

Industrial Ethernet

Powering Next Generation
Automation Network Solutions



VOLKTEK

PRODUCT FEATURES & BENEFITS



Robust Switch Performance

- Volktek industrial switches are built with field-hardened components to withstand harsh industrial environments such as constant vibration, heavy shocks, humidity and extreme temperatures ranging from -40°C to 75°C .
- Volktek industrial switches are built with industrial grade components to ensure continuous operation of mission-critical applications even in tough and harsh industrial environments.

Industrial Grade EMC Protection

- Discover the resilience of Volktek industrial switches, fortified with top-tier safeguards such as surge protection and ESD protection against voltage surges.
- Our industrial switches are engineered to meet stringent industry standards such as EN61000-6-2 and EN61000-6-4. They boast ESD protection and dual power inputs, ensuring unparalleled reliability for your system.



Efficient Power Isolation

Volktek switches incorporate Power Isolation features, which create a protective barrier between the primary power circuit and other circuits, guaranteeing device safety. This functionality shields the internal circuitry from potential harm caused by surges, ESD, or power fluctuations.

Factory Automation



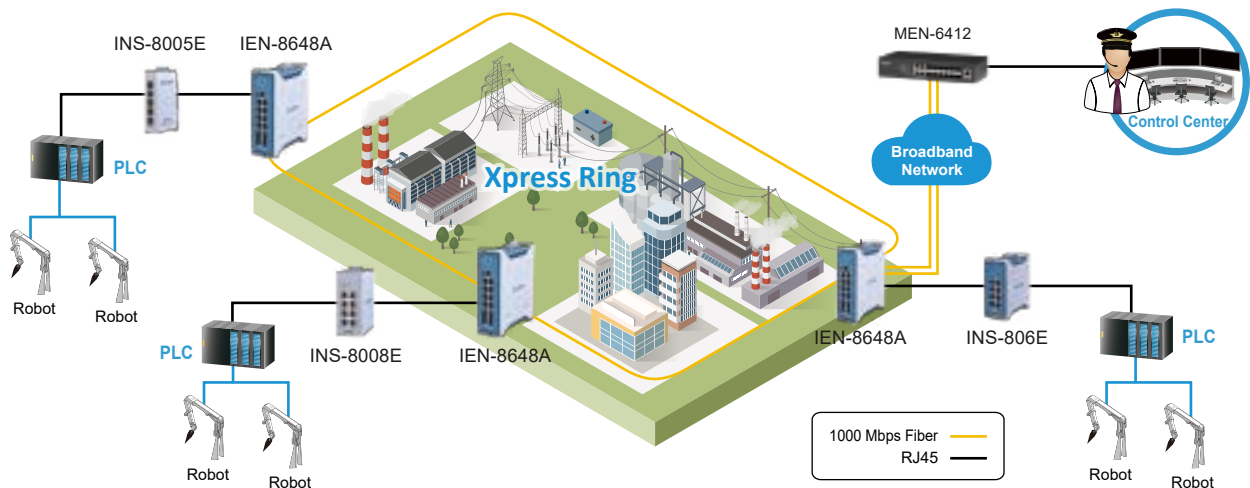
Customer's Requirements

PLCs and RTUs are microcomputers that communicate with an array of objects such as factory machines, sensors, and end devices, and then route the information from those objects to computers with SCADA software. Volktek industrial network switches allow them to communicate between those devices. Then SCADA software processes, distributes, and displays the data, helping operators and

other employees analyze the data and make important decisions and to help mitigate downtime. These kind of systems require redundant links for uninterrupted connectivity and must operate in wide temperature so that no data is lost. Additionally, the switches can provide long-range optical fiber links to establish connections between remote plants.

Proposed Solutions

- Volktek switches are designed to support various ring protocols like Xpress Ring and ERPS where a network failure is recovered in a time scale of milliseconds. This ensures non-stop transmission of real-time video and data.
- Volktek's industrial switches are capable of operating at critical temperature.
- Industrial grade switches provide better protection against ESD, and also certified with EMI/EMC protection.
- Every switch is rugged to excel in mission-critical applications for production and process automation and can be integrated into any large-scale distributed SCADA monitoring system.
- Features like SNMP and hardware monitoring notify the administrator during any unwanted hardware failure or accidental power cut to ensure the reliability.



Products Applied



IEN-8648A
L2+ Managed
8 x 10/100/1000 RJ45 &
4 x GbE SFP
Industrial Switch



INS-8008E
Unmanaged
8 x 10/100 RJ45
Industrial Switch



INS-8005E
Unmanaged
5 x 10/100 RJ45
Industrial Switch

PRODUCT INTRODUCTION

Layer 3 Managed Switches



9561-8GT4XS-TSN
L3 Managed 8 x 10/100/1000 RJ45 & 4 x 100/1G/10G SFP+ Industrial TSN Switch, USB Support

Layer 3 Routing
Seamless multi-network connectivity

Deterministic TSN
Guaranteed Bounded Latency

PRP/HSR Redundancy
Zero Downtime and Packet Loss

10G Uplinks
High-Bandwidth Data Performance

Managed Switches



INS-8615
Managed
5 x 10/100/1000 RJ45 & 1 x FX/GbE SFP
Industrial Switch



9015-8GT-I
Managed
8 x 10/100/1000 RJ45
Industrial Switch



9015-8GT2GS-I
Managed
8 x 10/100/1000 RJ45 & 2 x FX/GbE SFP
Industrial Switch



9560-16GT4XS-I
Managed
16 x 10/100/1000 RJ45 & 4 x 1G/10G SFP+
NEMA TS2 Approval



IEN-8648A
L2+ Managed
8 x 10/100/1000 RJ45 & 4 x GbE SFP
USB Support



IEN-8608A
L2+ Managed
8 x 10/100/1000 RJ45
Industrial Switch
USB Support



INS-8624
Managed
4 x 10/100/1000 RJ45 & 2 x FX/GbE SFP
Industrial Switch



9015-16GT-I
Managed
16 x 10/100/1000 RJ45
Industrial Switch

Unmanaged SPE Switches



7015-4U2T-T1L
Unmanaged
2 x 10/100BASE-TX RJ45 & 4 x 10BASE-T1L SPE
Industrial Switch

PRODUCT APPLICATION



Intelligent Transportation System

Key Features

- Long distance transmissions with high bandwidths.
- High reliability for outdoor applications.
- Optical bandwidth utilization for video transmission.
- Link and power redundancy.

Unmanaged Switches

Premium



INS-8005E
Unmanaged
5 x 10/100 RJ45
Industrial Switch



INS-8405E
Unmanaged
5 x 10/100/1000 RJ45
Industrial Switch



INS-8415
Unmanaged
5 x 10/100/1000 RJ45 &
1 x GbE SFP
Industrial Switch



INS-8008E
Unmanaged
8 x 10/100 RJ45
Industrial Switch



INS-8408E
Unmanaged
8 x 10/100/1000 RJ45
Industrial Switch



7015-8GT2GS-I
Unmanaged
8 x 10/100/1000 RJ45 &
2 x GbE SFP
Industrial Switch



INS-8108E
Unmanaged
8 x 10/100 RJ45
Industrial Switch



INS-801E
Unmanaged
5 x 10/100 RJ45
Industrial Switch



INS-806E
Unmanaged
8 x 10/100 RJ45
Industrial Switch



INS-802E
Unmanaged
8 x 10/100 RJ45 &
2 x FX/GbE SFP
Industrial Switch

Standard



INS-8005A
Unmanaged
5 x 10/100 RJ45
Industrial Switch



INS-8405A
Unmanaged
5 x 10/100/1000 RJ45
Industrial Switch



INS-8008A
Unmanaged
8 x 10/100 RJ45
Industrial Switch



INS-8408A
Unmanaged
8 x 10/100/1000 RJ45
Industrial Switch



7013-16T-I
Unmanaged
16 x 10/100/ RJ45
Industrial Switch



7013-16GT-I
Unmanaged
16 x 10/100/1000 RJ45
Industrial Switch



INS-840G
Unmanaged
16 x 10/100/1000 RJ45
Industrial Switch



Building Automation

Key Features

- High bandwidth and transmission rate.
- Link and power redundancy.
- Compact size for building interlayer placement.
- Reliability for fire protection system networks.



Factory Automation

Key Features

- High Mean Time Between Failures (MTBF) with 5 years of warranty for repair or replacement.
- High data transmission rate.
- Anti-shock and anti-vibration design.

PRODUCT INTRODUCTION

Substation Certified Switches



IEN-9425-SS
Unmanaged
5 x 10/100/1000 RJ45 &
2 x GbE SFP
Substation Approval



IEN-9428-SS
Unmanaged
8 x 10/100/1000 RJ45 &
2 x FX/GbE SFP
Substation Approval



IEN-9648-SS
Managed
8 x 10/100/1000 RJ45 &
4 x GbE SFP
USB Support
Substation Approval

Railway Certified Switches



IEN-9425-RW
Unmanaged
5 x 10/100/1000 RJ45 &
2 x GbE SFP
Railway Approval



IEN-9428-RW
Unmanaged
8 x 10/100/1000 RJ45 &
2 x GbE SFP
Railway Approval



IEN-9648-RW
Managed
8 x 10/100/1000 RJ45 &
4 x GbE SFP
USB Support
Railway Approval

PROFINET Certified Switches



IEN-9648-PN
Managed
8 x 10/100/1000 RJ45 &
4 x GbE SFP
USB Support
PROFINET Compliance

EtherNet/IP Certified Switches



IEN-8648A-EIP
Managed
8 x 10/100/1000 RJ45 &
4 x GbE SFP
USB Support
EtherNet/IP Approval

PRODUCT APPLICATION



Substation

Key Features

- Fast communication through Priority Packets.
- Efficient and reliable communication with VLAN.
- Fiber health diagnostic with DDM.
- Smart recovery through Code Redundancy.

DNV Certified Switches



INS-8005M
Unmanaged
5 x 10/100 RJ45
DNV Approval



INS-8005EM
Unmanaged
5 x 10/100 RJ45
DNV Approval



INS-8405M
Unmanaged
5 x 10/100/1000 RJ45
DNV Approval



INS-8405EM
Unmanaged
5 x 10/100/1000 RJ45
DNV Approval



9065-8T2GS-MR
Managed
8 x 10/100 RJ45 &
2 x FX/GbE SFP
USB support
DNV Approval



IEN-9648M
L2+ Managed
8 x 10/100/1000 RJ45 &
4 x GbE SFP
USB Support
DNV Approval



INS-8408AM
Unmanaged
8 x 10/100/1000 RJ45
DNV Approval

NEMA TS2 Switches



IEN-9648M
L2+ Managed
8 x 10/100/1000 RJ45 &
4 x GbE SFP
USB Support
NEMA TS2 Approval



9560-16GT4XS-I
Managed
16 x 10/100/1000 RJ45 &
4 x 1G/10G SFP+
USB Support
NEMA TS2 Approval



Railway

Key Features

- Vibration proof.
- Surge and ESD protection.
- Robust and durable.
- Long haul network.
- Operational efficiency.



Maritime and Offshore Applications

Key Features

- High level ESD & surge protection.
- Enclosed in aluminum casing for antirust protection.
- Wide operating temperature for reliability in harsh environments.
- Vibration and shock proof.

PRODUCT INTRODUCTION

UL Certified Switches



INS-8005A
Unmanaged
5 x 10/100 RJ45
Industrial Switch



INS-8005E
Unmanaged
5 x 10/100 RJ45
Industrial Switch



INS-8005EM
Unmanaged
5 x 10/100 RJ45
DNV Approval



INS-8405E
Unmanaged
5 x 10/100/1000 RJ45
Industrial Switch



INS-8405EM
Unmanaged
5 x 10/100/1000 RJ45
DNV Approval



9065-8T2GS-MR
Managed
8 x 10/100 RJ45 &
2 x FX/GbE SFP
USB support
DNV Approval



7015-4U2T-T1L
Unmanaged
2 x 10/100BASE-TX RJ45 &
4 x 10BASE-T1L SPE
Industrial Switch



INS-8008A
Unmanaged
8 x 10/100 RJ45
Industrial Switch



INS-8408E
Unmanaged
8 x 10/100/1000 RJ45
Industrial Switch



INS-8108E
Unmanaged
8 x 10/100 RJ45
Industrial Switch



7013-16T-I
Unmanaged
16 x 10/100/ RJ45
Industrial Switch



7013-16GT-I
Unmanaged
16 x 10/100/1000 RJ45
Industrial Switch



IEN-9648-SS
Managed
8 x 10/100/1000 RJ45 &
4 x GbE SFP
USB Support
Substation Approval



IEN-9648-PN
Managed
8 x 10/100/1000 RJ45 &
4 x GbE SFP
USB Support
PROFINET Compliance



9560-16GT4XS-I
Managed
16 x 10/100/1000 RJ45 &
4 x 1G/10G SFP+
NEMA TS2 Approval



Managed Industrial Switches



Model	9561-8GT4XS-TSN	INS-8615	9015-8GT-I	9015-8GT2GS-I	9560-16GT4XS-I	IEN-8648A	IEN-8608A	INS-8624	9015-16GT-I	
Interface	RJ45	-	5 x 10/100/1000	8 x 10/100/1000	8 x 10/100/1000	16 x 10/100/1000	8 x 10/100/1000	8 x 10/100/1000	4 x 10/100/1000	16 x 10/100/1000
	SFP	4 x 100/1G/10G SFP+	1 x FX/GbE	-	2 x FX/GbE	4 x 1G/10G SFP+	4 x GbE	-	2 x FX/GbE	-
	Console	1	-	-	-	1	1	1	-	-
	USB	1	-	-	-	Y	Y	Y	-	-
Hardware	Jumbo Frame (Bytes)	16K	10K	10K	10K	12K	10K	10K	10K	10K
	MAC Entries	16K	8K	8K	8K	16K	16K	16K	8K	8K
	Fan-less	Y	Y	Y	Y	Y	Y	Y	Y	Y
	SFP Information	Y	Y	Y	Y	Y	Y	-	Y	Y
	SFP DDMI	Y	Y	Y	Y	Y	Y	-	Y	Y
	Switching Fabric	56Gbps	12Gbps	16Gbps	20Gbps	112Gbps	24Gbps	16Gbps	12Gbps	32Gbps
Management	CLI	Y	Y	Y	Y	Y	Y	Y	Y	Y
	Telnet / SSH	Y	Y	Y	Y	Y	Y	Y	Y	Y
	HTTP/HTTPS	Y	Y	Y	Y	Y	Y	Y	Y	Y
	SNMP	Y	Y	Y	Y	Y	Y	Y	Y	Y
	SNMP Trap	Y	Y	Y	Y	Y	Y	Y	Y	Y
	MVLAN	Y	Y	Y	Y	Y	Y	Y	Y	Y
	Firmware Upgradable	Y	Y	Y	Y	Y	Y	Y	Y	Y
	Configuration Backup/Restore	Y	Y	Y	Y	Y	Y	Y	Y	Y
	Syslog	Y	Y	Y	Y	Y	Y	Y	Y	Y
	SNTP	-	Y	Y	Y	Y	Y	Y	Y	Y
	LLDP	Y	Y	Y	Y	Y	Y	Y	Y	Y
	UDLD	Y	-	-	-	-	Y	Y	-	-
	DHCP Client	Y	Y	Y	Y	Y	Y	Y	Y	Y
	DHCP Option 82	Y	Y	Y	Y	Y	Y	Y	Y	Y
	e-mail Alarm	-	Y	Y	Y	Y	Y	Y	Y	Y
Service Control	Y	Y	Y	Y	Y	Y	Y	Y	Y	
Reliability	STP / RSTP / MSTP	Y	STP / RSTP	STP / RSTP	STP / RSTP	STP / RSTP	Y	Y	STP / RSTP	STP / RSTP
	Xpress Ring	-	-	-	-	-	Y	Y	-	-
	ERPS v1/v2	Y	Y	Y	Y	Y	Y	Y	Y	Y
	Dual Homing	-	Y	Y	Y	Y	Y	Y	Y	Y
	LACP	Y	Y	Y	Y	Y	Y	Y	Y	Y
	Code Redundancy	Y	-	Y	Y	Y	Y	Y	-	Y
VLAN	IEEE 802.1Q VLAN	Y	Y	Y	Y	Y	Y	Y	Y	Y
	GARP/GVRP	Y	-	-	-	Y	Y	-	-	
	Port-based VLAN	Y	Y	Y	Y	Y	Y	Y	Y	
	MAC-based VLAN	Y	Y	Y	Y	Y	Y	Y	Y	
	IP-based VLAN	Y	-	-	-	Y	Y	Y	-	-
	Protocol-based	Y	-	-	-	Y	Y	Y	-	-
	QinQ	Y	Y	Y	Y	Y	Y	Y	Y	
	VLAN Translation	Y	-	-	-	Y	Y	Y	-	-
Security	ACL	Y	Y	Y	Y	Y	Y	Y	Y	
	SSH	Y	Y	Y	Y	Y	Y	Y	Y	
	Port Security	Y	Y	Y	Y	Y	Y	Y	Y	
	Port-based 802.1X	Y	Y	Y	Y	Y	Y	Y	Y	
	TACACS+	Y	Y	Y	Y	Y	Y	Y	-	
	MAC Search	-	Y	Y	Y	Y	Y	Y	Y	
	Refusal MAC	-	-	-	-	Y	Y	Y	-	-
	Static MAC	Y	Y	Y	Y	Y	Y	Y	Y	
	DHCP Snooping	Y	Y	Y	Y	Y	Y	Y	Y	
	DHCP Sever Screening	Y	Y	Y	Y	Y	Y	Y	Y	
	ARP Inspection	Y	Y	Y	Y	Y	Y	Y	Y	
	BPDU Guard/Filter	Y	Y	Y	Y	Y	Y	Y	Y	
	Root Guard	Y	Y	Y	Y	Y	Y	Y	Y	
	Management Host	Y	Y	Y	Y	Y	Y	Y	Y	
Power	DC Power Input	12 ~ 48VDC	12 ~ 57VDC	24 ~ 48VDC	24 ~ 48VDC	12 ~ 48VDC	12 ~ 60VDC	12 ~ 60VDC	20 ~ 57VDC	12 ~ 60VDC
	Redundant Power	Y	Y	Y	Y	Y	Y	Y	Y	Y
	Max Power Consumption	19W	10W	10W	11W	30W	18W	15W	10W	18W
Installation & operation information	Dimensions (W x H x D)	80 x 160 x 140.3 mm	31 x 136.3 x 105 mm	50 x 116 x 100 mm	50 x 116 x 100 mm	100 x 160 x 140 mm	57.3 x 175 x 126.4 mm	57.3 x 175 x 126.4 mm	57.3 x 175 x 126.4 mm	57.3 x 175 x 126.4 mm
	Weight	1,590g	515g	550g	550g	1,800g	1,005g	955g	795g	918g
	Mouting Kit	DIN-Rail	DIN-Rail	DIN-Rail	DIN-Rail	DIN-Rail	DIN-Rail	DIN-Rail	DIN-Rail	DIN-Rail
	Operating Temperature	-40°C ~ 70°C (-40°F ~ 158°F)	-40°C ~ 75°C (-40°F ~ 167°F)			-40°C ~ 70°C (-40°F ~ 158°F)		-40°C ~ 75°C (-40°F ~ 167°F)		

Unmanaged Industrial Switches



		SPE				Premium				
Model		7015-4U2T-T1L	INS-8005E	INS-8405E	INS-8415	INS-8008E	INS-8408E	7015-8GT2GS-I	INS-8108E	INS-801E
Interface	RJ45	2 x 10/100	5 x 10/100	5 x 10/100/1000	5 x 10/100/1000	8 x 10/100	8 x 10/100/1000	8 x 10/100/1000	8 x 10/100	5 x 10/100
	SFP	-	-	-	1 x GbE	-	-	2 x GbE	-	-
	SPE	4 x 10BASE-T1L	-	-	-	-	-	-	-	-
Hardware	Jumbo Frame (Bytes)	-	9,216	9K	10K	9,216	9K	10K	9,216	9,216
	MAC Entries	1K	2K	2K	8K	4K	8K	8K	4K	2K
	Fan-less	Y	Y	Y	Y	Y	Y	Y	Y	Y
	Automatic MDI / MDI-X on RJ-45	Y	Y	Y	Y	Y	Y	Y	Y	Y
	Switching Fabric	480Mbps	1Gbps	10Gbps	12Gbps	1.6Gbps	16Gbps	20Gbps	1.6Gbps	1Gbps
Power	DC Power Input	12 ~ 48VDC	12 ~ 48VDC	12 ~ 48VDC	20 ~ 57VDC	12 ~ 48VDC	9 ~ 57VDC	24 ~ 48VDC	12 ~ 48VDC	12 ~ 48VDC
	Redundant Power	-	Y	Y	Y	Y	Y	-	Y	Y
	Max Power Consumption	4W	3W	3W	10W	5W	5W	11W	1.8W	2.05W
Installation & operation information	Dimensions (W x H x D)	31 x 136 x 105 mm	23.6 x 109.2 x 73.8 mm	23.6 x 109.2 x 73.8 mm	31 x 136.3 x 105 mm	50 x 116 x 100 mm	50 x 116 x 100 mm	50 x 116 x 100 mm	109.2 x 73.8 x 28.4 mm	57.3 x 131.2 x 100.9 mm
	Weight	493g	183.4g	160g	510g	480g	480g	550g	145g	400g
	Operating Temperature	-40°C ~ 75°C (-40°F ~ 167°F)								

Unmanaged Industrial Switches



		Premium				Standard				
Model		INS-806E	INS-802E	INS-8005A	INS-8405A	INS-8008A	INS-8408A	7013-16GT-I	7013-16T-I	INS-840G
Interface	RJ45	8 x 10/100	8 x 10/100	5 x 10/100	5 x 10/100/1000	8 x 10/100	8 x 10/100/1000	16 x 10/100/1000	16 x 10/100	16 x 10/100/1000
	SFP	-	2 x FX/GbE	-	-	-	-	-	-	-
Hardware	Jumbo Frame (Bytes)	9K	9216	1552	9K	1552	9K	10K	16K	10K
	MAC Entries	4K	8K	1K	2K	1K	8K	8K	16K	8K
	Fan-less	-	Y	Y	Y	Y	Y	Y	Y	Y
	Automatic MDI / MDI-X on RJ-45	Y	Y	Y	Y	Y	Y	Y	Y	Y
	Switching Fabric	1.6Gbps	5.6Gbps	1Gbps	10Gbps	1.6Gbps	16Gbps	32Gbps	3.2Gbps	32Gbps
Power	DC Power Input	12 ~ 48VDC	12 ~ 48VDC	12 ~ 48VDC	12 ~ 48VDC	12 ~ 48VDC	9 ~ 57VDC	12 ~ 48VDC	12~48VDC	12 ~ 60VDC
	Redundant Power	Y	Y	Y	Y	Y	Y	-	Y	Y
	Max Power Consumption	5W	12W	3W	3W	3W	5W	12W	10W	12W
Installation & operation information	Dimensions (W x H x D)	57.3 x 131.2 x 100.9 mm	57.3 x 175 x 126.4 mm	23.6 x 109.2 x 73.8 mm	23.6 x 109.2 x 73.8 mm	50 x 116 x 100 mm	50 x 116 x 100 mm	50 x 160 x 120 mm	50 x 160 x 120 mm	57.3 x 175 x 126.4 mm
	Weight	480g	791g	180g	183.4g	435g	480g	900g	900g	918g
	Operating Temperature	-40°C ~ 75°C (-40°F ~ 167°F)								

Unmanaged Certified Switches



Model		INS-8005M	INS-8005EM	INS-8405M	INS-8405EM	INS-8408AM	IEN-9425-SS	IEN-9425-RW	IEN-9428-SS	IEN-9428-RW
Interface	RJ45	5 x 10/100	5 x 10/100	5 x 10/100/1000	5 x 10/100/1000	8 x 10/100/1000	5 x 10/100/1000	5 x 10/100/1000	8 x 10/100/1000	8 x 10/100/1000
	SFP	-	-	-	-	-	2 x GbE	2 x GbE	2 x GbE	2 x GbE
Hardware	Jumbo Frame (Bytes)	1536	9216	9K	9K	9K	10K	10K	10K	10K
	MAC Entries	1K	2K	2K	2K	-	8K	8K	8K	8K
	Fan-less	Y	Y	Y	Y	-	Y	Y	Y	Y
	Automatic MDI / MDI-X on RJ-45	Y	Y	Y	Y	Y	Y	Y	Y	Y
	Switching Fabric	1Gbps	1Gbps	10Gbps	10Gbps	16Gbps	14Gbps	14Gbps	20Gbps	20Gbps
Power	DC Power Input	18 ~ 30VDC	12 ~ 48VDC	9 ~ 48VDC	12 ~ 48VDC	24VDC	20 ~ 60VDC	20 ~ 60VDC	12 ~ 60VDC	12 ~ 60VDC
	Redundant Power	-	Y	-	Y	Y	-	-	Y	Y
	Max Power Consumption	3W	3W	4W	3W	5W	13W	13W	13W	13W
Installation & operation information	Dimensions (W x H x D)	23.6 x 109.2 x 73.8 mm	23.6 x 109.2 x 73.8 mm	23.6 x 109.2 x 73.8 mm	23.6 x 109.2 x 73.8 mm	50 x 120 x 100 mm	50 x 161.5 x 119.9 mm	50 x 161.5 x 119.9 mm	50 x 161.5 x 119.9 mm	50 x 161.5 x 119.9 mm
	Weight	145g	183.4g	160g	160g	590g	869g	869g	930g	930g
	Operating Temperature	-40°C ~ 75°C (-40°F ~ 167°F)								
Certification	Approval	DNV					IEEE 1613 IEC 61850-3	EN 50155 EN 50121-4	IEEE 1613 IEC 61850-3	EN 50155 EN 50121-4

Managed Certified Switches



Model	9065-8T2GS-MR	IEN-9648M	IEN-9648-SS	IEN-9648-RW	IEN-9648-PN	IEN-8648A-EIP	
Interface	RJ45	8x 10/100	8 x 10/100/1000	8 x 10/100/1000	8 x 10/100/1000	8 x 10/100/1000	8 x 10/100/1000
	SFP	2 x FX/GbE	4 x GbE	4 x GbE	4 x GbE	4 x FX/GbE	4 x GbE
	Console	1	1	1	1	1	1
	USB	Y	Y	Y	Y	Y	Y
Hardware	Jumbo Frame (Bytes)	10K	10K	10K	10K	10K	10K
	MAC Entries	16K	16K	16K	16K	16K	16K
	Fan-less	Y	Y	Y	Y	Y	Y
	SFP Information	Y	Y	Y	Y	Y	Y
	SFP DDMI	Y	Y	Y	Y	Y	Y
	Switching Fabric	5.6Gbps	24Gbps	24Gbps	24Gbps	24Gbps	24Gbps
Management	CLI	Y	Y	Y	Y	Y	Y
	Telnet / SSH	Y	Y	Y	Y	Y	Y
	HTTP/HTTPS	Y	Y	Y	Y	Y	Y
	SNMP	Y	Y	Y	Y	Y	Y
	SNMP Trap	Y	Y	Y	Y	Y	Y
	MVLAN	Y	Y	Y	Y	Y	Y
	Firmware Upgradable	Y	Y	Y	Y	Y	Y
	Configuration Backup/Restore	Y	Y	Y	Y	Y	Y
	Syslog	Y	Y	Y	Y	Y	Y
	SNTP	Y	Y	Y	Y	Y	Y
	LLDP	Y	Y	Y	Y	Y	Y
	UDLD	Y	Y	Y	Y	Y	Y
	DHCP Client	Y	Y	Y	Y	Y	Y
	DHCP Option 82	Y	Y	Y	Y	Y	Y
	e-mail Alarm	Y	Y	Y	Y	Y	Y
	Service Control	Y	Y	Y	Y	Y	Y
Reliability	STP / RSTP / MSTP	Y	Y	Y	Y	Y	Y
	Xpress Ring	Y	Y	Y	Y	Y	Y
	ERPS v1/v2	Y	Y	Y	Y	Y	Y
	Dual Homing	Y	Y	Y	Y	Y	Y
	LACP	Y	Y	Y	Y	Y	Y
Code Redundancy	Y	Y	Y	Y	Y	Y	
VLAN	IEEE 802.1Q VLAN	Y	Y	Y	Y	Y	Y
	GARP/GVRP	Y	Y	Y	Y	Y	Y
	Port-based VLAN	Y	Y	Y	Y	Y	Y
	MAC-based VLAN	Y	Y	Y	Y	Y	Y
	IP-based VLAN	Y	Y	Y	Y	Y	Y
	Protocol-based	Y	Y	Y	Y	Y	Y
	QinQ	Y	Y	Y	Y	Y	Y
VLAN Translation	Y	Y	Y	Y	Y	Y	
Security	ACL	Y	Y	Y	Y	Y	Y
	SSH	Y	Y	Y	Y	Y	Y
	Port Security	Y	Y	Y	Y	Y	Y
	Port-based 802.1X	Y	Y	Y	Y	Y	Y
	TACACS+	Y	Y	Y	Y	Y	Y
	MAC Search	Y	Y	Y	Y	Y	Y
	Refusal MAC	Y	Y	Y	Y	Y	Y
	Static MAC	Y	Y	Y	Y	Y	Y
	DHCP Snooping	Y	Y	Y	Y	Y	Y
	DHCP Sever Screening	Y	Y	Y	Y	Y	Y
	ARP Inspection	Y	Y	Y	Y	Y	Y
	BPDU Guard/Filter	Y	Y	Y	Y	Y	Y
Root Guard	Y	Y	Y	Y	Y	Y	
Management Host	Y	Y	Y	Y	Y	Y	
Power	DC Power Input	12 ~ 48VDC	12 ~ 60VDC	12 ~ 60VDC	12 ~ 60VDC	12 ~ 48VDC	12 ~ 60VDC
	Redundant Power	Y	Y	Y	Y	Y	Y
	Max Power Consumption	18W	18W	18W	18W	18W	18W
Installation & operation information	Dimensions (W x H x D)	50 x 161.5 x 119.9 mm	50 x 161.5 x 119.9 mm	50 x 161.5 x 119.9 mm	50 x 161.5 x 119.9 mm	50 x 161.5 x 119.9 mm	50 x 161.5 x 119.9 mm
	Weight	970g	955g	955g	955g	1,068g	955g
	Mouting Kit	DIN-Rail	DIN-Rail	DIN-Rail	DIN-Rail	DIN-Rail	DIN-Rail
	Operating Temperature	-40°C ~ 70°C (-40°F ~ 158°F)	-40°C ~ 75°C (-40°F ~ 167°F)	-40°C ~ 75°C (-40°F ~ 167°F)	-40°C ~ 75°C (-40°F ~ 167°F)	-40°C ~ 75°C (-40°F ~ 167°F)	-40°C ~ 75°C (-40°F ~ 167°F)
Certification	Approval	DNV	DNV, NEMA	UL, IEEE 1613, IEC 61850-3	EN 50155, EN 50121-4	PROFINET	ETHERNET/IP

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