V1.1 Dec, 2024



# **IGS-P9164 Series**

### Managed Cyber-hardened IEC 61850-3 20-port managed Gigabit Ethernet switch

### Features

- > Developed according to IEC 62443-4-1 and certified with the IEC 62443-4-2 industrial cybersecurity standards.
- > Designed for power substation / Railway application and fully compliant with the requirement of IEC 61850-3 and IEEE 1613
- Support O-Ring (recovery time < 30ms over 250 units of connection) and MSTP(RSTP/STP compatible) for Ethernet Redundancy
- > **Open-Ring** support the other vendor's ring technology in open architecture
- > O-Chain allow multiple redundant network rings
- Support standard IEC 62439-2 MRP (Media Redundancy Protocol) function
- Support IEEE 1588v2 clock Synchronization
- Support IPV6 new internet protocol version
- Support Modbus TCP protocol
- Provided HTTPS/SSH protocol to enhance network security
- Support IEEE 802.3az Energy-Efficient Ethernet technology
- Support SMTP client and NTP server protocol
- Support IP-based bandwidth management
- Support application-based QoS management
- Support Device Binding security function
- Support DOS/DDOS auto prevention
- > IGMP v2/v3 (IGMP snooping support) for filtering multicast traffic
- Support SNMP v1/v2c/v3 & RMON & 802.1Q VLAN Network Management
- Support ACL, TACACS+ and 802.1x User Authentication for security
- Support 9.6K Bytes Jumbo Frame
- Support DBU-01 backup unit to quickly backup/restore configuration
- Multiple notification for warning of unexpected event
- Support **DBU-01** backup unit device to quickly backup/restore configuration
- > Web-based ,Telnet, Console (CLI), and Windows utility (Open-Vision) configuration
- Support LLDP Protocol
- Rigid IP-30 housing design
- DIN-Rail and wall mounting enabled



### Introduction

IGS-P9164 series are IEC 61850-3 managed redundant ring Ethernet switches. These switches are designed for power substation application and rolling stock application, fully compliant with the requirement of IEC 61850-3 and IEEE 1613. **IGS-P9164GF** series are IEC 61850-3 managed redundant ring Ethernet switch with 16x10/100/1000Base-T(X) ports and 4x1000Base-X optical fiber port with SC connector. **IGS-P9164FX** series are IEC 61850-3 managed redundant ring Ethernet switch with 16x10/100/1000Base-T(X) ports and 4x100Base-FX optical fiber port with SC connector. **IGS-P9164GC** series are IEC 61850-3 managed redundant ring Ethernet switch with 16x10/100/1000Base-T(X) ports and 4x100Base-FX optical fiber port with SC connector. **IGS-P9164GC** series are IEC 61850-3 managed redundant ring Ethernet switch with 16x10/100/1000Base-T(X) ports and 4xGigabit combo ports with SFP socket. With completely support of Ethernet Redundancy protocol, **O-Ring** (recovery time < 30ms over 250 units of connection) and MSTP (RSTP/STP compatible) can protect your mission-critical applications from network interruptions or temporary malfunctions with its fast recovery technology. And support wide operating temperature from -40 °C to 85 °C. IGS-P9164GF(X) series can also be managed centralized and convenient by Open-Vision, Except the Web-based interface, Telnet and console (CLI) configuration. Therefore, the switch is one of the most reliable choice for highly-managed and Fiber Ethernet application.

- **O-Ring :** O-Ring is ORing's proprietary redundant ring technology, with recovery time of less 30 milliseconds and up to 250 nodes. The O-Ring redundant ring technology can protect mission-critical application from network interruptions or temporary malfunction with its fast recover technology.
- **Open-Ring :** Open-Ring is an enhanced redundant technology that makes ORing's switches compatible with other vendor's proprietary redundant ring technologies. It enables ORing's switches to form a single ring with other vendor's switch. In cases where the ring is setup using proprietary technology, ORing offers a compatibility service where ORing can make its switches compatible with your particular network requirements.
- <u>O-Chain</u> : O-Chain is the revolutionary network redundancy technology that provides the add-on network redundancy topology for any backbone network, O-Chain allows multiple redundant network rings of different redundancy protocols to join and function together as a larger and more robust compound network topology. O-Chain providing ease-of-use while maximizing fault-recovery swiftness, flexibility, compatibility, and cost-effectiveness in one set of network redundancy topology.
- MRP: Media Redundancy Protocol (MRP<sup>\*NOTE</sup>) is a data network protocol standardized by the IEC 62439-2. It allows rings of Ethernet switches to overcome any single failure with recovery time much faster than achievable with Spanning Tree Protocol.
- **IP-based Bandwidth Management :** The switch provide advanced IP-based bandwidth management which can limit the maximum bandwidth for each IP device. User can configure IP camera and NVR with more bandwidth and limit other device bandwidth.
- **Application-Based QoS**: The switch also support application-based QoS. Application-based QoS can set highest priority for data stream according to TCP/UDP port number.
- **Device Binding Function :** ORing special Device Binding function can only permit allowed IP address with MAC address to access the network. Hacker cannot access the IP surveillance network without permission. It can avoid hacker from stealing video privacy data and attacking IP camera, NVR and controllers.
- Advanced DOS/DDOS Auto Prevention : The switch also provided advanced DOS/DDOS auto prevention. If there is any IP flow become big in short time, the switch will lock the source IP address for certain time to prevent the attack. It's hardware based prevention so it can prevent DOS/DDOS attack immediately and completely.
- **IEEE 1588 Technology :** The IEEE 1588 technology can fulfill precision time synchronization requirements for protection and control applications.
- Modbus TCP : This is a Modbus variant used for communications over TCP/IP networks.
- **IEEE 802.3az Energy-Efficient Ethernet :** This is a set of enhancements to the twisted-pair and backplane Ethernet family of networking standards that will allow for less power consumption during periods of low data activity. The intention was to reduce power consumption by 50% or more.



### **Open-Vision**

ORing's switches are intelligent switches. Different from other traditional redundant switches, ORing provides a set of

Windows utility (Open-Vision) for user to manage and monitor all of industrial Ethernet switches on the industrial network.



Commander

Topology View



Design for Rugged Excellence

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## Specifications

0	Ring Switch Model	IGS-P9164GF-MM	IGS-P9164FX-MM	IGS-P9164GF-SS	IGS-P9164FX-SS	IGS-P9164GC	
Pł	ysical Ports						
10/100/1000Base-T(X) Ports in RJ45 Auto MDI/MDIX							
10	gabit Combo Port with //100/1000Base-T(X) and 0/1000Base-X SFP Port		4				
	Fiber Ports Number		-				
	Fiber Ports Standard	1000Base-SX	100Base-FX	1000Base-LX	100Base-FX	-	
	Fiber Mode	Multi-mode	Multi-mode	Single-mode	Single-mode	-	
_	Fiber Diameter (µm)	62.5/125 μm @ 50/125 μm	62.5/125 μm 50/125 μm	9/125 µm	9/125 µm	-	
ation	Fiber Optical Connector	SC	SC	SC	SC	-	
ecific	Typical Distance (Km)	0.55 Km	2 Km	10 Km	30 Km	-	
Fiber Ports Specification	Wavelength (nm)	850 nm	1310 nm	1310 nm	1310 nm	-	
	Max. Output Optical Power (dbm)	-4 dbm	-14 dbm	-3 dbm	-8 dbm	-	
	Min. Output Optical Power (dbm)	-9.5 dbm	-23.5 dbm	-9.5 dbm	-15 dbm	-	
	Max. Input Optical Power (Saturation)	0 dbm	0 dbm	-3 dbm	0 dbm	-	
	Min. Input Optical Power (Sensitivity)	-18 dbm	-31 dbm	-20 dbm	-34 dbm	-	
	Link Budget (db)	8.5 db	7.5 db	10.5 db	19 db	-	
Technology							
Ethernet Standards		IEEE 802.3 for 10Base-T IEEE 802.3u for 100Base-TX and 100Base-FX IEEE 802.3ab for 1000Base-T IEEE 802.z for 1000Base-X					
		IEEE 802.3x for Flow control IEEE 802.3ad for LACP (Link Aggregation Control Protocol ) IEEE 802.1p for COS (Class of Service) IEEE 802.1Q for VLAN Tagging IEEE 802.1w for RSTP (Rapid Spanning Tree Protocol)					

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incremental interface         incremental interface         incremental interface           MAIL Toalin         Res         incremental interface         incremental interface           MAIL Toalin         Res         incremental interface         incremental interface         incremental interface           MAIL Toalin         Res         incremental interface         incremental interface         incremental interface           Switch Properties         Switch Properties         Switch Properties         incremental interface         incremental interface           Switch Properties         Up to 3 66 Ryps         incremental interface         incremental interface         incremental interface           Switch Properties         Up to 3 66 Ryps         incremental interface         incremental interface         incremental interface           Switch Properties         Up to 3 66 Ryps         incremental interface         incremental interface         incremental interface           Switch Properties         Up to 3 66 Ryps         incremental interface         incremental interface         incremental interface           Switch Properties         Up to 3 66 Ryps         incremental interface         incremental interface         incremental interface           Switch Properties         Up to 3 66 Ryps         incremental interface         incremental interface		IFEE 802 1c for MCTD /M	ultinle Snanning Trop Dro	tocol)						
ILEE 802.148 pr. L.D.Y Lake Layer Discoury Printing 3           PACE Table 8           Facket Bolfer         4Nits           Facket Bolfer         9           Facket Bolfer         9           Freesamper         Sinthing Laneory 7: //s           Southing Steamper 7: //s         Sinthing Laneory 7: //s           Southing Printiput Symposition         Not rais for finite           Processing         Sinthing Laneory 7: //s           Southing Printiput Symposition         Processing           Southing Printiput Symposition         Processing           Southing Company         Processing <td></td> <td colspan="6">IEEE 802.1s for MSTP (Multiple Spanning Tree Protocol) IEEE 802.1x for Authentication</td>		IEEE 802.1s for MSTP (Multiple Spanning Tree Protocol) IEEE 802.1x for Authentication								
NAC Table         Ek           Proceed multime         440 mics           Proceeding         50           Proceeding         Southamp bandwidth: 400 pp.           Southamp bandwidth: 400 pp.         Southamp bandwidth: 400 pp.           Junito frame         Up to 0.60 fp.           Device Binding southamp bandwidth: 400 pp.         Southamp bandwidth: 400 pp.				ocol)						
reduct Duffer         419/03           Protocy Queue         8           Protocy Queue         8           Switch Properties         Switching Marray 70 in Switching Marray 70 in Switc	MAC Table									
Processing         Some and Flowward           Switch Properties         Switching laterally: 4005gs           Switch Properties         Switching laterally: 4005gs           Name         VAN ID Amage : VID 1 to 4094           Synth Properties         VAN ID Amage : VID 1 to 4094           Number Amage : VID 1 to 4094         Synth Properties           Jumbo Frame         Device Binding socially to Batare           Device Binding socially to Batare         Device Binding socially to State Amage           Security Features         Device Binding socially to Batare           Security Features         Device Binding Social to Batare		4Mbits								
Selfchild is balance: 7: Us           Switch Properties           VALID Range: VULP Selfchild is Selfchild in Section 2005           Switch Properties           VALID Range: VULP Selfchild is Section 2005           Switch Properties           VALID Range: VULP Selfchild is Section 2005           Section 2005 <td>Priority Queues</td> <td>8</td> <td colspan="8">8</td>	Priority Queues	8	8							
Switching basework: 90050           Switching basework: 90050           Switching basework: 90050           Max. Kumber of Available VARs: 4005           Max. Kumber of Available VARs: 4005           VALD 10 Ange: VID 10 4094           Edit multicate provide VID           Jumbo Frame           Up to 56.05 Kybes           Evolution for available VAR           Security Features           VLAN (Edit Control for available VAR)           Security Features           Security Features           VLAN (Edit Control for available VAR)           Security Features           StrikeTryRetTP (EEE 602.10) // segregate and secure network traffic           Security Features           StrikeTryRetTP (EEE 602.10) // segregate and secure network security           StrikeTryRetTP (EEE 602.10) // segregate and secure network security           StrikeTryRetTP (EEE 602.10) // segregate and secure network security           VLAN (60.2.1) // se	Processing	Store-and-Forward								
Switch Properties         Max. Kurber of Available VLAN: 4005           VAID 12 Arace: VLAD 12 Arace: VLAD         YLAD 12 Arace: VLAD           Auribo Pame         Up to 5.65 Mplas:           Switch Properties         YLAD YLAD YLAD:	-	Switching latency: 7 us								
Switch Properties         VLNU D Agnep : VD 1 to 0904           Pert are familing: User Define		Switching bandwidth: 40	Gbps							
UMA 10 Range : WD 11 d 044         Devise finding: User Define         Jumbo frame       Uo 50 968 West         Security Features       Emailty/Lister Define         Security Features       Emailty/Lister Define         Security Features       Emailty/Lister Define         Security Features       Emailty/Lister Define         Security Features       Emailty/Lister Designation and access security         FUEX RESULT       Emailty/Lister Designation and access security         FUEX RESULT       Emailty/Lister Designation and access security         Security Features       Redundant Ring (C-Ring) With recovery time less than Joins over 250 units         Software Features       Redundant Ring (C-Ring) With recovery time less than Joins over 250 units         Software Features       Redundant Ring (C-Ring) With recovery time less than Joins over 250 units         Software Features       Redundant Ring (C-Ring) With recovery time less than Joins over 250 units         Software Features       Redundant Ring (C-Ring) With recovery time less than Joins over 250 units         Software Features       Redundant Ring (C-Ring) With recovery time less than Joins over 250 units         Software Features       Redundant Ring (C-Ring) With recovery time less than Joins over 250 units         Software Features       Redundant Ring (C-Ring) Ring With Ring Ring Ring Ring Ring Ring Ring Ring	Cwitch Droportion	Max. Number of Available VLANs: 4095								
Import name         Port rate limiting: User Derker           Jumbo frame         Derice Bolding security Hature           Enable/fastible Derice Bolding security Hature         Enable/fastible Derice Bolding security Hature           Society Features         Part and Hature Derice Bolding security Hature           Society Features         Sciently Features           Society Features         Strip/Strip/Hature Derive Security           Mature Derive Supported         Derive Supported           Dip/Strip/Bature Derive Supported         Dorive Security           Software Features         Strip/Strip/Hature Derive Supported           Dip/Strip/Strip/Hature Derive Supported         Dorive Society Security           Dip/Strip/Strip/Strip/Hature Security         Derive Security           Pib-Bate Bondindth management         Dorive Society Security           Dip/Strip/Strip/Strip/Strip/Strip/Strip/Strip/Strip/Strip/Strip/Strip/Strip/Strip/Strip/Strip/Strip/Strip/Strip/Strip/Strip/Strip/Strip/Strip/Strip/Strip/Strip/Strip/Strip/Strip/Strip/Strip/Strip/Strip/Strip/Strip/Strip/Strip/Strip/Strip/Strip/Strip/Strip/Strip/Strip/Strip/Strip/Strip/Strip/Strip/Strip/Strip/Strip/Strip/Strip/Strip/Strip/Strip/Strip/Strip/Strip/Strip/Strip/Strip/Strip/Strip/Strip/Strip/Strip/Strip/Strip/Strip/Strip/Strip/Strip/Strip/Strip/Strip/Strip/Strip/Strip/Strip/Strip/Strip/Strip/Strip/Strip/Strip/Strip/Strip/Strip/Strip/Strip/Strip/Strip/Strip/Strip/Strip/Strip/Strip/Strip/Strip/Strip/Strip/Strip/Strip/Strip/Strip/Strip/Strip/Strip/Strip/Strip/Strip/Strip/Strip/Strip/Strip/Strip/Strip/Strip/Strip/Strip/St	Switch Properties	VLAN ID Range : VID 1 to 4094								
Jumbo frame: Up to 9 46 Apress Provide Diality Security Features Enablediable ports, MiC Beard port security Features Enablediable ports, MiC Beard port security Features VLAN (602.10, 1) to segregate and secure network traffic Radius certralized password management Security Features VLAN (602.10, 1) to segregate and access security Intto / SSI enhance network security This / SSI enhance network security Redundant King (C-Hing) With recovery time lass than 30ms over 250 units ToSOHMers Papertained authoritication and access security ULAN (602.10, 1) for real-time traffic ULAN (602.10, 1) for real										
Device Device Device         Device Device Device Survey           Security Features         V.A.M (002.10) to segregate and secons extruity           VLAM (002.10) to segregate and secons extruit         Ratio Second Interpret And Secons Extruit           Security Features         VLM (002.10) to segregate and secons extruit           Witty / Still enhance network secondy         Still Physics (02.11) for real-time traffic           Still Physics (02.11) for real-time traffic         VLM (002.10) with Access security           Still Physics (02.11) for real-time traffic         VLM (002.10) with VLM secons to the second		-								
Security Features       Enable/(disable pots, MC based pot security (82.1x) VLAN (802.10) to segregate and secure heaver traffic Radius centralized passed management SMPA's annyated automutation and access security imps / SSH mation enhows kernagement SMPA's annyated automutation and access security implement Radius centralized passed management Quality of Service (802.1p) for rei-line traffic Quality of Service (802.1p) for rei-line traffic Park Recovery Matter (Berrity FIP) compatibility Matter (Berrity FIP) compatibility Park Recovery Matter (BERRITY FIP) compatibility Park Recovery Matter (BERRITY FIP) compatibility Park Recovery Matter (BERRITY FIP) compatibility experted module rule (BERRITY FIP) Park Indicator (Rein)       Green Find Cataes that the system is operating in O-Ring Matter mode Green Binking: Indicates that the system is operating in O-Ring Matter mode Green Binking: Indicates that the system is operating in O-Ring Matter mode Green Binking: Indicates that the system is operating in O-Ring Matter mode Green Binking: Indicates that the system is operating in O-Ring Matter mode Gr	Jumbo frame									
Pact based network access control (802.1x)           Security Features         Part Access control (802.1x)           Signer Statures         Signer Statures           Software Features         Signer Statures           Software Features </td <td></td> <td colspan="7"></td>										
Security Features       VIA.47 (802-10,2 to segregate and score network traffic access security         Seture Security Features       Radius centralized password management         Seture Security Features       StripestTyPRSTY[CEE 802-10/W)         Reducedent Base network security       Reducedent Base network security         TDS/DIFFersore       Reducedent Base network security         Seture Security Features       Reducedent Base network security         Seture Security Seture Security       Reducedent Base network security         Seture Security Security Seture Security Securi										
Radius centralized passion management         SMMPA enzyted autheritotion and access socurity         HTBP / SSH enhance network security         STP/RSTP/MSTP (IEEE 802.1D/w/s)         Gualant of Server (Online)         Gualant of Server (Online)         Gualant of Server (Online)         IP-based bandwidth management         Option of Server (Online)         Port configuration, status, statustics, montoring, security         Port configuration, status,	Security Features									
SNPN-2 encrypted authentication and access security           Https / SPI enhance network security           Redundant Ring (O-Ring) with recovery time less than 30ms over 250 units           Software Features           Software Features           Software Features           Prove Indicator Reduction and access security           Dir/Dir/Dir/Dir/Dir           Network Redundancy           Open-Ring	Security reactives			uanic						
Http://Stite enhance network security         STP/RSTP/MSTP (HEEE 802: LID/v4)         Redundant, Ring (O-Ring) with recovery time less than 30ms over 250 units         TOS/DIfferer supported         Quality of Server (2021) (b) for real-time traffic         VLAN (802.10) with VLAN tagging and GVRP supported         TOS/DIFFERE supported         Application-based dos management         Application-based dos management         DOS/DOOS stuto prevention         Port configuration, status, statistics, monitoring, security         DHCP Server/Client/Relay         Modbus TCP         NTP         Network Redundancy         Bes-232 Serial Console Port         Res-232 Serial Console Port         Res-232 Serial Console Port         Bes-232 Serial Console Port         Res-232 In RAS connector with console cable.         MSTP (RSTP/STP compatible)         Res-232 In RAS connector with console cable.         MST (RSTP/STP Compatible)         Res-232 In RAS connector with console cable.         MST (RSTP/STP Compatible)         Res-232 In RAS connector with console cable.         MST (RSTP/STP) Compatible)         Green : Indicates that the system is operating in O-Ring Master mode         Green : Indicates that the system oparating in O-Ring Master mode			-	ritv						
STP.STP.MSTP (EEE 802.10/w/s)         Redundant Ring (O-Ring) with recovery time less than 30ms over 250 units         TOS/D/Brav supported         Quality of Service (802.12) for real-time traffic         VLAR (802.12) with VLAX tagging and GKRP supported         IGMP Shooping         IP-based backwidth management         DOS/D/DS and prevention         Port configuration, status, status				···· <b>·</b> /						
Redundant Rug (0-Rug) with ecovery time less than 30ms over 250 units         TOS/Differer supported         TOS/Differer supported         TOS/Differer supported         TOS/Differer supported         TOM 2000pting         TOM 2000pting         Passed bandwidth management         Application-based Qos management         DOS/DDOS auto prevention         Port configuration, status, stattics, monitoring, security         Diff Server/Client/Relay         SMTP Client         Modous TOP         NTP server         O-Chain         MEX-232 strail Console Port       06-Ring         O-Chain         MRP-NOTE         Fast Recovery         MSTP (RSTP/STP compatible)         Rs-232 Strail Console Port       Green : Indicates that the system is operating in O-Ring Moster mode         O-Ring Indicator (Run)       Green : Indicates that the system soperating in O-Ring Moster mode         Fast Recovery       Green : Indicates that the Ring is broking in O-Ring Moster mode         O-Ring Indicator (Run)       Green : Indicates that the Ring is broking in O-Ring Moster mode         IO/10000Base-TX (RISF Pot Indicator)       Green : Indicates that the Ring is broking indicator / OH light for 10Mbps indicator / OH lig										
Software Features       Quilty of Service (022 Lp) for real-time traffic VLAW (022 LQ) with VLAN tagging and GVRP supported IGMP Sonooning "Possed bandwidth management Application-based Qos management Mathematication application-based Qos management Mathematication application-based Qos management Application-based Cos management Application-cos		, , , ,	,	han 30ms over 250 units	5					
Software Features       VAX (802.10) with VAX tagging and GVRP supported IGMP Snooping IP-based bandwidth management Application-based QSS management ODS/DODS and prevention ODS/DODS and prevention ODS/DODS and prevention ODS/DODS and prevention ODS/DOTS and prevention ODS/DOTS and prevention ODS/DOTS         VAX end call grant in the system operating in O-Ring mode Grant Indicator (RM)       OPRIME OPRIME       Set		TOS/Diffserv supported								
Software Features       ICMP Snooping         Br-based bandwidth management Application-based QoS management DoS/DDS auto prevention Pot configuration, status, statistics, monitoring, security DHCP Server/Clent/Relay       Situation-based QoS management Devertion         Network Redundancy       O-Ring O-Chain MRP *00TE       Situation, status, statistics, monitoring, security DHCP Server/Clent/Relay         Strip Clent Modbus TCP MTP server       O-Ring O-Chain MRP *00TE       Situation, status, statistics, monitoring, security         Strip Clent MRP *00TE       O-Ring O-Chain MRP *00TE       Situation, status, statistics, monitoring, security         Retwork Redundancy       O-Ring O-Chain MRP *00TE       O-Ring Fast Recovery HISTP (RSTP/STP compatible)         Res-232 Serial Console Port       Rs-232 in RJ4S connector with console cable. 115200bps, 8, N, 1       Imagement Strip RSTP (RSTP/STP compatible)         Res-232 Griel Console Port       Green : Indicates that the system is operating in O-Ring Master mode       Imagement Green : Indicates that the system operating in O-Ring mode Green : Indicates that the system operating in O-Ring mode Green Blinking : Indicates that the system operating in O-Ring mode Green for Dink/Act indicate.       Imagement Fault Indicator (Rang)       Green for Dink/Act indicates.         10/100/1000Base-XFIber Port Indicate       Green for Dink/Act indicates.       Imagement Fault Indicator (Ring)       Green for Dink/Act indicates.         10/100/1000Base-XFIber Port Indicate       Green for Dink/Act indicator.       Green for p		Quality of Service (802.1	<ul><li>p) for real-time traffic</li></ul>							
Software Features       IP-based bandwidth management Agplication-based QoS management Josepholo Suito prevention - DOS/DOS Suito Prevention -		VLAN (802.1Q) with VLAI	N tagging and GVRP supp	orted						
Software Features       Application-based QoS management DOS/DDOS auto prevention Port configuration, status, statistics, monitoring, security DHCP Server/Client/Relay         SMP Client       Modbus TCP Modbus TCP         Modbus TCP       Modbus TCP         Mapp MoTE       Fast Recovery         Fast Recovery       MSTP (RSTP/STP compatible)         Rs-232 Serial Console Port       Rs-232 In RA45 connector with console cable. 115200bps, 8, N, 1         Power Indicator       Green : Power LED x 3         Ring Master Indicator (R.M.)       Green : Indicates that the system is operating in O-Ring Master mode Green Blinking: Indicates that the system operating in O-Ring mode Green Blinking: Indicates that the system operating in 0-Ring mode Green Blinking: Indicates that the Ring is broken.         Fault Indicator (Raul)       Amber : Indicate unexpected event occurred         10/1000Base-TX RMS Port       Green for port Link/Act. (for IGS-P9164GF series)         10/1000Base-TX Fiber Port Indicator       Green for port Link/Act. (for IGS-P9164GF series)         10/1000Base-TX Fiber Port Indicator       Green for port Link/Act. (for IGS-P9164GF series)         10/1000Base-TX Fiber Port Indicator       Green for port Link/Act. (for IGS-P9164GF series)         10		IGMP Snooping								
DOS/DDOS auto prevention       Port configuration, status, statistics, monitoring, security       Port configuration, status, statistics, monitoring, security         DPCP Server/Client/Kelay       SMTP Client       SMTP Client         Modus TCP       NTP server       SMTP Client         Modus TCP       NTP server       SMTP Client         OPERING       OPERING       SMTP Client         Or-Chain       OPERING       SMTP (IGTP/STP compatible)         Servery       RastP (IGTP/STP compatible)       SErvery         Fast Recovery       MSTP (IGSTP/STP compatible)       SErvery         Ring Master Indicator       Green : Indicates that the system operating in O-Ring Master mode       Servery         Ring Master Indicator (Ring)       Green : Indicates that the system operating in O-Ring mode       Green : Indicates that the system operating in O-Ring mode         Green : Indicates that the system operating in O-Ring mode       Green : Indicates that the system operating in O-Ring mode       Image: Indicator (Ring)         Indicator (Ring)       Green for Int/In/Att indicator       Green : Indicate state the system operating in O-Ring mode       Image: Indicate reserve         Indicator (Ring)       Green for Int/In/Att indicator       Green : Indicate reserve       Image: Indicate reserve       Image: Image	Software Features									
Port configuration, status, statistics, monitoring, security       DifCP Server/Clent/Relay         SMP2 Clent       SMP2 Clent/Relay         Modus TCP       Modus TCP         NP server       Open-Ring         Open-Ring       Open-Ring         O-Ring       Open-Ring         OPENDE       Revery         Rist Recovery       MRP*NOTE         Fast Recovery       MRP*NOTE         MRP*NOTE       Server LED x 3         Ring Master Indicator (R.M.)       Green : Power LED x 3         Green : Indicates that the system operating in O-Ring mode       Green Server LED x 3         Green Bilnking : Indicates that the system operating in O-Ring mode       Green Server LED x 3         Green Bilnking : Indicates that the Ring Is broken.       Green Server LED x 3         Fault Indicator (Ring)       Green for Indicates that the Ring Is broken.         Fault Indicator (Ring)       Green for port Link/Act indicator.         Indicator       Green for port Link/Act indicator.         Indicator       Green for port Link/Act (for IGS-P9164GF series)         Indicator </td <td></td> <td colspan="7"></td>										
DHCP Server/Client/Relay       SMTP Client         Modbus TCP       O-Ring         O-Ring       Open-Ring         O-Chain       Resource         MRP **OTE       Fast Recovery         MSTP (STP/STP compatible)       RS-232 Serial Console Pott         RS-232 Serial Console Pott       RS-232 in RJAS connector with console cable. 115200bps, 8, N, 1         LED Indicators       Green : Power LED x 3         Ring Master Indicator (Ring)       Green : Indicates that the system operating in O-Ring Master mode         Green : Indicates that the system operating in O-Ring mode       Green : Indicates that the system operating in O-Ring mode         Green : Indicates that the system operating in O-Ring mode       Green : Indicates that the Ring is broken.         Fault Indicator (Ring)       Green or Link/Act. (for IGS-P9164GF series)         I/1010/1000Base-T(X) RJ45 Port       Green for port Link/Act. (for IGS-P9164GF series)         I/00Base-X Fiber Port Indicator       Green for port Link/Act. (for IGS-P9164GF series)         I/00Base-X SFP Port Indicator       Green for port Link/Act. (for IGS-P9164GF series)         I/0100/100Base-X SFP Port Indicator       Green for port Link/Act. (for IGS-P9164GF series)         I/0100/100Base-X SFP Port Indicator       Green for port Link/Act. (for IGS-P9164GF series)         Fault contact       Event       Event Series										
SMTP Client Modus TCP NTP server       O-Ring Open-Ring Open-Ring Open-Ring Open-Ring NEW Server       O-Ring Open-Ring Open-Ring Open-Ring NEW Server       Serve										
Modbus TCP MTP server       MTP server         ORING Open-Ring Open-Ring Open-Ring Dechain MRP*NOTE Fast: Recovery MSTP (RSTP/STP compatible)       Secondal Secon										
O-Ring       O-Ring         Open-Ring       O-Chain         MRP<*NOTE										
Network RedundancyOpen-Ring O-Chain MPTNOTE Fast Recovery MSTP (RSTP/STP compatible)Rs-232 Serial Console PortRs-232 in RJ45 connector with console cable. 115200bps, 8, N, 1LEDImage: Console PortPower IndicatorsGreen : Power LED x 3Power IndicatorGreen : Indicates that the system is operating in O-Ring Master mode Green : Indicates that the system operating in O-Ring mode Green : Indicates that the system operating in O-Ring mode Green : Indicates that the system operating in O-Ring mode Green : Indicates that the system operating in O-Ring mode Green : Indicates that the Ring is broken.Fault Indicator (Ring)Green : Indicates that the Ring is broken.Fault Indicator (Ring)Green for Intk/Act indicator. Dual color LED for speed indicator : Green for 1000Mbps indicator / Amber for 100Mbps indicator / Off light for 10Mbps indicator IndicatorIndicatorGreen for port Link/Act. (for IGS-P9164GF series)1001000Base-X FIber Port IndicatorGreen for port Link/Act. (for IGS-P9164GF series)1001000Base-X SFP Port IndicatorGreen for port Link/Act. (for IGS-P9164GF series)1001000Base-X SFP Port IndicatorGreen for port Link/Act. (for IGS-P9164GF series)Fault contactFault contactRelayRelay output to carry capacity of 1A at 24VDC on 3-pin terminal block HV model : Dual power inputs with 88~264VAC/85~300VDC on dual 3-pin terminal blockPowerLV : 12Watts HV : 18.5WattsLV : 12Watts HV : 18.5WattsPower consumption (Typ.)LV : 12Watts HV : 20.7WattsLV : 18Watts HV : 19.3WattsLV : 12Watts HV : 18.5WattsLV : 12Watts HV : 18.5Watts<										
Network Redundancy       O-Chain MRP       MRP       MRP         Fast Recovery Fast Recovery MSTP (RSTP/STP compatible)       RS-232 Serial Console Port       RS-232 in RJ45 connector with console cable. 115200bps, 8, N, 1         ED indicators       S-232 in RJ45 connector with console cable. 115200bps, 8, N, 1       Image: Console Port       S-232 in RJ45 connector with console cable. 115200bps, 8, N, 1         ED indicators       Green : Power LED x 3       Green : Indicates that the system operating in O-Ring Master mode       Image: Console Port       Green : Indicates that the system operating in O-Ring mode       Image: Console Port       Image: Console Port       Green : Indicates that the system operating in O-Ring mode       Image: Console Port       Image: Console Port       Image: Console Port       Green Stinking: Indicates that the Ring is broken.       Image: Console Port       Im		O-Ring								
Network Redundancy       MRP       MRP       MRP         Fast Recovery       MSTP (RSTP/STP compatible)       MSTP (RSTP/STP compatible)       MSTP (RSTP/STP compatible)         RS-232 Serial Console Port       RS-232 in RJ45 connector with console cable. 115200bps, 8, N, 1       Image: Console Port       SC-232 in RJ45 connector with console cable. 115200bps, 8, N, 1         LED indicators       Green : Indicates that the system is operating in O-Ring Master mode       Image: Console Port       Image: Console Port         O-Ring Indicator (Ring)       Green : Indicates that the system operating in O-Ring mode       Image: Console Port       Image: Console Port         Fault Indicator (Fault)       Amber : Indicates that the Ring is broken.       Image: Console Port Indicator       Image: Console Port Indicator         Indicator (Fault)       Amber : Indicate unexpected event occurred       Image: Console Port Indicator       Image: Console Port Indicator         Indicator       Green for Link/Act indicator.       Image: Console Port Indicator       Image: Console Port Indicator       Image: Console Port Indicator         1000Base-X Fiber Port Indicator       Green for port Link/Act. (for IGS-P9164GF Series)       Image: Console Port Indicator       Image: Console Port Indicator         100/1000Base-X SFP Port Indicator       Green for port Link/Act. (for IGS-P9164GF Series)       Image: Console Port Indicator       Image: Console Port Indicator <t< td=""><td></td><td colspan="6"></td></t<>										
MRP       MRP       Fast Recovery Fast Recovery MSTP (RSTP/STP compatible)         RS-232 Serial Console Port       RS-232 in RJ45 connector with console cable. 115200bps, 8, N, 1         LED indicators       Green : Power LED x 3         Ring Master Indicator (R.M.)       Green : Indicates that the system operating in O-Ring Master mode         O-Ring Indicator (Ring)       Green : Indicates that the system operating in O-Ring mode Green Binking : Indicates that the system operating in O-Ring mode Green Binking : Indicates that the system operating in O-Ring mode Green Binking : Indicates that the system operating in O-Ring mode Green Binking : Indicates that the system operating in O-Ring mode Green Binking : Indicates that the system operating in O-Ring mode Green Binking : Indicates that the system operating in O-Ring mode Green Binking : Indicates that the system operating in O-Ring mode Green Binking : Indicates that the system operating in O-Ring mode Green Binking : Indicates that the system operating in O-Ring mode Green Binking : Indicate unexpected event occurred         10/100/1000Base-T(S)       Amber : Indicate unexpected event occurred         10/100/1000Base-TS Fiber Port Indicator       Green for Link/Act. (for IGS-P9164GF series)         1000/1000Base-X SFP Port Indicator       Green for port Link/Act. (for IGS-P9164GF series)         100/1000Base-X SFP Port Indicator       Green for port Link/Act. (for IGS-P9164GF series)         Fault contact       Example         Relay       Relay output to carry capacity of 1A at 24VDC on 3-pin terminal block HV m	Network Redundancy	O-Chain								
MSTP (RSTP/STP compatible)           RS-232 Serial Console Port         RS-232 in RJ45 connector with console cable. 115200bps, 8, N, 1           LED indicators           Power Indicator         Green : Power LED x 3           Ring Master Indicator (R.M.)         Green : Indicates that the system is operating in O-Ring Master mode           O-Ring Indicator (Ring)         Green : Indicates that the system operating in O-Ring Master mode           Green Blinking : Indicates that the system operating in O-Ring mode         Green Flinking : Indicates that the Ring is broken.           Fault Indicator (Rault)         Amber : Indicate unexpected event occurred         Green for Link/Act indicator.           Indicator         Green for Link/Act indicator : Green for 1000Mbps indicator / Amber for 100Mbps indicator / Off light for 10Mbps indicator / 0ff light for 10Mbps indicator	,									
RS-232 Serial Console Port       RS-232 in RJ45 connector with console cable. 115200bps, 8, N, 1         LED indicators Power Indicator          Green : Power LED x 3          Ring Master Indicator (R.M.)          Green : Indicates that the system is operating in 0-Ring Master mode Green Blinking : Indicates that the system operating in 0-Ring mode Green Blinking : Indicates that the system operating in 0-Ring mode Green Blinking : Indicates that the system operating in 0-Ring mode Green Blinking : Indicates that the system operating in 0-Ring mode Green for Link/Act indicator. Dual color LED for speed indicator : Green for 1000Mbps indicator / Amber for 100Mbps indicator / Off light for 10Mbps indicator 1000Base-X Fiber Port Indicator         Green for port Link/Act. (for IGS-P9164GF series) 100/1000Base-X SFP Port Indicator         Green for port Link/Act. (for IGS-P9164GF series) 100/1000Base-X SFP Port Indicator         Green for port Link/Act. (for IGS-P9164GF series) Fault contact Relay         Relay output to carry capacity of 1A at 24VDC on 3-pin terminal block HV model : Dual power inputs with 12~48VDC on dual 2-pin terminal block HV model : Dual power inputs with 88~264VAC/85~300VDC on dual 3-pin terminal block HV : 18/Watts         HV : 18/Watts		,								
LED indicators       Green : Power LED x 3         Power Indicator       Green : Indicates that the system is operating in O-Ring Master mode         O-Ring Indicator (Ring)       Green : Indicates that the system operating in O-Ring mode Green Blinking : Indicates that the Ring is broken.         Fault Indicator (Fault)       Amber : Indicate unexpected event occurred         I0/100/1000Base-T(X)       R145         Modesace-X Fiber Port Indicator       Green for port Link/Act. (for IGS-P9164GF series)         1000Base-X Fiber Port Indicator       Green for port Link/Act. (for IGS-P9164GF series)         1000Base-X Fiber Port Indicator       Green for port Link/Act. (for IGS-P9164GF series)         1000/1000Base-X SFP Port Indicator       Green for port Link/Act. (for IGS-P9164GF series)         1000/1000Base-X SFP Port Indicator       Green for port Link/Act. (for IGS-P9164GF series)         100/1000Base-X SFP Port Indicator       Green for port Link/Act. (for IGS-P9164GC series)         100/1000Base-X SFP Port Indicator       Green for port Link/Act. (for IGS-P9164GC series)         Fault contact       Relay output to carry capacity of 1A at 24VDC on 3-pin terminal block         Power       LV model : Dual power inputs with 12~48VDC on dual 2-pin terminal block         HV model : Dual power inputs with 88~264VAC/85~300VDC on dual 3-pin terminal block         Power consumption (Typ.)       LV : 18Watts HV : 18.SWatts       LV : 21Watts HV : 19.3Watts			,							
Power Indicator       Green : Power LED x 3         Ring Master Indicator (R.M.)       Green : Indicates that the system operating in O-Ring Master mode         O-Ring Indicator (Ring)       Green : Indicates that the system operating in O-Ring mode Green Blinking : Indicates that the Ring is broken.         Fault Indicator (Fault)       Amber : Indicate unexpected event occurred         10/100/1000Base-T(X) RJ45 Pott Indicator       Green for Link/Act indicator. Dual color LED for speed indicator : Green for 1000Mbps indicator / Amber for 100Mbps indicator / Off light for 10Mbps indicator Dual color LED for speed indicator : Green for 1000Mbps indicator / Amber for 100Mbps indicator / Off light for 10Mbps indicator 1000Base-X Fiber Port Indicato         Green for port Link/Act. (for IGS-P9164GF series)       Green for port Link/Act. (for IGS-P9164GF series)         1000/1000Base-X SFP Port Indicator       Green for port Link/Act. (for IGS-P9164GF series)         1001/1000Base-X SFP Port Indicator       Green for port Link/Act. (for IGS-P9164GC series)         1000/1000Base-X SFP Port Indicator       Green for port Link/Act. (for IGS-P9164GC series)         Fault contact       Event for port Link/Act. (for IGS-P9164GC series)         Relay       Relay output to carry capacity of 1A at 24VDC on 3-pin terminal block         Power       LV model : Dual power inputs with 12~48VDC on dual 2-pin terminal block         Redundant Input power       LV : 18Watts HV model : Dual power inputs with 88~264VAC/85~300VDC on dual 3-pin terminal block       LV : 17Watt	RS-232 Serial Console Port	RS-232 in RJ45 connecto	r with console cable. 11	5200bps, 8, N, 1						
Ring Master Indicator (R.M.)Green : Indicates that the system is operating in O-Ring Master modeO-Ring Indicator (Ring)Green : Indicates that the system operating in O-Ring mode Green Blinking : Indicates that the Ring is broken.Fault Indicator (Fault)Amber : Indicate unexpected event occurred10/100/1000Base-T(X) RJ45 Port IndicatorGreen for Link/Act indicator. Dual color LED for speed indicator : Green for 1000Mbps indicator / Amber for 100Mbps indicator / Off light for 10Mbps indicator1000Base-X Fiber Port IndicatorGreen for port Link/Act. (for IGS-P9164GF series)1000Base-FX Fiber Port IndicatorGreen for port Link/Act. (for IGS-P9164GF series)1000I000Base-X SFP Port IndicatorGreen for port Link/Act. (for IGS-P9164GF series)100/1000Base-X SFP Port IndicatorGreen for port Link/Act. (for IGS-P9164GC series)100/1000Base-X Wetter Port IndicatorGreen for port Link/Act. (for IGS-P9164GC series)100/1000Base-X SFP Port IndicatorGreen for port Link/Act. (for IGS-P9164GC series)100/1000Base-X Wetter Port IndicatorGreen for port Link/Act. (for IGS-P9164GC series)100/1000Base-X SFP Port IndicatorGreen for port Link/Act. (for IGS-P9164GC series)Fault contactEven for port Link/Act. (for IGS-P9164GC series)RelayRelay output to carry capacity of 1A at 24VDC on 3-pin terminal blockPowerLV model : Dual power inputs with 12~48VDC on dual 2-pin terminal blockPower consumption (Typ.)LV : 18Watts HV : 18.5WattsLV : 18Watts HV : 19.3WattsOver consumption (Typ.)LV : 18Watts HV : 18.5WattsLV : 18Watts HV : 18.5WattsLV : 17Watts 	LED indicators									
O-Ring Indicator (Ring)       Green : Indicates that the system operating in O-Ring mode Green Blinking : Indicates that the Ring is broken.         Fault Indicator (Fault)       Amber : Indicate unexpected event occurred         10/100/1000Base-T(X) RJ45 Port Indicator       Green for Link/Act indicator. Dual color LED for speed indicator : Green for 1000Mbps indicator / Amber for 100Mbps indicator / Off light for 10Mbps indicator         1000Base-X Fiber Port Indicator       Green for port Link/Act. (for IGS-P9164GF series)         1000/1000Base-X SFP Port Indicator       Green for port Link/Act. (for IGS-P9164GF series)         100/1000Base-X SFP Port Indicator       Green for port Link/Act. (for IGS-P9164GC series)         100/1000Base-X SFP Port Indicator       Green for port Link/Act. (for IGS-P9164GC series)         100/1000Base-X SFP Port Indicator       Green for port Link/Act. (for IGS-P9164GC series)         Fault contact       Relay output to carry capacity of 1A at 24VDC on 3-pin terminal block         Power       LV model : Dual power inputs with 12~48VDC on dual 2-pin terminal block         Power       LV model : Dual power inputs with 88~264VAC/85~300VDC on dual 3-pin terminal block         Power consumption (Typ.)       LV : 18Watts       LV : 21Watts       LV : 12Watts         HV : 18.5Watts       HV : 20.7Watts       HV : 18.5Watts       HV : 19.3Watts       HV : 18Watts         Overload current protection       Present       Present       IV :	Power Indicator	Green : Power LED x 3								
O-Ring Indicator (Ring)       Green : Indicates that the system operating in O-Ring mode Green Blinking : Indicates that the Ring is broken.         Fault Indicator (Fault)       Amber : Indicate unexpected event occurred         10/100/1000Base-T(X) RJ45 Port Indicator       Green for Link/Act indicator. Dual color LED for speed indicator : Green for 1000Mbps indicator / Amber for 100Mbps indicator / Off light for 10Mbps indicator         1000Base-X Fiber Port Indicator       Green for port Link/Act. (for IGS-P9164GF series)         1000/1000Base-X SFP Port Indicator       Green for port Link/Act. (for IGS-P9164GF series)         100/1000Base-X SFP Port Indicator       Green for port Link/Act. (for IGS-P9164GC series)         100/1000Base-X SFP Port Indicator       Green for port Link/Act. (for IGS-P9164GC series)         100/1000Base-X SFP Port Indicator       Green for port Link/Act. (for IGS-P9164GC series)         Fault contact       Relay output to carry capacity of 1A at 24VDC on 3-pin terminal block         Power       LV model : Dual power inputs with 12~48VDC on dual 2-pin terminal block         Power       LV model : Dual power inputs with 88~264VAC/85~300VDC on dual 3-pin terminal block         Power consumption (Typ.)       LV : 18Watts       LV : 21Watts       LV : 12Watts         HV : 18.5Watts       HV : 20.7Watts       HV : 18.5Watts       HV : 19.3Watts       HV : 18Watts         Overload current protection       Present       Present       IV :			a avatam in non the tot	Ding Master -						
O-Ring Indicator (Ring)       Green Blinking : Indicates that the Ring is broken.         Fault Indicator (Fault)       Amber : Indicate unexpected event occurred         10/100/1000Base-T(X) RJ45 Port       Green for Link/Act indicator.         Dual color LED for speed indicator : Green for 1000Mbps indicator / Amber for 100Mbps indicator / Off light for 10Mbps indicator         1000Base-X Fiber Port Indicator       Green for port Link/Act. (for IGS-P9164GF series)         1001000Base-X SFP Port Indicator       Green for port Link/Act. (for IGS-P9164GF series)         1001000Base-X SFP Port Indicator       Green for port Link/Act. (for IGS-P9164GC series)         1001000Base-X SFP Port Indicator       Green for port Link/Act. (for IGS-P9164GC series)         1001000Base-X SFP Port Indicator       Green for port Link/Act. (for IGS-P9164GC series)         1001000Base-X SFP Port Indicator       Green for port Link/Act. (for IGS-P9164GC series)         1001000Base-X SFP Port Indicator       Green for port Link/Act. (for IGS-P9164GC series)         Fault contact       Green for port Link/Act. (for IGS-P9164GC series)         Relay       Relay output to carry capacity of 1A at 24VDC on 3-pin terminal block         Power       LV model : Dual power inputs with 12~48VDC on dual 2-pin terminal block         HV model : Dual power inputs with 88~264VAC/85~300VDC on dual 3-pin terminal block         Power consumption (Typ.)       LV : 18Watts HV : 18.5Watts       LV : 18Watts	King Master Indicator (R.M.)		, , ,	-						
Fault Indicator (Fault)       Amber : Indicate unexpected event occurred         10/100/1000Base-T(X)       R345       Port         Indicator       Dual color LED for speed indicator : Green for 1000Mbps indicator / Amber for 100Mbps indicator / Off light for 10Mbps indicator         1000Base-X Fiber Port Indicator       Green for port Link/Act. (for IGS-P9164GF series)         100Base-X Fiber Port Indicator       Green for port Link/Act. (for IGS-P9164GF series)         100/1000Base-X SFP Port Indicator       Green for port Link/Act. (for IGS-P9164GC series)         100/1000Base-X SFP Port Indicator       Green for port Link/Act. (for IGS-P9164GC series)         100/1000Base-X SFP Port Indicator       Green for port Link/Act. (for IGS-P9164GC series)         100/1000Base-X SFP Port Indicator       Green for port Link/Act. (for IGS-P9164GC series)         100/1000Base-X SFP Port Indicator       Green for port Link/Act. (for IGS-P9164GC series)         100/1000Base-X SFP Port Indicator       Green for port Link/Act. (for IGS-P9164GC series)         Fault contact       EV       EV         Relay       Relay output to carry capacity of 1A at 24VDC on 3-pin terminal block         Power       EV       EV model : Dual power inputs with 12~48VDC on dual 2-pin terminal block         Redundant Input power       LV model : Dual power inputs with 88~264VAC/85~300VDC on dual 3-pin terminal block         Power consumption (Typ.)       LV : 18Wa	O-Ring Indicator (Ring)		, , ,	5						
10/100/1000Base-T(X)       R345       Port       Green for Link/Act indicator.         1ndicator       Dual color LED for speed indicator : Green for 1000Mbps indicator / Amber for 100Mbps indicator / Off light for 10Mbps indicator         1000Base-X       Fiber Port Indicator       Green for port Link/Act. (for IGS-P9164GF series)         100Base-X       Fiber Port Indicator       Green for port Link/Act. (for IGS-P9164GF series)         100/1000Base-X       FP Port Indicator       Green for port Link/Act. (for IGS-P9164GC series)         100/1000Base-X       Green for port Link/Act. (for IGS-P9164GC series)         100/1000Base-X       Green for port Link/Act. (for IGS-P9164GC series)         100/1000Base-X       Green for port Link/Act. (for IGS-P9164GC series)         Fault contact       Green for port Link/Act. (for IGS-P9164GC series)         Relay       Relay output to carry capacity of 1A at 24VDC on 3-pin terminal block         Power       LV model : Dual power inputs with 12~48VDC on dual 2-pin terminal block         HV model : Dual power inputs with 88~264VAC/85~300VDC on dual 3-pin terminal block         Power consumption (Typ.)       LV : 18Watts       LV : 18Watts       LV : 21Watts         HV : 18.5Watts       HV : 20.7Watts       HV : 18.5Watts       HV : 19.3Watts       HV : 18Watts         Overload current protection       Present       Foresent       Foresent       F		5	5							
IndicatorDual color LED for speed indicator : Green for 1000Mbps indicator / Amber for 100Mbps indicator / Off light for 10Mbps indicator1000Base-X Fiber Port IndicatorGreen for port Link/Act. (for IGS-P9164GF series)1001000Base-X Fiber Port IndicatorGreen for port Link/Act. (for IGS-P9164GF series)100/1000Base-X SFP Port IndicatorGreen for port Link/Act. (for IGS-P9164GC series)100/1000Base-X SFP Port IndicatorGreen for port Link/Act. (for IGS-P9164GC series)Fault contactRelayRelay output to carry capacity of 1A at 24VDC on 3-pin terminal blockPowerLV model : Dual power inputs with 12~48VDC on dual 2-pin terminal blockHV model : Dual power inputs with 88~264VAC/85~300VDC on dual 3-pin terminal blockPower consumption (Typ.)LV : 18Watts HV : 18.5WattsLV : 18Watts HV : 18.5WattsLV : 17Watts HV : 18.5WattsOverload current protectionPresentPresentLV : 18WattsLV : 18Watts HV : 18.5WattsLV : 18Watts HV : 18.5Watts	Fault Indicator (Fault)	Amber : Indicate unexpected event occurred								
1000Base-X Fiber Port IndicatorGreen for port Link/Act. (for IGS-P9164GF series)100Base-X Fiber Port IndicatorGreen for port Link/Act. (for IGS-P9164GF series)100/1000Base-X SFP Port IndicatorGreen for port Link/Act. (for IGS-P9164GC series)Fault contactRelay output to carry capacity of 1A at 24VDC on 3-pin terminal blockPowerLV model : Dual power inputs with 12~48VDC on dual 2-pin terminal blockHV model : Dual power inputs with 12~48VDC on dual 2-pin terminal blockPower consumption (Typ.)Power consumption (Typ.)LV : 18Watts HV : 18.5WattsLV : 21Watts HV : 20.7WattsLV : 18Watts HV : 18.5WattsLV : 17Watts HV : 18.5WattsOverload current protectionPresentPresentLV : 18WattsLV : 18.5WattsLV : 18.5Watts										
100Base-FX Fiber Port Indicator       Green for port Link/Act. (for IGS-P9164GFX series)         100/1000Base-X SFP Port Indicator       Green for port Link/Act. (for IGS-P9164GC series)         Fault contact         Relay       Relay output to carry capacity of 1A at 24VDC on 3-pin terminal block         Power       LV model : Dual power inputs with 12~48VDC on dual 2-pin terminal block         Power consumption (Typ.)       LV : 18Watts HV : 18.5Watts       LV : 21Watts HV : 20.7Watts       LV : 18Watts HV : 18.5Watts       LV : 17Watts HV : 18.5Watts         Overload current protection       Present       Present       LV : 18Watts       LV : 18.5Watts       LV : 18.5Watts	Indicator	Dual color LED for speed indicator : Green for 1000Mbps indicator / Amber for 100Mbps indicator / Off light for 10Mbps indicator								
100/1000Base-X SFP Port Indicator       Green for port Link/Act. (for IGS-P9164GC series)         Fault contact         Relay output to carry capacity of 1A at 24VDC on 3-pin terminal block         Power         Redundant Input power         LV model : Dual power inputs with 12~48VDC on dual 2-pin terminal block         HV model : Dual power inputs with 88~264VAC/85~300VDC on dual 3-pin terminal block         Power consumption (Typ.)       LV : 18Watts       LV : 21Watts       LV : 18Watts       LV : 17Watts         HV : 18.5Watts       LV : 21Watts       HV : 18.5Watts       HV : 19.3Watts       HV : 18Watts         Overload current protection       Present       Present       Present       Present	1000Base-X Fiber Port Indicator									
100/1000Base-X SFP Port Indicator       Green for port Link/Act. (for IGS-P9164GC series)         Fault contact         Relay output to carry capacity of 1A at 24VDC on 3-pin terminal block         Power         Redundant Input power         LV model : Dual power inputs with 12~48VDC on dual 2-pin terminal block         HV model : Dual power inputs with 88~264VAC/85~300VDC on dual 3-pin terminal block         Power consumption (Typ.)       LV : 18Watts       LV : 21Watts       LV : 18Watts       LV : 17Watts         HV : 18.5Watts       LV : 21Watts       HV : 18.5Watts       HV : 19.3Watts       HV : 18Watts         Overload current protection       Present       Present       Present       Present	100Base-FX Fiber Port Indicator									
Fault contact         Relay       Relay output to carry capacity of 1A at 24VDC on 3-pin terminal block         Power       LV model : Dual power inputs with 12~48VDC on dual 2-pin terminal block         Redundant Input power       LV model : Dual power inputs with 88~264VAC/85~300VDC on dual 3-pin terminal block         Power consumption (Typ.)       LV : 18Watts HV : 18.5Watts       LV : 21Watts HV : 20.7Watts       LV : 18Watts HV : 18.5Watts       LV : 17Watts HV : 18.5Watts         Overload current protection       Present										
Relay       Relay output to carry capacity of 1A at 24VDC on 3-pin terminal block         Power       IV model : Dual power inputs with 12~48VDC on dual 2-pin terminal block         Redundant Input power       LV model : Dual power inputs with 88~264VAC/85~300VDC on dual 3-pin terminal block         Power consumption (Typ.)       LV : 18Watts HV : 18.5Watts       LV : 21Watts HV : 20.7Watts       LV : 18Watts HV : 18.5Watts       LV : 17Watts HV : 18.5Watts         Overload current protection       Present       Image: Note that the second sec										
Power       LV model : Dual power inputs with 12~48VDC on dual 2-pin terminal block         Redundant Input power       LV model : Dual power inputs with 88~264VAC/85~300VDC on dual 3-pin terminal block         Power consumption (Typ.)       LV : 18Watts       LV : 21Watts       LV : 18Watts       LV : 17Watts         HV : 18.5Watts       HV : 20.7Watts       HV : 18.5Watts       HV : 19.3Watts       LV : 18Watts         Overload current protection       Present       Present       Present       Present	Fault contact									
Redundant Input power     LV model : Dual power inputs with 12~48VDC on dual 2-pin terminal block       HV model : Dual power inputs with 88~264VAC/85~300VDC on dual 3-pin terminal block       Power consumption (Typ.)     LV : 18Watts HV : 18.5Watts     LV : 21Watts HV : 20.7Watts     LV : 18Watts HV : 18.5Watts     LV : 17Watts HV : 18.5Watts       Overload current protection     Present	Relay	Relay Relay output to carry capacity of 1A at 24VDC on 3-pin terminal block								
Redundant Input power     LV model : Dual power inputs with 12~48VDC on dual 2-pin terminal block       HV model : Dual power inputs with 88~264VAC/85~300VDC on dual 3-pin terminal block       Power consumption (Typ.)     LV : 18Watts HV : 18.5Watts     LV : 21Watts HV : 20.7Watts     LV : 18Watts HV : 18.5Watts     LV : 17Watts HV : 18.5Watts       Overload current protection     Present	Power									
Redundant Input power     HV model : Dual power inputs with 88~264VAC/85~300VDC on dual 3-pin terminal block       Power consumption (Typ.)     LV : 18Watts     LV : 21Watts     LV : 18Watts     LV : 17Watts       HV : 18.5Watts     HV : 20.7Watts     HV : 18.5Watts     HV : 19.3Watts     HV : 18Watts       Overload current protection     Present     Present     Free Present		IV model : Duel nower in		dual 2-nin terminal block						
Power consumption (Typ.)     LV : 18Watts HV : 18.5Watts     LV : 21Watts HV : 20.7Watts     LV : 18Watts HV : 18.5Watts     LV : 21Watts HV : 19.3Watts     LV : 17Watts HV : 19.3Watts       Overload current protection     Present	Redundant Input power		•	•						
Power consumption (Typ.)     HV : 18.5Watts     HV : 20.7Watts     HV : 18.5Watts     HV : 19.3Watts     HV : 18Watts       Overload current protection     Present     Present     Present     Present     Present						LV: 17Watts				
Overload current protection     Present	Power consumption (Typ.)									
	Overload current protection									
Reverse Polarity Protection Present	•									
	Reverse Polarity Protection	Present								

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Physical Characteristic									
Enclosure	IP-30	IP-30							
Dimension (W x D x H)	115 (W) x 159 (D) x 154	115 (W) x 159 (D) x 154 (H)mm (4.53 x 6.3 x 6.06 inch)							
Weight (g)	LV Model : 1780 g HV Model : 2216 g	LV Model : 1769 g HV Model : 2205 g	LV Model : 1780 g HV Model : 2216 g	LV Model : 1769 g HV Model : 2205 g	LV Model : 1750 g HV Model : 2186 G				
Environmental									
Storage Temperature	-40 to 85°C (-40 to 185°F	)							
Operating Temperature	-40 to 85°C (-40 to 185°F	)							
Operating Humidity	5% to 95% Non-condensi	ng							
Industrial Cybersecurity	IEC 62443-4-1, IEC 6244	IEC 62443-4-1, IEC 62443-4-2							
EMC	CE EMC (EN55035, EN 55	CE EMC (EN55035, EN 55032), IEC 61850-3, IEEE 1613, EN50155 (EN50121-3-2, EN55011, EN50121-4)							
EMI	EN 55032, CISPR32, EN 6	EN 55032, CISPR32, EN 61000-3-2, EN 61000-3-3, FCC Part 15B class A,							
EMS	· ·	EN 55035(IEC/EN 61000-4-2 (ESD), IEC/EN 61000-4-3 (RS), IEC/EN 61000-4-4 (EFT), IEC/EN 61000-4-5 (Surge), IEC/EN 61000-4-6 (CS), IEC/EN 61000-4-8(PFMF), IEC/EN 61000-4-11(DIP))							
Shock	IEC60068-2-27								
Free Fall	IEC60068-2-31								
Vibration	IEC60068-2-6								
Safety	EN60950-1								
MTBF		LV:236,923 HV:300,460	LV:224681 HV:281,040	LV:196,356 HV:238,082	LV:299,365 HV:408,521				
Warranty	5 years								

## Ordering Information

IGS-P9AABCC - FF-GG								
Code Definition	10/100/1000Base-T(X) Port Number	Additional Number	Port	Additional Port Type	Fiber Optio	cal Mode	Fiber Optical (	Connector
Option	- <b>16:</b> 16 ports	<b>- 4:</b> 4 ports		<ul> <li>- GF: 1000Base-X optical fiber port</li> <li>- FX: 100Base-FX optical fiber port</li> <li>- GC: Gigabit combo port</li> </ul>	- MM: Multi-mode - SS: Single-mode		- SC: SC connector	
	Model Name			Description				
	IGS-P9164FX-MM-SC-LV		Industrial IEC 61850-3 20-port managed Gigabit Ethernet switch with 16x10/100/1000Base-T(X) and 4x100Base-FX, multi-mode, 2Km/1310nm, SC connector, low-voltage power inputs					
	IGS-P9164FX-SS-SC-LV		Industrial IEC 61850-3 20-port managed Gigabit Ethernet switch with 16x10/100/1000Base-T(X) and 4x100Base-FX, single-mode, 30Km/1310nm, SC connector, low-voltage power inputs					
Available Model	IGS-P9164FX-MM-SC-HV_US and 4			Industrial IEC 61850-3 20-port managed Gigabit Ethernet switch with 16x10/100/1000Base-T(X) and 4x100Base-FX, multi-mode, 2Km/1310nm, SC connector, high-voltage power inputs, US power cord				
	IGS-P9164FX-MM-SC-HV	_UK	Industrial IEC 61850-3 20-port managed Gigabit Ethernet switch with 16x10/100/1000B and 4x100Base-FX, multi-mode, 2Km/1310nm, SC connector, high-voltage power input power cord				. ,	
	IGS-P9164FX-MM-SC-HV_EU and 4x			Industrial IEC 61850-3 20-port managed Gigabit Ethernet switch with 16x10/100/1000Base-T(X) and 4x100Base-FX, multi-mode, 2Km/1310nm, SC connector, high-voltage power inputs, EU power cord				

power cordIGS-P9164GF-SS-SC-HV_UKIndustrial IEC 61850-3 20-port managed Gigabit Ethernet switch with 16x10/100/1000Base-T(X) and 4x1000Base-LX, single-mode, 10Km/1310nm, SC connector, high-voltage power inputs, UK power cordIGS-P9164GF-SS-SC-HV_EUIndustrial IEC 61850-3 20-port managed Gigabit Ethernet switch with 16x10/100/1000Base-T(X) and 4x1000Base-LX, single-mode, 10Km/1310nm, SC connector, high-voltage power inputs, EU power cordIGS-P9164GF-SS-SC-HV_EUIndustrial IEC 61850-3 20-port managed Gigabit Ethernet switch with 16x10/100/1000Base-T(X) and 4x1000Base-LX, single-mode, 10Km/1310nm, SC connector, high-voltage power inputs, JP power cordIGS-P9164GC-LVIndustrial IEC 61850-3 20-port managed Gigabit Ethernet switch with 16x10/100/1000Base-T(X) and 4x1000Base-LX, single-mode, 10Km/1310nm, SC connector, high-voltage power inputs, JP power cordIGS-P9164GC-LVIndustrial IEC 61850-3 20-port managed Gigabit Ethernet switch with 16x10/100/1000Base-T(X) and 4xGigabit combo ports, SFP socket, low-voltage power inputsIGS-P9164GC-LV_USIndustrial IEC 61850-3 20-port managed Gigabit Ethernet switch with 16x10/100/1000Base-T(X) and 4xGigabit combo ports, SFP socket, low-voltage power inputsIGS-P9164GC-HV_USIndustrial IEC 61850-3 20-port managed Gigabit Ethernet switch with 16x10/100/1000Base-T(X) and 4xGigabit combo ports, SFP socket, high-voltage power inputs, US power cordIGS-P9164GC-HV_UKIndustrial IEC 61850-3 20-port managed Gigabit Ethernet switch with 16x10/100/1000Base-T(X) and 4xGigabit combo ports, SFP socket, high-voltage power inputs, US power cordIGS-P9164GC-HV_UKIndustrial IEC 61850-3 20-port managed Gigabit Ethernet switch with 16x10/100/1000Base-T(X) and 4xGigabit combo ports, SFP socket, high-voltage							
IGS-P9164FX-SS-SC-HV_US         and 4x100Base-FX, single-mode, 30Km/1310nm, SC connector, high-voltage power inputs, US power cord           IGS-P9164FX-SS-SC-HV_UK         and 4x100Base-FX, single-mode, 30Km/1310nm, SC connector, high-voltage power inputs, UK power cord           IGS-P9164FX-SS-SC-HV_UK         and 4x100Base-FX, single-mode, 30Km/1310nm, SC connector, high-voltage power inputs, UK power cord           IGS-P9164FX-SS-SC-HV_EU         and 4x100Base-FX, single-mode, 30Km/1310nm, SC connector, high-voltage power inputs, EU power cord           IGS-P9164FX-SS-SC-HV_UP         industrial IEC 61850-3 20-port managed Gigabit Ethernet switch with 16x10/100/1000Base-T(X) and 4x100Base-FX, single-mode, 30Km/1310nm, SC connector, high-voltage power inputs, JP power cord           IGS-P9164GF-MM-SC-LV         Industrial IEC 61850-3 20-port managed Gigabit Ethernet switch with 16x10/100/1000Base-T(X) and 4x100Base-SX, multi-mode, 550m/850m, SC connector, low-voltage power inputs           IGS-P9164GF-MM-SC-LV_US         Industrial IEC 61850-3 20-port managed Gigabit Ethernet switch with 16x10/100/1000Base-T(X) and 4x100Base-SX, multi-mode, 550m/850m, SC connector, high-voltage power inputs, US power cord           IGS-P9164GF-MM-SC-HV_UK         Industrial IEC 61850-3 20-port managed Gigabit Ethernet switch with 16x10/100/1000Base-T(X) and 4x100Base-SX, multi-mode, 550m/850m, SC connector, high-voltage power inputs, UK power cord           IGS-P9164GF-MM-SC-HV_UK         Industrial IEC 61850-3 20-port managed Gigabit Ethernet switch with 16x10/100/1000Base-T(X) and 4x100Base-SX, multi-mode, 550m/850m, SC connector, high-voltage power inputs, UK power cord           IGS-P9164G	IGS-P9164FX-MM-SC-HV_JP	and 4x100Base-FX, multi-mode, 2Km/1310nm, SC connector, high-voltage power inputs, JP					
IGS-P9164FX-SS-SC-HV_LIK         and 4x100Base-FX, single-mode, 30Km/1310nm, SC connector, high-voltage power inputs, UK power cord           IGS-P9164FX-SS-SC-HV_EU         Industrial IEC 61860-3 20-port managed Gigabit Ethemet switch with 16x10/100/1000Base-TX) and 4x100Base-FX, single-mode, 30Km/1310nm, SC connector, high-voltage power inputs, JP power cord           IGS-P9164FX-SS-SC-HV_LP         Industrial IEC 61850-3 20-port managed Gigabit Ethemet switch with 16x10/100/1000Base-TX) and 4x100Base-FX, single-mode, 30Km/1310nm, SC connector, high-voltage power inputs, JP power cord           IGS-P9164GF-MM-SC-LV         Industrial IEC 61850-3 20-port managed Gigabit Ethemet switch with 16x10/100/1000Base-TX) and 4x100DBase-SX, multi-mode, 550m/850nm, SC connector, high-voltage power inputs           IGS-P9164GF-SS-SC-LV         Industrial IEC 61850-3 20-port managed Gigabit Ethemet switch with 16x10/100/1000Base-T(X) and 4x100DBase-LX, single-mode, 10Km/1310nm, SC connector, high-voltage power inputs, US power cord           IGS-P9164GF-MM-SC-HV_US         Industrial IEC 61850-3 20-port managed Gigabit Ethemet switch with 16x10/100/1000Base-T(X) and 4x100DBase-SX, multi-mode, 550m/850nm, SC connector, high-voltage power inputs, UK power cord           IGS-P9164GF-MM-SC-HV_UL         Industrial IEC 61850-3 20-port managed Gigabit Ethemet switch with 16x10/100/1000Base-T(X) and 4x100DBase-SX, multi-mode, 550m/850nm, SC connector, high-voltage power inputs, UK power cord           IGS-P9164GF-MM-SC-HV_LEU         Industrial IEC 61850-3 20-port managed Gigabit Ethemet switch with 16x10/100/1000Base-T(X) and 4x100DBase-SX, multi-mode, 550m/850nm, SC connector, high-voltage power inputs, UL power cord           IGS	IGS-P9164FX-SS-SC-HV_US	and 4x100Base-FX, single-mode, 30Km/1310nm, SC connector, high-voltage power inputs, US					
IGS-P9164FX-SS-SC-HV_EU         and 4x100Base-FX, single-mode, 30Km/1310nm, SC connector, high-voltage power inputs, EU           IGS-P9164FX-SS-SC-HV_JP         Industrial IEC 61850-3 20-port managed Gigabit Ethernet switch with 16x10/100/1000Base-T(X) and 4x100Base-SX, multi-mode, 550m/850nm, SC connector, high-voltage power inputs           IGS-P9164FF-SS-SC-LV         Industrial IEC 61850-3 20-port managed Gigabit Ethernet switch with 16x10/100/1000Base-T(X) and 4x1000Base-SX, multi-mode, 550m/850nm, SC connector, low-voltage power inputs           IGS-P9164GF-MM-SC-LV         Industrial IEC 61850-3 20-port managed Gigabit Ethernet switch with 16x10/100/1000Base-T(X) and 4x1000Base-SX, multi-mode, 550m/850nm, SC connector, low-voltage power inputs, US power cord           IGS-P9164GF-MM-SC-HV_US         Industrial IEC 61850-3 20-port managed Gigabit Ethernet switch with 16x10/100/1000Base-T(X) and 4x1000Base-SX, multi-mode, 550m/850nm, SC connector, high-voltage power inputs, US power cord           IGS-P9164GF-MM-SC-HV_UK         Industrial IEC 61850-3 20-port managed Gigabit Ethernet switch with 16x10/100/100Base-T(X) and 4x1000Base-SX, multi-mode, 550m/850nm, SC connector, high-voltage power inputs, UK power cord           IGS-P9164GF-MM-SC-HV_UK         Industrial IEC 61850-3 20-port managed Gigabit Ethernet switch with 16x10/100/1000Base-T(X) and 4x1000Base-T(X) and 4x1000Base-SX, multi-mode, 550m/850nm, SC connector, high-voltage power inputs, UK power cord           IGS-P9164GF-MM-SC-HV_UK         Industrial IEC 61850-3 20-port managed Gigabit Ethernet switch with 16x10/100/1000Base-T(X) and 4x1000Base-T(X) and	IGS-P9164FX-SS-SC-HV_UK	and 4x100Base-FX, single-mode, 30Km/1310nm, SC connector, high-voltage power inputs, UK					
IGS-P9164GF-SS-SC-HV_JP         and 4x100Base-FX, single-mode, 30Km/1310nm, SC connector, high-voltage power inputs, JP power cord           IGS-P9164GF-MM-SC-LV         industrial IEC 61850-3 20-port managed Gigabit Ethernet switch with 16x10/100/1000Base-T(X) and 4x1000Base-SX, multi-mode, 550m/850nm, SC connector, low-voltage power inputs           IGS-P9164GF-SS-SC-LV         industrial IEC 61850-3 20-port managed Gigabit Ethernet switch with 16x10/100/1000Base-T(X) and 4x1000Base-SX, multi-mode, 550m/850nm, SC connector, low-voltage power inputs           IGS-P9164GF-MM-SC-HV_US         industrial IEC 61850-3 20-port managed Gigabit Ethernet switch with 16x10/100/1000Base-T(X) and 4x1000Base-SX, multi-mode, 550m/850nm, SC connector, high-voltage power inputs, UK power cord           IGS-P9164GF-MM-SC-HV_UK         industrial IEC 61850-3 20-port managed Gigabit Ethernet switch with 16x10/100/1000Base-T(X) and 4x1000Base-SX, multi-mode, 550m/850nm, SC connector, high-voltage power inputs, UK power cord           IGS-P9164GF-MM-SC-HV_EU         industrial IEC 61850-3 20-port managed Gigabit Ethernet switch with 16x10/100/1000Base-T(X) and 4x1000Base-SX, multi-mode, 550m/850nm, SC connector, high-voltage power inputs, UL power cord           IGS-P9164GF-MM-SC-HV_P         industrial IEC 61850-3 20-port managed Gigabit Ethernet switch with 16x10/100/1000Base-T(X) and 4x1000Base-LX, single-mode, 10Km/1310nm, SC connector, high-voltage power inputs, JP power cord           IGS-P9164GF-SS-SC-HV_LP         industrial IEC 61850-3 20-port managed Gigabit Ethernet switch with 16x10/100/1000Base-T(X) and 4x1000Base-LX, single-mode, 10Km/1310nm, SC connector, high-voltage power inputs, UK power cord           IGS-P9164GF-S	IGS-P9164FX-SS-SC-HV_EU	and 4x100Base-FX, single-mode, 30Km/1310nm, SC connector, high-voltage power inputs, EU					
IGS-P9164GF-MM-SC-LV       and 4x1000Base-SX, multi-mode, 550m/850nm, SC connector, low-voltage power inputs         IGS-P9164GF-SS-SC-LV       Industrial IEC 61850-3 20-port managed Gigabit Ethernet switch with 16x10/100/1000Base-T(X) and 4x1000Base-LX, single-mode, 10Km/1310nm, SC connector, high-voltage power inputs.         IGS-P9164GF-MM-SC-HV_US       Industrial IEC 61850-3 20-port managed Gigabit Ethernet switch with 16x10/100/1000Base-T(X) and 4x1000Base-SX, multi-mode, 550m/850nm, SC connector, high-voltage power inputs, UK power cord         IGS-P9164GF-MM-SC-HV_UK       Industrial IEC 61850-3 20-port managed Gigabit Ethernet switch with 16x10/100/1000Base-T(X) and 4x1000Base-SX, multi-mode, 550m/850nm, SC connector, high-voltage power inputs, UK power cord         IGS-P9164GF-MM-SC-HV_EU       Industrial IEC 61850-3 20-port managed Gigabit Ethernet switch with 16x10/100/1000Base-T(X) and 4x1000Base-SX, multi-mode, 550m/850nm, SC connector, high-voltage power inputs, EU power cord         IGS-P9164GF-MM-SC-HV_JP       Industrial IEC 61850-3 20-port managed Gigabit Ethernet switch with 16x10/100/1000Base-T(X) and 4x1000Base-SX, multi-mode, 550m/850nm, SC connector, high-voltage power inputs, JP power cord         IGS-P9164GF-SS-SC-HV_JP       Industrial IEC 61850-3 20-port managed Gigabit Ethernet switch with 16x10/100/1000Base-T(X) and 4x1000Base-LX, single-mode, 10Km/1310nm, SC connector, high-voltage power inputs, UK power cord         IGS-P9164GF-SS-SC-HV_UK       Industrial IEC 61850-3 20-port managed Gigabit Ethernet switch with 16x10/100/1000Base-T(X) and 4x1000Base-LX, single-mode, 10Km/1310nm, SC connector, high-voltage power inputs, UK power cord         IGS-P9164GF-SS-SC-HV_LUK	IGS-P9164FX-SS-SC-HV_JP	and 4x100Base-FX, single-mode, 30Km/1310nm, SC connector, high-voltage power inputs, JP					
IGS-P9164GF-SS-SC-LV       and 4x1000Base-LX, single-mode, 10Km/1310nm, SC connector, low-voltage power inputs         IGS-P9164GF-MM-SC-HV_US       industrial IEC 61850-3 20-port managed Gigabit Ethernet switch with 16x10/1000Base-T(X) and 4x1000Base-SX, multi-mode, 550m/850nm, SC connector, high-voltage power inputs, US power cord         IGS-P9164GF-MM-SC-HV_UK       industrial IEC 61850-3 20-port managed Gigabit Ethernet switch with 16x10/100/1000Base-T(X) and 4x1000Base-SX, multi-mode, 550m/850nm, SC connector, high-voltage power inputs, UK power cord         IGS-P9164GF-MM-SC-HV_EU       industrial IEC 61850-3 20-port managed Gigabit Ethernet switch with 16x10/100/1000Base-T(X) and 4x1000Base-SX, multi-mode, 550m/850nm, SC connector, high-voltage power inputs, EU power cord         IGS-P9164GF-MM-SC-HV_LU       industrial IEC 61850-3 20-port managed Gigabit Ethernet switch with 16x10/100/1000Base-T(X) and 4x1000Base-SX, multi-mode, 550m/850nm, SC connector, high-voltage power inputs, JP power cord         IGS-P9164GF-SS-SC-HV_US       industrial IEC 61850-3 20-port managed Gigabit Ethernet switch with 16x10/100/1000Base-T(X) and 4x1000Base-LX, single-mode, 10Km/1310nm, SC connector, high-voltage power inputs, US power cord         IGS-P9164GF-SS-SC-HV_UK       industrial IEC 61850-3 20-port managed Gigabit Ethernet switch with 16x10/100/1000Base-T(X) and 4x1000Base-LX, single-mode, 10Km/1310nm, SC connector, high-voltage power inputs, UK power cord         IGS-P9164GF-SS-SC-HV_UK       industrial IEC 61850-3 20-port managed Gigabit Ethernet switch with 16x10/100/1000Base-T(X) and 4x1000Base-LX, single-mode, 10Km/1310nm, SC connector, high-voltage power inputs, UK power cord         IGS-P9164GF-SS-SC-	IGS-P9164GF-MM-SC-LV						
IGS-P9164GF-MM-SC-HV_US       and 4x1000Base-SX, multi-mode, 550m/850nm, SC connector, high-voltage power inputs, US power cord         IGS-P9164GF-MM-SC-HV_UK       Industrial IEC 61850-3 20-port managed Gigabit Ethernet switch with 16x10/100/1000Base-T(X) and 4x1000Base-SX, multi-mode, 550m/850nm, SC connector, high-voltage power inputs, UK power cord         IGS-P9164GF-MM-SC-HV_EU       Industrial IEC 61850-3 20-port managed Gigabit Ethernet switch with 16x10/100/1000Base-T(X) and 4x1000Base-SX, multi-mode, 550m/850nm, SC connector, high-voltage power inputs, EU power cord         IGS-P9164GF-MM-SC-HV_EU       Industrial IEC 61850-3 20-port managed Gigabit Ethernet switch with 16x10/100/1000Base-T(X) and 4x1000Base-SX, multi-mode, 550m/850nm, SC connector, high-voltage power inputs, JP power cord         IGS-P9164GF-SS-SC-HV_US       Industrial IEC 61850-3 20-port managed Gigabit Ethernet switch with 16x10/100/1000Base-T(X) and 4x1000Base-LX, single-mode, 10Km/1310nm, SC connector, high-voltage power inputs, US power cord         IGS-P9164GF-SS-SC-HV_UK       Industrial IEC 61850-3 20-port managed Gigabit Ethernet switch with 16x10/100/1000Base-T(X) and 4x1000Base-LX, single-mode, 10Km/1310nm, SC connector, high-voltage power inputs, UK power cord         IGS-P9164GF-SS-SC-HV_UK       Industrial IEC 61850-3 20-port managed Gigabit Ethernet switch with 16x10/100/1000Base-T(X) and 4x1000Base-LX, single-mode, 10Km/1310nm, SC connector, high-voltage power inputs, EU power cord         IGS-P9164GF-SS-SC-HV_UE       Industrial IEC 61850-3 20-port managed Gigabit Ethernet switch with 16x10/100/1000Base-T(X) and 4x1000Base-LX, single-mode, 10Km/1310nm, SC connector, high-voltage power inputs, EU power cord	IGS-P9164GF-SS-SC-LV						
IGS-P9164GF-MM-SC-HV_UK       and 4x1000Base-SX, multi-mode, 550m/850nm, SC connector, high-voltage power inputs, UK power cord         IGS-P9164GF-MM-SC-HV_EU       Industrial IEC 61850-3 20-port managed Gigabit Ethernet switch with 16x10/100/1000Base-T(X) and 4x1000Base-SX, multi-mode, 550m/850nm, SC connector, high-voltage power inputs, EU power cord         IGS-P9164GF-MM-SC-HV_JP       Industrial IEC 61850-3 20-port managed Gigabit Ethernet switch with 16x10/100/1000Base-T(X) and 4x1000Base-SX, multi-mode, 550m/850nm, SC connector, high-voltage power inputs, JP power cord         IGS-P9164GF-SS-SC-HV_US       Industrial IEC 61850-3 20-port managed Gigabit Ethernet switch with 16x10/100/1000Base-T(X) and 4x1000Base-LX, single-mode, 10Km/1310nm, SC connector, high-voltage power inputs, US power cord         IGS-P9164GF-SS-SC-HV_UK       Industrial IEC 61850-3 20-port managed Gigabit Ethernet switch with 16x10/100/1000Base-T(X) and 4x1000Base-LX, single-mode, 10Km/1310nm, SC connector, high-voltage power inputs, UK power cord         IGS-P9164GF-SS-SC-HV_EU       Industrial IEC 61850-3 20-port managed Gigabit Ethernet switch with 16x10/100/1000Base-T(X) and 4x1000Base-LX, single-mode, 10Km/1310nm, SC connector, high-voltage power inputs, EU power cord         IGS-P9164GF-SS-SC-HV_JP       Industrial IEC 61850-3 20-port managed Gigabit Ethernet switch with 16x10/100/1000Base-T(X) and 4x1000Base-LX, single-mode, 10Km/1310nm, SC connector, high-voltage power inputs, JP power cord         IGS-P9164GF-LV       Industrial IEC 61850-3 20-port managed Gigabit Ethernet switch with 16x10/100/1000Base-T(X) and 4xGigabit combo ports, SFP socket, low-voltage power inputs, US power cord         IGS-P9164GC-LV	IGS-P9164GF-MM-SC-HV_US	and 4x1000Base-SX, multi-mode, 550m/850nm, SC connector, high-voltage power inputs, US					
IGS-P9164GF-MM-SC-HV_EUand 4x1000Base-SX, multi-mode, 550m/850nm, SC connector, high-voltage power inputs, EU power cordIGS-P9164GF-MM-SC-HV_JPIndustrial IEC 61850-3 20-port managed Gigabit Ethernet switch with 16x10/100/1000Base-T(X) and 4x1000Base-SX, multi-mode, 550m/850nm, SC connector, high-voltage power inputs, JP power cordIGS-P9164GF-SS-SC-HV_USIndustrial IEC 61850-3 20-port managed Gigabit Ethernet switch with 16x10/100/1000Base-T(X) and 4x1000Base-LX, single-mode, 10Km/1310nm, SC connector, high-voltage power inputs, US power cordIGS-P9164GF-SS-SC-HV_UKIndustrial IEC 61850-3 20-port managed Gigabit Ethernet switch with 16x10/100/1000Base-T(X) and 4x1000Base-LX, single-mode, 10Km/1310nm, SC connector, high-voltage power inputs, UK power cordIGS-P9164GF-SS-SC-HV_UKIndustrial IEC 61850-3 20-port managed Gigabit Ethernet switch with 16x10/100/1000Base-T(X) and 4x1000Base-LX, single-mode, 10Km/1310nm, SC connector, high-voltage power inputs, EU power cordIGS-P9164GF-SS-SC-HV_EUIndustrial IEC 61850-3 20-port managed Gigabit Ethernet switch with 16x10/100/1000Base-T(X) and 4x1000Base-LX, single-mode, 10Km/1310nm, SC connector, high-voltage power inputs, JD power cordIGS-P9164GF-SS-SC-HV_JPIndustrial IEC 61850-3 20-port managed Gigabit Ethernet switch with 16x10/100/1000Base-T(X) and 4x000Base-LX, single-mode, 10Km/1310nm, SC connector, high-voltage power inputs, JD power cordIGS-P9164GC-LVIndustrial IEC 61850-3 20-port managed Gigabit Ethernet switch with 16x10/100/1000Base-T(X) and 4xGigabit combo ports, SFP socket, high-voltage power inputs, JD power cordIGS-P9164GC-LV_USIndustrial IEC 61850-3 20-port managed Gigabit Ethernet switch with 16x10/100/1000Base-T(X) and 4xGigabit combo ports, SFP socket, high-vo	IGS-P9164GF-MM-SC-HV_UK	and 4x1000Base-SX, multi-mode, 550m/850nm, SC connector, high-voltage power inputs, UK					
IGS-P9164GF-MM-SC-HV_JPand 4x1000Base-SX, multi-mode, 550m/850nm, SC connector, high-voltage power inputs, JP power cordIGS-P9164GF-SS-SC-HV_USIndustrial IEC 61850-3 20-port managed Gigabit Ethernet switch with 16x10/100/1000Base-T(X) and 4x1000Base-LX, single-mode, 10Km/1310nm, SC connector, high-voltage power inputs, US power cordIGS-P9164GF-SS-SC-HV_UKIndustrial IEC 61850-3 20-port managed Gigabit Ethernet switch with 16x10/100/1000Base-T(X) and 4x1000Base-LX, single-mode, 10Km/1310nm, SC connector, high-voltage power inputs, UK power cordIGS-P9164GF-SS-SC-HV_UKIndustrial IEC 61850-3 20-port managed Gigabit Ethernet switch with 16x10/100/1000Base-T(X) and 4x1000Base-LX, single-mode, 10Km/1310nm, SC connector, high-voltage power inputs, EU power cordIGS-P9164GF-SS-SC-HV_EUIndustrial IEC 61850-3 20-port managed Gigabit Ethernet switch with 16x10/100/1000Base-T(X) and 4x1000Base-LX, single-mode, 10Km/1310nm, SC connector, high-voltage power inputs, EU power cordIGS-P9164GF-SS-SC-HV_JPIndustrial IEC 61850-3 20-port managed Gigabit Ethernet switch with 16x10/100/1000Base-T(X) and 4x1000Base-LX, single-mode, 10Km/1310nm, SC connector, high-voltage power inputs, JP power cordIGS-P9164GC-LVIndustrial IEC 61850-3 20-port managed Gigabit Ethernet switch with 16x10/100/1000Base-T(X) and 4xGigabit combo ports, SFP socket, low-voltage power inputsIGS-P9164GC-HV_USIndustrial IEC 61850-3 20-port managed Gigabit Ethernet switch with 16x10/100/1000Base-T(X) and 4xGigabit combo ports, SFP socket, high-voltage power inputs, US power cordIGS-P9164GC-HV_UKIndustrial IEC 61850-3 20-port managed Gigabit Ethernet switch with 16x10/100/1000Base-T(X) and 4xGigabit combo ports, SFP socket, high-voltage power inputs, US power cord	IGS-P9164GF-MM-SC-HV_EU	and 4x1000Base-SX, multi-mode, 550m/850nm, SC connector, high-voltage power inputs, EU					
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IGS-P9164GC-LV       and 4xGigabit combo ports, SFP socket, low-voltage power inputs         IGS-P9164GC-HV_US       Industrial IEC 61850-3 20-port managed Gigabit Ethernet switch with 16x10/100/1000Base-T(X) and 4xGigabit combo ports, SFP socket, high-voltage power inputs, US power cord         IGS-P9164GC-HV_UK       Industrial IEC 61850-3 20-port managed Gigabit Ethernet switch with 16x10/100/1000Base-T(X) and 4xGigabit combo ports, SFP socket, high-voltage power inputs, US power cord	IGS-P9164GF-SS-SC-HV_JP	and 4x1000Base-LX, single-mode, 10Km/1310nm, SC connector, high-voltage power inputs, JP					
IGS-P9164GC-HV_US       and 4xGigabit combo ports, SFP socket, high-voltage power inputs, US power cord         IGS-P9164GC-HV_UK       Industrial IEC 61850-3 20-port managed Gigabit Ethernet switch with 16x10/100/1000Base-T(X) and 4xGigabit combo ports, SFP socket, high-voltage power inputs, UK power cord	IGS-P9164GC-LV						
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Industrial IEC 61850-3 20-port managed Gigabit Ethernet switch with 16x10/100/1000Base-T(X)	IGS-P9164GC-HV_UK	and 4xGigabit combo ports, SFP socket, high-voltage power inputs, UK power cord					
IGS-P9164GC-HV_EU and 4xGigabit combo ports, SFP socket, high-voltage power inputs, EU power cord	IGS-P9164GC-HV_EU	Industrial IEC 61850-3 20-port managed Gigabit Ethernet switch with 16x10/100/1000Base-T(X) and 4xGigabit combo ports, SFP socket, high-voltage power inputs, EU power cord					
IGS-P9164GC-HV_JP         Industrial IEC 61850-3 20-port managed Gigabit Ethernet switch with 16x10/100/1000Base-T(X) and 4xGigabit combo ports, SFP socket, high-voltage power inputs, JP power cord	IGS-P9164GC-HV_JP						

## Packing List

- IGS-P9164GF(X) or GC x 1
- DIN-Rail Kit x 1
- AC power cord (for HV only)
- ORing Tool CD x 1

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- Wall-mount Kit x 2
- Quick Installation Guide x 1
- Console Cable x 1

## **Optional Accessories**

- Open-Vision M500 : Powerful Network
   Management Windows Utility Suit, 500 IP devices
- DR/SDR/DRP Series DIN-Rail power supply