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Switch Software

HiOS – Hirschmann Operating System

HiOS is the latest operating system for the new generation of Industrial Ethernet devices, combining high performance with robust security. It provides the user with precise time synchronization, extensive redundancy mechanisms and diagnostic tools. With zero switchover time, the PRP (Parallel Redundancy Protocol) and HSR (High-Availability Seamless Redundancy) redundancy methods ensure smooth production processes. Comprehensive security mechanisms protect networks against attacks and operating errors.

- Layer 2 Embedded (L2E): Suitable for EES switches
- Layer 2 Standard (L2S): Suitable for the switch families RED, RSP, RSPS, RSPL, RSPE, GREYHOUND and OCTOPUS II
- Layer 2 Advanced (L2A): Suitable for the switch families MSP, RSP, RSPE, GREYHOUND 1040 and OCTOPUS II
- Layer 3 Standard (L3S): Suitable for the switch families RSP, RSPE and OCTOPUS II
- Layer 3 Advanced (L3A): Suitable for the MSP- and GREYHOUND1040 switches

Classic Switch Software

The Classic Switch Software provides a range of functions normally found in backbone systems used in office networks. This includes comprehensive management, diagnostics and filter functions, various redundancy features, security mechanisms and real-time applications.

- Layer 2 Basic (L2B): Suitable for the switch family RSB20
- Layer 2 Enhanced (L2E): Suitable for the RS20/RS30/RS40-, MS20/MS30- and OCTOPUS switches
- Layer 2 Professional (L2P): Suitable for the switch families RS20/RS30/RS40, MS20/MS30, OCTOPUS, PowerMICE, RSR20/RSR30, MACH100, MACH1000 and MACH4000
- Layer 3 Enhanced (L3E): Suitable for the PowerMICE-and MACH4000 switches
- Layer 3 Professional (L3P): Suitable for the switch families PowerMICE, MACH104, MACH1040 and MACH4000

NOTE: For the latest software functionalit overview please visit our website at: www.hirschmann.com/en/Software

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Software Functionality

Switching	Classic Switch Software v9.0					HiOS Hirschmann Operating System v7.0				
	L2B	L2E	L2P	L3E	L3P	L2E	L2S	L2A	L3S	L3A
Disable Learning (Hub Functionality)		●	●	●	●					
Fast Aging	●	●	●	●	●	●	●	●	●	●
Static Unicast/Multicast Address Entries	●	●	●	●	●	●	●	●	●	●
VLAN (802.1Q)		●	●	●	●	●	●	●	●	●
Independent VLAN Learning		●	●	●	●	●	●	●	●	●
Double VLAN Tagging (QinQ)			●	●	●					
GARP VLAN Registration Protocol (GVRP)			●	●	●		●	●	●	●
Multiple VLAN Registration Protocol (MVRP)						●	●	●	●	●
Protocol-based VLAN					●			●	●	●
Voice VLAN			●	●	●		●	●	●	●
MAC-based VLAN								●	●	●
IP Subnet-based VLAN								●	●	●
VLAN Unaware Mode						●	●	●	●	●
QoS/Port Prioritization (802.1D/p)	●	●	●	●	●	●	●	●	●	●
TOS/DSCP Prioritization	●	●	●	●	●	●	●	●	●	●
Interface Trust Mode						●	●	●	●	●
IP Ingress DiffServ Classification and Policing								●	●	●
IP Egress DiffServ Classification and Policing								●*		●
CoS Queue Management				●	●	●	●	●	●	●
Traffic Shaping				●	●					
Queue-Shaping/Max. Queue Bandwidth							●*	●	●	●
Jumbo Frames			●*		●*	●*	●*	●	●	●
GARP Multicast Registration Protocol (GMRP)			●	●	●		●*	●	●	●
IGMP Snooping/Querier (v1/v2/v3)	●	●	●	●	●					
IGMP Snooping/Querier per VLAN (v1/v2/v3)						●	●	●	●	●
Unknown Multicast Filtering						●	●	●	●	●
Multiple MAC Registration Protocol (MMRP)						●	●	●	●	●
Multiple Registration Protocol (MRP)						●	●	●	●	●
Egress Broadcast Limiter per Port		●	●	●	●					
Flow Control (802.3X)		●	●	●	●	●	●	●	●	●
Egress Interface Shaping						●	●	●	●	●
Ingress Storm Protection						●	●	●	●	●
Ethernet Train Backbone									●*	

Redundancy	Classic Switch Software v9.0					HiOS Hirschmann Operating System v7.0				
	L2B	L2E	L2P	L3E	L3P	L2E	L2S	L2A	L3S	L3A
HIPER-Ring (Manager)	●	●	●	●	●					
HIPER-Ring (Ring Switch)	●	●	●	●	●			●	●	●
Fast HIPER-Ring			●*	●*	●*					
Link Aggregation with LACP			●	●	●	●	●	●	●	●
HIPER-Ring over Link Aggregation			●*	●*	●*			●	●	●
Link Backup						●	●	●	●	●
Media Redundancy Protocol (MRP) (IEC62439-2)	●	●	●	●	●	●	●	●	●	●
Fast MRP (IEC62439-2)						●*	●*	●*	●*	
MRP over Link Aggregation								●	●	●
Advanced Ring Configuration for MRP			●	●	●					
High-availability Seamless Redundancy Protocol (HSR) (IEC62439-3)						●*	●*	●*	●*	
Parallel Redundancy Protocol (PRP) (IEC62439-3)						●*	●*	●*	●*	
Device Level Ring (DLR)							●*	●*	●*	
Redundant Network Coupling		●	●	●	●			●	●	●
Redundant Coupling Protocol								●	●	●
Sub Ring Manager			●*	●*	●*			●	●	●
RSTP 802.1D-2004 (IEC62439-1)	●	●	●	●	●	●	●	●	●	●
MSTP (802.1Q)			●	●	●			●	●	●
RSTP Guards		●	●	●	●	●	●	●	●	●
RSTP over MRP		●	●	●	●					
RSTP over HSR						●*	●*	●*	●*	
RSTP Ring Only Mode								●	●	●
VRRP				●	●				●	●
HiVRRP (VRRP enhancements)				●	●				●	●
VRRP Tracking				●	●				●	●

* Hardware dependent

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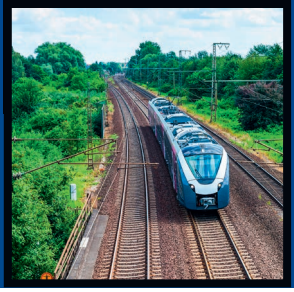

Configuration	Classic Switch Software v9.0					HiOS Hirschmann Operating System v7.0				
	L2B	L2E	L2P	L3E	L3P	L2E	L2S	L2A	L3S	L3A
Automatic Configuration Undo (roll-back)	●	●	●	●	●	●	●	●	●	●
Text-based Configuration File (XML)						●	●	●	●	●
Configuration Fingerprint		●	●	●	●	●	●	●	●	●
BOOTP/DHCP Client with Auto-Configuration	●	●	●	●	●	●	●	●	●	●
DHCP Server: per Port			●	●	●		●	●	●	●
DHCP Server: Pools per VLAN			●	●	●		●	●	●	●
DHCP Server: Option 43			●	●	●					
DHCP Relay per Interface				●	●					
AutoConfiguration Adapter ACA31 (SD Card)						●*	●*	●	●	●
AutoConfiguration Adapter ACA21/22 (USB)		●	●	●	●		●*	●*	●*	●
HiDiscovery	●	●	●	●	●	●	●	●	●	●
DHCP Relay with Option 82	●	●	●	●	●	●*	●*	●	●	●
Command Line Interface (CLI)	●	●	●	●	●	●	●	●	●	●
CLI Scripting			●	●	●	●	●	●	●	●
Full-featured MIB Support	●	●	●	●	●	●	●	●	●	●
Web-based Management	●	●	●	●	●	●	●	●	●	●
Context-sensitive Help	●	●	●	●	●	●	●	●	●	●

Management	Classic Switch Software v9.0					HiOS Hirschmann Operating System v7.0				
	L2B	L2E	L2P	L3E	L3P	L2E	L2S	L2A	L3S	L3A
LLDP (802.1AB)	●	●	●	●	●	●	●	●	●	●
LLDP-MED			●	●	●		●	●	●	●
SSHv1			●	●	●					
SSHv2			●	●	●	●	●	●	●	●
V.24	●	●	●	●	●	●	●	●	●	●
HTTP	●	●	●	●	●	●	●	●	●	●
HTTPS			●	●	●	●	●	●	●	●
SNMP v1/v2/v3	●	●	●	●	●	●	●	●	●	●
Traps	●	●	●	●	●	●	●	●	●	●
Telnet		●	●	●	●	●	●	●	●	●
TFTP	●	●	●	●	●	●	●	●	●	●
SFTP						●	●	●	●	●
SCP						●	●	●	●	●
DNS Client								●	●	●
Dual Software Image Support			●	●	●	●*	●*	●	●	●
Out Of Band Management								●*		●*

Routing	Classic Switch Software v9.0					HiOS Hirschmann Operating System v7.0				
	L2B	L2E	L2P	L3E	L3P	L2E	L2S	L2A	L3S	L3A
Full Wire-Speed Routing				●	●				●	●
Loopback Interface									●	●
ICMP Filter									●	●
Net-directed Broadcasts				●	●				●	●
Static Unicast Routing				●	●				●	●
Static Route Tracking					●				●	●
1:1 Network Address Translation									●	
RIP v1/v2				●	●				●	●
OSPFv2					●				●	●
ICMP Router Discovery (IRDP)				●	●				●	●
Equal Cost Multiple Path (ECMP)				●	●					●
Proxy ARP				●	●				●	●
IP/UDP Helper									●	●

Multicast Routing	Classic Switch Software v9.0					HiOS Hirschmann Operating System v7.0				
	L2B	L2E	L2P	L3E	L3P	L2E	L2S	L2A	L3S	L3A
IGMP v1, v2, v3					●				●	●
IGMP Proxy (Multicast Routing)									●	●
DVMRP					●					●*
PIM-DM (RFC3973)					●					●*
PIM-SM / SSM (RFC4601)					●					●*

* Hardware dependent

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Software Functionality (continued)

Security	Classic Switch Software v9.0					HiOS Hirschmann Operating System v7.0				
	L2B	L2E	L2P	L3E	L3P	L2E	L2S	L2A	L3S	L3A
IP-based Port Security		●	●	●	●					
MAC-based Port Security		●	●	●	●	●	●	●	●	●
Port-based Access Control with 802.1X			●	●	●	●	●	●	●	●
RADIUS VLAN Assignment						●	●	●	●	●
Guest/Unauthenticated VLAN			●	●	●	●	●	●	●	●
RADIUS Policy Assignment								●	●	●
MAC Authentication Bypass			●	●	●			●	●	●
Multi-Client Authentication per Port			●	●	●			●	●	●
Integrated Authentication Server (IAS)			●	●	●	●	●	●	●	●
Remote Authentication via RADIUS			●	●	●	●	●	●	●	●
LDAP								●	●	●
Basic ACL							●*			
Ingress MAC-based ACL				●	●			●	●	●
Ingress IPv4-based ACL				●	●			●	●	●
Ingress VLAN-based ACL								●	●	●
Egress MAC-based ACL								●*		●
Egress IPv4-based ACL								●*		●
Egress VLAN-based ACL								●*		●
Time-based ACL								●	●	●
VLAN-based ACL							●*	●	●	●
ACL Flow-based Limiting								●	●	●
DHCP Snooping								●	●	●
IP Source Guard								●*		●
Dynamic ARP Inspection								●	●	●
Automatic Denial-of-Service Prevention						●	●	●	●	●
Device Security Indication						●	●	●	●	●
Audit Trail						●	●	●	●	●
CLI Logging						●	●	●	●	●
HTTPS Certificate Management			●	●	●	●	●	●	●	●
Access to Management restricted by VLAN		●	●	●	●	●	●	●	●	●
Restricted Management Access			●	●	●	●	●	●	●	●
Appropriate Use Banner			●	●	●	●	●	●	●	●
SNMP Logging		●	●	●	●	●	●	●	●	●
Syslog Over TLS								●	●	●
Multiple Privilege Levels						●	●	●	●	●
Local User Management	●	●	●	●	●	●	●	●	●	●
Configurable Password Policy						●	●	●	●	●
Configurable Number of Login Attempts						●	●	●	●	●
User Account Locking						●	●	●	●	●

Time Synchronization	Classic Switch Software v9.0					HiOS Hirschmann Operating System v7.0				
	L2B	L2E	L2P	L3E	L3P	L2E	L2S	L2A	L3S	L3A
SNTP Client	●	●	●	●	●	●	●	●	●	●
SNTP Server	●	●	●	●	●	●	●	●	●	●
Buffered Real Time Clock			●	●	●	●*	●	●	●	●
PTPv2 Transparent Clock Two-step*			●	●	●	●*	●*	●	●	●
PTPv2 Boundary Clock*		●	●	●	●	●*	●*	●	●	●

Industrial Profiles	Classic Switch Software v9.0					HiOS Hirschmann Operating System v7.0				
	L2B	L2E	L2P	L3E	L3P	L2E	L2S	L2A	L3S	L3A
PROFINET IO Protocol		●	●	●	●	●*	●*	●	●	●
EtherNet/IP Protocol		●	●	●	●	●*	●*	●	●	●
ModbusTCP						●	●	●	●	●
IEC61850 Protocol (MMS Server, Switch Model)			●	●	●	●	●	●	●	●

* Hardware dependent

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Diagnostics	Classic Switch Software v9.0					HiOS Hirschmann Operating System v7.0				
	L2B	L2E	L2P	L3E	L3P	L2E	L2S	L2A	L3S	L3A
Management Address Conflict Detection			●	●	●	●	●	●	●	●
Address Relearn Detection		●	●	●	●					
LEDs	●	●	●	●	●	●	●	●	●	●
MAC Notification			●	●	●		●	●	●	●
Signal Contact	●	●	●	●	●	●*	●	●	●	●
Device Status Indication	●	●	●	●	●	●	●	●	●	●
TCPDump			●	●	●	●	●	●	●	●
Email Notification								●	●	●
Syslog		●	●	●	●	●	●	●	●	●
Persistent Logging on ACA						●*	●	●	●	●
Port Monitoring with Auto-Disable			●	●	●	●	●	●	●	●
Link Flap Detection			●	●	●	●	●	●	●	●
Overload Detection			●	●	●	●	●	●	●	●
Duplex Mismatch Detection		●	●	●	●	●	●	●	●	●
Link Speed and Duplex Monitoring			●	●	●	●	●	●	●	●
RMON (1, 2, 3, 9)	●	●	●	●	●	●	●	●	●	●
Port Mirroring 1:1	●	●	●	●	●	●	●	●	●	●
Port Mirroring 8:1		●	●	●	●	●	●	●	●	●
Port Mirroring N:1			●*		●*	●	●	●	●	●
Port Mirroring N:2						●*	●*	●*		●*
VLAN Mirroring								●	●	●
RSPAN								●	●	●
SFLOW								●	●	●
Copper Cable Test			●	●	●	●*	●*	●	●	●
System Information	●	●	●	●	●	●	●	●	●	●
Self-Tests on Cold Start	●	●	●	●	●	●	●	●	●	●
SFP Management	●	●	●	●	●	●	●	●	●	●
Configuration Check Dialog			●	●	●	●	●	●	●	●
Switch Dump		●	●	●	●	●	●	●	●	●
Snapshot Configuration Feature						●	●	●	●	●

Miscellaneous	Classic Switch Software v9.0					HiOS Hirschmann Operating System v7.0				
	L2B	L2E	L2P	L3E	L3P	L2E	L2S	L2A	L3S	L3A
Digital IO Management	●*	●*	●*	●*	●*			●*		●*
PoE (802.3AF)		●*	●*	●*	●*		●*	●*	●*	●*
PoE+ (802.3AT)			●*		●*		●*	●*	●*	●*
PoE+ Manual Power Management			●*		●*		●*	●*	●*	●*
PoE Fast Startup			●*				●*	●*	●*	●*
Port Power Down						●	●	●	●	●
Manual Cable Crossing	●	●	●	●	●	●	●	●	●	●

* Hardware dependent

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