

Switch-Software

HiOS – Hirschmann Operating System

HiOS ist das Betriebssystem für die aktuelle Generation der Industrial-Ethernet-Geräte, das hohe Leistung mit großer Sicherheit kombiniert. Es bietet den Benutzern präzise Zeitsynchronisation sowie umfangreiche Redundanzverfahren und Diagnos-Tools. Die Redundanzverfahren PRP (Parallel Redundancy Protocol) und HSR (High-availability Seamless Redundancy) gewährleisten dank null Umschaltzeit reibungslose Produktionsprozesse. Umfangreiche Security-Mechanismen schützen das Netzwerk vor Angriffen und Bedienfehlern.

- Layer 2 Embedded (L2E): geeignet für die EES-Switches
- Layer 2 Standard (L2S): geeignet für die Switch-Familien RED, RSP, RSPL, RSPE, GREYHOUND und OCTOPUS II
- Layer 2 Advanced (L2A): geeignet für die Switch-Familien MSP, RSP, RSPE, GREYHOUND 1040 und OCTOPUS II
- Layer 3 Standard (L3S): geeignet für die Switch-Familien RSP, RSPE und OCTOPUS II
- Layer 3 Advanced (L3A): geeignet für die MSP- und GREYHOUND1040 Switches



Classic Switch Software

Die Classic Switch Software bietet eine Reihe von Funktionen, die normalerweise nur Backbone-Systeme in Netzwerken des Office-Bereichs haben. Hierzu gehören umfangreiche Management-, Diagnose- und Filterfunktionen sowie verschiedene Redundanzverfahren, Security-Mechanismen und Echtzeit-Anwendungen.

- Layer 2 Basic (L2B): geeignet für die Switch-Familie RSB20
- Layer 2 Enhanced (L2E): geeignet für die RS20/RS30/RS40-, MS20/MS30- und die OCTOPUS-Switches
- Layer 2 Professional (L2P): geeignet für die Switch-Familien RS20/RS30/RS40, MS20/MS30, OCTOPUS, PowerMICE, RSR20/RSR30, MACH100, MACH1000 und MACH4000
- Layer 3 Enhanced (L3E): geeignet für die PowerMICE- und MACH4000-Switches
- Layer 3 Professional (L3P): geeignet für die Switch-Familien PowerMICE, MACH104, MACH1040 und MACH4000



Hinweis: Einen Überblick über die neueste Funktionalität der Software finden Sie unter: www.hirschmann.com/de/Software



Konfiguration
Automatische Konfiguration rückgängig machen (roll-back)
Text-basierte Konfigurationsdatei (XML)
Konfigurationsfingerabdruck
BOOTP/DHCP Client mit Autokonfiguration
DHCP Server: pro Port
DHCP Server: Pools pro VLAN
DHCP Server: Option 43
DHCP Relay per interface
AutoConfiguration Adapter ACA31 (SD card)
AutoConfiguration Adapter ACA21/22 (USB)
HiDiscovery
DHCP Relay mit Option 82
Command Line Interface (CLI)
CLI Scripting
Full-featured MIB Support
Web-based Management
Contextsensitive Hilfe

Classic Switch Software v9.0	L2B	L2E	L2P	L3E	L3P
●	●	●	●	●	●
●	●	●	●	●	●
		●	●	●	●
		●	●	●	●
		●	●	●	●
	●	●	●	●	●
●	●	●	●	●	●
●	●	●	●	●	●
●	●	●	●	●	●
●	●	●	●	●	●
●	●	●	●	●	●
●	●	●	●	●	●
●	●	●	●	●	●
●	●	●	●	●	●

HiOS Hirschmann Operating System v7.0	L2E	L2S	L2A	L3S	L3A
●	●	●	●	●	●
●	●	●	●	●	●
●	●	●	●	●	●
●	●	●	●	●	●
	●	●	●	●	●
	●	●	●	●	●
●*	●*	●	●	●	●
●	●*	●*	●*	●*	●
●*	●*	●	●	●	●
●	●	●	●	●	●
●	●	●	●	●	●
●	●	●	●	●	●
●	●	●	●	●	●
●	●	●	●	●	●
●	●	●	●	●	●
●	●	●	●	●	●

Management
LLDP (802.1AB)
LLDP-MED
SSHv1
SSHv2
V.24
HTTP
HTTPS
SNMP v1/v2/v3
Traps
Telnet
TFTP
SFTP
SCP
DNS Client
Unterstützung von Dual-Software-Image
Out Of Band Management

Classic Switch Software v9.0	L2B	L2E	L2P	L3E	L3P
●	●	●	●	●	●
		●	●	●	●
		●	●	●	●
●	●	●	●	●	●
●	●	●	●	●	●
		●	●	●	●
●	●	●	●	●	●
●	●	●	●	●	●
●	●	●	●	●	●
●	●	●	●	●	●
		●	●	●	●
		●	●	●	●
		●	●	●	●
		●	●	●	●
		●	●	●	●
		●	●	●	●

HiOS Hirschmann Operating System v7.0	L2E	L2S	L2A	L3S	L3A
●	●	●	●	●	●
	●	●	●	●	●
●	●	●	●	●	●
●	●	●	●	●	●
●	●	●	●	●	●
●	●	●	●	●	●
●	●	●	●	●	●
●	●	●	●	●	●
●	●	●	●	●	●
●	●	●	●	●	●
●	●	●	●	●	●
●	●	●	●	●	●
●	●	●	●	●	●
●	●	●	●	●	●
●	●	●	●	●	●
●*	●*	●	●	●	●*
		●*			●*

Routing
Full Wire-Speed Routing
Loopback-Interface
ICMP-Filter
Net-directed Broadcasts
Statisches Unicast-Routing
Statisches Routen-Nachverfolgen
1:1 Network Address Translation
RIP v1/v2
OSPFv2
ICMP-Router-Discovery (IRDP)
Equal Cost Multiple Path (ECMP)
Proxy ARP
IP/UDP Helper

Classic Switch Software v9.0	L2B	L2E	L2P	L3E	L3P
			●	●	
			●	●	
			●	●	
			●	●	
			●	●	
			●	●	
			●	●	
			●	●	
			●	●	
			●	●	
			●	●	
			●	●	
			●	●	
			●	●	

HiOS Hirschmann Operating System v7.0	L2E	L2S	L2A	L3S	L3A
			●	●	
			●	●	
			●	●	
			●	●	
			●	●	
			●	●	
			●	●	
			●	●	
			●	●	
			●	●	
			●	●	
			●	●	
			●	●	
			●	●	
			●	●	
			●	●	

Multicast Routing
IGMP v1/v2/v3
IGMP-Proxy (Multicast-Routing)
DVMRP
PIM-DM (RFC3973)
PIM-SM/SSM (RFC4601)

Classic Switch Software v9.0	L2B	L2E	L2P	L3E	L3P
					●
					●
					●
					●

HiOS Hirschmann Operating System v7.0	L2E	L2S	L2A	L3S	L3A
			●	●	
			●	●	
					●*
					●*
					●*

* Abhängig von der Hardware



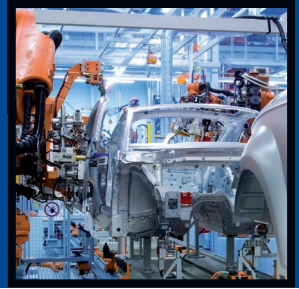
Software Funktionsübersicht (Fortsetzung)

Sicherheit	Classic Switch Software v9.0					HiOS Hirschmann Operating System v7.0				
	L2B	L2E	L2P	L3E	L3P	L2E	L2S	L2A	L3S	L3A
IP-basiertes Port-Security		●	●	●	●			●	●	●
MAC-basiertes Port-Security		●	●	●	●	●		●	●	●
Port-basiertes Access-Control mit 802.1X			●	●	●	●		●	●	●
RADIUS-VLAN-Zuordnung			●	●	●			●	●	●
Gast/nicht authentifiziertes VLAN			●	●	●			●	●	●
RADIUS-Richtlinien-Zuweisung								●	●	●
MAC-Authentication-Bypass			●	●	●			●	●	●
Multi-Client-Authentifizierung pro Port			●	●	●			●	●	●
Integrierter Authentifizierungs-Server (IAS)			●	●	●	●		●	●	●
Remote Authentifizierung via RADIUS			●	●	●	●		●	●	●
LDAP								●	●	●
Basis-ACL								●*		
Ingress MAC-basiertes ACL				●	●			●	●	●
Ingress IPv4-basiertes ACL				●	●			●	●	●
Ingress VLAN-basiertes ACL								●	●	●
Egress MAC-basiertes ACL								●*		●
Egress IPv4-basiertes ACL								●*		●
Egress VLAN-basiertes ACL								●*		●
Zeit-basiertes ACL								●	●	●
VLAN-basiertes ACL								●*	●	●
ACL-flussbasierte Begrenzung								●	●	●
DHCP-Snooping								●	●	●
IP Source Guard								●*		●
Dynamische ARP-Inspektion								●	●	●
Automatisches Denial-of-Service Prevention								●	●	●
Device Security Indication								●	●	●
Audit-Trail								●	●	●
CLI-Logging								●	●	●
HTTPS-Zertifikats-Management			●	●	●			●	●	●
Durch VLAN eingeschränkter Management-Zugriff		●	●	●	●			●	●	●
Eingeschränkter Management-Zugriff			●	●	●			●	●	●
Appropriate Use-Banner			●	●	●			●	●	●
SNMP-Logging		●	●	●	●			●	●	●
Syslog Over TLS								●	●	●
Multiple-Privilege-Levels								●	●	●
Lokales Benutzer-Management	●	●	●	●	●			●	●	●
Konfigurierbare Passwortrichtlinie								●	●	●
Konfigurierbare Anzahl von Login-Versuchen								●	●	●
User-Account-Locking								●	●	●

Zeitsynchronisation	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	●	●	●	●	●	●		●	●	●
Gepufferte Echtzeituhr			●	●	●	●*		●	●	●
PTPv2 Transparent Clock two-step*			●	●	●	●*	●*	●	●	●
PTPv2 Boundary Clock*		●	●	●	●	●*	●*	●	●	●

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

* Abhängig von der Hardware



Diagnose
Management-Adresskonflikterkennung
Adress-Relearn-Erkennung
LEDs
MAC-Notification
Signalkontakt
Gerätstatus-Indikation
TCPDump
E-Mail-Notifikation
Syslog
Dauerhaftes Logging auf ACA
Portbeobachtung mit Auto-Ausschaltung
Link-Flap-Erkennung
Überlast-Erkennung
Duplex-Mismatch-Erkennung
Leitungsgeschwindigkeits- und Duplex-Beobachtung
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
Kupferkabeltest
Systeminformation
Selbsttests bei Kaltstart
SFP-Management
Konfigurationsprüfungsdialog
Switch Dump
Schnappschuss-Konfigurationseigenschaft

Classic Switch Software v9.0				
L2B	L2E	L2P	L3E	L3P
		●	●	●
	●	●	●	●
●	●	●	●	●
		●	●	●
●	●	●	●	●
●	●	●	●	●
		●	●	●
	●	●	●	●
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		●	●	●
		●	●	●
	●	●	●	●
●	●	●	●	●
●	●	●	●	●
	●	●	●	●
		●*		●*
		●	●	●
●	●	●	●	●
●	●	●	●	●
●	●	●	●	●
		●	●	●
	●	●	●	●

HiOS Hirschmann Operating System v7.0				
L2E	L2S	L2A	L3S	L3A
●	●	●	●	●
●	●	●	●	●
	●	●	●	●
●*	●	●	●	●
●	●	●	●	●
●	●	●	●	●
		●	●	●
●	●	●	●	●
●*	●	●	●	●
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●	●	●	●	●

Diverses
Digitales-IO-Management
PoE (802.3AF)
PoE+ (802.3AT)
PoE+ Manuelles Leistungs-Budget-Management
PoE Fast-Startup
Port Leistungsabschaltung
Manuelles Kabelkreuzen

Classic Switch Software v9.0				
L2B	L2E	L2P	L3E	L3P
●*	●*	●*	●*	●*
	●*	●*	●*	●*
		●*		●*
		●*		●*
		●*		●*
		●*		●*
		●*		●*
		●*		●*
		●*		●*
●		●	●	●

HiOS Hirschmann Operating System v7.0				
L2E	L2S	L2A	L3S	L3A
		●*		●*
		●*		●*
	●*	●*	●*	●*
	●*	●*	●*	●*
	●*	●*	●*	●*
	●*	●*	●*	●*
	●*	●*	●*	●*
	●*	●*	●*	●*
●	●	●	●	●
●	●	●	●	●

* Abhängig von der Hardware