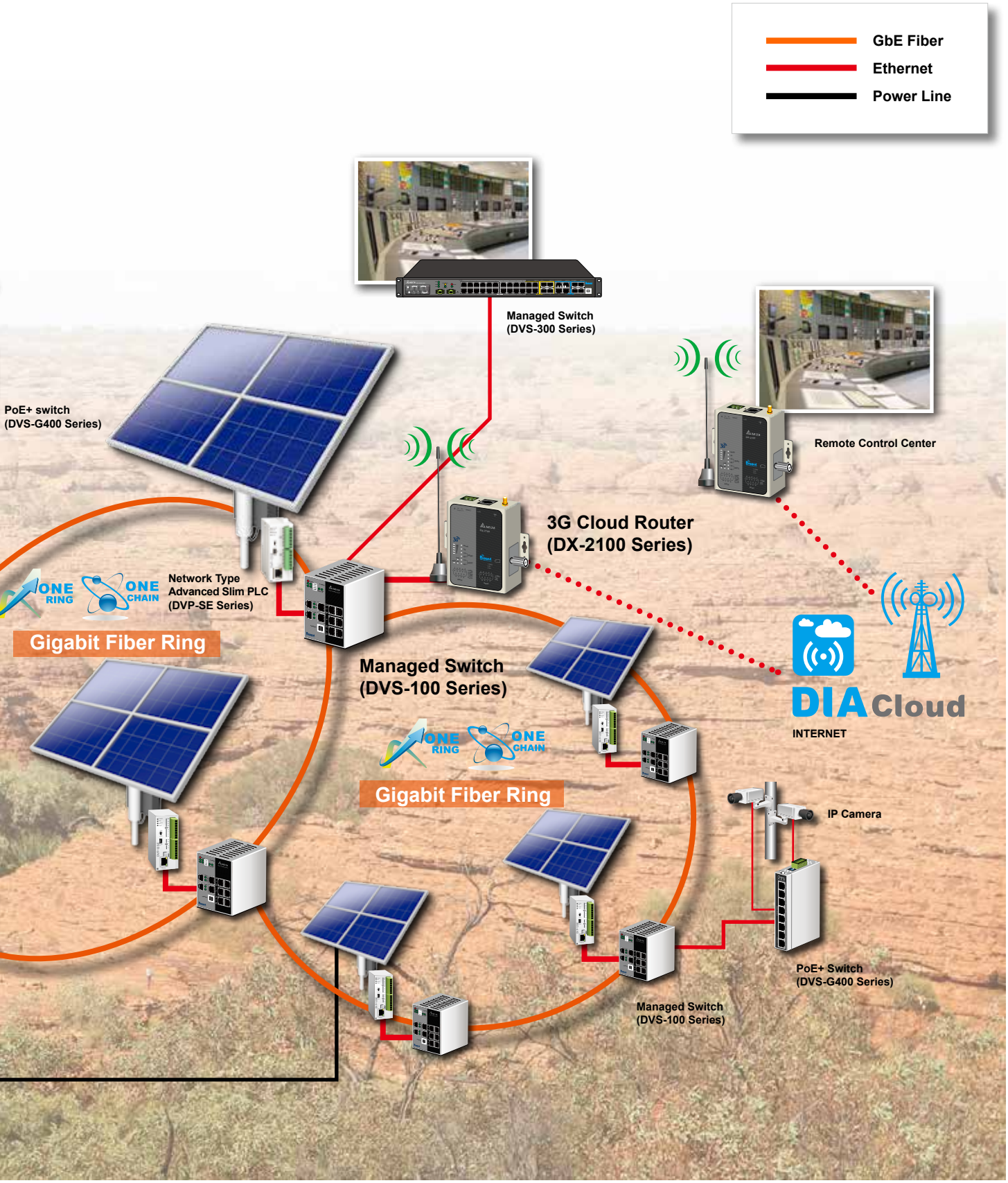
- UMTS / HSPA+ : 800/850, 900, AWS1700, 1900, 2100 MHz
- Supports DIACloud Cloud Management Platform
- IP30 metal case, -20°C to 70°C operating temperature

DVP-SE

Network Type Advanced Slim PLC

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




GbE Fiber
Ethernet
Power Line
Managed Switch
(DVS-300 Series)
PoE+ switch
(DVS-G400 Series)
Remote Control Center
3G Cloud Router
(DX-2100 Series)
ONE RING
ONE CHAIN
Network Type
Advanced Slim PLC
(DVP-SE Series)
Gigabit Fiber Ring
Managed Switch
(DVS-100 Series)
DIA Cloud
INTERNET
ONE RING
ONE CHAIN
Gigabit Fiber Ring
IP Camera
PoE+ Switch
(DVS-G400 Series)
Managed Switch
(DVS-100 Series)

Automated CNC Production Line

Unmanned factories is the ultimate goal for 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-W02W2-E2

IEEE 802.11 a/b/g/n Wireless AP

- IEEE 802.11n up to 450 Mbps data rate
- Supports 2-port RS-232/422/485 to Ethernet Device Server
- IP40 metal case, -40°C to 75°C operating temperature

DVS-008 Series

Unmanaged 8-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

AH500 Series

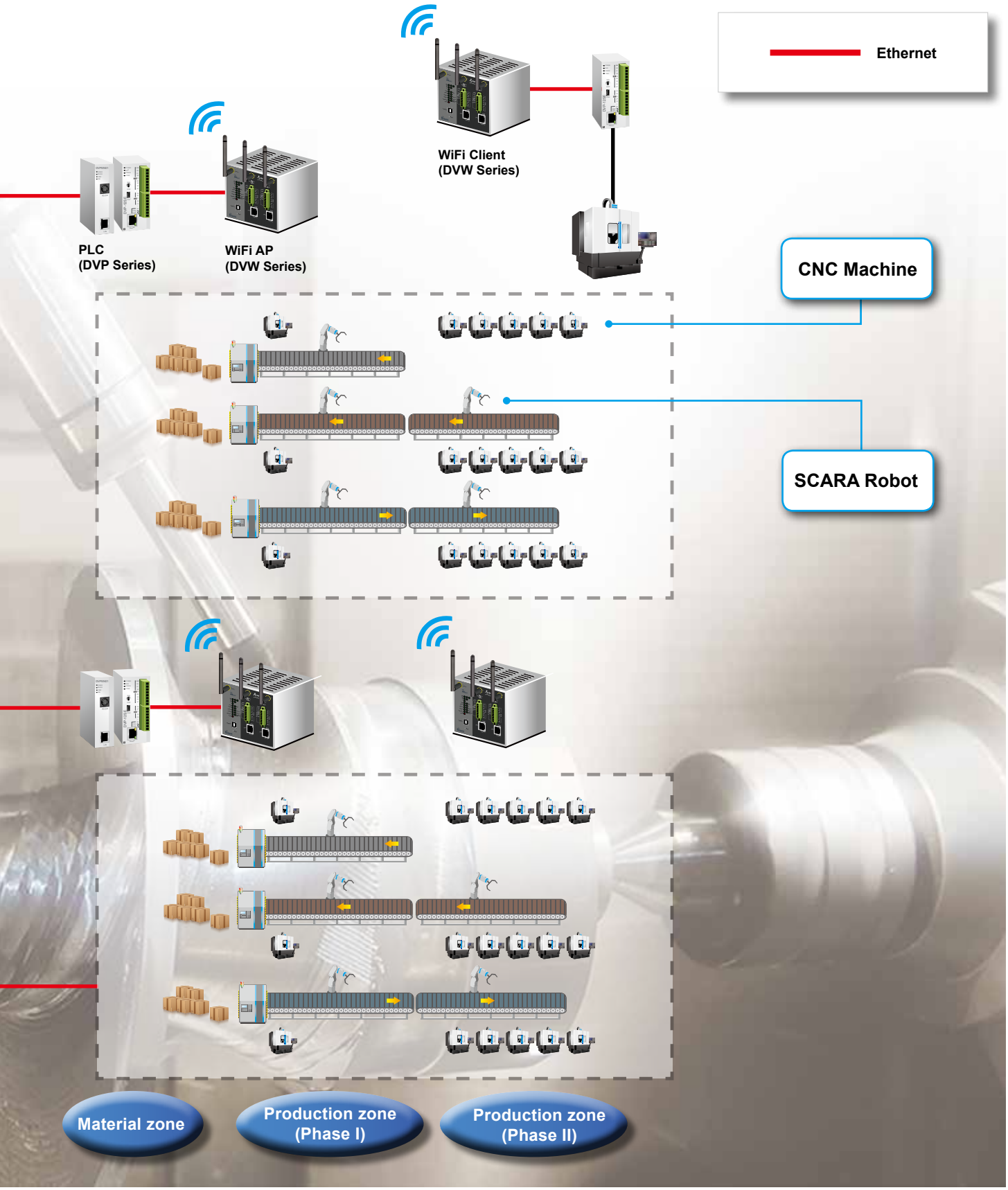
Hot Swappable Mid-range PLC

- Utilizes 32-bit processor
- Max. I/O points:
  DIO: Max. 4,352 points
  AIO: Max. 544 channels
  RIO: >100,000 points
- Program capacity: Max. 384 k steps (1.5 MB)
- Data register (D+L): 256 k 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

Advanced Slim PLC

- Remote I/O function is suitable for distributed sequence control
- Program capacity: 16k steps, Data register: 12k words; Higher execution speed, LD:0.64μs, MOV:2μs
- Built-in MODBUS TCP and EtherNet/IP


Ethernet
WiFi Client
(DVW Series)
PLC
(DVP Series)
WiFi AP
(DVW Series)
CNC Machine
SCARA Robot
Material zone
Production zone
(Phase I)
Production zone
(Phase II)

Ethernet Switches

Functions

Layer 3 Managed Switches

Managed Switches

Unmanaged Switches

PoE Managed Switches

PoE Unmanaged Switches

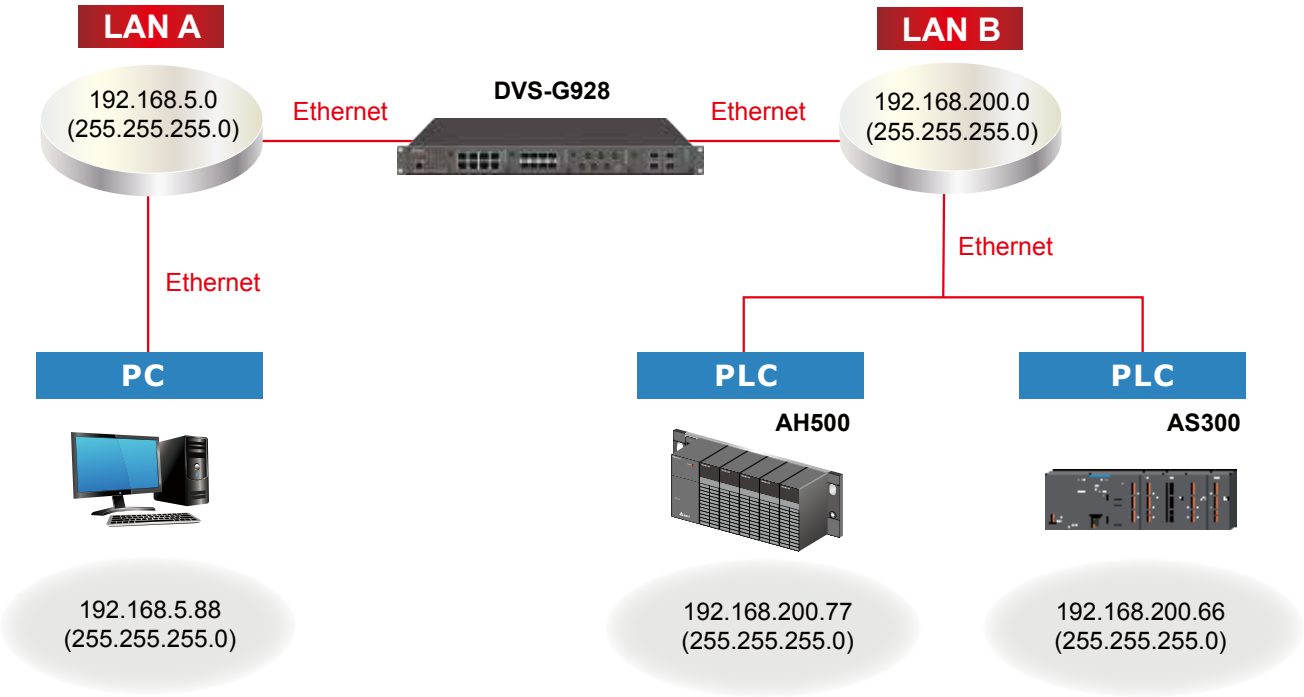
Ethernet-to-Fiber Media Converters

SFP Fiber Transceivers

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 megatrend, 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 excellent reliable and stable redundancy network.

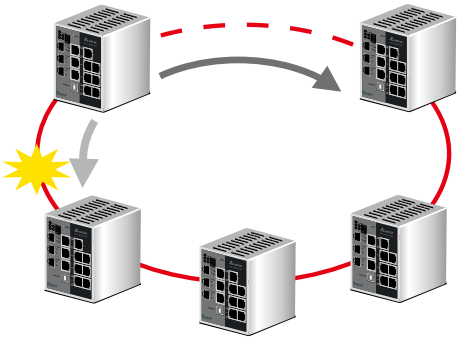
Plus ONE RING

Plus ONE CHAIN

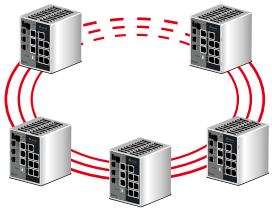
ONE RING Plus

Network self-healing brings most recovery

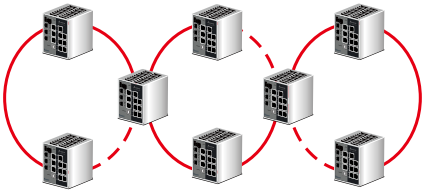
Delta's proprietary self-healing redundant ring technology is called ONE RING Plus. ONE RING Plus can enable redundant paths and provide self-healing recovery time of less than 10 milliseconds to ensure fluent data transmission with minimum loss when any nodes fail or meet default in a ring network. 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.



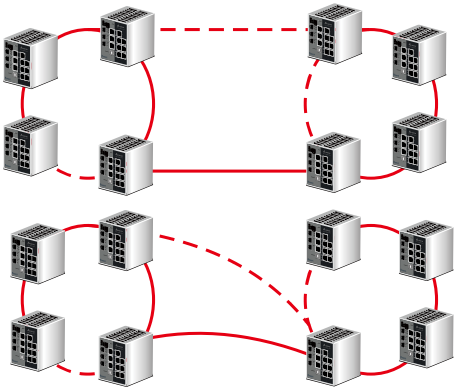
Trunking Ring



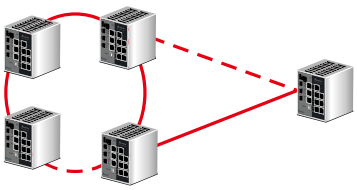
Multi-Ring



Ring Coupling



Dual-Homing



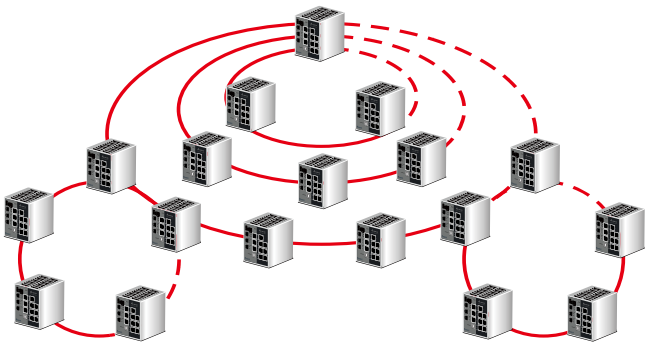
ONE CHAIN Plus

Multi-Network self-healing brings most efficient 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.

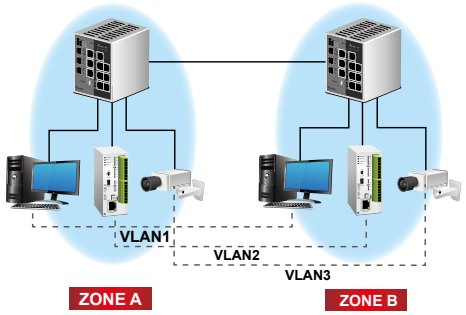
ONE CHAIN Plus is able to offer backup paths within 10 milliseconds when several network nodes fail at the same time to ensure fluent data transmission with minimum loss. Its high speed self-healing time is especially suitable for high-end automation network structures such as a Distributed Control System (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

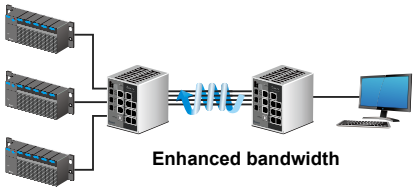
VLAN

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.



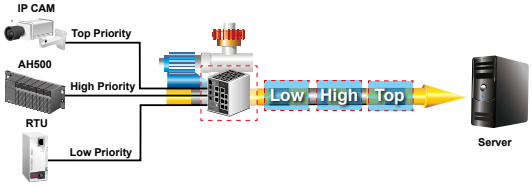
Trunking

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



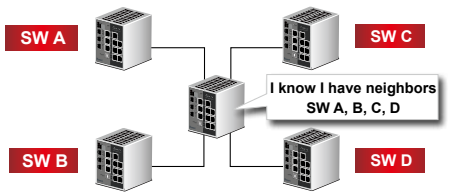
Quality of Service (QoS)

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



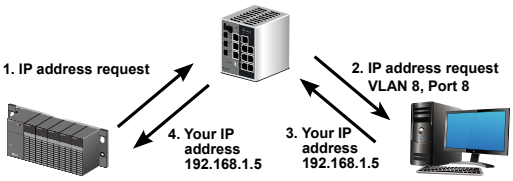
Link Layer Discovery Protocol (LLDP)

The LLDP protocol is used by network devices for advertising their identity, capabilities, and any updates to neighboring devices on an IEEE 802.ab 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.



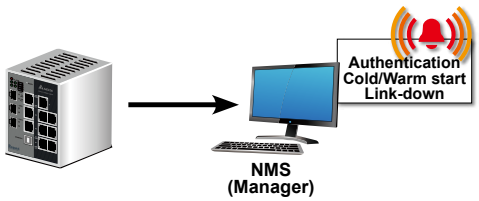
Enhanced Network Security Management

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

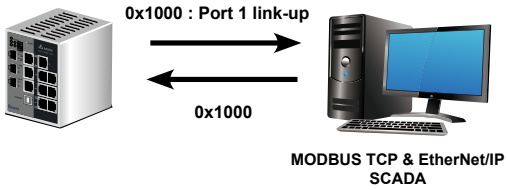
Simple Network Management Protocol (SNMP)

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

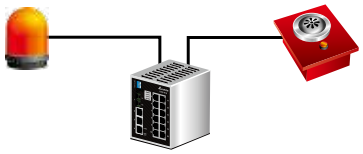
Delta Managed Ethernet Switches support MODBUS TCP and EtherNet/IP protocol for easy integration with an on-site industrial network management system. Users can monitor and manage the operational status via the graphical interface of Supervisory Control and Data Acquisition (SCADA) at any time. The consistency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



Smart Functions Well-tailored to Your Needs

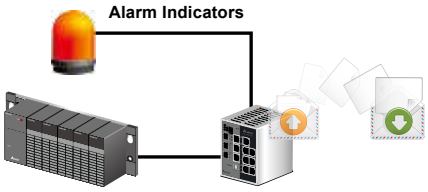
Relay Output for Event Alarms

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.



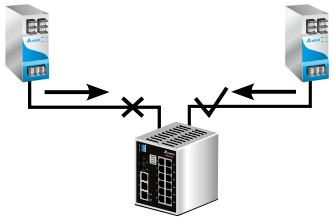
Digital Inputs

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

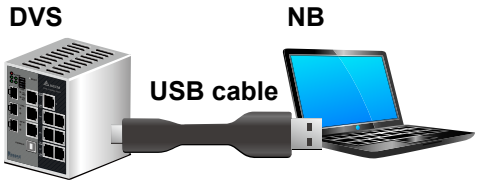
The design of dual power inputs provides excellent integration with the common dual power supply design of critical systems, or with industrial environments. It secures switches from potential power impact and provides highly-reliable and uninterrupted network transmission.



A Seamless Interconnection

USB Console Interface

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



Real-time Web Display

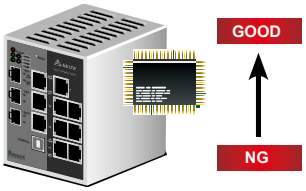
A real-time Web display tells users the connection status of each port with indicators on a Web page. With an uninterrupted network connection, users can manage operations in remote places at any time.

SFP DDM

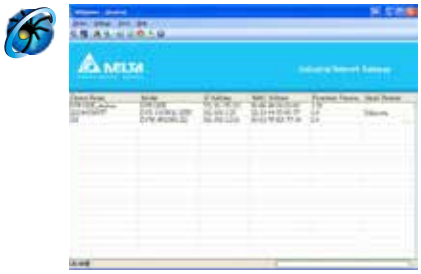
Utilizing the built-in digital diagnostic monitor (DDM) function of the DVS series Industrial Ethernet Switches, users can continuously monitor the current operation status of the Delta SFP fiber transceiver and the transmission quality through a datasheet displayed on the web.

Watch Dog Timer

The hardware Watch Dog Timer restores switches from malfunctions caused by any reasons, 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 Switchs

-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, SNTP 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℃ to 85℃ (-40 ℉ to 185 ℉)

Storage Temperature
- -40℃ to 85℃ (-40 ℉ to 185 ℉)

Ambient Relative Humidity
- 5% to 95% (non-condensing)

APPROVALS

Safety
- UL 61010, IEC 60950-1, 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℃ to 85℃	Select interface modules and SFP fiber transceivers				-	2	2
DVS-G928W01-CN	-40℃ to 85℃	Select interface modules and SFP fiber transceivers				-	2	2

DVS-G928 series interface module

DVS-G900-8GE
8 10/100/1000Base-T RJ45

DVS-G900-6GM12
6 10/100/1000Base-T M12

DVS-G900-8GF
8 100/1000Base-SFP

DVS-G900-4GF
4 1000Base-SFP

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℃ to 85℃	√	√	√	-	8	-	-	-
DVS-G900-6GM12	-40℃ to 85℃	√	√	√	-	-	6	-	-
DVS-G900-8GF	-40℃ to 85℃	√	√	√	-	-	-	8	-
DVS-G900-4GF	-40℃ to 85℃	-	-	-	√	-	-	-	4

Optional Products

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

DVS-328 series

Managed Industrial 20-Port FE + 4-Port FE combo 100Base-SFP + 4-Port GbE combo 100/1000Base-SFP Rack Mount Ethernet Switchs

-40~70°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 and ONE CHAIN high end redundancy technology, easy to build multiple ring topology, self-healing recovery time < 20ms
- 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
- 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
- Cable diagnostic provides the mechanism to detect and report potential cabling issues
- Intelligent Access Control List(ACL)
- MAC addresses locking function per port blocks unauthorized access
- USB console interface for easy connection with laptops
- 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 works 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

Fast Ethernet
RJ45 Ports
- 20 10/100Base-T(X), auto MDI/MDI-X, auto negotiation

Fast Ethernet Combo Ports
RJ45 Ports:
- 4 10/100Base-T(X), auto MDI/MDI-X, auto negotiation

SFP Ports:
- 4 100Base-SFP

Gigabit Ethernet Combo Ports
RJ45 Ports:
- 4 10/100/1000Base-T, auto MDI/MDI-X, auto negotiation

SFP Ports:
- 4 100/1000Base-SFP

Console Port
- RS-232 (USB B-Type connector)

LEDs
Device:
- PWR1, PWR2, PWR3, R.M/CPLG.R, C.HD/C.TL, ALARM, DI

Ports:
- 100M(SFP port), 100/1000M(SFP port), 10/100M(RJ45 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 2A @ 24V_{DC}

Reset Button
- 1 set

PERFORMANCE AND SCALABILITY

Switching Capacity
- 12.8Gbps, Wired speed, Non-blocking switching fabric

Forwarding Rate
- 19Mpps

MAC Address Table
- 16K

Packet Buffer Memory
- 1.5M bits

IGMP Multicast Groups
- 256

Max. VLANs
- 255

Quality of Service
- 8 priority queues per port

DHCP/BootP Server
- 1,275 IP addresses

Jumbo Frame
- 9,216 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, SNTP Server/Client, IPv6, DoS/DDoS auto prevention, MODBUS TCP, EtherNet/IP

Security
- MAC filtering, 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
- Installation: Front cabling. Industrial terminal block
- LV: 2 sets 36 to 72V_{DC} (Tested @ 36 to 60V_{DC})
- HV: 1 set 85 to 264V_{AC} / 88 to 370V_{DC} (Tested @ 100 to 240V_{AC})

Input Current
- LV: 0.75A
- HV: 1.2A

Overload Current Protection
- Present, Max. Input current 8A

Reverse Polarity Protection
- Present (V_{DC} input)

Voltage Dips Protection Time
- Min. 12ms at 48 V_{DC}

PHYSICAL

Housing
- IP40 metal case

Dimensions
- 44 mm(H) x 440 mm(W) x 257 mm (D)

Weight
- 4,950g

Installation
- 19" Rack mounting and wall mounting

ENVIRONMENTAL LIMITS

Operating Temperature
• -40℃ to 70℃ (-40 ℉ to 158 ℉)

Storage Temperature
• -40℃ to 85℃ (-40 ℉ to 185 ℉)

Ambient Relative Humidity
• 5% to 95% (non-condensing)

APPROVALS

Safety
• UL 60950-1, IEC 60950-1, CCC

EMI
• FCC 47 CFR Part 15 Subpart B Class A, IEC 61000-6-4, EN 55022 (CISPR 22), EN 55032

EMS [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, IEC 61000-4-11, 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	Combo Port 10/100/1000Base-T and 100/1000Base-SFP	Combo Port 10/100Base-T(X) and 100Base-SFP	10/100 Base-T(X)	DI	DO (Relay)	Power Input
DVS-328R02-8SFP	-40℃ to 70℃	4	4	20	1	1	3

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-G116 series

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

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 works 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, SNTP 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
- Industial DIN-Rail and wall mounting

ENVIRONMENTAL LIMITS

Operating Temperature
• -40℃ to 75℃ (-40 ℉ to 167 ℉)

Storage Temperature
• -40℃ to 85℃ (-40 ℉ to 185 ℉)

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	100/1000Base-SFP	10/100/1000 Base-T	DI	DO (Relay)	Power Input
DVS-G116W02-4GF	-40℃ to 75℃	---	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 Switchs

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 works the CPU handles
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- 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
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- 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, SNTP 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
- Industial DIN-Rail and wall mounting

ENVIRONMENTAL LIMITS

Operating Temperature
• -40℃ to 75℃ (-40 ℉ to 167 ℉)

Storage Temperature
• -40℃ to 85℃ (-40 ℉ to 185 ℉)

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	100/1000Base-SFP	10/100/1000 Base-T	DI	DO (Relay)	Power Input
DVS-G112W02-4GF	-40℃ to 75℃	---	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 Switchs

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 works 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, SNTP 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
- Industial DIN-Rail and wall mounting

ENVIRONMENTAL LIMITS

Operating Temperature
• -40℃ to 75℃ (-40 ℉ to 167 ℉)

Storage Temperature
• -40℃ to 85℃ (-40 ℉ to 185 ℉)

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	100/1000Base-SFP	10/100/1000 Base-T	DI	DO (Relay)	Power Input
DVS-G106W02-2GF	-40℃ to 75℃	---	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-110 series

Managed Industrial 7-Port FE + 3-Port GbE Combo 100/1000Base-SFP Ethernet Switches

UL508 -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*
- SNMP v1/v2c/v3 facilitates the exchange of management between network devices
- Supports EtherNet/IP and MODBUS TCP protocols that facilitate the remote management by SCADA and other industrial devices
- Proprietary ONE RING and ONE CHAIN high end redundancy technology, easy to build multiple ring topology, self-healing recovery time < 20ms
- 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
- 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
- Cable diagnostic provides the mechanism to detect and report potential cabling issues
- Intelligent Access Control List (ACL)
- MAC addresses locking function per port blocks unauthorized access
- USB console interface for easy connection with laptops
- 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 802.1X 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

Fast Ethernet
RJ45 Ports:
- 10/100Base-T(X), auto MDI/MDI-X, auto negotiation

Gigabit Ethernet Combo Ports
RJ45 Ports:
- 10/100/1000Base-T, auto MDI/MDI-X, auto negotiation

SFP Ports:
- 100/1000Base-SFP

Console Port
- RS-232 (USB B-Type connector)

LEDs
Device:
- ALARM, PWR1, PWR2, DI1, DI2, R.M/CPLG.R, C.HD/C.TL

Ports:
- 100/1000M (SFP port), 10/100/1000M (GbE RJ45 port), 10/100M (FE RJ45 port), LINK/ACT

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 2A @ $24V_{DC}$

Reset Button
- 1 set

PERFORMANCE AND SCALABILITY

Switching Capacity
- 7.4Gbps, wire-speed, non-blocking switching fabric

Forwarding Rate
- 11Mpps

MAC Address Table
- 8K

Packet Buffer Memory
- 512K bits

IGMP Multicast Groups
- 256

Max. VLANs
- 255

Quality of Service
- 8 priority queues per port

DHCP/BootP Server
- 1275 IP addresses

Jumbo Frame
- 9,216 Bytes

MANAGEMENT

Software
- STP/RSTP/MSTP, LACP, QoS, IGMP Snooping v1/v2/v3, IGMP Query v1/v2, GARP, GMRP, VLAN, 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, Telnet, Syslog, SMTP, SNTP 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, 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 48 V_{DC} redundant terminal block input

Input Current
- Max. 0.95A

Overload Current Protection
- Present, max. input current 3A

Reverse Polarity Protection
- Present

Voltage Dips Protection Time
- Min. 12ms at $24V_{DC}$

PHYSICAL

Housing
- IP40 metal case

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

Weight
- 564g

Installation
- Industrial DIN-Rail and wall mounting

ENVIRONMENTAL LIMITS

Operating Temperature
- -40℃ to 75℃ (-40˚F to 167˚F)

Storage Temperature
- -40℃ to 85℃ (-40˚F to 185˚F)

Ambient Relative Humidity
- 5% to 95% (non-condensing)

APPROVALS

Safety
- UL 508, EN 60950-1, IEC 61131-2

EMI
- FCC 47 CFR Part 15 Subpart B Class A, 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	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-110W02-3SFP	-40℃ to 75℃	3	---	7	2	2	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

DVS-109 series

Managed Industrial 8-Port FE + 1-Port GbE Ethernet Switches

UL508 -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*
- SNMP v1/v2c/v3 facilitates the exchange of management between network devices
- Supports EtherNet/IP and MODBUS TCP protocols that facilitate the remote management by SCADA and other industrial devices
- Proprietary ONE RING and ONE CHAIN high end redundancy technology, easy to build multiple ring topology, self-healing recovery time < 20ms
- 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
- 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
- Cable diagnostic provides the mechanism to detect and report potential cabling issues
- Intelligent Access Control List (ACL)
- MAC addresses locking function per port blocks unauthorized access
- USB console interface for easy connection with laptops
- 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

*Please check DELTA website for the latest firmware version

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
- 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 802.1X 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

Fast Ethernet
RJ45 Ports:
- 10/100Base-T(X), auto MDI/MDI-X, auto negotiation

Gigabit Ethernet
RJ45 Ports:
- 10/100/1000Base-T, auto MDI/MDI-X, auto negotiation

Console Port
- RS-232 (USB B-Type connector)

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

Ports:
- 10/100/1000M(GbE RJ45 port), 10/100M(FE RJ45 port), LINK/ACT

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}

Reset Button
- 1 set

PERFORMANCE AND SCALABILITY

Switching Capacity
- 3.6Gbps, Wired speed, Non-blocking switching fabric

Forwarding Rate
- 5.35Mpps

MAC Address Table
- 8K

Packet Buffer Memory
- 512K bits

IGMP Multicast Groups
- 256

Max. VLANs
- 255

Quality of Service
- 8 priority queues per port

DHCP/BootP Server
- 1275 IP addresses

Jumbo Frame
- 9,216 Bytes

MANAGEMENT

Software
- STP/RSTP/MSTP, LACP, QoS, IGMP Snooping v1/v2/v3, IGMP Query v1/v2, GARP, GMRP, VLAN, 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, Telnet, Syslog, SMTP, SNTP 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, USB Local Console, SNMP, MODBUS TCP, EtherNet/IP, 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 3A

Reverse Polarity Protection
- Present

Voltage Dips Protection Time
- Min. 12ms at 24V_{DC}

PHYSICAL

Housing
- IP40 metal case

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

Weight
- 500g

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 60950-1, IEC 61131-2

EMI
• FCC 47 CFR Part 15 Subpart B Class A, 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	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-109W02-1GE	-40℃ to 75℃	---	1	8	1	1	2

Optional Products
DVP/CliQ/PMC Series: 12/24 V_{DC} Industrial Power Supply
CliQII/PMC Series: 48V_{DC} Industrial Power Supply

DVS-108 series

Managed Industrial 6-Port FE + 2-Port GbE Combo 100/1000Base-SFP Ethernet Switches

UL508 -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*
- SNMP v1/v2c/v3 facilitates the exchange of management between network devices
- Supports EtherNet/IP and MODBUS TCP protocols that facilitate the remote management by SCADA and other industrial devices
- Proprietary ONE RING and ONE CHAIN high end redundancy technologies, easy to build multiple ring topology, self-healing recovery time < 20ms.
- 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
- 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.
- Cable diagnostic provides the mechanism to detect and report potential cabling issues
- Intelligent Access Control List (ACL)
- MAC addresses locking function per port blocks unauthorized access
- USB console interface for easy connection with laptops
- 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

*Please check DELTA website for the latest firmware version

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 802.1X 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

Fast Ethernet
RJ45 Ports:
- 10/100Base-T(X), auto MDI/MDI-X, auto negotiation

Gigabit Ethernet Combo Ports
RJ45 Ports:
- 10/100/1000Base-T, auto MDI/MDI-X, auto negotiation

SFP Ports:
- 100/1000Base-SFP

Console Port
- RS-232 (USB B-Type connector)

LEDs
Device:
- ALARM, PWR1, PWR2, DI1, DI2, R.M/CPLG.R, C.HD/C.TL

Ports:
- 100/1000M (SFP port), 10/100/1000M (GbE RJ45 port), 10/100M (FE RJ45 port), LINK/ACT

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 2A@24V_{DC}

Reset Button
- 1 set

PERFORMANCE AND SCALABILITY

Switching Capacity
- 5.2Gbps, wire-speed, non-blocking switching fabric

Forwarding Rate
- 7.7Mpps

MAC Address Table
- 8K

Packet Buffer Memory
- 512K bits

IGMP Multicast Groups
- 256

Max. VLANs
- 255

Quality of Service
- 8 priority queues per port

DHCP/BootP Server
- 1275 IP addresses

Jumbo Frame
- 9,216 Bytes

MANAGEMENT

Software
- STP/RSTP/MSTP, LACP, QoS, IGMP Snooping v1/v2/v3, IGMP Query v1/v2, GARP, GMRP, VLAN, 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, Telnet, Syslog, SMTP, SNTP 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, USB Local Console, SNMP, MODBUS TCP, EtherNet/IP, 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 48 V_{DC} redundant terminal block input

Input Current
- Max. 0.87A

Overload Current Protection
- Present, max. input current 3A

Reverse Polarity Protection
- Present

Voltage Dips Protection Time
- Min. 12ms at 24V_{DC}

PHYSICAL

Housing
- IP40 metal case

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

Weight
- 520g

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 60950-1, IEC 61131-2

EMI
• FCC 47 CFR Part 15 Subpart B Class A, 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	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-108W02-2SFP	-40℃ to 75℃	2	---	6	2	2	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

DVS-103I02C-DLR

EtherNet/IP DLR Industrial 3-Port FE Ethernet Switches

UL61010 FANLESS

- **EtherNet/IP protocol supported**
- **Support DLR (device-level ring) technology, self-healing recovery time < 3ms (less than 50-node)**
- **Design with DI and DO to automate alarms**
- **12 to 48 V_{DC} redundant terminal block power input**
- **-20℃ to 70℃ 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℃ to 70℃ (-4˚F to 158˚F)

Storage Temperature
- -20℃ to 70℃ (-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℃ to 70℃	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-G005I00A Series

Unmanaged Industrial 5-Port GbE Ethernet Switches

UL508 EMC LEVEL 3 FANLESS

- **Supports IEEE 802.1p based QoS for packet forwarding precedence**
- **Built-in Broadcast Storm Protection**
- **Transparent transmission of VLAN tagged packets**
- **Jumbo frame size up to 9,216 Bytes**
- **EEE Green Ethernet for power savings**
- **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
- 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

Gigabit Ethernet
RJ45 Ports:
- 10/100/1000Base-T, auto MDI/MDI-X, auto negotiation

LEDs
Per Device:
- PWR

Per Port:
- 10/100/1000M, LINK/ACT

PERFORMANCE AND SCALABILITY

Switching Capacity
DVS-G005I00A:
- 10Gbps, wire-speed, non-blocking switching fabric

Forwarding Rate
DVS-G005I00A:
- 7.44Mpps

MAC Address Table
DVS-G005I00A:
- 2K

Packet Buffer Memory
DVS-G005I00A:
- 1M bits

Jumbo Frame
- 9,216 Bytes

Broadcast Storm Protection
- Default enabled

Transparent Forwarding VLAN Tagged Packets
- Default enabled

IEEE 802.1p based QoS
- Default enabled

Green Ethernet
- Default enabled

POWER REQUIREMENTS

Input Voltage
• 1 set, 12 to 48 V_{DC} terminal block input

Input Current
• Max. 0.18A

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 45mm (W) x 108.7mm (D)

Weight
• 300g

Installation
• Industrial DIN-Rail and wall mounting

ENVIRONMENTAL LIMITS

Operating Temperature
• -10℃ to 60℃ (14˚F to 140˚F)

Storage Temperature
• -40℃ to 85℃ (-40 ˚F to 185 ˚F)

Ambient Relative Humidity
• 5% to 95% (non-condensing)

APPROVALS

Safety
• UL 508, EN 60950-1, IEC 61131-2

EMI
• FCC 47 CFR Part 15 Subpart B Class A, 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 2, IEC 61000-4-6 level 2, 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	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-G005I00A	-10℃ to 60℃	---	5	---	---	---	1

Optional Products

DVP/CliQ/PMC Series: 12/24 V_{DC} Industrial Power Supply
CliQII/PMC Series: 48V_{DC} Industrial Power Supply

DVS-016 Series

Unmanaged Industrial 16-Port FE Ethernet Switches

UL508 | -40~75°C | EMC LEVEL 4 | FANLESS

- **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

Fiber Optic Ports:
- 100Base-FX (SC connector), MultiMode or SingleMode

LEDs
Per Device:
- ALARM, PWR1, PWR2

Per Port:
- 100M (RJ45 port), 100M (fiber 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
- 5% to 95% (non-condensing)

APPROVALS

Safety
- UL 508, EN 60950-1, 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

Fiber Optics

	100Base-FX	
	MultiMode	SingleMode
Cable	62.5/125μm, 50/125μm	9/125μm
Wavelength	1310nm	1310nm
Max. TX Power	-14dBm	-8dBm
Min. TX Power	-20dBm(1) -22.5dBm(2)	-15dBm
RX Sensitivity	-31dBm	-31dBm
Optical Budget	11dBm(1) 8.5dBm(2)	16dBm
Max. Link Distance	5km	30km

(1) 62.5/125μm fiber optic cable (2) 50/125μm fiber optic cable

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.

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
DVS-016W01-MC01	-40°C to 75°C	15	1	---	---	1	2
DVS-016W01-SC01	-40°C to 75°C	15	---	1	---	1	2

Optional Products

DVP/CliQ/PMC Series: 12/24 V_{DC} Industrial Power Supply
CliQII/PMC Series: 48V_{DC} Industrial Power Supply

DVS-008 Series

Unmanaged Industrial 8-Port FE Ethernet Switches

UL508 -40~75°C EMC LEVEL 4 FANLESS

- **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

Fiber Optic Ports:
- 100Base-FX(SC connector), MultiMode or SingleMode

LEDs
Per Device:
- ALARM, PWR1, PWR2

Per Port:
- 100M(RJ45 port), 100M(fiber 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 (DVS-008W series)

Transparent Forwarding VLAN Tagged Packets
- Default enabled (DVS-008W series)

IEEE 802.1p based QoS
- Default enabled (DVS-008W series)

POWER REQUIREMENTS

Input Voltage
DVS-008W series:
- 2 sets, 12 to 48 V_{DC} redundant terminal block input

DVS-008I00:
- 1 set, 12 to 48 V_{DC} terminal block input

Input Current
DVS-008W series:
- Max. 0.45A

DVS-008I00:
- Max. 0.18A

Overload Current Protection
- Present, max. input current 3A

Reverse Polarity Protection
- Present

Voltage Dips Protection Time
DVS-008W series:
- Min. 13ms at 24V_{DC}

DVS-008I:
- Min. 10ms at 24V_{DC}

PHYSICAL

Housing
• IP40 metal case

Dimensions
DVS-008W series:
• 145.3 mm (H) x 75 mm (W) x 108.7 mm (D)
DVS-008I00:
• 145.3 mm (H) x 45 mm (W) x 108.7 mm (D)

Weight
DVS-008W series:
• 430g
DVS-008I00:
• 300g

Installation
• Industrial DIN-Rail and wall mounting

ENVIRONMENTAL LIMITS

Operating Temperature
DVS-008W series:
• -40℃ to 75℃ (-40˚F to 167˚F)
DVS-008I00:
• -10℃ to 60℃ (14˚F to 140˚F)
• Tested @ -25℃ to 70℃ (-13˚F to 158˚F)

Storage Temperature
• -40℃ to 85℃ (-40˚F to 185˚F)

Ambient Relative Humidity
• 5% to 95% (non-condensing)

APPROVALS

Safety
• UL 508, EN 60950-1, 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

Fiber optics

	100Base-FX	
	MultiMode	SingleMode
Cable	62.5/125μm, 50/125μm	9/125μm
Wavelength	1310nm	1310nm
Max. TX Power	-14dBm	-8dBm
Min. TX Power	-20dBm(1) -22.5dBm(2)	-15dBm
RX Sensitivity	-31dBm	-31dBm
Optical Budget	11dBm(1) 8.5dBm(2)	16dBm
Max. Link Distance	5km	30km

(1) 62.5/125μm fiber optic cable (2) 50/125μm fiber optic cable

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.

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-008I00	-10℃ to 60℃	8	---	---	---	---	1
DVS-008W01	-40℃ to 75℃	8	---	---	---	1	2
DVS-008W01-MC01	-40℃ to 75℃	7	1	---	---	1	2
DVS-008W01-MC02	-40℃ to 75℃	6	2	---	---	1	2
DVS-008W01-SC01	-40℃ to 75℃	7	---	1	---	1	2
DVS-008W01-SC02	-40℃ to 75℃	6	---	2	---	1	2

Optional Products

DVP/CliQ/PMC Series: 12/24 V_{DC} Industrial Power Supply
CliQII/PMC Series: 48V_{DC} Industrial Power Supply

DVS-005 Series

Unmanaged Industrial 5-Port FE Ethernet Switches

UL508 -40~75°C EMC LEVEL 4 FANLESS

- **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

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

Fiber Optic Ports:
- 100Base-FX (SC connector), MultiMode or SingleMode

LEDs
Per Device:
- ALARM, PWR1, PWR2

Per Port:
- 100M (RJ45 port), 100M (fiber 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
- 1Gbps, wire-speed, non-blocking switching fabric

Forwarding Rate
- 1.5Mpps

MAC Address Table
- 1K

Packet Buffer Memory
- 512K bits

POWER REQUIREMENTS

Input Voltage
DVS-005W series:
- 2 sets, 12 to 48 V_{DC} redundant terminal block power input

DVS-005I00:
- 1 set, 12 to 48 V_{DC} terminal block input

Input Current
- Max. 0.24A

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 45mm (W) x 108.7mm (D)

Weight
- 300g

Installation
- Industrial DIN-Rail and wall mounting

ENVIRONMENTAL LIMITS

Operating Temperature
DVS-005W series:
- -40℃ to 75℃ (-40˚F to 167˚F)

DVS-005I00:
- -10℃ to 60℃ (14˚F to 140˚F)
- Tested @ -25℃ to 70℃ (-13˚F to 158˚F)

Storage Temperature
- -40℃ to 85℃ (-40˚F to 185˚F)

Ambient Relative Humidity
- 5% to 95% (non-condensing)

APPROVALS

Safety
- UL 508, EN 60950-1, 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

Fiber optics

	100Base-FX	
	MultiMode	**SingleMode**
Cable	62.5/125μm, 50/125μm	9/125μm
Wavelength	1310nm	1310nm
Max. TX Power	-14dBm	-8dBm
Min. TX Power	-20dBm(1) -22.5dBm(2)	-15dBm
RX Sensitivity	-31dBm	-31dBm
Optical Budget	11dBm(1) 8.5dBm(2)	16dBm
Max. Link Distance	5km	30km

(1) 62.5/125μm fiber optic cable (2) 50/125μm fiber optic cable

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.

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-005I00	-10℃ to 60℃	5	---	---	---	---	1
DVS-005W01	-40℃ to 75℃	5	---	---	---	1	2
DVS-005W01-MC01	-40℃ to 75℃	4	1	---	---	1	2
DVS-005W01-SC01	-40℃ to 75℃	4	---	1	---	1	2

Optional Products
DVP/CliQ/PMC Series: 12/24 V_{DC} Industrial Power Supply
CliQII/PMC Series: 48V_{DC} Industrial Power Supply

DVS-G005I00C Series

Unmanaged Industrial 5-Port GbE Ethernet Switches

UL61010 -20~70°C FANLESS

- **12 to 48 V_{DC} redundant terminal block power input**
- **Jumbo frame size up to 10K Bytes**
- **-20℃ to 70℃ 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℃ to 70℃ (-4˚F to 158˚F)

Storage Temperature
- -40℃ to 85℃ (-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℃ to 70℃	---	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

Vibration Resistant | UL61010 | -40~75°C | EMC LEVEL 3 | FANLESS

- **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 V_{DC} redundant power input**
- **-40℃ to 75℃ 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℃ to 75℃ (-40˚F to 167˚F)

Storage Temperature
- 40℃ to 85℃ (-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 600068-2-27

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/ 1000Base-T	10/ 100Base-T(X)	DI	DO (Relay)	Power Input
DVS-008W00-M12	-40℃ to 75℃	---	---	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. Backwardcompatible with IEEE 802.3af
- Advanced PoE managment 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, SNTP 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, 48 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℃ to 70℃ (-40˚F to 158˚F)

Storage Temperature
- -40℃ to 85℃ (-40˚F to 185˚F)

Ambient Relative Humidity
- 5% to 95% (non-condensing)

APPROVALS

Safety
- EN 60950-1

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℃ to 70℃	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-G408W01 Series

IEEE 802.3af/at PoE+ Unmanaged Industrial 8-Port GbE Ethernet Switches

-40~70°C | EMC LEVEL 3 | FANLESS

- **8 10/100/1000Base-T PoE+(PSE) ports**
- **Based on IEEE 802.3at standard up to 30Watts per port. Backward compatible with IEEE 802.3af**
- **Jumbo frame size up to 9,216 Bytes**
- **48 to 57V_{DC} 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)
- IEEE 802.3z 1000Base-X
- IEEE 802.3x Flow Control
- IEEE 802.3af PoE 15.4 Watts
- IEEE 802.3at PoE 30 Watt

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-

LEDs
Per Device:
- PWR1, PWR2, ALARM

Per Port:
- PoE, 10/100/1000M, LINK/ACT

DIP Switches
- Power failure alarm

Alarm Contacts (DO)
- 1 relay output
- Carry current 1A@24V_{DC}

PERFORMANCE AND SCALABILITY

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

Forwarding Rate
- 11.9Mpps

MAC Address Table
- 2K

Packet Buffer Memory
- 1.5M bits

Jumbo Frame
- 9,216 Bytes

POWER REQUIREMENTS

Input Voltage
• 2 sets, 48 to 57 V_{DC} redundant terminal block input

Input Current
• Max. 5A (with powered device); Max. 0.16A (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
• 390g

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 60950-1

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

EMS
• IEC 61000-4-2, EN 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-G408W01	-40°C to 70°C	8	---	---	1	2

Optional Products

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

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**
- **48 to 57V_{DC} 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, 48 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℃ to 70℃ (-40˚F to 158˚F)

Storage Temperature
• -40℃ to 85℃ (-40 ℉ to 185 ℉)

Ambient Relative Humidity
• 5% to 95% (non-condensing)

APPROVALS

Safety
• EN 60950-1

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℃ to 70℃	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

EMC LEVEL 3 FANLESS

- **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 12V$_{DC}$ 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℃ to 70℃ (-4˚F to 158˚F)

Storage Temperature
• -40℃ to 85℃ (-40˚F to 185˚F)

Ambient Relative Humidity
• 5% to 95% (non-condensing)

APPROVALS

Safety
• EN 60950-1

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℃ to 70℃	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

EMC LEVEL 3 FANLESS

- **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℃ to 70℃ (-4˚F to 158˚F)

Storage Temperature
• -40℃ to 85℃ (-40˚F to 185˚F)

Ambient Relative Humidity
• 5% to 95% (non-condensing)

APPROVALS

Safety
• EN 60950-1

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℃ to 70℃	1	1	---	---	2

DVS-G002I00C-TF Series

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

UL61010 -20~70°C FANLESS

- 12 to 48 V_{DC} redundant terminal block power input
- Supports Link fault Pass-Through (LFP)
- Jumbo frame size up to 10K Bytes
- -20℃ to 70℃ 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℃ to 70℃ (-4˚F to 158˚F)

Storage Temperature
• -40℃ to 85℃ (-40 ℉ to 185 ℉)

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℃ to 70℃	---	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	50/125μm MultiMode	9/125μm SingleMode	9/125μm 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
• 8.5 mm (H) x 13.4 mm (W) x 57 mm (D)

Installation
• Hot-swappable, pluggable

ENVIRONMENTAL LIMITS

Operating Temperature
Standard Models:
• -5℃ to 70℃ (23˚F to 158˚F)
Wide Temp. Models:
• -40℃ to 85℃ (-40˚F to 185˚F)

Storage Temperature
• -40℃ to 85℃ (-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℃ to 70℃	Wide Temperature -40℃ to 85℃	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	62.5/125μm MultiMode	9/125μm SingleMode	9/125μm 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℃ to 70℃ (23˚F to 158˚F)
Wide Temp. Models:
• -40℃ to 85℃ (-40˚F to 185˚F)

Storage Temperature
• -40℃ to 85℃ (-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℃ to 70℃	Wide Temperature -40℃ to 85℃	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

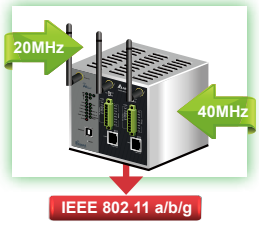
Wireless AP

High-gain Antennas

IEEE 802.11 WLAN

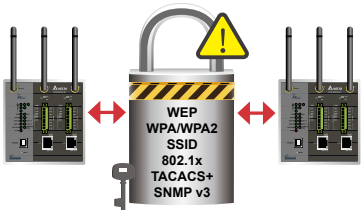
IEEE 802.11n Technology

The IEEE 802.11n standard is improved with better data rates by Multiple-input and Multiple-output (MIMO) technology. It supports a bandwidth from 20 MHz to 40 MHz that doubles the speed of transmission performance and is compatible with previous IEEE 802.11 a/b/g standards.



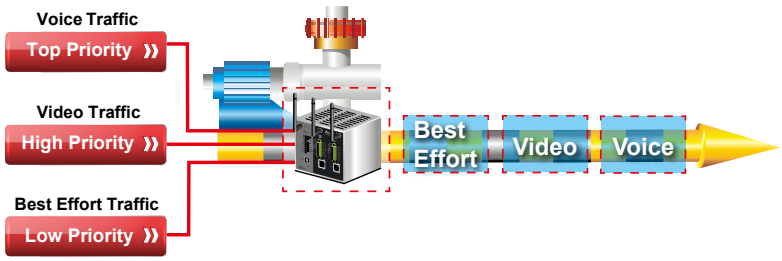
Enhanced WLAN Security Management

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



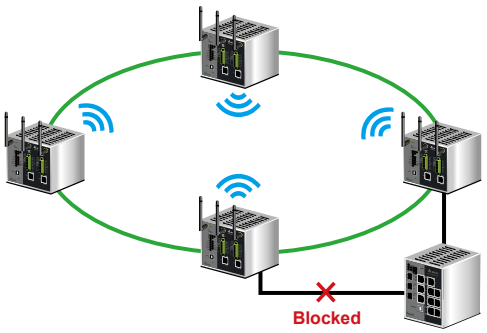
Wi-Fi Multimedia

Quality of Service (QoS) prioritizes activities in queue, providing exceptional quality for wireless transmission, and is particularly effective for multimedia applications and internet calls.



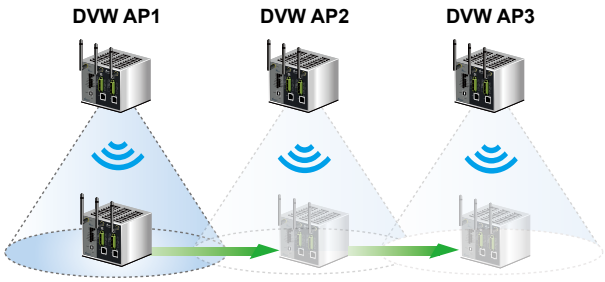
STP/RSTP

Incorrect wiring frequently causes loops that affect network operation. STP/RSTP protects networks from this type of harm and builds a redundancy path which contributes to a highly reliable network system.



Industrial-grade Fast Roaming

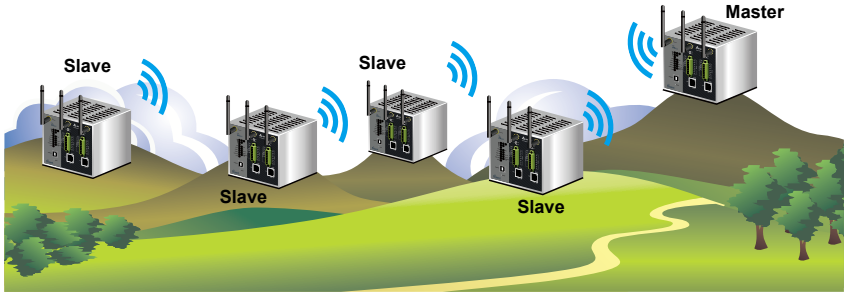
Delta's Fast Roaming technology helps users achieve quick roaming through the access points in the industrial field. This technology enables wireless devices to handover within milliseconds, creating a high-reliability wireless network, that is especially suitable for mobile applications, such as automatic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



Versatile Wireless Spot

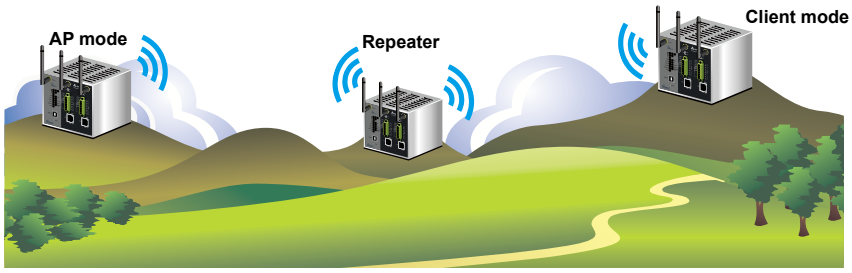
Wireless Distribution System (WDS) Point-to-Multipoint Mode

Replacing traditional wired LAN extensions, this mode enables a LAN extension of two or more LANs through wireless connection.



Wireless Distribution System Repeater Mode

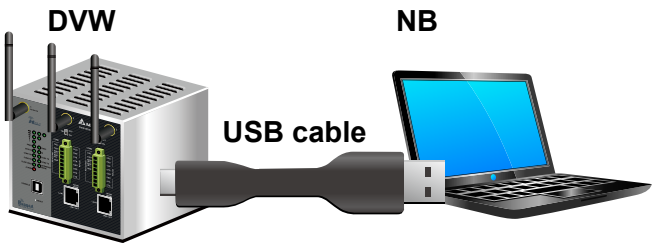
Wireless connection is often limited by the effective transmission distance between two ends. The WDS repeater mode extends the transmission distance to overcome this distance limit.



A Seamless Interconnection

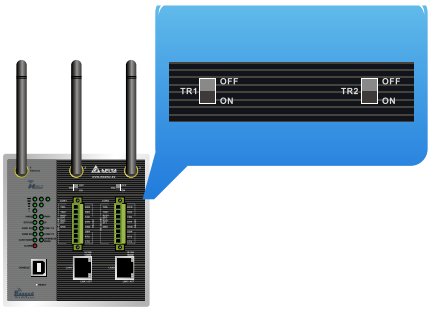
USB Console Interface

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



Adjustable Terminal Resistors

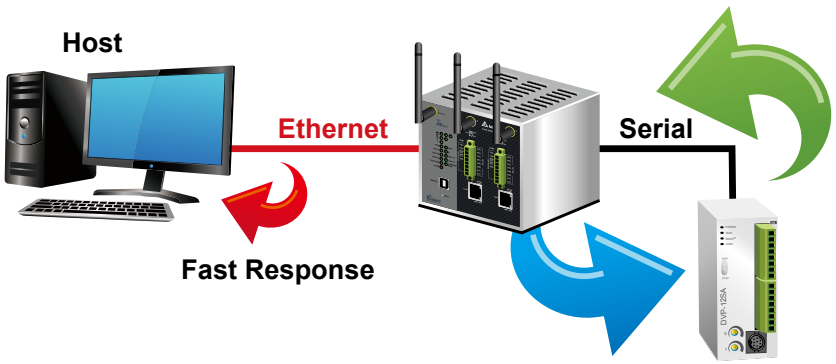
For applications that use RS-485 communication, signal reflection in cables often causes interference and poor communication quality. Using adjustable terminal resistors that switch on/off according to requirements improves communication quality.



MODBUS Cache

- Speeds up data loading time
- Online real-time monitoring

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

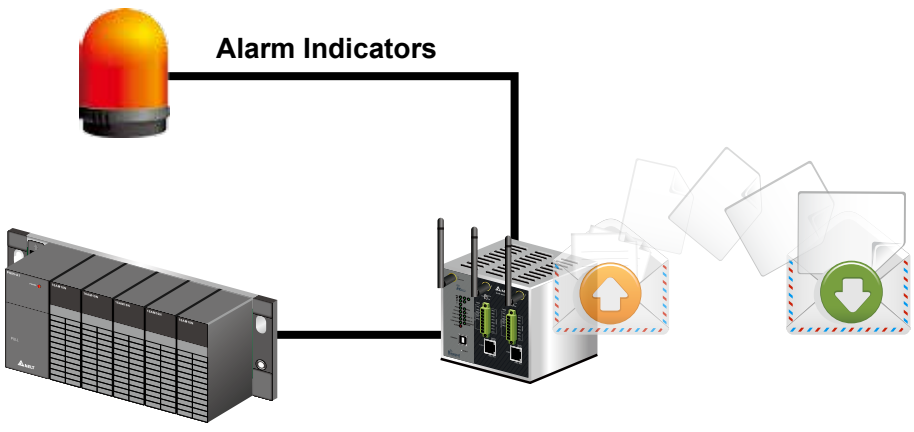


Online Real-time Monitoring

	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

Digital Inputs

Designed for industrial environments, the DVW Series Wireless APs easily connect to various industrial devices, such as programmable logic controllers (PLC) or sensors, and deliver real-time alarms to users via relay output or email.

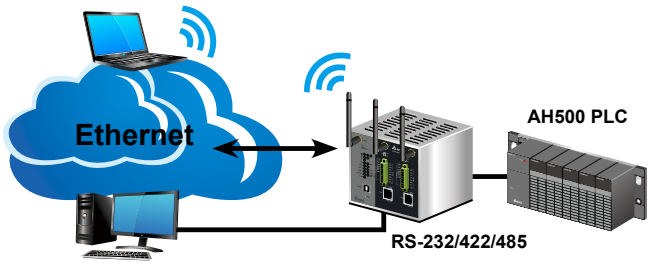


Introduction to Serial Device Servers

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.

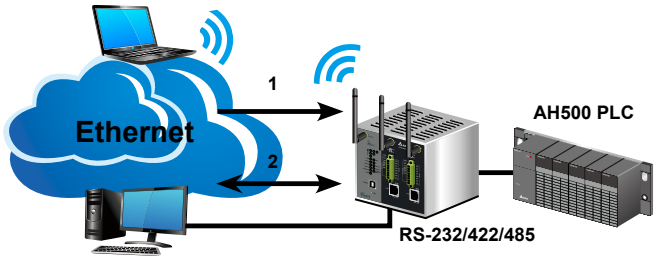
COM6 = 192.168.1.200:2000



COM5 = 192.168.1.100:1000

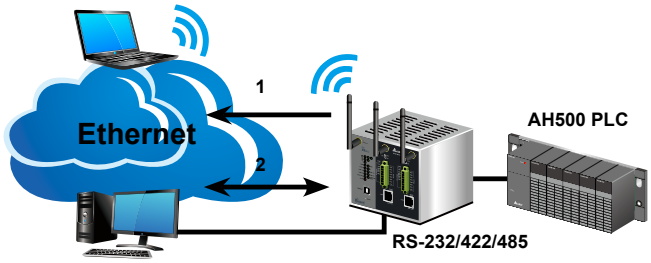
TCP Server

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.



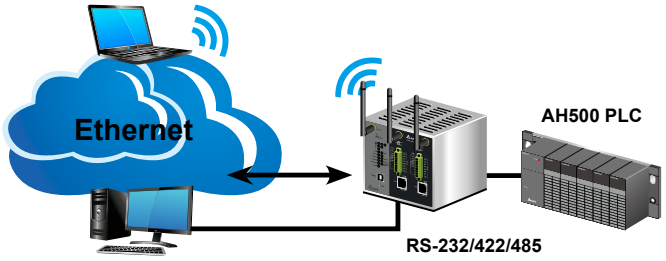
TCP Client

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.



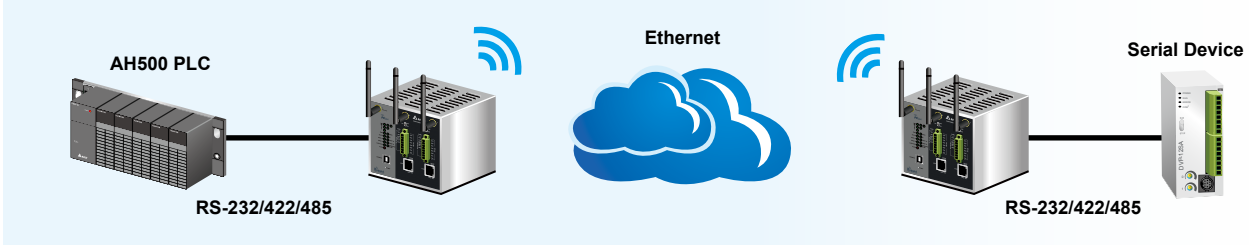
UDP Mode

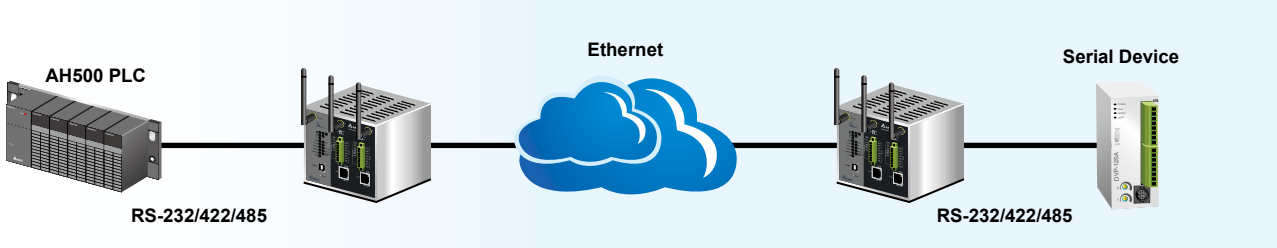
Serial devices can connect to hosts for continuous data transmission via wired or wireless communication with a DVW Series. The UDP mode enables better transmission performance compared to the TCP mode, and it is suitable for real-time information display systems, such as electronic billboards. It is less applicable to highly critical systems.

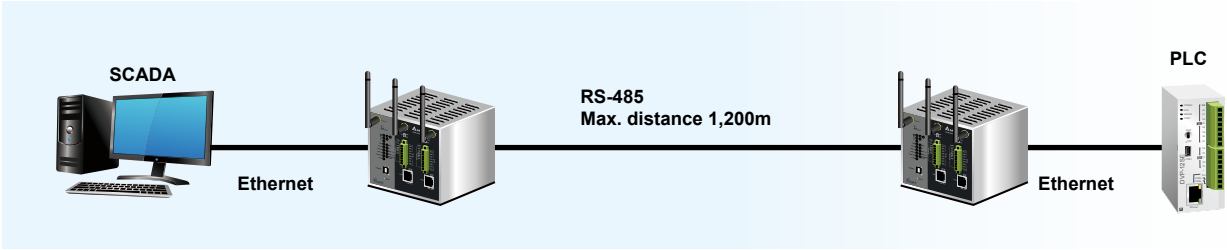


Pair Connection

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.



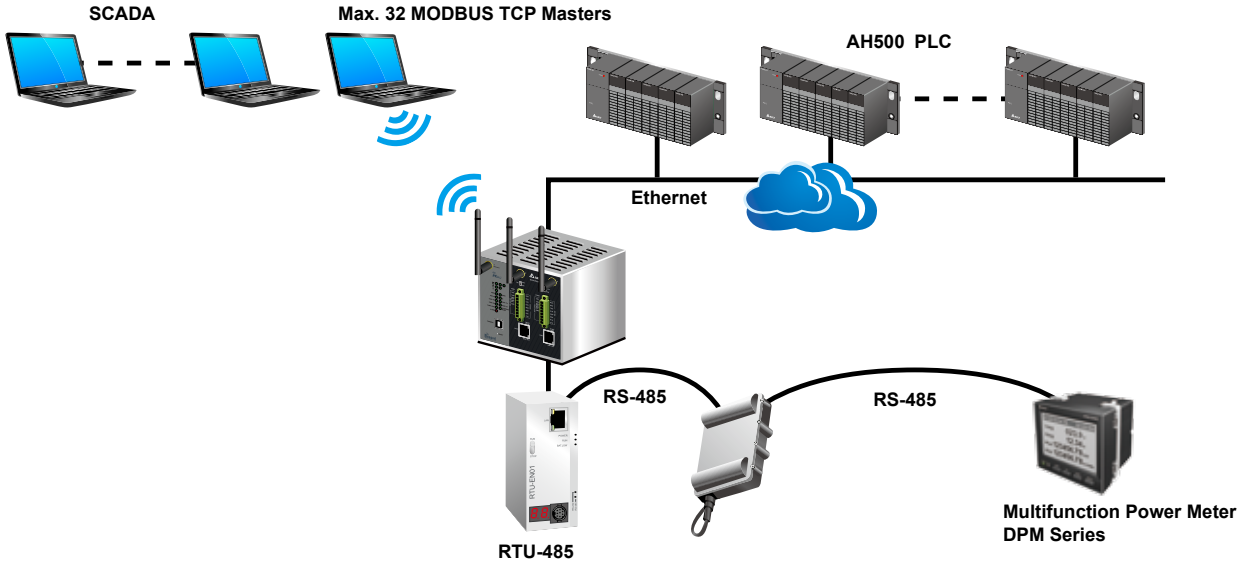




Introduction to MODBUS Gateway

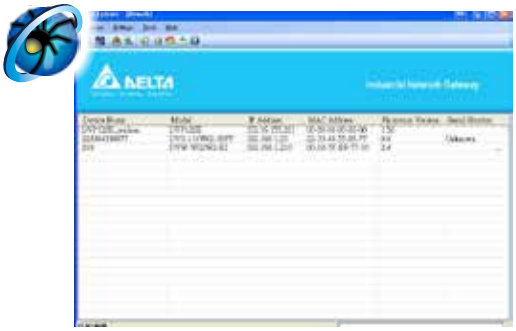
32 TCP Masters with 32 TCP Slaves

Via wired or wireless communication, up to 32 TCP masters can connect to serial slave devices, and each serial master can connect up to 32 TCP slaves.



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-W02W2-E2

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

802.11n | UL508 | -40~75°C | EMC LEVEL 4 | FANLESS

Rugged Wireless

- Compliant with IEEE 802.11n wireless technology capable of up to 450Mbps data rate
- Backward compatible with 802.11 a/b/g standards for seamless integration
- Multiple Wireless Modes: AP, Client CPE, WDS P-T-P, WDS P-T-MP and Repeater
- 3 x 3 MIMO technology increases data rate
- Wireless QoS (IEEE 802.11e, WMM) for video packets precedence transmission
- IEEE 802.11r fast roaming, seamless roaming recovery time between APs<50ms
- Enhanced wireless security: 64/128-bit WEP, WPA/WPA2, WPA-PSK/WPA2-PSK (TKIP/AES) and 802.1x Authentication
- Enhanced LAN security: MAC/IP/TCP/UDP filtering, HTTPS, SSL, 802.1X
- Supports 2-port RS-232/422/485-to-Ethernet Device Server
- Up to 16 simultaneous connections allows multiple hosts collection
- Built-in 2-port MODBUS ASCII/RTU to MODBUS TCP Gateway
- Up to 32 TCP masters or 32 TCP slaves per port at the same time
- Built-in 20MB buffer memory avoids data loss once the connection is down
- STP/RSTP for network redundancy further ensures reliability and avoids network loops
- Automatic IP assignment by DHCP/BootP server for easy network construction
- SNTP (simple network time protocol) for network clock synchronization
- Broadcast/Multicast/Unknown Unicast storm control improves throughput problems
- MAC addresses locking function per Ethernet port blocks unauthorized access
- USB console interface for easy connection with laptops
- 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, DI, relay, Syslog & SNMP trap

Specifications

TECHNOLOGY

Standard Compliance

- IEEE 802.11 a/b/g/n Wireless LAN
- IEEE 802.11i Wireless Security
- IEEE 802.11e QoS(WMM)
- IEEE 802.3 10Base-T
- IEEE 802.3u 100Base-T(X)
- IEEE 802.3ab 1000Base-T
- IEEE 802.3x Flow Control
- IEEE 802.1D Spanning Tree Protocol
- IEEE 802.1w Rapid Spanning Tree Protocol
- IEEE 802.1Q VLAN Tagging
- IEEE 802.1X Port Authentication

Processing Type

- CSMA/CA

INTERFACE

Wireless

IEEE 802.11 a/b/g/n:
- 3T3R

Antennas:
- 3 2dBi omni-directional, RP-SMA (male) connector

INTERFACE

Gigabit Ethernet
RJ45 Ports:
• 2 10/100/1000Base-T, auto MDI/MDI-X, auto negotiation

Serial Communication
Serial Ports :
• 2 RS-232/422/485, Terminal Block (8 contacts per port), 2KV isolation protection
Baud Rate:
• 110bps to 921.6kbps
Data Bits:
• 7, 8
Parity:
• None, Even, Odd, Space, Mark
Stop Bits:
• 1, 2
Flow Control:
• RTS/CTS (RS-232 only), DTR/DSR, XON/XOFF
RS-232:
• TxD, RxD, RTS, CTS, DTR, DSR, DCD, GND
RS-422:
• Tx+, Tx-, Rx+, Rx-, GND
RS-485 (2-wire) :
• D+, D-, GND
RS-485 (4-wire) :
• Tx+, Tx-, Rx+, Rx-, GND

Console Port
• USB B-Type connector

LEDs
Wireless Mode:
• Client, AP/WDS
Device:
• Signal Strength, Status, PWR1, PWR2, DI, ALARM
RJ45 Ports:
• 10/100/1000M, LINK/ACT
Serial Ports:
• COM1 RX, COM1 TX, COM2 RX, COM2 TX

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}

Terminal Resistor Switches
• 2 sets, 120KΩ

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

Frequency Band
2.400GHz ~ 5.850GHz

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):
• 2.4000GHz ~ 2.4835GHz (13 channels)
• 5.725GHz ~ 5.850GHz (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
802.11n mode:
• up to 450Mbps
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 24Mbps: 17dBm (±2dBm)
• 36Mbps: 16dBm (±2dBm)
• 48Mbps: 14dBm (±2dBm)
• 54Mbps: 13dBm (±2dBm)
802.11b (per chain):
• 1Mbps to 11Mbps: 19dBm (±2dBm)
802.11g:
• 6Mbps to 36Mbps: 19dBm (±2dBm)
• 48Mbps: 18dBm (±2dBm)
• 54Mbps: 17dBm (±2dBm)

RF Output Power MIMO (Max., per chain)
802.11n (2.4G HT20):
• MCS0~5, 8~13, 16~19: 18dBm (±2dBm)
• MCS6, 20: 17dBm (±2dBm)
• MCS14, 21, 22: 16dBm (±2dBm)
• MCS7, 15, 23: 15dBm (±2dBm)
802.11n (2.4G HT40):
• MCS0~5, 8~13, 16~19: 17dBm (±2dBm)
• MCS6, 20, 21: 16dBm (±2dBm)
• MCS14, 22: 16dBm (±2dBm)
• MCS7, 14, 15, 23: 15dBm (±2dBm)
802.11n (5G HT20):
• MCS0~4, 8~12, 16~19: 16dBm (±2dBm)
• MCS5: 15dBm (±2dBm)
• MCS6, 13, 20: 14dBm (±2dBm)
• MCS7, 15, 23: 12dBm (±2dBm)
802.11n (5G HT40):
• MCS0~4, 8~11, 16~19: 16dBm (±2dBm)
• MCS5, 12: 15dBm (±2dBm)
• MCS6, 13, 20: 14dBm (±2dBm)
• MCS7, 15, 22: 12dBm (±2dBm)
• MCS23: 11dBm (±2dBm)

Receiver Sensitivity
802.11a:
-93dBm @ 6Mbps, -85dBm @ 36Mbps
-81dBm @ 48Mbps, -79dBm @ 54Mbps
802.11b:
• -96dBm @ 1Mbps, -90dBm @ 11Mbps
802.11g:
• -94dBm @ 6Mbps, -86dBm @ 36Mbps
-82dBm @ 48Mbps, -80dBm @ 54Mbps

Receiver Sensitivity MIMO
802.11n(2.4G HT20):
• -93dBm @ MCS0, -81dBm @ MCS5, -79dBm @ MCS6, -76dBm @ MCS7
• -93dBm @ MCS8, -83dBm @ MCS12, -77dBm @ MCS14, -75dBm @ MCS15
• -92dBm @ MCS16, -82dBm @ MCS20, -75dBm @ MCS22, -72dBm @ MCS23
802.11n(2.4G HT40):
• -90dBm @ MCS0, -79dBm @ MCS5, -75dBm @ MCS6, -74dBm @ MCS7
• -90dBm @ MCS8, -81dBm @ MCS12, -74dBm @ MCS14, -72dBm @ MCS15
• -90dBm @ MCS16, -79dBm @ MCS20, -72dBm @ MCS22, -69dBm @ MCS23
802.11n(5G HT20):
• -92dBm @ MCS0, -91dBm @ MCS2, -83dBm @ MCS4, -79dBm @ MCS5, -77dBm @ MCS6, -74dBm @ MCS7
• -91dBm @ MCS8, -81dBm @ MCS12, -71dBm @ MCS15
• -90dBm @ MCS16, -79dBm @ MCS20, -72dBm @ MCS22, -69dBm @ MCS23
802.11n(5G HT40):
• -89dBm @ MCS0, -88dBm @ MCS2, -81dBm @ MCS4, -77dBm @ MCS5, -74dBm @ MCS6, -72dBm @ MCS7
• -89dBm @ MCS8, -78dBm @ MCS12, -71dBm @ MCS15
• -88dBm @ MCS16, -77dBm @ MCS20, -71dBm @ MCS22, -69dBm @ MCS23

MANAGEMENT

Software
- STP/RSTP, QoS, VLAN, SSH, DNS, HTTP, HTTPS, RADIUS, SNMP v1/v2c/v3, SNMP Traps, TFTP, BootP Server/Client, DHCP Server/Client, Telnet, Syslog, SMTP, SNTP Server/Client, ARP, MODBUS TCP

Security
Security Access:
- MAC/IP/TCP/UDP filtering, HTTPS, SSH, 802.1X, SNMP v3

Wireless Security:
- 802.11i, 64/128-bit WEP, WPA/WPA2, 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)

Configuration
- Web Browser, Cisco-like Telnet CLI, USB Local Console, SNMP, 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 48 V_{DC} redundant terminal block input

Input Current
- Max. 1.02A

Overload Current Protection:
- Present, max. input current 3A

Reverse Polarity Protection
- Present

Voltage Dips Protection Time
- Min. 12ms at 24V_{DC}

PHYSICAL

Housing
- IP40 metal case

Dimensions
- 145.3 mm (H) x 112.5 mm (W) x 108.7 mm (D)

Weight
- 500g

Installation
- Industrial DIN-Rail and wall mounting

ENVIRONMENTAL LIMITS

Operating Temperature
- -40℃ to 75℃ (-40˚F to 167˚F)

Storage Temperature
- -40℃ to 85℃ (-40˚F to 185˚F)

Ambient Relative Humidity
- 5% to 95% (non-condensing)

APPROVALS

Safety
- UL 508, EN 60950-1, IEC 61131-2

EMI
- FCC 47 CFR Part 15 Subpart B Class A,
- IEC 61000-6-4, EN 55022(CISPR22), EN 301 489-1/17

EMS
[EN 301 489-1/17, 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

RF
- EN 300 328, EN 301 893, NCC, SRRC
- 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-232/422/485	DI	DO (Relay)	Power Input	Band	
DVW-W02W2-E2	-40℃ to 75℃	2	2	1	1	2	US	USA, Taiwan
DVW-W02W2-E2-EU	-40℃ to 75℃	2	2	1	1	2	EU	European Union
DVW-W02W2-E2-CN	-40℃ to 75℃	2	2	1	1	2	CN	China

Optional Products

DVP/CliQ/PMC Series: 12/24 V_{DC} Industrial Power Supply
CliQII/PMC Series: 48 V_{DC} Industrial Power Supply

DVW-W01I2-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 866Mbps 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 integratio
- 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
- Support 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 866Mbps
802.11n mode:
• up to 300Mbps
802.11a mode:
• 6, 9, 12, 18, 24, 36, 48, 54Mbp
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 (±1.5dBm)
• 48Mbps: 20dBm (±1.5dBm)
• 54Mbps: 19dBm (±1.5dBm)
802.11b:
• 1Mbps to 11Mbps: 22dBm (±1.5dBm)
802.11g:
• 6Mbps to 24Mbps: 20dBm (±1.5dBm)
• 36Mbps: 19dBm (±1.5dBm)
• 48/54Mbps: 18dBm (±1.5dBm)

RF Output Power MIMO (Max., per chain)
802.11n (2.4G HT20/40):
• MCS0: 20dBm (±1.5dBm)
• MCS7: 18dBm (±1.5dBm)
802.11n (5G HT20/40):
• MCS0: 21dBm (±1.5dBm)
• MCS7: 19dBm (±1.5dBm)
802.11ac (5G HT20):
• MCS0: 21dBm (±1.5dBm)
• MCS8: 17dBm (±1.5dBm)
802.11ac (5G HT40):
• MCS0: 21dBm (±1.5dBm)
• MCS8: 17dBm (±1.5dBm)
• MCS9: 15dBm (±1.5dBm)
802.11ac (5G HT80):
• MCS0: 19dBm (±1.5dBm)
• MCS8: 16dBm (±1.5dBm)
• MCS9: 15dBm (±1.5dBm)

Receiver Sensitivity
802.11a:
• -86dBm @ 6Mbps, -85dBm @ 9Mbps, -83dBm @ 12Mbps, -83dBm @ 18Mbps, -81dBm @ 24Mbps, -78dBm @ 36Mbps, -74dBm @ 48Mbps, -73dBm @ 54Mbp
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℃ to 60℃ (14˚F to 140˚F)

Storage Temperature
- -40℃ to 85℃ (-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℃ to 60℃	1	1	1	1	1	2	US	USA, Taiwan
DVW-W01I2-E1-EU	-10℃ to 60℃	1	1	1	1	1	2	EU	European Union, Australia, New Zealand
DVW-W01I2-E1-CN	-10℃ to 60℃	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:
• 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 (2.4GHz)
• ≦ 3.2dB (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

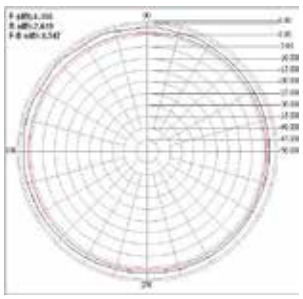
Operating Temperature
• -30°C to 60°C (-22°F to 140°F)

Storage Temperature
• -40°C to 85°C (-40°F to 185°F)

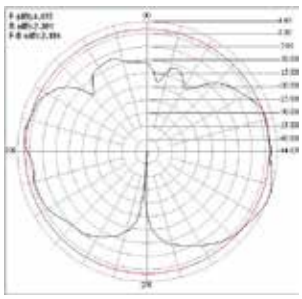
Ambient Relative Humidity
• 5% to 95% (non-condensing)

FIELD PATTERNS

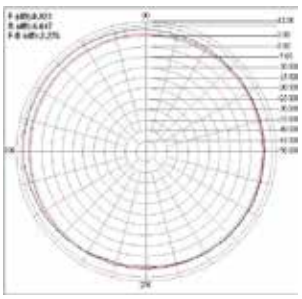
H-PLANE for 2.4GHz



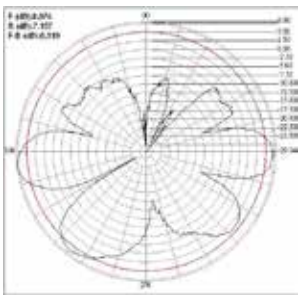
E-PLANE for 2.4GHz



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

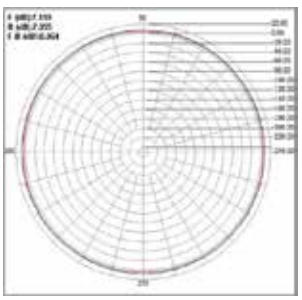
Operating Temperature
• -30℃ to 60℃ (-22˚F to 140˚F)

Storage Temperature
• -40℃ to 85℃ (-40˚F to 185˚F)

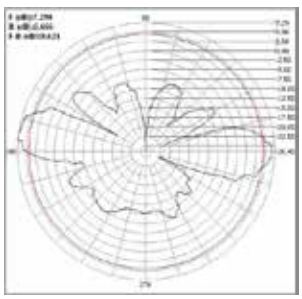
Ambient Relative Humidity
• 5% to 95% (non-condensing)

FIELD PATTERNS

H-PLANE



E-PLANE



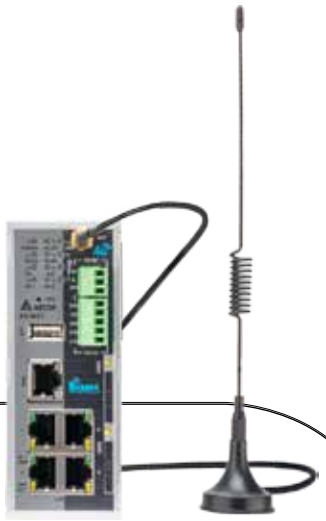
IIoT Routers

DIACloud Routers

VPN Routers

DX-3021L9 Series

Industrial 4G/WAN DIACloud Cloud Routers



UL61010 -20~70°C FANLESS

- 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
- Automatic APN parameter matching and connection redial
- Connecting to internet through by cellular network or broadband interfaces. Come with indication 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
- Support to upgrade device firmware and configure 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), prevent 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℃ to 70℃	5	1	1	2	2	1	Universal	Worldwide

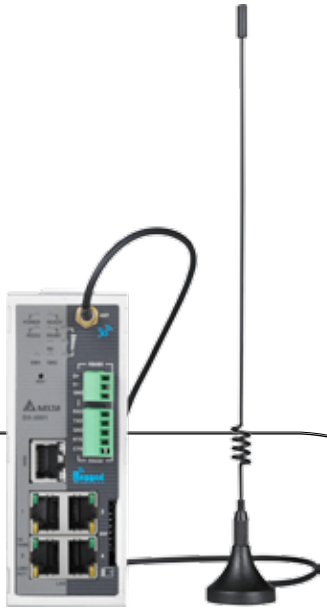
NOTE. For available countries for purchase, please contact your regional sales or distributors.

Optional Products

DVP/CliQ/PMC Series: 12/24 V_{DC} Industrial Power Supply
CliQII/PMC Series: 48 V_{DC} Industrial Power Supply

DX-3001H9 Series

Industrial 3G/WAN DIACloud Cloud Routers



-20~70°C FANLESS

- A data acquisition device connected to cloud servers. Supports a two-way data collection channel between the device and the cloud
- Supports MODBUS TCP and MODBUS ASCII/RTU protocols
- Using UMTS/HSPA+ 3G technology, supports a wide range of bands (850 / 800, 900, AWS1700, 1900, 2100 MHz). Downward compatible with GSM/GPRS/EDGE 2G network
- Dual SIM redundancy design : seamless switch between two ISP systems for continuous online operation
- HSPA+ data transmission rate up to 21.6Mbps (downlink) / 5.76Mbps (uplink)
- Automatic APN parameter matching and connection redial
- Flexible connection method over WAN port, e.g. static IP, DHCP client and HTTP Proxy
- User configurable priorities of the connection to Internet over WAN and 2 cellular networks
- Various peripheral interfaces include RS-485, RS-232 and 4 LAN ports
- Built-in RTC and supports NTP time synchronization over a network
- Supports TCP/IP, UDP, ICMP, DHCP, HTTP, DNS and SSH protocols
- Device configurations import/export
- Network data flow statistics
- Device and PLC interlocking
- Networking failure diagnostics

Specifications

TECHNOLOGY

Standard Compliance

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

Specifications

INTERFACE

3G
GSM/GPRS/EDGE/UMTS/HSPA+
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

LEDs
Device:
• POWER, READY, SIM1, SIM2, SD, Signal Strength
RJ45 Ports:
• 100M, LINK/ACT
Serial Ports:
• RS-232, RS-485

SIM Slot
• Number of SIMs: 2, Mini-SIM (25mm x 15mm)
• SIM Operating Voltage: 1.8V/3V

SD Socket
• SDHC(32mm x 24mm x 2.1mm), up to 32GB

Reset Button
• 1 set

3G RF
Frequency Band:
• UMTS/HSPA+: 800/850, 900, AWS1700, 1900, 2100 MHz
• GSM/GPRS/EDGE: 850, 900, 1800, 1900 MHz

Data Transmission Rates
HSPA+:
• Up link 5.76 Mbps
• Down link 21.6 Mbps
UMTS:
• Up link 384 kbps
• Down link 384 kbps
EDGE:
• Up link 236.8 kbps
• Down link 296 kbps
GPRS:
• Up link 85.6 kbps
• Down link 85.6 kbps
RF Output Power:
• Class 4 (2 W, 33 dBm) @GSM 850 / 900
• Class 1 (1 W, 30 dBm) @GSM 1800 / 1900
• Class 3 (0.25 W, 24 dBm) @UMTS
• Class E2 (0.5 W, 27 dBm) @EDGE 850 / 900
• Class E2 (0.4 W, 26 dBm) @EDGE 1800 / 1900
Receiver Sensitivity :
• -108 dBm @ UMTS
• -107 dBm @ GSM 850 / 900 MHz
• -106 dBm @ DCS1800 / PCS1900 MHz

MANAGEMENT

Cloud Service
• DIACloud

Software
• SSH, DNS, HTTP, TFTP, DHCP Server/Client, Syslog, NTP, MODBUS RTU Master, SNMP Server

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

Configuration
• Web Browser, DIACom, Android/iOS App

POWER REQUIREMENTS

Input Voltage
• 12 to 48V_{DC}, 2 pin terminal block input

Input Current
• Max. 1A

Overload Current Protection
• Present, Max. Input current 1.5A

Reverse Polarity Protection
• Present

PHYSICAL

Housing
• IP30 metal case

Dimensions
• 145.3 mm (H) x 45 mm (W) x 112.3 mm (D)

Weight
• 372g

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 60950-1
• IEC 60950-1

EMI
• FCC 47 CFR Part 15 Subpart B Class B
• EN 55022
• EN 55032
• EN 301 489-1/7/24

EMS
(EN 301 489-1/7/24, 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 301 511, EN 301 908-1
• FCC Part 22H, 24E, 27

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-3001H9	-20℃ to 70℃	5	1	1	---	---	1	China, EU, USA

Optional Products
DVP/CliQ/PMC Series: 12/24 V_{DC} Industrial Power Supply
CliQII/PMC Series: 48 V_{DC} Industrial Power Supply

DX-2100 Series

Industrial 3G DIACloud Cloud Routers

-20~70°C FANLESS

- Data acquisition equipment 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
- Supports MODBUS TCP, MODBUS ASCII/RTU and MC protocols
- Using UMTS/HSPA+ 3G technology, supports a wide range of bands (800/850, 900, AWS1700, 1900, 2100 MHz), downward compatible with GSM / GPRS / EDGE 2G network
- HSPA+ data transmission rate up to 21.6 Mbps (downlink)/ 5.76Mbps (uplink)
- Automatic APN parameter matching and connection redial
- Various peripheral interfaces include RS-485, RS-232 and 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 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

Specifications

TECHNOLOGY

Standard Compliance

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

INTERFACE

3G

GSM/GPRS/EDGE/UMTS/HSPA+

Antennas:

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

INTERFACE

Fast Ethernet
RJ45 Ports:
• 1 10/100Base-T(X), auto MDI/MDI-X, auto negotiation

Serial Communication
Serial Ports :
• 1 RS-232(DB9 male), 1 RS-485(DB9 female), 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

LEDs
Device:
• PWR, SD, Ready, 3G, Signal Strength
RJ45 Ports:
• LAN
Serial Ports:
• RS-232 RX, RS-232 TX, RS-485 RX, RS-485 TX

SIM Slot
• Number of SIMs: 1, Mini-SIM (25mm x 15mm)
• SIM Operating Voltage: 1.8V/3V

SD Socket
• SDHC(32mm x 24mm x 2.1mm), up to 32GB

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 XP, Windows Vista (32/64 bits), Windows 7 (32/64 bits)

Configuration
• Web Browser, DIACom, Android/iOS App

PHYSICAL

Housing
• IP30 metal case

Dimensions
• 111 mm(H) x 77 mm(W) x 26 mm (D)

Weight
• 196g

Installation
• Wall mounting

3G RF
Frequency Band:
• UMTS/HSPA+: 800/850, 900, AWS1700, 1900, 2100 MHz
• UMTS/HSPA+ (CN model): 900, 2100 MHz
• GSM/GPRS/EDGE: 850, 900, 1800, 1900 MHz

Data Transmission Rates
HSPA+:
• Up link 5.76 Mbps
• Down link 21.6 Mbps
UMTS:
• Up link 384 kbps
• Down link 384 kbps
EDGE:
• Up link 236.8 kbps
• Down link 296 kbps
GPRS:
• Up link 85.6 kbps
• Down link 85.6 kbps
RF Output Power:
• Class 4 (2 W, 33 dBm) @GSM 850 / 900
• Class 1 (1 W, 30 dBm) @GSM 1800 / 1900
• Class 3 (0.25 W,24 dBm) @UMTS
• Class E2 (0.5 W,27 dBm) @EDGE 850 / 900
• Class E2 (0.4 W,26 dBm) @EDGE 1800 / 1900
RF Output Power(CN model):
• Class 4 (33 dBm, -2.5/+0.5dBm) @GSM 850 / 900
• Class 1 (30 dBm, -2.5/+0.5dBm) @GSM 1800 / 1900
• Class 3 (24 dBm, -2.5dBm) @UMTS 2100/900
• Class E2 (27 dBm, -2.5/+1.5dBm)
• Class E2 (0.4 W,26 dBm)
Receiver Sensitivity :
• -108 dBm @ UMTS
• -107 dBm @ GSM 850 / 900 MHz
• -106 dBm @ DCS1800 / PCS1900 MHz
Receiver Sensitivity(CN model) :
• -109 dBm @ UMTS 2100 MHz
• -110 dBm @ UMTS 900 MHz
• -109.5 dBm @ GSM 850 MHz
• -109 dBm @ GSM 900 MHz
• -108 dBm @ DCS1800 / PCS1900 MHz

POWER REQUIREMENTS

Input Voltage
• 12 to 48V_{DC}, 3 pin terminal block input

Input Current
• Max 1A

Overload Current Protection
• Present, Max. Input current 1.5A

Reverse Polarity Protection
• NOT Present

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 60950-1, EN 60950-1 (DX-2100RW-WW certified)

EMI
• FCC 47 CFR Part 15 Subpart B Class A
• EN 55022 (DX-2100RW-WW certified)
• EN 301 489-1/7/24 (DX-2100RW-WW certified)

EMS
(EN 301 489-1/7/24, 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 (DX-2100RW-WW certified)

• RF
• EN 301 511, EN 301 908-1 (DX-2100RW-WW certified)
• FCC Part 22H, 24E, 27 (DX-2100RW-WW certified)

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-2100RW-CN	-20℃ to 70℃	1	1	1	---	---	1	China
DX-2100RW-WW	-20℃ to 70℃	1	1	1	---	---	1	EU, USA

Optional Products
DVP/CliQ/PMC Series: 12/24 V_{DC} Industrial Power Supply
CliQII/PMC Series: 48 V_{DC} Industrial Power Supply

DX-2300 Series

Industrial Ethernet DIACloud Cloud Routers

-20~70°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
- Supports MODBUS TCP, MODBUS ASCII/RTU and MC protocols
- 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 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

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(DB9 male), 1 RS-485 (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

LEDs

Device:
• PWR, SD, Ready
RJ45 Ports:
• 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 XP, Windows Vista (32/64 bits), Windows 7 (32/64 bits)

Configuration

• Web Browser, DIACom, Android/iOS App

POWER REQUIREMENTS

Input Voltage

• 9 to 40V_{DC}, 2 pin terminal block input

Input Current

• Max. 0.53A

Overload Current Protection

• Present, Max. Input current 1.5A

Reverse Polarity Protection

• NOT Present

PHYSICAL

Housing

• IP30 metal case

Dimensions

• 145.3 mm(H) x 45 mm(W) x 112.3 mm (D)

Weight

• 308g

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 60950-1, EN 60950-1

EMI
• FCC 47 CFR Part 15 Subpart B Class A
• EN 55022

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

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

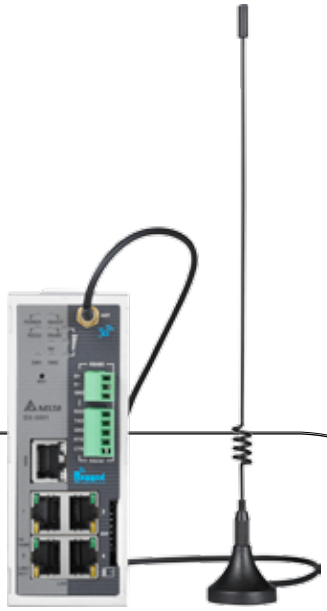
Ordering Information

Product		Port Combination			Interface			Region
Model Name	Operating Temperature	10/100 Base-T(X)	RS-232	RS-485	DI	DO (Relay)	Power Input	
DX-2300LN-CN	-20℃ to 70℃	5	1	1	---	---	1	China
DX-2300LN-WW	-20℃ to 70℃	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

DX-3001H9-V Series

Industrial 3G/WAN VPN Routers



-20~70°C FANLESS

- Supports IPSec, OpenVPN, PPTP, L2TP and GRE standard VPN protocols, CA certificate in IPSec, L2TP over IPSec
- Using UMTS/HSPA+ 3G technology, supports a wide range of bands (850 / 800, 900, AWS1700, 1900, 2100 MHz). Downward compatible with GSM/GPRS/EDGE 2G network
- Dual SIM redundancy design: seamless switch between two ISP systems for online continuity
- HSPA+ data transmission rate up to 21.6Mbps (downlink) / 5.76Mbps (uplink)
- Automatic APN parameter matching and connection redial
- Flexible connection method over WAN port, e.g. static IP, DHCP client and more
- User configurable priorities of the connection to Internet over WAN and 2 cellular networks
- 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 filtering
- Supports TCP/IP, UDP, ICMP, DHCP, HTTP, DNS and SSH protocols
- Device configurations import/export
- Network data flow statistics
- Networking failure diagnostics

Specifications

TECHNOLOGY

Standard Compliance

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

INTERFACE

3G

GSM/GPRS/EDGE/UMTS/HSPA+

Antennas:

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

Specifications

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

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

LEDs
Device:
- POWER, READY, SIM1, SIM2, SD, Signal Strength

RJ45 Ports:
- 100M, LINK/ACT

Serial Ports:
- RS-232, RS-485

SIM Slot
- Number of SIMs: 2, Mini-SIM (25mm x 15mm)
- SIM Operating Voltage: 1.8V/3V

SD Socket
- SDHC(32mm x 24mm x 2.1mm), up to 32GB

Reset Button
- 1 set

3G RF
Frequency Band:
- UMTS/HSPA+: 800/850, 900, AWS1700, 1900, 2100 MHz
- GSM/GPRS/EDGE: 850, 900, 1800, 1900 MHz

Data Transmission Rates
HSPA+:
- Up link 5.76 Mbps
- Down link 21.6 Mbps

UMTS:
- Up link 384 kbps
- Down link 384 kbps

EDGE:
- Up link 236.8 kbps
- Down link 296 kbps

GPRS:
- Up link 85.6 kbps
- Down link 85.6 kbps

RF Output Power:
- Class 4 (2 W, 33 dBm) @GSM 850 / 900
- Class 1 (1 W, 30 dBm) @GSM 1800 / 1900
- Class 3 (0.25 W, 24 dBm) @UMTS
- Class E2 (0.5 W, 27 dBm) @EDGE 850 / 900
- Class E2 (0.4 W, 26 dBm) @EDGE 1800 / 1900

Receiver Sensitivity :
- -108 dBm @ UMTS
- -107 dBm @ GSM 850 / 900 MHz
- -106 dBm @ DCS1800 / PCS1900 MHz

MANAGEMENT

VPN
- IPSec, OpenVPN, PPTP, L2TP, GRE

Software
- SSH, DNS, HTTP, TFTP, DHCP Server/Client, Syslog, NTP, MODBUS RTU Master, SNMP Server

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

Configuration
- Web Browser

POWER REQUIREMENTS

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

Input Current
- Max. 1A

Overload Current Protection
- Present, Max. Input current 1.5A

Reverse Polarity Protection
- Present

PHYSICAL

Housing
- IP30 metal case

Dimensions
- 145.3 mm (H) x 45 mm (W) x 112.3 mm (D)

Weight
- 372g

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 60950-1
- IEC 60950-1

EMI
- FCC 47 CFR Part 15 Subpart B Class B
- EN 55022
- EN 55032
- EN 301 489-1/7/24

EMS
(EN 301 489-1/7/24, 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 301 511, EN 301 908-1
- FCC Part 22H, 24E, 27

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

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

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(Green Building)

Taoyuan Plant 1

Tainan Plant
(Diamond-rated Green Building)

ASIA (China)

Wujiang Plant 3

Delta Electronics

Tokyo Office

ASIA (India)

Rudrapur Plant
(Green Building)

EUROPE

Amsterdam, Netherlands

AMERICA

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3 **Liaoning** Shenyang Dalian
4 **Shanxi** Taiyuan
5 **Beijing**
6 **Tianjin**
7 **Hebei** Shijiazhuang Qinhuangdao Tangshan
8 **Shandong** Qingdao Jinan Yantai
9 **Jiangsu** Yangzhou Nanjing Nantong Changzhou Wuxi Suzhou Kunshan Xuzhou
10 **Shanghai** Jiading Songjiang
11 **Anhui** Hefei
12 **Zhejiang** Hangzhou Ningbo Wenzhou Jiaxing Shaoxing
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14 **Jiangxi** Nanchang
15 **Guangdong** Shenzhen Guangzhou Foshan
16 **Guangxi** Nanning Guilin Liuzhou
17 **Yunnan** Kunming
18 **Sichuan** Chengdu
19 **Shaanxi** Xian
20 **Henan** Zhengzhou Luoyang Changyuan
21 **Hubei** Wuhan Xiangfan
22 **Hunan** Changsha Hengyang
23 **Inner Mongolia** Baotou
24 **Guizhou** Guiyang
25 **Gansu** Lanzhou
26 **Xinjiang** Urumqi
27 **Anhui** Wuhu

Smarter. Greener. Together.

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