PCS-9882

Managed Ethernet Switch

The PCS-9882 series 1U 19" managed Ethernet switches are designed for severe environments. It supports high data transmission rate to meet the increasing requirements in substation automation system (SAS), networked control system (NCS), distributed control systems (DCS), industrial system, etc.

Features

- The PCS-9882 series Ethernet switches adopt high-performance switching chip and excellent industrial design to keep the line speed forwarding under full duplex and full rate operation of all the ports. The design and manufacturing of this device has fully considered various adverse conditions and interference factors in industrial applications to ensure a reliable data transmission under harsh environments.
- This device is especially suitable for IEC 61850 application and digital substation process level bus.
- Support of IEC 61850 modeling and monitoring via IEC 61850 protocol
- Support of MAC-based and protocol-based flow control to prevent message isolation in process level bus of digital substation
- Support of static multicast management to make the flow control more transparent and reliable

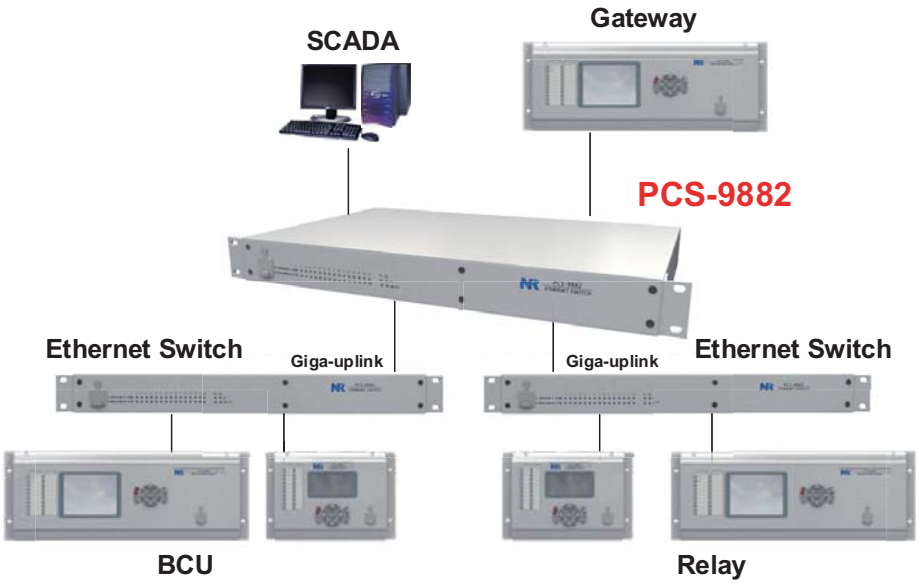

Figure 1 Typical application

- Support of ACL-based white list and black list along with DoS anti-attack technology to ensure the security and reliability of digital substation process level bus
- The advanced heat emission technology (protected by patent) is applied to ensure an excellent heat emission performance and a stable working environment range between -40°C ~ +85°C.
- The advanced technologies, including total-enclosed housing, partitioned grounding connection, anti-interference power supply, PCB division by voltage level and cable shielding, ensure zero package loss under strong electromagnetic interference.
- The compact parallel processing technology is applied to ensure an excellent store and forward performance.
- The optimized RSTP protocol is adopted and the switch failover time has achieved an international leading level: max.2ms per hop.
- The dual load-sharing hot-swappable technology is adopted for AC and DC power supply.
- The processing capacity guarantees a handling of any packet (64~1518 bytes) with zero loss of package.
- VLAN, traffic prioritization, RSTP, port security, GMRP/GVRP, IGMP snooping are supported to meet the process level bus requirements in digital substation.
- The port security strategy, which is based on static MAC address and IEEE 802.1X, guarantees the access security of connected IEDs.
- To ensure the security access control, SSL/SSH is supported.
- Support of IEEE 1588V2 protocol, support of the one-step and two-step methods.
- The device is designed as an industrial managed Ethernet switch with abundant functions (e.g. port flow control, network storm limitation, port mirroring, SNMP, RMON, WEB, port trunking, SNTP, RADIUS, etc.).
- In case of a power supply short interruption, this device can still work for up to 500ms, to ensure enough time for data forward.
- Several Gigabit ports are equipped for the improvement of uplink performance.
- The GOOSE/SMV message delay compensation technology can efficiently solve the reliance problem on clock synchronization network in digital substation process level bus. (PCS-9882SD only)

Functions

Functions	PCS-9882AD	PCS-9882BD	PCS-9882ED	PCS-9882PD	PCS-9882SD	PCS-9882GD
Ethernet Switching						
Gigabit port (SFP, 1000BASE-SX, 1.25GBd, IEEE 802.3, hot plug)	0~4	0~2	0	0~4[4]	0~4[5]	[6]
Gigabit port (Copper, 10BASE-T/100BASE-TX/100BASE-T, MDI/MDIX)	0~4	0~2	0	0~4[4]	0~4[5]	
Fast Ethernet ports (SFP, 100BASE-FX, IEEE 802.3, hot plug)	0~2[1]	0~16[2]	0~12[3]	0~4[4]	0~18[5]	
Fast Ethernet ports (Copper, 10BASE-T/100BASE-TX, MDI/MDIX)	22~24[1]	0~16[2]	12~24[3]	24	0	
Direct forward mode	●	●	●	●	●	●
Flow Control (IEEE 802.3x)						
Network storm suppression	●	●	●	●	●	●
Port rate limitation	●	●	●	●	●	●
Port mirror	●	●	●	●	●	●
Link aggregation	●	●	●	●	●	●
Quality of Service control	●	●	●	●	●	●
Flow limitation (MAC-based)				●	●	●
Flow limitation (protocol-based)				●	●	●

Functions	PCS-9882AD	PCS-9882BD	PCS-9882ED	PCS-9882PD	PCS-9882SD	PCS-9882GD
Delay Compensation						
GOOSE message-based					●	
SMV message-based					●	
Virtual Local Area Network						
Port-based VLAN	●	●	●	●	●	●
MAC-based VLAN				●	●	●
Protocol-based VLAN				●	●	●
IP-based VLAN				●	●	●
IEEE 802.1Q-based VLAN	●	●	●	●	●	●
Overlapped VLAN configuration	●	●	●	●	●	●
VLAN tag insertion, modification and deletion	●	●	●	●	●	●
GARP VLAN registration protocol	●	●	●	●	●	●
QinQ VLAN				●	●	●
Ring Network						
STP (IEEE 802.1D), RSTP (IEEE 802.1w), MSTP (fast switch to backup link)	●	●	●	●	●	●
NR-Ring private protocol (faster recovery speed)	●	●	●	●	●	●
Dedicated protocol (minimize network storm)	●	●	●	●	●	●
MRP	●	●	●	●	●	●
Multicast						
IEEE802.1Q-based VLAN multicast	●	●	●	●	●	●
MAC-based static multicast management	●	●	●	●	●	●
GMRP dynamic multicast management	●	●	●	●	●	●
IGMP snooping dynamic multicast management.	●	●	●	●	●	●
Port Security						
Static MAC-based port security certification	●	●	●	●	●	●
IEEE 802.1X-based port security certification	●	●	●	●	●	●
RADIUS Server (with IEEE 802.1X for remote and local certification)	●	●	●	●	●	●
SSL/SSH	●	●	●	●	●	●
Quantity limitation on MAC learning	●	●	●	●	●	●
Telnet ON/OFF	●	●	●	●	●	●
Free of DoS attack	●	●	●	●	●	●
ACL function				●	●	●
Security log and operation log	●	●	●	●	●	●
Clock Synchronization						
SNTP Server/Client	●	●	●	●	●	●
PTP				●	●	●
File Management						

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Offline modification of config file	●	●	●	●	●	●
Uploading and downloading of config file	●	●	●	●	●	●
Log and event file uploading to PC	●	●	●	●	●	●
Management Method						
WEB Server, Telnet and CLI	●	●	●	●	●	●
IEC 61850 MMS remote monitoring	●	●	●	●	●	●
SNMP V1/V2C/V3.	●	●	●	●	●	●
RMON	●	●	●	●	●	●
Alarm and block output contact via relay	●	●	●	●	●	●
IP conflict detection	●	●	●	●	●	●
LLDP	●	●	●	●	●	●
TACACS+, RADIUS and IEEE802.1X				●	●	●
Data Store & Forward Delay						
Fast Ethernet port	2μs	2μs	2μs	10μs	15μs	10μs
Gigabit port	1μs	1μs	1μs	5μs	5μs	5μs

[1]For PCS-9882AD, the No.23 & 24 fast Ethernet ports are configurable to be copper or fiber optic. Please use different SFP sockets for the distinction.

[2]For PCS-9882BD, all the 16 fast Ethernet ports are configurable to be copper or fiber optic. Please use different SFP sockets for the distinction.

[3]For PCS-9882ED, the No.13~24 fast Ethernet ports are configurable to be copper or fiber optic. Please use different SFP sockets for the distinction.

[4]For PCS-9882PD, all the 4 Gigabit ports share the same interfaces with 4 fiber optic fast Ethernet ports. Please use different SFP sockets for the distinction.

[5]For PCS-9882SD, all the 4 Gigabit ports share the same interfaces with 4 (out of 18) fiber optic fast Ethernet ports. Please use different SFP sockets for the distinction.

[6]For PCS-9882GD modular-structure switch, all the 28 ports are configurable. Please specify your requirement with port type and quantity according to the following table.

[7]For PCS-9882GD, all the fiber optic fast Ethernet ports (max.28) share the same interfaces with all the fiber optic Gigabit ports. Please use different SFP sockets for the distinction.

[8]For PCS-9882GD, all the copper fast Ethernet and Gigabit ports share the same interfaces.

Type	Gigabit Port		Fast Ethernet Port	
	Fiber Optic	Copper	Fiber Optic	Copper
PCS-9882GD-28F	0~28[7]	/	0~28[7]	/
PCS-9882GD-4F24C	0~4[7]	0~24[8]	0~4[7]	0~24[8]
PCS-9882GD-8F16C	0~8[7]	0~16[8]	0~8[7]	0~16[8]
PCS-9882GD-16F	0~16[7]	/	0~16[7]	/
PCS-9882GD-16F8C	0~16[7]	0~8[8]	0~16[7]	0~8[8]
PCS-9882GD-8F8C	0~8[7]	0~8[8]	0~8[7]	0~8[8]