

2-7	Physical requirements/approvals-certification – Product positioning	
9-14	Railswitch - Unmanaged switches: SPIDER, RS20, RS30	
19	Lite managed switch GECKO	
21-23	Railswitch – managed: RS20, RS30, RS40	Classic
25-26	MICE: MS20, MS30, MS4128	
27-29	19"-switch: MACH102, MACH104	
30-34	Ruggedized switches: RSR, MACH10x0, MACH1040	
36-37	Backbone switches: MACH4000	
38-42	IP67 switches: OCTOPUS	
44-45	OCTOPUS II – OCTOPUS III	HiOS
46-49	Modulare switches: MSP, MSM	
50-51	Bobcat BRS	
52-57	RSP, RSPE – RSPM, RSPL, RSPS	
58	RED25	
59-65	19"-switches GREYHOUND: GRS1x20/30 --- GRS1x42 – media modules	
66-67	Backbones switches: DRAGON MACH4000 – MACH4500	
68-75	EagleOne, EAGLE20/30, EAGLE 40, TofinoXenon	Security
76-77	Industrial Cellular Router: OWL	
78-85	OpenBAT, BAT867-R, BAT Controller WLC	WLAN
86-88	DIN Rail Patch panel: MIPP	
89	Network Management: Industrial HiVision, licenses; Annual Maintenance Plan	Management
91-99	XFP/SFP: 100 Mbit/s, 1.000 Mbit/s, 2.500 Mbit/s 10.000 Mbit/s	
100	Rail Power Supplies: RPS	
101	PoE Injector: RPI	
102	Power Blocks	
103	Accessories: Dust cover, DIN Rail Adapter, etc.	
104	Terminal cable	
105	AutoConfigurationAdapter ACA	
106-114	Power Consumption/Power Output – Switches	
115	Overview: Norm & Standards	
116-123	Mean Time Between Failure MTBF	
124-125	Routing limits	
126-142	Overview: Function – Platform 4 / Platform 5	
143-155	Layer 2 – Redundancy	
156	Layer 2 – Redundancy – in which switch ... which redundancy	
157	DIP switch-settings	
158	Download-Link: Manuals - Installation guides	
159	Product-features and Approval-matrix, MTU (Jumboframes)	
160	Naming of tools: HiDiscovery, HiView, ...	
161	Patchcable (RJ45, M12 D-coded/X-coded)	
162	How and who to contact	

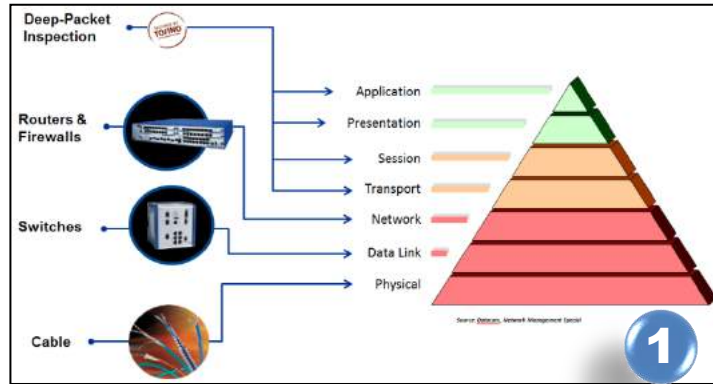
Booklet

One-page information



PHYSICAL REQUIREMENTS

Steps to find the right product



2

- OpenBAT
- BAT450-F
- BAT 867

3

- EAGLE One
- EAGLE 20/30
- TOFINO XENON

Firewall

4

Layer2 / Layer 3 - Switches

DIN Rail

- SPIDER
- GECKO
- RS20/30/40
- MS20/30
- RSR20/30
- BOBCAT BRS
- RSP20/30
- RSPL20/30
- RSPS20

19" Rack mount

- MACH 102/104
- MACH1020/1030
- Greyhound GRS 1020/1030/1042
- MACH 4002
- DRAGON MACH4000/4500

Harsh Conditions

- OCTOPUS 8/16/24
- OCTOPUS OS20/30

IP 67

IP 65

5

Speed

- 10 Mbit/s
- 100 Mbit/s
- 1.000 Mbit/s
- 2.500 Mbit/s
- 10.000 Mbit/s

6

Type of ports

- Fiber
 - Singlemode
 - BFOCIST
 - D-LC
 - D-SC
 - Multimode
 - BFOCIST
 - D-LC
 - D-SC
 - MTRJ
- Twisted Pair
 - RJ45
 - M12, D-coded
 - M12, X-coded

7

Type of power available

- Different power plug
- Type of power plug
- Redundancy

- 24 Volt DC
- 48 Volt DC
- 60/120/250 Volt DC
- 110/230 Volt AC
- 47 ... 57 Volt DC (PoE)
- 53 ... 57 Volt DC (PoE+)

8

Temperature

- 0° ... +60°C
- 0° ... +50°C
- -40° ... +70°C
- -40° ... +85°C

- Fanless
- Conformal coating

EEC – Extended Environmental Condition means larger temperature range

NORMS AND STANDARDS

10

Safety

- cUL508 Safety of industrial control equipment
- UL61010-1/2-201
- EN60950-1 Safety of industrial technology equipment
- EN61131-2

Country specific

- EC (European Union)
- FCC (US)
- C-Tick (Australia)
- GOST-R (Russia)

Substation

- IEC61850-3
- IEEE1613

Marine

- ABS (American Bureau of shipping)
- BV (Bureau Veritas)
- DNV (Det Norsk Veritas)
- GL (German Lloyd)
- LR (Lloyd Register)
- KR (Korean Register)
- RINA (Italy)
- BSH (Compass Distance)

Hazardous Locations

- ISA 12.12.01
- ATEX Zone2
- cUL1604 Class1 Div 2

Vehicle

- e1/E13

Transportation

- NEMA TS2 Traffic control

Railway

- EN50121-4 Railway along track
- EN50155 Railway on vehicle
- EN5510-2 Fire test to railway components
- prEN45545
- NF F 16-101
- NF F 16-102



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ETHERNET PRODUCTS AT A GLANCE

Unmanaged DIN Rail Mount Switches

SPIDER III

The entry-level Rail switch in the SPIDER family are a cost efficient way of utilizing ETHERNET technology. They are characterized by compact design and „plug-and-work installation“.



SPIDER III

SPIDER III SL for harsh environments and Applications in which switch management is not necessary. SPIDER II PL: expand on the benefits of the Standard Line offerings by adding configurations with the free and portable Hirschmann Switch Programming tool via USB.

Light managed DIN Rail Mount Switches

GECKO

Lite managed switch

- GECKO 4TX 4 ports
- GECKO 5TX 5 ports



RSB20

Fast Ethernet RSB switches with basic software version

- RSB20 8 or 9 ports



Managed DIN Rail Mount Switches

RS20, RS30, RS40, RS22, RS32

Fully configurable managed switches with selectable features and approvals

- RS20 4, 8, 9, 16, 17, 24 or 25 ports
- RS30 10, 18, or 26 ports, two of which are Gigabit
- RS40 9 ports, all Gigabit
- RS22 4, 8, 9, 16, 17, 24 or 25 ports, four of which are PoE
- RS32 10, 18, or 26 ports, four of which are PoE and two are Gigabit



MS20, MS30, MSP30, MSP32, MSP40, MSP42

Full Gigabit managed modular switches with selectable features and approvals as well as user hot-swappable media modules for almost limitless copper/fiber combinations.

- MS20/30 up to 26 ports, two of which can be Gigabit
- MSP30/32 HiOS advanced Layer 2 and Layer 3 switch, up to 28 ports, four of which can be Gigabit
- MSP40/42 HiOS advanced Layer 2 and Layer 3 switch, up to 28 Gigabit ports, four of which on the first slot can be 2.5 Gigabit



RSR20, RSR30

Ultra-hardened switches, operating temperature -40°C to +85°C, DC or AC power input

- RSR20: 8 or 9 ports
- RSR30: 9 or 10 ports, two or three of which are Gigabit

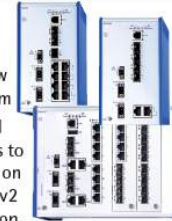


Managed DIN Rail Mount Switches

RSP Series

Hardened managed switches with the new HiOS operating system

- RSP: uninterrupted redundancy thanks to PRP, HSR and DLR, on all ports IEEE 1588v2 time synchronization, comprehensive security functions, variants with 3 GE SFP and 8 FE ports, up to 7 FE SFP slots, Layer 2 and Layer 3 versions
- RSPS: optional PRP, HSR and DLR, on all ports IEEE 1588v2 time synchronization, variants with 6 FE ports, up to 4 FE SFP slots
- RSPSL: comprehensive security functions, variants with 2 GE combo and 8 FE ports, up to 4 FE SFP slots
- RSPSE: best-possible investment protection thanks to the maximum flexibility provided by the media modules, Layer 2 and Layer 3 versions



RED25

Cost-effective Fast Ethernet redundancy entry-level switch supporting PRP, HSR or DLR. Offered in two, four-port versions:

- Four FE TX ports
- Two FE TX ports, plus two FE small form-factor pluggable (SFP) ports



Managed DIN Rail Mount Switches

BRS Series

BOBCAT

Next generation of OpenRail switches (RS20/30/40)



Managed DIN Rail Mount Switches

IP67 Waterproof Switches

OCTOPUS

- OCTOPUS 5TX unmanaged, 5 ports, M12 D-code
- OCTOPUS 8TX-EEC unmanaged configurable, 8 ports, M12 D-code
- OCTOPUS 8TX PoE-EEC unmanaged configurable, 8 ports, M12 D-code
- OCTOPUS 8M/16M/24M managed, 8, 16 and 24 ports, M12 D-code
- OCTOPUS 8M-6PoE and 8M-8PoE managed, 8 ports, M12 D-code, 6 and 8 of which are PoE
- OCTOPUS 16M-8PoE and 24M-8PoE managed, 16 and 24 ports, M12 D-code, 8 of which are PoE
- OCTOPUS OS2x/3x: IP65/67; from 8 up to 28 ports; M12 D-code; several options available: multi- or singlemode fiber ports, Power over Ethernet with up to 15 PoE/PoE+ ports, 2 or 4 GE ports M12 X-code, managed or unmanaged types, Layer 3 software support, power supply options from 24 to 110 V DC and 100 to 230 V AC, certified for trains, ships and for use in road vehicles.



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ETHERNET PRODUCTS AT A GLANCE

19" Mount managed Switches

MACH100



Hardened Enterprise-grade switches

- MACH102-8TP modular switch, up to 26 ports, 10 fixed ports, two of which are Gigabit (modules available for MM/SM fiber, RJ45, PoE/PoE+ and SFP)
- MACH102-8TP-F 10 fixed ports, two of which are Gigabit
- MACH102-24TP-F 26 fixed ports, two of which are Gigabit
- MACH104 - All Gigabit, 4 RJ45/SFP combo ports and 20 RJ45 ports (4 of which can be PoE)
- MACH104 - All Gigabit, 4 RJ45/SFP combo ports, 16 RJ45 PoE+ ports (optional with 2 XFP 10G uplink ports)

MACH1000



Ultra-hardened switches, fully configurable, operating temperature -40°C to +85°C, optionally for all variants 4 PoE ports

- MAR1020, up to 24 ports
- MAR1030, up to 28 ports, up to four of which are Gigabit
- MAR1120, up to 20 ports on rear of switch
- MAR1130, up to 24 ports on rear of switch, up to four of which are Gigabit
- MAR1040, 16 Gigabit RJ45/SFP combo ports, in Layer 2 or Layer 3 version

Industrial-strength Patch Panel

MIPP

- Single Modules: 6 x SC Duplex, 6x LC Duplex, 12x LC Duplex, 4 x RJ45 Keystone Jack unshielded or shielded
- Double Modules: 12 x SC Duplex and 12 x LC Duplex
- Accessories: Pigtails



GREYHOUND



Fast/Gigabit Ethernet switch designed for use in harsh industrial environments.

- From entry level types with 16 Fast Ethernet up 28 ports Full Gigabit Layer 3 versions
- Field exchangeable media modules
- Versions with hot swap power supplies
- 2.5 Gigabit uplink and full wire speed Layer 3 options

MACH1000



MACH4000



High density and high speed backbone switch w/Layer 3/routing and speeds up to 10 Gigabit

- MACH4002-24G up to 24 Gigabit ports
- MACH4002-24G+3X, up to 24 Gigabit ports and three 10 Gigabit XFP ports
- MACH4002-48G up to 48 Gigabit ports
- MACH4002-48G+3X up to 48 Gigabit ports and three 10 Gigabit XFP ports

DRAGON MACH 4000/4500

With these powerful yet simple-to-use layer2/3 switches, you can build flexible, redundant and secure backbone networks with a higher bandwidth (up to 10 Gigabit)

Security, Firewall and VPN Appliance

EAGLE One Router

- Compliance with global standards and certifications, including approvals for hazardous locations and marine certifications
- Ease of integration through unique "firewall learning mode" that reduces traditional installation risks
- Advanced redundancy features for maximum security, including layer 2 & layer 3 functions that ensure switchover to a standby device in the event of a fault or failure



EAGLE20/30 Firewalls

- Customizable design with interface configuration options for Fast Ethernet, Gigabit Ethernet & Symmetrical High-speed Digital Subscriber Line (SHDSL)
- Advanced Graphical User Interface helps you create custom rules for fast, easy configuration
- Operating system HiSecOS 3.0 security features, including Deep Packet Inspection (DPI), ensure the highest level of security



Tofino Xenon Security Appliance

- Protect PLCs, RTUs and other control devices with this stealth industrial firewall that provides stateful and industrial protocol deep packet inspection at Layer 2 (data link)
- Simplify installation: Zero-impact Plug-n-Protect technology requires no pre-configuration, no network changes and no disruption to the control system
- Configure-Test-Deploy: Zero-day vulnerability protection with deep protocol awareness that is not dependent upon vulnerability updates



Rail Data Diode

- Reliably protects networks from external cyber threats through singular data flow
- Securely transfers Ethernet data to the public internet without putting the system at risk
- Easy-to-explain product functionality for governmental or regulatory approval processes



Industrial Wireless LAN



BAT Access Points/Clients

- OpenBAT family - BAT-R and BAT-F - rugged configurable wireless LAN access points and/or clients
- BAT450-F rugged compact and lightweight configurable wireless LAN access points and/or clients
- BAT867-R configurable wireless LAN access point and/or client featuring IEEE 802.11ac
- BAT Controller WLC for centralized management of large WLAN networks
- BAT-C Wireless LAN access client
- Extensive antenna and accessory offering

Secure Remote Access Solution

A simple and secure way to provide remote network access and diagnostics through a three-component system:

- GateManager
- SiteManager
- LinkManager



Network Management Solution

Industrial HiVision

Network visualization and configuration software with integrated OPC server.

- Automatic topology detection
- MultiConfig™ for simultaneous configuration of multiple devices
- Security Status Visualization
- Network dashboard
- Annual Maintenance Plan



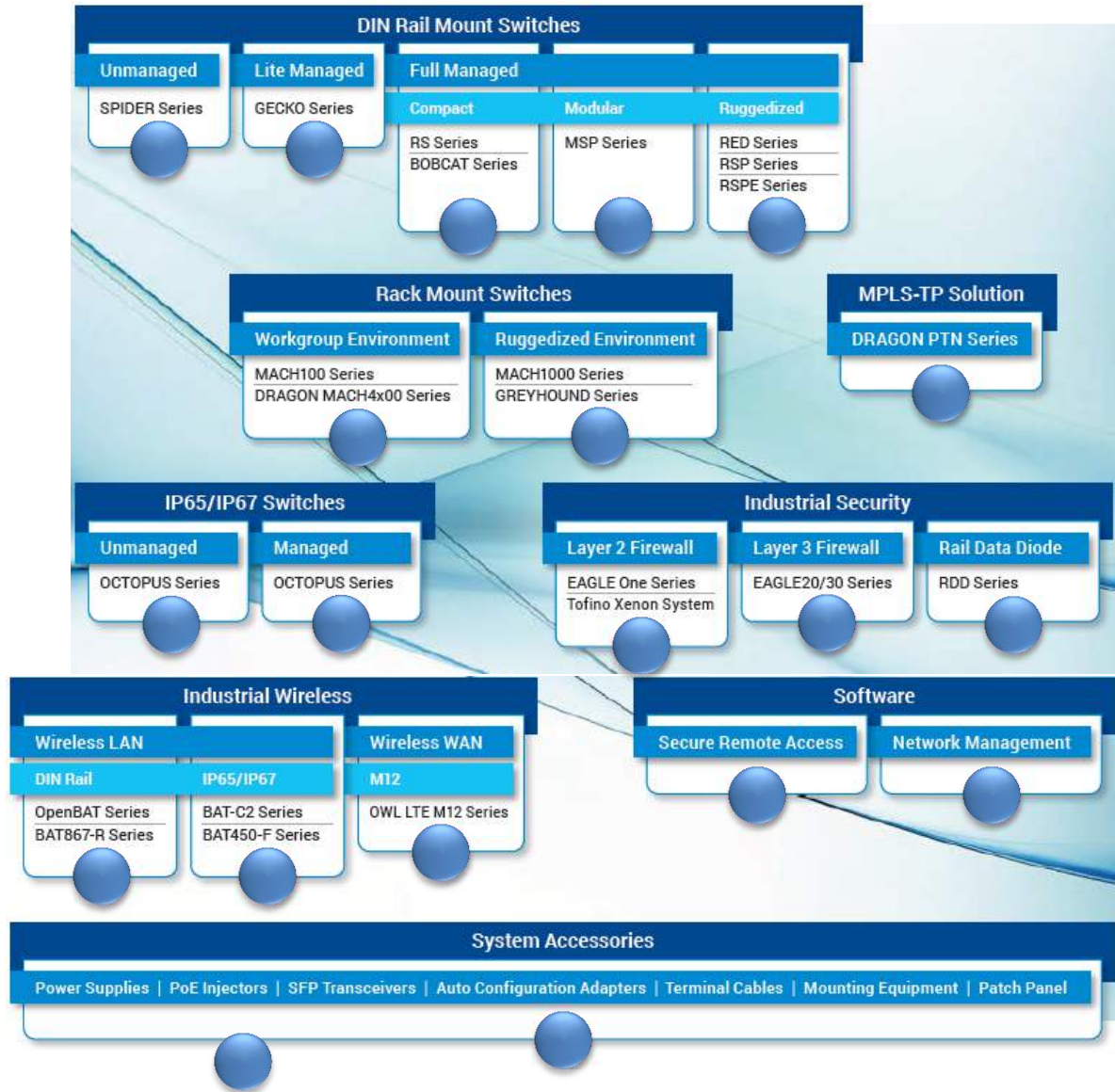
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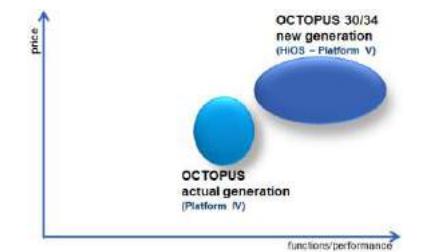
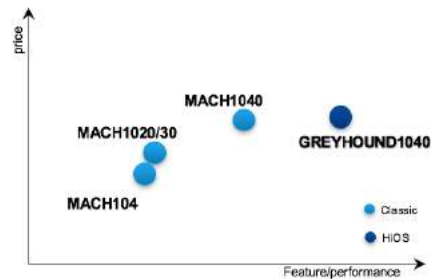
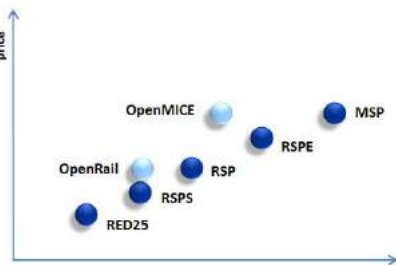
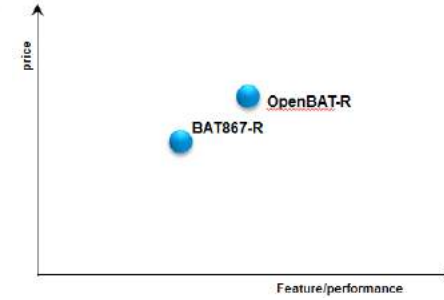
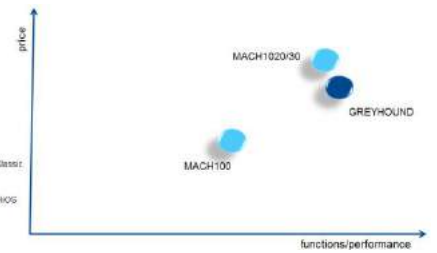
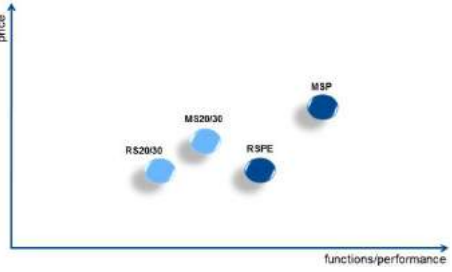
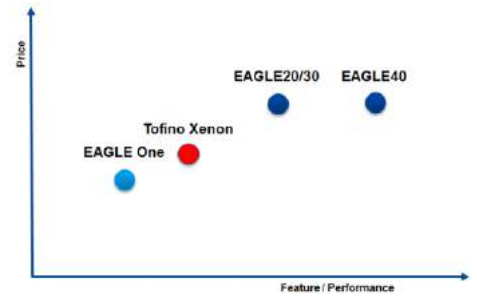
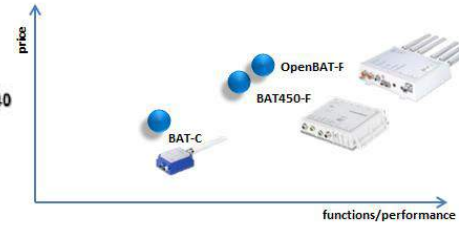
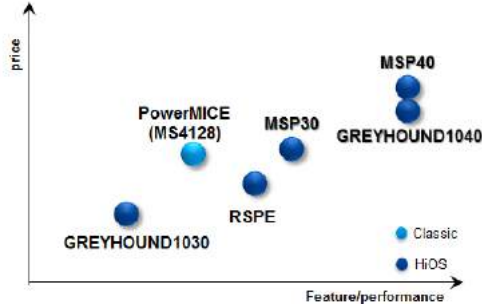
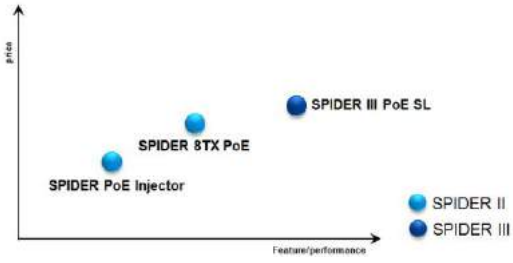
Product, Feature and Approval Matrix

Product Line	Unmanaged Switches	Managed Switches	Lite Managed Switch	Industrial Cellular Routers	OWI LTE M12
Spider III - Standard Line	●	●	●	●	●
Spider III - Premium Line	○	○	○	○	○
Octopus	○	○	○	○	○
RS20	○	○	○	○	○
RS30	○	○	○	○	○
RS40	○	○	○	○	○
BOBCAT	○	○	○	○	○
MSP	○	○	○	○	○
RED	○	○	○	○	○
RSP	○	○	○	○	○
RSPE	○	○	○	○	○
OCTOPUS	○	○	○	○	○
MACH100	○	○	○	○	○
DRAGON MACH4x00	○	○	○	○	○
MACH1000	○	○	○	○	○
GREYHOUND	○	○	○	○	○
MPLS-TP Solution	○	○	○	○	○
DRAGON PTN	○	○	○	○	○
Firewall Systems	○	○	○	○	○
EAGLE One	○	○	○	○	○
Tofino Xenon	○	○	○	○	○
EAGLE 20/30	○	○	○	○	○
Rail Data Diode	○	○	○	○	○
Wireless LAN	○	○	○	○	○
OpenBAT	○	○	○	○	○
BAT87-R	○	○	○	○	○
BAT-C2	○	○	○	○	○
BAT450-F	○	○	○	○	○
Industrial Cellular Routers	○	○	○	○	○
OWI LTE M12	○	○	○	○	○

○ Hollow markers indicate that a non-standard/accessory mounting option is available.
 All DIN rail mount switches can be mounted in a 19" rack by using the Rack Mount Adapter (accessory). The SPIDER and SPIDER III series have mounting options on their housings to enable panel mounting. The RSR has an adapter plate and the MACHs can have their front rack mount flanges turned 90° (additional flanges for rear are available for added support).
 ●* only 110V DC



Product positioning



Classic

Platform 4



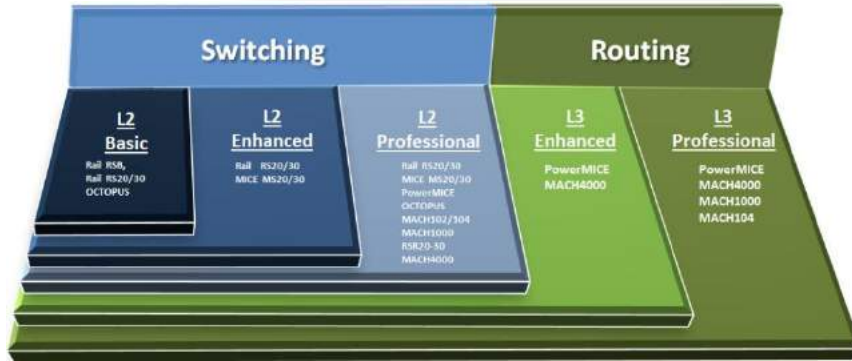
The Classic Switch Software (Release 8)
Software Platform for Hirschmann™ managed MACH, MICE, Rail and OCTOPUS families

HiOS

Platform 5



HiOS - Hirschmann™ Operating System
Software Platform for Hirschmann™ managed RSP, MSP and Embedded Ethernet Switch families



Further step to find the right product

Switching	
Layer 2 Basic	Suitable for RSB20, OCTOPUS . The cost-effective entrance into managed switch capabilities. Includes statistics, Filters and redundancy technologies. The alternative for unmanaged switches.
Layer 2 Enhanced	Suitable for RS20/30/40, MS20/30 . Basic level plus a wide range of management, filter and diagnostic functions. Fast redundancy mechanisms, industrial profiles like EtherNet/IP and PROFINET and security features are also supported. Ideally suited for standard industrial applications
Layer 2 Professional	Suitable for MACH100, MACH1000, MACH4000, RS20/30/40, MS20/30, RSR Enhanced software plus extended diagnostic, filter properties, security and redundancy features. A software package for applications where great value is placed on uncompromising plant safety and the highest level of availability

Switching	
Layer 2 Standard	Suitable for RSP, GRS series. In addition to numerous management and diagnostic options, HiOS provides precise time synchronization compliant with IEEE 1588v2 plus a variety of redundancy protocols. With zero switchover times, the PRP (Parallel Redundancy Protocol) and HSR (High-Availability Seamless Redundancy) redundancy methods ensure smooth production processes. Comprehensive security mechanisms protect your network against attacks and operating errors, so also contributing to high network availability.
Layer 2 Advanced	Suitable for MSP and RSP series. The Advanced Level includes all features of the Standard Level plus additional redundancy enhancements with MRP over Link Aggregation and Quality of Service functions such as DiffServ, MAC and IP based VLANs, protocol based VLANs and security mechanisms like enhanced Access Control Lists (ACL). Flow based ACL, RADIUS-based policy assignment, IP source guard, dynamic ARP inspection and IEEE 802.1x multi client authentication.

Routing	
Layer 3 Enhanced	Suitable for PowerMICE, MACH4000 Professional L2 software plus additional security, static routing, dynamic routing protocols (RIP), router- and link redundancy. The Layer 3 software for smaller networks and applications with extended security requirements.

Routing	
Layer 3 Standard	Suitable for OCTOPUS, RSP and RSPE series. Layer 3 software includes the functionality of L2 software plus additional functionality such as static routing, 1:1 Network Address Translation, Router Redundancy and multicast forwarding. Ethernet Train Backbone is available for OCTOPUS.
Layer 3 Advanced	Suitable for MSP series Layer 3 software includes the functionality of L3 Standard software plus additional functionality plus a wide range of dynamic routing protocols for unicast- and multicast protocols

Detail information page 122 -

UNMANAGED SWITCHES

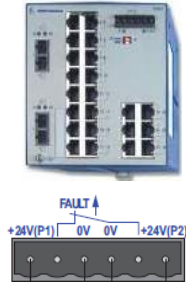
The configurable **Unmanaged RS20 and RS30** family of switches are ideal for applications that require more than the basic SPIDERS.

Port densities include:

8x, 9x, 16x, 17x, 24x and 25x ports in a compact DIN rail switch housing.

Up to 3x fiber ports,

redundant power inputs via dual 24 VDC, fault relay (triggerable by loss of one power input and/or the loss of the link(s) specified).



The **Unmanaged OCTOPUS** switches are designed

for use at the field level with automation networks,

while offering IP67, IP65 or IP54 (depending on specific model),

The OCTOPUS resist the effects of mechanical stress, humidity, dirt, dust, shock and vibrations.

Unmanaged OCTOPUS switches are available with the 10-port version also being available with PoE ports (24 VDC or 110 VAC powered)

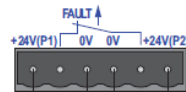


This letter serves as a formal notification that Belden is discontinuing the **RS2 Unmanaged Rail Switches, effective immediately.**

RS2 Unmanaged Rail Switches contain components which have become obsolete. Belden has a limited stock of these devices which will last until last delivery date (December 31, 2016).

The new SPIDER III Premium Line is able to replace and continue all functions and solutions which were provided by RS2

The **RS2 Series** of unmanaged switches offer advanced features such as redundant power inputs and most offer fault relay (triggerable by loss of power and/or port-link). Standard features include 10/100 ports, Class 1 Div 2, optional -40 to +70°C And MTBF exceeding 100 years

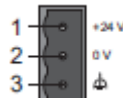


RS-4TX
RS-TX
RS-4TX/1FX
RS-3TX/2FX

SPIDER, SPIDER II and SPIDER III family of switches provides users with an economical, yet highly reliable hardened Ethernet switch.

Models are available with fiber (MM/SM), Twisted Pair, FE- and GE-ports, PoE ports.

All SPIDER switches are extremely compact and have LED indicators that provide information on power status, link status and data rate



Spider I / II / III SL

Figure	Pin	Function
	1	+ 24 V DC
	2	FAULT
	3	0 V
	4	0 V
	5	FAULT
	6	+ 24 V DC

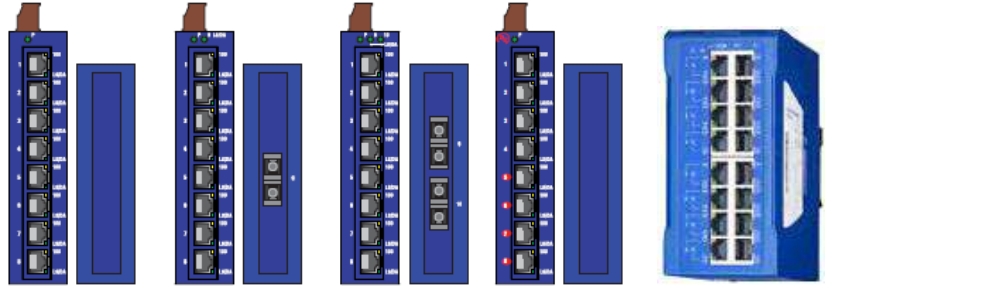
Spider III PL

SPIDER unmanaged switches

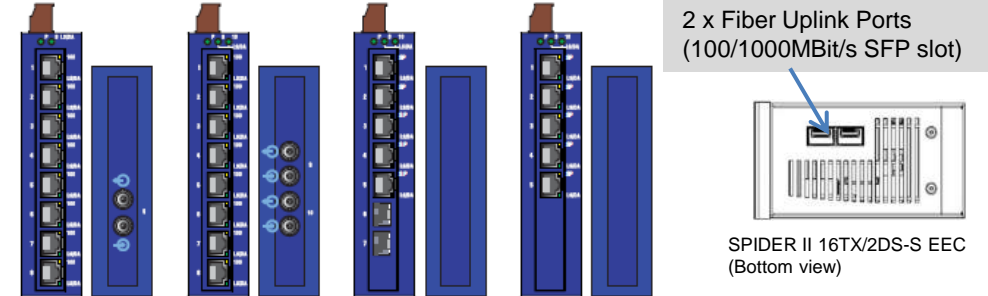
EEC: -40° C to +70° C



SPIDER-SL-40-08T1999999S29

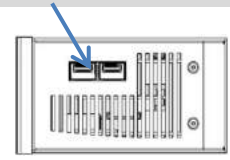


SPIDER II 8TX
SPIDER II 8TX EEC
SPIDER II 8TX/1FX EEC
SPIDER II 8TX/1FX-SM EEC
SPIDER II 8TX/2FX EEC
SPIDER II 8TX/2FX-SM EEC
SPIDER II 8TX PoE
SPIDER II 16TX EEC



SPIDER II 8TX/1FX-ST EEC
SPIDER II 8TX/2FX-ST EEC
SPIDER II Giga 5T/2S EEC
SPIDER II Giga 5T EEC

2 x Fiber Uplink Ports
(100/1000MBit/s SFP slot)



SPIDER II 16TX/2DS-S EEC
(Bottom view)

Back-up fuse
Rated voltage
Voltage range incl. maximum tolerances
Buffer time

≤4 A Slow Blow
12 V DC ... 24 V DC
9,6 V DC ... 32 V DC
min. 10 ms at 20,4 VDC

		10/100/1000 BASE-TX RJ45	10/100 BASE-TX RJ45	10/100 BASE-TX PoE ports inclu	Fiber - Multimode 100 BASE-FX _A D-SC	Fiber - Multimode 100 BASE-FX _B ST/BEOC	Fiber - Singlemode 100 BASE-FX _E D-SC	Fiber - SFP slots 1000 BASE-FX	Jumbo frame support with up to 5014 Byte user data	QoS support IEEE 802.1D
SPIDER 1TX/1FX	943 890-001	1			1					
SPIDER 1TX/1FX EEC	943 927-001	1			1					
SPIDER 1TX/1FX-SM	943 891-001	1					1			
SPIDER 1TX/1FX-SM EEC	943 928-001	1					1			
SPIDER 3TX-TAP	943 899-001	3								
SPIDER 4TX/1FX	943 221-001	4			1					
SPIDER 4TX/1FX EEC	943 221-101	4			1					
SPIDER 4TX/1FX-ST EEC	943 914-001	4				1				
SPIDER 4TX/1FX-SM EEC	943 880-001	4					1			
SPIDER 5TX	943 824-002	5								
SPIDER 5TX EEC	943 824-102	5								
SPIDER 8TX	943 376-001	8								
SPIDER 8TX EEC	943 376-201	8								
SPIDER II 8TX	943 957-001	8								
SPIDER II 8TX EEC	943 958-001	8								
SPIDER II 8TX PoE	942 008-001	4	4							
SPIDER II 8TX/1FX EEC	943 958-111	8			1					
SPIDER II 8TX/1FX-SM EEC	943 958-131	8					1			
SPIDER II 8TX/2FX EEC	943 958-211	8			2					
SPIDER II 8TX/2FX-SM EEC	943 958-231	8					2			
SPIDER II 8TX/1FX-ST EEC	943 958-121	8				1				
SPIDER II 8TX/2FX-ST EEC	943 958-221	8				2				
SPIDER II 16TX EEC	942 120-001	16								
SPIDER II 16TX/2DS-S EEC	942 121-001	16						2(ps)		
SPIDER II Giga 5T EEC	943 962-002	5								
SPIDER II Giga 5T/2S EEC	943 963-002	5						2		
SPIDER II Giga 5T EEC Jumbo	943 962-202	5							✓	
SPIDER II Giga 5T/2S EEC Jumbo	943 963-202	5						2	✓	
SPIDER II Giga 5T EEC PRO	943 962-102	5								✓
SPIDER II Giga 5T/2S EEC PRO	943 963-102	5						2		✓
SPIDER-SL-40-08T1999999S29	942 132-004	8								

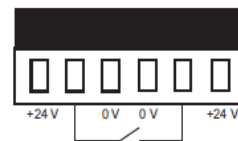
Comparison – unmanaged switches

Feature	RS20/30 unmanaged	RS2	Premium Line
FE / GbE ports	Up to 24 ports	Up to 8 ports	Up to 24 ports
PoE(+) ports	✓	✗	tbd
Power Supply	12/24/48 VDC, 24 VAC	24 VDC	12/24/48 VDC, 24 VAC
Extended temperature range (-40°C to +70°C)	✓	✓ (some variants)	✓
IP30 plastic enclosure W x H x D – w/o terminal block	74/110 x 131 x 111 mm	47 x 135 x 111 mm 40 x 145 x 80 mm	✗
IP40 metal enclosure W x H x D – w/o terminal block	✗	✗	39/49/56 x 135 x 117 mm
Redundant power input	✓	✓	✓
Indicator contact (power, port break)	✓	✓	✓
USB interface for configuration	✗	✗	✓*
Conformal coating	✓ (optional)	✗	✓ (optional)
Jumbo frames (up to 9014 Bytes)	✗	✗	✓
Quality of Service	✗	✗	✓
Energy Efficient Ethernet (IEEE 802.1az)	✗	✗	✓
EC, cUL61010, FCC, C-Tick, EAC	✓	✓	✓
Vehicle e1	✗	✓ (some variants)	✓
Haz-Loc ISA12.12.01 C1D2, ATEX Zone 2	✓	✓ (some variants)	✓
Navy GL, DNV	✓	✓ (some variants)	✓
Railway EN50121-4	✓	✗	✓

Feature	SPIDER I/II	Standard Line
FE / GbE ports	Up to 10 ports	Up to 8 ports
PoE+ ports	tbd	tbd
Power Supply	12/24 VDC	12/24 VDC
Extended temperature range (-40°C to +70°C)	✓ (some variants)	✓
IP30 plastic enclosure W x H x D – w/o terminal block	25/40 x 100 x 79 mm 35 x 138 x 121 mm	26/38 x 102 x 79 mm 45 x 110 x 88 mm
IP40 metal enclosure W x H x D – w/o terminal block	✗	✗
Redundant power input	✗	✗
Indicator contact (power, port break)	✗	✗
USB interface for configuration	✗	✗
Conformal coating	✗	✗
Jumbo frames (up to 9014 Bytes)	✓ (SPIDER II Giga ... Jumbo)	✗
Quality of Service	✓ (SPIDER II Giga ... Pro)	✗
Energy Efficient Ethernet (IEEE 802.1az)	✗	✗
EC, cUL61010, FCC, C-Tick, EAC	✓	✓
Vehicle e1	✓	✗
Haz-Loc ISA12.12.01 C1D2, ATEX Zone 2	✗	✗
Navy GL, DNV	✗	✗
Railway EN50121-4	✗	✗



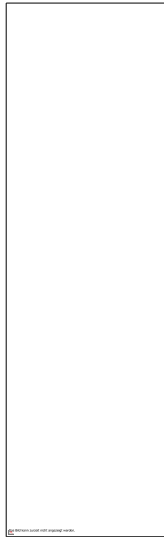
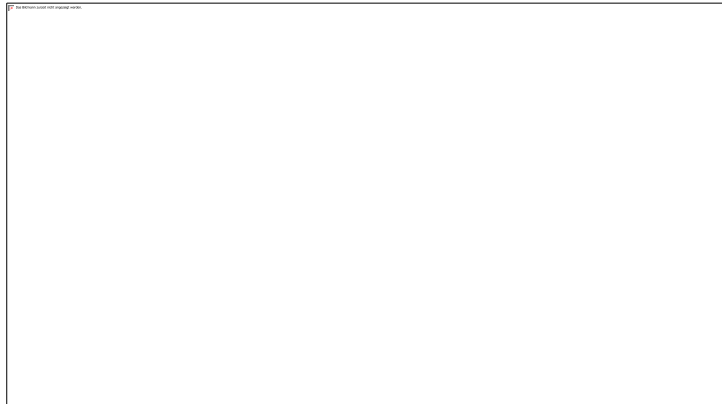
SPIDER III PL



Pin	Function
1	+ 24 V DC
2	FAULT
3	0 V
4	0 V
5	FAULT
6	+ 24 V DC

Feature	Standard Line	Premium Line	PoE Line
FE / GbE ports	Up to 8 ports	Up to 24 ports	Up to 10 ports
PoE+ ports	tbd	✗	tbd
Power Supply	12/24 VDC	12/24/48 VDC, 24 VAC	24/48 VDC
Extended temperature range (-40°C to +70°C)	✗	✓	✓
IP30 plastic enclosure W x H x D – w/o power supply connector	25/42 x 102 x 78 mm 45 x 110 x 82 mm	✗	✗
IP40 metal enclosure W x H x D – w/o power supply connector	✗	39/56 x 135 x 113mm	66 x 135 x 113mm
Redundant power input	✗	✓	✓
Indicator contact (power, port break)	✗	✓	✓
USB interface for configuration	✗	✓	✓
Conformal coating	✗	✓ (optional)	✓ (optional)
Jumbo frames (up to 9014 Bytes)	✗	✓	✓
Quality of Service	✗	✓	✓
Energy Efficient Ethernet (IEEE 802.1az)	✗	✓	✓
EC, cUL61010, FCC, C-Tick, EAC	✓	✓	✓
Vehicle e1	✗	✓	✓
Haz-Loc ISA12.12.01 C1D2, ATEX Zone 2	✗	✓	✗
Navy GL	✗	✓	✓
Railway EN50121-4	✗	✓	✗

	Parameter	Values
global	PSU alarm	PSU 1-2 enabled / disabled
	Aging time	Aging time in s
	QoS 802.1p mapping	VLAN Priority 0...7, Traffic Class 0...3
	QoS DSCP mapping	DSCP value 0...63, Traffic Class 0...3
per port	Flow Control	enabled / disabled
	Port admin state	enabled / disabled
	Jumbo frames	enabled / disabled (9720 Byte) Only for Gigabit ports
	Broadcast storm protection	enabled / disabled
	Broadcast storm threshold	0% ... 100%
	Multicast storm protection	enabled / disabled
	Multicast storm threshold	0% ... 100%
	QoS Trust Mode	Untrusted, trustDot1p, trustIpDscp
	Port based priority	0 ... 7
	Link alarm	enabled / disabled



Order code	Product Code	Description
Standard Line		
942132001	SPIDER-SL-20-05T1999999SY9HHHH	5 x 10/100Base-TX
942132016	SPIDER-SL-20-05T1999999TY9HHHH	5 x 10/100Base-TX
942132002	SPIDER-SL-20-08T1999999SY9HHHH	8 x 10/100Base-TX
942132017	SPIDER-SL-20-08T1999999TY9HHHH	8 x 10/100Base-TX
942132003	SPIDER-SL-40-05T1999999SY9HHHH	5 x 10/100/1000Base-T
942132004	SPIDER-SL-40-08T1999999SY9HHHH	8 x 10/100/1000Base-T
942132005	SPIDER-SL-20-01T1M299999SY9HHHH	1 x 10/100Base-TX, 1 x 100Base-FX, MM, SC connector
942132006	SPIDER-SL-20-01T1S299999SY9HHHH	1 x 10/100Base-TX, 1 x 100Base-FX, SM, SC connector
942132007	SPIDER-SL-20-04T1M299999SY9HHHH	4 x 10/100Base-TX, 1 x 100Base-FX, MM, SC connector
942132018	SPIDER-SL-20-04T1M299999TY9HHHH	4 x 10/100Base-TX, 1 x 100Base-FX, MM, SC connector
942132008	SPIDER-SL-20-04T1M499999SY9HHHH	4 x 10/100Base-TX, 1 x 100Base-FX, MM, ST connector
942132019	SPIDER-SL-20-04T1M499999TY9HHHH	4 x 10/100Base-TX, 1 x 100Base-FX, MM, ST connector
942132009	SPIDER-SL-20-04T1S299999SY9HHHH	4 x 10/100Base-TX, 1 x 100Base-FX, SM, SC connector
942132010	SPIDER-SL-20-06T1M299999SY9HHHH	6 x 10/100Base-TX, 1 x 100Base-FX, MM, SC connector
942132011	SPIDER-SL-20-06T1S299999SY9HHHH	6 x 10/100Base-TX, 1 x 100Base-FX, SM, SC connector
942132012	SPIDER-SL-20-06T1M2M299999SY9HHHH	6 x 10/100Base-TX, 2 x 100Base-FX, MM, SC connector
942132013	SPIDER-SL-20-06T1S2S299999SY9HHHH	6 x 10/100Base-TX, 2 x 100Base-FX, SM, SC connector
942132014	SPIDER-SL-40-06T1O699999SY9HHHH	6 x 10/100/1000Base-T, 1 x FE/GE SFP slot
942132015	SPIDER-SL-40-06T1O6O699999SY9HHHH	6 x 10/100/1000Base-T, 2 x FE/GE SFP slot
Premium Line		
942141016	SPIDER-PL-20-05T1999999TY9HHHH	5 x 10/100Base-TX
942141017	SPIDER-PL-20-08T1999999TY9HHHH	8 x 10/100Base-TX
942141019	SPIDER-PL-40-05T1999999TY9HHHH	5 x 10/100/1000Base-T
942141020	SPIDER-PL-40-08T1999999TY9HHHH	8 x 10/100/1000Base-T
942141022	SPIDER-PL-20-01T1M299999TY9HHHH	1 x 10/100Base-TX, 1 x 100Base-FX, MM, SC connector
942141023	SPIDER-PL-20-01T1S299999TY9HHHH	1 x 10/100Base-TX, 1 x 100Base-FX, SM, SC connector
942141024	SPIDER-PL-20-04T1M299999TY9HHHH	4 x 10/100Base-TX, 1 x 100Base-FX, MM, SC connector
942141025	SPIDER-PL-20-04T1M499999TY9HHHH	4 x 10/100Base-TX, 1 x 100Base-FX, MM, ST connector
942141026	SPIDER-PL-20-04T1S299999TY9HHHH	4 x 10/100Base-TX, 1 x 100Base-FX, SM, SC connector
942141027	SPIDER-PL-20-06T1Z6Z6TY9HHHH	6 x 10/100Base-TX, 3 x FE SFP slot
942141028	SPIDER-PL-20-08T1M299999TY9HHHH	8 x 10/100Base-TX, 1 x 100Base-FX, MM, SC connector
942141029	SPIDER-PL-20-08T1S299999TY9HHHH	8 x 10/100Base-TX, 1 x 100Base-FX, SM, SC connector
942141030	SPIDER-PL-20-07T1M2M299999TY9HHHH	7 x 10/100Base-TX, 2 x 100Base-FX, MM, SC connector
942141031	SPIDER-PL-20-07T1S2S299999TY9HHHH	7 x 10/100Base-TX, 2 x 100Base-FX, SM, SC connector
942141033	SPIDER-PL-40-01T1O699999TY9HHHH	1 x 10/100/1000Base-TX, 1 x FE/GE SFP slot
942141034	SPIDER-PL-40-04T1O699999TY9HHHH	4 x 10/100/1000Base-TX, 1 x FE/GE SFP slot
942141032	SPIDER-PL-20-24T1Z6Z6999TZ9HHHV	24x 10/100Base-TX, 2x FE SFP slots
942141018	SPIDER-PL-20-16T1999999TZ9HHHV	16x 10/100Base-TX

(* Some variants, like 5TX, 8TX, 4TX/1FX MM-SC or 4TX/1FX MM-ST, are also available with EEC)

SPIDER III

- SPIDER -
- line
- 2
- 0
- T1
- 6
- 7
- 8
- 9
- 10
- HH
- HH

1. Product family -line 2. Data rate 4. Copper ports quantity 5. Copper ports type

6. Fiber port #1 7. Fiber port #2 8. Fiber port #3 9. Temp. range 10. Approvals 11. Customer specific type 12. Customer specific configuration

1. Product family

SPIDER-SL SPIDER III Standard

SPIDER-PL SPIDER III Premium

2. Data rate

2 Fast Ethernet

4 Gigabit Ethernet

3 Fast + 2x Gigabit Ethernet

3. Technology

0 no PoE

4 PoE

4. Copper ports quantity

01 1x Twisted Pair /RJ45

04 4x Twisted Pair /RJ45

05 5x Twisted Pair /RJ45

06 6x Twisted Pair /RJ45

07 7x Twisted Pair /RJ45

08 8x Twisted Pair /RJ45

16 16x Twisted Pair /RJ45

24 24x Twisted Pair /RJ45

5. Copper ports type

T1 1x Twisted Pair /RJ45

6. Fiber port 1

S2	Singlemode; D-SC (100 Mbit/s)	SL 20	PL 20
M2	Multimode; D-SC (100 Mbit/s)	SL 20	PL 20
M4	Multimode; ST (BFOC) (100 Mbit/s)	SL 20	PL 20
Z6	SFP slot (100 Mbit/s)		PL 20
06	SFP slot (100/1000 Mbit/s)		PL 40
99	empty	SL 20	PL 20 PL 40

7. Fiber port 2

99	empty	SL 20	SL 40	PL 20	PL 40
M2	Multimode; D-SC (100 Mbit/s)			PL 20	
S2	Singlemode; D-SC (100 Mbit/s)			PL 20	
Z6	SFP slot (100 Mbit/s)			PL 20	
06	SFP slot (100/1000 Mbit/s)		SL 40		

8. Fiber port 3

99	empty	SL 20	SL 40	PL 20	PL 40
Z6	SFP slot (100 Mbit/s)			PL 20	
06	SFP slot (100/1000 Mbit/s)		SL 40		

9. Temperature range

S	Standard 0°C ... +60°C (incl. SFPs +50°C)	SL 20	SL 40		
T	Extended -40°C ... +70°C	SL 20		PL 20	PL 40
E	Extended -40°C ... +70°C incl. Conf. Coating			PL 20	PL 40

10. Approvals & Declarations

Z9	CE, FCC; EN 61131, C-Tick (RCM)	TY	Y9 + EN50121-4
Y9	Z9 + cUL61010	R9	Z9 + e1
X9	Y9 + ISA12.12 Class 1 Div.2	WV	Y9 + ISA12.12 Class 1 Div.2 + ATEX Zone 2 DNVGL + EN50121-4 + e1
W9	Z9 + ATEX Zone 2	WW	Y9 + ISA12.12 Class 1 Div.2 +ATEX Zone 2 IEC 61850-3, IEEEE1613 + DNVGL + EN50121-4
UY	Y9 + DNVGL		

11. Customer specific type

HH	Hirschmann Standard		HK		HH
HK	Terminal Block with Spring Clamp				

12. Customer specific configuration

HH	Hirschmann Standard (9,6V – 32V DC)	SL	PL
HV	Hirschmann Voltage (9,6V – 60V DC 18V – 30V AC)		PL

Extended range



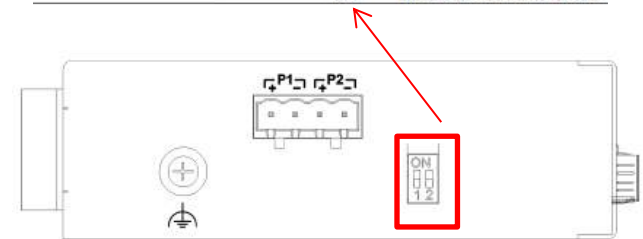
SPIDER III POE VARIANTS

Product Code	Description
SPIDER-SL-44-05T1O69999TZ9HHHH 942 274-001	Full Giga unmanaged switch with dual inputs DC 12-57V. 4 x 10/100/1000 PoE+ 1 x 10/100/1000 TX 1 x 100/1000 SFP
SPIDER-SL-44-05T1999999TZ9HHHH 942 274-002	Full Giga unmanaged switch with dual inputs DC 12-57V. 4 x 10/100/1000 PoE+ 1 x 10/100/1000 TX
SPIDER-SL-44-08T1999999TZ9HHHH 942 274-003	Full Giga unmanaged switch with dual inputs DC 12-57V. 8 x 10/100/1000 PoE+
SPIDER-SL-44-08T1O6O699TZ9HHHH 942 274-004	Full Giga unmanaged switch with dual inputs DC 12-57V. 8 x 10/100/1000 PoE+ 2 x 100/1000 SFP
SPIDER-SL-24-05T1999999TZ9HHHH 942 274-005	Fast Ethernet unmanaged switch with dual inputs DC 12-57V. 4 x 10/100 PoE+ 1 x 10/100 TX
SPIDER-SL-24-04T1M29999TZ9HHHH 942 274-005	Fast Ethernet unmanaged switch with dual inputs DC 12-57V. 4 x 10/100 PoE+ 1 x 100 MM-SC
SPIDER-SL-24-04T1M49999TZ9HHHH 942 274-006	Fast Ethernet unmanaged switch with dual inputs DC 12-57V. 4 x 10/100 PoE+ 1 x 100 MM-ST
SPIDER-SL-24-04T1S29999TZ9HHHH 942 274-007	Fast Ethernet unmanaged switch with dual inputs DC 12-57V. 4 x 10/100 PoE+ 1 x 100 SM-SC
SPIDER-SL-24-04T1S49999TZ9HHHH 942 274-008	Fast Ethernet unmanaged switch with dual inputs DC 12-57V. 4 x 10/100 PoE+ 1 x 100 SM-ST



- Switch variants:** 5 to 10 ports
Up to 10 Gig ports
Up to 5 FE
Up to 8 PoE+ ports
- Fiber ports:** 2 Gig/FE SFP based, 1 FE-SC/ST types
- Copper ports:** 4 to 5 FE or 5 to 8 Gig ports
- Power supply:** 12 - 57VDC (12 - 18VDC)
- PoE type:** PoE+ (30 W/port); total budget: 120W
- PoE power output:** 12-18.9V → 60W 1.
19-57V → 120W 1.
1. The device stops working, when the total PoE output power exceeds max. PoE power output
- Temperature range:** -40° to +70° C
- More interfaces:** DIP switch
- Features:** Jumbo frame support

Device	DIP Switch	Setting	Description
SPIDER-SL-44-05T1O6...	100/1GSFP	ON	Supports 1000M SFP module
		OFF	Supports 100M SFP module
		Jumbo	ON
SPIDER-SL-44-05T199...	N.C.	OFF	Disable Jumbo frame function
		Jumbo	ON
SPIDER-SL-44-08T19999...	N.C.	OFF	Disable Jumbo frame function
		Jumbo	ON
SPIDER-SL-44-08T1O6O6...	100/1GSFP	ON	Supports 1000M SFP module
		OFF	Supports 100M SFP module
SPIDER-SL-24-...	N.C.	ON	Enable Jumbo frame function
		OFF	Disable Jumbo frame function
SPIDER-SL-24-...	Jumbo	ON	Enable Jumbo frame function
		OFF	Disable Jumbo frame function



SPIDER unmanaged switches inclusive PoE/PoE+

Power Source Equipment - PSE

SPIDER Giga 2TX PoE EEC (PoE+ Injector) 942 059-001

Power over Ethernet Injector
Operating Voltage: 24/48 V DC redundant
Power Consumption: max. 33,8 Watt



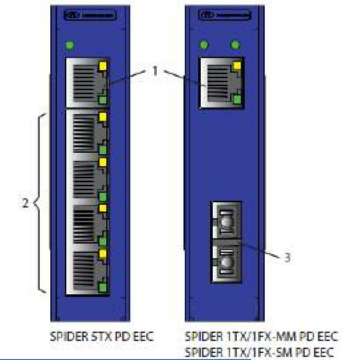
Figure	Pin assignment on the device	Specification of the operating voltage
	1 Power supply connection 2, 0 V, minus terminal	Rated voltage range DC 24 V ... 48 V
	2 Power supply connection 2, 24/48 V, plus terminal	
	3 -	
	4 -	
	5 Power supply connection 1, 0 V, minus terminal	
	6 Power supply connection 1, 24/48 V, plus terminal	

Power Device- PD

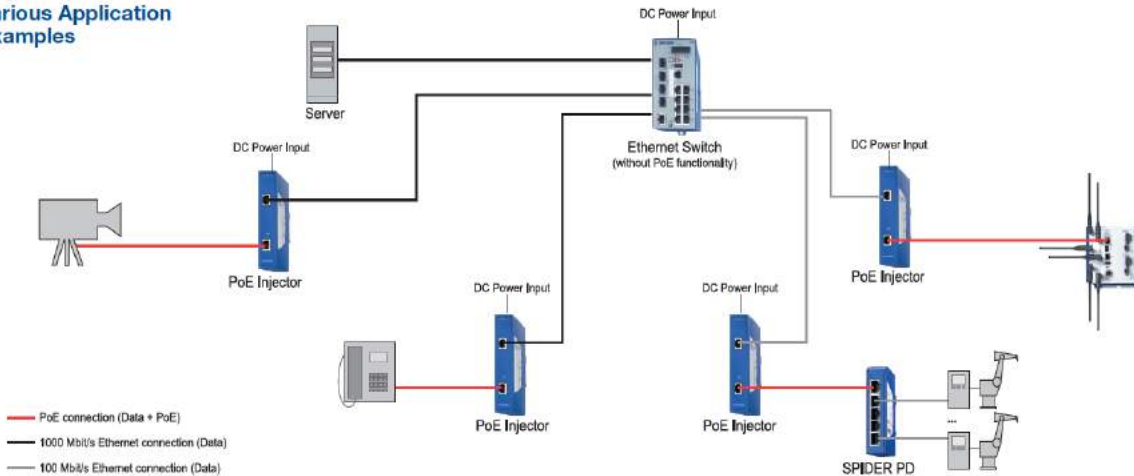
Product name	Order number
SPIDER 5TX PD EEC PoE powered switch. 1x 10/100 BASE-TX RJ45 PoE input, 4x 10/100 BASE-TX, RJ45 (non-PoE) ports	942 051-001
SPIDER 1TX/1FX-MM PD EEC PoE powered media converter. 1x 10/100 RJ45 PoE input, 1x 100BASE-FX, D-SC - Multimode	942 051-002
SPIDER 1TX/1FX-SM PD EEC PoE powered media converter. 1x 10/100 BASE-TX, RJ45 PoE input, 1x 100 BASE-FX, D-SC - Singlemode	942 051-003



1: Port 1 10/100 Mbit/s PoE PD port



Various Application Examples



Product name	Order number
SPIDER II 8TX PoE 8x 10/100 Mbit/s, RJ45, incl. 4x PoE according to IEEE802.3af Operating voltage: 18V DC - 32 V DC	942 008-001



POE VARIANTS

	Order number	PoE IEEE	PoE+ IEEE	# Ports	Ports on device	Port Speed	max. PoE Power	PSE Power Pairs	Max. Power Cord length	Power Input PoE (Including)	Power Input PoE+ (Including)	Redundant Power Input	Individual Ports Potential	Max. Operating	Max. Power Consumpti	Max. Power Output
SPIDER																
SPIDER II 8TX PoE	942 008-001	x	-	4	8	10/100 Mbit/s	61,6 W	Phantom (Signal - Alternative A)	na	18..32 VDC	-	no	yes	-10..+60 °C	74,9 W	255,5 Btu (IT)/h
SPIDER Giga 2TX PoE EEC	942 059-001	x	x	1	2	10/100/1000 Mbit/s	30 W	Phantom (Signal - Alternative A)	na	21..53 VDC	21..53 VDC	yes	no	-40..+70 °C	33,8 W	115,4 Btu (IT)/h
SPIDER-SL-24-04T1M29999T3HHHH	942274-005	x	x	4	5	10/100 Mbit/s	120 W		na	12..57 VDC	12..57 VDC	yes	na	-40..+70 °C	145,5 W	na
SPIDER-SL-24-04T1M49999T3HHHH	942274-006	x	x	4	5	10/100 Mbit/s	120 W		na	12..57 VDC	12..57 VDC	yes	na	-40..+70 °C	145,5 W	na
SPIDER-SL-24-04T1S29999T3HHHH	942274-007	x	x	4	5	10/100 Mbit/s	120 W		na	12..57 VDC	12..57 VDC	yes	na	-40..+70 °C	145,5 W	na
SPIDER-SL-24-04T1S49999T3HHHH	942274-008	x	x	4	5	10/100 Mbit/s	120 W		na	12..57 VDC	12..57 VDC	yes	na	-40..+70 °C	145,5 W	na
SPIDER-SL-24-05T1999999T3HHHH	942274-009	x	x	4	5	10/100 Mbit/s	120 W		na	12..57 VDC	12..57 VDC	yes	na	-40..+70 °C	145,5 W	na
SPIDER-SL-44-05T1999999T3HHHH	942274-002	x	x	4	5	10/100/1000 Mbit/s	120 W		na	12..57 VDC	12..57 VDC	yes	na	-40..+70 °C	145,5 W	na
SPIDER-SL-44-05T1069999T3HHHH	942274-001	x	x	4	6	10/100/1000 Mbit/s	120 W		na	12..57 VDC	12..57 VDC	yes	na	-40..+70 °C	145,5 W	na
SPIDER-SL-44-08T1999999T3HHHH	942274-003	x	x	8	8	10/100/1000 Mbit/s	120 W		na	12..57 VDC	12..57 VDC	yes	na	-40..+70 °C	145,5 W	na
SPIDER-SL-44-08T1060699T3HHHH	942274-004	x	x	8	10	10/100/1000 Mbit/s	120 W		na	12..57 VDC	12..57 VDC	yes	na	-40..+70 °C	145,5 W	na
OpenRail																
RS22	943 434-999	x	-	4	last 4 ports	10/100 Mbit/s	61,6 W	Phantom (Signal - Alternative A)	< 2m	47..52 VDC	-	yes	no	-40..+70 °C	82,0 W	69,7 Btu (IT)/h
RS32	943 434-999	x	-	4	last 4 ports	10/100 Mbit/s	61,6 W	Phantom (Signal - Alternative A)	< 2m	47..52 VDC	-	yes	no	-40..+70 °C	85,1 W	80,2 Btu (IT)/h
MICE / PowerMICE																
MM22-T1T1T1T1	943 938-999	x	-	4	1 to 4	10/100 Mbit/s	61,6 W	Spare Pair (Signal - Alternative B)	< 3m	47..52 VDC	-	no	na	-40..+70 °C	63,6 W	6,9 Btu (IT)/h
MACH100																
M1-8TP-RJ45 PoE	942 028-001	x	x	8	1 to 8	10/100 Mbit/s	124 W	Phantom (Signal - Alternative A)	< 3m	45..57 VDC	51..57 VDC	no	no	0..+50 °C	126,0 W	6,9 Btu (IT)/h
MACH102-8TP	943 969-001	x	x	16	Slot 1 and 2	10/100 Mbit/s	248 W	Phantom (Signal - Alternative A)	< 3m	via M1-8TP-RJ45 PoE	via M1-8TP-RJ45 PoE	na	na	0..+50 °C	12 W	41 Btu (IT)/h
MACH102-8TP-R	943 969-101	x	x	16	Slot 1 and 2	10/100 Mbit/s	248 W	Phantom (Signal - Alternative A)	< 3m	via M1-8TP-RJ45 PoE	via M1-8TP-RJ45 PoE	na	na	0..+50 °C	13 W	44 Btu (IT)/h
MACH104-16TX-PoEP-L2P	942 030-001	x	x	16	5 to 20	10/100/1000 Mbit/s	241 W	Phantom (Signal - Alternative A)	na	90..264 V AC, 47..63 Hz	90..264 V AC, 47..63 Hz	no	yes	0..+50 °C	330 W	300 Btu (IT)/h
MACH104-16TX-PoEP-R-L2P	942 026-001	x	x	16	5 to 20	10/100/1000 Mbit/s	241 W	Phantom (Signal - Alternative A)	na	90..264 V AC, 47..63 Hz	90..264 V AC, 47..63 Hz	yes	yes	0..+50 °C	340 W	340 Btu (IT)/h
MACH104-16TX-PoEP-E-L2P	942 027-001	x	x	16	5 to 20	10/100/1000 Mbit/s	241 W	Phantom (Signal - Alternative A)	na	45..57 VDC	51..57 VDC	no	no	0..+50 °C	300 W	200 Btu (IT)/h
MACH104-16TX-PoEP+2X-L2P	942 031-001	x	x	16	5 to 20	10/100/1000 Mbit/s	241 W	Phantom (Signal - Alternative A)	na	90..264 V AC, 47..63 Hz	90..264 V AC, 47..63 Hz	no	yes	0..+50 °C	330 W	300 Btu (IT)/h
MACH104-16TX-PoEP+2X-R-L2P	942 033-001	x	x	16	5 to 20	10/100/1000 Mbit/s	241 W	Phantom (Signal - Alternative A)	na	90..264 V AC, 47..63 Hz	90..264 V AC, 47..63 Hz	yes	yes	0..+50 °C	340 W	340 Btu (IT)/h
MACH104-16TX-PoEP+2X-E-L2P	942 032-001	x	x	16	5 to 20	10/100/1000 Mbit/s	241 W	Phantom (Signal - Alternative A)	na	45..57 VDC	51..57 VDC	no	no	0..+50 °C	300 W	200 Btu (IT)/h
MACH104-16TX-PoEP-L3P	942 030-002	x	x	16	5 to 20	10/100/1000 Mbit/s	241 W	Phantom (Signal - Alternative A)	na	90..264 V AC, 47..63 Hz	90..264 V AC, 47..63 Hz	no	yes	0..+50 °C	330 W	300 Btu (IT)/h
MACH104-16TX-PoEP-R-L3P	942 026-002	x	x	16	5 to 20	10/100/1000 Mbit/s	241 W	Phantom (Signal - Alternative A)	na	90..264 V AC, 47..63 Hz	90..264 V AC, 47..63 Hz	yes	yes	0..+50 °C	340 W	340 Btu (IT)/h
MACH104-16TX-PoEP-E-L3P	942 027-002	x	x	16	5 to 20	10/100/1000 Mbit/s	241 W	Phantom (Signal - Alternative A)	na	45..57 VDC	51..57 VDC	no	no	0..+50 °C	300 W	200 Btu (IT)/h
MACH104-16TX-PoEP+2X-L3P	942 031-002	x	x	16	5 to 20	10/100/1000 Mbit/s	241 W	Phantom (Signal - Alternative A)	na	90..264 V AC, 47..63 Hz	90..264 V AC, 47..63 Hz	no	yes	0..+50 °C	330 W	300 Btu (IT)/h
MACH104-16TX-PoEP+2X-R-L3P	942 033-002	x	x	16	5 to 20	10/100/1000 Mbit/s	241 W	Phantom (Signal - Alternative A)	na	90..264 V AC, 47..63 Hz	90..264 V AC, 47..63 Hz	yes	yes	0..+50 °C	340 W	340 Btu (IT)/h
MACH104-16TX-PoEP+2X-E-L3P	942 032-002	x	x	16	5 to 20	10/100/1000 Mbit/s	241 W	Phantom (Signal - Alternative A)	na	45..57 VDC	51..57 VDC	no	no	0..+50 °C	300 W	200 Btu (IT)/h



POE VARIANTS

	Order number	PoE IEEE	PoE+ IEEE	# Ports	Ports on device	Port Speed	max. PoE Power	PSE Power Pairs	Max. Power Cord length	Power Input PoE (Including)	Power Input PoE+ (Including)	Redundant Power Input	Individual Ports Potential	Max. Operating	Max. Power Consumpti	Max. Power Output
MACH1000																
MAR1022 / MAR1122	943 940-999	x	-	4	1 to 4	10/100 Mbit/s	61,6 W	Phantom (Signal - Alternative A)	na	90..265 V AC, 47.. 63 Hz 77..300 VDC	-	no	yes	-40..+70 °C	-	-
MAR1032 / MAR1032	943 940-999	x	-	4	first 4 FE ports	10/100 Mbit/s	61,6 W	Phantom (Signal - Alternative A)	na	90..265 V AC, 47.. 63 Hz 77..300 VDC	-	no	yes	-40..+70 °C	111,3 W	380,5 Btu (IT)/h
MACH4000																
M4-FAST 8TP-RJ45-PoE	943 873-001	x	-	8	1 to 8	10/100 Mbit/s	via device	Phantom (Signal - Alternative A)	na	via device	-	na	no	0..+60 °C	15 W	52,0 Btu (IT)/h
4002-48+4G	various	x	-	32	Slot 1 to 4	10/100 Mbit/s	137 W	Phantom (Signal - Alternative A)	na	90.. 265 V AC, 47.. 63 Hz 19.2.. 32 VDC 38.4.. 60 VDC	-	yes	yes (per module)	0..+60 °C	-	-
4002-24G	various	x	-	16	Slot 1 and 2	10/100 Mbit/s	163 W	Phantom (Signal - Alternative A)	na	90.. 265 V AC, 47.. 63 Hz 19.2.. 32 VDC 38.4.. 60 VDC	-	yes	yes (per module)	0..+60 °C	-	-
4002-48G	various	x	-	32	Slot 1 to 4	10/100 Mbit/s	110 W	Phantom (Signal - Alternative A)	na	90.. 265 V AC, 47.. 63 Hz 19.2.. 32 VDC 38.4.. 60 VDC	-	yes	yes (per module)	0..+60 °C	-	-
4002-24G+3X	various	x	-	16	Slot 1 and 2	10/100 Mbit/s	157 W	Phantom (Signal - Alternative A)	na	90.. 265 V AC, 47.. 63 Hz 19.2.. 32 VDC 38.4.. 60 VDC	-	yes	yes (per module)	0..+60 °C	-	-
4002-48G+3X	various	x	-	32	Slot 1 to 4	10/100 Mbit/s	106 W	Phantom (Signal - Alternative A)	na	90.. 265 V AC, 47.. 63 Hz 19.2.. 32 VDC 38.4.. 60 VDC	-	yes	yes (per module)	0..+60 °C	-	-
OCTOPUS																
OCTOPUS 8TX PoE-EEC	942 151-001	x	x	7	8	10/100 Mbit/s	35 W	Phantom (Signal - Alternative A)	na	16,8 VDC ... 32 VDC	16,8 VDC ... 32 VDC	yes	no	-40..+70 °C	44 W	31 Btu (IT)/h
OCTOPUS 8M-6PoE	943 967-101	x	-	6	1 to 3 / 5 to 7	10/100 Mbit/s	92,4 W	Phantom (Signal - Alternative A)	< 3m	46.. 57 VDC	-	yes	no	-40..+70 °C	110 W	50 Btu (IT)/h
OCTOPUS 8M-8PoE	943 967-001	x	-	8	1 to 8	10/100 Mbit/s	124 W	Phantom (Signal - Alternative A)	< 3m	46.. 57 VDC	-	yes	no	-40..+70 °C	142 W	51 Btu (IT)/h
OCTOPUS 16M-8PoE	943 960-001	x	-	8	1 to 8	10/100 Mbit/s	124 W	Phantom (Signal - Alternative A)	< 3m	46.. 57 VDC	-	yes	no	-40..+70 °C	145 W	62 Btu (IT)/h
OCTOPUS 24M-8PoE	942 063-001	x	-	8	1 to 8	10/100 Mbit/s	124 W	Phantom (Signal - Alternative A)	< 3m	46.. 57 VDC	-	yes	no	-40..+70 °C	148,8 W	74 Btu (IT)/h
OCTOPUS OS32-081602T6T6TPEPHH	942 063-001	x	-	8	3 to 10	10/100 Mbit/s	124 W	Phantom (Signal - Alternative A)	< 3m	46.. 57 VDC	-	yes	no	-40..+70 °C	145 W	67 Btu (IT)/h
OCTOPUS OS32-080802T6T6TPEPHH	942 063-002	x	-	8	3 to 10	10/100 Mbit/s	124 W	Phantom (Signal - Alternative A)	< 3m	46.. 57 VDC	-	yes	no	-40..+70 °C	140 W	52 Btu (IT)/h
OCTOPUS OS32-081602O6O6TPEPHH	942 063-003	x	-	8	3 to 10	10/100 Mbit/s	124 W	Phantom (Signal - Alternative A)	< 3m	46.. 57 VDC	-	yes	no	-40..+70 °C	145 W	67 Btu (IT)/h
OCTOPUS OS32-080802O6O6TPEPHH	942 063-004	x	-	8	3 to 10	10/100 Mbit/s	124 W	Phantom (Signal - Alternative A)	< 3m	46.. 57 VDC	-	yes	no	-40..+70 °C	140 W	52 Btu (IT)/h
OS24-080900T5T5TFFBHH	942 025-007	x	x	8	2 to 9	10/100 Mbit/s	61,6 W	Phantom (Signal - Alternative A)	na	16,8.. 60 VDC	16,8.. 60 VDC	yes	no	-40..+70 °C	80 W	68 Btu (IT)/h
OS24-080900T5T5TNEBHH	942 025-008	x	x	8	2 to 9	10/100 Mbit/s	61,6 W	Phantom (Signal - Alternative A)	na	50,4.. 138 VDC	50,4.. 138 VDC	no	no	-40..+70 °C	80 W	68 Btu (IT)/h
OS24-081000T5T5TFFUHB	942 025-003	x	x	8	2 to 5 / 7 to 10	10/100 Mbit/s	61,6 W	Phantom (Signal - Alternative A)	na	16,8.. 60 VDC	16,8.. 60 VDC	yes	no	-40..+70 °C	80 W	68 Btu (IT)/h
OS24-081000T5T5TNEUHB	942 025-004	x	x	8	2 to 5 / 7 to 10	10/100 Mbit/s	61,6 W	Phantom (Signal - Alternative A)	na	50,4.. 138 VDC	50,4.. 138 VDC	no	no	-40..+70 °C	80 W	68 Btu (IT)/h
OS24 (OS II)	942 133-999	x	x	15	depends on variant	10/100 Mbit/s	61,6 W	Phantom (Signal - Alternative A)	na	16,8.. 60 VDC 51.. 138 VDC	16,8.. 60 VDC 51.. 138 VDC	yes	no	-40..+70 °C	108 W	157 Btu (IT)/h
OS34 (OS II)	942 133-999	x	x	15	depends on variant	10/100/1000 Mbit/s	61,6 W	Phantom (Signal - Alternative A)	na	16,8.. 60 VDC 51.. 138 VDC	16,8.. 60 VDC 51.. 138 VDC	yes	no	-40..+70 °C	108 W	157 Btu (IT)/h
OSIII	942 258-999	x	x	24	24	10/100/1000 Mbit/s	120 W	Phantom (Signal - Alternative A)	na	16,8.. 60VDC 50,4 VDC ... 138 VDC	16,8.. 60VDC 50,4 VDC ... 138 VDC	yes	no	-40..+70 °C		

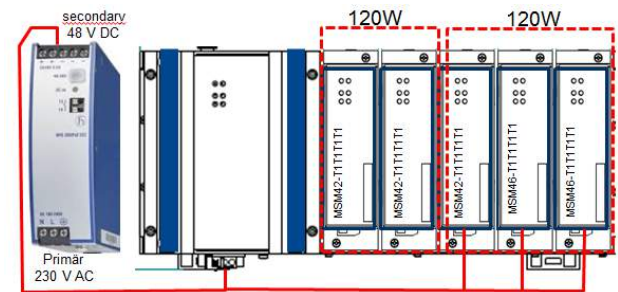
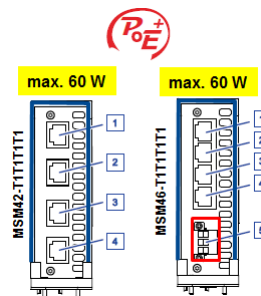


POE VARIANTS

	Order number	PoE IEEE	PoE+ IEEE	# Ports	Ports on device	Port Speed	max. PoE Power	PSE Power Pairs	Max. Power Cord length	Power Input PoE (Including)	Power Input PoE+ (Including)	Redundant Power Input	Individual Ports Potential	Max. Operating	Max. Power Consumpti	Max. Power Output
RSP Family																
RSP32/37	942 084-999	x	x	24	5 to 12	10/100 Mbit/s	124 W 61,6 W per module	Phantom (Signal - Alternative A)	na	47..57 VDC	53..57 VDC	yes	yes	-40..+85 °C	153 W	98 Btu (IT)/h
RSPM22-4T14T1...		x	x	8	1 to 8	10/100 Mbit/s	61,6 W	Phantom (Signal - Alternative A)	na	via device	via RSP	na	no	-40..+70 °C	2 W	7 Btu (IT)/h
RSPM22-4T14Z6...	942 106 999	x	x	4	1 to 4	10/100 Mbit/s	61,6 W	Phantom (Signal - Alternative A)	na	via device	via RSP	na	no	-40..+70 °C	5 W	17 Btu (IT)/h
MSP																
MSP32	942 076-998	x	x	28	depends on module	10/100/1000 Mbit/s	124 W	Phantom (Signal - Alternative A)	na	45..57 VDC	51..57 VDC	yes	no	-40..+85 °C	19.0 W plus modules	65.0 Btu (IT)/h plus modules
MSM42-T1T1T1T1L	942 077-999	x	x	4	1 to 4	10/100/1000 Mbit/s	61,6 W	Phantom (Signal - Alternative A)	na	via MSP32	via MSP32	na	no	-40..+85 °C	14 w	14.0 Btu (IT)/h
MSM22-T5T5T5T5L	942 077-999	x	x	4	1 to 4	10/100 Mbit/s	61,6 W	Phantom (Signal - Alternative A)	na	via MSP32	via MSP32	na	no	-40..+85 °C	3 W	10.0 Btu (IT)/h
MSM46	942 077-999	x	x	4	1 to 4	10/100/1000 Mbit/s	124 W	Phantom (Signal - Alternative A)	na	47..57 VDC	53..57 VDC	na	no	-40..+85 °C	4 W + PoE	14.0 Btu (IT)/h + PoE
PoE Injector																
RPI-A1-8PoE	942 224-001	x	x	8	all	up to 1 Gbit/s	30 W per Port	A	100 m	110.. 150 VDC and 100.. 240 VAC	110.. 150 VDC and 100.. 240 VAC	-		+70 °C	280W	240 W
RPI-P1-8PoE	942 225-001	x	x	8	all	up to 1 Gbit/s	30 W per Port	A	100 m	48.. 56 VDC	48.. 56 VDC	-		+85 °C	250W	240 W
RPI-A1-4PoE	942 226-001	x	x	4	all	up to 1 Gbit/s	30 W per Port	A	100 m	110.. 150 VDC and 100.. 240 VAC	110.. 150 VDC and 100.. 240 VAC	-		+70 °C	135W	120 W
RPI-P1-4PoE	942 227-001	x	x	4	all	up to 1 Gbit/s	30 W per Port	A	100 m	48.. 56 VDC	48.. 56 VDC	-		+85 °C	125W	120 W
BOBCAT																
BOBCAT	BRS22/32/42	x	x	8	up to 12	10/100 Mbit/s 10/100/1000	240W	Phantom (Signal - Alternative A)	<3m	46.. 52 VDC	46.. 57 VDC	yes	no	-40..+70 °C	255W	
BOBCAT	BRS22/32/42	x	x	8	up to 12	10/100 Mbit/s 10/100/1000	90W	Phantom (Signal - Alternative A)	<3m	46.. 52 VDC	46.. 57 VDC	yes	no	-40..+70 °C	105W	

GREYHOUND

GRS1040 tbd



LITE MANAGED SWITCH

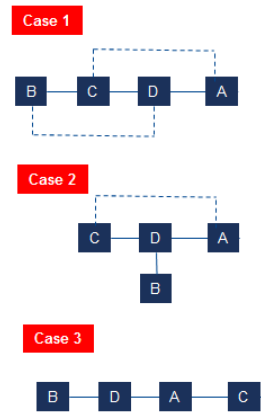
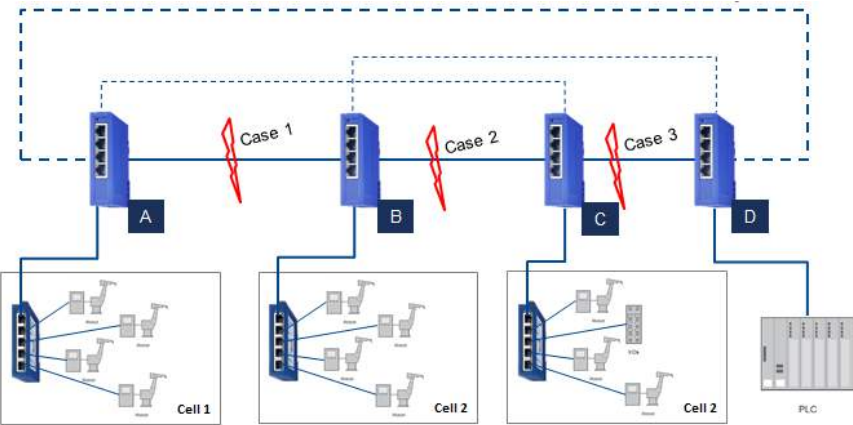
GECKO

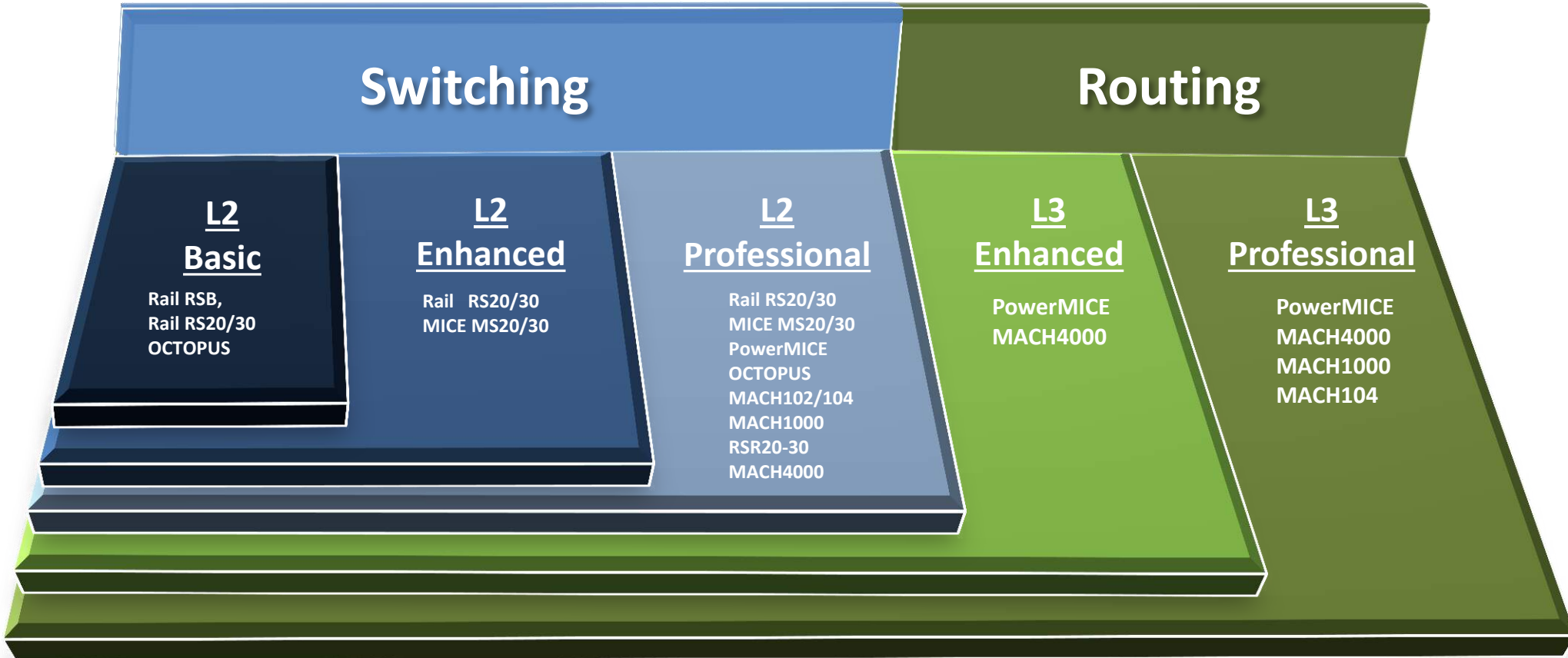


- **4 x 10/100BaseTX** (942 104-001)
- **5 x 10/100BaseTX** (942 104-002)
- SPIDER 5TX housing (25mm x 114mm x 79mm)
- Operating temperature 0°C to +60°C
- Power input 24V DC
- CE, FCC, cUL 508

- **Management**
 - SNMP v1, v2c, v3 (security level: authNoPriv)
 - SNMP traps
 - Web based management (HTTPS)
 - HTTPS server
 - LLDP (802.1AB)
- **Diagnostic**
 - Device status indication (LEDs)
 - RMON (1) statistics
 - Simple interface statistics (MIB-2)
 - Error logging local → Log-File
 - Topology Discovery according to IEEE 802.1AB (LLDP)
 - TFTP client
- **Configuration**
 - DHCP
 - Via HiDiscovery
 - Via Industrial HiVision
 - WEB based management
- **Security**
 - HTTPS certificate management
 - Different privilege levels
 - Local user accounts
 - SNMPv3 (authNoPriv)
 - Possibility to disable each port
- **Redundancy**
 - RSTP according to IEEE 802.1D-2004 (IEC62439-1)
- **Filter**
 - Store and Forward switching
 - TOS/DSCP prioritization (Mapping TOS/DSCP to 802.1D/p)
 - Prioritization through 4 queues
 - Static unicast/multicast address entries (up to 100)
- **Switching**
 - Static unicast/multicast address entries
 - QoS / Port priority (802.1D/p)
 - TOS/DSCP prioritization

- ★ **Basic Settings**
 - 📄 Device Information
 - 🌐 Network
 - 📄 Software
 - 💾 Load/Save
 - 🔌 Port
 - ⚙️ Configuration
 - 📊 Statistics
- 🔒 **Device Security**
 - 🔑 Password
 - 🌐 HTTPS
 - 🔌 SNMP
- ⊗ **Switching**
 - 🔍 Filter for MAC-Addresses
 - 📊 QoS/Priority
 - 🔌 Port Configuration
 - 📄 802.1D/p Mapping
 - 📄 IP DSCP Mapping
 - 🌐 L2-Redundancy
 - 🌐 Spanning Tree
 - 🌐 Global
 - 🔌 Port
- 🔍 **Diagnostics**
 - 🔊 Alarms (Traps)
 - 📄 LLDP
 - 📄 System Log
- 🌐 **Secure Remote Access**
 - 🔌 SiteManager GECKO
 - 📄 About
- 🔍 **Help**
 - 📄 About
 - 🔌 Technical Support





Software Overview



Detail information page 122 -

RS20		00				D			H	H	XX.X
1. Design	2. FE-ports	3. GE-ports	4. Uplink port 1	5. Uplink port 2	6. Temperature	7. Power Supply	8. Approvals	9. Software	10. Configuration	11. OEM type	12. Software release

1. Design

RS20 all ports max. 100 Mbit/s

RS22 all ports max. 100 Mbit/s incl. 4 ports PoE à 15,4W

2. FE - ports

04	4x 10/100 Mbit/s
08	8x 10/100 Mbit/s
09	9x 10/100 Mbit/s
16	16x 10/100 Mbit/s
17	17x 10/100 Mbit/s
24	24x 10/100 Mbit/s
25	25x 10/100 Mbit/s

3. GE - ports

00 No Gigabit-Ethernet port

4./5. Media type uplink port 1 uplink port 2

T1	Twisted Pair /RJ45 (10/100Mbit/s -
M2	Multimode/SC (100Mbit/s) 1300nm; 50/125µm; 0 – 8 dB; 0-5km; 1.0dB/km; 800MHz*km
M4	Multimode/BFOC (ST) (100Mbit/s) 1300nm; 50/125µm; 0 – 8dB; 0-5km; 1.0dB/km; 800MHz*km
S2	Singlemode/SC (100Mbit/s) 1300nm; 9/125µm; 0 – 16 dB; 0-30km; 0,4dB/km; 3,5ps/(nm*km)
S4	Singlemode/BFOC (ST) (100Mbit/s) 1300nm; 9/125µm; 0 – 16 dB; 0-30km; 0,4dB/km; 3,5ps/(nm*km)
E2	Singlemode+/SC (100Mbit/s) 1300nm; 9/125µm; 7 – 29 dB; 20-65km; 0,4dB/km; 3,5ps/(nm*km)
L2	Singlemode LH /SC(100Mbit/s) 1550nm; 9/125µm; 7 – 29 dB; 24-86km; 0,3dB/km; 19ps/(nm*km)
G2	Singlemode LH+/SC(100Mbit/s) 1550nm; 9/125µm; 14-47dB; 67-176km; 0,25dB/km; 19ps/(nm*km)

4./5. Media type Double port 1 and 2

M2	Multimode/SC (100Mbit/s)
M4	Multimode/BFOC (ST) (100Mbit/s)
S2	Singlemode/SC (100Mbit/s)
S4	Singlemode/ST (100Mbit/s)
E2	Singlemode+/SC (100Mbit/s)
L2	Singlemode/LH /SC (100Mbit/s)
G2	Singlemode+/SC (100Mbit/s)
MM	Multimode/SC (100Mbit/s)
NN	Multimode/BFOC (ST) (100Mbit/s)
VV	Singlemode/SC (100Mbit/s)
UU	Singlemode/ST (100Mbit/s)
EE	Singlemode+/SC (100Mbit/s)



Dual Uplinks:
Single Port 1 + Single Port 2



Triple Uplinks:
Dual Port 1 + Single Port 2



6. Temperature range

S	Standard 0°C ... +60°C
T	Extended -40°C ... +70°C
E	Extended -40°C ... +70°C including Corformal Coating

7. Operating voltage

D	9,6 ... 60V DC and 18 – 30 V AC (RS20)
P	47 – 52 V DC – PoE (RS22)

8. Approvals & Certifications

A	cUL 508, cUL 1604 class 1 Div.2
A+	GL, IEC 61850-3, IEEE1613, EN50121-4
H+	ATEX 100a, Zone 2

9. Software version

P	Professional: Enhanced software plus security, extended diagnosis and redundancy
E	Enhanced Remote access, diagnosis, filters, redundancy
U	Unmanaged

10. Configuration

H	Standard
X	Customer specific
P	PROFINET presettings
E	EtherNet/IP presettings

11. OEM type

H	Standard
X	Customer specific
F	Metal body (RS22)
V	Improved shock resistance

12. SW release

XX.X	Newest software
-------------	-----------------

- 1. Design
- 2. FE-ports
- 3. GE-ports
- 4. Uplink port 1
- 5. Uplink port 2
- 6. Temperature
- 7. Power Supply
- 8. Approvals
- 9. Software
- 10. Configuration
- 11. OEM type
- 12. Software release

1. Design

- RS30** FE switch incl. 2 ports GE
- RS32** FE switch incl. 2 ports GE incl. 4 ports PoE à 15,4 W

2. FE - ports

- 08** 8x 10/100 Mbit/s
- 16** 16x 10/100 Mbit/s
- 24** 24x 10/100 Mbit/s

3. GE - ports

- 02** 2 Gigabit-Ethernet ports

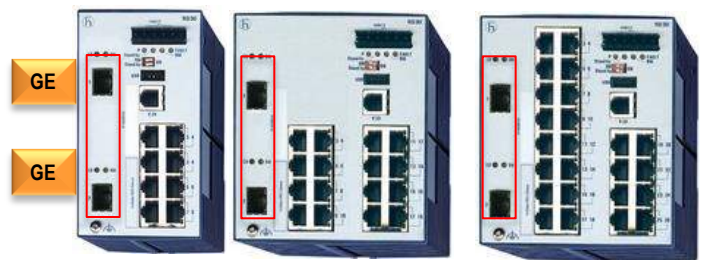
4. Media type uplink port 1

- T1** Twisted Pair /RJ45 (10/100/1000 Mbit/s)
- 06** SFP slot (1000 Mbit/s)
- 00** Double SFP slot (1000 Mbit/s or 100 Mbit/s --- dual speed) *only possible combination **00 ZZ**

5. Media type uplink port 2

- T1** Twisted Pair /RJ45 (10/100/1000 Mbit/s)
- 06** SFP slot (1000 Mbit/s)
- ZZ** Double SFP slot (100 Mbit/s) *only possible combination **00 ZZ**

Dual Uplinks:
Single Port 1 + Single Port 2



Configurator

6. Temperature range

- S** Standard 0°C ... +60°C
- T** Extended -40°C ... +70°C
- E** Extended -40°C ... +70°C including Corformal Coating

7. Operating voltage

- D** 9,6 ... 60V DC and 18 – 30 V AC (RS30)
- P** 47 – 52 V DC – PoE (RS32)

8. Approvals & Certifications

- A** cUL 508, cUL 1604 class 1 Div.2
- A+** GL, IEC 61850-3, IEEE1613, EN50121-4
- H+** ATEX 100a, Zone 2

9. Software version

- P** **Professional:** Enhanced software plus security, extended diagnosis and redundancy
- E** **Enhanced** Remote access, diagnosis, filters, redundancy
- U** **Unmanaged**

10. Configuration

- H** Standard
- X** Customer specific
- P** PROFINET presettings
- E** EtherNet/IP presettings

11. OEM type

- H** Standard
- X** Customer specific
- F** Metal body (RS32)
- V** Improved shock resistance

12. SW release

- XX.X** Newest software

Double SFP slots
RS30 >>> **00 ZZ** <<<

- SFP GE + FE**
- SFP GE + FE**
- SFP FE**
- SFP FE**



24-port type without EEC temperature range

- RS40

1. Design
- 00

2. FE-ports
- 09

3. GE-ports
- CC

4. Uplink port 1
- CC

5. Uplink port 2
- 6. Temperature
- D

7. Power Supply
- 8. Approvals
- 9. Software
- H

10. Configuration
- H

11. OEM type
- XX.X

12. Software release

1. Design

RS40

9x Gigabit - ETHERNET

2. FE - ports

00

FE – integrate in GE ports

3. GE - ports

09

9x 10/100/1000 Mbit/s

- 5x 10/100/1000 Mbit/s
- 4x Combo ports (SFP/RJ45)

4/5 Media type

CC

2x Combo port

SFP port - dual speed,
RJ45

uplink port 1
uplink port 2



Note larger enclosure size for E and T temp variants

RS40-00 09 CC CC T D...

RS40-00 09 CC CC E D...

6. Temperature range

S

 Standard 0°C ... +60°C

T

 Extended -40°C ... +70°C

E

 Extended -40°C ... +70°C including Corformal Coating

7. Operating voltage

D

 9,6 ... 60V DC and 18 – 30 V AC (RS20)

8. Approvals & certifications

A

 cUL 508, cUL 1604 class 1 Div.2

H

A +
GL, IEC 61850-3, IEEE1613, EN50121-4

B

9. Software version

P

Professional:
Enhanced software plus security, extended diagnosis and redundancy

E

Enhanced
Remote access, diagnosis, filters, redundancy

10. Configuration

H

 Standard

X

 Customer specific

P

E

11. OEM type

H

 Standard

X

 Customer specific

V

12. SW release

xx.x

 Newest software

- 1. Combo SFP FE & GE
- 2. Combo SFP FE & GE
- 3. Combo SFP FE & GE
- 4. Combo SFP FE & GE
- 9. 10/100/1000BASE-TX



- 1. Combo 10/100/1000BASE-TX
- 2. Combo 10/100/1000BASE-TX
- 3. Combo 10/100/1000BASE-TX
- 4. Combo 10/100/1000BASE-TX
- 5. 10/100/1000BASE-TX
- 6. 10/100/1000BASE-TX
- 7. 10/100/1000BASE-TX
- 8. 10/100/1000BASE-TX

MICE FAMILY modular managed switches

MS30 1. Design
 2. FE-ports 3. GE-ports

4. Temperature 5. Power Supply 6. Approvals 7. Software
 8. Configuration 9. OEM type 10. Software release

1. Design

- MS20** Modular switch (10/100 Mbit/s)
- MS30** Modular switch (10/100 Mbit/s + 2 ports GE)

2. FE - ports

- 08** 8x 100 Mbit/s – 2 slots for media moduls
- 16** 16x 100 Mbit/s – 4 slots for media moduls
- 24** 24x 100 Mbit/s – 6 slots for media moduls

3. GE - ports

- 00** no Gigabit-ETHERNET port
 - MS20
- 02** 2x Gigabit-ETHERNET port
 - MS30

4. Temperature range

- S** Standard 0°C ... +60°C
- T** Extended -40°C ... +70°C
- E** Extended -40°C ... +70°C including Corformal Coating

5. Operating voltage

- A** 18 – 32V DC
- C** 18 – 60V DC / 2x 4-pin plug
- E** 18 – 60V DC / 1x 6-pin plug

6. approvals & certifications

- Z** CE
- Y** CE, UL508
- A** Y+ ISA 12.12.01 class1 div.2
- B** A+ ATEX Zone2, GL
- E** Y + EN 50121-4
- S** Y + GL, IEC61850-3, IEEE 1613, EN 50121-4
- H** S+ ISA 12.12.01 class1 div.2,



7. Software version

- P** Professional: Enhanced software plus security, extended diagnosis and redundancy
- E** Enhanced Remote access, diagnosis, filters, redundancy

8. configuration

- H** Standard
- X** Customer specific
- P** PROFINET presettings
- E** EtherNet/IP presettings

9. OEM type

- H** Standard
- X** Customer specific

10. SW release

- xx.x** Newest software



PowerMICE MS4128

- MS 4128-5** 943 009-001 *out of delivery* Power MICE --- L2P, also possible for L3E 4 slots and 1 slot Gigabit (4 ports modul) **L3E bis max. SW 5.x**
- MS 4128-L2P** 943 009-101 Power MICE --- Layer 2 Professional 4 slots and 1 slot Gigabit (4 ports modul)
- MS 4128-L3E** 943 009-201 *out of delivery* Power MICE --- Layer 3 Enhanced 4 slots and 1 slot Gigabit (4 ports modul)
- MS 4128-L3P** 943 009-301 Power MICE --- Layer 3 Professional 4 slots and 1 slot Gigabit (4 ports modul)

MM2

0

-

HH

1. Product 2. Technology 3. Port Type 1 4. Port Type 2 5. Port Type 3 6. Port Type 4 7. Temp. range 8. Approvals 9. OEM type

2. Technology

0 Standard; ~~1 Realtime;~~ 2 PoE; ~~3 Precisions Time Protocol 2;~~ ~~4 Digital IO~~

3./4./5./6. Port Type 1 to 4

Z6	SFP slot Fiber (100Mbit/s)		
G2	SM LH+ /SC (100Mbit)	14-47dB (67-176km);	1550nm
L2	Singlemode Fiber Long Haul: SM LH /SC (100Mbit)	7-29dB (24-86km);	1550nm
S2	Singlemode Fiber: SM /SC (100Mbit)	0-16dB (0-30km);	1300nm
S4	Singlemode Fiber: SM /BFOC (ST) (100Mbit)	0-16dB (0-30km);	1300nm
M2	Multimode Fiber: MM /SC (100Mbit)	0-8dB (0-5km);	1300nm
M3	Multimode Fiber /MM /MTRJ (100Mbit)	0-8dB (0-5km);	1300nm
M4	Multimode Fiber: MM /BFOC (ST) (100Mbit)	0-8dB (0-5km);	1300nm
F4	Multimode Fiber: MM /BFOC (ST)(10Mbit)	0-9,5dB (0-2km);	850nm
P9	Plastic optic fiber POF/SCRJ (100Mbit)	0-7dB (0-140m);	650nm
T1	Twisted Pair: RJ45 (10/100Mbit)		
T5	Twisted Pair: M12 (10/100Mbit)	Eol - Last order date: Febr. 28,2019	
A8	AUI: DSub-male (10Mbit)	Eol - Last order date: Febr. 28,2019	
IO	Digital I/O (MM20 IO IO IO IO ...)	MM24...	Eol - Last order date: Febr. 28,2019
99	empty		



MTRJ/male



Any MM2x or MM3x media module can be plugged into any MSxx MICE backplane.



Gigabitmodul for MS4128-xx and MS30

7. Temperature

S 0°C to +60°C; T -40°C to +70°C; E -40V to +70°C incl. conformal coating

8. approvals & certifications

Z CE Y CE, UL508 E Y + GL, EN 50121-4 A Y + ISA 12.12.01 class1 div.2
S Y + GL, IEC61850-3, IEEE 1613, EN 50121-4 H A + GL, IEC61850-3 – IEEE 1613, IEEE50121-4 B A + ATEX Zone2, GL

MM4-2TX/SFP (943 622-001)
Now: MM30-07079999 xx
2x Gigabit RJ45/SFP Combo ports

MM4-4TX/SFP (943 010-001)
Now: MM30-07070707...
4x Gigabit RJ45/SFP Combo ports
(if using with MS30, only 2 ports active)

Due to changes of the standards, come of the approval ratings may no longer be met (ATEX Zone 2, ISA 12.12.01 class 1 div.2, IEC 61850, IEEE 1613). Recertification is in process. Please check latest specifications and data sheets.

MS4128 / PowerMICE Obsolescence and Product Migration



Layer 2

MS4128-L2P	943 009-102	----->	MSP30-24040SCY999HHE2A
MS4128-L2P ATEX	943 009-101	----->	MSP30-24040SCWY99HHE2A
MS4128-L2P EEC	943 009-103	----->	MSP30-24040TCWY99HHE2A

Layer 3

MS4128-L3E	943 009-202	----->	MSP30-24040SCY9URHHE3A
MS4128-L3E ATEX	943 009-201	----->	MSP30-24040SCWYURHHE3A
MS4128-L3E EEC	943 009-203	----->	MSP30-24040TCY9URHHE3A
MS4128-L3P	943 009-302	----->	MSP30-24040SCY9MRHHE3A
MS4128-L3P ATEX	943 009-301	----->	MSP30-24040SCWYMRHHE3A
MS4128-L3P EEC	943 009-303	----->	MSP30-24040TCY9MRHHE3A

Note:

- Above cross is to 7-slot MSP. Backplanes with fewer media module slots are available.
- MS20/30/4128 media modules are not compatible with the MSP's media modules
- The MSP Series has more configuration options, including number of media module slots, PoE and other approvals. Please use the configuration tool to ensure that the resulting cross/part meets the application.



MACH102 fanless 19-inch switch

MACH102 switches with **-F** are not modular. Those with **-R** have redundant power supplies



"R" in part number suffix adds dual/redundant power inputs



Dual AC input
Redundant on left, standard on right

MACH102-8TP-F 943 969-201

fixed, not modular ---- continuous front plate
8 ports 10/100BASE-TX
2 FE/GE Combo ports
1 power supply 100 up to 240 VAC

MACH102-8TP-FR 943 969-301

fixed, not modular ---- continuous front plate
8 ports 10/100BASE-TX
2 FE/GE Combo ports
2 power supplies 100 up to 240 VAC
(redundant PS – stand-by mode)

MACH102-24TP-F 943 969-401

fixed, not modular ---- continuous front plate
24 ports 10/100BASE-TX
2 FE/GE Combo ports
1 power supply 100 up to 240 VAC

MACH102-24TP-FR 943 969-501

fixed, not modular ---- continuous front plate
24 ports 10/100BASE-TX
2 FE/GE Combo ports
2 power supplies 100 up to 240 VAC
(redundant PS – stand-by mode)

MACH102-8TP 943 969-001

8 ports 10/100BASE-TX
2 FE/GE Combo ports, **2 empty slots** for expansion modules
1 power supply 100 up to 240 VAC

MACH102-8TP-R 943 969-101

8 ports 10/100BASE-TX
2 FE/GE Combo ports, **2 empty slots** for expansion modules
2 power supplies 100 up to 240 VAC
(redundant PS – stand-by-mode)

M1-8TP-RJ45-PoE 942 028-001

Expansion module
8 Ports PoE / PoE Plus
if PoEP is used, only 4 Ports will be supported
(Limitation on Power: 124W)
external Power supply → 48VDC (min. 46V ; max. 57V)
(>50VDC for PoE Plus)



M1-8TP-RJ45 943 970-001

Expansion module
with 8 ports TP 10/100 BASE-TX



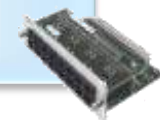
M1-8SFP 943 970-301

Expansion module
with 8 empty slots for SFP transceivers 100BASE-FX
Interface SFP slots for 100BASE-FX
Distance see SFP transceivers (M-FAST SFP-xx)



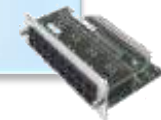
M1-8MM-SC 943 970-101

Expansion module
with 8 ports Fiber Optic multimode 100BASE-FX
Distance MM (50/125µm): 0-5000m, 11 dB link budget
MM (62.5/125µm): 0-4000m, 8 dB link budget



M1-8SM-SC 943 970-201

Expansion module
with 8 ports Fiber Optic singlemode 100BASE-FX
Distance SM (9/125µm): 0-32.5km, 16 dB link budget



All MACH102 models have 2x GE RJ45/SFP slot

- SFP sockets accept FE SFPs or/and GE SFPs
- Twisted Pair ports (RJ45) 10/100/1000 Mbit/s



Approvals

- cUL 508
- cUL 60950

Temp. range

- 0°C up to +50°C
- fanless



HIRSCHMANN

A BELDEN BRAND

Layer 2 and Layer 3



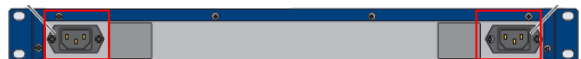
Rear View of device variants:

MACH104-20TX-F...
MACH104-20TX-F-4PoE...



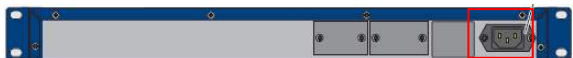
Rear View of device variants:

MACH104-20TX-FR...



Rear View of device variants:

MACH104-16TX-PoEP...
MACH104-16TX-PoEP+2X...



Rear View of device variants:

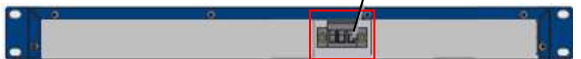
MACH104-16TX-PoEP-R...
MACH104-16TX-PoEP+2X-R...



Rear view of device variants:

MACH104-16TX-PoEP-E...
MACH104-16TX-PoEP+2X-E...

Plug for power supply 44-57 V DC



Plug for PoE power supply

For the use of **type 1 powered devices (PoE)**:
nom. voltage 48V DC ----- max. voltage range 45V to 57 V DC
For the use of **type 2 powered devices (PoE+)**:
nom. voltage 54V DC ----- max. voltage range 51V to 57 V DC



MACH104-20TX-F...
MACH104-20TX-FR



MACH104-20TX-F-4PoE



MACH104-16TX-PoEP+2X...
MACH104-16TX-PoEP+2X-R...
MACH104-16TX-PoEP+2X-E...



MACH104-16TX-PoEP...
MACH104-16TX-PoEP-R...
MACH104-16TX-PoEP-E...



IEEE 802.3af
15 Watt per port



IEEE 802.3at
30 Watt per port

PoE power
(max. number of Powered Devices)
☞ 8x PD class 4 (30W)
☞ 16x PD class 0 (15,4W)
It's possible to mix:
The limit is ~248 Watt

MACH104

	MACH104-20TX-F 942 003-001	MACH104-20TX-F-L3P 942 003-002	MACH104-20TX-FR 942 003-101	MACH104-20TX-FR-L3P 942 003-102	MACH104-20TX-F-4PoE 942 003-201	MACH104-20TX-F-4PoE-L3P 942 003-202	MACH104-16TX-PoEP 942 030-001	MACH104-16TX-PoEP-L3P 942 030-002	MACH104-16TX-PoEP-R 942 026-001	MACH104-16TX-PoEP-R-L3P 942 026-002	MACH104-16TX-PoEP+2X 942 031-001	MACH104-16TX-PoEP+2X-L3P 942 031-002	MACH104-16TX-PoEP+2X-R 942 033-001	MACH104-16TX-PoEP+2X-R-L3P 942 033-002	MACH104-16TX-PoEP-E 942 027-001	MACH104-16TX-PoEP-E-L3P 942 027-002	MACH104-16TX-PoEP+2X-E 942 032-001	MACH104-16TX-PoEP+2X-E-L3P 942 032-002
Gigabit ETHERNET COMBO ports	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
Gigabit ETHERNET Twisted Pair ports	20	20	20	20	20	20	16	16	16	16	16	16	16	16	16	16	16	16
10 Gigabit ETHERNET ports for XFP	-	-	-	-	-	-	-	-	-	-	2	2	2	2	-	-	2	2
Integrated PoE power supply for 4 PoE ports	-	-	-	-	✓	✓	-	-	-	-	-	-	-	-	-	-	-	-
Integrated PoE+ power supply for 16 ports	-	-	-	-	-	-	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Power supply (100-240V AC) (fan inside the power supply)	-	-	-	-	-	-	1.) ✓	1.) ✓	2.) ✓	2.) ✓	3.) ✓	3.) ✓	2.) ✓	2.) ✓	-	-	-	-
Redundant Power supply (100-240V AC)	-	-	✓	✓	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Redundant power supply (100-240V AC) (fan inside the power supply)	-	-	-	-	-	-	-	-	✓	✓	-	-	✓	✓	-	-	-	-
Power supply (44-57V DC) fanless	-	-	-	-	-	-	-	-	-	-	-	-	-	-	✓	✓	✓	✓
Software Version	L2P	L3P	L2P	L3P	L2P	L3P	L2P	L3P	L2P	L3P	L2P	L3P	L2P	L3P	L2P	L3P	L2P	L3P

- 1.) For the supply voltage, the following applies: A power module providing the PoE voltage and the internal supply voltage is integrated in the device
- 2.) For the supply voltage, the following applies:
- The supply voltage can be connected redundantly;
 - Two power modules providing the PoE voltage and the internal supply voltage are integrated in the device. The power modules operate in load-sharing mode.
- 3.) For the supply voltage, the following applies: A power module providing the PoE voltage and the internal supply voltage is integrated in the device.
- 4.) For the supply voltage, the following applies: PoE voltage and internal supply voltage are provided by an external power module

RSR Rail Switch Ruggedized



RSR20 08 00 T1 T1 T1
8x 10/100BASE-TX(RJ45)



RSR20 09 00 MM M2 T1
3x 100BASE-FX(SC)
6x 10/100BASE-TX(RJ45)



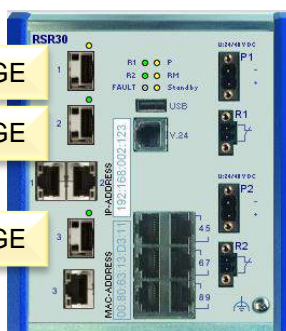
RSR20 08 00 M2 M2 T1
2x 100BASE-FX(SC)
6x 10/100BASE-TX(RJ45)



RSR20 09 00 JJ M3 T1
3x 100BASE-FX(MTRJ)
6x 10/100BASE-TX(RJ45)



RSR20 09 00 MM M2 T1
3x 100BASE-FX(D-SC)
6x 10/100BASE-TX(RJ45)



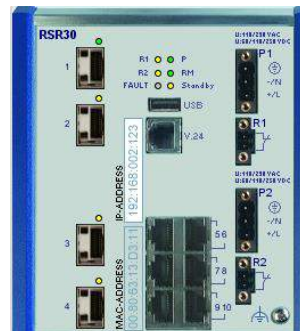
RSR30 06 03 CC 07 T1
3x combo ports SFP slot (FE/GE)/TP-RJ45
6x 10/100BASE-TX(RJ45)



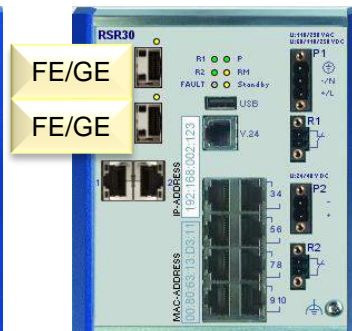
RSR30 07 03 00 06 Z6
3x SFP slot (GE)
7x SFP slot (FE)



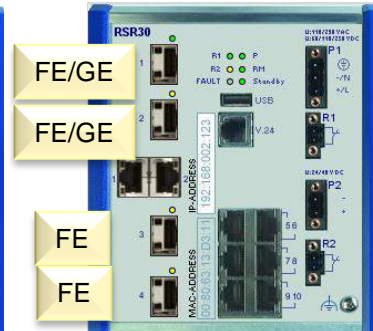
RSR30 08 02 06 06 T1
2x SFP slot (GE)
8x 10/100BASE-TX(RJ45)



RSR30 08 02 00 ZZ T1
2x SFP slot (GE)
2x SFP slot (FE)
6x 10/100BASE-TX(RJ45)



RSR30 08 02 07 07 T1
2x combo port (FE/GE)/ SFP slot TP-RJ45
8x 10/100BASE-TX(RJ45)



RSR30 08 02 CC ZZ T1
2x combo port (FE/GE) SFP slot/TP-RJ45
2x SFP slot (FE)
6x 10/100BASE-TX(RJ45)



Note: All combo ports support GE and FE

The core of your order:

RSR									H	P	H	H	XX.X
1. Product	2. Data rate	3. 10/100 Mbit/s ports	4. 10/100/1000 Mbit/s ports	5. Uplink port 1 configuration	6. Uplink port 2 configuration	7. Temperature range	8. Voltage range 1	9. Voltage range 2	10. Approvals	11. Software version	12. Configuration	13. OEM type	14. SW release

1. Product **RSR** Rail Switch ruggedized

2. Data rate

- 20** 10/100 Mbit/s ports
- 30** 10/100/1000 Mbit/s ports

3. Ports Fast-ETHERNET

- 06** - 6x 100 Mbit/s (RSR30)
- 07** - 7x 100 Mbit/s (RSR30)
- 08** - 8x 100 Mbit/s (RSR20,RSR30)
- 09** - 9x 100 Mbit/s (RSR20)

4. Ports Gigabit-ETHERNET

- 00** - 0x 1000 Mbit/s (RSR20)
- 02** - 2x 1000 Mbit/s (RSR30)
- 03** - 3x 1000 Mbit/s (RSR30)

5. Ports Type - 1. Uplink

CC - 2x Combo Port Gigabit	ZZ - 2x SFP Slot (100 Mbit/s)
00 - 2x SFP Slot Gigabit	07 - Combo port (1000 Mbit/s)
TT - 2x Twisted Pair (RJ45)	06 - SFP slot (1000 Mbit/s)
MM - 2x Multimode (D-SC)	T1 - Twisted Pair (RJ45)
JJ - 2x Multimode (MTRJ)	M2 - Multimode (D-SC)
NN - 2x Multimode (BFOC/ST)	M3 - Multimode (MTRJ)
VV - 2x Singlemode (D-SC)	M4 - Multimode (BFOC/ST)
UU - 2x Singlemode (BFOC/ST)	S2 - Singlemode (D-SC)
LL - 2x Singlemode Long Haul (D-SC)	S4 - Singlemode (BFOC/ST)
GG - 2x Singlemode Long Haul+ (D-SC)	L2 - Singlemode Long Haul (D-SC)
	G2 - Singlemode Long Haul+ (D-SC)
	Z6 - SFP slot (100 Mbit)

Not all options are possible in all RSR types

6. Ports Type - 2. Uplink

ZZ | 07 | 06 | T1 | M2 | M3 | M4 | S2 | S4 | L2 | G2 | Z6



7. Temperature range

- S** Standard 0°C ... +60°C
- U** Extended -40°C ... +85°C
- F** Extended -40°C ... +85°C including Conformal Coating

8. Operating voltage 1

- C** 24/36/48 V DC (18-60VDC)
- K** 60/120/250 V DC 110/230 V AC

9. Operating voltage 2

- 9** not available
- C** 24/36/48 V DC (18-60VDC)
- K** 60/120/250 V DC 110/230 V AC

10. Approvals **H** UL508:GL, IEC 61850-3, IEEE1613, EN50121-4

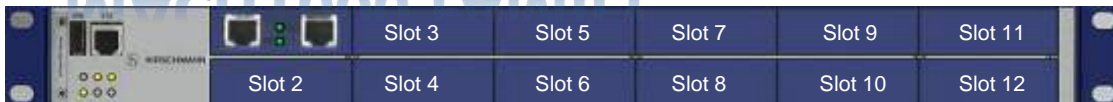
11. SW version **P** Professional:

12. Configuration **H** Hirschmann

13. OEM type **H** Hirschmann

14. SW release **XX.X** Newest software

MACH1000 FAMILY 19-inch ruggedized switch



MAR1020-99 TT ... Max. 24 ports 10/100 Mbit/s

MAR1030-CC TT ... Max. 24 ports 10/100 Mbit/s
+ 2 ports FE/GE (Combo SFP/RJ45)

MAR1030-4O TT ... Max. 24 ports 10/100 Mbit/s
+ 4 ports GE (SFP); 1000 Mbit/s

MAR1030-OT TT ... Max. 24 ports 10/100 Mbit/s
+ 2 ports GE (SFP) + 2 ports 10/100/1000 Mbit/s (RJ45)

MAR1030-4T TT ... Max. 24 ports 10/100 Mbit/s
+ 4 ports 10/100/1000 Mbit/s (RJ45)

MAR1022-99 TT ... Max. 24 ports 10/100 Mbit/s
incl. 4 ports PoE (RJ45)
Take care: with PoE variants the second power supply only feeds the PoE ports

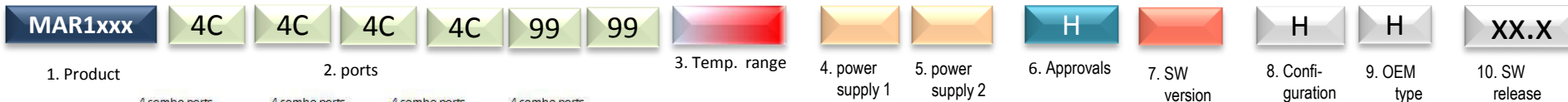
MAR1032-CC TT ... Max. 24 ports 10/100 Mbit/s
incl. 4 ports PoE + 2 ports FE/GE (Combo SFP/RJ45)
Take care: with PoE variants the second power supply only feeds the PoE ports



MAR1120-99 TT ...
Rear: Max. 20 ports 10/100 Mbit/s
Front: 1 „service“ port (10/100Base-TX; RJ45)



MAR1130-4T TT ...
Rear: Max. 20 ports 10/100 Mbit/s
+ 2/4 ports GE (div. variation)
Front: 1 „service“ port in the front (10/100Base-TX; RJ45)



1. Product 2. ports 3. Temp. range 4. power supply 1 5. power supply 2 6. Approvals 7. SW version 8. Configuration 9. OEM type 10. SW release

4 combo ports 4x RJ45 /4x SFP slots 4 combo ports 4x RJ45 /4x SFP slots 4 combo ports 4x RJ45 /4x SFP slots 4 combo ports 4x RJ45 /4x SFP slots



1. Chassis type

- MAR1040** Full GE switch I 16 ports
- MAR1042** Full GE switch incl. 4 ports PoE
- MAR1140** Full GE switch I 16 ports rear and one port in front
- MAR1142** Full GE switch I and one port in front 16 ports rear incl. 4 ports PoE

2. Gigabit ports

4C4C4C4C9999 16x 10/100/1000 Mbit/s ports
Combo Ports
SFP slots – dual speed

3. Temperature range

- S** Standard 0°C ... +60°C
- C** Standard 0°C ... +60°C including Corformal Coating
- T** Extended -40°C ... +85°C
- E** Extended -40°C ... +85°C including Corformal Coating

4. Voltage range power supply 1

- L** 24/36/48 V DC --- power plug
 - M** 110/250 V DC -- 110/230 V AC --- power plug
- at PoE versions

5. Voltage range power supply 2

- L** 24/36/48 V DC --- power plug
- M** 110/250 V DC -- 110/230 V AC --- power plug
- 9** empty

Power supply MACH1042 (with PoE)



Port 1 (230 V AC supports chassis operating voltage)

Port 2 (230 V AC supports exclusive 4 ports PoE)
- No operating voltage redundancy -

6. Approvals

H UL508; UL1604 Class 1 Div2; GL; IEC 61850-3; IEEE1613; EN50121-4; NEMA TS

7. Software version

P Layer 2 - Professional
R Layer 3

8. Configuration

H Hirschmann

9. OEM type

H Hirschmann

10. SW release

XX.X Newest software



MAR1040



MAR1042



MAR1140



MAR1142



MAR1140, MAR1142

Configurator





MACH4000 FAMILY

19-inch backbone switch

10 Gigabit-ETHERNET

Maximum ports: 48 GE + 3x 10 GE

MACH 4002 – 48G+3X-L2P	943 878-101
MACH 4002 – 48G+3X-L3E	943 878-201
MACH 4002 – 48G+3X-L3P	943 878-301

Maximum ports: 24 GE + 3x 10 GE

MACH 4002 – 24G+3X-L2P	943 915-101
MACH 4002 – 24G+3X-L3E	943 915-201
MACH 4002 – 24G+3X-L3P	943 915-301

Gigabit-ETHERNET

Maximum ports: 48 GE

MACH 4002 – 48G-L2P	943 911-101
MACH 4002 – 48G-L3E	943 911-201
MACH 4002 – 48G-L3P	943 911-301

Maximum ports: 24 GE

MACH 4002 – 24G-L2P	943 916-101
MACH 4002 – 24G-L3E	943 916-201
MACH 4002 – 24G-L3P	943 916-301

Fast-ETHERNET

Maximum ports: 48 FE + 4 combi ports GE

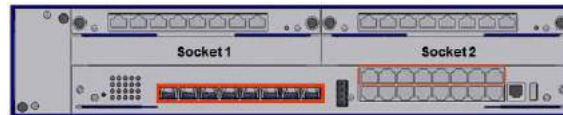
MACH 4002 – 48+4G-L2P	943 859-101
MACH 4002 – 48+4G-L3E	943 859-201
MACH 4002 – 48+4G-L3P	943 859-301



3 XFP sockets + 16 TP-ports



3 XFP sockets + 8 TP-ports



8 combo- + 8 TP-ports



8 combo ports



4 combo- + 16x 10/100 ports



M4-FAST 8-SFP 943 864-001

- 8 SFP sockets for use with SFP transceiver
- Speed 100Mbit/s
- SFP transceiver M-FAST SFP xx



M4-GIGA 8-SFP 943 879-001

- 8 SFP sockets for use with SFP transceiver
- Speed 100/1000Mbit/s is defined by the SFP transceiver used, M-FAST SFP xx or M-SFP xx
- **PLEASE NOTICE:** Not for use in the MACH 4002-48+4G



M4-8TP-RJ45 943 863-001

- 8 ports TP 10/100/1000Mbit/s with RJ45 sockets
- AutoNeg, AutoCrossing, Cable Diagnostic
- 10/100Mbit/s with MACH 4002 - 48+4G



M4-FAST 8TP-RJ45-PoE 943 873-001

- 8 ports TP 10/100Mbit/s with RJ45 sockets
- Power over Ethernet is provided over pairs 1-2, 3-6

Max. PoE power according to chassis

4002-48+4G	137 Watt
4002-24G	163 Watt
4002-48G	110 Watt
4002-24G+3X	157 Watt
4002-48G+3X	106 Watt

End of life

MACH4000 FAMILY

PLUG-IN POWER SUPPLY FOR MACH4002-CHASSIS

M4-S-AC/DC 300W (943 870-001)
operating voltage: 100-240V AC
120-350V DC

~~**M4-S-24VDC 300W** (943 871-001)
operating voltage: 19-32V DC
current: max.15A~~

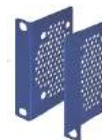
~~**M4-S-48VDC 300W** (943 872-001)
operating voltage: 38-72V DC
current: max.8A~~



Front View



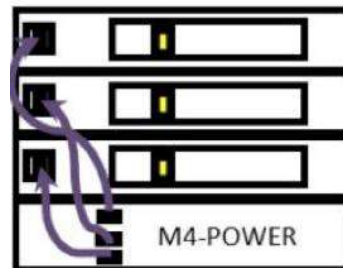
M4-Rackmount (10 pcs.)
943 951-101
60mm x 88mm x 19mm



M4-Rackmount (10 pcs.)
943 951-001
110mm x 88mm x 19mm



Rear View



EXTERNAL MODULARE POWER SUPPLY CHASSIS



M4-POWER
943 874-001

M4-P-AC/DC 300W (943 875-001)
Operating voltage: 100-240V AC,
129-350V DC



~~**M4-P-24VDC 300W** (943 876-001)
Operating voltage: 24V DC
(19V – 32V)~~

M4-Powercable 90° of M4-P-xx
is included in the delivery packet.
(943 922-001)



~~**M4-P-48VDC 300W** (943 877-001)
Operating voltage: 48V DC
(38V – 72V)~~

M4-Powercable 180° of M4-P-xx
Accessoire (separate order)
(943 922-101)



SFP Dust cover (25 pcs.)
943 942-001

RJ45 Dust cover (50 pcs.)
943 936-001



OCTOPUS 16M (943 912-001)

managed ruggedized IP67-Switch 16 TX,

Approvals: E1, DIN 5510-2, NF F 16-101, NF F 16-102, GL

OCTOPUS 16M Train (943 984-001)

managed ruggedized IP67-Switch 16 TX,

Approvals: EN 50155, EN 50121-4, DIN 5510-2, NF F 16-101, NF F 16-102

OCTOPUS 16M 8PoE (943 960-001)

managed ruggedized IP67-Switch 16 TX, including 8 ports PoE

Approvals: EN50155

OCTOPUS 24M (943 923-001)

managed ruggedized IP67-Switch 24 TX,

Approvals: E1, DIN 5510-2, NF F 16-101, NF F 16-102, GL

OCTOPUS 24M Train (943 985-001)

managed ruggedized IP67-Switch 24 TX,

Approvals: EN 50155, EN 50121-4, DIN 5510-2, NF F 16-101, NF F 16-102

OCTOPUS 24M Train-BP (943 093-001)

managed ruggedized IP67-Switch 24 TX, including 2 Bypass Relais

EN 50155, EN 50121-4, DIN 5510-2, NF F 16-101, NF F 16-102

OCTOPUS 24M-8PoE (943 063-001)

managed ruggedized IP67-Switch 24 TX, including 8 ports PoE

Approvals: E1, EN 50155, EN 50121-4, DIN 5510-2, NF F 16-101, NF F 16-102



OCTOPUS 8M (943 931-001)

managed ruggedized IP67-Switch 8 TX,

Approvals: E1, DIN 5510-2, NF F 16-101, NF F 16-102, GL

OCTOPUS 8M Train (943 983-001)

managed ruggedized IP67-Switch 8 TX,

Approvals: EN 50155, EN 50121-4, DIN 5510-2, NF F 16-101, NF F 16-102

OCTOPUS 8M –Train-BP (943 091-001)

managed ruggedized IP67-Switch 8 TX, including 2 Bypass Relais

Approvals: EN 50155, EN 50121-4, DIN 5510-2, NF F 16-101, NF F 16-102

OCTOPUS 8M - 6PoE (943 967-101)

managed ruggedized IP67-Switch 8 TX, including 6 ports PoE

Approvals: EN50155

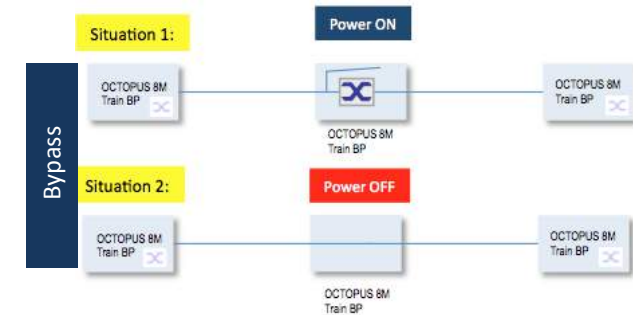
OCTOPUS 8M -8PoE (943 967-001)

managed ruggedized IP67-Switch 8 TX, including 8 ports PoE

Approvals: EN50155



Product Code	Product Name	Management	Power supply	Ports	FE
943892001	OCTOPUS 5TX EEC	Unmanaged	9.0V - 32V	5-port	5 Cu
943931001	OCTOPUS 8M	Managed	9.0V - 60V	8-port	8 Cu
943893001	OCTOPUS 8M Train	Managed	9.0V - 60V	8-port	8 Cu
943967101	OCTOPUS 8M-6PoE	Managed	48V	8-port	8 Cu
943907001	OCTOPUS 8M-8PoE	Managed	48V	8-port	8 Cu
942091001	OCTOPUS 8M-Train-BP	Managed	9.0V - 60V	8-port	8 Cu
943912001	OCTOPUS 16M	Managed	9.0V - 60V	16-port	16 Cu
943894001	OCTOPUS 16M Train	Managed	9.0V - 60V	16-port	16 Cu
943960001	OCTOPUS 16M-8PoE	Managed	48V	16-port	16 Cu
942092001	OCTOPUS 16M-Train-BP	Managed	9.0V - 60V	16-port	16 Cu
943922001	OCTOPUS 24M	Managed	9.0V - 60V	24-port	24 Cu
943955001	OCTOPUS 24M Train	Managed	9.0V - 60V	24-port	24 Cu
942053001	OCTOPUS 24M-8PoE	Managed	48V	24-port	24 Cu
942093001	OCTOPUS 24M-Train-BP	Managed	9.0V - 60V	24-port	24 Cu





OCTOPUS OS24-080900T5T5TFFB (942 025-007)
managed ruggedized IP67-Switch 9 TX,
including 8 ports PoE

Approvals: E1, EN 50155, EN 50121-4, DIN 5510-2, NF F 16-101, NF F 16-102

OCTOPUS OS24-080900T5T5TNEB (942 025-008)
managed ruggedized IP67-Switch 9 TX,
including 8 ports PoE

Approvals: EN 50155, EN 50121-4, DIN 5510-2, NF F 16-101, NF F 16-102

OCTOPUS OS24-081000T5T5TFFU (942 025-003)
unmanaged ruggedized IP54-Switch 10 TX,
including 8 ports PoE

Approvals: E1, EN 50155, EN 50121-4, DIN 5510-2, NF F 16-101, NF F 16-102

OCTOPUS OS24-081000T5T5TFNEU (942 025-004)
unmanaged ruggedized IP54-Switch 10 TX,
including 8 ports PoE

Approvals: EN 50155, EN 50121-4, DIN 5510-2, NF F 16-101, NF F 16-102



OCTOPUS OS20-0010001M1MTREP (943 988-001)
managed ruggedized IP67-Switch 8 TX, 2 FX-MM,

Approvals: E1, EN50155

OCTOPUS OS20-0010001S1STREP (943 988-002)
managed ruggedized IP67-Switch 8 TX, 2 FX-SM,

Approvals: E1, EN50155

OCTOPUS OS20-0010004M4MTREP (943 988-003)
managed ruggedized IP67-Switch 8 TX, 2 FX-SM,

Approvals: E1, EN50155

OCTOPUS OS20-0010004S4STREP (943 988-004)
managed ruggedized IP67-Switch 8 TX, 2 FX-SM,

Approvals: E1, EN50155



Optical ports variant 1

IEC 61076-3-106 Variant 1	Multimode fibre	Singlemode fibre
Fast ETHERNET	FO link up to 4 km 943 968-001	FO link up to 22 km 943 968-002
Gigabit ETHERNET	FO link up to 550m 943 968-005	FO link up tp 17 km 943 968-006



Optical ports variant 4

IEC 61076-3-106 Variant 4	Multimode fibre	Singlemode fibre
Fast ETHERNET	FO link up to 4 km 943 968-003	FO link up to 22 km 943 968-004
Gigabit ETHERNET	FO link up to 550m 943 968-007	FO link up tp 17 km 943 968-008



02	2 * 1000 Mbit/s Ethernet
1M	M-FAST SFP-MM / LC / EEC / variant 1
1S	M-FAST SFP-SM / LC / EEC / variant 1
1P	M-FAST SFP-SM+ / LC / EEC / variant 1
1L	M-FAST SFP-LH / LC / EEC / variant 1
1A	M-SFP-SX / LC / EEC / variant 1
1B	M-SFP-LX / LC / EEC / variant 1
1C	M-SFP-LH / LC / EEC / variant 1
1D	M-SFP-LH+ / LC / EEC / variant 1
4M	M-FAST SFP-MM / LC / EEC / variant 4
4S	M-FAST SFP-SM / LC / EEC / variant 4
4P	M-FAST SFP-SM+ / LC / EEC / variant 4
4L	M-FAST SFP-LH / LC / EEC / variant 4
4A	M-SFP-SX / LC / EEC / variant 4
4B	M-SFP-LX / LC / EEC / variant 4
4C	M-SFP-LH / LC / EEC / variant 4
4D	M-SFP-LH+ / LC / EEC / variant 4

Variant 1 and 4 IEC 61076-3-106 connectors are not sold by Belden and need to be sourced via third party, such as Metz Connect. See parts and link below.

Var 1 plug/shell (EtherNet/IP)	1401015000ME
Var 4 plug/shell (Profinet)	14010850F0ME
Duplex LC insert (multimode)	1402800820-I
Duplex LC insert (singlemode)	1402900820-I

<http://www.metz-connect.com/us/productsearch/E-DAT%20Industry%20IP67%20V1>





OCTOPUS 8TX-EEC (942 150-001)
unmanaged ruggedized IP67-Switch 8
 Configurable, like SPIDER PL
 8x 10/100 BASE-TX

OCTOPUS 8TX-EEC PoE (942 151-001)
unmanaged ruggedized IP67-Switch 8
 Configurable, like SPIDER PL
 8x 10/100 BASE-TX, incl. 7 PoE ports
 The max. PoE output of the device is 35 Watt



OCTOPUS OS20-001000T5T5TAFU (942 025-001)
unmanaged ruggedized IP54-Switch 10 TX
 Approvals: EN 50155, EN 50121-4, DIN 5510-2,
 NF F 16-101, NF F 16-102



OCTOPUS OS20-000900T5T5TAFB (942 025-005)
managed ruggedized IP67-Switch 9 TX,
 Approvals: E1, EN 50155, EN 50121-4, DIN 5510-2, NF F 16-101, NF F 16-102

OCTOPUS OS30-0008021A1ATREP (943 988-005)
managed ruggedized IP67-Switch 8 TX, 2FX-MM (Gigabit)
 Approvals: E1, EN50155



OCTOPUS OS30-0008021B1BTREP (943 988-006)
managed ruggedized IP67-Switch 8 TX, 2FX-SM (Gigabit)
 Approvals: E1, EN50155

OCTOPUS OS30-0008024A4ATREP (943 988-007)
managed ruggedized IP67-Switch 8 TX, 2FX-MM (Gigabit)
 Approvals: E1, EN50155

OCTOPUS OS30-0008024B4BTREP (943 988-008)
managed ruggedized IP67-Switch 8 TX, 2FX-SM (Gigabit)
 Approvals: E1, EN50155

Product	orL2P.bin	omL2P.bin
OS20-xxxx	✓	
OS30-xxxx	✓	
OCTOPUS 8M (-8PoE)		✓
OCTOPUS 16M (-8PoE)		✓
OCTOPUS 24M (-8PoE)		✓
OS32-xxxx		✓



OCTOPUS OS32-080802T6T6TPEP (942 069-002)
managed ruggedized IP65, IP67-Switch 10 TX,
 including 8 ports PoE (10/100 Mbit/s), M12 „D“ coding,
 2x 1000 Mbit/s M12 „X“-coding
 Approvals: CE, C-Tick, GOST-R, EN 50155

OCTOPUS OS32-081602T6T6TPEP (942 069-001)
managed ruggedized IP65, IP67-Switch 18 TX,
 including 8 ports PoE (10/100 Mbit/s), M12 „D“ coding
 8 ports 10/100 Mbit/s, M12 „D“ coding
 2x 1000 Mbit/s, M12 „X“-coding
 Approvals: CE, C-Tick, GOST-R, EN 50155

OCTOPUS OS32-0808020606TPEP (942 069-004)
managed ruggedized IP65, IP67-Switch 10 Ports
 including 8 ports PoE, M12 „D“ coding,
 2 ports 1000BASE-SFP sockets
 Approvals: CE, C-Tick, GOST-R, EN 50155

OCTOPUS OS32-0816020606TPEP (942 069-003)
managed ruggedized IP54-Switch 18 Ports
 including 8 ports PoE, M12 „D“ coding,
 8 ports 10/100 Mbit/s, M12 „D“ coding
 2 ports 1000BASE-SFP sockets
 Approvals: CE, C-Tick, GOST-R, EN 50155



Order No.	Field attachable connector M12	description
942 040-001	0986 EMC 105	M12 male, 4-pole, D-coded Spring type
934 828-002	RSCIS 4D/9	M12 male, 4-pole, D-coded IDC
942 159-001	BRSCIS 4D/9	M12 male, 4-pole, D-coded Rail approved version IDC
942 083-001	EM12G OCTOPUS	M12 male, 8-pole ; X-coded IDC

Product Code	Product Name		Power supply	Ports	FE	GE	PoE	Approval Vehicles
943892001	OCTOPUS 5TX EEC	Unmanaged	9,6V - 32V	5-port	5 Cu	n/a	n/a	E1
943931001	OCTOPUS 8M	Managed	9,6V - 60V	8-port	8 Cu	n/a	n/a	E1, DIN 5510-2, NF F 16-101, NF F 16-102
943983001	OCTOPUS 8M Train	Managed	9,6V - 60V	8-port	8 Cu	n/a	n/a	EN 50155, EN 50121-4, DIN 5510-2, NF F 16-101, NF F 16-102
943967101	OCTOPUS 8M-6PoE	Managed	48V	8-port	8 Cu	n/a	6-port PoE	EN 50155
943967001	OCTOPUS 8M-8PoE	Managed	48V	8-port	8 Cu	n/a	8-port PoE	EN 50155
942091001	OCTOPUS 8M-Train-BP	Managed	9,6V - 60V	8-port	8 Cu	n/a	n/a	EN 50155, EN 50121-4, DIN 5510-2, NF F 16-101, NF F 16-102
943912001	OCTOPUS 16M	Managed	9,6V - 60V	16-port	16 Cu	n/a	n/a	E1, DIN 5510-2, NF F 16-101, NF F 16-102
943984001	OCTOPUS 16M Train	Managed	9,6V - 60V	16-port	16 Cu	n/a	n/a	EN 50155, EN 50121-4, DIN 5510-2, NF F 16-101, NF F 16-102
943960001	OCTOPUS 16M-8PoE	Managed	48V	16-port	16 Cu	n/a	8-port PoE	EN 50155
942092001	OCTOPUS 16M-Train-BP	Managed	9,6V - 60V	16-port	16 Cu	n/a	n/a	EN 50155, EN 50121-4, DIN 5510-2, NF F 16-101, NF F 16-102
943923001	OCTOPUS 24M	Managed	9,6V - 60V	24-port	24 Cu	n/a	n/a	E1, DIN 5510-2, NF F 16-101, NF F 16-102
943985001	OCTOPUS 24M Train	Managed	9,6V - 60V	24-port	24 Cu	n/a	n/a	EN 50155, EN 50121-4, DIN 5510-2, NF F 16-101, NF F 16-102
942063001	OCTOPUS 24M-8PoE	Managed	48V	24-port	24 Cu	n/a	8-port PoE	E1, EN 50155, EN 50121-4, DIN 5510-2, NF F 16-101, NF F 16-102
942093001	OCTOPUS 24M-Train-BP	Managed	9,6V - 60V	24-port	24 Cu	n/a	n/a	EN 50155, EN 50121-4, DIN 5510-2, NF F 16-101, NF F 16-102
942025005	OCTOPUS OS20-000900T5T5TAFBHH	Managed	24V/48V	9-port	9 Cu	n/a	n/a	E1, EN 50155, EN 50121-4, DIN 5510-2, NF F 16-101, NF F 16-102
942025006	OCTOPUS OS20-000900T5T5TNEBHH	Managed	110V	9-port	9 Cu	n/a	n/a	EN 50155, EN 50121-4, DIN 5510-2, NF F 16-101, NF F 16-102
943988001	OCTOPUS OS20-0010001M1MTREPHH	Managed	16,8V - 45V	10-port	8 Cu / 2 Fo	n/a	n/a	E1, EN 50155
943988002	OCTOPUS OS20-0010001S1STREPHH	Managed	16,8V - 45V	10-port	8 Cu / 2 Fo	n/a	n/a	E1, EN 50155
943988003	OCTOPUS OS20-0010004M4MTREPHH	Managed	16,8V - 45V	10-port	8 Cu / 2 Fo	n/a	n/a	E1, EN 50155
943988004	OCTOPUS OS20-0010004S4STREPHH	Managed	16,8V - 45V	10-port	8 Cu / 2 Fo	n/a	n/a	E1, EN 50155
942025001	OCTOPUS OS20-001000T5T5TAFUHB	Unmanaged	24V/48V	10-port	10 Cu	n/a	n/a	E1, EN 50155, EN 50121-4, DIN 5510-2, NF F 16-101, NF F 16-102
942025002	OCTOPUS OS20-001000T5T5TNEUHB	Unmanaged	110V	10-port	10 Cu	n/a	n/a	EN 50155, EN 50121-4, DIN 5510-2, NF F 16-101, NF F 16-102
942025007	OCTOPUS OS24-080900T5T5TFFBHH	Managed	24V/48V	9-port	9 Cu	n/a	8-port PoE	E1, EN 50155, EN 50121-4, DIN 5510-2, NF F 16-101, NF F 16-102
942025008	OCTOPUS OS24-080900T5T5TNEBHH	Managed	110V	9-port	9 Cu	n/a	8-port PoE	EN 50155, EN 50121-4, DIN 5510-2, NF F 16-101, NF F 16-102
942025003	OCTOPUS OS24-081000T5T5TFFUHB	Unmanaged	24V/48V	10-port	10 Cu	n/a	8-port PoE	E1, EN 50155, EN 50121-4, DIN 5510-2, NF F 16-101, NF F 16-102
942025004	OCTOPUS OS24-081000T5T5TNEUHB	Unmanaged	110V	10-port	10 Cu	n/a	8-port PoE	EN 50155, EN 50121-4, DIN 5510-2, NF F 16-101, NF F 16-102
943988005	OCTOPUS OS30-0008021A1ATREPHH	Managed	16,8V - 45V	10-port	8 Cu	2 Fo	n/a	E1, EN 50155
943988006	OCTOPUS OS30-0008021B1BTREPHH	Managed	16,8V - 45V	10-port	8 Cu	2 Fo	n/a	E1, EN 50155
943988007	OCTOPUS OS30-0008024A4ATREPHH	Managed	16,8V - 45V	10-port	8 Cu	2 Fo	n/a	E1, EN 50155
943988008	OCTOPUS OS30-0008024B4BTREPHH	Managed	16,8V - 45V	10-port	8 Cu	2 Fo	n/a	E1, EN 50155
942069004	OCTOPUS OS32-080802O6O6TPEPHH	Managed	48V	10-port	8 Cu	2 SFP	8-port PoE	E1, EN 50155, EN 50121-4, DIN 5510-2, NF F 16-101, NF F 16-102
942069002	OCTOPUS OS32-080802T6T6TPEPHH	Managed	48V	10-port	8 Cu	2 Cu	8-port PoE	E1, EN 50155, EN 50121-4, DIN 5510-2, NF F 16-101, NF F 16-102
942069003	OCTOPUS OS32-081602O6O6TPEPHH	Managed	48V	18-port	16 Cu	2 SFP	8-port PoE	E1, EN 50155, EN 50121-4, DIN 5510-2, NF F 16-101, NF F 16-102
942069001	OCTOPUS OS32-081602T6T6TPEPHH	Managed	48V	18-port	16 Cu	2 Cu	8-port PoE	E1, EN 50155, EN 50121-4, DIN 5510-2, NF F 16-101, NF F 16-102



Switching

HiOS L2 Standard

Comprehensive Security,
Seamless Redundancy*

Basic ACLS (limited functions) #

RSP*#, RSPE*#, RED25

**RSPL, RSPS*, GRS1X20/1X30,
OCTOPUS OS, Bobcat BRS**

HiOS L2 Advanced

Enhanced QoS,
Basic ACLS (full functions)

**RSP, RSPE, MSP,
OCTOPUS OS,
GRS1X42, Bobcat BRS**

Routing

HiOS L3 Standard

Static IPv4 Routing
ACL, NAT

**RSP, RSPE,
OCTOPUS OS**

HiOS L3 Advanced

IPv4 Routing
MC-Routing

**MSP
GRS1X42
OS3**

Detail information page 122 -

Function overview



- OS**
 -
 -
 -
 -
 -
 - T5**
 - T**
 -
 -
 - 99**
 - HH**
 - S**
 - E**
1. Design 2. PoE 3. Fast Ethernet 4. Gigabit 5. Uplink port Typ 1 6. Uplink port Typ 1 7. Local ports 8. Temp. range 9. Voltage range 10. Approvals 11. SW Pck. 12. OEM type 13. HW Config 14. SW Conf

1. Design

OS20	Fast Ethernet Ports
OS24	Fast Ethernet Ports with PoE
OS30	FE and GE Ports
OS34	FE and GE Ports with PoE

2. PoE ports

00	No PoE ports
08	8x FE PoE ports
10	10x FE PoE ports
11	11x FE PoE ports
12	12x FE PoE ports
14	14x FE PoE ports
15	15x FE PoE ports

3. 10/100 Mbit/s ports

08	8x 10/100 Mbit/s
12	12x 10/100 Mbit/s
16	16x 10/100 Mbit/s
20	20x 10/100 Mbit/s
24	24x 10/100 Mbit/s
28	28x 10/100 Mbit/s

4. 10/100/1000 Mbit/s ports

00	none
02	2x 10/100/1000 Mbit/s
04	4x 10/100/1000 Mbit/s

5. / 6. Uplink port Typ 1 / Typ 2

T5	TP FE, M12/D-coded	1A	M-SFP SX/LC, EEC/V1
1M	M-Fast SFP-MM/LC, EEC/V1	1B	M-SFP LX/LC, EEC/V1
1S	M-Fast SFP-SM/LC, EEC/V1	1C	M-SFP LH/LC, EEC/V1
1P	M-Fast SFP-SM+/LC, EEC/V1	1D	M-SFP LH+/LC, EEC/V1
1L	M-Fast SFP-LH/LC, EEC/V1	4A	M-SFP SX/LC, EEC/V4
4M	M-Fast SFP-MM/LC, EEC/V4	4B	M-SFP LX/LC, EEC/V4
4S	M-Fast SFP-SM/LC, EEC/V4	4C	M-SFP LH/LC, EEC/V4
4P	M-Fast SFP-SM+/LC, EEC/V4	4D	M-SFP LH+/LC, EEC/V4
4L	M-Fast SFP-LH/LC, EEC/V4	5A	M-SFP SX/EEC, QODC
99	Not assembled	5B	M-SFP LX/EEC, QODC
R5	TP FE, M12/D-coded with Bypass-Relay	5C	M-SFP LH/EEC, QODC
R6	TP GE, M12/X-coded with Bypass-Relay	5D	M-SFP LH+/EEC, QODC
T6	TP GE, M12/X-coded		

7. Local ports T5 M12, D-coded

8. Temperature range T Extended -40°C ... +70°C

9. Voltage range

BB	2x 24V DC (16,8 to 30V DC) !!! Included M12; ELWIK A 5012; 933 175-100
HH	2x 36/48V DC (25,2 to 60V DC) !!! Included M12 voltage plug
N9	1x 72/110V DC (50,4 to 138V DC) !!! Included 7/8"; RKC40/9 - 4-pole connector; 942 086-004
M9	1x 110/120/220/230V AC (88 to 265V AC), 7/8" 3-poles voltage plug !!! Included 7/8"; RKC30/9 - 3-pole connector; 942 086-003
FF	2x 24V DC ... 48V DC !!! Included 7/8"; RKC50/9 - 5-pole connector; 942 086-005
QQ	2x 24/36/48V DC (16,8 to 60V DC) !!! Included M12 voltage plug

10. Approvals

Z9 - CE, FCC, EN 61131, EN 60950-1
 U9 - CE, FCC, EN 61131, EN 60950-1, GL
 UT - CE, FCC, EN 61131, EN 60950-1, GL, UL60950-1, EN 50121-4
 T9 - CE, FCC, EN 61131, EN 60950-1, EN 50121-4
 S9 - CE, FCC, EN 61131, EN 60950-1, EN 50121-4, EN 50155, EN 45545
 R9 - CE, FCC, EN 61131, EN 60950-1, E1
 Y9 - CE, FCC, EN 61131, EN 60950-1, UL60950-1
 UY - CE, FCC, EN 61131, EN 60950-1, GL, UL60950-1
 US - CE, FCC, EN 61131, EN 60950-1, GL, UL60950-1, EN 50121-4, EN 50155
 TY - CE, FCC, EN 61131, EN 60950-1, EN 50121-4, UL60950-1
 SY - CE, FCC, EN 61131, EN 60950-1, EN 50121-4, EN 50155, EN 45545, UL60950-1

11. Software Packages 99 reserved

12. OEM type HH Standard

13. HW config

S	Standard	D	DLR (Port 1/2)
M	Fast MRP (Port 1/2)	N	NAT (Port 1/2)
P	PRP (Port 1/2)	T	Prepared for Train backbone (port 1-4)
H	HSR (Port 1/2)		

14. SW config

E	reserved	B	BDEW configuration
I	Ethernet / IP configuration	D	DLR configuration
P	ProfiNet / IO configuration		

15. SW level

2S	HiOS Layer 2 Standard	3S	HiOS Layer 3 Standard
2A	HiOS Layer 2 Advanced		



V1: IP67-connector acc. IEC61076-3-106; Variant 1



V4: IP67-connector acc. IEC61076-3-106; Variant 4



Q-ODC Huber + Suhner



1. Product	OS3	OCTOPUS III
2. Data rate	3 4	10/100 and 10/100/1.000 Mbit/s 10/100/1.000 Mbit/s
3. Hardware type	0 4	No PoE Including PoE/PoE+
4. PoE ports total	00 08 16 24	No PoE/PoE+ 8x PoE/PoE+ 16x PoE/PoE+ 24x PoE/PoE+
5. PoE ports 100 Mbit/s	00 08 16	No PoE/PoE+ 8x 100 Mbit/s PoE/PoE+ 16x 100 Mbit/s PoE/PoE+
6. PoE ports 1.000 Mbit/s	00 08 16 16	No PoE/PoE+ 8x 1.000 Mbit/s PoE/PoE+ 16x 1.000 Mbit/s PoE/PoE+ 24x 1.000 Mbit/s PoE/PoE+
7. 100 Mbit/s ports	00 08 16	0x 100 Mbit/s 08x 100 Mbit/s 16x 100 Mbit/s
8. 1.000 Mbit/s ports	00 08 16	08x 100 Mbit/s 16x 100 Mbit/s 24x 100 Mbit/s
9. 10 Gbit/s ports	00	0x 1.000 Mbit/s
10. 1st pair of uplink ports	T6 R6	2x 1GE M12; x-coded 2x 1GE M12; x-coded, relay
10. 2nd pair of uplink ports	T6 R6	2x 1GE M12; x-coded 2x 1GE M12; x-coded, relay



12. Temperature range	V T	-40°C ... 60°C -40°C ... 70°C
13. Voltage range	BB HH PP QQ N9 M9	2x 24VDC (16,8 – 30VDC) 2x 36/48VDC (25,2 - 60VDC) 2x 47 - 57VDC (PoE); 53 - 57VDC (PoE+) 2x 24/36/48 (16,8 -60VDC) 1x 72/110 VDC (50,4 – 138 VDC) 1x 110/120/220/230 VAC (88-265 VAC)
14. Approvals	Z9 Y9 S9	CE; FCC; EN61131; EN62368-1 „Z9“ + cUL61010 „Z9“ + EN50121-4 + EN50155 + EN45545 + EMV06
15. Software Packages	99 UR MR	reserved Unicast Routing Multicast Routing
16. Customized	HH	Hirschmann Standard
17. Hardware Config.	S	Standard
18. Software Config.	E P I B	Standard Profinet/IO configuration Ethernet/IP configuration BDEW configuration
19. Software level	2A 3A	HiOS Layer 2 Advanced HiOS Layer 3 Advanced
20. Software version	XX.X	Newest version
21. Maintenance version	XX	Newest maintenance version

Overview – PowerMICE, MSP30 and MSP40

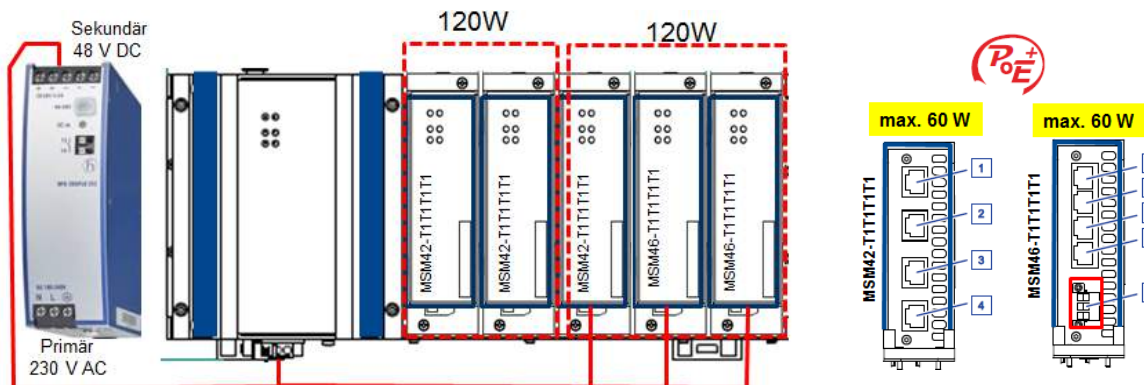
		PowerMICE	MSP30	MSP40
Ports	Max. port count	28	28	28
FE Ports	No. of Fast Ethernet ports	24	24	00
GE Ports	No. of Gigabit ports	04	04	28
Power over Ethernet	PoE / PoE+	✓/✗	✓/✓	✓/✓
	Port count	28	28	24
Port count & types	FE-SC-ST, SFP - MM, SM	✓	✓	✓
	Dual speed SFP slot (1000/2500)	✗	✗	✓
USB/SD Card	Max TX port support	28	28	24
	Max fiber port support	28	28	28
IEEE1588v2	Hardware support	✓	✓	✓
Levels	Software Levels	Classic L2P/L3E/L3P	HiOS L2A/L3A	HiOS L2A/L3A
Security	Extensive security features	✗	✓	✓
Software Features	MRP, RSTP, VRRP, HiperRing, Ring coupling	✓	✓	✓

MSP32/42

integrates PoE / PoE+

- optional for all ports
- max. 120W per MSP32/42
- max. 60W per module

Extra PoE+ ports with **MSM46-T1T1T1T1**



RPS260/PoE EEC

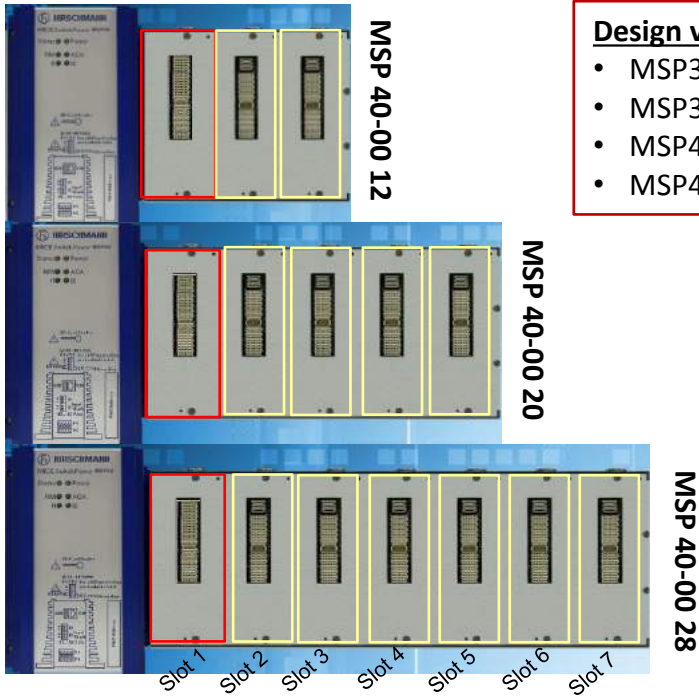
260 Watt

942 200-001

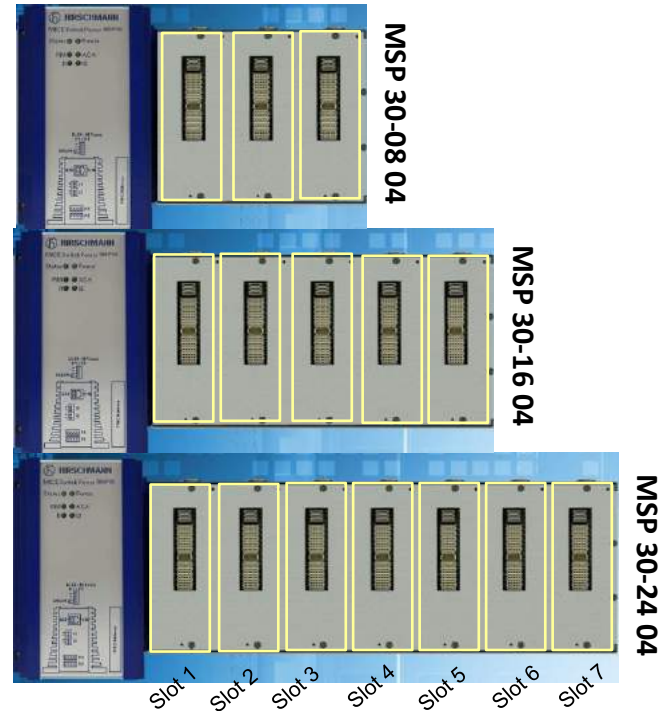
Input data	100-240V AC; 50-60Hz or 110-150V DC
Output data	48-56V DC
Current consumption	Input inrush current: 6/9A (120/230V AC)
Temp. range	-25° to +70°C

- 1 Port 1 (RJ45)
- 2 Port 2 (RJ45)
- 3 Port 3 (RJ45)
- 4 Port 4 (RJ45)
- 5 3-pin terminal block for the PoE supply voltage

MSP40 – MSP30 configuration concept



- Design variants**
- MSP30 – GE/FE
 - MSP32 – GE/FE with PoE+
 - MSP40 – Full GE
 - MSP42 – Full GE with PoE+



Slot 1 on MSP40

- MSM50 – 1GE or 2.5 GE SFP module (4 ports)
- MSM60 – 1GE or 10 GE SFP module (2 ports)

Slot 1 on MSP30

- MSM40 – 4x 10/100/1.000 Mbit/s; RJ45
4x 100/1.000 Mbit/s; SFP slots
- MSM20/22 – 10/100 Mbit/s; TP; 100 Mbit/s; fiber

Slot 2 – 7 on MSP40

- MSM40 – 4x 10/100/1.000 Mbit/s; RJ45 (T1); 100 Mbit/s; SFP slots; Combo ports (C1)
- MSM42/46 – 4x 10/100/1.000 Mbit/s; RJ45 PoE/PoE+ module
- MSM22 T5. – 4x 10/100 Mbit/s PoE/PoE+ module (M12 D-coded)
- MSM20 T5. - 4x 10/100 Mbit/s (M12 D-coded)
- MSM20... - max. 100 Mbit/s

Slot 2 – 7 on MSP30

- MSM40 – 4x 10/100/1.000 Mbit/s; RJ45 (T1); 100 Mbit/s; SFP slots; Combo ports (C1)
- MSM42/46 – 4x 10/100 Mbit/s; RJ45 PoE/PoE+ module
- MSM22 T5. – 4x 10/100 Mbit/s PoE/PoE+ module (M12 D-coded)
- MSM20 T5. - 4x 10/100 Mbit/s (M12 D-coded)
- MSM20 - max. 100 Mbit/s



Configurator

Product name/-code

MSP_ - 0 - HH E XX.X

- 1. Design
- 2. 10/100 Mbit/s Ports
- 3. 10/100/1000 Mbit/s Ports
- 4. 10/100/1000/10.000 Mbit/s Ports
- 5. Temp. range
- 6. Operating voltage
- 7. approvals
- 8. SW-Paket
- 9. customized version
- 10. SW-config.
- 11. SW-Level
- 12. SW-version

1. Design

MSP30

Fast-Ethernet
incl. 4x Gigabit uplinks *
(*only TP- and Combo ports in slot 1),
SFP slots are dualspeed. **Max. 4 GE ports**

MSP32

Fast-Ethernet
incl. 4x Gigabit uplinks
suitable for PoE or PoE+

MSP40

Full Gigabit
incl. 4x 2.5 GB uplinks

MSP42

Full Gigabit
incl. 4x 2.5 GB uplinks
Suitable for PoE or PoE+

MSP32 /42
integrates PoE/PoE+
optional for all ports
max. 120W per MSP32/42
max. 60W per module

Extra PoE+ ports with **MSM46**

5. Temperature range

- S Standard 0°C ... +60°C
- T Extended -40°C ... +70°C
- E Extended -40°C ... +70°C including Conformal Coating

6. Operating voltage

- C 18V ... 60VDC (at MSP30, MSP40)
- P 47V ... 57VDC PoE (at MSP32/42)
53V ... 57VDC PoE+ (at MSP32/42)

7. approvals & certifications

- Z9 - CE; FCC; EN61131; (EN60950)
- Y9 - ,Z9" + cUL508; (UL60950)#1
- X9 - ,Z9" + cUL508;(UL60950)#1;ISA12.12
- W9 - ,Z9" + ATEX Zone2
- WY - ,Y9" + ATEX Zone 2
- V9 - ,Z9" + IEC61850; IEEE1613 (Substation application)
- VY - ,V9" + cUL508; (UL60950)#1 (Substation application)
- VU - ,V9" + cUL508; (UL60950)# +GL; (ABS; BV; DNS; LR)#1 (Substation & Navy appl.
- VT - ,V9" + cUL508; (UL60950)#1 + EN50121 (Substation & Rail application)
- T9 - ,Z9" + EN50121 (Rail application)
- TY - ,T9" + cUL508; (UL60950)#1 (Rail application)
- U9 - ,Z9" + GL; (ABS; BV; DNS; LR)#1 (Navy application)
- UY - ,U9" + cUL508; (UL60950)#1 (Navy application)
- UW - ,U9" + cUL508; (UL60950)#1 + ATEX Zone 2 (Navy application)
- UX - ,U9" + cUL508; (UL60950)#1 + ISA12.12 (Navy application)

2. numbers ports FastEthernet 10/100 Mbit/s

08

8 ports

16

16 ports

24

24 ports

00

No excl. FE ports,
all ports Full GE (MSP4_)

3. numbers ports 10/100/1000 Mbit/s

04

4 Ports

12

12 Ports

20

20 Ports

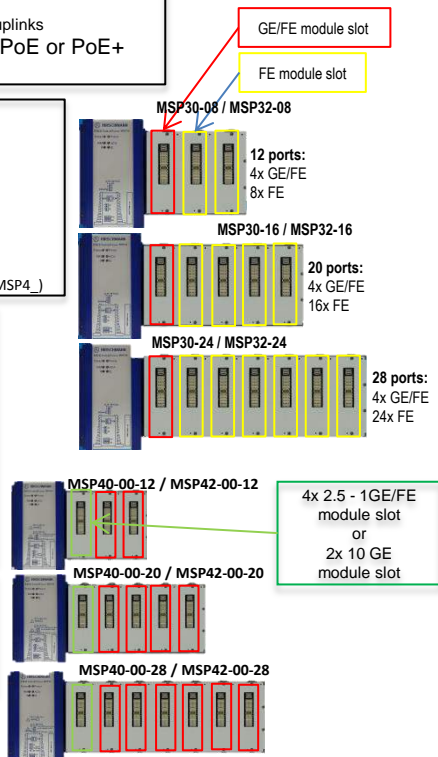
28

28 Ports

4. numbers ports 10/100/1000/10.000 Mbit/s

0

0 Ports



8. SW - packets

- 99 - reserved (L2 A)
- UR - Unicast-Routing (L3 A)
- MR - Multicast-Routing (incl. UR) (L3 A)

9. customized version

- HH - Hirschmann Standard
- HX - Hirschmann Extreme

10. SW configuration

- E - Hirschmann Standard Configuration

11. SW level

- 2A - HiOS Layer 2 Advanced
- 3A - HiOS Layer 3 Advanced

12. SW version

- xx.x - actual software-version

MSP-FAMILY MICE Switch Media Moduls MSM

Productname/-code

MSM									HH	9	E	xx.x
1. Product	2. Data rate	3. HW Type	4. Port 1	5. Port 2	6. Port 3	7. Port 4	8. Temperature range	9. approvals	10. Customized version	11. HW configuration	12. SW-config.	13. SW-release

1. Product	MSM	MICE media modul																								
2. Data rate	<table border="1"> <tr><td>2</td><td>- 10/100 Mbit/s ports</td></tr> <tr><td>4</td><td>- 10/100/1.000 Mbit/s ports</td></tr> <tr><td>5</td><td>- 1.000/2.500 Mbit/s ports (only for MSP40/42)</td></tr> <tr><td>6</td><td>- 1.000/ 10.000 Mbit/s ports (MSM60 Q6Q6 9999 only for MSP40/42)</td></tr> </table>	2	- 10/100 Mbit/s ports	4	- 10/100/1.000 Mbit/s ports	5	- 1.000/2.500 Mbit/s ports (only for MSP40/42)	6	- 1.000/ 10.000 Mbit/s ports (MSM60 Q6Q6 9999 only for MSP40/42)																	
2	- 10/100 Mbit/s ports																									
4	- 10/100/1.000 Mbit/s ports																									
5	- 1.000/2.500 Mbit/s ports (only for MSP40/42)																									
6	- 1.000/ 10.000 Mbit/s ports (MSM60 Q6Q6 9999 only for MSP40/42)																									
3. HW Type	<table border="1"> <tr><td>0</td><td>Standard</td></tr> <tr><td>2</td><td>suitable for PoE or PoE+ (only in MSM42 T1T1T1T1, supported in MSP32/42)</td></tr> <tr><td>4</td><td>suitable for I/O operation (only in MSM24 IOIOIOIO)</td></tr> <tr><td>6</td><td>PoE+ capable with ext. power supply</td></tr> </table>	0	Standard	2	suitable for PoE or PoE+ (only in MSM42 T1T1T1T1, supported in MSP32/42)	4	suitable for I/O operation (only in MSM24 IOIOIOIO)	6	PoE+ capable with ext. power supply																	
0	Standard																									
2	suitable for PoE or PoE+ (only in MSM42 T1T1T1T1, supported in MSP32/42)																									
4	suitable for I/O operation (only in MSM24 IOIOIOIO)																									
6	PoE+ capable with ext. power supply																									
4. Port 1	<table border="1"> <tr><td>T1</td><td>Twisted Pair; RJ45 MSM4.....</td><td>S4</td><td>Singlemode; ST MSM20.....</td></tr> <tr><td>T5</td><td>Twisted Pair; M12 MSM2.....</td><td>L2</td><td>Long Haul; SC MSM20.....</td></tr> <tr><td>M2</td><td>Multimode; SC MSM20.....</td><td>G2</td><td>Long Haul+; SC MSM20.....</td></tr> <tr><td>M4</td><td>Multimode; ST MSM20.....</td><td>C1</td><td>Combo port; SFP/RJ45 MSM40..... Dualspeed 1GB/100MB</td></tr> <tr><td>S2</td><td>Singlemode; SC MSM20.....</td><td>IO</td><td>Digital Input/Output (only in MSM24)</td></tr> <tr><td>Q6</td><td>SFP slot 1.000/2.500 Mbit/s (only in MSM50; Dualspeed 1GB/2.5GB) (only in MSM60; 10GB)</td><td></td><td></td></tr> </table>	T1	Twisted Pair; RJ45 MSM4.....	S4	Singlemode; ST MSM20.....	T5	Twisted Pair; M12 MSM2.....	L2	Long Haul; SC MSM20.....	M2	Multimode; SC MSM20.....	G2	Long Haul+; SC MSM20.....	M4	Multimode; ST MSM20.....	C1	Combo port; SFP/RJ45 MSM40..... Dualspeed 1GB/100MB	S2	Singlemode; SC MSM20.....	IO	Digital Input/Output (only in MSM24)	Q6	SFP slot 1.000/2.500 Mbit/s (only in MSM50; Dualspeed 1GB/2.5GB) (only in MSM60; 10GB)			
T1	Twisted Pair; RJ45 MSM4.....	S4	Singlemode; ST MSM20.....																							
T5	Twisted Pair; M12 MSM2.....	L2	Long Haul; SC MSM20.....																							
M2	Multimode; SC MSM20.....	G2	Long Haul+; SC MSM20.....																							
M4	Multimode; ST MSM20.....	C1	Combo port; SFP/RJ45 MSM40..... Dualspeed 1GB/100MB																							
S2	Singlemode; SC MSM20.....	IO	Digital Input/Output (only in MSM24)																							
Q6	SFP slot 1.000/2.500 Mbit/s (only in MSM50; Dualspeed 1GB/2.5GB) (only in MSM60; 10GB)																									
5. Port 2	See port type 1. Uplink																									
6. Port 3	See port type 1. Uplink																									
7. Port 4	See port type 1. Uplink																									



8. Temperature range	<table border="1"> <tr><td>S</td><td>Standard</td><td>0°C ... +60°C</td></tr> <tr><td>T</td><td>Extended</td><td>-40°C ... +70°C</td></tr> <tr><td>E</td><td>Extended</td><td>-40°C ... +70°C including Corformal Coating</td></tr> </table>	S	Standard	0°C ... +60°C	T	Extended	-40°C ... +70°C	E	Extended	-40°C ... +70°C including Corformal Coating
S	Standard	0°C ... +60°C								
T	Extended	-40°C ... +70°C								
E	Extended	-40°C ... +70°C including Corformal Coating								

9. approvals & certifications	<p>Z9 – CE; FCC; EN61131; (EN60950) Y9 – ,Z9' + cUL508; (UL60950)#1 X9 – ,Z9' + cUL508; (UL60950)#1;ISA12.12 W9 – ,Z9' + ATEX Zone2 WY – ,Y9' + ATEX Zone2 V9 – ,Z9' + IEC61850; IEEE1613 (Substation application) VY – ,V9' + cUL508; (UL60950)#1 (Substation application) VU – ,V9' + cUL508; (UL60950)# +GL; (ABS; BV; DNS; LR)#1 (Substation & Navy appl.) VT – ,V9' + cUL508; (UL60950)#1 + EN50121 (Substation & Rail application) T9 – ,Z9' + EN50121 (Rail application) TY – ,T9' + cUL508; (UL60950)#1 (Rail application) U9 – ,Z9' + GL; (ABS; BV; DNS; LR)#1 (Navy application) UY – ,U9' + cUL508; (UL60950)#1 (Navy application) UW – ,U9' +cUL508; (UL60950)#1 + ATEX Zone 2 (Navy application) UX – ,U9' + cUL508; (UL60950)#1 + ISA12.12 (Navy application)</p>
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10. customized version	HH	- Hirschmann Standard
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11. HW configuration	9	- no FPGA
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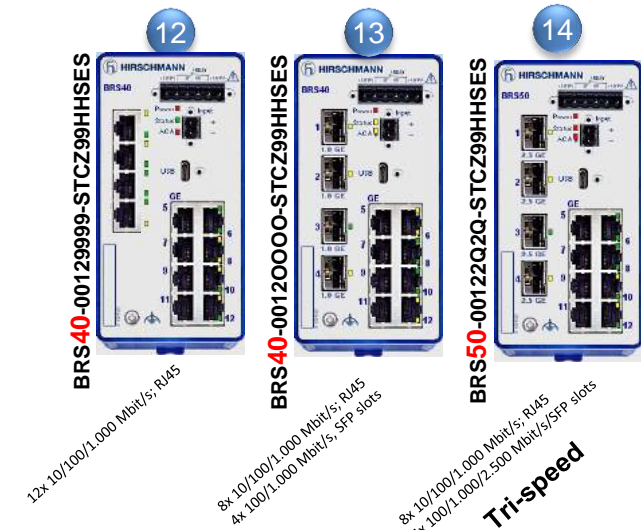
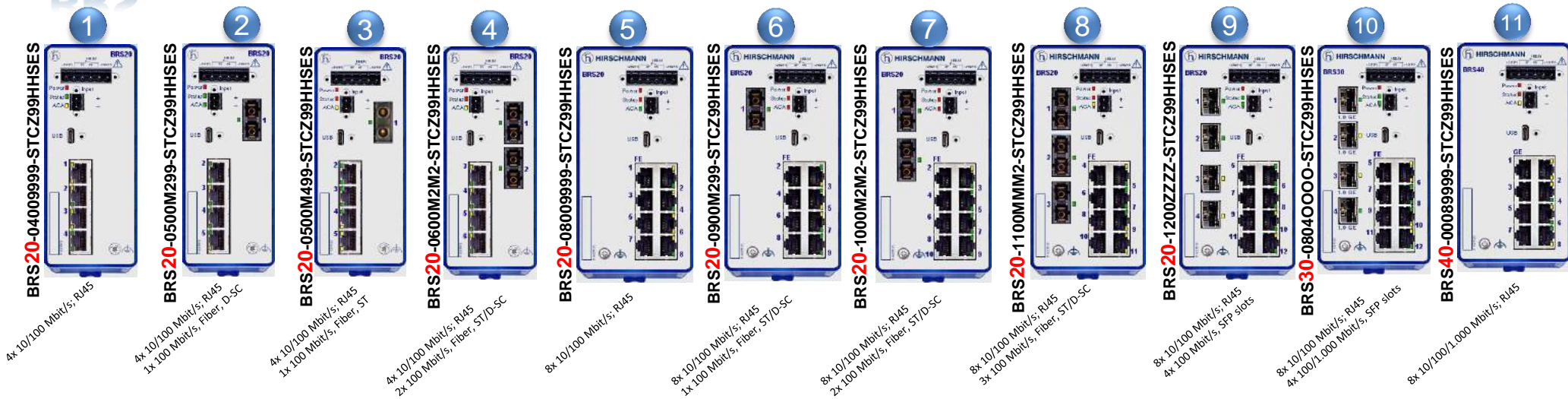
12. SW configuration	E	- Hirschmann; Standard Configuration
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13. SW version	xx.x	- actual software-version
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max. 62 W	<p>MSM42-T1T1T1T1</p>	PoE supply voltage via MSP	<p>MSM46-T1T1T1T1</p>	ext. terminal block for PoE supply voltage
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BRS Bobcat-Railswitch



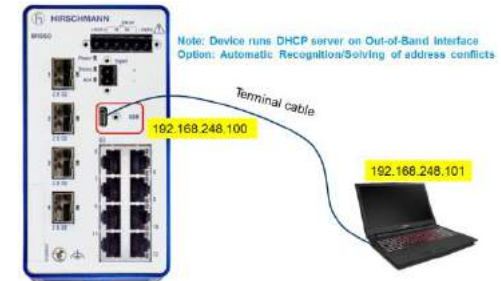
Product Code	Order number	Speaking name
BRS20-04009999-STCY99HHSESXX.X.XX	942-170-001	BRS20-4TX
BRS20-04009999-TTCY99HHSESXX.X.XX	942-170-011	BRS20-4TX-EEC
BRS20-0600M2M2-STCY99HHSESXX.X.XX	942-170-003	BRS20-4TX/2FX
BRS20-0600M2M2-TTCY99HHSESXX.X.XX	942-170-013	BRS20-4TX/2FX-EEC
BRS20-0600S2S2-STCY99HHSESXX.X.XX	942-170-005	BRS20-4TX/2FX-SM
BRS20-0600S2S2-TTCY99HHSESXX.X.XX	942-170-015	BRS20-4TX/2FX-SM-EEC
BRS20-08009999-STCY99HHSESXX.X.XX	942-170-002	BRS20-8TX
BRS20-08009999-TTCY99HHSESXX.X.XX	942-170-012	BRS20-8TX-EEC
BRS20-1000M2M2-STCY99HHSESXX.X.XX	942-170-004	BRS20-8TX/2FX
BRS20-1000M2M2-TTCY99HHSESXX.X.XX	942-170-014	BRS20-8TX/2FX-EEC
BRS20-1000S2S2-STCY99HHSESXX.X.XX	942-170-006	BRS20-8TX/2FX-SM
BRS20-1000S2S2-TTCY99HHSESXX.X.XX	942-170-016	BRS20-8TX/2FX-SM-EEC
BRS30-08040000-STCY99HHSESXX.X.XX	942-170-007	BRS30-8TX/4SFP
BRS30-08040000-TTCY99HHSESXX.X.XX	942-170-017	BRS30-8TX/4SFP-EEC
BRS40-00089999-STCY99HHSESXX.X.XX	942-170-008	BRS40-8TX
BRS40-00089999-TTCY99HHSESXX.X.XX	942-170-018	BRS40-8TX-EEC
BRS40-00120000-STCY99HHSESXX.X.XX	942-170-009	BRS40-8TX/4SFP
BRS40-00120000-TTCY99HHSESXX.X.XX	942-170-019	BRS40-8TX/4SFP-EEC
BRS50-00122Q2Q-STCY99HHSESXX.X.XX	942-170-010	BRS50-8TX/4SFP
BRS50-00122Q2Q-TTCY99HHSESXX.X.XX	942-170-020	BRS50-8TX/4SFP-EEC

Bobcat PoE variants

- BRS22/32/42/52

PoE/PoE+ support
48V; 240W; 8 ports
24V; 90W; 8 ports

Variants support up to 240 Watts @48VDC across up to 8 ports without load sharing, with each port able to provide the maximum per-port output power of 30 Watts simultaneously.



BRS												9	HH	S	E		xx.x
1. Product	2. Data rate	3. HW type	4. FE ports	5. GE ports	6. 1st uplink group	7. 2nd uplink group	8. Temp. range	9. Voltage range	10. Housing	11. Approvals Decl. A	12. Approvals Decl. B	13. SW	14.	15. Tech	16.	17. SW	16.SW Vers

1. Product	BRS	Bobcat Rail Switch
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2. Data rate	2	10/100 Mbit/s ports	4	10/100/1.000 Mbit/s ports
	3	10/100/2x 1.000 Mbit/s ports	5	10/100/1.000/2.500 Mbit/s ports Tri-speed

3. HW type	0 - Standard	2 - PoE
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4. Numbers of FE ports	00	0x 10/100 Mbit/s	09	9x 10/100 Mbit/s
	04	4x 10/100 Mbit/s	10	10x 10/100 Mbit/s
	05	5x 10/100 Mbit/s	11	11x 10/100 Mbit/s
	06	6x 10/100 Mbit/s	12	12x 10/100 Mbit/s
	08	8x 10/100 Mbit/s		

5. Numbers of GE ports	00	0x 100/1.000 Mbit/s	08	8x 100/1.000 Mbit/s
	04	4x 100/1.000 Mbit/s	12	12x 100/1.000 Mbit/s or 8x 100/1.000 Mbit/s + 4x 1G/2.5G depending on 2./3. - Tri-Speed

6. First uplink group	M2	1x MM /SC	VV	2x SM /SC
	M4	1x MM /ST	UU	2x SM /ST
	S2	1x SM /SC	EE	2x SM+ /SC
	S4	1x SM /ST	LL	2x SM-LH /SC
	E2	1x SM+ /SC	GG	2x SM-LH+ /SC
	L2	1x SM-LH /SC	ZZ	1x SM-LH+ /SC
	G2	1x SM-LH+ /SC	00	2x SFP slot; dual speed- FE/GE
	Z6	1x SFP slot	2Q	2x SFP slot; 1G/2.5G
	MM	2x MM /SC	99	Not configurable
	NN	2x MM /ST		

6. Second uplink group	M2	1x MM /SC	G2	1x LH+ /SC
	M4	1x MM /ST	Z6	1x SFP slot
	S2	1x SM /SC	ZZ	2x SFP slot
	S4	1x SM /ST	00	2x SFP slot; dual speed – FE/GE
	E2	1x SM+ /SC	2Q	2x SFP slot; 1G/2.5G
	L2	1x LH /SC	99	Not configurable

8. Temp. range	S	Standard 0°C ... +60°C	T	Extended -40°C ... +70°C
	C	Standard C 0°C ... +60°C incl. Conformal Coating	E	Extended -40°C ... +70°C incl. Conformal Coating

9. Voltage range	T	2x 9,6 – 32 VDC	U	2x 18 – 30 VDC
	F	2x 18 – 60 VDC /18-30 VAC	P	2x 48 VDC (PoE) / 54 VDC (PoE+)

10. Housing	C	C - IP20 Plastic	E	E - IP40 Metall
	D	D - IP30 Metall		

11. Approvals Declarations Part A	Z	Z – CE; FCC; EN61131; EN62368-1
	Y	Y – „Z“ + cUL61010 - UL
	X	X – „Z“ + cUL61010 + ISA12.12.01 – UL + hazardous location US
	V	V – „Z“ + IEC61850; IEEE1613 - Substation
	U	U – „Z“ + DNVGL - Navy
	T	T – „Z“ + EN50121; NEMA TS2 - Rail

12. Approvals Declarations Part B	Y	Y – cUL61010 - UL
	X	X – cUL61010 + ISA12.12.01 – UL + hazardous location US
	V	V - IEC61850; IEEE1613 - Substation
	U	U - DNVGL - Navy
	T	T – EN50121; NEMA TS2 - Rail
	9	9 – no additional approval

13. SW package	9	reserved
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14. Customization	HH	Hirschmann Standard
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15. Technologie	S	- Standard
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16. SW Configuration	E	- Empty
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17. SW Level	2S	HiOS Layer 2 Standard
	2A	HiOS Layer 2 Advanced

18. SW version	XX.X	Latest software version
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RSP VARIANTS OVERVIEW

RSP ---- RSPE

- all-round carefree package for the highest level of security
- Option for "Oms" recovery (PRP, HSR)
- Option Fast MRP
- Prepared for add-on software packages (L3, NAT,...) in future
- Precise time stamping based on IEEE1588v2
- **RSP: 3x GE ports, plus 8 FE ports**
- **RSPE: Modular, up to 4x GE and 24x FE**



RSP3X 08 03 306 TT
3 SFP (GE/FE)
8x FE ports, RJ45



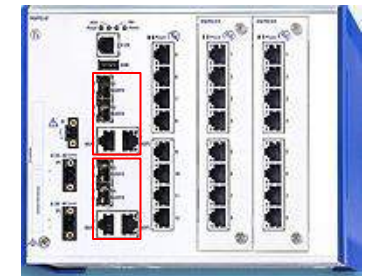
RSP3X 08 03 306 ZT
3 SFP (GE/FE)
4x FE ports, RJ45
4x FE SFP-slots



RSP2X 11 00 326 TT
3 SFP (FE)
8x FE ports, RJ45



RSP2X 11 00 326 TT
3 SFP (FE)
4x FE ports, RJ45
4x FE SFP-slots



RSP3X 24 04 407 T99
4 Combo ports (GE/FE)
8x FE ports, RJ45
-- Extension with media modules

RSPS „Smart“		RSPL „Lite“	RSP		RSPE		Based on HiOS Layer 2 Standard Release 2.0
20	25		20/30 25/35	30/32	35/37		
							Plug & Work
			✓	✓	✓	✓	DHCP : Server per port
			✓	✓	✓	✓	DHCP server: Pools per VLAN
			✓	✓	✓	✓	Multiple stored firmware versions
			✓	✓	✓	✓	DHCP relay agent, option 82
		✓	✓	✓	✓	✓	Security
			✓	✓	✓	✓	IEEE 802.1x
		✓	✓	✓	✓	✓	Integrated Authentication Server (IAS)
		✓	✓	✓	✓	✓	Redundancy
			✓	✓	✓	✓	MRP
✓	✓	✓	✓	✓	✓	✓	Fast MRP
	✓		✓	✓	✓	✓	PRP
	✓		✓	✓	✓	✓	HSR
	✓		✓	✓	✓	✓	DLR
	✓		✓	✓	✓	✓	Time synchronization
	✓		✓	✓	✓	✓	PTPv2 TC two-step
	✓		✓	✓	✓	✓	PTPv2 BC

RSPS the Smart type

- Reduced security features set but still on a high level
 - Option for "Oms" recovery (PRP, HSR) and Fast MRP
 - Precise time stamping based on IEEE1588v2
- FE type, 6 ports, 3 different port versions:
- 6x 10/100 TX,
 - 2x 10/100 TX / 4x FE-SFP
 - 4x 10/100 TX / 2x FE-SFP
- Applications which require an uninterrupted redundancy technology (smart Red.-Box) and/or precise time stamping PTP IEEE1588v2



RSPS2X 06 00 226 YT
4x FE SFP-slots
2x FE TP, RJ45



RSPS2X 06 00 226 TT
2x FE SFP-slots
4x FE TP, RJ45



RSPS2X 06 00 2T1 TT
6x FE TP, RJ45



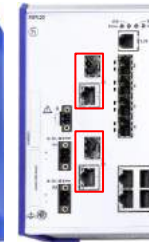
RSPL20 08 00 226 TT
2x FE SFP-slots
6x FE TP, RJ45



RSPL20 08 00 226 YT
4x FE SFP-slots
4x FE TP, RJ45



RSPL30 08 02 207 YT
2x Combo ports (GE/FE)
2x FE SFP-slots
6x FE TP, RJ45

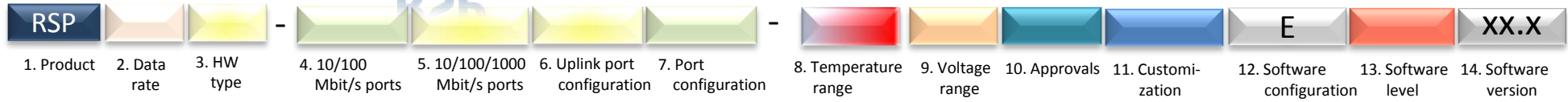


RSPL30 08 02 207 ZT
2x Combo ports (GE/FE)
4x FE SFP-slots
4x FE TP, RJ45

RSPL Lite version of RSP

- all-round carefree package for the highest level of security (similar to RSP)
 - 2x GE Combo ports (option), plus 8 FE ports
 - FE port options: 2x SFP / 6x TX, 4x SFP / 4x TX
- No add-on software packages and IEEE1588 support
- No PRP and HSR
- Applications which require a comprehensive feature range including e.g. diagnostic and a high level of security, but no uninterrupted redundancy and PTP IEEE1588 support.

RSP Rail Switch Power



1. Product	RSP	Rail Switch Power
2. Data rate	2	10/100 Mbit/s ports
	3	10/100/1000 Mbit/s ports
3. HW type	0	Standard
	5	Enhanced Redundancy (PRP, HSR, Fast MRP)
4. 10/100 Mbit/s ports	08	8x 10/100 Mbit/s
	11	11x 10/100 Mbit/s
5. 10/100/1000 Mbit/s ports	00	none
	03	3x 10/100/1000 Mbit/s
6. Uplink port config	3Z6	3x SFP slot (100Mbit/s)
	306	3x SFP slot (100/1000 Mbit/s)
7. Port configuration	TT	All Twisted Pair /RJ45
	ZT	4x SFP slot (100 Mbit/s) 4x Twisted Pair/RJ45 (100Mbit/s)

8. Temp. range	S	Standard 0°C ... +60°C	E	Extended -40°C...+70°C including Conformal Coating
	T	Extended -40°C ... +70°C		

9. Operating voltage	CC	2x 24 – 48 VDC (18-60 VDC)
	K9	1x 60-250 VDC (48-320 VDC)
	KK	or 1x 110 – 230 VAC (88-265 VAC)
	TT	2x 60-250 VDC (48-320 VDC) or 2x 110-230 VAC (88-265 VAC)
		2x 12 – 24 VDC

10. Approvals & certifications	Z9 - CE, FCC, EN61131
	Y9 - Z9 + cUL508 (UL)
	Y9 - Z9 + IEC 61850; IEEE1613 (Substation)
	YY - Z9 + IEC 61850; IEEE1613 + cUL508 (Substation, UL)
	T9 - Z9 + EN50121-4 (Train)
	TY - Z9 + EN50121-4 + cUL508 (Train, UL)
	U9 - Z9 + GL (ship)
	UX - Z9 + GL, cUL508, ISA12.12 (ship, UL, US Haz. Loc)
	UY - Z9 + GL, cUL508 (ship, UL)
	WA - Z9 + ATEX, IECEX (EU/Int. Haz.Loc)
	WB - Z9 + ATEX, IECEX, GL (EU/US/Int. Haz.Loc, Ship)
	WC - Z9 + ATEX, IECEX, ISA12.12 (EU/US/Int. Haz.Loc, UL)
	WD - Z9 + ATEX, IECEX, ISA12.12, GL (EU/US/Int. Haz.loc,UL, Ship)
	X9 - Z9 + cUL508, ISA12.12 (UL, US Haz.Loc)

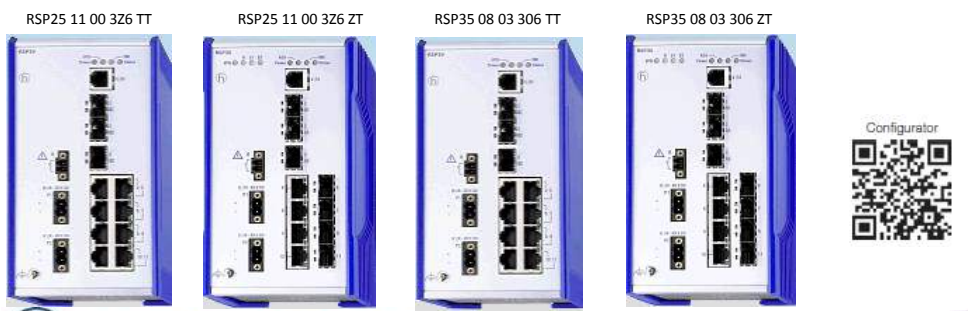
11. Customization	HD	- DLR	RSP25/35	RSP20/30	HS	- Standard (MRP/RSTP)
	HM	- Fast MRP				
	HP	- PRP				
	HH	- HSR				
	HN	- 1:1 NAT				

100 Mbit/s

12. SW configuration	E	- Enhanced encryption (<56 Bit, up to 256 Bit DES) Management access	I	- Ethernet/IP
	B	- Diagnostic User (BDEW)	D	- DLR (pre-configured)
	P	- Profinet		

13. SW level	2S	- HiOS Layer 2 Standard
	2A	- HiOS Layer 2 Advanced
	3S	- HiOS Layer 3 Standard

14. SW version	XX.X	XX.X - Latest software version
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The core of your order:

RSPE	3	-	24	04	407	T99	-			99	HH	E		XX.X		
1. Product	2. Data rate	3. HW type	4. 10/100 Mbit/s ports	5. 10/100/1000 Mbit/s ports	6. Uplink port configuration	7. Port configuration		8. Temp. range	9. Volt.range	10. Approvals	11. SW pack	12. Custom	13. HW Conf	14.	15.	16.SW Vers

1. Product	RSPE	Rail Switch Power Enhanced
2. Data rate	3	10/100/1000 Mbit/s ports
3. HW type	0	- Standard
	2	- Standard with PoE
	5	- Enhanced Redundancy (PRP, HSR, Fast MRP)
	7	- Enhanced Redundancy with PoE
4. 10/100 Mbit/s ports	24	24x 10/100 Mbit/s
5. 10/100/1000 Mbit/s ports	04	4x 10/100/1000 Mbit/s (no PoE option)
6. Uplink port config	407	4x Combo ports (10/100/1000 Mbit/s) (no PoE option)
7. Port configuration	T99	8x Twisted Pair /RJ45 (in type RSPE32/37: max. 62 W)
8. Temperature range	S	Standard 0°C ... +60°C
	T	Extended -40°C ... +70°C
	E	Extended -40°C... +70°C including Conformal Coating

9. Voltage range	CC	2x 24 – 48 VDC (18-60 VDC)
	K9	1x 60 – 250 VDC (48- 320 VDC) or 1x 110 -230 VAC (88-265 VAC)
	KK	2x 48- 320 VDC or 2x 88-265 VAC
	PP	2x 47 – 57 VDC (PoE); 53 – 57 VDC (PoE+); RSPE 32/37

10. Approvals	Z9 - CE, FCC, EN61131 - (Basic) W9 - Z9 + ATEX Zone2 - (EU-haz.loc.) WA - Z9 + ATEX, IECEx - (EU/int. haz.loc.) WB - Z9 + ATEX, IECEx, GL - (EU/int. haz.loc., Ship) WC - Z9 + ATEX, IECEx, UL61010, ISA12.12 - (EU/US/int. haz.loc., UL Safety) WD - Z9 + ATEX, IECEx, UL61010, ISA12.12, GL - (EU/US/int. haz.loc., UL Safety, Ship) UW - Z9 + ATEX, UL61010, GL - (EU-haz.loc., UL Safety, Ship) WX - Z9 + ATEX, UL61010, ISA12.12 - (EU/US haz.loc.) WU - Z9 + ATEX, UL61010, ISA12.12, GL - (EU/US-haz.loc., UL Safety, Ship) T9 - Z9 + EN50121 - (Train) U9 - Z9 + GL - (Ship) VP - Z9 + IEC 61850, IEEE1613, UL61010 - (Substation, UL Safety) V9 - Z9 + IEC 61850, IEEE1613 - (Substation) P9 - Z9 + UL61010 - (UL Safety) UX - Z9 + UL61010, ISA12.12, GL - (UL Safety, US-haz.loc., Ship) TY - Z9 + UL61010, EN50121 - (UL Safety, Train) UY - Z9 + UL61010, GL - (UL Safety, Ship) UT - Z9 + UL61010-1/-2-201, GL, EN50121-4, NEMA TS2 - (UL Safety, Ship, Train) VT - Z9 + UL61010-1/-2-201, IEC61850, IEEE1613, EN50121-4, NEMA TS2 - (UL Safety, Substation, Transportation) VU - Z9 + IEC 61850, IEEE1613, UL61010, GL - (Substation, UL Safety, Ship)
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11. SW package	99	reserved
	NA	1:1 NAT 100 Mbit/s

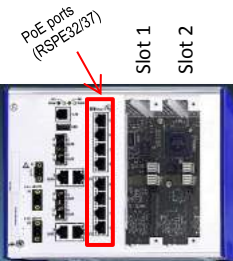
12. Customization	HH	Hirschmann Standard
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13. HW Configuration	D	- DLR	RSPE35/37	RSPE30 S - Standard (MSP/RSTP)
	M	- Fast MRP		
	P	- PRP		
	H	- HSR		
	R	- TSN		

14. SW Configuration	E	Entry (without configuration)
	B	Diagnostic User (BDEW)
	P	Profinet
	I	Ethernet/IP
	D	DLR (preconfigured)

15. SW Level	2S	HiOS Layer 2 Standard
	2A	HiOS Layer 2 Advanced
	3S	HiOS Layer 3 Standard

16. SW version	XX.X	Latest software version
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Not used slots:
Accessoire –
RSPM-cover
942 131-001

Slot 1: for all media module RSPM
All media modules are pluggable
except RSPM20-4Z64Z6... (8 FO ports)
Slot 2: all media modules are pluggable

PoE--- **RSPE32/RSPE37** max. 124 Watt
RSPM22 max. 62 Watt

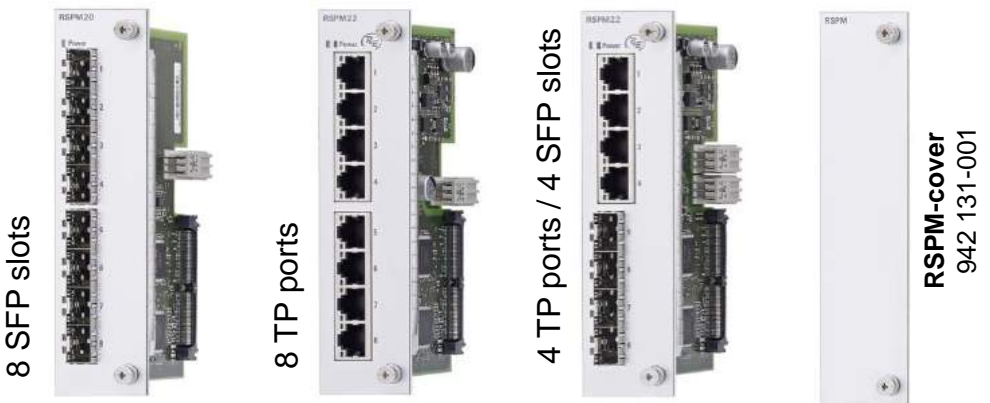
RSPM Rail Switch Power

The core of your order:

RSPM	2	0	-	4Z6	4T1	S	HH	S	9	99.9
1. Product	2. Data rate	3. HW type	4. Port 1	5. Port 2	6. Temperature range	7. Approvals	8. Custom	9. HW Conf	10. SW Config	16. SW Vers

1. Product	RSPM	RSPE Module
2. Data rate	2	10/100 Mbit/s ports
3. HW type	0 2	Standard Standard with PoE
4. Port Configuration Part 1	4Z6 4T1	4Z6 – 4x SFP slots (100 Mbit/s) 4T1 – 4x TP-RJ45 (10/100 Mbit/s)
5. Port Configuration Part 2	4Z6 4T1	4Z6 – 4x SFP slots (100 Mbit/s) 4T1 – 4x TP-RJ45 (10/100 Mbit/s)
6. Temperature range	S T E	Standard 0°C ... +60°C Extended -40°C ... +70°C Extended -40°C ... +70°C including Conformal Coating
7. Approvals	Z9 - CE, FCC, EN61131 - (Basic) W9 - Z9 + ATEX Zone2 - (EU-haz.loc.) WA - Z9 + ATEX, IECEx - (EU/Int. haz.loc.) WB - Z9 + ATEX, IECEx, GL - (EU/Int. haz.loc., Ship) WC - Z9 + ATEX, IECEx, UL61010, ISA12.12 - (EU/US/Int. haz.loc., UL Safety) WD - Z9 + ATEX, IECEx, UL61010, ISA12.12, GL - (EU/US/Int. haz.loc., UL Safety, Ship) UW - Z9 + ATEX, UL61010, GL - (EU-haz.loc., UL Safety, Ship) WX - Z9 + ATEX, UL61010, ISA12.12 - (EU/US haz.loc.) WU - Z9 + ATEX, UL61010, ISA12.12, GL - (EU/US-haz.loc., UL Safety, Ship) T9 - Z9 + EN50121 - (Train) U9 - Z9 + GL - (Ship) VP - Z9 + IEC 61850, IECEx, UL61010 - (Substation, UL Safety) V9 - Z9 + IEC 61850, IECEx, UL61010 - (Substation) P9 - Z9 + UL61010 - (UL Safety) UX - Z9 + UL61010, ISA12.12, GL - (UL Safety, US-haz.loc., Ship) TY - Z9 + UL61010, EN50121 - (UL Safety, Train) UY - Z9 + UL61010, GL - (UL Safety, Ship) UT - Z9 + UL61010-1/2-201, GL, EN50121-4, NEMA TS2 - (UL Safety, Ship, Train) VT - Z9 + UL61010-1/2-201, IEC61850, IECEx, EN50121-4, NEMA TS2 - (UL Safety, Substation, Transportation) VU - Z9 + IEC 61850, IECEx, UL61010, GL - (Substation, UL Safety, Ship)	

8. Customization	HH	Hirschmann Standard
9. HW Configuration	S	Standard (no FPGA)
10. SW Configuration	9	without software configuration
11. SW version	99.9	no software

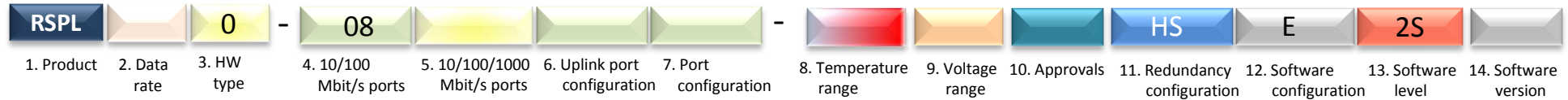


Note: For purposes of heat dissipation, if using an 8x SFP module, the max. number of SFPs in the other module cannot exceed 4, for a total of 12. Does not include chassis GE combo ports.



RSPL Rail Switch Power - Lite

The core of your order:



1. Product	RSPL	Rail Switch Power - Lite
2. Data rate	2	10/100 Mbit/s ports
	3	10/100/1000 Mbit/s ports
3. HW type	0	Standard
4. 10/100 Mbit/s ports	08	8x 10/100 Mbit/s
5. 10/100/1000 Mbit/s ports	00	none
	02	2x GE combo ports
6. Uplink port config	2Z6	2x SFP slot (100Mbit/s)
	207	2x GE combo ports
7. Port configuration	TT	- All Twisted Pair /RJ45
	YT	-2x SFP slot (100 Mbit/s) 6x Twisted Pair/RJ45 (100 Mbit/s)
	ZT	- 4x SFP slot (100 Mbit/s) 4x Twisted Pair/RJ45 (100Mbit/s)

8. Temperature range	S	Standard 0°C ... +60°C
	T	Extended -40°C ... +70°C
	E	Extended -40°C... +70°C including Corformal Coating
9. Voltage range	CC	- 2x 24 - 48 VDC (18 – 60 VDC)
	M9	- 1x 110 – 250 VDC (88V -320 VDC) & 110 - 230 VAC (88-265 VAC)
	TT	- 2x 12 -24 VDC
10. Approvals	Z9	CE, FCC, EN61131
	V9	„Z9“ + IEC 61850, IEEE1613
	Y9	„Z9“ + cUL508
	VY	„V9“ + cUL508
	VT	„V9“ + cUL508; EN50121
	T9	„Z9“ + EN50121, NEMA TS2S2
TY	„T9“ + cUL508	
11. Redundancy configuration	HS	Standard
12. SW configuration	E	Hirschmann Standard
13. SW level	2S	HiOS Layer 2 Standard
14. SW version	xx.x	Latest software version



RSPS Rail Switch Power - Smart

The core of your order:

RSPS	2	06	00							E	2S	
1. Product	3. HW type	4. 10/100 Mbit/s ports	5. 10/100/1000 Mbit/s ports	6. Uplink port configuration	7. Port configuration	8. Temperature range	9. Voltage range	10. Approvals	11. Redundancy configuration	12. Software configuration	13. Software level	14. Software version

1. Product	RSPS	Rail Switch Power - Smart
2. Data rate	2	10/100 Mbit/s ports
3. HW type	0 5	Standard Enhanced redundancy PRP Fast MRP, HSR
4. 10/100 Mbit/s ports	06	6x 10/100 Mbit/s
5. 10/100/1000 Mbit/s ports	00	none
6. Uplink port config	2T1 2Z6	2x 10/100Mbit/s 2x SFP slots (100 Mbit/s)
7. Port configuration	TT YT	All Twisted Pair /RJ45 2x SFP slot (100 Mbit/s); 4x Twisted Pair/RJ45 (100 Mbit/s)

8. Temperature range	S T E	Standard 0°C ... +60°C Extended -40°C ... +70°C Extended -40°C ... +70°C including Corformal Coating
9. Voltage range	CC K9 M9	2x 24 – 48 V DC (18 – 60 V DC) 1x 60 – 250 V DC or 1x 110 – 230 V AC (88 -265 V AC) 1x 110 – 250 V DC (88V -320 V DC) & 110 - 230 V AC (88-265 V AC)
10. Approvals	Z9 V9 Y9 VY	CE, FCC, EN61131 „Z9“ + IEC 61850, IEEE1613 „Z9“ + cUL508 „V9“ + cUL508
	VT T9 TY	„V9“ + EN50121 „Z9“ + EN50121 „Z9“ + EN50121, cUL508
11. Redundancy configuration	RSPS25 HD HM HP HH	- DLR - Fast MRP - PRP - HSR
	RSPS20 HS	- Standard
12. SW configuration	E	Hirschmann Standard
13. SW level	2S	HiOS Layer 2 Standard
14. SW version	XX.X	Latest software version



The core of your order:

RED25	04	00		TT					E	2S	
1. Product	2. FE ports	3. 10/100/1000 Mbit/s ports	4. Uplink port configuration	5. Port configuration	6. Temperature range	7. Voltage range	8. Approvals	9. Redundancy configuration	10. Software configuration	11. Software level	12. Software version

1. Product	RED25	Redundancy Switch
2. 10/100 Mbit/s ports	04	4x 10/100 Mbit/s
3. 10/100/1000 Mbit/s ports	00	none
4. Uplink port config	2T1 2Z6	2x 10/100Mbit/s, RJ45 2x SFP slots (100 Mbit/s)
5. Port config	TT	2x 10/100Mbit/s, RJ45

6. Temperature range	S	Standard 0°C ... +60°C
	T	Extended -40°C ... +70°C
	E	Extended -40°C ... +70°C including Conformal Coating
7. Voltage range	DD	2x 24 – 48 V DC (16,8 – 60 V DC)
8. Approvals	Z9	CE, FCC, EN61131
	Y9	„Z9“ + UL61010-1/-2-210
9. Redundancy configuration	HD	DLR
	HH	HSR
	HM	Fast MRP
	HP	PRP
10. SW configuration	E	Hirschmann Standard
11. SW level	2S	HiOS Layer 2 Standard
12. SW version	xx.x	Latest software version



RED25 04 00 2T1 TT

RED25 04 00 2Z6 TT

DIFFERENCES GREYHOUND AND MACH1020/30

		MACH1020/30	GREYHOUND
Ports	Max. port count	28	
	GE ports	4	
	FE ports	24	
Power Supplies	HV power supply	both	
	LV power supply	both	
	Redundant power supply	both	
Mounting Options	Ports front, power supply rear	both	
	Ports rear, power supply rear	both	
	Max. port count on rear	24	28
PoE		✓	X
Temperature Range	Standard	0°C to +60°C	0°C to +60°C
	Extended	-40°C to +85°C	-40°C to +70°C
Software		Classic L2P	HiOS L2S
Dimension (WxHxD)		448 x 44 x 310 mm	448 x 44 x 315 mm
		448 x 44 x 345 mm	

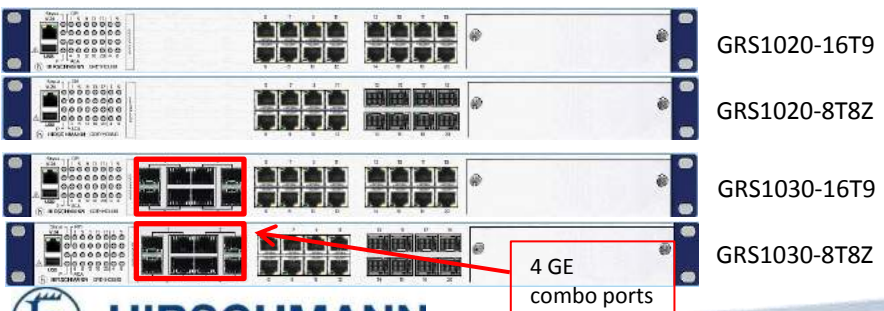
		MACH1020/30	GREYHOUND
Port Types	MTRJ MM	✓	X
	SC MM	both	
	SC SM	both	
	SC LH	✓	X
	SC LH+	✓	X
	ST MM	both	
	ST SM	both	
	ST MM FL	✓	X
	M12	✓	X
	Max fiber port support	28	20
	Design	Fanless	both
EMC interference immunity		same	
Shock and vibration		same	
Device replacement		ACA21	ACA22
Serial interface		RJ11	RJ45
Configurable		both	
Modular		X	✓

GREYHOUND FAMILY 19-inch switch --- GRS1X20/1X30

GRS	1			0						HH	S	H	2S	XX.X
1. Product	2. Series	3. Port Position	4. Data rate	5. PoE	6. fixed Ports	7. Temp. range	8. PS 1	9. PS 2	10. Approvals	11. Cust. conf.	12. HW conf.	13. SW conf.	14. SW Level	15. SW version

1. Chassis type	GRS	Greyhound Switch
2. Series	1	Greyhound Series
3. Port position	0 1	Ports front, power supply rear Ports rear, power supply rear
4. Data rate	2 3	FE Switch FE Switch with GE Uplink ports
5. PoE Support	0	no PoE support
6. Configuration of fixed ports	16T9 8T8Z	16x FE Twisted Pair ports, RJ45 8x FE Twisted Pair ports, RJ45 8x FE SFP slots
7. Temperature range	S C T E	Standard 0°C ... +60°C Standard 0°C ... +60°C including Corformal Coating Extended -40°C ... +70°C Extended -40°C ... +70°C including Corformal Coating

8. Power supply 1	C M	24 ... 48 VDC (2-pin terminal block) 110...250VDC / 110...240VAC (3-pin terminal block)
9. Power supply 2	C M 9	24 ... 48 VDC (2-pin terminal block) 110...250VDC / 110...240VAC No second power supply
10. Approvals	Z9 Y9 X9 V9 VY VU VT U9 UY UX UT T9 TY	CE, FCC, EN61131, EN60950 „Z9“ + cUL60950 „Z9“ + cUL60950, ISA 12.12 „Z9“ + IEC61850-3, IEEE1613 „V9“ + cUL60950 „V9“ + cUL60950 + GL „V9“ + cUL60950 + EN50121-4 „Z9“ + GL „U9“ + cUL60950 „U9“ + cUL60950, ISA 12.12, GL „U9“ + cUL60950, EN50121-4 „Z9“ + EN50121-4 „T9“ + cUL60950
11. Customer configuration	HH	Hirschmann - Standard
12. HW configuration	S	Standard
13. SW Configuration	H	Hirschmann
14. SW version	2S	HiOS Layer 2 Standard
15. SW Version	XX.X	Newest software



GREYHOUND FAMILY

Media Module --- GRS1X20/1X30

GRM 1. Product	2 2. Data rate	0 3. PoE	- 4. Configuration ports 1 and 3	 5. Configuration ports 5 and 7	 6. Configuration ports 2 and 4	 7. Configuration ports 6 and 8
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 8. Temp. range	 9. Approvals	HH 10. Cust. conf.	S 11. HW conf.
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1. Product	GRM	Greyhound Switch Media Module
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2. Data rate	2	10/100 Mbit/s ports
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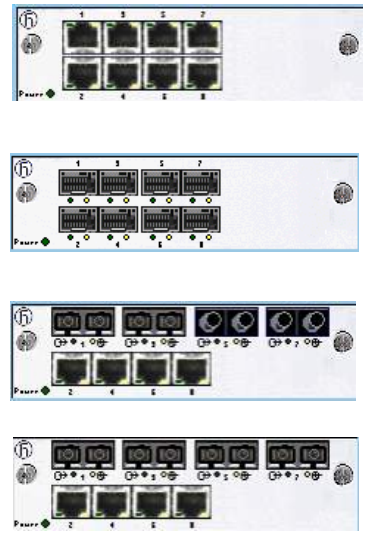
3. PoE Support	0	no PoE support
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4. Configuration of ports 1 and 3	ZZ	2x SFP slot, 100 Mbit/s
	TT	2x TP, RJ45, 100 Mbit/s
	VV	2x SM, D-SC, 100 Mbit/s
	UU	2x SM, BFOC, 100 Mbit/s
	MM	2x MM, D-SC, 100 Mbit/s
	NN	2x MM, BFOC, 100 Mbit/s

5. Configuration of ports 5 and 7	ZZ TT VV UU MM NN	* not all variations are possible to configure
--	---	--

6. Configuration of ports 2 and 4	ZZ TT VV UU MM NN	* not all variations are possible to configure
--	---	--

7. Configuration of ports 6 and 8	ZZ TT VV UU MM NN	* not all variations are possible to configure
--	---	--



8. Temperature range	S	Standard 0°C ... +60°C
	C	Standard 0°C ... +60°C including Corformal Coating
	T	Extended -40°C ... +70°C
	E	Extended -40°C ... +70°C including Corformal Coating

9. Approvals	Z9	CE, FCC, EN61131, EN60950
	Y9	„Z9“ + cUL60950
	X9	„Z9“ + cUL60950, ISA 12.12
	V9	„Z9“ + IEC61850-3, IEEE1613
	VY	„V9“ + cUL60950
	VU	„V9“ + cUL60950 + GL
	VT	„V9“ + cUL60950 + EN50121-4
	U9	„Z9“ + GL
	UY	„U9“ + cUL60950
	UX	„U9“ + cUL60950, ISA 12.12, GL
	UT	„U9“ + cUL60950, EN50121-4
T9	„Z9“ + EN50121-4	
TY	„T9“ + cUL60950	

10. Customer configuration	HH	Hirschmann - Standard
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11. HW configuration	S	Standard
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GRS1		4	2	-							HH	S	H			xx.x
1. Product	2. Port Position	3. Data rate	4. PoE	5. fixed Ports	6. Temp. range	7. PS 1	8. PS 2	9. CP PS	10. CP MM	11. Approvals	12. Cust. conf.	13. HW conf.	14. SW conf.	15. SW Level	16. SW Pack	17. SW version

1. Chassis type	GRS1	Greyhound 19" Switch
2. Port position	0	Ports front, power supply rear
	1	Ports rear, power supply rear
3. Data rate	4	FE/GE Switch
4. PoE Support	2	PoE / PoE+ support <small>Please configure PoE power supply and PoE media modules separately</small>
5. Configuration of fixed ports	AT2Z	2x 2,5 GE/2.5 or 2x 1 GE SFP slots, 10x FE/GE TX ports
	6T6Z	4x 2,5 GE or 4x 1 GE SFP slots, 2x FE/GE SFP, 6x FE/GE TX
6. Temperature range	S	Standard 0°C ... +60°C
	C	Standard 0°C ... +60°C including Corformal Coating
	T	Extended -40°C ... +70°C
	E	Extended -40°C ... +70°C including Corformal Coating
7. Power supply 1 <small>Slot for power supply</small>	L	24 ... 48 VDC or 48 ... 54 VDC (PoE/PoE+)
	H	60 ... 250 VDC and 110 ... 240VAC
8. Power supply 2 <small>Slot for power supply</small>	L	24 ... 48 VDC or 48 ... 54 VDC (PoE/PoE+)
	H	60 ... 250 VDC and 110 ... 240VAC
9. Cover Plate Power Supply Input 2	0	No cover
	1	Cover plate assembled



Attention ! Power supplies need to be configured and ordered separately.

10. Cover Plate Media Module Slot	0	No cover
	1	1x Cover plate assembled
	2	2x Cover plate assembled
11. Approvals	Z9	CE, FCC, EN61131, EN60950
	Y9	„Z9“ + cUL60950
	X9	„Z9“ + cUL60950, ISA 12.12 Class 1 Div. 2
	W9	„Z9“ + ATEX Zone 2
	V9	„Z9“ + IEC61850-3, IEEE1613
	VY	„Z9“ + cUL60950, IEC61850, IEEE1613
	U9	„Z9“ + GL
	UY	„Z9“ + cUL60950, GL
	UX	„Z9“ + cUL60950, ISA12.12 Class 1 Div.2, GL
	UW	„Z9“ + cUL60950, ATEX Zone 2, GL
	T9	„Z9“ + EN50121-4, NEMA TS2
	TY	„Z9“ + cUL60950, EN50121-4, NEMA TS2
	S9	„Z9“ + EN50121-4, EN50155, NEMA TS2
SY	„Z9“ + cUL60950, EN50121-4, EN50155, NEMA TS2	
12. Customer configuration	HH	Hirschmann - Standard
13. HW configuration	S	Standard
14. SW Configuration	E	Standard
15. SW Level	2A	HiOS Layer 2 Advanced
	3A	HiOS Layer 3 Advanced
16. SW Packages	99	No package
	UR	Unicast Routing
	MR	Unicast + Multicast Routing
17. SW Version	xx.x	Newest software

- GMM**

 1. Product
- 2**

 2. Data rate
- 0**

 3. HW Type
- 4. Configuration ports 1 and 3
- 5. Configuration ports 5 and 7
- 6. Configuration ports 2 and 4
- 7. Configuration ports 6 and 8
- 8. Temp. range
- 9. Approvals
- HH**

 10. Cust. conf.
- S**

 11. HW conf.

1. Product

GMM

Greyhound Switch Media Module

2. Data rate

2

3

4

FE Fiber ports
 FE Fiber ports + FE/GE TX ports
 FE/GE SFP slots + FE/GE TX ports

3. Hardware Type

0

2

Standard
 PoE/PoE+ support
 Please configure PoE power supply separately

4. Configuration of ports 1 and 3

TT

00

MM

NN

VV

UU

2x TP, RJ45, 10/100/1000 Mbit/s
 2x SFP slot, 100/1000 Mbit/s
 2x MM, D-SC, 100 Mbit/s
 2x MM, BFOC, 100 Mbit/s
 2x SM, D-SC, 100 Mbit/s
 2x SM, BFOC, 100 Mbit/s

5. Configuration of ports 5 and 7

TT

00

MM

NN

VV

UU

* not all variations are possible to configure

6. Configuration of ports 2 and 4

TT

00

MM

NN

VV

UU

* not all variations are possible to configure

7. Configuration of ports 6 and 8

TT

00

MM

NN

VV

UU

* not all variations are possible to configure

8. Temperature range

S

C

T

E

Standard 0°C ... +60°C
 Standard 0°C ... +60°C including Conformal Coating
 Extended -40°C ... +70°C
 Extended -40°C ... +70°C including Conformal Coating



9. Approvals

Z9

Y9

X9

W9

V9

VY

U9

UY

UX

UW

T9

TY

S9

SY

CE, FCC, EN61131, EN60950
 „Z9“ + cUL60950
 „Z9“ + cUL60950, ISA 12.12 Class 1 Div. 2
 „Z9“ + ATEX Zone 2
 „Z9“ + IEC61850-3, IEEE1613
 „Z9“ + cUL60950, IEC61850, IEEE1613
 „Z9“ + GL
 „Z9“ + cUL60950, GL
 „Z9“ + cUL60950, ISA12.12 Class 1 Div.2, GL
 „Z9“ + cUL60950, ATEX Zone 2, GL
 „Z9“ + EN50121-4, NEMA TS2
 „Z9“ + cUL60950, EN50121-4, NEMA TS2
 „Z9“ + EN50121-4, EN50155, NEMA TS2
 „Z9“ + cUL60950, EN50121-4, EN50155, NEMA TS2

10. Customer configuration

HH

Hirschmann - Standard

11. HW configuration

S

Standard

GPS

1

2

3

4

5

6

Power Supplies

1. Design

2. HW Type

3. PS

4. Temp.range

5. Approvals

6. Cust. conf.

1. Design

GPS

Greyhound Power Supply

2. HW Type

1

2

3

Standard (Switch only)
 PoE (PoE only) (later release)
 PoE and switch

3. Power Supply

C

P

K

24 ... 48 VDC
 48 VDC (PoE) and 54 VDC (PoE+)
 60 ... 250 VDC and 110 ... 240 VAC

4. Temp.-range

See above

5. Approvals

See above

6. Customization

HH

Standard

PoE-power supply supports 185W;
 No load sharing;
 max. PoE support: **185W**
 per modul are **124W** supported.
 Fixed ports don't support PoE

GREYHOUND FAMILY 19-inch switch --- GRS1042/1142

Main Differences MACH1040/1042/1140/1142 and GREYHOUND 1042/1142

		MACH1x4y	GREYHOUND1x42
Ports	Max. port count	16	28
	GE ports	16	28
	FE ports	16	28
Power Supplies	HV power supply	both	
	LV power supply	both	
	Redundant power supply	both	
	field exchangeable	X	✓
Mounting Options	Ports front, power supply rear	both	
	Ports rear, power supply rear	both	
Power over Ethernet	PoE / PoE+	✓/X	✓/✓
	Port count	4	16
	PoE power	Up to 60W	Up to 185W
Temperature Range	Standard	0°C to +60°C	0°C to +60°C
	Extended	-40°C to +70°C*	-40°C to +70°C*
Software		Classic L2P/L3P	HiOS L2A/L3A
IEEE1588	Hardware support	✓	✓

*IEC 60068-2-2 Dry Heat Test +85°C 16 Hours

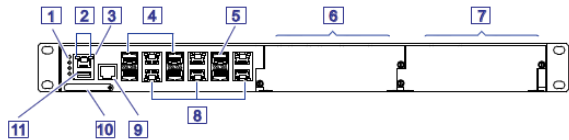
		MACH1x4y	GREYHOUND1x42
Port Types	FE-SC MM	X	✓
	FE-SC SM	X	✓
	FE-ST MM	X	✓
	FE-ST SM	X	✓
	FE-SFP slot	✓	✓
	GE SFP slot	✓	✓
	Dual speed SFP slot (100/1.000Mbit/s)	✓	✓
	Dual speed SFP slot (1.000/2.500Mbit/s)	X	✓
	Max TX port support	16	26 /28*
	Max fiber port support	16	22
Design	Fanless		both
	EMC interference immunity		same
	Shock and vibration		same
	Device replacement	ACA21	ACA22 +SD card
	Serial interface	RJ11	RJ45
	Configurable		both
	Modular	X	✓

*28 TX ports with 2 additional TX SFP

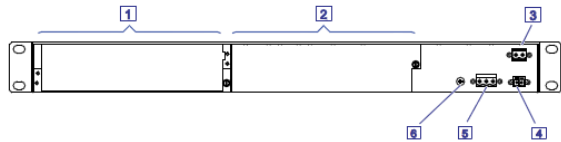




Out-of-band Management port

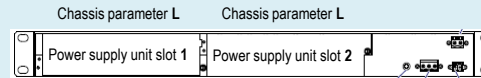
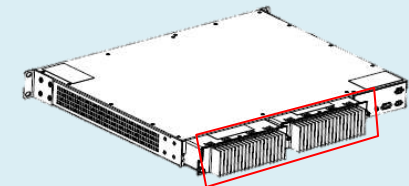


- Front view - 6TX/6FX**
- 1 LED display elements for device status
 - 2 Display elements for power supply unit status
 - 3 V.24 interface
 - 4 SFP slot for 1/2.5 Gbit/s F/O connections
 - 5 SFP slot for 100/1000 Mbit/s F/O connections
 - 6 ... 7 Cover panels for media module slot
 - 8 RJ45 socket for 10/100/1000 Mbit/s Twisted Pair connections
 - 9 Out-of-band management port
 - 10 Slot for the SD card
 - 11 USB interface

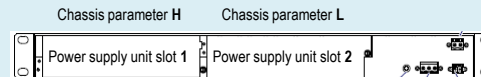


- Rear view - 6TX/6FX and 10TX/2FX**
- 1 Cover panel for power supply unit slot 1
 - 2 Cover panel for power supply unit slot 2
 - 3 2-pin terminal block for the supply voltage, characteristic value L
 - 4 Connection for the signal contact
 - 5 3-pin terminal block for the supply voltage, characteristic value H
 - 6 Grounding screw

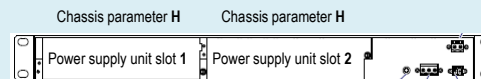
Example (Power supply)



Slot 1: GPS1C or GPS3P (Low Voltage)
Slot 2: GPS1C or GPS3P (Low Voltage)



Slot 1: GPS1K (High Voltage)
Slot 2: GPS1C or GPS3P (Low Voltage)



Slot 1: GPS1K (High Voltage)
Slot 2: GPS1K (High Voltage)

Pay attention: If you need PoE, you need min. one chassis slot „L“ including power supply (GPS3P) which offers PoE. Fixed ports don't support PoE, only ports on media modules.

!!! Attention: Additional order of the power supply !!!

DRAGON-MACH4000/4500 FAMILY

Sub-Group	Order number	Product name	description
Chassis MACH4500	942 153-001	DRAGON MACH4500-80G+8X-L2A	DRAGON MACH4500 Chassis with 8x10G (SFP+ - Fixed) + 32x1G (TX - Fixed) + 48x1G (with modules); Fan Unit Installed; HiOS L2A
	942 153-002	DRAGON MACH4500-80G+8X-L3A-UR	DRAGON MACH4500 Chassis with 8x10G (SFP+ - Fixed) + 32x1G (TX - Fixed) + 48x1G (with modules); Fan Unit Installed; HiOS L3A UR (Unicast Routing only)
	942 153-003	DRAGON MACH4500-80G+8X-L3A-MR	DRAGON MACH4500 Chassis with 8x10G (SFP+ - Fixed) + 32x1G (TX - Fixed) + 48x1G (with modules); Fan Unit Installed; HiOS L3A MR (Unicast + Multicast Routing)
Chassis MACH4000	942 154-001	DRAGON MACH4000-80G+8X-L2A	DRAGON MACH4000 Chassis with 4x10G (SFP+ - Fixed) + 48x1G (with modules); Fan Unit Installed; HiOS L2A
	942 154-002	DRAGON MACH4000-80G+8X-L3A-UR	DRAGON MACH4000 Chassis with 4x10G (SFP+ - Fixed) + 48x1G (with modules); Fan Unit Installed; HiOS L3A UR (Unicast Routing only)
	942 154-003	DRAGON MACH4000-80G+8X-L3A-MR	DRAGON MACH4000 Chassis with 4x10G (SFP+ - Fixed) + 48x1G (with modules); Fan Unit Installed; HiOS L3A MR (Unicast + Multicast Routing)
Components	942 155-001	D4K-12TP-RJ45	DRAGON MACH4K Module with 12 x RJ45 10/100/1000 Ports
	942 155-501	D4K-12SFP	DRAGON MACH4K Module with 12 x 100/1000 SFP Ports
	942 156-001	D4K-PSU-300W-HV	DRAGON 4K 300-Watt High Voltage Power Suplly Unit
	942 157-001	D4K-AIR	DRAGON M4K Fan Unit; field-replaceable / hot-swappable; 5 load sharing inbuilt fans
Blank Panels	942 222-001	D4K-LC Panel	Blind Panel to cover one empty Line Card Slot if module is not used
	942 222-002	D4K-PSU-Panel	Blind Panel to cover redundant PSU Slot if second PSU is not used
10G SFP	942 210-001	M-SFP-10-SR/LC EEC	10Gigabit SFP+ Multimode (MM) 850
	942 211-001	M-SFP-10-LR/LC EEC	10Gigabit SFP+ Singlemode (SM) 1310nm
	942 212-001	M-SFP-10-ER/LC EEC	10Gigabit SFP+ Singlemode (SM) 1550nm-40km
	942 213-001	M-SFP-10-ZR/LC	10Gigabit SFP+ Singlemode (SM) 1550nm-80km



DRAGON-MACH4000/4500 FAMILY

Key facts

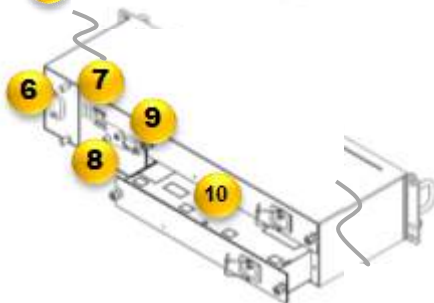
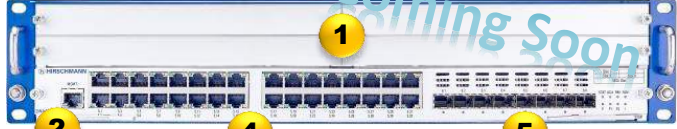
- **DRAGON MACH4000** → Up to 48x 1 GE + 4x 10 GE ports
- **DRAGON MACH4500** → Up to 80x 1 GE + 8x 10 GE ports
- **Internal redundant** high voltage power supply slots (power supply not included)
- **2U height** for replacement without changing cabinet design
- Fan Module (integrated) and standard temperature range (0°C – 60°C)
- External Interfaces on the rear side: USB, SD Card and V24
- HiOS L2A and L3A software with unicast and multicast routing options

DRAGON MACH4000-48G+4X-L2A	942 154-001
DRAGON MACH4000-48G+4X-L3A-UR	942 154-002
DRAGON MACH4000-48G+4X-L3A-MR	942 154-003
DRAGON MACH4500-80G+8X-L2A	942 153-001
DRAGON MACH4500-80G+8X-L3A-UR	942 153-002
DRAGON MACH4500-80G+8X-L3A-MR	942 153-003

DRAGON MACH4000-chassis



DRAGON MACH4500-chassis



- Slots for up to four swappable media modules
- Out-of-band management port
- Fixed SFP+ ports – 4 x 10 GE (2.5 GE and 1 GE compatible)
- Fixed TX ports – 32x 1 GE
- Fixed SFP+ ports – 8 x 10 GE (2.5 GE and 1 GE compatible)
- Swappable Fan Unit
- USB port and V.24 interface
- SD card slot
- Signal contact
- Slots for two internal power supplies

Modules

- **D4K-12TP-RJ45** → 12x 10/100/1.000 Mbit/s TX, RJ45
942 155-001
- **D4K-12SFP** → 12x 100 or 1.000 Mbit/s SFP
942 155-501
- **D4K-AIR** → Fan Unit
942 157-001
- **D4K-PSU-300W-HV** → Power Supply
942 156-001



D4K-12TP-RJ45



D4K-12SFP








D4K-AIR

Power Cord Europe (CEE 7/4 plug)
942 271-001
to be ordered separately



D4K-PSU-300W-HV

Example of Different Firewalls in Belden's Portfolio

	Transparent layer 2 firewall	Transparent layer 2 DPI firewall	Stateful layer 3 firewall	WLAN access point with layer 2+3 firewall	Router with layer 3 firewall
	EagleOne 	Tofino 	Eagle 20/30 	OpenBAT 	Magnum 10RX Magnum 5RX 
Application	Network boundary/ internal network/ field level	Internal network/ field level	Network boundary/ internal network/ field level	Network boundary/ internal network/ field level/ WLAN protection	Edge (5RX) or core (10RX) router
Product Features (excerpt)					
Access Control Lists	MAC	MAC/IP/TCP/UDP	MAC/IP/TCP/UDP	MAC/IP/TCP/UDP	IP/TCP/UDP
Layer 2 firewall	✓	✓	-	✓	-
Layer 3 firewall	✓	-	✓	✓	✓
Deep Packet Inspection	-	Modbus, OPC, Ethernet/IP, DNP3, IEC 60870-5-104	Modbus, OPC	-	-
NAT	✓	-	✓	✓	✓
VPN	✓	-	✓	✓	✓
Router / router redundancy	✓ / ✓	✓ - ✓	✓ / ✓	✓ / ✓	✓ / ✓
WAN & WWAN interfaces	-	-	SHDSL / 3G, LTE	3G, LTE (with IP67 version)	T1/E1
Ports	2 FE	2 FE	4 FE, 2 GE	2 GE, 2 WLAN	Configurable up to 10 GE ports (copper or SFP), 16 T1/E1 ports, or 32 serial ports.
Firewall Learning / Test Mode	✓	✓	✓	-	-
Configurable with Industrial HiVision	✓	-	✓	✓	Selective features



- Eagle 40

1. Product
- 03

2. GE ports
- 3. Type
- 4. Temp. range
- CC

5. Voltage range
- 6. Approvals 1
- 9

7. Approvals 2
- HS

8. Type
- R

9. SW conf
- A

10. IDS
- 11. Security

1. Product	EAGLE 40	Security router and firewall
2. GE ports	03	3x 10/100/1.000 Mbit/s ports
3. Type uplink ports	3T1 106	3x Twisted Pair; RJ45 1x SFP slot, 2x TP, RJ45
4. Temperature range	S T E	Standard 0°C ... +60°C Extended -40°C ... +70°C Extended -40°C ... +70°C including Conformal Coating
5. Voltage range	CC	2x 24-48 VDC



6. Approvals part 1	Z Y X	CE, FCC, C-Tick, EN61131, EN60950 „Z“ + UL61010 „Z“ + UL61010 + ISA12.12 + ATEX
7. Approvals part 2	9	No additional approval
8. Type	HS	Hirschmann standard
9. SW configuration	R	Router mode
10. IDS intrusion detection	A	No IDS
11. Security modules	NF IN	No additional modules firewall only Industrial Automation Protection Suite Modbus + OPC Enforcer

- EagleOne
1. Product
- 02
2. FE ports
- 00
3. GE ports
- 4. Port 1 type
- 5. Port 2 type
- 6. Temp. range
- DD
7. Voltage range
- 8. Approvals
- 0000
9. SW Pack
- HH
10. OEM
- E
11. SW Conf.
- xx.X
12. SW version

1. Product	EagleOne	2 port Security Router
2. FE ports	02	2x 10/100 Mbit/s ports
3. GE ports	00	not available
4. Port 1 type <small>100 Mbit/s</small>	T1 M2	1x Twisted Pair; RJ45 1x Multimode; D-SC
5. Port 2 type <small>100 Mbit/s</small>	T1 M2 S2	1x Twisted Pair; RJ45 1x Multimode; D-SC 1x Singlemode; D-SC
6. Temperature range	S T E	Standard 0°C ... +60°C Extended -40°C ... +70°C Extended -40°C ... +70°C including Conformal Coating



7. Voltage range	DD	12 ... 48 VDC; 24 VAC red. input
8. Approvals	Z9 Y9 X9 W9 WX U9 UY UT T9 TY V9 VY VU VT	CE, FCC, C-Tick, EN61131, EN60950 „Z9“ + cUL508 „Z9“ + cUL508, ISA12.12 „Z9“ + ATEX „X9“ + ATEX „Z9“ + GL „U9“ + cUL508 „U9“ + cUL508, ISA12.12 „Z9“ + EN50121-4 „V9“ + cUL508 „V9“ + IEC61850, IEEE1613 „V9“ + cUL508 „V9“ + cUL508, GL „V9“ + cUL508 + EN50121
9. SW - Package	0000	reserved
10. OEM Type	HH	Hirschmann
11. SW - Configuration	E	Entry (Hirschmann)
12. SW- version	XX.X	newest SW-version

EAGLE		0	04		206	TT	9	99				HS	E	3F	XX.X
1. Product	2. Data rate	3. HW type	4. 10/100 Mbit/s ports	5. 10/100/1000 ports	6. Uplink port 2 configuration	7. Port conf.	8. Cell ports	9. WAN ports	10. Temp. range	11. Voltage range	12. Approvals	13. Type	14. Configuration	15. SW Level	16. SW version

1. Product	EAGLE	Security Router
2. Data rate	2 3	- 10/100 Mbit/s ports - 10/100 Mbit/s ports and 10/100/1000 Mbit/s ports
3. Hardware type	0	Standard
4. 10/100 Mbit/s ports	04	4x 10/100 Mbit/s
5. 10/100/1000 Mbit/s ports	00 02	none 2x 10/100/1000 Mbit/s
6. Uplink port	206 999	only SFP slots not available (EAGLE 20)
7. Port configuration	TT	only Twisted Pair (RJ45)
8. Cellular ports	9	not assembled
9. WAN ports	99 H2	not assembled 2x SHDSL
10. Temperature range	S T E	Standard 0°C ... +60°C Extended -40°C ... +70°C Extended -40°C ... +70°C including Conformal Coating



11. Voltage range 1	CC K9 KK	2x 18 – 60 VDC 1x 48 – 320 VDC or 1x 88 – 265 VAC 2x 48-320 VDC, 89-265 VAC
8. Approvals		Z9 - CE, FCC, EN61131, EN60950 Y9 - Z9 + cUL508 X9 - Z9 + cUL508, ISA 1212 V9 - Z9 + IEC 61850, IEEE1613 P9 - Z9 + cUL508 VP - V9 + cUL508 VY - Z9 + cUL508 VU - Z9 + cUL508, GL VT - Z9 + cUL508, EN50121 U9 - Z9 + GL UY - U9 + cUL508 UX - U9 + cUL508, ISA 1212 UT - U9 + cUL508, EN50121 T9 - Z9 + EN50121-4 TY - Z9 + cUL508, GL
13. Type	HS	Hirschmann Standard
14. SW - configuration	E	extended encryption
15. SW - Level	3F OP MB 01	Layer 3 Firewall SW „3F“ + OPC Classic Enforcer „3F“ + Modbus Enforcer „3F“ + OPC Classic Enforcer + Modbus Enforcer
16. SW- version	XX.X	newest SW-version

Deep Packet Inspection

TofinoXe	02	00					DD		0003	TA	T	xx.X
1. Product	2. FE ports	3. GE ports	4. Port 1 type	5. Port 2 type	6. Temp. range	7. Voltage range	8. Approvals	9. SW Pack	10. OEM	11. SW Conf.	12. SW version	

1. Product	TofinoXE	2 port Security Switch
2. FE ports	02	2x 10/100 Mbit/s ports
3. GE ports	00	not available
4. Port 1 type	T1 M2 S2	1x Twisted Pair; RJ45 1x Multimode; D-SC 1x Singlemode; D-SC
5. Port 2 type	T1 M2 S2	1x Twisted Pair; RJ45 1x Multimode; D-SC 1x Singlemode; D-SC
6. Temperature range	S T E	Standard 0°C ... +60°C Extended -40°C ... +70°C Extended -40°C ... +70°C including Conformal Coating
7. Voltage range	DD	12 ... 48 VDC; 24 VAC red. input



8. Approvals	<p>Z9 - CE, FCC, C-Tick, EN61131, EN60950 Y9 - "Z9" + cUL508 X9 - "Z9" + cUL508, ISA12.12 W9 - "Z9" + ATEX WX - "X9" + ATEX U9 - "Z9" + GL UY - "U9" + cUL508 UX - "U9"+cUL508, ISA12.12 UT - "U9"+cUL508 + EN50121-4 T9 - "Z9" + EN50121-4 TY - "T9" + cUL508 V9 - Z9 + IEC 61850, IEEE1613 VY - V9 + cUL508 VU - V9+cUL508, GL VT - V9+cUL508, EN50121</p>
---------------------	--

9. SW - Package	<p>0003 Firewall+NetConnect –FW+NC 0007 „0003“ + Modbus Enforcer – FW+NC+MB 0013 „0003“ + IEC104 Enforcer 0023 „0003“ + DNP3 Enforcer 0043 „0003“ + GOOSE Enforcer 0053 „0003“ + IEC104+GOOSE Enforcer 0063 „0003“ + DNP3+GOOSE Enforcer 000B „0003“ + OPC Enforcer – FW+NC+OPC 000F „0007“ + OPC Enforcer – FW+NC+MB+OPC 000K „0003“ + EtherNet/IP Enforcer – FW+NC+EIP 000Q „0007“ + EtherNet/IP Enforcer – FW+NC+MB+EIP 000V „000B“ + EtherNet/IP Enforcer – FW+NC+OPC+EIP 000Z „000Q“ + OPC Enforcer – FW+NC+MB+OPC+EIP</p>
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10. OEM Type	TA	Tofino Security Standard
11. SW - Configuration	T	Tofino Standard Configuration
12. SW- version	xx.X	Latest SW-version

Product positioning Tofino – EAGLE

	Tofino Xenon	Hirschmann EagleONE	Hirschmann Eagle 20/30
Filtering Options Bridge/Transparent Mode Routing	X -	X X	X X
ACL	MAC/IP/TCP/UDP	MAC/IP/TCP/UDP	MAC/IP/TCP/UDP
Deep Packet Inspection DPI	X Modbus TCP, OPC, EtherNet-IP, GOOSE IEC104, DNP3		X Modbus TCP, OPC
Network Address Translation NAT		X	X
VPN		X	X
Router Redundancy		X	X
WAN Interfaces			SHDSL
Ports	2 FE	2 FE	4 FE, 2 GE

Application	EAGLE	Tofino XENON
Primary mode of operation	Layer 3	Layer 2
Zones use different subnets	✓	
Zones within the same subnet		✓
Redundancy support	✓	
„Retrofitting“ security into existing plant		✓
High-security applications		✓
„step and repeat“ zones (NAT)	✓	
Securing critical Modbus controllers		✓
Securing OPC servers		✓
Remote access via VPN	✓	
Plant boundary security	✓	



EAGLE Solutions

Application	EAGLE One	EAGLE20/30	Tofino Xenon
Mode of operation	Layer 2/3	Layer 2/3	Layer 2
Zones use different subnets	✓	✓	
Zones within the same subnet	✓	✓ ACLs	✓
Redundancy support	✓	✓ L3 only	
'Retrofitting' security into existing plant	✓	✓	✓
High-security applications	✓	✓	✓
'step and repeat' zones (NAT)	✓	✓	
Securing Modbus TCP devices		✓ L3 only	✓
Securing OPC devices		✓ L3 only	✓
Securing Ethernet/IP devices			✓
Securing IEC104 devices			✓
Securing DNP3 devices,			✓
GOOSE			✓
Remote access via VPN	✓ L3 only	✓ L3 only	
Plant boundary security	✓	✓	

Plant-wide Security Solutions

Feature	EAGLE One	EAGLE 20-0400	EAGLE 30-0402
Application	Edge, Existing LAN	Edge, Existing LAN	Edge, Existing LAN
LAN	2x 10/100	4x 10/100	4x 10/100, 2x SFP (GbE)
Routing	Static	Static, OSPF	Static, OSPF
Redundancy	Ring Coupling, RSTP, L3 redundancy (VRRP based)	VRRP	VRRP
VLANs	1	Up to 64	Up to 64
Power Supply	9 - 60VDC / 24VAC	18 - 60VDC or 48 - 320VDC / 88 - 265VAC	18 - 60VDC or 48 - 320VDC / 88 - 265VAC
VPN	IPSec	IPSec	IPSec
WAN	-	-	SHDSL
DI	1	1	1
Extended Temp, Additional Approvals	Yes	Yes	Yes



Feature	OWL 3G	OWL LTE	OWL LTE M12
	942 145-001 	942 146-001 	942 147-002 
Main cellular Standard	UMTS	LTE	LTE
Power Supply	12/24 VDC*	12/24/48 VDC*	24/36 VDC**
Power consumption	2.3-5.5W	2.5-11W	2.5-11W
LAN Interface - FE	2 ports/RJ45	2 ports/RJ45	2 ports/M12 (D-coded), PoE PD
GPS		GPS	GPS receiver with embedded dead reckoning
Extension port – Serial Interface		1 port RS232	1 port RS232
I/O Interface	-	2x IN 1x OUT	2 x opto-coupled binary inputs (max 60 V DC , max 7mA) 2 x opto-coupled Digital Outputs (max 60 V AC/DC, max 300mA), 8-pin A-coded M12
USB interface for configuration	-	X	X
Extended temperature range (-40°C to +70°C)		X	X
IP rating	IP20	IP30	IP40
Din-Rail mount / wall mount	X / -	X / -	- / X
Weight (approx.)	280g	400g	450g
Special approval (Railway EN 50155, EN 50121-4, EN 45545)	-	-	X



Product name:
Antenna Cable (3m) (UMTS)
order number: 942 042-102



Product name:
Joymax Stub Antenna (UMTS)
order number: 942 042-103



Product name:
Sencity Omni Antenna (UMTS-Europe)
order number: 942 042-101
Operating temp.: -40°C ... +85°C



Product name:
WWAN-A-I-41-S-O
order number: 942 042-105
LTE (4G), UMTS (3G)


















Product name:
GNSS-A-O-90-S-P
order number: 942 042-108
GPS



Please note that OWL has SMA sockets. SMA connector has a pin, SMA socket has a hole to match the pin.
Please also note that GPRS/UMTS uses different frequencies and thus antennas than WLAN.
Antenna cables should not be longer than 10 meters.
Antennas are not inside the delivery packet of OWL. **You have to order them separately.**



Feature	OWL 3G	OWL LTE	OWL LTE M12
GSM/GPRS/EDGE	Dual-band: 900/1800MHz	Triple-band: 900/1800/1900MHz	Triple-band: 900/1800/1900MHz
UMTS/HSPA	Dual-band: 900/2100MHz	Dual-band: 900/2100MHz	Dual-band: 900/2100MHz
LTE	-	5-band: 800/900/1800/2100/2600MHz	5-band: 800/900/1800/2100/2600MHz
Transfer rate (max)	14,4 Mbps down 5,76 Mbps up	100 Mbps down 50 Mbps up	150 Mbps down 50 Mbps up
SIM Interface	2 SIMs	2 SIMs	2 SIMs
Switch SIM on disconnect	X	X	X
Switch SIM on roaming	X	X	X
Switch SIM on I/O input	-	X	X
Switch SIM on remaining data volume	X	X	X
Antenna Configuration	Main + Rx Div	Main + Rx Div	Main + Rx Div
Antenna Connectors	SMA	SMA	SMA
VPN Tunneling	OpenVPN (Client/Server), Ipsec VPN (C/S), L2TP (C/S), PPTP (C/S), GRE		
Security	HTTPs, Firewall (SPI), NAT, X.509		
Diagnostic & Configuration	SNMP, DHCP (C/S) network status, syslog, DynDNS, NTP (C), HiDiscovery		
Redundancy	VRRP, ping monitoring with route failover		
Configuration Management	Upload/Download configuration, change configuration based on SMS		

Order-Nr.	Antenna	Product image	Description	BAT867-R	BAT450-F	OpenBAT BAT-R	OpenBAT BAT-F
943 981-022	BAT-ANT-N-6G-IP65		Omnidirectional antenna for 2.4 GHz band	+	+	+	+
943 981-003	BAT-ANT-N-5A-IP65		Omnidirectional antenna for 5 GHz	+	+	+	+
942 110-001	BAT_ANT-N-3AGN-IP67		Omnidirectional antenna for 2,4 GHz band and 5 GHz band	+	+	+	+
942 047-001	BAT-ANT-N-3AGN-F		Omnidirectional antenna for 2,4 GHz band and 5 GHz band	-	+	-	+
942 046-001	BAT-ANT-RSMA-2AGN-R		Omnidirectional antenna for 2,4 GHz band and 5 GHz band	+	-	+	-
943 981-004	BAT-ANT-N-6ABG-IP65		Hemispherical antenna for 2,4 GHz band and 5 GHz band	+	+	+	+
943 981-005	BAT-ANT-N-14G-IP23		Directional antenna for 2,4 GHz band with 14 dBi gain	-	+	+	+
942 981-006	BAT-ANT-N-18A-V-IP65		Directional antenna for 5 GHz band with 18 dBi gain	-	+	+	+
943 981-007	BAT-ANT-N-23A-V-IP65		Directional antenna for 5 GHz band with a high gain of 23 dBi	-	+	+	+
943 981-008	BAT-ANT-N-23A-VH-IP65		Directional antenna for 5 GHz band with a high gain of 23 dBi	-	+++	+++	+++
943 981-014	BAT-ANT-N-MiMo-18N-IP65		Directional antenna for 5 GHz band with 18 dBi gain	-	+++	+++	+++
943 981-009	BAT-ANT-N-8G-DS-IP65		Polarization-diversity antenna for 2,4 GHz band, linear	-	++	++	++
943 981-010	BAT-ANT-N-9A-DS-IP65		Polarization-diversity antenna for 5 GHz band, linear	-	++	++	++
943 981-012	BAT-ANT-N-MiMoDB-5N-IP65		Omni-directional dualband antenna for MiMo for the 2,4 GHz and 5 GHz bands	+	+++	+++	+++
943 981-013	BAT-ANT-N-MiMo5-9N-IP65		Sectoral MiMo antenna for 5 GHz band	-	+++	+++	+++

+++ very good; ++ good; + possible; - cannot be used



BAT450-F

9

W

9

A

T6

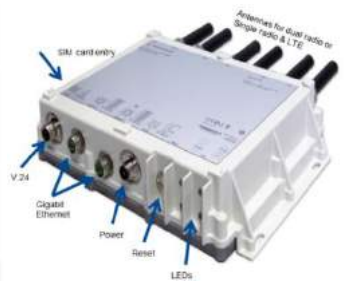
9

H

- 1. Product
- 2. Country approvals
- 3. Slot 1
- 4. slot 2
- 5. Slot 3
- 6. AP/AC
- 7. Voltage range 1
- 8. Voltage range 2
- 9. App 1
- 10. App 2
- 11. Mount.
- 12. Int 1
- 13. Int 2
- 14. Temp. range
- 15. SW Option 1
- 16. SW Option 2
- 17. SW Option 3
- 18. Conf
- 19. Impl
- 20. SW

1. Product	BAT450-F	WLAN Access Point (field variant) IP65/67 housing
2. Country approvals	EU	Europe
	SG	Singapore
	AU	Australia
	CN	China
	IN	India
	MX	Mexico
	US	USA/Canada for antennas til 9dB
	JP	Japan
	OM	Oman
3. Slot 1	W	WLAN Module
4. Slot 2	9	not mounted
	W	WLAN Module
5. Slot 3	L	LTE Europe
	9	not mounted
6. Client / Access point	A	Access Point / Access Client (configurable)
	C	Access Client (only)
7. Voltage range 1	W	16-32 V DC, PoE (PD)
	N	77-138 V DC
8. Voltage range 2	9	not assembled
9. Approvals 1	9	no additional approval
	K	K-Train (EN50155)
10. Approvals 2	9	no additional approvals
	M	Vehicles, E1
11. Mounting	A	Standard

12. Interface 1	T6	10/100/1000 Mbit/s; M12
13. Interface 2	T6	10/100/1000 Mbit/s; M12
	T7	10/100/1000 Mbit/s; M12 + V.24 + ACA
	V4	V.24
	99	not assembled
14. Temp.- range	T	Extended -40°C... +70°C
	E	Extended -40°C... +70°C including Conformal Coating
	M	Extended -30°C... +70°C including Conformal Coating
15. SW Option 1	9	none
	A	VPN-5
	B	VPN-50
	C	VPN-100
16. SW Option 2	9	none
17. SW Option 3	D	Public Spot
	9	none
	P	PRP
	A	Auto WDS
18. Configuration	Z	Starter Kit (Antenna, Connector incl.)
	9	no accessories
19. Implementation	H	Hirschmann Standard
20. SW version	XX.X	Newest software version



Scope of delivery („Z“: Starter Kit)

- 1 x premounted protection cap (M12, plastic) for supply voltage connection;
- 3 x per WLAN Module premounted protection cap (7/8", plastic) for N socket depending on device configuration;
- 3 x per WLAN module Antennas (BAT-ANT-N-3AGN-IP67);
- 2 x per WLAN module 50 Ω terminators for closing free antenna connections;
- 1 x or 2 x Included X-coded M12 plug for Ethernet port 1 and/or Ethernet port 2;
- 1 x Included M12 power supply plug ELKA 5012 PG7 (933-170-100);
- 0 x or 1 x Included Terminal cable: M12 plug, 4-pin, A-coded applies to device variants with V.24 interface



BAT-?																9		H	
1. Product	2. Country approvals	3. Slot 1	4. slot 2	5. Slot 3	6. AP/AC	7. Voltage range 1	8. Voltage range 2	9. App 1	10. App 2	11. Inst.	12. Ports Eth 1	13. Ports Eth 2	14. Temp. range	15. SW Option 1	16. SW Option 2	17. SW Option 3	18. Conf	19. Impl	20. SW

1. Product	BAT-R WLAN Access Point (DIN rail mountable) BAT-F IP65/67 housing																					
2. Country approvals	<table border="0"> <tr> <td>AU – Australia</td> <td>KO – Korea</td> <td>EU – Europe/CE</td> </tr> <tr> <td>BR – Brazil</td> <td>MX – Mexico</td> <td>SG – Singapore</td> </tr> <tr> <td>CN – China</td> <td>MY – Malaysia</td> <td>TH – Thailand</td> </tr> <tr> <td>DZ – Algeria</td> <td>OM – Oman</td> <td>US – USA/Canada (FCC/IC)</td> </tr> <tr> <td>ID – Indonesia</td> <td>SA – Saudia Arabia</td> <td>for antennas til 9 dB</td> </tr> <tr> <td>IN – India</td> <td></td> <td>VN – Vietnam</td> </tr> <tr> <td>JP – Japan</td> <td></td> <td></td> </tr> </table>	AU – Australia	KO – Korea	EU – Europe/CE	BR – Brazil	MX – Mexico	SG – Singapore	CN – China	MY – Malaysia	TH – Thailand	DZ – Algeria	OM – Oman	US – USA/Canada (FCC/IC)	ID – Indonesia	SA – Saudia Arabia	for antennas til 9 dB	IN – India		VN – Vietnam	JP – Japan		
AU – Australia	KO – Korea	EU – Europe/CE																				
BR – Brazil	MX – Mexico	SG – Singapore																				
CN – China	MY – Malaysia	TH – Thailand																				
DZ – Algeria	OM – Oman	US – USA/Canada (FCC/IC)																				
ID – Indonesia	SA – Saudia Arabia	for antennas til 9 dB																				
IN – India		VN – Vietnam																				
JP – Japan																						
3. Slot 1	W WLAN Module																					
4. Slot 2	9 not mounted W WLAN Module																					
5. Slot 3	9 not mounted																					
6. Client / Access point	A Access Point/Access Client (configurable) C Access Client (only)																					
7. Voltage range 1	C 24 – 48 VDC K 60 -250 VDC; 110 – 230 VAC P PoE, 802.3af (single radio) W 19,2 - 32 VDC, PoE																					
8. Voltage range 2	C 24 – 48 VDC K 60 -250 VDC; 110 – 230 VAC W 19,2 - 32 VDC, PoE 9 not assembled																					
9. Approvals 1	I Substation (EN61850) G ATEX Zone 2 M Vehicles, E1 9 no additional approvals F ANSI/ISA61010-1 + Class 1 Div 2 K Train (EN50155)																					
10. Approvals 2	9 no additional approvals M Vehicles, E1 V SRD (UNII-3 Channels for Europe)																					



11. Installation	A OPERATOR ACCESS AREA Indoor Area for which one of the following conditions applies when operated as intended: - accessible without TOOLS - access options for the OPERATOR provided deliberately - the OPERATOR is informed of access, regardless of which he need B SERVICE ACCESS AREA Indoor Voltage range 1/2: only „K“ Area outside the OPERATOR AREA which must be accessible to the SERVICER even when switched off.
12. Ports Ethernet 1	O7 Combo Gigabit Ethernet (Gigabit SFP-slot; RJ45) BAT-R M12 X-coded Ethernet connector Order code: 942 083-001 O5 Combo Gigabit Ethernet (Gigabit SFP-slot; M12; x-code) BAT-F
13. Ports Ethernet 2	T1 TP 10/100/1000 Mbit/s; BAT-R: RJ45 99 not assembled BAT-F: M12: x-code
14. Temperature range	K -40°C ... +55°C Incl. Conf. Coating S Standard 0°C ... +60°C T Extended -40°C ... +70°C E Extended -40°C ... +70°C including Conformal Coating
15. SW Option 1	9 none B VPN-50 A VPN-5 C VPN-100
16. SW Option 2	9 none
17. SW Option 3	D Public Spot P PRP 9 none A Auto WDS
18. Configuration	Z Starter Kit (Antenna, Connector incl.) 9 no accessories
19. Implementation	H Hirschmann Standard
20. SW version	XX.X Newest software version

BAT867-R				9						A	T6				9			H	
1. Product	2. Country approvals	3. Slot 1	4. slot 2	5. Slot 3	6. AP/AC	7. Voltage range 1	8. Voltage range 2	9. App 1	10. App 2	11. Mount.	12. Int 1	13. Int 2	14. Temp. range	15. SW Option 1	16. SW Option 2	17. SW Option 3	18. Conf	19. Impl	20. SW

1. Product	BAT867-R	WLAN Access Point IP40 housing
2. Country approvals	<input type="checkbox"/> EU Europe (CE) <input type="checkbox"/> US USA/Canada (FCC/IC) for antennas till 9dB <input type="checkbox"/> AU Australia <input type="checkbox"/> CN China	
3. Slot 1	W	WLAN Module
4. Slot 2	9	not mounted
5. Slot 3	9	not mounted
6. Client / Access point	<input type="checkbox"/> A Access Point / Access Client (configurable) <input type="checkbox"/> C Access Client (only)	
7. Voltage range 1	U	24 VDC
8. Voltage range 2	9	not assembled
9. Approvals 1	9	no additional approval
10. Approvals 2	9	no additional approvals
11. Mounting	A	Standard

12. Interface 1	T1	10/100/1.000 Mbit/s; RJ45
13. Interface 2	99	not assembled
14. Temp.- range	L	Extended -10°C... +60°C
15. SW Option 1	9	none
16. SW Option 2	9	none
17. SW Option 3	9	none
18. Configuration	<input type="checkbox"/> Z Starter Kit (Antenna, Connector incl.) <input type="checkbox"/> 9 no accessories	
19. Implementation	H	Hirschmann Standard
20. SW version	XX.X	Newest software version

Key Features

- WLAN module : 1 x 802.11ac (backward compatible with 802.11a/b/g/n)
- Data rates: IEEE 802.11 n -> up to 300 Mbps
IEEE 802.11 ac -> up to 867 Mbps
- MIMO : 2x2
- Antenna connectors : 2 X RSMA
- Frequency : 2.4 / 5 GHZ
- Reset button, 3xLED (Power, WLAN, LAN)
- Ethernet : 1 X RJ 45 (10/100/1000BASE-TX data rates)

OPEN BAT - ACCESSOIRES

Configurator >>> Point 18. What's included **with (Z)** & **without (9)** the Starter Kit



OpenBAT-F

OpenBAT-R

No accessories option includes the following...

- 1x Installation manual and 1 x CD/DVD with PDF docs and software
- 1x or 2x Field installable power plug, for 6 to 8 mm OD cable (connector type dependent on the configured power input. A power plug with a larger thread, e.g. for 8 to 10 mm cable OD, can be found in the Other Accessories below .
- 1x or 2x (depending on device model) Dust cap for power socket(s)
- 1x V1 sealing cap for optical connection
- 1x Sealing caps for power supply
- 3x per WLAN module Sealing caps N for antenna
- 4x or 5x (depending on device model) M12 cap

No accessories option includes the following...

- 1x Installation manual and 1 x CD/DVD with PDF docs and software
- 1x per C or W power input configuration, a 2-pin pluggable terminal block for power
- 1x per K power input configuration, a 3-pin pluggable terminal block for power
- 1x per C, K or W power input configuration, a 2-pin pluggable terminal block for signal/fault output

9

Starter Kit includes all of the above and...

- 1x Terminal cable: M12 connector, 8-pin on DB9 socket
- 1x or 2x (depending on device model) M12 plug ; x-coded (934 637-032)
- 3x per WLAN module 50-Ω terminators for equipping free antenna connections
- 3x per WLAN module 3-dBi dipole dual-band antennas for initial operation

Starter Kit includes all of the above and...

- 1x Terminal cable: M12 connector, 8-pin on DB9 socket
- 3x 50-Ω terminators for equipping free antenna connections (only for device variants with 2 wireless modules)
- 3x per WLAN module 3-dBi dipole dual-band antennas for initial operation

Z

OPEN BAT - ACCESSOIRES

- ACA 21-M12 (EEC) - Auto Configuration Adapter w/ M12 for OpenBAT-F 943 913-001
- ACA 21-USB (EEC) - Auto Configuration Adapter w/ USB for OpenBAT-R 943 271-003
- Terminal/serial configuration cable w/ 8-pin M12 to DB9 socket 942 087-001

- Field-attachable 8-pin M12 Ethernet X-Code plug for Gigabit 934 637-032 (Hirschmann)
Lumberg part no. 0986 EMC 600

- Single-ended M12, male, X-coded, Gigabit Ethernet Lumberg part no. RSTS 8X-478/...M
- Single-ended M12, male, X-coded, Gigabit Ethernet, rail industry approval Lumberg part no. BRSTS 8X-552/...M

- 7/8" plug for K power input option, cable OD 6-8 mm 942 086-003
- 7/8" plug for K power input option, cable OD 8-10mm Lumberg part no. RKC 30/11
- 7/8" plug for W and C power input option, cable OD 8-10mm 942 086-004
- 7/8" plug for W and C power input option, cable OD 6 to 8 mm Lumberg part no. RKC 40/11

- 4-pin female M12 A-Code field-attachable for relay output, cable OD 3-6.5 mm Lumberg part no. RKC 4/7
- 4-pin female M12 A-Code field-attachable for relay output, cable OD 4-8 mm Lumberg part no. RKC 4/9

- Locking screw for M12 socket, metal, IP67 (25 pieces) 942 057-001
- Locking screw for M12 plug, metal, IP67 (10 pieces) 942 115-001
- Locking screw for 7/8" plug, metal, IP67 (10 pieces) 942 111-001

- BAT-ANT-N-3AGN-IP67 (10 pcs.) 942 110-001
- 50-Ω terminators for unused antenna connections, N (10 pieces) 942 118-001
- 50-Ω terminators for unused antenna connections, SMA (10 pieces) 942 117-001


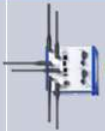


- Pole mounting kit for OpenBAT-F 942 116-001
- SFP mounting/extraction tool for IP67 socket 942 079-001
- Adapter for pole mounting 943 966-001



Differences BAT450-F and OpenBAT (BAT-F) and BAT867-R

		BAT867-R	OpenBAT (BAT-R)
Configurations		Access Point / Client	Access Point / Client
Radio/WLAN	No. of WLAN modules	1	Up to 2
	Standards	IEEE 802.11a/b/g/n/ac	IEEE 802.11a/b/g/n
	Frequency Bands	2.4 and 5 GHz	2.4 and 5 GHz
	MIMO	2 x 2	3 x 3
	Data rates	up to 867 Mbit/s	up to 450 Mbit/s
	Clear space	X	✓
Ports	Ethernet (10/100/1000 Mbit/s)	1	1 or 2
	SFP (GE)	X	1
	Serial / USB	X	V.24/ACA21
Power Supply	U → 24 V DC	✓	X
	W → 24 V DC, PoE	X	✓
	C → 18-60 V DC	X	✓
	K → 48-320 V DC / 90-265 V AC	X	✓
	P → PoE, 802.3 af	X	✓
Temperature Range	Standard	-10°C to 60°C	0°C to 60°C
	Extended	X	-40°C to 70°C
Dimensions	(W x H x D)	50 x 147.5 x 122.5 mm	150 x 136 x 115 mm
Approval	K - Train (EN50155)	X	✓
	M - Vehicles (E1)		
	I - Substation (EN61850)		
	G - ATEX Zone 2	X	✓
	F - ANSI/ISA 61010-1; Class 1 Div 2		

Device	Supported standards	Maximum gross data rate
BAT-C	IEEE 802.11a/b/g/h/n	65 MBit/s
BAT867-R	IEEE 802.11a/b/g/n/ac	867 MBit/s (2x MIMO)
BAT300 family	IEEE 802.11a/b/g/h/n	300 MBit/s (2x MIMO)
BAT450-F	IEEE 802.11a/b/g/h/n	450 MBit/s (3x MIMO)
OpenBAT family	IEEE 802.11a/b/g/h/n	450 MBit/s (3x MIMO)

Features	Entry level	Mid Range	High End
IP30 / DIN Rail	 BAT867-R		 OpenBAT-R
IP65/67 / Wall – Mast		 BAT450-F	 OpenBAT-F
Hardware Optionen	Limited	Medium	High
Client / Accesspoint	C/AP	C/AP	C/AP
Software	HiLCOS	HiLCOS	HiLCOS

		BAT450-F	OpenBAT (BAT-F)
Ports	Ethernet (10/100/1000 Mbit/s)	2	2
	SFP (GE)	X	✓
Power Supply	Serial	(V.24/ACA11)	(V.24/ACA21)
	W → 24 VDC, PoE	✓	✓
	C → 18-60 VDC	X	✓
	K → 48-320 VDC / 90-265 VAC	X	✓
	P → PoE, 802.3 af	X	✓
Temperature Range	Standard	X	0°C to 60°C
	Extended	-40°C to 70°C	-40°C to 70°C
Dimension	(WxHxD) in mm	261 x 189 x 55	311 x 219 x 75
Approval	K - Train (EN50155)	✓	✓
	M - Vehicles (E1)		
	I - Substation (EN61850)		
	G - ATEX Zone 2	X	✓
	F - ANSI/ISA 61010-1; Class 1 Div 2		
Extension Interface	LTE, IIoT (WHART, ISA 100.11a, BlueTooth)	✓*	X

* Planned for Q2/2017)

Special Approvals

		BAT-R	BAT-F	BAT-C
Safety of industrial control equipment	UL50950-1	✓	✓	
	EN60950-1	✓	✓	✓
	EN60950-22		✓	
Substation	UL508			✓
	IEEE1613	✓	✓	
	EN61850-3	✓	✓	
Vehicle	E1/e1	✓	✓	✓
Railway norm	EN 50121-4	✓	✓	
	EN50155	✓	✓	
	EN45545	✓	✓	
Hazardous Location	Atex Zone II	✓	✓	
	Class 1 Div 2	✓	✓	
Protection Class	Nema 4X		✓	

BAT-Controller WLC xx

Central Firmware deployment and management of the Access Point.
Requires an external web server.



WLC25	manages < 25 APs	942 034-001
WLC50	manages < 50 APs	942 034-002
WLC100	manages < 100 APs	942 034-003
WLC200	manages < 200A Ps	942 034-004
WLC500	manages < 500 APs	942 034-005
WLC1000	manages < 1000 APs	942 034-006

Variant 1 and 4 IEC 61076-3-106 connectors are currently not sold by Belden and need to be sourced via third party , such as Metz Connect. See parts and link below.

Var 1 plug/shell (EtherNet/IP)	1401015000ME
Var 4 plug/shell (Profinet)	14010850F0ME
Duplex LC insert (multimode)	1402800820-I
Duplex LC insert (singlemode)	1402900820-I

<http://www.metz-connect.com/us/productsearch/E-DAT%20Industry%20IP67%20V1>

**EtherNet/IP
Variant 1**



**PROFINET
Variant 4**

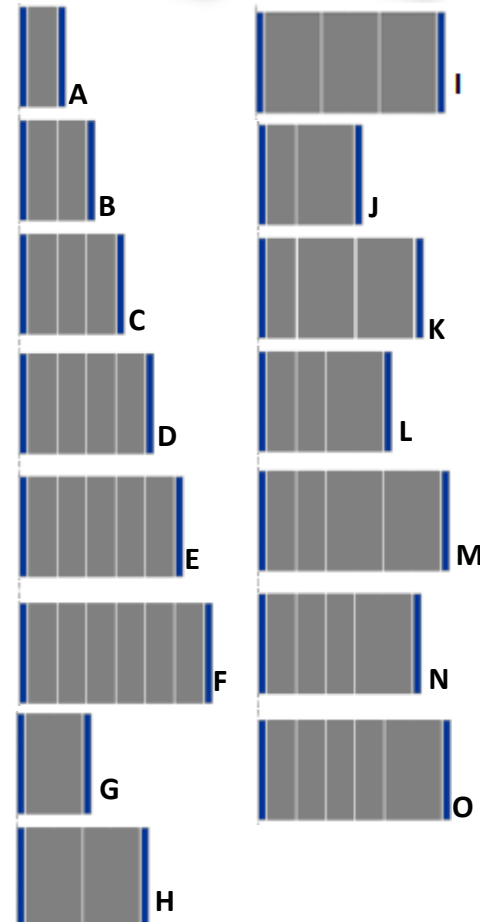


ORDER CODE MIPP --- CHASSIS



X no chassis
W wall mounting plate
D Standard DIN Rail

X	no Module
A	1x Single Module
B	2x Single Modules
C	3x Single Modules
D	4x Single Modules
E	5x Single Modules
F	6x Single Modules
G	1x Double Module
H	2x Double Modules
I	3x Double Modules
J	1x Single Module + 1x Double Module
K	1x Single Module + 2x Double Modules
L	2x Single Modules + 1x Double Module
M	2x Single Modules + 2x Double Modules
N	3x Single Modules + 1x Double Module
O	4x Single Modules + 1x Double Module



chassis
 tuned to space requirements of the used modules

ORDER CODE MIPP --- MODULES



Keystone



Module type – construction (copper)

c Single Module



Keystones / couplers (copper)

At the fiber adapters are color-integrated according to cable type

- c** unshielded coupling
- d** shielded coupling
- u** unshielded keystone
- s** shielded keystone

Cable type (copper)

- d** Cat 5e
- e** Cat 6
- a** Cat 6A

Number of Connections (copper)

- 2** 2 keystones / 2 couplers
- 4** 4 keystones / 4 couplers



Two options

Blind Module

- 1** Single Blind Module
- 2** Double Blind Module

Module type – construction (fiber)

1 Single Module



2 Double Module



P Pre-Terminated MPO Cassette



Adapter (fiber)

At the fiber adapters are color-integrated according to cable type

- T** BFOC (ST) Duplex adapter
- B** BFOC (ST) Duplex **metal** adapter
- L** LC Duplex adapter
- S** SC Duplex adapter
- M** SC Duplex **metal** adapter
- E** E2000 adapter
- N** Leermodul
- 4** LC Duplex MM/OM4 (only in module type „P“)
- 9** LC Duplex SM/OS2 (only in module type „P“)

Cable type (fiber)

- 1** MM/OM1
- 2** MM/OM2
- 3** MM/OM3
- 4** MM/OM4
- 9** SM/OS2 UPC
- A** SM/OS2 APC (color: green)
- 5** 6 x SM/OS2 / 6 x OM1
- 6** 6 x SM/OS2 / 6 x OM2
- 7** 6 x SM/OS2 / 6 x OM3
- 8** 6 x SM/OS2 / 6 x OM4
- M** MPO-12 (male) (only in module type „P“)

Accessories (fiber) (matched to the type of cable)

- P** Pigtails
- B** Brilliance field installable connectors
- N** no accessoire
- A** Polarität Typ-A (only in module type „P“)

Keystone Color Chart Fiber

Light ivory

Fibertype: Multimode
OM1 62,5/125
OM2 50/125

aqua

Fibertype: Multimode
OM3 50/125

pink

Fibertype: Multimode
OM4 50/125

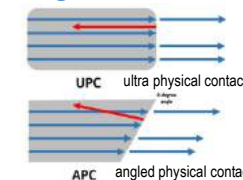
azure

Fibertype: Singlemode
9/125
OS2/UPC

green

Fibertype: Singlemode
9/125
OS2/APC

Singlemode SM



Fiber modules

Copper modules



HIRSCHMANN

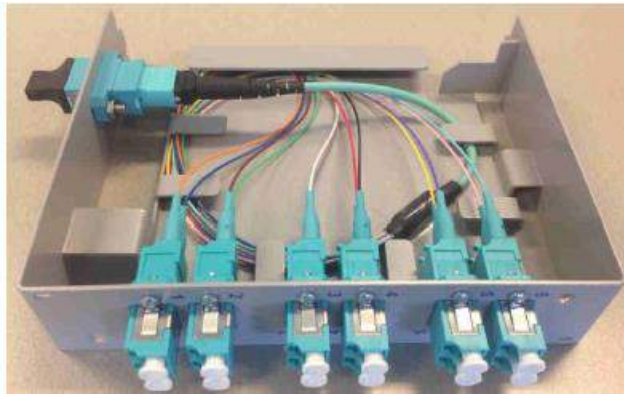
A BELDEN BRAND

MIPP --- MPO CASSETTE

MIPP™ Pre-Terminated MPO Cassette is designed for **plug & play** network designs



- Pre-Terminated module with one MPO (12 fibers) on bottom or top side (Trunk side).
The MPO is internally connected by means of a fan out, to six LC duplex adapters (12 fibers) on the front (Patch side)



Type of Adapters

Patch Side

- LC Duplex
- LC/APC Duplex
- LC Duplex w/ Shutters
- LC/APC Duplex w/ Shutters
- SC Duplex
- SC/APC Duplex
- SC Duplex w/ Shutters
- SC/APC Duplex w/ Shutters
- ST Duplex

Trunk Side

- 1-Port MPO-12 (m)
- 1-Port MPO-12 (f)

Fiber Applications

- Multimode: OM1, OM2, OM3 and OM4
- Singlemode: OS2 and OS2/APC

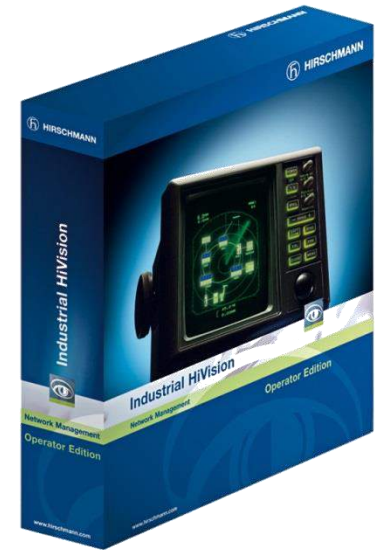
Polarity

- Type - A
- Type - A ALT
- Type - B
- Type - C

INDUSTRIAL HiVISION - LICENSE/AMP

License keys for Industrial HiVision depend on the number of devices (nodes) to be monitored. The following classifications are available. You can also add the licenses.

Order number	Nodes
costfree	16
943 156-032	32
943 156-064	64
943 156-128	128
943 156-256	256
943 156-512	512
943 156-124	1024
943 156-248	2048
943 156-496	4096



The 16 Node Free License is supported by version 06.0.04 and higher. In Ind. HiVision it is displayed as Promotion license. The Promotion License is free of charge. It is bound to a Hardware Key. Only one Promotion License can be used at one time. It can not be added to nodes of other licenses. Node leasing is not supported.

Option: Upgrade from lower to higher version of Industrial HiVision via Annual Maintenance Plan

You already have a **full version** of Industrial HiVision version ≥ 4.0 . The number of upgrade nodes should be the same as of the full nodes.

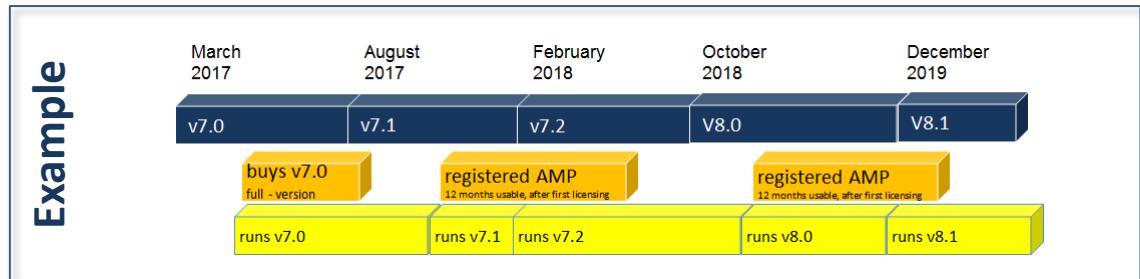
With an AMP you can get upgrades to newer versions of Ind. HiVision within 12 months. You can get an upgrade for the current version within 12 months after the first use of an AMP. With an AMP you get a license of the type **Upgrade**



After the 12 months you want to be free to decide whether you want to order a new AMP or not.

NOTE: Your AMP registration code is valid for all upgrades of Industrial HiVision within 12 months, starting from the first licensing.

IMPORTANT: You have to edit FULL-LICENSE **and** UPGRADE-LICENSE in the license menu



Ind.HiVision, Annual Maintenance Plan, 32 Nodes	942 021-032	Ind.HiVision, Annual Maintenance Plan, 512 Nodes	942 021-512
Ind.HiVision, Annual Maintenance Plan, 64 Nodes	942 021-064	Ind.HiVision, Annual Maintenance Plan, 1024 Nodes	942 021-124
Ind.HiVision, Annual Maintenance Plan, 128 Nodes	942 021-128	Ind.HiVision, Annual Maintenance Plan, 2048 Nodes	942 021-248
Ind.HiVision, Annual Maintenance Plan, 256 Nodes	942 021-256	Ind.HiVision, Annual Maintenance Plan, 4096 Nodes	942 021-496

OVERVIEW



Possibility: Which SFP in which switch slot?

- *1: since HIOS 02.0.01. PRP ports are supported
- *2: since HIOS 02.0.02
- *3: only specific SFPs are supported, see installation guide..
- *4: since HiSecos 01.2
- *5: since HIOS 03.0.00

Device	FE SFP 100	GE SFP 1000	GE TP SFP 10/100	GE TP SFP 1000	FE TP SFP 100	Device	FE SFP 100	GE SFP 1000	GE TP SFP 10/100	GE TP SFP 1000	FE TP SFP 100
RS 30 FE SFP GE SFP 2 GE and 2 FE	x - - x	- x x	- - x (GE port)	- x x (GE port)	- - -	PowerView - MM4(2)TX/SFP (GE Combo ports) - MM3 4SFP	- x x	x - -	- - -	- - -	- - x
RS 40 GE Combo	x	x	-	-	-	MSP30/32 MSM20 MSM40 MSM50 MSM60	- x - -	- x x x	- - - -	- - x -	- - - -
RSP20	x	-	-	x*5	x*5	MACH 102 - GE Combo ports - FE SFP	- x x	- x x	- - -	- - -	- - x
RSP15	x	-	-	x*5	x*1 x*5	MACH 104 - GE Combo ports	- x	x x	- -	- -	- -
RSP30	x	x	-	x*5	x*5	MACH 1000 (102x, 103x) - FE SFP - GE SFP - GE Combo ports	- x x	- x x	- - -	- x -	- x -
RSP35	x	x	-	x*5	x*1 x*5	MACH 1000 (104x) GE Combo ports	x	x	-	-	-
RSPL20	x	-	-	-	x*5	MACH 4002 48+4G - Basic Board FE SFP - Basic Board GE SFP - M4 Fast 8 SFP - M4 Giga 8 SFP (not supported in this MACH)	- - x -	- x - -	- - - -	- - x -	- - x -
RSPL30 - FE SFP - GE Combo ports	x x	- x	- -	- -	x*5 -	MACH 4002 24G/48G (+30) - Basic Board GE SFP - Basic Board X GE XFP - M4 Fast 8 SFP - M4 Giga 8 SFP	- - x x	- x - x	- - - x	- x - x	- - x x
RSP520/25	x	-	-	-	x*5	OS20	x*2	-	-	-	-
RSPE - FE SFP - GE Combo ports	x x	- x	- -	- -	x -	OS30	x*2	x*2	-	-	-
RSR 20	-	-	-	-	-	OS32	x*2	x*2	-	-	-
RSR 30 - FE SFP - GE SFP - GE Combo ports	x - - x	- x x	- - -	- - -	x -	Eagle20 Eagle30	- x	- x	- -	- -	- x*4
EES20/25	x	-	-	-	x*2	OpenBAT (BAT-R, BAT-F)	-	x*2	-	-	-
EESX - FE SFP - GE Combo ports	x x	- x	- -	- -	x -	Spider II Giga ST/2S EEC	-	x	-	-	-
MDCE 20 - MM3 4 SFP	x	-	-	-	-						
MDCE 30 - MM4(2)TX/SFP (GE Combo ports) - (SW)	x -	- x	- - (SW)	- -	- -						



RSR30 06 03 CC07T1
 RSR30 06 02 CCZT11
 RSR30 08 02 CCZT11
 RSR30 08 02 0707T1

SFP	Wavelength	Optical Power in mW					Optical Power in dBm				Optical Budget			Attenuation to add if short dist.	Maximum Link Span				
		OUT max	OUT min	OUT moy	IN min	IN max	OUT max	OUT min	IN min	IN max	Glass 62,5/125µm	Glass 50/125µm	Silicium 9/125		Glass 62,5/125µm (OM1)	Glass 50/125µm (OM2/OM3)	Silicium 9/125µm	Corning® SMF-28 9/125µm*	Att/km / reserve
M-SFP-SX/LC	850 nm	0,40 mW	0,14 mW	0,27 mW	0,013 mW	1,00 mW	-4 dBm	-8,5 dBm	-19,0 dBm	0 dBm	0 dB - 7,5 dB			0 - 275m	0 - 550m			3dB/km / 3dB	
M-SFP-MX/LC	1310 nm	0,50 mW	0,13 mW	0,31 mW	0,020 mW	0,50 mW	-3 dBm	-9 dBm	-17,0 dBm	-3,0 dBm	0 - 8 dB			0 - 1km	0 - 2km			1,0 dB/km, 500 MHz*km	
M-SFP-MX/LC EEC	1310 nm	0,50 mW	0,13 mW	0,31 mW	0,020 mW	0,50 mW	-3 dBm	-9 dBm	-17,0 dBm	-3,0 dBm	0 - 8 dB			0 - 1km	0 - 2km			1,0 dB/km, 500 MHz*km	
M-SFP-LX/LC	1310 nm	0,50 mW	0,13 mW	0,31 mW	0,010 mW	0,50 mW	-3 dBm	-9 dBm	-20,0 dBm	-3,0 dBm			0 dB - 11 dB	0 - 550m	0 - 550m	0 - 20km		0,4 dB/km / 3dB	
SFP-GIG-LX/LC	1310 nm	0,63 mW	0,16 mW	0,39 mW	0,005 mW	1,00 mW	-2 dBm	-8,0 dBm	-23,0 dBm				0 dB - 10,5 dB			0 - 20km			
SFP-GIG-LX/LC EEC	1310 nm	0,63 mW	0,16 mW	0,39 mW	0,005 mW	1,00 mW	-2 dBm	-8,0 dBm	-23,0 dBm				0 dB - 10,5 dB			0 - 20km			
M-SFP-LX+/LC	1310 nm	1,58 mW	0,50 mW	1,04 mW	0,005 mW	0,50 mW	+2 dBm	-3 dBm	-23,0 dBm	-3,0 dBm			5 - 20 dB	-5 dB		5 - 42km		0,4dB/km / 3dB	
M-SFP-LH/LC	1550 nm	2,00 mW	0,63 mW	1,31 mW	0,004 mW	0,50 mW	+3 dBm	-2 dBm	-24,0 dBm	-3,0 dBm			6 dB - 22 dB	-6 dB		16 - 80km	22 - 110km	0,25dB/km / 2dB	
M-SFP-LH/LC EEC	1550 nm	2,00 mW	0,63 mW	1,31 mW	0,004 mW	0,50 mW	+3 dBm	-2 dBm	-24,0 dBm	-3,0 dBm			6 dB - 22 dB	-6 dB		16 - 80km	22 - 110km	0,25dB/km / 2dB	
M-SFP-LH+/LC	1550 nm	3,16 mW	1,00 mW	2,08 mW	0,001 mW	0,16 mW	+5 dBm	0 dBm	-32,0 dBm	-8,0 dBm			13 dB - 32 dB	-13 dB		44 - 120km	60 - 160km	0,25dB/km / 2dB	
M-GE SFP-BA-LX	1310 nm	0,50 mW	0,13 mW	0,31 mW	0,010 mW	1,00 mW	-3 dBm	-9 dBm	-20,0 dBm	0 dBm			0 - 11 dB			0 - 20km		0,4 dB/km / 3dB	
M-GE SFP-BB-LX	1550 nm	0,50 mW	0,13 mW	0,31 mW	0,010 mW	1,00 mW	-3 dBm	-9 dBm	-20,0 dBm	0 dBm			0 - 11 dB			0 - 20km		0,4 dB/km / 3dB	
M-SFP-BIDI Type A LH/LC	1490 nm	3,16 mW	0,79 mW	1,98 mW	0,003 mW	1,00 mW	+5 dBm	-1 dBm	-25,0 dBm	0 dBm			5 - 24 dB	-5 dB		23 - 80km		0,25dB/km / 2dB	
M-SFP-BIDI Type B LH/LC	1590 nm	3,16 mW	0,79 mW	1,98 mW	0,003 mW	1,00 mW	+5 dBm	-1 dBm	-25,0 dBm	0 dBm			5 - 24 dB	-5 dB		23 - 80km		0,25dB/km / 2dB	
M-FAST SFP-MM	1310 nm	0,04 mW	0,01 mW	0,02 mW	0,001 mW	0,04 mW	-14 dBm	-20 dBm	-31,0 dBm	-14,0 dBm	0 - 11 dB	0 - 8 dB			0 - 4km	0 - 5km		1dB/km / 3dB	
M-FAST SFP-MMLC	1310 nm	0,04 mW	0,01 mW	0,02 mW	0,001 mW	0,04 mW	-14 dBm	-20 dBm	-31,0 dBm	-14,0 dBm	0 - 11 dB	0 - 8 dB			0 - 4km	0 - 5km		1dB/km / 3dB	
SFP-FAST-MMLC	1310 nm	0,04 mW	0,01 mW	0,02 mW	0,0006 mW	0,04 mW	-14 dBm	-20 dBm	-32,0 dBm	-14,0 dBm			0 - 8 dB			0 - 2km		1dB/km / 3dB	
SFP-FAST-MMLC EEC	1310 nm	0,04 mW	0,01 mW	0,02 mW	0,0006 mW	0,04 mW	-14 dBm	-20 dBm	-32,0 dBm	-14,0 dBm			0 - 8 dB			0 - 2km		1dB/km / 3dB	
M-FAST SFP-SM	1310 nm	0,16 mW	0,03 mW	0,10 mW	0,002 mW	0,16 mW	-8 dBm	-15 dBm	-28,0 dBm	-8,0 dBm			0 - 13 dB			0 - 25km		0,4 dB/km	
SFP-FAST-SM/LC	1310 nm	0,16 mW	0,03 mW	0,10 mW	0,0004 mW	0,16 mW	-8 dBm	-15 dBm	-34,0 dBm	-8,0 dBm			0 - 13 dB			0 - 30km		0,4 dB/km	
SFP-FAST-SM/LC EEC	1310 nm	0,16 mW	0,03 mW	0,10 mW	0,0004 mW	0,16 mW	-8 dBm	-15 dBm	-34,0 dBm	-8,0 dBm			0 - 13 dB			0 - 30km		0,4 dB/km	
M-FAST SFP-SM+	1310 nm	1,00 mW	0,32 mW	0,66 mW	0,0004 mW	0,10 mW	0 dBm	-5 dBm	-34,0 dBm	-10,0 dBm			10 - 29 dB	-10 dB		25 - 65km		0,4 dB/km	
M-FAST SFP-LH/LC	1550 nm	1,00 mW	0,32 mW	0,66 mW	0,0004 mW	0,10 mW	0 dBm	-5 dBm	-34,0 dBm	-10,0 dBm			10 - 29 dB	-10 dB		47 - 104km	55 - 140km	0,25 dB/km	
M-SFP-2.5-MM/LC EEC	850 nm	0,40 mW	0,13 mW	0,26 mW	0,050 mW	0,40 mW	-4 dBm	-9 dBm	-13,0 dBm	-4,0 dBm	0 - 4 dB	0 - 4 dB		0 - 170m	0-550m(OM3)/400(OM2)			3,5dB/km	
M-SFP-2.5-SM-/LC EEC	1310 nm	0,50 mW	0,11 mW	0,31 mW	0,016 mW	0,50 mW	-3 dBm	-10 dBm	-18,0 dBm	-3,0 dBm			0 - 8,5 dB			0 - 5km		0,55dB/km	
M-SFP-2.5-SM/LC EEC	1310 nm	1,00 mW	0,32 mW	0,66 mW	0,016 mW	1,00 mW	0 dBm	-5 dBm	-18,0 dBm	0 dBm			0 - 13 dB			0 - 20km		0,55dB/km	
M-SFP-2.5-SM+/LC EEC	1310 nm	2,00 mW	0,63 mW	1,31 mW	0,002 mW	0,16 mW	+3 dBm	-2 dBm	-27,0 dBm	-8,0 dBm			12 - 25 dB	-12 dB		21 - 45km		0,55dB/km	
M-SFP-10-SR/LC EEC	850 nm		0,79 mW	0,79 mW	0,078 mW			-1 dBm	-11,1 dBm		0 - 8,1 dB	0 - 8,1 dB		26m/OM1:33m	66m/OM2:81m/OM3:300m/OM4:400m			3,2dB/km - 3dB/km	
M-XFP-10-SR/LC	850 nm		0,79 mW	0,79 mW	0,078 mW			-1 dBm	-11,1 dBm		0 - 8,1 dB	0 - 8,1 dB		26m/OM1:33m	66m/OM2:81m/OM3:300m			3,2dB/km - 3dB/km	
M-XFP-10-SR/LC EEC	850 nm		0,79 mW	0,79 mW	0,078 mW			-1 dBm	-11,1 dBm		0 - 8,1 dB	0 - 8,1 dB		26m/OM1:33m	66m/OM2:81m/OM3:300m			3,2dB/km - 3dB/km	
M-SFP-10-LR/LC EEC	1310 nm		2,51 mW	2,51 mW	0,036 mW			-1 dBm	-14,4 dBm				0 - 7,4 dB			0 - 10 km		0,4dB/km	
M-XFP-10-LR/LC	1310 nm		0,79 mW	0,79 mW	0,036 mW			-1 dBm	-14,4 dBm				0 - 8,4 dB			2m - 10 km		0,4dB/km	
M-XFP-10-LR/LC EEC	1310 nm		0,79 mW	0,79 mW	0,036 mW			-1 dBm	-14,4 dBm				0 - 8,4 dB			2m - 10 km		0,4dB/km	
M-SFP-10-ER/LC EEC	1550 nm		1,58 mW	1,58 mW	0,025 mW			+2 dBm	-16,0 dBm				3 - 15 dB	-3 dB		10 - 40 km		0,25dB/km	
M-XFP-10-ER/LC	1550 nm		1,58 mW	1,58 mW	0,025 mW			+2 dBm	-16,0 dBm				3 - 15 dB	-3 dB		10 - 40 km		0,25dB/km	
M-XFP-10-ER/LC EEC	1550 nm		1,58 mW	1,58 mW	0,025 mW			+2 dBm	-16,0 dBm				3 - 15 dB	-3 dB		10 - 40 km		0,25dB/km	
M-SFP-10-ZR/LC	1550 nm		2,51 mW	2,51 mW	0,004 mW			+4 dBm	-24,0 dBm				11 - 22 dB	-11 dB		40 - 80 km		0,25dB/km	
M-XFP-10-ZR/LC	1550 nm		2,51 mW	2,51 mW	0,004 mW			+4 dBm	-24,0 dBm				11 - 22 dB	-11 dB		40 - 80 km		0,25dB/km	



XFP Transceiver		Cable type	Wave-length in nm	Con-connector	System Attenuation	Transmit Power min	Receiver Sensitivity	Example for F/O expansion	Fiber data
M-XFP SR/LC	943 917-001	62,5/125µm Multimode	850	LC	0 – 8,1 dB	-1,0 dBm	-11,1 dBm	2m – 26m	3,2 dB/km 160 MHz x km
M-XFP SR/LC EEC	942 054-001								
		62,5/125µm Multimode	850	LC	0 – 8,1 dB			2m – 33m	3,2 dB/km 200 MHz x km
		50/125µm Multimode	850	LC	0 – 8,1 dB			2m -66m	3,0 dB/km 400 MHz x km
		50/125µm Multimode	850	LC	0 – 8,1 dB			2m – 82m	3,0 dB/km 500 MHz x km
		50/125µm Multimode	850	LC	0 – 8,1 dB			2m – 300m	3,0 dB/km 2000 MHz x km
M-XFP LR/LC	943 919-001	9/125µm Singlemode	1300	LC	0 – 8,4dB	-1,0 dBm	-14,4 dBm	2m – 10km	0,4 dB/km 3,5 ps/(nm x km)
M-XFP LR/LC EEC	942 055-001								
M-XFP ER/LC	943 920-001	9/125µm Singlemode	1550	LC	3 – 15 dB	+ 2,0 dBm	-16,0 dBm	10km – 40km	0,25 dB/km 19 ps/(nm x km)
M-XFP ER/LC EEC	942 056-001								
M-XFP ZR/LC	943 921-001	9/125µm Singlemode	1550	LC	11 – 24 dB	+4,0 dBm	-24 dBm	40km – 80km	0,25 dB/km 19 ps/(nm x km)

EEC: -40°C - +85°C



SFP+ slots included in DRAGON MACH and MSP40 – MSM60 media module

Product Code	Order number		Wave-length	Fiber	System attenuation	Distance	Fiber data	Temperature range	MTBF
M-SFP-10-SR/LC EEC	942 210-001	MM	850nm	50/125 µm	0-8.1 dB	max. 66 m	3,0 dB/km, 400 MHz*km	-40 - +85°C	Telcordia SR-332, Issue 2, 40°C 610 years
						max. 82 m	3,0 dB/km, 500 MHz*km (OM2)		
						max. 300 m	3,0 dB/km, 2.000 MHz*km (OM3)		
						max. 400 m	3,0 dB/km, 4.700 MHz*km (OM4)		
				max. 26 m		3,2 dB/km, 160 MHz*km			
				max. 33 m		3,2 dB/km, 200 MHz*km (OM1)			
M-SFP-10-LR/LC EEC	942 211-001	SM	1310 nm	9/125 µm	0-7.4 dB	Typ. 10 km	0,4 dB/km, 3,5 ps/(nm*km)	-5 - +85°C	Telcordia SR-332, Issue 3, 40°C 2466 years
M-SFP-10-ER/LC EEC	942 212-001	SM	1550 nm		3-15 dB	10-40 km	0,25 dB/km, 19 ps/(nm*km)		Telcordia SR-332, Issue 3, 40°C 1059 years
M-SFP-10-ZR/LC	942 213-001	SM	1550 nm		11-22 dB	40-80km	0,25 dB/km, 19 ps/(nm*km)		Telcordia SR-332, Issue 3, 40°C 1198 years

SR ... Short Reach: 850 nm → 300m
 LR ... Long Reach: 1310 nm → 10km
 ER ... Extended Reach: 1550 nm → 40km
 ZR ... : 1550 nm → 80km

Approvals: EN60950, cUL 60950-1

EEC: -40°C - +85°C





2.5 Gbit/s

Currently, exclusive to GRS1042/1142, MSP40 (MSM50Q6Q6...) and BRS50

Product Code	Order number		Wave-length	Fiber	System attenuation	Distance	Fiber data	Temperature range	MTBF		
M-SFP-2.5-MM/LC EEC	942 162-001	MM	850 nm	62,5/125 μm 50/125 μm		0-170m 0-550m					
M-SFP-2.5-SM-/LC EEC	942 163-001	SM	1310nm	9/125μm		0-5km					
M-SFP-2.5-SM/LC EEC	942 164-001					0-20km					
M-SFP-2.5-SM+/LC EEC	942 165-001					21-45km					
M-SFP-2.5-LH/LC	942 220-001					1551 nm	14-28 dB	Typ. 80 km	0,25 dB/km, 19 ps/(nm*km)	0 - +60°C	Telcordia SR-332, Issue 1, 40°C 236 Jahre
M-SFP-2.5-LH+/LC	942 221-001						16-31 dB	Typ. 100 km	non-amplified links 0,25 dB/km, 19 ps/(nm*km)		Telcordia SR-332, Issue 2, 40°C 259 Jahre

EEC: -40°C - +85°C



SFP 1 Gbit/s



Product Code	Order number		Wave-length	Fiber	System attenuation	Distance	Transmit Power max.	Transmit Power min	Receiver sensitivity	Max. Optical Input Power
M-SFP-SX/LC	943 014-001	MM	850nm	G 62,5/125 G50/125	0-7,5dB	0-275m 0-550m	-4,0dBm	-9,5dBm	-20dBm	0dBm
M-SFP-SX/LC EEC	943 896-001									
M-SFP-LX/LC	943 015-001	MM SM	1310nm	G62,5/125 G50/125 S9/125	0-10,5dB	0-550m* 0-550m* 0-20km	-3dBm	-9,5dBm	-20dBm	-3dBm
M-SFP-LX/LC EEC	943 897-001									
M-SFP-MX/LC EEC	942 108-001	MM	1310nm	G62,5/125 G50/125 (800MHz/km)	0-12dB	0-500m 0-1,5km	-3dBm	-9dBm	-17dBm	-3dBm
M-SFP-LX+/LC	942 023-001	SM			5-20dB	5-42km	+2dBm	-3dBm	-23dBm	-3dBm
M-SFP-LX+/LC EEC	942 024-001									
M-SFP-LH/LC	943 042-001	SM	1550nm	S9/125	5-22dB	23-80km (0,25dB/km)	+5dBm	0dBm	-22dBm	0dBm
M-SFP-LH/LC EEC	943 898-001				13-30dB	71-108km (0,25dB/km) 71-128km (0,21dB/km)	+5dBm	0dBm	-30dBm	-10dBm
M-SFP-LH+/LC	943 049-001				0-11dB	0-20km (0,25dB/km)				
M-SFP-BIDI Bundle LX/LC EEC	943 974-101				A:1310nm B:1550nm	5-24dB	23-80km (0,25dB/km)			
M-SFP-BIDI Bundle LH/LC EEC	943 975-101	A:1490nm B:1590nm								

Safety of information
technology equipment

cUL 60950-1

Shipbuilding

Germanischer Lloyd, ABS, BV, DNV, LR, KR, RINA

*with f/o adapter inline with IEE 802.3-2000 clause 38
(single-mode fiber offset-launch mode conditioning patch cord)

EEC: -40°C - +85°C



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SFP 100 Mbit/s



Product Code	Order number		Wave-length	Fiber	System attenuation	Distance	Transmit Power max	Transmit Power min	Receiver sensitivity	
M-FAST SFP-MM/LC	943 865-001	MM	1310nm	G62,5/125 G50/125	0-11dB	0-4km (1,0dB/km, 500 MHz*km)	-14dBm (62,5/125)	-20dBm (62,5/125) -23,5dBm (50/125)	-31dBm	
M-FAST SFP-MM/LC EEC	943 945-001				0-8dB	0-5km (1,0dB/km, 800MHz*km)				
M-FAST SFP-SM/LC	943 866-001	SM	1310nm	S9/125	0-13dB	0-25km (0,4dB/km)	-8dBm	-15dBm	-28dBm	
M-FAST SFP-SM/LC EEC	943946-001									
M-FAST SFP-SM+/LC	943 867-001				10-29dB	25-65km	0dBm	-5dBm	-34dBm	
M-FAST SFP-SM+/LC EEC	943 947-001									
M-FAST SFP-LH/LC	943 868-001		1550nm		10-29dB	47-104km (0,25dB/km) 55-140km (0,18dB/km)	0dBm	-5dBm	-34dBm	
M-FAST SFP-LH/LC EEC	943 948-001									

Shipbuilding

Germanischer Lloyd

EEC: -40°C - +85°C



SFP

Entry-Level SFPs



100 Mbit/s

SFP-FAST-MM/LC
942 194-001
SFP-FAST-MM/LC EEC
942 194-002

Multimode

SFP-FAST-SM/LC
942 195-001
SFP-FAST-SM/LC EEC
942 195-002

Singlemode

1.000 Mbit/s

SFP-GIG-LX/LC
942 196-001
SFP-GIG-LX/LC EEC
942 196-002

Singlemode

SFP Dust-Cover (25 pcs.)

943 942-001



Fiber cable types and limitations

Name	Diameter	Bandwith	100 Mbit/s	1.000 Mbit/s
OM1	62,5/125 µm	200 MHz x km	4km	275m
OM2	50/125 µm	500 MHz x km	5km	550m
OM3	50/125 µm	2.000 MHz x km	5km	550m
OM4	50/125 µm	4.700 MHz x km	5km	1km
OS1/OS2	9/125 µm		150km	120km

Twisted Pair (RJ45) SFPs

M- SFP-TX/RJ45 (943 977-001)
M-SFP-TX/RJ45 EEC (942 161-001)

Gigabit RJ45 SFP

M- FAST SFP-TX/RJ45 (942 098-001)
M-FAST SFP-TX/RJ45 EEC (942 098-002)

FastEthernet RJ45 SFP

Transmit Power max.

-14dBm

-8dBm

-2dBm

Transmit Power min.

-20dBm

-15dBm

-8dBm

Center wavelength

1310 nm

1310 nm

1310 nm

Receiver sensitivity

-32dBm

-34dBm

-23dBm

Maximum Optical Input Power

dBm

dBm

dBm

Optical budget

0-8dB

0-13dB

0 – 10,5dB

Maximum Link Span

0 – 2km
GI 50/125

0 – 30km
SM 9/125

0 – 20km
SM 9/125

Approvals

Safety of information
technology equipment

cUL 60950-1



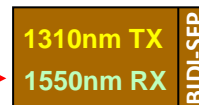
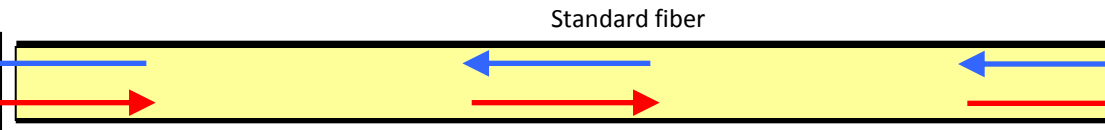
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SFP

Entry-Level BIDI-SFPs

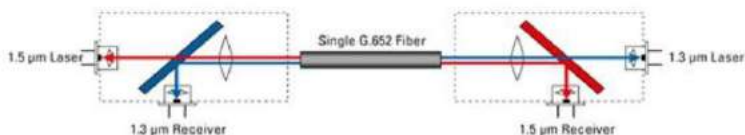
100 Mbit/s



Only one fiber to send **and** receive

EEC: -40°C - +85°C

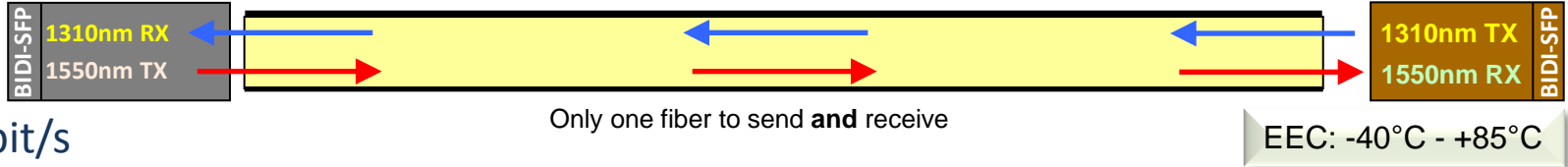
Product Code	Order number		Wave-length	Fiber	System attenuation	distance	Fiber data	Temperature range	Approvals
SFP-FAST-BA MM/LC EEC	942 204-001	MM	TX 1310 nm; RX 1550 nm	50/125 µm	0-16 dB	0-2 km	1,0 dB/km, 800 MHz*km	-40 - +85°C	EN60950, cUL 60950-1
SFP-FAST-BA MM/LC EEC	942 204-001	MM	TX 1310 nm; RX 1550 nm	62,5/125 µm	0-16 dB	0-2 km	1,0 dB/km, 500 MHz*km	-40 - +85°C	EN60950, cUL 60950-1
SFP-FAST-BB MM/LC EEC	942 204-002	MM	TX 1550 nm; RX 1310 nm	50/125 µm	0-16 dB	0-2 km	1,0 dB/km, 800 MHz*km	-40 - +85°C	EN60950, cUL 60950-1
SFP-FAST-BB MM/LC EEC	942 204-002	MM	TX 1550 nm; RX 1310 nm	62,5/125 µm	0-16 dB	0-2 km	1,0 dB/km, 500 MHz*km	-40 - +85°C	EN60950, cUL 60950-1
SFP-FAST-BA SM/LC EEC	942 205-001	SM	TX 1310 nm; RX 1550 nm	9/125 µm	0-18 dB	0-20 km	0,4 dB/km, 3,5 ps/(nm*km)	-40 - +85°C	EN60950, cUL 60950-1
SFP-FAST-BB SM/LC EEC	942 205-002	SM	TX 1550 nm; RX 1310 nm	9/125 µm	0-18 dB	0-20 km	0,25 dB/km, 19 ps/(nm*km)	-40 - +85°C	EN60950, cUL 60950-1
SFP-FAST-BA SM+/LC EEC	942 206-001	SM	TX 1310 nm; RX 1550 nm	9/125 µm	0-29 dB	0-60 km	0,4 dB/km, 3,5 ps/(nm*km)	-40 - +85°C	EN60950, cUL 60950-1
SFP-FAST-BB SM+/LC EEC	942 206-002	SM	TX 1550 nm; RX 1310 nm	9/125 µm	0-29 dB	0-60 km	0,25 dB/km, 19 ps/(nm*km)	-40 - +85°C	EN60950, cUL 60950-1



SFP

Entry-Level BIDI-SFPs

1.000 Mbit/s



Product Code	Order number		wave-length	fiber	System attenuation	Distance	Fiber data	Temperature range	Approvals
SFP-GIG-BA LX/LC EEC	942 207-001	SM	TX 1310 nm; RX 1550 nm	9/125 μm	0–15 dB	0 - 20 km	0,4 dB/km, 3,5 ps/(nm*km)	-40 - +85°C	EN60950, cUL 60950-1
SFP-GIG-BB LX/LC EEC	942 207-002	SM	TX 1550 nm; RX 1310 nm	9/125 μm	0–15 dB	0 - 20 km	0,25 dB/km, 19 ps/(nm*km)	-40 - +85°C	EN60950, cUL 60950-1
SFP-GIG-BA LX+/LC EEC	942 208-001	SM	TX 1310 nm; RX 1550 nm	9/125 μm	3-20 dB	12 - 40 km	0,4 dB/km, 3,5 ps/(nm*km)	-40 - +85°C	EN60950, cUL 60950-1
SFP-GIG-BB LX+/LC EEC	942 208-002	SM	TX 1550 nm; RX 1310 nm	9/125 μm	3-20 dB	12 - 40 km	0,25 dB/km, 19 ps/(nm*km)	-40 - +85°C	EN60950, cUL 60950-1
SFP-GIG-BA LH/LC EEC	942 209-001	SM	TX 1490 nm; RX 1550 nm	9/125 μm	4-24 dB	19 - 80 km	0,25 dB/km, 19 ps/(nm*km)	-40 - +85°C	EN60950, cUL 60950-1
SFP-GIG-BB LH/LC EEC	942 209-002	SM	TX 1550 nm; RX 1490 nm	9/125 μm	4-24 dB	19 - 80 km	0,25 dB/km, 19 ps/(nm*km)	-40 - +85°C	EN60950, cUL 60950-1



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RAIL POWER SUPPLIES

RPS15 943 662-015

Input data	AC 100-240V; 50-60Hz AC Input Current 0,28A DC 110-300V
Output data	DC 24-28V 0,63A (24V); 0,54A (28V)
AC Input Current	0,17A at 230V AC



RPS60/48V EEC 943 952-001 90 Watt

Input data	100-240V AC; 50-60Hz or 85 to 264V DC; 47-63Hz (DC 100 to 375V) Max. 0,7A at 230V AC; max. 1,3A at 100V AC Activation current: <40A at 264V AC
Output data	47-52V DC (typ. 48V); externally adjustable 1,25A static at 48V nominal 1,88A (150% of nominal load) for max. 2,5 sec
Current consumption	Max. 0,7A at 230V; max. 1,3A at 100V



RPS30 943 662-003

Input data	100-240V AC; 47 to 63Hz or 85 to 375 DC Max. 0,35A at 296V AC Activation current: <36A at 240V AC
Output data	24V DC (-0,5%, +0,5%) 1,3A at 100 – 240V AC
Current consumption	Max. 0,35 A at 296 V AC



RPS260/PoE EEC 942 200-001 260 Watt

Input data	100-240V AC; 50-60Hz or 110-150V DC
Output data	48-56V DC
Current consumption	Input inrush current: 6/9A (120/230V AC)
Temp. range	-25° to +70°C



RPS80 EEC 943 662-080

Input data	100-240V AC(+/-15%); 50-60Hz or 110 to 300V DC (-20/+25%) Activation current: <13A at 230V AC
Output data	24-28V DC (typ. 24,1 V) external adjustable 3,4-3,0 A continuous Min 5,0 – 4,5A for typ. 4 sec
Current consumption	Max. 1,0 – 1,8 A at 100-240 V AC Max. 0,85 – 0,3 A at 110-200V DC



RPS480/PoE EEC 480 Watt

Input data	
Output data	48-56V DC
Current consumption	



RPS120EEC (CC) 943 662-121

Input data	100-240V AC; (-15/+10%) 50 to 60Hz or 110 to 300V DC (+/- 20%) Max. 1,4 - 0,65 A at 100-240V AC Max. 1,2 – 0,45 A at 120 – 300V DC Activation current: < 15A at 100 and 230V AC
Output data	24-28V DC (typ. 24,1 V); externally adjustable Min. 5 – 4,5 A continuous 7,5 – 6,7A for 4 sec
Current consumption	Max. 1,4-0,65 A at 100-240 V AC Max. 1,2-0,45 A at 120-300V DC

RPS90/48V LV 943 980-001

Input data	24V DC (4,2A) 48V DC (2,1A)
Output data	48-54V DC (typ. 48V); externally adjustable 1,25A static at 48V nominal 1,88A (150% of nominal load) for max. 2,5 sec
Current consumption	24 V DC (4,2 A); 48 V DC (2,1 A)



RPS90/48 HV 943979-001 90 Watt

Input data	100-240V AC; 50-60Hz or 85 to 264V DC; 47-63 Hz (DC 100 to 375V)
Output data	48-54V DC (typ. 48V); externally adjustable 1,9A static at 48V nominal 1,88A (150% of nominal load) for max. 2,5 sec
Current consumption	60V DC (1,7A); 250V DC (0,4A) 110V AC (1,0A); 230V AC (0,5A)

PC150/36V/48V-IP67

Input data	Rated voltage: 24V DC / 36V DC / 48V DC Voltage range: 24 - 48V DC Input current: 3,8 – 8A DC Fuse: 16 A (T)
Output data	Output voltage: 48V DC (0 to +2% accuracy) Output current (max.): 3,2A

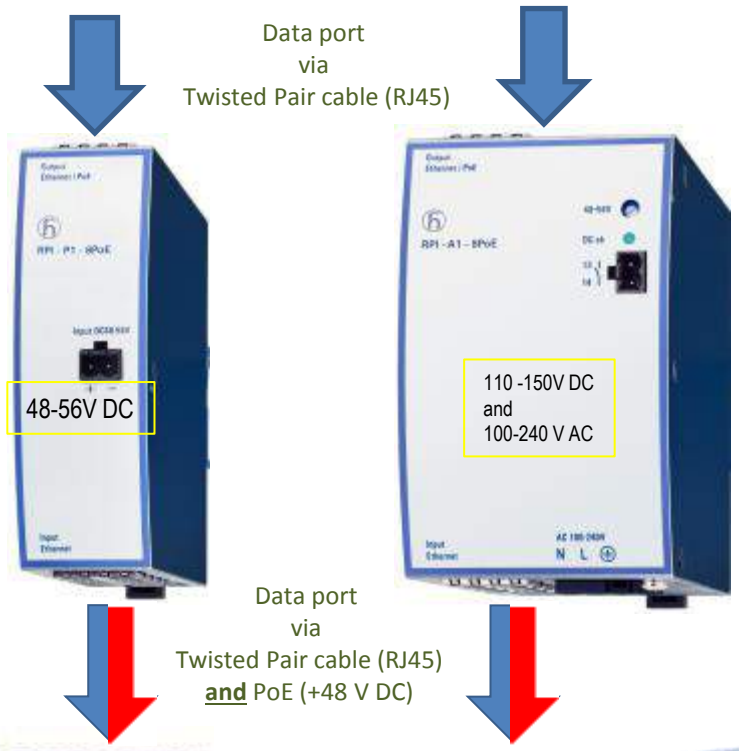
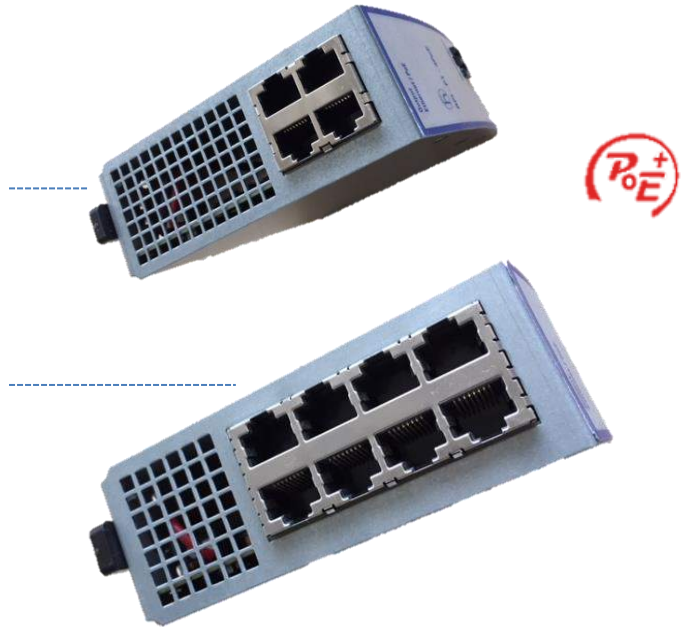


PC150/72V/48V-IP67

Input data	Rated voltage: 72V DC / 96V DC / 110V DC Voltage range: 72 - 110V DC Input current: 1,5 – 2,4A DC Fuse: 6,3 A (T)
Output data	Output voltage: 48V DC (0 to +2% accuracy) Output current (max.): 3,2A

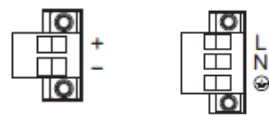
POE INJECTORS

Product	Order number	Port type	Power consumption	Operating Voltage	Operating Temperature
RPI-P1-4PoE	942 227-001	4x FE/GE ports à 30W	125 W	48-56 V DC	-40°C to +85°C
RPI-A1-4PoE	942 226-001	4x FE/GE ports à 30W	160 W	110 -150V DC and 100-240 V AC	-25°C to +70°C
RPI-P1-8PoE	942 225-001	8x FE/GE ports à 30W	245 W	48-56 V DC	-40°C to +85°C
RPI-A1-8PoE	942 224-001	8x FE/GE ports à 30W	290 W	110 -150V DC and 100-240 V AC	-25°C to +70°C



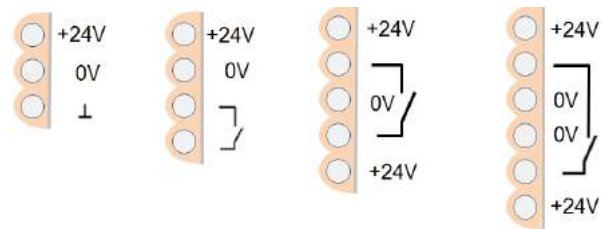
POWER BLOCKS

Order code



GRS Greyhound
RSR20/30 („C“)
RSP2x/3x („CC“)
LV power supply

GRS Greyhound
RSR20/30 („K“)
RSP2x/3x (KK“,“K9“)
HV power supply



Screw torque



name	order number	type	product
Terminal block 5 pin + interlock (50 pcs)	943 845-001	5 pin interlock (screw)	Rail RS2-xx/xx, MSP
Terminal block 6 pin + interlock (50 pcs)	943 845-002	6 pin interlock (screw)	MICE MS2108/MS3124, SPIDER PL, EAGLE One, RED25
Terminal block 5 pin green (50 pcs)	943 845-003	5 pin snap (green)	Rail RS unmanaged
Terminal block 4 pin black (50 pcs)	943 845-004	4 pin snap	Power MICE MS4128, MS20/30 (Option „E“)
Terminal block 3 pin (50 pcs)	943 845-005	3 pin snap	SPIDER I + II, SPIDER III-SL, GECKO
Terminal block 6 pin (50 pcs)	943 845-006	6 pin snap	Rail RS20/30/40, RSB
Terminal block 4 pin (50 pcs)	943 845-007	4 pin snap with coding	MICE MS20/MS30
Terminal block 3 pin (50 pcs)	943 845-008	3 pin power (screw)	RSR/MACH1000/RSP/GRS (HV power supply); MSM46 (PoE media modul), EAGLE20/30 („K9“,“KK“)
Terminal block 2 pin (50 pcs)	943 845-009	2 pin power (screw)	RSR/PoE-PS/RSP/GRS (LV power supply), BAT867, OpenBAT, RPS90/48V LV, EAGLE20/30 („CC“), GRS1040 (Option „HL“), RSP, RSPE
Terminal block 2 pin (50pcs)	943 845-010	2 pin relay (screw)	RSR/MACH100/1000-signal contact, RSP/RSPL/RSPS-Signal contact, EAGLE20/30-Signal contact, GRS1040-signal contact,
Terminal block 3 pin (50 pcs), screw	943 845-011	3 pin power (screw)	MACH1000 (LV power supply)
Terminal block 4 pin (50 pcs)	943 845-012	4 pin power	BAT-54, BAT300
Terminal block 6 pin (50 pcs), screw	943 845-013	5 pin power (screw)	EagleOne, SPIDER III-PL, RED25
Terminal block 4 pin (10 pcs), + interlock	942 272-103	4 pin power (screw)	MSP30/40
Power cord	942 000-001	3 pin power moulded (screw)	RSR/MACH1000/Greyhound/RSP (HV power supply)
Power cord	942 067-001 (1,5m) 942 067-101 (2,5m)	3 pin power (screw) + Schuko	RSR/MACH1000/Greyhound/RSP (HV power supply)

ACCESSOIRES

Rail Power Supplies Accessoire

Power cord (942 000-001) for pluggable connection for the power supply of MACH1000 family and RSR20/30; cable length 2meters



Power cord that has a CEE 7/4 plug (Schuko) at one end (942 067-001; 1,5m 942 067-101; 2,5m) for pluggable connection for the power supply of MACH1000-, Greyhound -, RSR20/30 -, RSP-family.



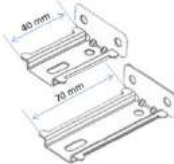
19" DIN Rail Adapter

943 766-002



SPIDER III, DIN rail wall mounting (40mm) 942 177-001

SPIDER III, DIN rail wall mounting (70mm) 942 177-002



SFP tool, to unplug SFP from a slot (OCTOPUS/BAT) 942 177-001

Dust Cover

RJ45 Dust-Cover (50 pcs.)

943 936-001



SFP Dust-Cover (25 pcs.)

943 942-001



OCTOPUS Dust cap (25 pcs.)

942 057-001



MACH4000, M4-Rackmount (10pcs.)

943 951-101

60mm x 88mm x 19mm



MACH4000, M4-Rackmount (10pcs.)

943 951-001

110mm x 88mm x 19mm



MACH100/1000, Greyhound fixing bracket

943 943-001

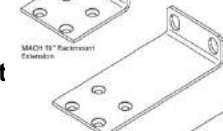
47mm x 44mm x 19mm



MACH100/1000, Greyhound fixing bracket

943 943-101

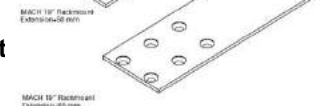
97mm x 44mm x 19mm



MACH100/1000, Greyhound fixing bracket

943 943-201

127mm x 44mm x 19mm

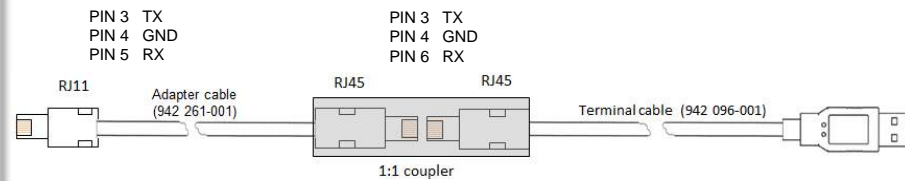
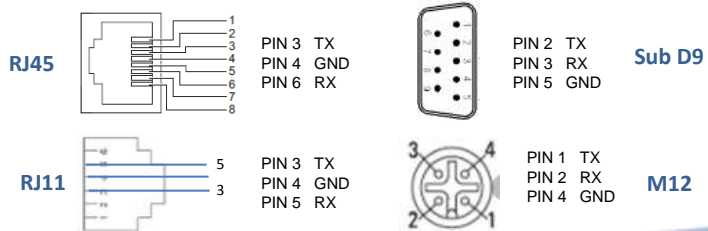


SUPPORTED TERMINAL CABLE

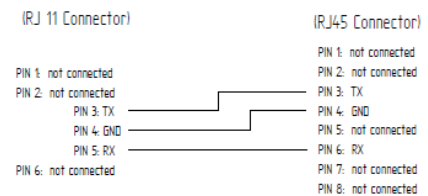
Especially PIN assignment
„CISCO Terminal cable“

Product Family	Terminal Cable RJ11 to DB9 943 301-001	Terminal Cable RJ45 to USB 942 096-001	Terminal Cable RJ45 to DB9 942 097-001	Terminal Cable M12 to USB 942 199-001	Terminal Cable M12-4pin to DB9 943 902-001	Terminal Cable M12-8pin to DB9 942 087-001
RSB	X					
RS20/30/40	X					
RSR	X					
MS20/30	X					
MSP30/40		X	X			
RED	X					
RSP/RSPL/RSPS/RSPE	X					
MACH100	X					
MACH1000	X					
MACH4000	X					
Dragon MACH4000/4500		X				
GRS1020/1030/1040		X	X			
OCTOPUS (Platform 4)					X	
OCTOPUS II (HiOS)				X		
EagleOne	X					
EAGLE20/30	X					
OpenBAT-R/-F						X
BAT450-F					X	

VT 100 terminal settings	
Speed	9,600 Baud
Data	8 Bit
Stopbit	1 Bit
Handshake	OFF
Parity	none



Adapter cable
(including coupler)
942 261-001



Terminal cable: M12 on Sub-D9 943 902-001

PIN assignment of the V.24 interface(M12) and wiring to the DB9 connector

Terminal cable: RJ11 on Sub-D9 943 301-001

PIN assignment of the V.24 interface (RJ11) and wiring to the DB9 connector

SUPPORTED AUTO-CONFIGURATION ADAPTERS

Product Family	ACA11- RJ11 EEC	ACA11- M12 EEC	ACA21- M12 EEC	ACA21- USB EEC	ACA22A- USB Mini	ACA22- M12 EEC	ACA22- USB EEC	ACA22- USB-C EEC	ACA31
SPIDER III PL				X	X		X		
OCTOPUS 8TX			X			X			
RSB	X								
RS20/30/40	X*			X	X		X		
RSR				X	X		X		
MS20/30	X*			X	X		X		
MSP30						X	X		X
MSP40						X	X		X
Bobcat								X	
RED25				X	X		X		
RSP/RSPL/RSPS									X
RSPE				X	X		X		X
MACH100				X	X		X		
MACH1000				X	X		X		
MACH4000				X	X		X		
GRS1020/1030				X	X		X		
GRS1040					X		X		X
OCTOPUS			X			X			
OCTOPUS II			X			X			
EagleOne				X					
EAGLE20/30							X		X
OpenBAT-R				X			X		
OpenBAT-F			X			X			
BAT450-F		X							

* limited write support

ACA 11 (EEC)

943 751-002

ACA 11-M12 (EEC)

943 972-001

ACA 22-M12 (EEC)

512MB USB 2.0

942 125-001

ACA 21-M12 (EEC)

64MB USB 1.1

943 913-003

ACA 22A

ACA 22-USB (EEC)

512MB USB 2.0

942 152-001

942 124-001

ACA 21-USB (EEC)

64MB USB 1.1

943 271-003

ACA 22-USB-C EEC

942 239-001

ACA 31

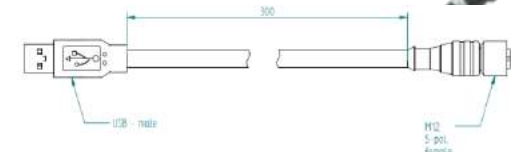
942 074-001

Adapter cable M12 – USB cable

942 199-001

Adapter cable to connect an ACA2x M12 to an USB-interface of a computer

1...red
2...white
3...green
4...black



1...red
2...shield
3...white
4...black
5...green

POWER CONSUMPTION – POWER OUTPUT

Device name	Max. power consumption	Power output
SPIDER II 8TX	4,1 W	14,0 Btu (IT)/h
SPIDER II 8TX EEC	5,8 W	19,8 Btu (IT)/h
SPIDER II 8TX/1FX EEC	6,3 W	21,5 Btu (IT)/h
SPIDER II 8TX/2FX EEC	8,4 W	28,7 Btu (IT)/h
SPIDER II 8TX/1FX-SM EEC	7,0 W	23,9 Btu (IT)/h
SPIDER II 8TX 1FX-ST EEC	7,0 W	23,9 Btu (IT)/h
SPIDER II 8TX/2FX-SM EEC	8,4 W	28,7 Btu (IT)/h
SPIDER II 8TX/2FX-ST EEC	8,4 W	28,7 Btu (IT)/h
SPIDER II GIGA 5T EEC	3,6 W	12,1 Btu (IT)/h
SPIDER II GIGA 5T/2S EEC	6,6 W	21,6 Btu (IT)/h
SPIDER II GIGA 5T EEC PRO	3,6 W	12,1 Btu (IT)/h
SPIDER II GIGA 5T/2S EEC PRO	6,6 W	21,6 Btu (IT)/h
SPIDER II GIGA 5T EEC JUMBO	3,6 W	12,1 Btu (IT)/h
SPIDER II GIGA 5T/2S EEC JUMBO	6,6 W	21,6 Btu (IT)/h
SPIDER II 8TX PoE non PD (powered device)	4,6 W	15,7 Btu (IT)/h
SPIDER II 8TX PoE 4x Class 0-PD (powered device)	74,9 W	255,5 Btu (IT)/h
GECKO	2,35 W	8,0 BTU (IT)/h
SPIDER Giga 2TX PoE EEC	33,8 W	115,4 BTU (IT)/h

Device name	Max. power consumption	Power output in Btu (IT)/h
SPIDER III PL-20-01...HH	3,8 W	13,1
SPIDER III PL-20-01...HV	4,4 W	15,1
SPIDER III PL-20-04...HH	4,3 W	14,7
SPIDER III PL-20-04...HV	4,9 W	16,7
SPIDER III PL-20-05...HH	2,4 W	8,0
SPIDER III PL-20-05...HV	3,0 W	10,4
SPIDER III PL-20-06...HH	9,0 W	30,7
SPIDER III PL-20-06...HV	8,6 W	29,5
SPIDER III PL-20-07...HH	6,9 W	23,7
SPIDER III PL-20-07...HV	6,9 W	23,5
SPIDER III PL-20-08...2...HH	5,0 W	16,9
SPIDER III PL-20-08...2...HV	5,2 W	17,7
SPIDER III PL-20-08...99...HH	2,6 W	8,8
SPIDER III PL-20-08...99...HV	3,1 W	10,6
SPIDER III PL-40-01...HH	4,0 W	13,8
SPIDER III PL-40-01...HV	4,7 W	16,0
SPIDER III PL-40-04...HH	5,9 W	20,0
SPIDER III PL-40-04...HV	6,1 W	21,0

Device name	Max. power consumption	Power output in Btu (IT)/h
SPIDER III SL-20-01T1...	2,0	7,0
SPIDER III SL-20-04T1..	2,4	8,3
SPIDER III SL-20-05T1...	1,3	4,6
SPIDER III SL-20-06T1.....9	2,8	9,5
SPIDER III SL-20-06T1.....2	3,8	12,8
SPIDER III SL-20-08T1...	1,5	5,3
SPIDER III SL-40-05T1...	4,0	13,7
SPIDER III SL-40-06T1....99..	8,7	29,6
SPIDER III SL-40-06T1....06..	13,3	45,4
SPIDER III SL-40-08T1...	5,0	17,1
SPIDER III SL-20-01T1...	2,0	7,0
SPIDER III SL-20-04T1..	2,4	8,3
SPIDER III SL-20-05T1...	1,3	4,6
SPIDER III SL-20-06T1.....9	2,8	9,5
SPIDER III SL-20-06T1.....2	3,8	12,8
SPIDER III SL-20-08T1...	1,5	5,3
SPIDER III SL-40-05T1...	4,0	13,7
SPIDER III SL-40-06T1....99..	8,7	29,6



POWER CONSUMPTION – POWER OUTPUT

Device name	Device model	Maximum power consumption	Power output
2 uplink ports:			
RS20-0400...	2xTX port	5.3 W	18.1 Btu (IT)/h
RS20-0400...	1xFX port, 1xTX port	6.5 W	22.2 Btu (IT)/h
RS20-0400...	2xFX port	7.7 W	26.3 Btu (IT)/h
RS20-0800...	RS22-0800... 2xTX port	5.3 W	18.1 Btu (IT)/h
RS20-0800...	RS22-0800... 1xFX port, 1xTX port	6.5 W	22.2 Btu (IT)/h
RS20-0800...	RS22-0800... 2xFX port	7.7 W	26.3 Btu (IT)/h
RS20-1600...	RS22-1600... 2xTX port	9.4 W	32.1 Btu (IT)/h
RS20-1600...	RS22-1600... 1xFX port, 1xTX port	10.6 W	36.2 Btu (IT)/h
RS20-1600...	RS22-1600... 2xFX port	11.8 W	40.3 Btu (IT)/h
RS20-2400-...	RS22-2400-... 2xTX port	12.1 W	41.3 Btu (IT)/h
RS20-2400-...	RS22-2400-... 1xFX port, 1xTX port	13.3 W	45.4 Btu (IT)/h
RS20-2400-...	RS22-2400-... 2xFX port	14.5 W	52.9 Btu (IT)/h
RS30-0802-...	RS32-0802-... 2xTX port	8.9 W	30.4 Btu (IT)/h
RS30-0802-...	RS32-0802-... 1xFX port, 1xTX port	8.6 W	29.4 Btu (IT)/h
RS30-0802-...	RS32-0802-... 2xFX port	8.3 W	28.4 Btu (IT)/h
RS30-1602-...	RS32-1602-... 2xTX port	13.0 W	44.4 Btu (IT)/h
RS30-1602-...	RS32-1602-... 1xFX port, 1xTX port	12.7 W	43.4 Btu (IT)/h
RS30-1602-...	RS32-1602-... 2xFX port	12.4 W	42.4 Btu (IT)/h
RS30-2402-...	RS32-2402-... 2xTX port	15.7 W	53.6 Btu (IT)/h
RS30-2402-...	RS32-2402-... 1xFX port, 1xTX port	15.4 W	52.6 Btu (IT)/h
RS30-2402-...	RS32-2402-... 2xFX port	15.1 W	51.6 Btu (IT)/h
3 uplink ports:			
RS20-0900-...	RS22-0900-... 3xFX port	9.6 W	32.8 Btu (IT)/h
RS20-1700-...	RS22-1700-... 3xFX port	13.7 W	46.7 Btu (IT)/h
RS20-2500-...	RS22-2500-... 3xFX port	16.4 W	56.0 Btu (IT)/h
4 uplink ports:			
RS30-0802-...	RS32-0802-... 4xFX port	12.7 W	43.3 Btu (IT)/h
RS30-1602-...	RS32-1602-... 4xFX port	16.8 W	57.3 Btu (IT)/h
RS30-2402-...	RS32-2402-... 4xFX port	19.5 W	66.5 Btu (IT)/h
RS40-...	4xFX port	20.0 W	68.2 Btu (IT)/h

Power consumption/power output RS20/RS30/RS40 and RS22/RS32 without PDs

Device name	Device model	Maximum power consumption	Power output
2 uplink ports:			
RS22-0800...	2xTX port	70.9 W	31.8 Btu (IT)/h
RS22-0800...	1xFX port, 1xTX port	72.1 W	35.9 Btu (IT)/h
RS22-0800...	2xFX port	73.3 W	40.0 Btu (IT)/h
RS22-1600...	2xTX port	75.0 W	45.8 Btu (IT)/h
RS22-1600...	1xFX port, 1xTX port	76.2 W	49.9 Btu (IT)/h
RS22-1600...	2xFX port	77.4 W	54.0 Btu (IT)/h
RS22-2400-...	2xTX port	77.7 W	55.0 Btu (IT)/h
RS22-2400-...	1xFX port, 1xTX port	78.9 W	59.1 Btu (IT)/h
RS22-2400-...	2xFX port	80.1 W	66.6 Btu (IT)/h
RS32-0802-...	2xTX port	74.5 W	44.1 Btu (IT)/h
RS32-0802-...	1xFX port, 1xTX port	74.2 W	43.1 Btu (IT)/h
RS32-0802-...	2xFX port	73.9 W	42.1 Btu (IT)/h
RS32-1602-...	2xTX port	78.6 W	58.1 Btu (IT)/h
RS32-1602-...	1xFX port, 1xTX port	78.3 W	57.1 Btu (IT)/h
RS32-1602-...	2xFX port	78.0 W	56.1 Btu (IT)/h
RS32-2402-...	2xTX port	81.3 W	67.3 Btu (IT)/h
RS32-2402-...	1xFX port, 1xTX port	81.0 W	66.3 Btu (IT)/h
RS32-2402-...	2xFX port	80.7 W	65.3 Btu (IT)/h
3 uplink ports:			
RS22-0900-...	3xFX port	75.2 W	46.5 Btu (IT)/h
RS22-1700-...	3xFX port	79.3 W	60.4 Btu (IT)/h
RS22-2500-...	3xFX port	82.0 W	69.7 Btu (IT)/h
4 uplink ports:			
RS32-0802-...	4xFX port	78.3 W	57.0 Btu (IT)/h
RS32-1602-...	4xFX port	82.4 W	71.0 Btu (IT)/h
RS32-2402-...	4xFX port	85.1 W	80.2 Btu (IT)/h

Power consumption/power output RS22/RS32 with 4x Class 0 PD

POWER CONSUMPTION – POWER OUTPUT

Device name MS family	Power consumption	Power output
MS20-0800...A	5,0 W	17,1 Btu (IT)/h
MS20-0800...C..	7,4 W	25,4 Btu (IT)/h
MS20-0800...E..		
MS30-0802...A..	5,6 W	19,2 Btu (IT)/h
MS30-0802...C..	8,6 W	29,6 Btu (IT)/h
MS20-1600...A..	12 W	40,0 Btu (IT)/h
MS20-1600...C..	15,6 W	52,2 Btu (IT)/h
MS30-1602...A..	12,6 W	41,1 Btu (IT)/h
MS30-1602...C..	16,8 W	56,7 Btu (IT)/h
MS20-2400...A..	12,0 W	40,0 Btu (IT)/h
MS20-2400...C..	16,8 W	56,7 Btu (IT)/h
MS30-2402...A..	12,6 W	42,1 Btu (IT)/h
MS30-2402...C..	18,0 W	60,9 Btu (IT)/h

Device name media modules	Power consumption	Power output
MM23-S2S2T1T1	5,5 W	18,8 Btu (IT)/h
MM23-F4F4T1T1	5,5 W	18,8 Btu (IT)/h
MM30-07070707	9,0 W	30,8 Btu (IT)/h
MM30-07079999	5,8 W	19,8 Btu (IT)/h
MM33-07079999	7,5 W	25,6 Btu (IT)/h

	Power consumption	Power output
MICE 2000 media modules:		
MM2-4TX1	0.8 W	2.8 Btu (IT)/h
MM2-4TX1-EEC	0.8 W	2.8 Btu (IT)/h
MM2-4FXM3	6.8 W	23.2 Btu (IT)/h
MM2-2FXM3 / 2TX1	3.8 W	13.0 Btu (IT)/h
MM2-2FXM2	3.8 W	13.0 Btu (IT)/h
MM2-2FXS2	3.8 W	13.0 Btu (IT)/h
MICE 3000 media modules:		
MM3-2AUI	3.4 W	11.6 Btu (IT)/h
MM3-4FLM4	5.0 W	17.1 Btu (IT)/h
MM3-2FLM4 / 2TX1-RT	5.0 W	17.1 Btu (IT)/h
MM3-4TX5	0.8 W	2.8 Btu (IT)/h
MM3-4TX1-RT	0.8 W	2.8 Btu (IT)/h
MM3-1FXM2 / 3TX1	2.3 W	7.9 Btu (IT)/h
MM3-2FXM2 / 2TX1	3.8 W	13.0 Btu (IT)/h
MM3-2FXM2 / 2TX1-EEC	3.8 W	13.0 Btu (IT)/h
MM3-2FXM2 / 2TX1-RT	3.8 W	13.0 Btu (IT)/h
MM3-2FXM4 / 2TX1	3.8 W	13.0 Btu (IT)/h
MM3-4FXM2	6.8 W	23.2 Btu (IT)/h
MM3-4FXM4	6.8 W	23.2 Btu (IT)/h
MM3-1FXS2 / 3TX1	2.3 W	7.9 Btu (IT)/h
MM3-1FXS2 / 3TX1 EEC	2.3 W	7.9 Btu (IT)/h
MM3-2FXS2 / 2TX1	3.8 W	13.0 Btu (IT)/h
MM3-2FXS2 / 2TX1-EEC	3.8 W	13.0 Btu (IT)/h
MM3-4FXS2	6.8 W	23.2 Btu (IT)/h
MM3-1FXL2 / 3TX1	3.4 W	11.6 Btu (IT)/h

	Power consumption	Power output
MICE 4000 media modules:		
MM4-4TX / SFP	9.0 W	30.8 Btu (IT)/h
MM4-2TX / SFP	5.8 W	19.8 Btu (IT)/h
MM20-... 4 TX-/0 FX-Ports	0.8 W	2.8 Btu (IT)/h
MM20-... 3 TX-/1 FX-Ports	2.3 W	7.9 Btu (IT)/h
MM20-... 2 TX-/2 FX-Ports	3.8 W	13.0 Btu (IT)/h
MM20-... 0 TX-/2 FX-Ports	3.8 W	13.0 Btu (IT)/h
MM20-... 1 TX-/3 FX-Ports	5.3 W	18.1 Btu (IT)/h
MM20-... 0 TX-/4 FX-Ports	6.8 W	23.2 Btu (IT)/h
MM20-A8A89999	3.4 W	11.6 Btu (IT)/h
MM20-F4F4F4F4	5.0 W	17.1 Btu (IT)/h
MM20-Z6Z6Z6Z6	8.0 W	27.3 Btu (IT)/h
MM20-P9P9P9P9SAHH	8.0 W	27.3 Btu (IT)/h
MM20-P9P9T1T1SAHH	5.2 W	17.8 Btu (IT)/h
MM30-07070707	9.0 W	30.8 Btu (IT)/h
MM30-07079999	5.8 W	19.8 Btu (IT)/h
MM21-T1T1T1T1	0.8 W	2.8 Btu (IT)/h
MM21-F4F4T1T1	5.0 W	17.1 Btu (IT)/h
MM21-M2M2T1T1	3.8 W	13.0 Btu (IT)/h
MM21-S2S2T1T1	3.8 W	13.0 Btu (IT)/h
MM22-T1T1T1T1	0.8 W	2.8 Btu (IT)/h
MM23-T1T1T1T1...SAHH	4.5 W	15.4 Btu (IT)/h
MM23-M2M2T1T1...SAHH	6.0 W	20.5 Btu (IT)/h
MM23-S2S2T1T1...SAHH	5.5 W	18.8 Btu (IT)/h
MM23-F4F4T1T1...SAHH	5.5 W	18.8 Btu (IT)/h
MM24-IOIOIOIO...	7.5 W	25.6 Btu (IT)/h
MM33-07079999...SAHH	7.5 W	25.6 Btu (IT)/h

POWER CONSUMPTION– MSP/MSM

Device name MSP family	Power consumption	Power output
MSP30-0804	16 W	55 Btu (IT)/h
MSP30-1604	17 W	58 Btu (IT)/h
MSP30-2404	18 W	61 Btu (IT)/h
MSP32-0804	17 W	58 Btu (IT)/h
MSP32-1604	18 W	61 Btu (IT)/h
MSP32-2404	19 W	65 Btu (IT)/h
MSP40-0012	17 W	58 Btu (IT)/h
MSP40-0020	19 W	65 Btu (IT)/h
MSP40-0028	21,5 W	73 Btu (IT)/h
MSP42-0012	18 W	61 Btu (IT)/h
MSP42-0020	19,5 W	67 Btu (IT)/h
MSP42-0028	22,5 W	77 Btu (IT)/h

MSM20 media modules		
MSM20-xxT1T1T1 (GE)	5 W	17 Btu (IT)/h
MSM20-xxT1T1T1 (FE)	4 W	14 Btu (IT)/h
MSM20-xxxxT1T1 (GE)	4 W	14 Btu (IT)/h
MSM20-xxxxT1T1 (FE)	4 W	14 Btu (IT)/h
MSM20-xxxxxxx (GE/FE)	5 W	17 Btu (IT)/h
MSM20-T5T5T5T5 (FE)	2 W	7 Btu (IT)/h
MSM20-T5T5T5T5 (FE)	3 W	10 Btu (IT)/h
MSM22-T5T5T5T5 (FE)	3 W	10 Btu (IT)/h
MSM24-IOIOIOIO	7 W	24 Btu (IT)/h

MSM40 media modules		
MSM40-C1C1C1C1 (GE)	5 W	17 Btu (IT)/h
MSM40-C1C1C1C1 (FE)	5 W	17 Btu (IT)/h
MSM40-T1T1T1T1 (GE)	3 W	10 Btu (IT)/h
MSM40-T1T1T1T1 (FE)	2 W	7 Btu (IT)/h

MSM42/46 media modules		
MSM42-T1T1T1T1 (GE)	4 W	14 Btu (IT)/h
MSM42-T1T1T1T1 (FE)	3 W	10 Btu (IT)/h
MSM46-T1T1T1T1 (GE)	4 W	14 Btu (IT)/h
MSM46-T1T1T1T1 (FE)	3 W	10 Btu (IT)/h

MSM50 media modules		
MSM50-Q6Q6Q6Q6 (1GE)	3 W	10 Btu (IT)/h
MSM50-Q6Q6Q6Q6 (2,5GE)	4 W	14 Btu (IT)/h
MSM60-Q6Q69999 (10GE)	7W	24 Btu (IT)/h



POWER CONSUMPTION – POWER OUTPUT

Device name	Max. power consumption	Power output
RSP20-11003Z6TT...	15W	51 BTU (IT)/h
RSP20-11003Z6ZT...	18W	61 BTU (IT)/h
RSP25-11003Z6TT...	19W	65 BTU (IT)/h
RSP25-11003Z6ZT...	22W	75 BTU (IT)/h
RSP30-0803306TT...	15W	51 BTU (IT)/h
RSP30-0803306ZT...	18W	61 BTU (IT)/h
RSP35-0803306TT...	19W	65 BTU (IT)/h
RSP35-0803306ZT...	22W	75 BTU (IT)/h
RSPL20-08002Z6TT...	8W	27 BTU (IT)/h
RSPL20-08002Z6YT...	10W	34 BTU (IT)/h
RSPL30-0802207YT...	14W	47 BTU (IT)/h
RSPL30-0802207ZT...	16W	55 BTU (IT)/h
RSPS20-...2Z6YT...	10W	34 BTU (IT)/h
RSPS20-...2Z6TT...	8W	27 BTU (IT)/h
RSPS20-...2T11TT...	7W	24 BTU (IT)/h
RSPS25-...2Z6YT...	12W	41 BTU (IT)/h
RSPS25-...2Z6TT...	10W	34 BTU (IT)/h
RSPS25-...2T11TT...	9W	31 BTU (IT)/h

Device name	Max. power consumption	Power output
RSPE30	16 W	55 BTU (IT)/h
RSPE32 <small>incl. 124W PoE output power</small>	151W	92 BTU (IT)/h
RSPE35	18 W	61 BTU (IT)/h
RSPE37 <small>Incl. 124W output power</small>	153W	98 BTU (IT)/h
RSPM20-4Z64Z6	9W	31 BTU (IT)/h
RSPM20-4T14T1	2W	7 BTU (IT)/h
RSPM20-4T14Z6	5W	17 BTU (IT)/h
RSPM22-4T14T1 <small>incl. PoE output power</small>	2W	7 BTU (IT)/h
RSPM22-4T14Z6 <small>incl. PoE output power</small>	5W	17 BTU (IT)/h



POWER CONSUMPTION – POWER OUTPUT

Device name	Max. power consumption	Power output	Name	Max. power consumption (W)	Max. power output (Btu; IT/h)	
GRS1020-16T9...	7,5 W	26 BTU (IT)/h	GRS1042 AT2Z...	32	110	
GRS1120-16T9...	7,5 W	26 BTU (IT)/h	GRS1142 AT2Z...	32	110	
GRS1030-16T9...	10,5 W	36 BTU (IT)/h	GRS1042 6T6Z...	32	110	
GRS1130-16T9...	10,5 W	36 BTU (IT)/h	GRS1142 6T6Z...	32	110	
GRS1020-8T8Z...	12 W	41 BTU (IT)/h	GPS1-K	2,5	9	
M	GRS1130-8T8Z...	12 W	41 BTU (IT)/h	GPS1-C	3,5	12
	GRS1030-8T8Z...	16 W	55 BTU (IT)/h	GPS3-P	5,5	19
	GRS1130-8T8Z...	16 W	55 BTU (IT)/h	GMM20-XXXXXXXX	10	34
	GRS1020-16T9...	9 W	31 BTU (IT)/h	GMM30-XXXXTTTT	6,5	22
	GRS1120-16T9...	9 W	31 BTU (IT)/h	GMM32-XXXXTTTT	8,5	29
	GRS1030-16T9...	12 W	41 BTU (IT)/h	GMM40-OOOOTTTT	5,5	19
	GRS1130-16T9...	12 W	41 BTU (IT)/h	GMM42-OOOOTTTT	7,5	26
	GRS1020-8T8Z...	15,5 W	53 BTU (IT)/h	GMM40-OOOOOOOO	7,5	26
	GRS1120-8T8Z	15,5 W	53 BTU (IT)/h	GMM40-TTTTTTTT	3,5	12
	GRS1030-8T8Z	18 W	61 BTU (IT)/h	GMM42-TTTTTTTT	5,5	19
GRS1130-8T8Z	18 W	61 BTU (IT)/h				
Media modules						
GRM20-TTTTTTTT...	2 W	7 BTU (IT)/h				
GRM20-XXXXTTTT...	7,5 W	26 BTU (IT)/h				
GRM20-XXXXXXXX	9 W	31 BTU (IT)/h				



POWER CONSUMPTION – POWER OUTPUT

Device name	Max. power consumption	Power output
MACH104-16TX-PoEP... MACH104-16TX-PoEP+2X...	Max. 330 W	Max. 300 BTU (IT)/h
MACH104-16TX-PoEP-R... MACH104-16TX-PoEP+2X-R...	Max. 340 W	Max. 340 BTU (IT)/h
MACH104-16TX-PoEP-E... MACH104-16TX-PoEP+2X-E...	Max. 300 W	Max. 200 BTU (IT)/h
MACH104-20TX-F...	35 W	119 BTU (IT)/h
MACH104-20TX-FR...	35 W	119 BTU (IT)/h
MACH104-20TX-F-4PoE when 4x Class 0 PD connected	110 W	170 BTU (IT)/h

Device name	Max. power consumption	Power output
MACH102-8TP	12W	41 Btu (IT)/h
MACH102-8TP-R	13W	44 Btu (IT)/h
MACH102-8TP-F	12W	41 Btu (IT)/h
MACH102-8TP-FR	13W	44 Btu (IT)/h
MACH102-24TP-F	16W	55 Btu (IT)/h
MACH102-24TP-FR	17W	58 Btu (IT)/h
M1-8TP-RJ45	2 W	7 Btu (IT)/h
M1-8TP-RJ45 PoE - Internal operating voltage - External PoE voltage - no PD - 8x Class0 PD	2,2W 1,2W 2W + PDs	7,6 Btu (IT)/h 4,1 Btu (IT)/h 6,9 Btu (IT)/h
M1-8MM-SC	10W	34 Btu (IT)/h
M1-8SM-SC	10W	34 Btu (IT)/h
M1-8SFP (incl. SFP modules)	11W	37 Btu (IT)/h

Device name	Max. power consumption	Power output
MACH4002-48+4G	66.0 W	225.3 Btu (IT)/h
MACH4002-24G	66.0 W	225.3 Btu (IT)/h
MACH4002-24G+3X	74.0 W	252.6 Btu (IT)/h
MACH4002-48G	118.0 W	402.7 Btu (IT)/h
MACH4002-48G+3X	125.0 W	426.6 Btu (IT)/h
M4-POWER	0	0
M4-S-AC/DC 300W (230 V)	350.0 W	170.7 Btu (IT)/h
M4-S-AC/DC 300W (110 V)	370.0 W	238.9 Btu (IT)/h
M4-S-24VDC 300W	380.0 W	273.0 Btu (IT)/h
M4-S-48VDC 300W	380.0 W	273.0 Btu (IT)/h
M4-P-AC/DC 300W (230 V)	350.0 W	170.7 Btu (IT)/h
M4-P-AC/DC 300W (110 V)	370.0 W	238.9 Btu (IT)/h
M4-P-24VDC 300W	380.0 W	273.0 Btu (IT)/h
M4-P-48VDC 300W	380.0 W	273.0 Btu (IT)/h

Device name	Maximum power consumption	Power output
OS20-000800...	22 W	75 BTU (IT)/h
OS20-001200...	26 W	87 BTU (IT)/h
OS20-002000...	27 W	94 BTU (IT)/h
OS20-002800...	29 W	100 BTU (IT)/h
OS24-xx1200... including 60 W PoE output power	103 W	140 BTU (IT)/h
OS24-xx2000... including 60 W PoE output power	106 W	149 BTU (IT)/h
OS24-xx2800... including 60 W PoE output power	108 W	157 BTU (IT)/h
OS30-0008xx...	26 W	87 BTU (IT)/h
OS30-0016xx...	27 W	94 BTU (IT)/h
OS30-0024xx...	29 W	100 BTU (IT)/h
OS34-xx08xx... including 60 W PoE output power	103 W	140 BTU (IT)/h
OS34-xx16xx... including 60 W PoE output power	106 W	149 BTU (IT)/h
OS34-xx24xx... including 60 W PoE output power	108 W	157 BTU (IT)/h

Note: The values for the maximum power output and the power consumption each apply to the fully expanded devices. See the type plate of the device for the exact specifications.



Standard Line	MTBF in h for environmental condition	
	G _B 25°C	G _B 60°C
SPIDER SL-20 5T	2 848 397	984 750
SPIDER SL-20 5T EEC	2 845 546	981 389
SPIDER SL-20 1T/1M-SC	2 705 181	740 364
SPIDER SL-20 1T/1S-SC	2 140 568	562 307
SPIDER SL-20 4T/1M-SC	2 286 711	631 384
SPIDER SL-20 4T/1M-SC EEC	2 282 902	629 724
SPIDER SL-20 4T/1M-ST	2 286 711	631 384
SPIDER SL-20 4T/1M-ST EEC	2 282 902	629 724
SPIDER SL-20 4T/1S-SC	1 869 809	497 136
SPIDER SL-40 5T	1 453 349	591 049
SPIDER SL-20 8T	2 218 157	832 761
SPIDER SL-20 8T EEC	2 218 157	832 761
SPIDER SL-40 8T	1 207 249	531 875
SPIDER SL-20 6T/1M-SC	1 830 046	526 160
SPIDER SL-20 6T/1S-SC	1 554 703	430 277
SPIDER SL-20 6T/2M-SC	1 499 396	389 370
SPIDER SL-20 6T/2S-SC	1 162 135	292 800
SPIDER SL-40 6T/1SFP	1 158 737	448 785
SPIDER SL-40 6T/2SFP	1 088 487	425 025
SPIDER PoE SL-24	1 447 374	na
SPIDER PoE SL-44-05	979 190	na
SPIDER PoE SL-44-08	472 065	na

Premium Line		MTBF in h for environmental condition	
		G _B 25°C	G _B 60°C
SPIDER PL-20 5T	24V	1 363 990	546 843
	48V	1 391 965	593 548
SPIDER PL-20 1T/1M-SC	24V	1 349 776	465 245
	48V	1 363 807	489 704
SPIDER PL-20 1T/1S-SC	24V	1 226 563	403 067
	48V	1 204 795	405 585
SPIDER PL-20 4T/1M-SC	24V	1 149 795	388 071
	48V	1 159 961	404 941
SPIDER PL-20 4T/1M-ST	24V	1 149 795	388 071
	48V	1 159 961	404 941
SPIDER PL-20 4T/1S-SC	24V	1 059 586	343 911
	48V	1 042 891	345 660
SPIDER PL-20 6T/3SFP	24V	1 025 704	376 198
	48V	1 041 443	397 728
SPIDER PL-20 8T/1M-SC	24V	954 743	321 009
	48V	968 365	336 555
SPIDER PL-20 8T/1S-SC	24V	873 990	282 590
	48V	885 392	294 568
SPIDER PL-20 7T/2M-SC	24V	852 056	261 414
	48V	862 889	271 631
SPIDER PL-20 7T/2S-SC	24V	731 432	214 023
	48V	739 400	220 823
SPIDER PL-40 5T	24V	1 117 606	457 011
	48V	1 127 208	480 589
SPIDER PL-40 1T/1SFP	24V	1 530 211	633 903
	48V	1 565 508	697 528
SPIDER PL-40 4T/1SFP	24V	1 112 112	441 174
	48V	1 130 639	471 079

Premium Line		MTBF in h for environmental condition	
SPIDER PL-20 8T	24V	1 206 410	496 940
	48V	1 228 242	535 211
SPIDER PL-40 8T	24V	908 230	382 076
	48V	920 549	404 304

SPIDER II	MTBF in h for environmental condition								Interne Temperaturerhöhung
	G _B 25°C	G _B 50°C	G _B 55°C	G _B 60°C	G _F 25°C	G _F 50°C	G _F 55°C	G _F 60°C	
SPIDER II 8TX	1 623 640	/	/	459 587	811 820	/	/	229 794	15°C
SPIDER II 8TX EEC	1 239 618	/	/	356 428	619 809	/	/	178 214	15°C
SPIDER II 8TX/1FX EEC	1 009 693	/	/	261 975	504 847	/	/	130 988	15°C
SPIDER II 8TX/2FX EEC	771 188	/	/	190 853	385 594	/	/	95 427	15°C
SPIDER II 8TX/1FX-ST EEC	950 841	/	/	248 594	475 421	/	/	124 297	15°C
SPIDER II 8TX/2FX-ST EEC	771 188	/	/	190 853	385 594	/	/	95 427	15°C
SPIDER II 8TX/1FX-SM EEC	1 001 101	/	/	284 563	500 551	/	/	142 282	15°C
SPIDER II 8TX/2FX-SM EEC	839 560	/	/	236 814	419 780	/	/	118 407	15°C
SPIDER II Giga 5T EEC	1 084 142	/	/	346 959	542 071	/	/	173 480	15°C
SPIDER II Giga 5T/2S EEC	1 001 113	/	/	318 065	500 557	/	/	159 033	15°C

Rail Basic Switch	MTBF in h for environmental condition			
	Gg25°C	Gg60°C	Gp25°C	Gp60°C
RSB20-0800T1T1SAABHH RSB20-0800T1T1TAABHH	770 754	242 503	385 377	121 252
RSB20-0800M2M2SAABHH RSB20-0800M2M2TAABHH	559 490	154 077	279 745	77 038
RSB20-0800S2S2SAABHH RSB20-0800S2S2TAABHH	565 695	165 236	282 847	82 618
RSB20-0900ZZZ6SAABHH RSB20-0900ZZZ6TAABHH	624 766	189 506	312 383	94 753
RSB20-0900M2TTSAABHH RSB20-0900M2TTTAABHH	579 932	167 181	289 966	83 590
RSB20-0900S2TTSAABHH RSB20-0900S2TTTAABHH	583 247	173 539	291 624	86 770
RSB20-0900MMM2SAABHH RSB20-0900MMM2TAABHH	514 927	137 830	257 463	68 915
RSB20-0900VVM2SAABHH RSB20-0900VVM2TAABHH	520 178	146 693	260 089	73 347

OpenRail	MTBF in h for environmental condition			
	Gg25°C	Gg60°C	Gp25°C	Gp60°C
RS20				
RS20-0400T1T1_D_E	655 704	157 606	327 852	78 803
RS20-0400T1T1_D_P	573 899	116 934	286 950	58 467
MM-Modul	6 351 553	1 377 332	3 175 777	688 666
SM-Modul	6 775 068	1 972 879	3 386 618	986 440
LH-Modul	3 049 426	443 166	1 524 713	221 583
RS20-0800T1T1_D_E	547 337	140 488	273 669	70 244
RS20-0800T1T1_D_P	489 137	107 239	244 569	53 620
RS20-1600T1T1_D_E	392 548	111 438	196 274	55 719
RS20-1600T1T1_D_P	361 684	89 441	180 842	44 721
RS20-2400T1T1_D_E	323 986	95 657	161 993	47 829
RS20-2400T1T1_D_P	302 668	78 983	151 334	39 492
TP-Modul	21 691 974	5 600 191	10 845 987	2 800 096
MM-Modul	6 335 457	1 228 602	3 167 729	614 301
SM-Modul	6 754 935	1 681 336	3 377 468	840 668
Modul SM+	4 360 303	1 061 170	2 180 152	530 585
LH-Modul	3 045 711	426 552	1 522 856	213 276
RS20+				
RS20-0900MM2M2_D_E	419 309	85 457	209 654	42 729
RS20-0900MM2M2_D_P	384 280	71 897	192 140	35 949
RS20-1700MM2M2_D_E	322 029	73 761	161 015	36 881
RS20-1700MM2M2_D_P	300 960	63 435	150 480	31 717
RS20-2600MM2M2_D_E	274 393	66 499	137 197	33 250
RS20-2600MM2M2_D_P	258 947	57 969	129 473	28 994
RS20-2600VVS2_D_E	279 454	79 713	139 727	39 856
RS20-2600VVS2_D_P	263 449	67 788	131 725	33 894
RS20-2600LL2_D_E	202 535	58 239	101 268	29 119
RS20-2600LL2_D_P	193 994	51 606	96 997	25 803
RS30				
RS30-0802T1T1_D_E	454 581	124 677	227 291	62 339
RS30-0802O6T1_D_E	410 201	98 604	205 101	49 302
RS30-0802O6O6_D_E	373 716	81 549	186 858	40 775
RS30-1602T1T1_D_E	342 436	101 253	171 218	50 627
RS30-1602O6T1_D_E	316 630	83 353	158 315	41 677
RS30-1602O6O6_D_E	294 442	70 831	147 221	35 416
RS30-2402T1T1_D_E	289 071	88 054	144 536	44 027
RS30-2402O6T1_D_E	270 464	74 197	135 232	37 099
RS30-2402O6O6_D_E	254 107	64 109	127 054	32 055

	Gg25°C	Gg60°C	Gp25°C	Gp60°C
MS20-0800_A_E	472 193	116 306	236 097	58 153
MS20-1600_A_E	315 592	93 445	157 796	46 723
MS30-0802_A_E	397 985	105 191	198 993	52 596
MS30-1602_A_E	280 621	86 133	140 311	43 067
MS20-0800_C_E	422 494	105 268	211 297	52 634
MS20-1600_C_E	292 589	86 184	146 295	43 092
MS30-0802_C_E	362 086	96 079	181 043	48 040
MS30-1602_C_E	262 285	79 926	131 143	39 963
Medien-Module				
MM4-2TX/SFP	1 724 797	301 941	862 399	150 971
MM20-MSMSM5M5_HH	969 606	185 124	484 803	92 562
MM20-P9P9T1T1_HH	880 067	163 208	440 034	81 604
MM20-P9P9P9_HH	658 511	111 913	329 256	55 957
MM20-Z6Z6Z6_HH (ohne SFPs)	695 335	134 176	347 668	67 088
PoE-Modul: MM22-T1T1T1_HH (interne Temperaturerhöhung = 20°C)	2 450 677	423 125	1 225 339	211 563
MM23-T1T1T1_HH	1 065 394	270 915	532 697	135 457
MM23-M2M2T1T1_HH	840 263	199 521	420 131	99 761
MM23-S2S2T1T1_HH	854 336	218 643	427 168	109 322
MM23-F4F4T1SAHH	681 346	166 647	340 673	83 324
MM33-O7O79999SAHH	646 124	136 473	323 062	68 237
RS30-0802OOZT_D_E	285 056	62 150	142 528	31 075
RS30-0802OOZT_D_P	268 423	54 654	134 211	27 327
RS30-1602OOZT_D_E	236 490	55 724	118 245	27 862
RS30-1602OOZT_D_P	224 927	49 622	112 463	24 811
RS30-2402OOZT_D_E	209 749	51 477	104 874	25 739
RS30-2402OOZT_D_P	200 602	46 226	100 301	23 113
RS40-0009				
RS40-0009OOCC7TTE	237 340	56 551	118 670	28 276
RS40-0009OOCC7TTP	225 696	50 277	112 848	25 139

MSP PowerMICE	MTBF in h for environmental condition	
	Gg 25°C	Gg 60°C
MSP30-08040_C...	372 029	134 746
MSP30-16040_C...	312 816	117 404
MSP30-24040_C...	270 065	104 093
MSP32-08040_P...	340 385	121 132
MSP32-16040_P...	290 136	106 933
MSP32-24040_P...	252 991	95 777
MSM Media Modules		
MSM40-T1T1T1T1	11 371 362	2 161 185
MSM42-T1T1T1T1	3 401 409	742 500
MSM40-C1C1C1C1	8 176 469	2 282 662
MSM45-C1C1C1C1		
MSM24-IOIOIOIO	1 538 951	490 118
MSM20-M2T1T1T1	4 588 064	969 848
MSM20-S2T1T1T1	4 804 113	1 231 646
MSM20-M4T1T1T1	4 588 064	969 848
MSM20-S4T1T1T1	2 574 363	390 390
MSM20-L2T1T1T1	2 574 363	390 390
MSM20-G2T1T1T1	3 004 303	588 740
MSM20-M2M2T1T1	3 050 653	599 102
MSM20-S2S2T1T1	3 244 700	812 460
MSM20-M4M4T1T1	3 050 653	599 102
MSM20-S4S4T1T1	1 495 269	211 414
MSM20-L2L2T1T1	1 495 269	211 414
MSM20-G2G2T1T1	1 793 411	332 881
MSM20-M2M2M2M2	1 742 597	334 002
MSM20-S2S2S2S2	1 870 387	472 294
MSM20-M4M4M4M4	1 742 597	334 002
MSM20-S4S4S4S4	796 298	109 700
MSM20-L2L2L2L2	796 298	109 700
MSM20-G2G2G2G2	967 631	176 560

GRS Basic Unit; 16TP	MTBF in h for environmental condition			
	G _B 25°C	G _B 60°C	G _F 25°C	G _F 60°C
GRS1020-16T9_C9 GRS1120-16T9_C9	447 558	146 435	223 779	73 217
GRS1030-16T9_C9 GRS1130-16T9_C9	380 912	129 222	190 456	64 611
GRS1020-16T9_CC GRS1120-16T9_CC	501 654	162 228	250 827	81 114
GRS1030-16T9_CC GRS1130-16T9_CC	419 403	141 367	209 702	70 683
GRS1020-16T9_M9 GRS1120-16T9_M9	450 103	147 284	225 052	73 642
GRS1030-16T9_M9 GRS1130-16T9_M9	382 754	129 883	191 377	64 941
GRS1020-16T9_MC GRS1120-16T9_MC	502 565	162 491	251 282	81 245
GRS1030-16T9_MC GRS1130-16T9_MC	420 040	141 566	210 020	70 783
GRS1020-16T9_MM GRS1120-16T9_MM	503 943	163 008	251 971	81 504
GRS1030-16T9_MM GRS1130-16T9_MM	421 002	141 959	210 501	70 979

GRS Media Module	MTBF in h for environmental condition			
	G _B 25°C	G _B 60°C	G _F 25°C	G _F 60°C
GRM20-TTTTTTTT	2 889 619	1 031 228	1 444 810	515 614
GRM20-ZZZZZZZZ	4 555 534	1 096 613	2 277 767	548 306
GRM20-ZZZZTTTT	3 508 279	957 225	1 754 140	478 612
GRM20-MMMMTTTT	1 251 836	267 883	625 918	133 941
GRM20-NNNNTTTT	1 251 836	267 883	625 918	133 941
GRM20-VVVVTTTT	1 316 449	350 102	658 224	175 051
GRM20-UUUUTTTT	675 319	101 474	337 659	50 737
GRM20-MMMMMMMM	811 237	159 904	405 618	79 952
GRM20-NNNNNNNN	811 237	159 904	405 618	79 952
GRM20-VVVVVVVV	866 348	222 202	433 174	111 101
GRM20-UUUUUUUU	385 120	54 062	192 560	27 031

GRS Basic Unit; 8TP/8SFP	MTBF in h for environmental condition			
	G _B 25°C	G _B 60°C	G _F 25°C	G _F 60°C
GRS1020-8T8Z_C9 GRS1120-8T8Z_C9	490 173	158 439	245 086	79 219
GRS1030-8T8Z_C9 GRS1130-8T8Z_C9	411 348	138 481	205 674	69 240
GRS1020-8T8Z_CC GRS1120-8T8Z_CC	555 815	177 092	277 908	88 546
GRS1030-8T8Z_CC GRS1130-8T8Z_CC	456 602	152 522	228 301	76 261
GRS1020-8T8Z_M9 GRS1120-8T8Z_M9	493 227	159 433	246 614	79 717
GRS1030-8T8Z_M9 GRS1130-8T8Z_M9	413 497	139 240	206 749	69 620
GRS1020-8T8Z_MC GRS1120-8T8Z_MC	556 934	177 406	278 467	88 703
GRS1030-8T8Z_MC GRS1130-8T8Z_MC	457 357	152 755	228 679	76 377
GRS1020-8T8Z_MM GRS1120-8T8Z_MM	558 627	178 022	279 313	89 011
GRS1030-8T8Z_MM GRS1130-8T8Z_MM	458 498	153 212	229 249	76 606

GRS Power Supply	According to MIL-HDBK-217F; NOTICE 2: MTBF in h for environmental condition		
	G _B 25°C	G _B 40°C	G _B 60°C
GPS1-C	1 383 473	928 505	501 393
GPS1-K	757 498	508 388	274 529

GRS Power Supply	MTBF in h for environmental condition	
	G _B 25°C	G _B 60°C
GPS3-P	1 224 941	448 002

GRS Basic Unit	MTBF in h for environmental condition	
	G _B 25°C	G _B 60°C
GRS1042-AT2Z_HLJLL	382 902	152 474
GRS1042-AT2Z_HH	379 511	151 543
GRS1142-AT2Z_HLJLL	373 369	135 214
GRS1142-AT2Z_HH	370 144	134 482
GRS1042-6T6Z_HLJLL	433 189	167 774
GRS1042-6T6Z_HH	428 854	166 647
GRS1142-6T6Z_HLJLL	421 028	147 111
GRS1142-6T6Z_HH	416 932	146 244

GRS Media Module	MTBF in h for environmental condition	
	G _B 25°C	G _B 60°C
GMM40-TTTTTTTT	1 104 852	423 582
GMM42-TTTTTTTT	790 860	273 535
GMM40-OOOOOOOO	4 555 534	1 096 613
GMM40-OOOOTTTT	2 225 975	706 531
GMM42-OOOOTTTT	1 453 887	435 960
GMM30-MMMMTTTT	1 038 391	243 685
GMM30-NNNNTTTT	1 038 391	243 685
GMM30-VVVVTTTT	1 082 461	309 887
GMM30-UUUUTTTT	607 909	97 795
GMM20-MMMMMMMM	811 237	159 904
GMM20-NNNNNNNN	811 237	159 904
GMM20-VVVVVVVV	866 348	222 202
GMM20-UUUUUUUU	385 120	54 062

Substation-Switch	MTBF in h for environmental condition				Interne Temperaturerhöhung
	G _B 25°C	G _B 60°C	G _F 25°C	G _F 60°C	
MAR1020-99 & 12 FE-2-Port-Module TT (ohne Netzteile)	340 555	79 039	170 278	39 519	15°C
MAR1020-99 & 12 FE-2-Port-Module MM (ohne Netzteile)	188 028	83 818	94 911	17 009	15°C
MAR1030-CC (ohne Netzteile, ohne SFPs)	417 186	87 916	206 593	43 959	15°C
MAR1030-CC & 12 FE-2-Port-Module TT (ohne Netzteile, ohne SFPs)	299 762	72 387	149 881	36 193	15°C
MAR1030-CC & 12 FE-2-Port-Module MM (ohne Netzteile, ohne SFPs)	175 402	54 386	87 791	17 393	15°C

DRAGON MACH4000-48G+4X incl. Fan-module, but without PSU	1 281 583
DRAGON MACH4500-48G+8X incl. Fan-module, but without PSU	679 052
PSU: D4K-PSU-300W-HV	840 336
Fan-module: D4-AIR	6 995 673
Media-module: D4K-12TP-RJ45	2 921 848
Media-module: D4-12SFP	8 472 775

DRAGON MACH4000-48G+4X (inclusive Fan-module but without PSU)	1 281 583
DRAGON MACH4500-48G+8X (inclusive Fan-module but without PSU)	679 052

PSU:	
D4K-PSU-300W-HV	840 336
Fan-module:	
D4K-AIR	6 995 673
Media-module:	
D4K-12TP-RJ45	2 921 848
D4K-12SFP	8 472 775

MACH4000-Familie	MTBF in h for environmental condition								Interne Temperaturerhöhung
	G _B 25°C	G _B 50°C	G _B 55°C	G _B 60°C	G _F 25°C	G _F 50°C	G _F 55°C	G _F 60°C	
Grundgeräte (ohne SFPs/XFPs)									
MACH4002-48+4G	165 602	72 064	/	48 609	82 801	36 032	/	24 305	15°C
MACH4002-24G	150 897	/	/	44 376	75 449	/	/	22 188	15°C
MACH4002-48G	102 712	/	/	34 895	51 356	/	/	17 448	15°C
MACH4002-24G+3X	140 157	/	/	42 460	70 079	/	/	21 230	15°C
MACH4002-48G+3X	97 620	/	/	33 699	48 810	/	/	16 850	15°C
Lüftereinschub									
M4-AIR	10 000 000	/	/	/	/	/	/	/	/
M4-AIR-T	4 819 187	/	/	/	/	/	/	/	10°C
Netzteileneinschübe: Switch-Chassis									
M4-S-AC/DC 300W	/	/	/	/	/	/	/	/	/
M4-S-24VDC 300W M4-S-48VDC 300W	649 676	/	/	/	324 838	/	/	/	5°C
Einschub-Module									
M4-BTP-RJ45	6 094 897	/	/	1 352 104	3 047 449	/	/	676 052	5°C
M4-FAST 8-SFP (ohne SFPs)	1 155 420	/	/	293 869	577 710	/	/	146 935	5°C
M4-FAST 8TP-RJ45-PoE	571 149	/	/	197 741	285 575	/	/	98 871	5°C
M4-GIGA 8-SFP (ohne SFPs)	2 378 994	/	/	594 716	1 189 497	/	/	297 358	5°C
Netzteileneinschübe: Netzteil-Chassis									
M4-P-AC/DC 300W	/	/	/	/	/	/	/	/	/
M4-P-24VDC 300W M4-P-48VDC 300W	649 676	/	/	/	324 838	/	/	/	5°C

MACH1040 Family Full Gigabit	MTBF in h für Umgebungsbedingung			
	G _B 25°C	G _B 60°C	G _F 25°C	G _F 60°C
MAR1040-4C4C4C4C9999S_9HPHH MAR1040-4C4C4C4C9999S_HPHH	243 521	62 863	121 760	31 431
MAR1140-4C4C4C4C9999S_9HPHH	237 643	60 373	118 822	30 186
MAR1140-4C4C4C4C9999S_HPHH	237 574	60 350	118 787	30 175
MAR1042-4C4C4C4C9999S_MHPHH	243 521	62 863	121 760	31 431
MAR1142-4C4C4C4C9999S_MHPHH	237 574	60 350	118 787	30 175

MACH100	MTBF in h für Umgebungsbedingung			
	G _B 25°C	G _B 50°C	G _F 25°C	G _F 50°C
MACH102-8TP MACH102-8TP-F	189 007	96 929	94 503	48 465
MACH102-8TP-R MACH102-8TP-FR	231 733	110 401	115 867	55 201
MACH102-24TP-F	166 916	85 037	83 458	42 519
MACH102-24TP-FR	199 380	95 232	99 690	47 616
M1-BTP-RJ45	2 856 204	1 386 195	1 428 102	693 098
M1-BMM-SC	741 899	220 167	370 950	110 084
M1-BSM-SC	839 442	306 586	419 721	153 293
M1-BSFP	4 116 891	1 517 748	2 058 446	758 874
M1-BTP-RJ45 PoE	1 085 552	486 119	542 776	243 060

MACH104 Family Full Gigabit	MTBF in h for environmental condition			
	G _B 25°C	G _B 50°C	G _F 25°C	G _F 50°C
MACH104-20TX-F MACH104-20TX-FR MACH104-20TX-F-4PoE	210 192	86 687	105 096	43 344

MACH104 Family Full Gigabit	MTBF in h für Umgebungsbedingung			
	G _B 25°C	G _B 50°C	G _F 25°C	G _F 50°C
MACH104-20TX-F	130 139	65 306	65 069	32 653
MACH104-20TX-FR	149 063	71 156	74 531	35 578
MACH104-20TX-F-4PoE	119 950	61 406	59 975	30 703

MACH104-16TX-PoE+	MTBF in h für Umgebungsbedingung				Interne Temperaturerhöhung
	G _B 25°C	G _B 50°C	G _F 25°C	G _F 50°C	
MACH104-16TX-PoEP	131 722	52 578	65 861	26 289	15°C
MACH104-16TX-PoEP-R	148 227	59 671	74 113	29 835	15°C
MACH104-16TX-PoEP-E	187 299	77 311	93 649	38 655	15°C
MACH104-16TX-PoEP+2X	128 310	51 693	64 155	25 846	15°C
MACH104-16TX-PoEP+2X-R	143 921	58 533	71 960	29 266	15°C
MACH104-16TX-PoEP+2X-E	180 476	75 412	90 238	37 706	15°C

RSP	MTBF for environmental condition			
	G _B 25°C	G _B 60°C	G _F 25°C	G _F 60°C
RSP20-11003Z6TT-xCC RSP30-08033O6TT-xCC	563 927 h 64,4 y	180 168 h 20,6 y	281 964 h 32,2 y	90 084 h 10,3 y
RSP20-11003Z6TT-xK9 RSP30-08033O6TT-xK9	534 852 h 61,1 y	175 416 h 20,0 y	267 426 h 30,5 y	87 708 h 10,0 y
RSP20-11003Z6TT-xKK RSP30-08033O6TT-xKK	437 873 h 50,0 y	146 128 h 16,7 y	218 936 h 25,0 y	73 064 h 8,3 y
RSP25-11003Z6TT-xCC RSP35-08033O6TT-xCC	514 412 h 61,8 y	174 006 h 19,9 y	270 706 h 30,9 y	87 003 h 9,9 y
RSP25-11003Z6TT-xK9 RSP35-08033O6TT-xK9	514 557 h 58,7 y	169 570 h 19,4 y	257 279 h 29,4 y	84 785 h 9,7 y
RSP25-11003Z6TT-xKK RSP35-08033O6TT-xKK	424 176 h 48,4 y	142 048 h 16,2 y	212 088 h 24,2 y	71 024 h 8,1 y
RSP20-11003Z6ZT-xCC RSP30-08033O6ZT-xCC	579 684 h 66,2 y	178 652 h 20,4 y	289 842 h 33,1 y	89 326 h 10,2 y
RSP20-11003Z6ZT-xK9 RSP30-08033O6ZT-xK9	549 006 h 62,7 y	173 978 h 19,9 y	274 503 h 31,3 y	86 989 h 9,9 y
RSP20-11003Z6ZT-xKK RSP30-08033O6ZT-xKK	447 313 h 51,1 y	145 129 h 16,6 y	223 657 h 25,5 y	72 564 h 8,3 y
RSP25-11003Z6ZT-xCC RSP35-08033O6ZT-xCC	556 036 h 63,5 y	172 613 h 19,7 y	278 018 h 31,7 y	86 306 h 9,9 y
RSP25-11003Z6ZT-xK9 RSP35-08033O6ZT-xK9	527 749 h 60,2 y	168 246 h 19,2 y	263 875 h 30,1 y	84 123 h 9,6 y
RSP25-11003Z6ZT-xKK RSP35-08033O6ZT-xKK	433 100 h 49,4 y	141 118 h 16,1 y	216 550 h 24,7 y	70 559 h 8,1 y

RSPE	MTBF for environmental condition			
	G _B 25°C	G _B 60°C	G _F 25°C	G _F 60°C
RSPE Base Unit:				
RSPE30-24044O7T99-_CC	423 905 h	147 964 h	211 953 h	73 982 h
RSPE30-24044O7T99-_K9	406 777 h	144 084 h	203 388 h	72 042 h
RSPE30-24044O7T99-_KK	348 135 h	123 716 h	174 068 h	61 858 h
RSPE32-24044O7T99-_PP	336 090 h	114 774 h	168 045 h	57 387 h
RSPE35-24044O7T99-_CC	415 895 h	145 994 h	207 948 h	72 997 h
RSPE35-24044O7T99-_K9	399 396 h	142 214 h	199 698 h	71 107 h
RSPE35-24044O7T99-_KK	342 715 h	122 336 h	171 357 h	61 168 h
RSPE37-24044O7T99-_PP	331 035 h	113 585 h	165 518 h	56 792 h
RSPE Media Modules:				
RSPM20-4T14Z6_	3 328 178 h	1 074 332 h	1 664 089 h	537 166 h
RSPM22-4T14Z6_	1 952 815 h	559 641 h	976 407 h	279 821 h
RSPM20-4T14T1_	2 928 504 h	971 611 h	1 464 252 h	485 806 h
RSPM22-4T14T1_	1 442 827 h	424 280 h	721 413 h	212 140 h
RSPM20-4Z64Z6_	4 600 414 h	1 293 096 h	2 300 207 h	646 548 h

RSPS	MTBF for environmental condition			
	G _B 25°C	G _B 60°C	G _F 25°C	G _F 60°C
RSPS20-06002T1TT-_CC	683 494 h 78,0 a	232 464 h 26,5 a	341 747 h 39,0 a	116 232 h 13,3 a
RSPS20-06002T1TT-_K9	641 245 h 73,2 a	224 612 h 25,6 a	320 623 h 36,6 a	112 306 h 12,8 a
RSPS20-06002T1TT-_M9	677 087 h 77,3 a	236 724 h 27,0 a	338 543 h 38,6 a	118 362 h 13,5 a
RSPS20-06002Z6TT-_CC	718 364 h 82,0 a	238 127 h 27,2 a	359 182 h 41,0 a	119 064 h 13,6 a
RSPS20-06002Z6TT-_K9	671 841 h 76,7 a	229 895 h 26,2 a	335 920 h 38,3 a	114 948 h 13,1 a
RSPS20-06002Z6TT-_M9	711 290 h 81,2 a	242 599 h 27,7 a	355 645 h 40,6 a	121 300 h 13,8 a
RSPS20-06002Z6YT-_CC	724 054 h 82,7 a	241 076 h 27,5 a	362 027 h 41,3 a	120 538 h 13,8 a
RSPS20-06002Z6YT-_K9	676 815 h 77,3 a	232 642 h 26,6 a	338 407 h 38,6 a	116 321 h 13,3 a
RSPS20-06002Z6YT-_M9	716 867 h 81,8 a	245 660 h 28,0 a	358 434 h 40,9 a	122 830 h 14,0 a
RSPS25-06002T1TT-_CC	650 821 h 74,3 a	221 778 h 25,3 a	325 411 h 37,1 a	110 889 h 12,7 a
RSPS25-06002T1TT-_K9	612 401 h 69,9 a	214 620 h 24,5 a	306 201 h 35,0 a	107 310 h 12,3 a
RSPS25-06002T1TT-_M9	645 009 h 73,6 a	225 651 h 25,8 a	322 505 h 36,8 a	112 826 h 12,9 a
RSPS25-06002Z6TT-_CC	682 360 h 77,9 a	226 927 h 25,9 a	341 180 h 38,9 a	113 463 h 13,0 a
RSPS25-06002Z6TT-_K9	640 247 h 73,1 a	219 439 h 25,1 a	320 123 h 36,5 a	109 719 h 12,5 a
RSPS25-06002Z6TT-_M9	675 974 h 77,2 a	230 984 h 26,4 a	337 987 h 38,6 a	115 492 h 13,2 a
RSPS25-06002Z6YT-_CC	687 491 h 78,5 a	229 603 h 26,2 a	343 746 h 39,2 a	114 801 h 13,1 a
RSPS25-06002Z6YT-_K9	644 762 h 73,6 a	221 940 h 25,3 a	322 381 h 36,8 a	110 970 h 12,7 a
RSPS25-06002Z6YT-_M9	681 009 h 77,7 a	233 757 h 26,7 a	340 505 h 38,9 a	116 879 h 13,3 a

RSPL	MTBF for environmental condition			
	G _B 25°C	G _B 60°C	G _F 25°C	G _F 60°C
RSPL20-08002Z6TT-_CC	684 453 h 78,1 a	237 944 h 27,2 a	342 226 h 39,1 a	118 972 h 13,6 a
RSPL20-08002Z6TT-_M9	678 027 h 77,4 a	242 409 h 27,7 a	339 014 h 38,7 a	121 204 h 13,8 a
RSPL20-08002Z6YT-_CC	710 870 h 81,1 a	240 792 h 27,5 a	355 435 h 40,6 a	120 396 h 13,7 a
RSPL20-08002Z6YT-_M9	703 941 h 80,4 a	245 365 h 28,0 a	351 971 h 40,2 a	122 682 h 14,0 a
RSPL30-08022O7YT-_CC	554 040 h 63,2 a	195 585 h 22,3 a	277 020 h 31,6 a	97 793 h 11,2 a
RSPL30-08022O7YT-_M9	549 822 h 62,8 a	198 592 h 22,7 a	274 911 h 31,4 a	99 296 h 11,3 a
RSPL30-08022O7ZT-_CC	571 223 h 65,2 a	197 505 h 22,5 a	285 611 h 32,6 a	98 753 h 11,3 a
RSPL30-08022O7ZT-_M9	566 740 h 64,7 a	200 572 h 22,9 a	283 370 h 32,3 a	100 286 h 11,4 a

AutoConfiguration Adapter	MTBF in h für Umgebungsbedingung			
	G _B 25°C	G _B 60°C	G _F 25°C	G _F 60°C
ACA11	6 807 352	1 111 900	3 403 676	555 950
ACA21-US8	4 851 177	571 555	2 425 589	285 778
ACA22	2 000 000	/	/	/
ACA31	2 000 000	/	/	/

RED25-04002T1TT-...	6 494 025
RED25-04002Z6TT-...	6 468 913

EAGLE_One TX-TX	652 424 h	M-FAST SFP-MM/LC	4 504 505	OCTOPUS 5TX	2 403 272	OCTOPUS 8TX-EEC	6 779 960	
	74,5 a	M-FAST SFP-SM/LC	5 714 000	OCTOPUS 5TX EEC	2 834 171			
EAGLE_One TX-MM	604 004 h	M-FAST SFP-SM+/LC	5 602 000	OCTOPUS 8M	461 586	OCTOPUS 8TX-EEC PoE	4 755 238	
	69,0 a	M-FAST SFP-LH/LC	3 215 434	OCTOPUS 8M-Train				
EAGLE_One MM-MM	562 275 h	M-FAST SFP-MM/LC EEC	4 716 000	OCTOPUS 16M	298 989	OS20-000800T5T5T5-TN9Z999HHSE2S	735 186	
	64,2 a	M-FAST SFP-SM/LC EEC	5 714 000	OCTOPUS 16M-Train		OS20-001200T5T5T5-TBBS999HHNE3S	1 412 828	
EAGLE20-0400999TT999_CC	587 930 h	M-FAST SFP-LH/LC EEC	4 346 000	OCTOPUS 24M	286 014	OS20-001200T5T5T5-THHS999HHNE3S	1 661 958	
	67,1 a	M-SFP-SX/LC	17 211 704	OCTOPUS 24M-Train		OS20-001200T5T5T5-TN9Z999HHSE2S	683 340	
EAGLE20-0400999TT999_K9	556 397 h	M-SFP-MX/LC		OCTOPUS 16M-2FX	267 808	OS20-002000R5R5T5-TBBS999HHSE2A	1 229 710	
	63,5 a	M-SFP-LX/LC	13 888 889	OCTOPUS 24M-2FX	257 351	OS20-002000T5T5T5-TBBS999HHSE2A	1 347 709	
EAGLE20-0400999TT999_KK	452 208 h	M-SFP-LX+/LC	4 269 126	OCTOPUS 8M-6PoE	253 697	OS20-002800T5T5T5-TBBY999HHSE3S	1 195 600	
	51,6 a	M-SFP-LH/LC	15 936 019	OCTOPUS 8M-8PoE	252 927	OS30-001604R6R6T5-TN9S999HHTE3S	625 078	
EAGLE30-0402206TT999_CC	583 357 h	M-SFP-LH+/LC		M-SFP-SX/LC EEC	5 211 000	OCTOPUS 16M-8PoE	194 861	OS24-152800T5T5T5-TQQS999HHSE2S
EAGLE30-0402206TT999_K9	552 300 h	M-SFP-LX/LC EEC	7 407 000	OCTOPUS 16M-8PoE-2FX	181 117	OS34-100804R6T6T5-TN9S999HHSE2S	438 904	
	63,0 a	M-SFP-LX+/LC EEC	4 269 126			OS34-110804T6T6T5-TN9S999HHSE3S	441 326	
EAGLE30-0402206TT999_KK	449 498 h	M-SFP-LH/LC EEC	4 220 000			OS34-1416041AT6T5-TN9S999HHSE3S	362 096	
	51,3 a	M-SFP-LH+/LC EEC	4 158 350			OS34-152404T6T6T5-TN9S999HHSE2A	404 285	
		M-SFP-2,5-MM/LC EEC	4 700 000			OS34-141604R6T6T5-TN9S999HHTE3S	416 146	
RPS 15	7 165 000	M-SFP-2,5-SM/LC EEC	6 983 000			OS34-151604T6T6T5-TN9S999HHSE2A	420 575	
RPS 30		M-SFP-2,5-SM+/LC EEC	5 163 000					
RPS 80 EEC	2 436 000							
RPS 120	2 436 000							
RPS 120 EEC	1 338 000							

IP67-Switch	MTBF in h für Umgebungsbedingung								Interne Temperaturerhöhung
	G _B 25°C	G _B 50°C	G _B 55°C	G _B 60°C	G _F 25°C	G _F 50°C	G _F 55°C	G _F 60°C	
Octopus									
OCTOPUS 5TX	2 403 272	/	794 614	/	1 201 636	/	397 307	/	10°C
OCTOPUS 5TX EEC	2 834 171	/	/	800 474	1 417 086	/	/	400 237	5°C
OCTOPUS 8M OCTOPUS 8M-Train	461 586	/	/	99 288	230 793	/	/	49 644	15°C
OCTOPUS 16M OCTOPUS 16M-Train	298 989	/	/	76 262	149 495	/	/	38 131	15°C
OCTOPUS 24M OCTOPUS 24M-Train	286 014	/	/	70 668	143 007	/	/	35 334	15°C
OCTOPUS 16M-2FX	267 808	/	/	65 331	133 904	/	/	32 666	15°C
OCTOPUS 24M-2FX	257 351	/	/	61 182	128 676	/	/	30 591	15°C
OCTOPUS 8M-6PoE	253 697	/	/	53 243	126 849	/	/	26 622	15°C
OCTOPUS 8M-8PoE	252 927	/	/	53 181	126 464	/	/	26 591	15°C
OCTOPUS 16M-8PoE	194 861	/	/	45 778	97 431	/	/	22 889	15°C
OCTOPUS 16M-8PoE-2FX	181 117	/	/	41 600	90 559	/	/	20 800	15°C
OS20-0010001M1MTREPHH OS20-0010004M4MTREPHH	356 451	/	/	/	178 225	/	/	/	15°C
OS20-0010001S1STREPHH OS20-0010004S4STREPHH	366 107	/	/	/	183 054	/	/	/	15°C
OS30-0008021A1ATREPHH OS30-0008024A4ATREPHH	361 606	/	/	/	180 803	/	/	/	15°C
OS30-0008021B1BTREPHH OS30-0008024B4BTREPHH	377 154	/	/	/	188 577	/	/	/	15°C
OS20-001000T5T5TAFUHB	855 426	/	/	283 430	427 713	/	/	141 715	15°C
OS20-001000T5T5TNEUHB	/	/	/	/	/	/	/	/	
OS24-081000T5T5TFFUHB	/	/	/	/	/	/	/	/	
OS24-081000T5T5TNEUHB	/	/	/	/	/	/	/	/	
OS20-000900T5T5TAGBHH	620 656	/	/	197 634	310 328	/	/	98 817	15°C
OS20-000900T5T5TNEBHH	/	/	/	/	/	/	/	/	
OS24-080900T5T5TFGBHH	/	/	/	/	/	/	/	/	
OS24-080900T5T5TNEBHH	/	/	/	/	/	/	/	/	



BAT-R	MTBF for environmental condition			
	Gg25°C	Gg60°C	Gf25°C	Gf60°C
BAT-REUW99LJWWLJLJLJO7T1LJLJ9LJLJH	283 043 h 32.3 a	94 767 h 10.8 a	141 522 h 16.2 a	47 383 h 5.4 a
BAT-REUW99LJCCJLJLJLJO7T1LJLJ9LJLJH	508 438 h 58. a	152 976 h 17.5 a	254 219 h 29. a	76 488 h 8.7 a
BAT-REUW99LJKKJLJLJLJO7T1LJLJ9LJLJH	487 478 h 55.6 a	147 703 h 16.9 a	243 739 h 27.8 a	73 852 h 8.4 a
BAT-REUW99LJCKJLJLJLJO7T1LJLJ9LJLJH	484 309 h 55.3 a	146 900 h 16.8 a	242 155 h 27.6 a	73 450 h 8.4 a
BAT-REUW99LJK9LJLJLJO7T1LJLJ9LJLJH	545 778 h 62.3 a	162 188 h 18.5 a	272 889 h 31.2 a	81 094 h 9.3 a
BAT-REUW99LJCCJLJLJLJO7T1LJLJ9LJLJH	447 782 h 51.1 a	125 703 h 14.3 a	223 891 h 25.6 a	62 852 h 7.2 a
BAT-REUW99LJKKJLJLJLJO7T1LJLJ9LJLJH	431 445 h 49.3 a	122 121 h 13.9 a	215 722 h 24.6 a	61 061 h 7. a
BAT-REUW99LJCKJLJLJLJO7T1LJLJ9LJLJH	428 960 h 49. a	121 571 h 13.9 a	214 480 h 24.5 a	60 786 h 6.9 a
BAT-REUW99LJK9LJLJLJO7T1LJLJ9LJLJH	476 493 h 54.4 a	131 857 h 15.1 a	238 246 h 27.2 a	65 929 h 7.5 a

BAT-C	MTBF for Environmental Condition			
	Gg20°C	Gg60°C	Gf20°C	Gf60°C
BAT-C	12 149 783 h 1386 a	2 349 757 h 268 a	6 074 928 h 693 a	1 174 877 h 134 a

BAT-F	MTBF for environmental condition			
	Gg25°C	Gg60°C	Gf25°C	Gf60°C
BAT-FEUW99LJWWLJLJLJO5T6LJLJ9LJLJH BAT-FEUW99CWWK98O5T6E9999H	286 996 h 32.8 a	94 529 h 10.8 a	143 498 h 16.4 a	47 264 h 5.4 a
BAT-FEUW99LJWWLJLJLJO599LJLJ9LJLJH	289 781 h 33.1 a	95 155 h 10.9 a	144 890 h 16.5 a	47 578 h 5.4 a
BAT-FEUW99LJP9LJLJLJO5T6LJLJ9LJLJH	691 925 h 79. a	188 534 h 21.5 a	345 962 h 39.5 a	94 267 h 10.8 a
BAT-FEUW99LJP9LJLJLJO599LJLJ9LJLJH	708 334 h 80.9 a	191 042 h 21.8 a	354 167 h 40.4 a	95 521 h 10.9 a
BAT-FEUW99LJCCJLJLJLJO5T6LJLJ9LJLJH	497 344 h 56.8 a	145 682 h 16.6 a	248 672 h 28.4 a	72 841 h 8.3 a
BAT-FEUW99LJCCJLJLJLJO599LJLJ9LJLJH	505 766 h 57.7 a	147 175 h 16.8 a	252 883 h 28.9 a	73 587 h 8.4 a
BAT-FEUW99LJKKJLJLJLJO5T6LJLJ9LJLJH	477 271 h 54.5 a	140 893 h 16.1 a	238 636 h 27.2 a	70 446 h 8.0 a
BAT-FEUW99LJKKJLJLJLJO599LJLJ9LJLJH BAT-FEUW99AKK988O599T9999H	485 021 h 55.4 a	142 289 h 16.2 a	242 511 h 27.7 a	71 144 h 8.1 a
BAT-FEUW99LJCKJLJLJLJO5T6LJLJ9LJLJH	474 233 h 54.1 a	140 161 h 16. a	237 117 h 27.1 a	70 081 h 8.0 a
BAT-FEUW99LJCKJLJLJLJO599LJLJ9LJLJH	481 884 h 55. a	141 543 h 16.2 a	240 942 h 27.5 a	70 771 h 8.1 a
BAT-FEUW99LJK9LJLJLJO5T6LJLJ9LJLJH	533 016 h 60.8 a	154 013 h 17.6 a	266 508 h 30.4 a	77 006 h 8.8 a
BAT-FEUW99LJK9LJLJLJO599LJLJ9LJLJH	542 701 h 62. a	155 682 h 17.8 a	271 350 h 31. a	77 841 h 8.9 a
BAT-FEUW99LJCCJLJLJLJO5T6LJLJ9LJLJH	439 155 h 50.1 a	120 736 h 13.8 a	219 577 h 25.1 a	60 368 h 6.9 a
BAT-FEUW99LJKKJLJLJLJO5T6LJLJ9LJLJH	423 430 h 48.3 a	117 428 h 13.4 a	211 715 h 24.2 a	58 714 h 6.7 a
BAT-FEUW99LJCKJLJLJLJO5T6LJLJ9LJLJH	421 037 h 48.1 a	116 919 h 13.3 a	210 519 h 24. a	58 460 h 6.7 a
BAT-FEUW99LJK9LJLJLJO5T6LJLJ9LJLJH	466 736 h 53.3 a	126 403 h 14.4 a	233 368 h 26.6 a	63 201 h 7.2 a

RSPE L2A

Switching	
Size of the MAC address table (incl. static filters)	16384
Max. number of statically configured MAC address filters	100
Max. number of MAC address filters learnable through IGMP Snooping	1024
Max. number of MAC address entries (MMRP)	512
Number of priority queues	8 Queues
Port priorities that can be set	0..7
MTU (max. length of packets)	12288 Bytes

VLAN	
VLAN ID range	1..4042
Number of VLANs	max. 256 simultaneously per device max. 256 simultaneously per port

Access Control Lists (ACL)	
Max. number of ACLs	50
Max. number of rules per port	1023
Max. number of rules per ACL	1023
Number of total configurable rules	4092 (4x1023)
Max. number of VLAN assignments (in)	24
Max. number of rules which log an event	128
Max. number of Ingress rules	1023

BRS L2S

Switching	
Size of the MAC address table (incl. static filters)	16384
Max. number of statically configured MAC address filters	100
Max. number of MAC address filters learnable through IGMP Snooping	1024
Max. number of MAC address entries (MMRP)	64
Number of priority queues	8 Queues
Port priorities that can be set	0..7
MTU (max. length of packets)	9720 Bytes

VLAN	
VLAN ID range	1..4042
Number of VLANs	max. 128 simultaneously per device max. 128 simultaneously per port

GRS1020/30 L2S

Switching	
Size of the MAC address table (incl. static filters)	16384
Max. number of statically configured MAC address filters	100
Max. number of MAC address filters learnable through IGMP Snooping	512
Maximum number of MAC address entries (MMRP)	64
Number of priority queues	8 Queues
Port priorities that can be set	0..7

VLAN	
VLAN-ID	1..4042
Number of VLANs	max. 128 simultaneously per device max. 128 simultaneously per port

GRS1040 L2A

Switching	
Size of the MAC address table (incl. static filters)	32768
Max. number of statically configured MAC address filters	100
Max. number of MAC address filters learnable through IGMP Snooping	1024
Max. number of MAC address entries (MMRP)	512
Number of priority queues	8 Queues
Port priorities that can be set	0..7
MTU (max. length of over-long packets)	12288 Bytes

VLAN	
VLAN ID range	1..4042
Number of VLANs	max. 512 simultaneously per device max. 512 simultaneously per port

Access Control Lists (ACL)	
Max. number of ACLs	100
Max. number of rules per port	1023
Max. number of rules per ACL	1023
Number of total configurable rules	8184 (8x1023)
Max. number of VLAN assignments (in)	24
Max. number of VLAN assignments (out)	24
Max. number of rules which log an event	8184 (8x1023)
Max. number of Ingress rules	1023
Max. number of Egress rules	1023

EAGLE40	MTBF in h for environmental condition (Telcordia Issue 4)	
	G _B 25°C	G _B 55°C
EAGLE40-03	816 773	321 519

ROUTING LIMITS

Device	Multicast Routes	Unicast Routes	Unicast Routes	ARP entries	ARP entries	VRRP	VRRP	ACLs (direction IN)	ACLs (direction IN)	ACLs (direction IN)	DVMRP	PIM-DM	PIM-SM
		static	total	static	total	VRRP	HiVRRP	max. Rules per ACL	max. Rules per Interface	max. Rules per Device	max. table entries in hardware	max. table entries	max. table entries
PowerMICE L3E	0	256	2048	64	2048	max. 8 Instances per Interface	max. 16 Instances per device	10	20	1000	-	-	-
PowerMICE L3P	512	256	4096	64	2048	max. 8 Instances per Interface	max. 16 Instances per device	10	100	1000	512	512	512
MACH4000 L3E	0	256	2048	64	2048	max. 8 Instances per Interface	max. 16 Instances per device	10	20	1000	-	-	-
MACH4000 L3P	512	256	4096	64	2048	max. 8 Instances per Interface	max. 16 Instances per device	10	100	1000	512	512	128
MACH4000 XG L3E	0	256	1536	64	3584	max. 8 Instances per Interface	max. 16 Instances per device	10	20	480 (1), 1000 (2)	-	-	-
MACH4000 XG L3P	512*	256, 512(3)	1860*	64	2048*	max. 8 Instances per Interface	max. 16 Instances per device	10	100	480 (1), 1000 (2)	512	512	512
MACH100 GE L3P**	512	256, 512(3)	4096	64	3072	max. 8 Instances per Interface	max. 16 Instances per device	10	100	1000	512	512	512
MACH1000 GE L3P	512	256, 512(3)	4096	64	3072	max. 8 Instances per Interface	max. 16 Instances per device	10	100	1000	512	512	512



ROUTING LIMITS

	RSP RSPE OCTOPUS	RSP20/30	RSPL20/30 EESX20/30 GRS1020_1030	RSPS20/25 EES20/25 RED25	MSP30	GRS1040 MSP40	DRAGON MACH4500 MACH4000 (preliminary)
MAC Address Table	16k	16k	16k	2k	32k	32k	32k
L2-Multicasts	1k	1k	512	256	1k	1k	1k
Max DOT1X Clients per port	- (2S) 16 (2A,3A)	-	-	-	16	16	16
Port Security - Max. Dynamic Addresses	600	600	600	600	600	600	600
Port Security - Max. Static Addresses	64	64	64	64	64	64	64
VLANs	256	256	128	16	512	512	512
MSTP Instances	-	-	-	-	16	16	31 (TBD)
LAGs (03.0.00)	2 (2S) 4 (2A,3S)	2	2	2	8	8	16 (TBD)
Max. ports per LAG (03.0.00)	4	4	4	2	8	8	8
Traffic-Classes/Queues	8	8	8	4	8	8	8
Max ACL Lists	50	50	-	-	100	100	100 (TBD)
Max ACL Rules per List	256 (2S) 512 (2A)	255	-	-	1023	1023	1023 (TBD)
Number of total configurable rules	8 x 256 (2S) 8 x 512 (2A)	8 x 256	-	-	8 x 1023	8 x 1023	8 x 1023 (TBD)
Max ACL VLAN Assignments	12 (2S) 24 (2A)	12	-	-	24	24	48 (TBD)
Max ACL Logging Rules	128	128	-	-	128	128	128 (TBD)
Max Ingress ACL Rules per device	768	768	-	-	1792	1792	3840 (MACH4000) 7680 (MACH4500)
Max Egress ACL Rules per device	-	-	-	-	512	512	1024 (MACH4000) 2048 (MACH4500)



Classic

Platform 4



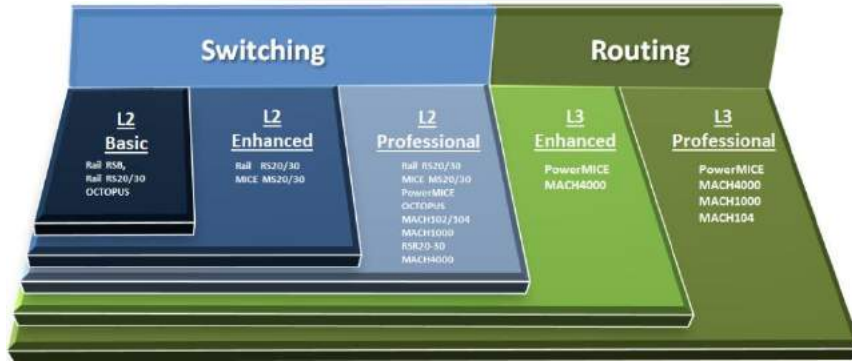
The Classic Switch Software (Release 8) Software Platform for Hirschmann™ managed MACH, MICE, Rail and OCTOPUS families

HiOS

Platform 5



HiOS - Hirschmann™ Operating System Software Platform for Hirschmann™ managed RSP, MSP and Embedded Ethernet Switch families



Switching	
Layer 2 Basic	Suitable for RSB20, OCTOPUS. The cost-effective entrance into managed switch capabilities. Includes statistics, Filters and redundancy technologies. The alternative for unmanaged switches.
Layer 2 Enhanced	Suitable for RS20/30/40, MS20/30. Basic level plus a wide range of management, filter and diagnostic functions. Fast redundancy mechanisms, industrial profiles like EtherNet/IP and PROFINET and security features are also supported. Ideally suited for standard industrial applications
Layer 2 Professional	Suitable for MACH100, MACH1000, MACH4000, RS20/30/40, MS20/30, RSR. Enhanced software plus extended diagnostic, filter properties, security and redundancy features. A software package for applications where great value is placed on uncompromising plant safety and the highest level of availability

Switching	
Layer 2 Standard	Suitable for RSP, GRS series. In addition to numerous management and diagnostic options, HiOS provides precise time synchronization compliant with IEEE 1588v2 plus a variety of redundancy protocols. With zero switchover times, the PRP (Parallel Redundancy Protocol) and HSR (High-Availability Seamless Redundancy) redundancy methods ensure smooth production processes. Comprehensive security mechanisms protect your network against attacks and operating errors, so also contributing to high network availability.
Layer 2 Advanced	Suitable for MSP and RSP series. The Advanced Level includes all features of the Standard Level plus additional redundancy enhancements with MRP over Link Aggregation and Quality of Service functions such as DiffServ, MAC and IP based VLANs, protocol based VLANs and security mechanisms like enhanced Access Control Lists (ACL). Flow based ACL, RADIUS-based policy assignment, IP source guard, dynamic ARP inspection and IEEE 802.1x multi client authentication.

Routing	
Layer 3 Enhanced	Suitable for PowerMICE, MACH4000. Professional L2 software plus additional security, static routing, dynamic routing protocols (RIP), router- and link redundancy. The Layer 3 software for smaller networks and applications with extended security requirements.
Layer 3 Professional	Suitable for PowerMICE, MACH104, MACH1040, MACH4000. Layer 3 Enhanced plus a wide range of dynamic routing protocols (RIP, OSPF), multicast routing protocols, fast router redundancy and enhanced link redundancy

Routing	
Layer 3 Standard	Suitable for OCTOPUS, RSP and RSPE series. Layer 3 software includes the functionality of L2 software plus additional functionality such as static routing, 1:1 Network Address Translation, Router Redundancy and multicast forwarding. Ethernet Train Backbone is available for OCTOPUS.
Layer 3 Advanced	Suitable for MSP series. Layer 3 software includes the functionality of L3 Standard software plus additional functionality plus a wide range of dynamic routing protocols for unicast- and multicast protocols

Function Platform 4 (Classic) + Platform 5 (HiOS)

Status of list: Classic = 09.0; HiOS = 7.0;



* Hardware dependent

Configuration
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

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

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



Function Platform 4 (Classic) + Platform 5 (HiOS)

Status of list: Classic = 09.0; HiOS = 7.0;



Redundancy
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

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

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

* Hardware dependent



Function Platform 4 (Classic) + Platform 5 (HiOS)

Status of list: Classic = 09.0; HiOS = 7.0;



* Hardware dependent

Routing
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

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

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



Function Platform 4 (Classic) + Platform 5 (HiOS)

Status of list: Classic = 09.0; HiOS = 7.0;



* Hardware dependent

Industrial Profiles
PROFINET IO Protocol
EtherNet/IP Protocol
ModbusTCP
IEC61850 Protocol (MMS Server, Switch Model)
Time Synchronization
SNTP Client
SNTP Server
Buffered Real Time Clock
PTPv2 Transparent Clock Two-step*
PTPv2 Boundary Clock*
Multicast Routing
IGMP v1, v2, v3
IGMP Proxy (Multicast Routing)
DVMRP
PIM-DM (RFC3973)
PIM-SM / SSM (RFC4601)
Miscellaneous
Digital IO Management
PoE (802.3AF)
PoE+ (802.3AT)
PoE+ Manual Power Management
PoE Fast Startup
Port Power Down
Manual Cable Crossing

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

	L2B	L2E	L2P	L3E	L3P
	●	●	●	●	●
	●	●	●	●	●
			●	●	●
			●	●	●
		●	●	●	●

	L2B	L2E	L2P	L3E	L3P
					●
					●
					●
					●
					●

	L2B	L2E	L2P	L3E	L3P
	●*	●*	●*	●*	●*
			●*	●	●*
			●*		●*
			●*		●*
			●*		●*
			●*		
	●	●	●	●	●

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

	L2S	L2A	L3S	L3A
	●	●	●	●
	●	●	●	●
	●	●	●	●
	●*	●	●	●
	●*	●	●	●

	L2S	L2A	L3S	L3A
			●	●
			●	●
				●*
				●*
				●*

	L2S	L2A	L3S	L3A
		●*		●*
	●*	●*	●*	●*
	●*	●*	●*	●*
	●*	●*	●*	●*
	●*	●*	●*	●*
	●*	●*	●*	●*
	●	●	●	●
	●	●	●	●

* Hardware dependent



HiOS/Classic Feature Overview

Status of list: Classic = 09.1; HiOS = 08.1; HiSecOS = 03.2



⚠ = Feature is hardware dependent and not supported by all devices in this software level.
(This information is only available for HiOS)

Management	HiOS						Classic								HiSecOS	
	Since	L2E	L2S	L2A	L3S	L3A	Since	L2B (<=05.0)	L2B+ (>=05.2)	L2E	L2P	L3E	L3P	Since	L3F	
DNS Client	02.0			✓	✓	✓	-							01.0	✓	
DNS Caching Server	-						-							01.0	✓	
Dual Software Image Support	01.0	⚠	⚠	✓	✓	✓	01.0				✓	✓	✓	01.0	✓	
TFTP	01.0	✓	✓	✓	✓	✓	01.0	✓	✓	✓	✓	✓	✓	-		
SFTP	01.0	✓	✓	✓	✓	✓	-							-		
SCP	02.0	✓	✓	✓	✓	✓	-							-		
SFTP Server	-						-							01.0	✓	
SCP Server	-						-							01.0	✓	
LLDP (802.1AB)	01.0	✓	✓	✓	✓	✓	01.0	✓	✓	✓	✓	✓	✓	01.1	✓	
LLDP-MED	02.0		✓	✓	✓	✓	07.0				✓	✓	✓	-		
SSHv1	-						02.0				✓	✓	✓	-		
SSHv2	01.0	✓	✓	✓	✓	✓	08.0				✓	✓	✓	01.0	✓	
V.24	01.0	✓	⚠	✓	✓	✓	01.0	✓	✓	✓	✓	✓	✓	01.0	✓	
HTTP	01.0	✓	✓	✓	✓	✓	01.0	✓	✓	✓	✓	✓	✓	01.2	✓	
HTTPS	01.0	✓	✓	✓	✓	✓	08.0				✓	✓	✓	01.0	✓	
Traps	01.0	✓	✓	✓	✓	✓	01.0	✓	✓	✓	✓	✓	✓	01.0	✓	
SNMP v1/v2/v3	01.0	✓	✓	✓	✓	✓	01.0	✓	✓	✓	✓	✓	✓	01.0	✓	
Telnet	01.0	✓	✓	✓	✓	✓	01.0			✓	✓	✓	✓	-		

HiOS/Classic Feature Overview

Status of list: Classic = 09.1; HiOS = 08.1; HiSecOS = 03.2



⚠ = Feature is hardware dependent and not supported by all devices in this software level.
(This information is only available for HiOS)

	HiOS						Classic								HiSecOS	
	Since	L2E	L2S	L2A	L3S	L3A	Since	L2B (<=05.0)	L2B+ (>=05.2)	L2E	L2P	L3E	L3P	Since	L3F	
Diagnostics																
Management Address Conflict Detection	02.0	✓	✓	✓	✓	✓	02.0			✓	✓	✓	✓	-		
Address Conflict Detection for routing interfaces	07.0				✓	✓	-							-		
Address Relearn Detection	-						06.0			✓	✓	✓	✓	-		
MAC Notification	02.0		✓	✓	✓	✓	08.0				✓	✓	✓	-		
SFP Management	01.0	✓	✓	✓	✓	✓	01.0	✓	✓	✓	✓	✓	✓	01.0	✓	
Signal Contact	01.0	⚠	✓	✓	✓	✓	01.0	✓	✓	✓	✓	✓	✓	01.0	✓	
Device Status Indication	01.0	✓	✓	✓	✓	✓	03.0	✓	✓	✓	✓	✓	✓	01.0	✓	
TCPDump	01.0	✓	✓	✓	✓	✓	06.0				✓	✓	✓	-		
LEDs	01.0	✓	✓	✓	✓	✓	01.0	✓	✓	✓	✓	✓	✓	01.0	✓	
Syslog	01.0	✓	✓	✓	✓	✓	01.0			✓	✓	✓	✓	01.0	✓	
Persistent Logging on ACA	01.0	⚠	✓	✓	✓	✓	-							01.0	✓	
Email Notification	02.0			✓	✓	✓	-							-		
Port Monitoring with Auto-Disable	02.0	✓	✓	✓	✓	✓	07.0				✓	✓	✓	-		
Link Flap Detection	02.0	✓	✓	✓	✓	✓	07.0				✓	✓	✓	-		
Overload Detection	05.0	✓	✓	✓	✓	✓	08.0				✓	✓	✓	-		
Duplex Mismatch Detection	02.0	✓	✓	✓	✓	✓	06.0			✓	✓	✓	✓	-		
Link Speed and Duplex Monitoring	05.0	✓	✓	✓	✓	✓	09.0				✓	✓	✓	-		
RMON (1,2,3,9)	01.0	✓	✓	✓	✓	✓	01.0	✓	✓	✓	✓	✓	✓	01.0	✓	
Port Mirroring 1:1	01.0	✓	✓	✓	✓	✓	01.0	✓	✓	✓	✓	✓	✓	-		
Port Mirroring 8:1	01.0	✓	✓	✓	✓	✓	06.0			✓	✓	✓	✓	-		
Port Mirroring N:1	05.0	✓	✓	✓	✓	✓	08.0				✓	✓	✓	-		
RSPAN	05.0			✓	✓	✓	-							-		
SFLOW	02.0			✓	✓	✓	-							-		
VLAN Mirroring	05.0			✓	✓	✓	-							-		
Port Mirroring N:2	07.0	⚠	⚠	⚠		✓	-							-		
System Information	01.0	✓	✓	✓	✓	✓	01.0	✓	✓	✓	✓	✓	✓	01.0	✓	
Self-Tests on Cold Start	01.0	✓	✓	✓	✓	✓	01.0	✓	✓	✓	✓	✓	✓	-		
Copper Cable Test	02.0	⚠	⚠	✓	✓	✓	01.0				✓	✓	✓	-		
Configuration Check Dialog	01.0	✓	✓	✓	✓	✓	07.0				✓	✓	✓	01.0	✓	
Switch Dump	01.0	✓	✓	✓	✓	✓	06.0			✓	✓	✓	✓	01.0	✓	
Snapshot Configuration Feature	03.0	✓	⚠	⚠	✓	✓	-							02.0	✓	

HiOS/Classic Feature Overview

Status of list: Classic = 09.1; HiOS = 08.1; HiSecOS = 03.2



⚠ = Feature is hardware dependent and not supported by all devices in this software level.
(This information is only available for HiOS)

Configuration	HiOS						Classic								HiSecOS	
	Since	L2E	L2S	L2A	L3S	L3A	Since	L2B (<=05.0)	L2B+ (>=05.2)	L2E	L2P	L3E	L3P	Since	L3F	
AutoConfiguration Adapter ACA11 Limited Support (RS20/30/40, MS20/30)	-						03.1	✓		✓	✓	✓	✓	-		
Automatic Configuration Undo (roll-back)	01.0	✓	✓	✓	✓	✓	04.0		✓	✓	✓	✓	✓	01.0	✓	
Configuration Fingerprint	02.0	✓	✓	✓	✓	✓	08.0			✓	✓	✓	✓	01.2	✓	
Text-based Configuration File (XML)	01.0	✓	✓	✓	✓	✓	-							01.0	✓	
AutoConfiguration Adapter ACA11 Full Support	-						05.2		✓					-		
Backup config on a remote server when saving	07.0	✓	✓	✓	✓	✓	-							-		
Clear config but keep IP settings	07.0	✓	✓	✓	✓	✓	01.0	✓	✓	✓	✓	✓	✓	-		
BOOTP/DHCP Client with Auto-Configuration	01.0	✓	✓	✓	✓	✓	01.0	✓	✓	✓	✓	✓	✓	-		
DHCP Server: per Port	02.0		✓	✓	✓	✓	04.1				✓	✓	✓	-		
DHCP Server: Pools per VLAN	02.0		✓	✓	✓	✓	07.1				✓	✓	✓	-		
DHCP Server: Option 43	-						08.0				✓	✓	✓	-		
AutoConfiguration Adapter ACA31 (SD card)	01.0	⚠	⚠	⚠	⚠	⚠	-							01.0	✓	
AutoConfiguration Adapter ACA21/22 (USB)	03.0		⚠	⚠	⚠	✓	01.0			✓	✓	✓	✓	01.0	✓	
HiDiscovery	01.0	✓	✓	✓	✓	✓	01.0	✓	✓	✓	✓	✓	✓	01.0	✓	
DHCP Relay with Option 82	02.0	⚠	⚠	✓	✓	✓	01.0	✓	✓	✓	✓	✓	✓	-		
USB-C Management support	07.4		⚠				-							-		
Command Line Interface (CLI)	01.0	✓	✓	✓	✓	✓	01.0	✓	✓	✓	✓	✓	✓	01.0	✓	
CLI Scripting	02.0	✓	✓	✓	✓	✓	01.0				✓	✓	✓	01.2	✓	
CLI script handling over ENVm at boot	07.0	✓	✓	✓	✓	✓	-							-		
Full-featured MIB Support	01.0	✓	✓	✓	✓	✓	01.0	✓	✓	✓	✓	✓	✓	01.0	✓	
Web-based Management	01.0	✓	⚠	⚠	✓	✓	01.0	✓	✓	✓	✓	✓	✓	01.0		
Context-sensitive Help	01.0	✓	✓	✓	✓	✓	01.0	✓	✓	✓	✓	✓	✓	01.0	✓	
HTML5 based Management	07.0	✓	✓	✓	✓	✓	-							03.4	✓	



HiOS/Classic Feature Overview

Status of list: Classic = 09.1; HiOS = 08.1; HiSecOS = 03.2



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Security	HiOS						Classic								HiSecOS	
	Since	L2E	L2S	L2A	L3S	L3A	Since	L2B (<=05.0)	L2B+ (>=05.2)	L2E	L2P	L3E	L3P	Since	L3F	
IP-based Port Security	-						01.0			✓	✓	✓	✓	-		
MAC-based Port Security	01.0	✓	✓	✓	✓	✓	01.0			✓	✓	✓	✓	-		
Port-based Access Control with 802.1X	01.0	✓	✓	✓	✓	✓	01.0			✓	✓	✓	✓	-		
Guest/unauthenticated VLAN	01.0	✓	✓	✓	✓	✓	07.0			✓	✓	✓	✓	-		
Integrated Authentication Server (IAS)	01.0	✓	✓	✓	✓	✓	-							-		
RADIUS VLAN Assignment	01.0	✓	✓	✓	✓	✓	07.0			✓	✓	✓	✓	-		
RADIUS Policy Assignment	02.0			✓	✓	✓	-							-		
Multi-Client Authentication per Port	02.0			✓	✓	✓	07.0			✓	✓	✓	✓	-		
MAC Authentication Bypass	02.0			✓	✓	✓	07.0			✓	✓	✓	✓	-		
Format options for MAC authentication bypass	07.0			✓	✓	✓	-							-		
DHCP Snooping	02.0			✓	✓	✓	-							-		
IP Source Guard	02.0			⚠		✓	-							-		
Dynamic ARP Inspection	02.0			✓	✓	✓	-							-		
Denial-of-Service Prevention	02.0	✓	✓	✓	✓	✓	-							01.0	✓	
DoS Prevention Drop Counter	07.4		⚠				-							-		
LDAP	05.0			✓	✓	✓	-							03.0	✓	
Ingress MAC-based ACL	02.0			✓	✓	✓	01.0					✓	✓	01.0	✓	
Egress MAC-based ACL	02.0			⚠		✓	-							-		
Ingress IPv4-based ACL	02.0			✓	✓	✓	01.0					✓	✓	01.0	✓	
Egress IPv4-based ACL	02.0			⚠		✓	-							-		
Time-based ACL	02.0			✓	✓	✓	-							-		
VLAN-based ACL	02.0	⚠	⚠	✓	✓	✓	-							01.0	✓	
Ingress VLAN-based ACL	02.0	⚠	⚠	✓	✓	✓	-							01.0	✓	
Egress VLAN-based ACL	02.0			⚠		✓	-							-		
ACL Hit Counter	-						-							01.2	✓	
Basic ACL	03.0	⚠	⚠				-							-		
ACL Row-based Limiting	03.0			✓	✓	✓	-							01.2	✓	
Access to Management restricted by VLAN	01.0	✓	✓	✓	✓	✓	01.0			✓	✓	✓	✓	01.0	✓	
CLI Logging	01.0	✓	✓	✓	✓	✓	-							01.0	✓	
HTTPS Certificate Management	01.0	✓	✓	✓	✓	✓	08.0				✓	✓	✓	01.0	✓	
Restricted Management Access	01.0	✓	✓	✓	✓	✓	06.0				✓	✓	✓	01.0	✓	
Device Security Indication	01.0	✓	✓	✓	✓	✓	-							01.1	✓	
Audit Trail	01.0	✓	✓	✓	✓	✓	-							01.0	✓	
Appropriate Use Banner	01.0	✓	✓	✓	✓	✓	08.0				✓	✓	✓	01.0	✓	
Configurable Password Policy	01.0	✓	✓	✓	✓	✓	-							01.0	✓	
Configurable Number of Login Attempts	01.0	✓	✓	✓	✓	✓	-							01.0	✓	
SNMP Logging	01.0	✓	✓	✓	✓	✓	06.0			✓	✓	✓	✓	01.0	✓	
Multiple Privilege Levels	01.0	✓	✓	✓	✓	✓	-							01.0	✓	
Local User Management	01.0	✓	✓	✓	✓	✓	01.0	✓	✓	✓	✓	✓	✓	01.0	✓	
Remote Authentication via RADIUS	01.0	✓	✓	✓	✓	✓	05.0				✓	✓	✓	01.0	✓	
User Account Locking	01.0	✓	✓	✓	✓	✓	-							01.0	✓	

HiOS/Classic Feature Overview

Status of list: Classic = 09.1; HiOS = 08.1; HiSecOS = 03.2



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	HiOS						Classic							HiSecOS	
	Since	L2E	L2S	L2A	L3S	L3A	Since	L2B (<=05.0)	L2B+ (>=05.2)	L2E	L2P	L3E	L3P	Since	L3F
Packet Filter															
Stateful Packet Inspection (SPI) for Routed Traffic	-						-							01.0	✓
Industrial Profiles															
EtherNet/IP Protocol	05.0	⚠	⚠	⚠	⚠	⚠	03.0			✓	✓	✓	✓	-	
IEC61850 Protocol (MMS Server, Switch Mode)	03.0	✓	⚠	⚠	⚠	⚠	08.0				✓	✓	✓	-	
Modbus TCP	05.0	✓	⚠	⚠	⚠	⚠	-							-	
PROFINET Protocol	05.0	⚠	⚠	⚠	⚠	⚠	03.0			✓	✓	✓	✓	-	
Time Synchronization															
IRIG-B	01.1	⚠					-							-	
Buffered Real Time Clock	01.0	⚠	✓	✓	✓	✓	01.0				✓	✓	✓	01.0	✓
SNTP Client	01.0	✓	✓	✓	✓	✓	01.0	✓	✓	✓	✓	✓	✓	-	
SNTP Server	01.0	✓	✓	✓	✓	✓	01.0	✓	✓	✓	✓	✓	✓	-	
NTP Client	-						-							01.0	✓
NTP Server	-						-							01.0	✓
PTPv2 Transparent Clock two-step	01.0	⚠	⚠	⚠	✓	✓	07.0				✓	✓	✓	-	
PTPv2 Boundary Clock	01.0	⚠	⚠	⚠	✓	✓	05.0			✓	✓	✓	✓	-	
BC with Up to 8 Sync / s	07.0			⚠		⚠	-							-	
802.1AS	07.3		⚠	⚠	⚠		-							-	

HiOS/Classic Feature Overview

Status of list: Classic = 09.1; HiOS = 08.1; HiSecOS = 03.2



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	HiOS						Classic								HiSecOS	
	Since	L2E	L2S	L2A	L3S	L3A	Since	L2B (<=05.0)	L2B+ (>=05.2)	L2E	L2P	L3E	L3P	Since	L3F	
Traffic Shaping	-						01.0					✓	✓	-		
Disable Learning (hub functionality)	-						03.0			✓	✓	✓	✓	-		
Independent VLAN Learning	01.0	✓	✓	✓	✓	✓	01.0			✓	✓	✓	✓	01.0	✓	
Fast Aging	01.0	✓	✓	✓	✓	✓	01.0	✓	✓	✓	✓	✓	✓	01.0	✓	
Static Unicast/Multicast Address Entries	01.0	✓	✓	✓	✓	✓	01.0		✓	✓	✓	✓	✓	01.0	✓	
QoS / Port Prioritization (802.1D/p)	01.0	✓	✓	✓	✓	✓	01.0	✓	✓	✓	✓	✓	✓	01.0	✓	
TOS/DSCP Prioritization	01.0	✓	✓	✓	✓	✓	04.0	✓	✓	✓	✓	✓	✓	-		
Interface Trust Mode	01.0	✓	✓	✓	✓	✓	-							-		
CoS Queue Management	01.0	✓	✓	✓	✓	✓	01.0					✓	✓	-		
IP Ingress DiffServ Classification and Policing	02.0			✓	✓	✓	-							-		
IP Egress DiffServ Classification and Policing	02.0			⚠	✓	✓	-							-		
Queue-Shaping / Max. Queue Bandwidth	03.0		⚠	✓	✓	✓	-							-		
Egress Broadcast Limiter per Port	-						01.0			✓	✓	✓	✓	-		
Flow Control (802.3X)	01.0	✓	✓	✓	✓	✓	01.0			✓	✓	✓	✓	01.0	✓	
Egress Interface Shaping	01.0	✓	✓	✓	✓	✓	-							-		
Ingress Storm Protection	01.0	✓	✓	✓	✓	✓	-							01.2	✓	
Jumbo Frames	01.1		⚠	✓	✓	✓	08.0				✓	✓	✓	-		
VLAN (802.1Q)	01.0	✓	✓	✓	✓	✓	01.0			✓	✓	✓	✓	01.0	✓	
Protocol-based VLAN	02.0			✓	✓	✓	01.0						✓	-		
VLAN Unaware Mode	01.0	✓	⚠	✓	✓	✓	-							-		
GARP VLAN Registration Protocol (GVRP)	06.0		⚠	✓	✓	✓	03.0				✓	✓	✓	-		
Double VLAN Tagging (QinQ)	-						05.1				✓	✓	✓	-		
Voice VLAN	02.0		✓	✓	✓	✓	07.0				✓	✓	✓	-		
MAC-based VLAN	02.0			✓	✓	✓	-							-		
IP subnet-based VLAN	02.0			✓	✓	✓	-							-		
TSN 802.1Qbv Support on interfaces 1/1 - 1/3.	07.3		⚠	⚠	⚠		-							-		
GARP Multicast Registration Protocol (GMRP)	06.0		⚠	✓	✓	✓	01.0				✓	✓	✓	-		
IGMP Snooping/Querier (v1/v2/v3)	-						01.5		✓	✓	✓	✓	✓	-		
IGMP Snooping/Querier per VLAN (v1/v2/v3)	01.0	✓	✓	✓	✓	✓	-							-		
Unknown Multicast Filtering	01.0	✓	✓	✓	✓	✓	-							-		
Multiple VLAN Registration Protocol (MVRP)	03.0	✓	✓	✓	✓	✓	-							-		
Multiple MAC Registration Protocol (MMRP)	03.0	✓	✓	✓	✓	✓	-							-		
Multiple Registration Protocol (MRP)	03.0	✓	✓	✓	✓	✓	-							-		

HiOS/Classic Feature Overview

Status of list: Classic = 09.1; HiOS = 08.1; HiSecOS = 03.2

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HiOS/Classic Feature Overview

Status of list: Classic = 09.1; HiOS = 08.1; HiSecOS = 03.2



⚠ = Feature is hardware dependent and not supported by all devices in this software level.
(This information is only available for HiOS)

Miscellaneous	HiOS					Classic								HiSecOS	
	Since	L2E	L2S	L2A	L3S	L3A	Since	L2B (<=05.0)	L2B+ (>=05.2)	L2E	L2P	L3E	L3P	Since	L3F
Digital IO Management	02.0		⚠	⚠		⚠	07.0			✓	✓	✓	✓	-	
PoE (802.3af)	02.0		⚠	⚠	⚠	⚠	03.0			✓	✓	✓	✓	-	
PoE+ (802.3at)	02.0		⚠	⚠	⚠	⚠	07.0		✓		✓	✓	✓	-	
PoE+ Manual Power Management	05.0		⚠	⚠	⚠	⚠	09.0				✓		✓	-	
PoE Fast Startup	05.0		⚠	⚠	⚠	⚠	07.1				✓	✓	✓	-	
Manual Cable Crossing	01.0	✓	✓	✓	✓	✓	04.1	✓	✓	✓	✓	✓	✓	01.0	✓
Port Power Down	01.0	✓	✓	✓	✓	✓	-							01.0	✓
SHDSL WAN Interface	-						-							01.2	✓



HiOS/Classic Feature Overview

Status of list: Classic = 09.1; HiOS = 08.1; HiSecOS = 03.2



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(This information is only available for HiOS)

	HiOS						Classic								HiSecOS	
	Since	L2E	L25	L2A	L35	L3A	Since	L2B (<=05.0)	L2B+ (>=05.2)	L2E	L2P	L3E	L3P	Since	L3F	
Routing																
IP/UDP Helper	04.0				✓	✓	-							-		
Full Wire-Speed Routing	04.0				✓	✓	01.0					✓	✓	-		
Port-based Router Interfaces	04.0				✓	✓	01.0					✓	✓	01.0	✓	
VLAN-based Router Interfaces	04.0				✓	✓	01.0					✓	✓	01.0	✓	
Loopback Interface	04.0				✓	✓	-							03.0	✓	
ICMP Filter	04.0				✓	✓	-							03.0	✓	
Net-directed Broadcasts	04.0				✓	✓	06.0					✓	✓	-		
1:1 NAT	06.0				⚠		-							01.0	✓	
Port Forwarding	-						-							01.0	✓	
IP Masquerading (N:1 NAT)	-						-							01.0	✓	
Destination NAT	-						-							01.0	✓	
Double NAT	-						-							01.0	✓	
Equal Cost Multiple Path (ECMP)	04.0					✓	01.0					✓	✓	02.0	✓	
Static Unicast Routing	04.0				✓	✓	-							01.0	✓	
OSPFv2	04.0				✓	✓	01.0						✓	02.0	✓	
RIP v1/v2	04.0				✓	✓	01.0					✓	✓	-		
ICMP Router Discovery (IRDP)	04.0				✓	✓	01.0					✓	✓	-		
Proxy ARP	04.0				✓	✓	01.0					✓	✓	01.0	✓	
Static Route Tracking	04.0				✓	✓	05.0					✓	✓	03.0	✓	



HiOS/Classic Feature Overview

Status of list: Classic = 09.1; HiOS = 08.1; HiSecOS = 03.2



⚠ = Feature is hardware dependent and not supported by all devices in this software level.
(This information is only available for HiOS)

	HiOS						Classic						HiSecOS		
	Since	L2E	L2S	L2A	L3S	L3A	Since	L2B (<=05.0)	L2B+ (>=05.2)	L2E	L2P	L3E	L3P	Since	L3F
Multicast Routing															
DVMRP	04.0					⚠	01.5						✓	-	
IGMP v1/v2/v3	04.0				✓	✓	01.5						✓	-	
IGMP Proxy (Multicast Routing)	04.0				✓	✓	-							-	
PIM-DM (RFC3973)	04.0					⚠	01.5						✓	-	
PIM-SM / SSM (RFC4601)	04.0					⚠	07.0						✓	-	

	HiOS						Classic						HiSecOS		
	Since	L2E	L2S	L2A	L3S	L3A	Since	L2B (<=05.0)	L2B+ (>=05.2)	L2E	L2P	L3E	L3P	Since	L3F
Multipoint VPN															
IPSec, IKE v1/v2, 3DES, AES (-128, -192, -256), Pre-Shared Key (PSK), X.509v3 certificates, MD5, SHA-1, NAT-T, Hub-and-Spoke	-						-							02.0	✓



HiOS/Classic Feature Overview

Status of list: Classic = 09.1; HiOS = 08.1; HiSecOS = 03.2



⚠ = Feature is hardware dependent and not supported by all devices in this software level.
(This information is only available for HiOS)

	HiOS						Classic							HiSecOS	
	Since	L2E	L2S	L2A	L3S	L3A	Since	L2B (<=05.0)	L2B+ (>=05.2)	L2E	L2P	L3E	L3P	Since	L3F
Advanced Ring Configuration for MRP	-						07.0				✓	✓	✓	-	
Device Level Ring (DLR)	05.0		⚠	⚠	⚠		-							-	
HiPER-Ring (Manager)	-						01.0		✓	✓	✓	✓	✓	-	
HiPER-Ring (Ring Switch)	05.0		⚠	✓	✓	✓	01.0	✓	✓	✓	✓	✓	✓	-	
HiPER-Ring over Link Aggregation	05.0			✓	✓	✓	02.0				✓	✓	✓	-	
Fast HiPER-Ring	-						04.0				✓	✓	✓	-	
Link Aggregation with LACP	03.0	✓	✓	✓	✓	✓	01.0				✓	✓	✓	-	
Link Backup	03.0	✓	✓	✓	✓	✓	-							-	
Media Redundancy Protocol (MRP) (IEC62439-2)	01.0	✓	✓	✓	✓	✓	03.0		✓	✓	✓	✓	✓	-	
Fast MRP (IEC62439-2)	01.0	⚠	⚠	⚠	⚠		-							-	
MRP over Link Aggregation	03.0			✓	✓	✓	-							-	
High Availability Seamless Redundancy Protocol (HSR) (IEC62439-3)	02.0	⚠	⚠	⚠	⚠		-							-	
HSR 1 GBit/s	07.0		⚠	⚠	⚠		-							-	
Parallel Redundancy Protocol (PRP) (IEC62439-3)	01.1	⚠	⚠	⚠	⚠		-							-	
PRP 1 GBit/s	06.0		⚠	⚠	⚠		-							-	
Redundant Network Coupling	06.0		⚠	✓	✓	✓	01.0			✓	✓	✓	✓	-	
Sub Ring Manager	04.0		⚠	✓	✓	✓	05.0				✓	✓	✓	-	
RSTP 802.1D-2004 (IEC62439-1)	01.0	✓	✓	✓	✓	✓	04.1		✓	✓	✓	✓	✓	-	
MSTP (802.1Q)	06.1			✓	⚠	✓	06.0				✓	✓	✓	-	
RSTP Guards	01.0	✓	✓	✓	✓	✓	06.0			✓	✓	✓	✓	-	
RSTP over MRP	-						05.0			✓	✓	✓	✓	-	
VRRP	04.0				✓	✓	01.0					✓	✓	01.2	✓
VRRP Tracking	04.0				✓	✓	04.0					✓	✓	03.0	✓
HiVRRP (VRRP enhancements)	04.0				✓	✓	04.0						✓	-	



HiOS Feature Overview per Device

⚠ = Feature is hardware dependent and not supported by all devices in this software level.
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HiOS = 08.1



	HiOS	L2E	L2E	L2S	L2S	L2S	L2S	L2S	L2S	L2S	L2S	L2A	L2A	L2A	L2A	L2A	L2A	L2A	L2A	L3S	L3S	L3S	L3S	L3A	L3A	L3A	L3A	L3A	L3A	L3A	L3A	L3A	L3A	L3A	L3A	L3A	L3A				
Management	Since	EES	EESX	RSPS	RSPL	RSP	RSPE	RED	GRS	OS	BRS	RSP	RSPE	OS	MSP	MSP40	OS3	GRS1040	DRAGON	RSP	RDD	RSPE	OS	MSP (UR)	MSP (MR)	MSP40 (UR)	MSP40 (MR)	OS3 (UR)	OS3 (MR)	GRS1040 (UR)	GRS1040 (MR)	DRAGON (UR)	DRAGON (MR)	DRAGON (UR)	DRAGON (MR)						
DNS Client	02.0											✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓				
Dual Software Image Support	01.0		✓			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			
TFTP	01.0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		
SFTP	01.0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
SCP	02.0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
LLDP (802.1AB)	01.0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
LLDP-MED	02.0			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
SSHv2	01.0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
V.24	01.0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
HTTP	01.0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
HTTPS	01.0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Traps	01.0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
SNMP v1/v2/v3	01.0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Telnet	01.0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

Industrial Profiles	Since	EES	EESX	RSPS	RSPL	RSP	RSPE	RED	GRS	OS	BRS	RSP	RSPE	OS	MSP	MSP40	OS3	GRS1040	DRAGON	RSP	RDD	RSPE	OS	MSP (UR)	MSP (MR)	MSP40 (UR)	MSP40 (MR)	OS3 (UR)	OS3 (MR)	GRS1040 (UR)	GRS1040 (MR)	DRAGON (UR)	DRAGON (MR)	DRAGON (UR)	DRAGON (MR)						
EtherNet/IP Protocol	05.0	✓		✓		✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		
IEC61850 Protocol (MMS Server, Switch Model)	03.0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
Modbus TCP	05.0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
PROFINET Protocol	05.0	✓		✓		✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	

HiOS Feature Overview per Device

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HiOS = 08.1

	HiOS	L2E	L2E	L2S	L2S	L2S	L2S	L2S	L2S	L2S	L2S	L2A	L2A	L2A	L2A	L2A	L2A	L2A	L2A	L3S	L3S	L3S	L3S	L3A	L3A	L3A	L3A	L3A	L3A	L3A	L3A	L3A	L3A	L3A	L3A		
Diagnostics	Since	EES	EESX	RSPS	RSP	RSP	RSP	RSP	RED	GR5	OS	BRS	RSP	RSP	OS	MSP	MSP40	OS3	GRS1040	DRAGON	RSP	RDD	RSPE	OS	MSP (UR)	MSP (MR)	MSP40 (UR)	MSP40 (MR)	OS3 (UR)	OS3 (MR)	GRS1040 (UR)	GRS1040 (MR)	DRAGON (UR)	DRAGON (MR)			
Management Address Conflict Detection	02.0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		
Address Conflict Detection for routing interfaces	07.0																				✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			
MAC Notification	02.0			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		
SFP Management	01.0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
Signal Contact	01.0		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
Device Status Indication	01.0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
TCPDump	01.0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
LEDs	01.0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
Syslog	01.0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
Persistent Logging on ACA	01.0		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
Email Notification	02.0																				✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
Port Monitoring with Auto-Disable	02.0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Link Flap Detection	02.0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Overload Detection	05.0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Duplex Mismatch Detection	02.0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Link Speed and Duplex Monitoring	05.0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
RMON (1,2,3,9)	01.0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Port Mirroring 1:1	01.0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Port Mirroring 8:1	01.0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Port Mirroring N:1	05.0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
RSPAN	05.0																				✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
SFLOW	02.0																				✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
VLAN Mirroring	05.0																				✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Port Mirroring N:2	07.0		✓		✓							✓	✓	✓	✓	✓	✓	✓	✓	✓					✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
System Information	01.0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Self-Tests on Cold Start	01.0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Copper Cable Test	02.0		✓		✓	✓	✓		✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Configuration Check Dialog	01.0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Switch Dump	01.0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Snapshot Configuration Feature	03.0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

HiOS Feature Overview per Device

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(This information is only available for HiOS)

HiOS = 08.1



Configuration	HiOS	L2E	L2E	L2S	L2S	L2S	L2S	L2S	L2S	L2S	L2S	L2A	L2A	L2A	L2A	L2A	L2A	L2A	L2A	L3S	L3S	L3S	L3S	L3A	L3A	L3A	L3A	L3A	L3A	L3A	L3A	L3A	L3A	L3A	L3A	
	Since	EES	EESX	RSPS	RSP	RSP	RSP	RED	GR5	OS	BR5	RSP	RSP	OS	MSP	MSP40	OS3	GRS1040	DRAGON	RSP	RDD	RSP	OS	MSP (UR)	MSP (MR)	MSP40 (UR)	MSP40 (MR)	OS3 (UR)	OS3 (MR)	GRS1040 (UR)	GRS1040 (MR)	DRAGON (UR)	DRAGON (MR)			
Automatic Configuration Undo (roll-back)	01.0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
Configuration Fingerprint	02.0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
Text-based Configuration File (XML)	01.0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
Backup config on a remote server when saving	07.0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
Clear config but keep IP settings	07.0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
BOOTP/DHCP Client with Auto-Configuration	01.0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
DHCP Server: per Port	02.0			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
DHCP Server: Pools per VLAN	02.0			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
AutoConfiguration Adapter ACA31 (SD card)	01.0		✓	✓	✓	✓	✓					✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
AutoConfiguration Adapter ACA21/22 (USB)	03.0							✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
HIDiscovery	01.0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
DHCP Relay with Option 82	02.0		✓		✓	✓	✓		✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
USB-C Management support	07.4										✓																									
Command Line Interface (CLI)	01.0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
CLI Scripting	02.0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
CLI script handling over ENVM at boot	07.0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Full-featured MIB Support	01.0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Web-based Management	01.0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Context-sensitive Help	01.0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
HTML5 based Management	07.0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Time Synchronization	Since	EES	EESX	RSPS	RSP	RSP	RSP	RED	GR5	OS	BR5	RSP	RSP	OS	MSP	MSP40	OS3	GRS1040	DRAGON	RSP	RDD	RSP	OS	MSP (UR)	MSP (MR)	MSP40 (UR)	MSP40 (MR)	OS3 (UR)	OS3 (MR)	GRS1040 (UR)	GRS1040 (MR)	DRAGON (UR)	DRAGON (MR)			
IRIG-B	01.1	✓																																		
Buffered Real Time Clock	01.0		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
SNTP Client	01.0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
SNTP Server	01.0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
PTPv2 Transparent Clock two-step	01.0	✓		✓	✓	✓	✓			✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
PTPv2 Boundary Clock	01.0	✓		✓	✓	✓	✓			✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
BC with Up to 8 Sync / s	07.0														✓	✓	✓									✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
802.1AS	07.3											✓	✓										✓	✓												

HiOS Feature Overview per Device

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HiOS = 08.1



	HiOS	L2E	L2E	L2S	L2S	L2S	L2S	L2S	L2S	L2S	L2S	L2A	L2A	L2A	L2A	L2A	L2A	L2A	L2A	L3S	L3S	L3S	L3S	L3A	L3A	L3A	L3A	L3A	L3A	L3A	L3A	L3A	L3A	L3A	L3A				
Switching	Since	EES	EESX	RSPS	RSPL	RSP	RSPE	RED	GRS	OS	BRS	RSP	RSPE	OS	MSP	MSP40	OS3	GRS1040	DRAGON	RSP	RDD	RSPE	OS	MSP (UR)	MSP (MR)	MSP40 (UR)	MSP40 (MR)	OS3 (UR)	OS3 (MR)	GRS1040 (UR)	GRS1040 (MR)	DRAGON (UR)	DRAGON (MR)						
Independent VLAN Learning	01.0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓				
Fast Aging	01.0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			
Static Unicast/Multicast Address Entries	01.0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			
QoS / Port Prioritization (802.1D/p)	01.0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			
TOS/DSCP Prioritization	01.0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		
Interface Trust Mode	01.0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		
CoS Queue Management	01.0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		
IP Ingress DiffServ Classification and Policing	02.0											✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		
IP Egress DiffServ Classification and Policing	02.0														✓	✓	✓	✓	✓					✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		
Queue-Shaping / Max. Queue Bandwidth	03.0					✓	✓				✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
Flow Control (802.3X)	01.0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
Egress Interface Shaping	01.0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
Ingress Storm Protection	01.0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
Jumbo Frames	01.1					✓	✓				✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
VLAN (802.1Q)	01.0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
Protocol-based VLAN	02.0											✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
VLAN Unaware Mode	01.0	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
GARP VLAN Registration Protocol (GVRP)	06.0								✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Voice VLAN	02.0			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
MAC-based VLAN	02.0											✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
IP subnet-based VLAN	02.0											✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
TSN 802.1Qbv Support on interfaces 1/1 - 1/3.	07.3						✓				✓	✓										✓	✓																
GARP Multicast Registration Protocol (GMRP)	06.0								✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
IGMP Snooping/Querier per VLAN (v1/v2/v3)	01.0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Unknown Multicast Filtering	01.0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Multiple VLAN Registration Protocol (MVRP)	03.0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Multiple MAC Registration Protocol (MMRP)	03.0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Multiple Registration Protocol (MRP)	03.0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

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	HiOS	L2E	L2E	L2S	L2S	L2S	L2S	L2S	L2S	L2S	L2S	L2A	L2A	L2A	L2A	L2A	L2A	L2A	L2A	L3S	L3S	L3S	L3S	L3A	L3A	L3A	L3A	L3A	L3A	L3A	L3A	L3A	L3A	L3A	L3A			
Routing	Since	EES	EESX	RSPS	RSPL	RSP	RSPE	RED	GRS	OS	BRS	RSP	RSPE	OS	MSP	MSP40	OS3	GRS1040	DRAGON	RSP	RDD	RSPE	OS	MSP (UR)	MSP (MR)	MSP40 (UR)	MSP40 (MR)	OS3 (UR)	OS3 (MR)	GRS1040 (UR)	GRS1040 (MR)	DRAGON (UR)	DRAGON (MR)					
IP/UDP Helper	04.0																			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓				
Full Wire-Speed Routing	04.0																				✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			
Port-based Router Interfaces	04.0																				✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		
VLAN-based Router Interfaces	04.0																				✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		
Loopback Interface	04.0																				✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		
ICMP Filter	04.0																				✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
Net-directed Broadcasts	04.0																				✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
1:1 NAT	06.0																				✓		✓	✓														
Equal Cost Multiple Path (ECMP)	04.0																							✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
Static Unicast Routing	04.0																				✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
OSPFv2	04.0																				✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
RP v1/v2	04.0																				✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
ICMP Router Discovery (IRDP)	04.0																				✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
Proxy ARP	04.0																				✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Static Route Tracking	04.0																				✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Multicast Routing	Since	EES	EESX	RSPS	RSPL	RSP	RSPE	RED	GRS	OS	BRS	RSP	RSPE	OS	MSP	MSP40	OS3	GRS1040	DRAGON	RSP	RDD	RSPE	OS	MSP (UR)	MSP (MR)	MSP40 (UR)	MSP40 (MR)	OS3 (UR)	OS3 (MR)	GRS1040 (UR)	GRS1040 (MR)	DRAGON (UR)	DRAGON (MR)					
DVMRP	04.0																								✓		✓		✓		✓		✓		✓		✓	
IGMP v1/v2/v3	04.0																				✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
IGMP Proxy (Multicast Routing)	04.0																				✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
PIM-DM (RFC3973)	04.0																								✓		✓		✓		✓		✓		✓		✓	
PIM-SM / SSM (RFC4601)	04.0																								✓		✓		✓		✓		✓		✓		✓	

HiOS Feature Overview per Device

⚠ = Feature is hardware dependent and not supported by all devices in this software level.
(This information is only available for HiOS)



HiOS = 08.1

Security	HiOS	L2E	L2E	L2S	L2S	L2S	L2S	L2S	L2S	L2S	L2S	L2A	L2A	L2A	L2A	L2A	L2A	L2A	L3S	L3S	L3S	L3S	L3A	L3A	L3A	L3A	L3A	L3A	L3A	L3A	L3A	L3A	L3A								
	Show	EES	EESX	RSPS	RSPL	RSP	RSPE	RED	GRS	OS	BRS	RSP	RSPE	OS	MSP	MSP40	OS3	GRS1040	DRAGON	RSP	RDD	RSPE	OS	MSP (UR)	MSP (MR)	MSP40 (UR)	MSP40 (MR)	OS3 (UR)	OS3 (MR)	GRS1040 (UR)	GRS1040 (MR)	DRAGON (UR)	DRAGON (MR)								
MAC-based Port Security	01.0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓								
Port-based Access Control with 802.1X	01.0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓							
Guest/unauthenticated VLAN	01.0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓							
Integrated Authentication Server (IAS)	01.0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓						
RADIUS VLAN Assignment	01.0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓						
RADIUS Policy Assignment	02.0											✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓						
Multi-Client Authentication per Port	02.0											✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓					
MAC Authentication Bypass	02.0											✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓				
Format options for MAC authentication bypass	07.0											✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓				
DHCP Snooping	02.0											✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			
IP Source Guard	02.0													✓	✓	✓	✓	✓	✓					✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			
Dynamic ARP Inspection	02.0											✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			
Denial-of-Service Prevention	02.0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			
DoS Prevention Drop Counter	07.4										✓																														
LDAP	05.0											✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		
Ingress MAC-based ACL	02.0											✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		
Egress MAC-based ACL	02.0											✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		
Ingress IPv4-based ACL	02.0											✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		
Egress IPv4-based ACL	02.0													✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		
Time-based ACL	02.0											✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
VLAN-based ACL	02.0	✓		✓	✓	✓			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
Ingress VLAN-based ACL	02.0	✓		✓	✓	✓			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
Egress VLAN-based ACL	02.0	✓		✓	✓	✓			✓	✓	✓			✓	✓	✓	✓	✓	✓					✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
Basic ACL	03.0	✓		✓	✓	✓			✓	✓	✓													✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
ACL Row-based Limiting	03.0											✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
Access to Management restricted by VLAN	01.0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
CLI Logging	01.0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
HTTPS Certificate Management	01.0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
Restricted Management Access	01.0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Device Security Indication	01.0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Audit Trail	01.0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Appropriate Use Banner	01.0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Configurable Password Policy	01.0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Configurable Number of Login Attempts	01.0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
SNMP Logging	01.0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Multiple Privilege Levels	01.0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Local User Management	01.0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Remote Authentication via RADIUS	01.0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
User Account Locking	01.0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

HiOS Feature Overview per Device

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HiOS = 08.1



	HiOS	L2E	L2E	L2S	L2S	L2S	L2S	L2S	L2S	L2S	L2S	L2A	L2A	L2A	L2A	L2A	L2A	L2A	L3S	L3S	L3S	L3S	L3A	L3A	L3A	L3A	L3A	L3A	L3A	L3A	L3A		
	Sirow	EES	EESX	RSPS	RSPL	RSP	RSP	RED	GRS	OS	BR5	RSP	RSPE	OS	MSP	MSP40	OS3	GRS1040	DRAGON	RSP	RDD	RSPE	OS	MSP (UR)	MSP (MR)	MSP40 (UR)	MSP40 (MR)	OS3 (UR)	OS3 (MR)	GRS1040 (UR)	GRS1040 (MR)	DRAGON (UR)	DRAGON (MR)
Miscellaneous																																	
Digital ID Management	02.0										✓				✓	✓								✓	✓	✓	✓						
PoE (802.3af)	02.0						✓				✓	✓	✓	✓	✓	✓	✓	✓					✓	✓	✓	✓	✓	✓	✓	✓	✓		
PoE+ (802.3af)	02.0						✓				✓	✓	✓	✓	✓	✓	✓	✓					✓	✓	✓	✓	✓	✓	✓	✓	✓		
PoE+ Manual Power Management	05.0						✓				✓	✓	✓	✓	✓	✓	✓	✓					✓	✓	✓	✓	✓	✓	✓	✓	✓		
PoE Fast Startup	05.0						✓				✓	✓	✓	✓	✓	✓	✓	✓					✓	✓	✓	✓	✓	✓	✓	✓	✓		
Manual Cable Crossing	01.0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Port Power Down	01.0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

HiOS Feature Overview per Device

⚠ = Feature is hardware dependent and not supported by all devices in this software level.
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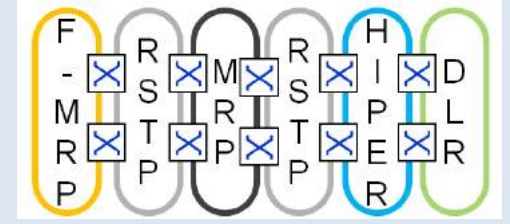
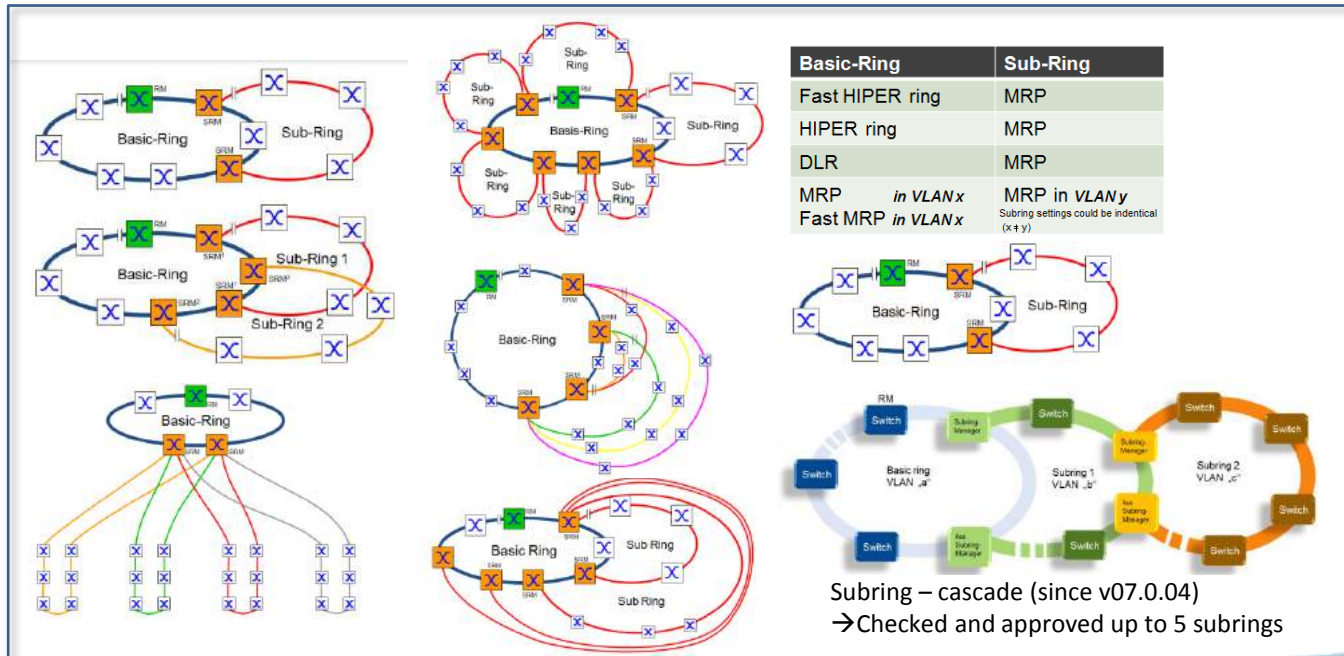
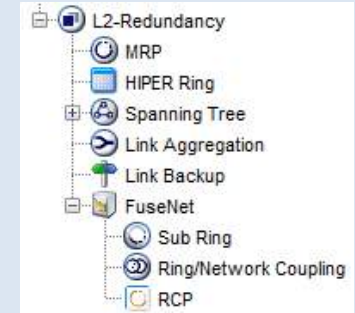
HiOS = 08.1

	HiOS	L2E	L2E	L2S	L2S	L2S	L2S	L2S	L2S	L2S	L2S	L2A	L2A	L2A	L2A	L2A	L2A	L2A	L2A	L3S	L3S	L3S	L3S	L3A	L3A	L3A	L3A	L3A	L3A	L3A	L3A	L3A	L3A	L3A			
Redundancy	Since	EES	EESX	RSPS	RSPL	RSP	RSPE	RED	GRS	OS	BRS	RSP	RSPE	OS	MSP	MSP40	OS3	GRS1040	DRAGON	RSP	RDD	RSPE	OS	MSP (UR)	MSP (MR)	MSP40 (UR)	MSP40 (MR)	OS3 (UR)	OS3 (MR)	GRS1040 (UR)	GRS1040 (MR)	DRAGON (UR)	DRAGON (MR)				
Device Level Ring (DLR)	05.0			✓		✓	✓	✓				✓	✓	✓						✓		✓	✓														
HiPER-Ring (Ring Switch)	05.0										✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			
HiPER-Ring over Link Aggregation	05.0											✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			
Link Aggregation with LACP	03.0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		
Link Backup	03.0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		
Media Redundancy Protocol (MRP) (IEC62439-2)	01.0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
Fast MRP (IEC62439-2)	01.0	✓		✓		✓	✓	✓				✓	✓	✓						✓		✓	✓														
MRP over Link Aggregation	03.0											✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		
High Availability Seamless Redundancy Protocol (HSR) (IEC62439-3)	02.0	✓		✓		✓	✓	✓				✓	✓	✓						✓		✓	✓														
HSR 1 Gbit/s	07.0					✓	✓					✓	✓	✓						✓		✓	✓														
Parallel Redundancy Protocol (PRP) (IEC62439-3)	01.1	✓		✓		✓	✓	✓				✓	✓	✓						✓		✓	✓														
PRP 1 Gbit/s	06.0					✓	✓					✓	✓	✓						✓		✓	✓														
Redundant Network Coupling	06.0										✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
Sub Ring Manager	04.0									✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
RSTP 802.1D-2004 (IEC62439-1)	01.0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
MSTP (802.1Q)	06.1											✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
RSTP Guards	01.0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
VRRP	04.0																			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
VRRP Tracking	04.0																			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
HIVRRP (VRRP enhancements)	04.0																			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	

REDUNDANCY PROTOCOLS

Redundancy procedure	Network topology	Switch-over time
Fast HIPER-ring	ring	5ms for 10 switches in ring 25ms for 100 switches in ring 40ms for 200 switches in ring
Link Aggregation	Coupling of network segments via parallel active lines with dynamic load distribution and line redundancy	</= 1s
Sub-Ring	Ring segment coupled to a primary ring	Typ. 80ms, up to <500ms or 200ms (selectable) – the number of switches has a minimal effect on the switch-over time

- Redundant Coupling Protocol**
- Only 2 devices per coupling, but no devices in-between.
 - Coupling of 2 Rings. Redundancy protocol can be HR, Fast-MRP, MRP, RSTP, DLR.
 - SW 2A and higher
 - Note: RSTP off at non-RSTP ring ports
 - 2 Red. protocols have to be configured at the same time.



COMPARISON OF REDUNDANCY PROTOCOLS

defined in IEC62439

Protocol		Most current standard	Typical re-config	Remark	Available since
CRP	Cross-Network Redundancy	IEC 62439-4:2010	1s worst case for 512 end nodes	any topology/mesh, diameter limited	2007
BRP	Beacon Redundancy Protocol	IEC 62439-5:2010	4...8ms worst case for 500 end nodes	Two top level switches with star, line or ring topologies	2007
DRP	Distributed Redundancy Protocol	IEC 62439-6:2010	100ms worst case for 50 end nodes	Ring, double ring	2010
STP	Spanning Tree Protocol	IEEE 802.1d	30s	any topology/mesh, diameter limited	1990
RSTP	Rapid Spanning Tree Protocol	IEEE 802.1D-2004	2s	any topology/mesh, diameter limited	2004
Optimized RSTP	Rapid Spanning Tree Protocol	IEEE 802.1D-2004 (configuration requirements described in IEC 62439-1:2010)	5...20ms per switch	ring	2010
MRP ^{*(1)}	Media Redundancy Protocol	IEC 62439-2:2010	200ms worst case for 50 switches	ring	1998/2007
Fast MRP ^{*(2)}	Media Redundancy Protocol	IEC 62439-2:2010	30ms worst case for 50 switches; 10ms worst case for 15 switches	ring	2010
HSR 100 Mbit/s 1000 Mbit/s in RSP, RSPE OCTOPUS with HW: Rev.2	High-Availability Seamless Redundancy	IEC 62439-3:2012-07	0ms	ring	2010
PRP 100 Mbit/s 1000 Mbit/s in RSPE35	Parallel Redundancy Protocol	IEC 62439-3:2012-07	0ms	Any topology/ duplicated networks	2010

(1) pre-standard Hiper Ring since 1998, MRP since 2007

(2) pre-standard Fast Hiper Ring since 2007

Proprietary - Hirschmann subring

<100ms (200 switches)



HIRSCHMANN

A BELDEN BRAND



REDUNDANCY – LAYER 2

FuseNet

	RSTP	MSTP	HIPER Ring	Fast HIPER Ring	MRP	Fast MRP	PRP HSR DLR	Link Backup	Link Aggregation	Link Aggregation over HIPER ring	Link Aggregation over MRP (HiOS-2A)	Subring Manager	Ring-, Network-coupling	Ring Coupling Protocol
RS2 xx/xx	●		●		●								●	
RS20-L2B/RSB	●		●		●								●	
RS20/30/40 OCTOPUS OS20/30 Classic	●	●	●		●				● L2P				●	
MS20/30	●	●	●		●				● L2P				●	
MS2108/3124	●		●										●	
MS4128	●		●		●				●	● L2P	●	4	●	
MSP30	●	●	●		●			●	8	●		8	●	●
MSP40	●	●	●		●			●	8	●		12	●	●
MACH102/104	●	●	●		●				●			4 *MACH104	●	
MACH1000	●	●	●	●	●				●			4	●	
MACH1040	●	●	●	●	●				●			16	●	
RSR20/30	●	●	●	●	●				●			4	●	
Greyhound GRS1X20/30	●				●			●	●			2		
Greyhound GRS 1X42	●	●	●		●			●	8	● L2A, L3S	●	20	●	●
MACH4000	●	●	●		●				8 L2P	● L2P		8	●	●
DRAGON MACH	●	●	●		●			●	●	●	●	20	●	●
Bobcat BRS	●	()	● L2S L2A		●			●	2	●		scheduled Q1/2020 L2A	●	scheduled
RSP20/30 OCTOPUS OS20/24/30/34 HiOS	●	●	●		●		●	●	4	● L2A, L3S	●	8 L2A	● L2A	● L2A
RSP25/35 RSPE35/37	●	●	●		●	●	●	●	4	● L2A, L3S	●	8 L2A	● L2A	● L2A
RSPE30	●	●	●		●			●	4	● L2A, L3S	●	8 L2A	● L2A	● L2A
RSPL20/30	●	●			●			●	●				●	
RSPS20/25	●				●	*25	*25	●	●					
RED25	●				●	●	●	●	●					
GECKO	●													

● OCTOPUS: The hardware configuration must be chosen accordingly, as seamless redundancy requires a piece of hardware at the respective ports 1 and port 2

● Since V5.0 --- HIPER-Ring (Ring Switch-only); L2A, L3S, L3A

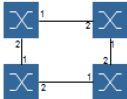
● Since V6.1 --- L2A, L3S, L3A

DIP-switch functionality RS family and MS family



Port 1 and Port 2 are HIPER ring ports

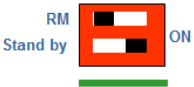
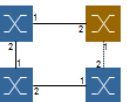
Attention: One switch have to be redundancy manager !



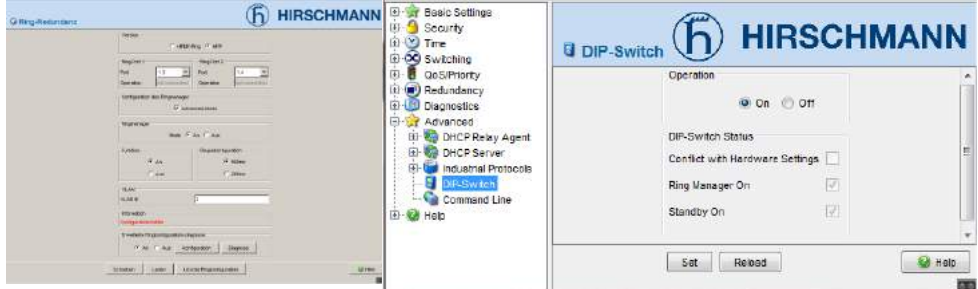
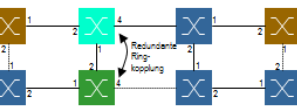
Software-Configuration is dominant



Port 1 and Port 2 are HIPER ring ports
This switch is Redundancy manager



Port 1 and Port 2 are HIPER ring ports and coupling master 4 is blocked



OFF ON



Switch „Ring port“ position	MICE device	Ring ports for the HIPER ring
OFF	MS20	module 1/port 1 and module 1/port2
ON	MS20	module 1/port 1 and module 2/port2
OFF	MS30	module 1/port 1 and module 1/port2
ON	MS30	module 2/port 1 and module 2/port2

Switch „RM“ position	Switch „Stand-by“ position	Ring redundancy	Redundancy manager	Ring coupling	Control port	Coupling port
OFF	OFF	on	off	off	-	-
ON	OFF	on	on	off	-	-
OFF	ON	on	off	on	Module 1/ Port 3 (MS20) Module 2/ Port 3 (MS30)	Modul 1/ Port 4 (MS20) Module 2/ Port 4 (MS30)
ON	ON	off	off	off	-	-

DIP-switch 4: Configuration: OFF – Give the software configuration precedence over the DIP switch position. In case, the other DIP switch positions are meaningless

Download-Webpage manuals installation guides – be informed



<https://www.doc.hirschmann.com/> All current product manual seen at a glance

On this website you will find the current manuals and operating instructions for Hirschmann products at a glance. Currently, you will find the product manuals of the last five years here.









Manuals for older products will be available shortly.

- General Safety instructions
- Hardware Installation Guides
- Software Manual Collections (User and Reference Manuals)

BOBCAT Rail Switch BRS

- BRS20/30/40/50 (Industrial Ethernet BOBCAT Rail Switch)
User Manual Installation Rel. 03  
EN DE
- BRS - HiOS-2S (Industrial Ethernet BOBCAT Rail Switch)
Manual Collection (User and Reference Manuals) Rel. 7.4  
EN DE

Classic Switch Software

- Classic Switch Software (Availability, Integrity and Confidentiality)
ICS Security Guide Rel. 1.01  
EN DE
- Classic Switch Software (Availability, Integrity and Confidentiality)
IT Security Handbook Rel. 1.0  
EN DE
- RS20/RS30/RS40, MS20/MS30 (Industrial ETHERNET (Gigabit-)Switch)
Manual Collection (User and Reference Manuals) Rel. 9.0  
EN DE
- PowerMICE, MACH4002 (Industrial ETHERNET (Gigabit-)Switch)
Manual Collection (User and Reference Manuals) Rel. 9.0  
EN DE

DRAGON PTN - Packet Transport Node

- DRAGON PTN General Specifications 

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This page contains information about vulnerabilities which affect Hirschmann, GarrettCom, Tofino and ProSoft hardware and software products, both historical and present.



product naming



The starting point for configuring Hirschmann devices
HiDiscovery is a simple, free of charge application to identify Hirschmann devices in your LAN and assign IP addresses.
HiDiscovery is available in versions 1 and 2. The basic difference is that it runs on **v1** via **MAC multicasts** and can work as **IP multicast** on **v2** and thus also across router boundaries.



HiView is an intuitive, free of charge application which provides access to our products' graphical user interface
HiView v3.1 includes HiDiscovery v2.



The essential management tool for all stages of your network lifecycle



HiFusion allows you to integrate manufacturer-specific MIB variables for third-party devices into Industrial HiVision



Display state of network by smartphone via Industrial HiVision



Each new version of HiLCOS comes with LANconfig, the powerful Windows management tool for BAT devices

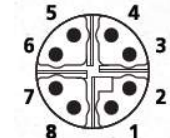


SNMP based windows monitoring tools providing monitoring, diagnostic, statistics, trace and syslog for the BAT devices

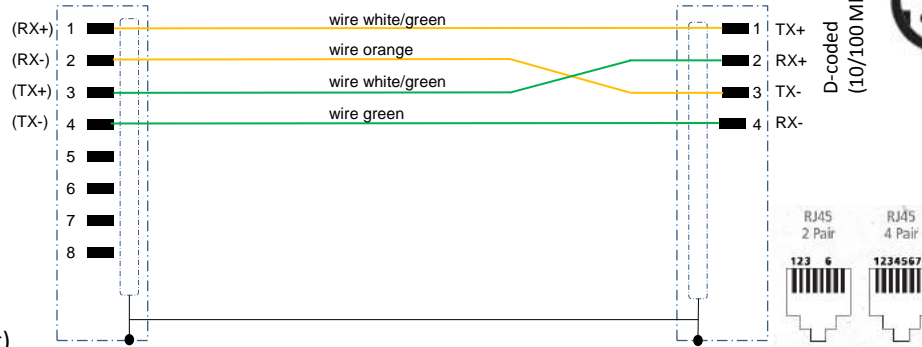
INDUSTRIAL ETHERNET

Patch cord

Typ/ type	Kontaktbelegung/ contact assignment		
	Polzahl/ number of poles	Farbkennung/ color code	Paar/ pair
RSTS 8X 8		1 = weiß / white	2
		2 = orange / orange	3
		3 = weiß / white	4
		4 = grün / green	1
		5 = weiß / white	2
		6 = braun / brown	3
		7 = weiß / white	4
		8 = blau / blue	1
RJ45 8		1 = weiß / white	2
		2 = orange / orange	3
		3 = weiß / white	4
		4 = blau / blue	1
		5 = weiß / white	2
		6 = grün / green	3
		7 = weiß / white	4
		8 = braun / brown	1



X-coded (Gigabit)



Pin	Data	PoE
1	TX+	Positive V _{PSE}
2	RX+	Negative V _{PSE}
3	TX-	Positive V _{PSE}
4	RX-	Negative V _{PSE}

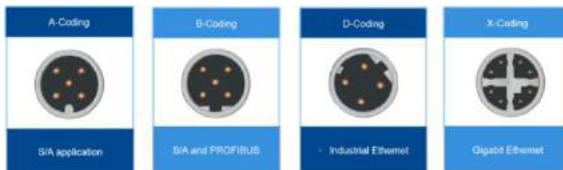
Pin	10/100 Mbit/s	1000 Mbit/s	PoE
1	RX+	BI_DB+	Negative V _{PSE}
2	RX-	BI_DB-	Negative V _{PSE}
3	TX+	BI_DA+	Positive V _{PSE}
4	TX-	BI_DA-	Positive V _{PSE}
5	—	BI_DC+	—
6	—	BI_DC-	—
7	—	BI_DD-	—
8	—	BI_DD+	—

Product name	Order number
RSTS 8X-RSTS 8X-478/2 M	934 809-005
RSTS 8X-RSTS 8X-478/5 M	934 809-006
RSTS 8X-RSTS 8X-478/10 M	934 809-007
RSTS 8X-RSTS 8X-478/15 M	934 809-008

Hirschmann Product Name	Hirschmann Order Number	Hirschmann Description
CAT5e Ethernet patch cord, RJ45/RJ45, 100 Mb, 0.3 m	942112176	Length 0.3 m, Cat 5e, SF/UTP, RJ45/RJ45, 2-pair, 100 Mbit/s, PUR jacket
CAT5e Ethernet patch cord, RJ45/RJ45, 100 Mb, 0.5 m	942112177	Length 0.5 m, Cat 5e, SF/UTP, RJ45/RJ45, 2-pair, 100 Mbit/s, PUR jacket
CAT5e Ethernet patch cord, RJ45/RJ45, 100 Mb, 1 m	942112178	Length 1m, Cat 5e, SF/UTP, RJ45/RJ45, 2-pair, 100 Mbit/s, PUR jacket
CAT5e Ethernet patch cord, RJ45/RJ45, 100 Mb, 2 m	942112179	Length 2 m, Cat 5e, SF/UTP, RJ45/RJ45, 2-pair, 100 Mbit/s, PUR jacket
CAT5e Ethernet patch cord, RJ45/RJ45, 100 Mb, 5 m	942112180	Length 5 m, Cat 5e, SF/UTP, RJ45/RJ45, 2-pair, 100 Mbit/s, PUR jacket
CAT6A Ethernet patch cord, RJ45/RJ45, 1 Gb, 0.3 m	942112181	Length 0.3 m, Cat 6A, S/FTP, RJ45/RJ45, 4-pair, 1000 Mbit/s, PUR jacket
CAT6A Ethernet patch cord, RJ45/RJ45, 1 Gb, 0.5 m	942112182	Length 0.5 m, Cat 6A, S/FTP, RJ45/RJ45, 4-pair, 1000 Mbit/s, PUR jacket
CAT6A Ethernet patch cord, RJ45/RJ45, 1 Gb, 1 m	942112183	Length 1m, Cat 6A, S/FTP, RJ45/RJ45, 4-pair, 1000 Mbit/s, PUR jacket
CAT6A Ethernet patch cord, RJ45/RJ45, 1 Gb, 2 m	942112184	Length 2 m, Cat 6A, S/FTP, RJ45/RJ45, 4-pair, 1000 Mbit/s, PUR jacket
CAT6A Ethernet patch cord, RJ45/RJ45, 1 Gb, 5 m	942112185	Length 5 m, Cat 6A, S/FTP, RJ45/RJ45, 4-pair, 1000 Mbit/s, PUR jacket

#	TIA-1005 and ISO 11801-3				PROFINET	
	RJ45 4 Pair	RJ45 2 Pair	M12-X	M12-D	RJ45 2 Pair	M12-D
1	Orange	Orange	Orange	Orange	Orange	Orange
2	Green	Green	Green	Green	Green	Green
3	Blue	Blue	Blue	Blue	Blue	Blue
4	Brown	Brown	Brown	Brown	Brown	Brown
5	—	—	—	—	—	—
6	—	—	—	—	—	—
7	—	—	—	—	—	—
8	—	—	—	—	—	—

Order No.	Field attachable connector M12	description
942 040-001	0986 EMC 105	M12 male, 4-pole, D-coded Spring type
934 828-002	RSCIS 4D/9	M12 male, 4-pole, D-coded IDC
942 159-001	BRSCIS 4D/9	M12 male, 4-pole, D-coded Rail approved version IDC
942 083-001	EM12G OCTOPUS	M12 male, 8-pole ; X-coded IDC
934 637-032	0986 EMC 600	M12 male, 8-pole ; X-coded



Typ/ type	Kontaktbelegung/ contact assignment	
	Polzahl/ number of poles	Farbkennung/ color code
BRSTS 8X 8		1 = weiß / white
		2 = blau / blue
		3 = gelb / yellow
		4 = orange / orange
		5 = n.c.
		6 = n.c.
		7 = n.c.
		8 = n.c.
BRSTS 4D 4		1 = gelb / yellow
		2 = weiß / white
		3 = orange / orange
		4 = blau / blue



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