# DVS-328 series

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

-40~85°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

# Specifications

## 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 @ 24$V_{DC}$

### 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 72$V_{DC}$ (Tested @ 36 to 60$V_{DC}$)
- HV: 1 set 85 to 264$V_{AC}$ / 88 to 370$V_{DC}$ (Tested @ 100 to 240$V_{AC}$)

### 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)**
• 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