



HIRSCHMANN

A BELDEN BRAND

New Product Bulletin

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OCTOPUS Train-BP from Hirschmann™

The new OCTOPUS Train-BP managed IP67 switch guarantees high-availability data communication in trains. Even in the case of a failure, it still maintains the connection between adjacent switches.



Now for the First Time, the OCTOPUS Train-BP has Uplink Ports with Bypass Relay. It Therefore Fulfills the Extremely Demanding Requirements for Use in Ethernet Consist Networks of Trains (IEC 61375-3-4 Draft Standard, Redundancy Level 3).

- Uplink ports with bypass relays allow reliable and secure connection of terminals to the backbone of trains
- Suitable as a Consist Switch in accordance with the IEC 61375-3-4 draft standard for maximum reliability of data communication in trains
- Rail-specific EMC and fire safety approvals ensure optimum operational reliability

The new OCTOPUS Train-BP offers maximum future-proof onboard data communication for trains. Thanks to its two uplink ports with bypass relay and rail-specific approvals, it fulfills the requirements for switches for Ethernet Consist Networks in accordance with the IEC 61375-3-4 draft standard. The bypass relay allows network topologies, which ensure that communication between all devices is maintained despite duplicate faults – even in the actual switches. With each OCTOPUS Train-BP, which can also be seamlessly integrated into Profinet and EtherNet/IP environments, up to 22 terminals can be connected to a train segment network and linked securely to the backbone. In addition, thanks to comprehensive management functions and maximum operational reliability, neither water nor dust nor extreme temperatures nor excessive vibration can harm the OCTOPUS Train-BP.

Applications

The OCTOPUS Train-BP enables future-proof solutions for secure data communication in trains via Ethernet. Thanks to uplink ports with bypass relay, the connection between adjacent switches can be maintained even if an OCTOPUS fails – for example because of a power supply failure. Thanks to this fault-tolerant network design, a variety of applications can be realized, which reliably offer passengers high levels of comfort. This includes, for example, up-to-date display of reachable connecting trains.

Your Benefits

The OCTOPUS Train-BP managed switch enables implementation of Ethernet Consist Networks, which offer optimum reliability for data communication in trains. Uplink ports with bypass relay are now available to you for the first time, meaning that communication between adjacent switches is not interrupted even if an OCTOPUS fails. You can reliably connect terminals to the backbone with these switches – even in the event of duplicate faults in the network. Moreover, the OCTOPUS Train-BP also fulfills the stringent EMC and fire safety requirements of the European standards that govern use in rail vehicles. Even water, dust, heat, cold or vibrations do not cause problems. In short: this switch guarantees you maximum operational reliability.

**A new product to
serve your needs.
Be certain.**



The new OCTOPUS Train-BP managed IP67 switch enables IEC-compliant network solutions in trains.

Hirschmann™ OCTOPUS Train-BP

The OCTOPUS Train-BP comes with 8, 16 or 24 Fast Ethernet ports (10/100 BASE-TX), two of which are used as uplinks and have a bypass relay. The fast switchover times provided by additional redundancy protocols, such as MRP, HIPER Ring and RSTP, guarantee a high level of network availability. Rail-specific approvals combine with IP67 protection, an extended temperature range from -40°C to +70°C, vibration-resistant M12 connectors and a redundant power supply to ensure maximum operational reliability. Numerous security mechanisms also offer maximum protection from network attacks. Last but not least, the OCTOPUS Train-BP, which has a compact metal housing for wall mounting, can be commissioned quickly and monitored conveniently thanks to extensive management functions.

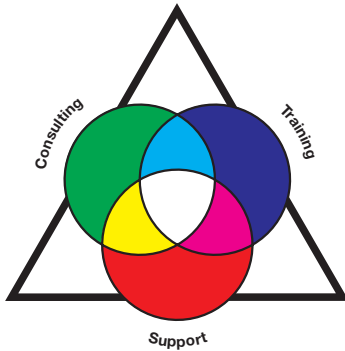
Benefits at a Glance

- Uplinks with bypass relays ensure fail-safe connections between adjacent switches
- Suitable as a Consist Switch in accordance with the IEC 61375-3-4 draft standard
- Rail-specific EMC and fire safety approvals:
 - IEC/EN 61000-4-2 ... 6, IEC/EN 61000-4-9, EN 55022 Class A, FCC 47 CFR Part 15 Class A, EN 50124-4, EN 50155, DIN 5510-2, NF F 16-102
- Variants with 8, 16 or 24 Fast Ethernet ports (10/100 BASE-TX) offer optimum flexibility
- Seamless integration in PROFINET and EtherNet/IP environments
- Industrial protection class IP67
- Extended operating temperature range of -40°C to +70°C
- Fanless cooling
- Sturdy metal housing with compact dimensions for wall mounting (184 x 189 x 70 mm, 261 x 189 x 70 mm, or 338 x 189 x 70 mm, depending on variant)
- Redundant power supply (24, 36 and 48 V)
- LEDs for equipment and network status and power supply
- Layer 2 Professional software:
 - Configuration: CLI, DHCP relay agent option 82, HiDiscovery, autoconfiguration adapter ACA21
 - Diagnostics: RMON, port mirroring, LLDP (topology discovery 802.1ab), signaling contact for alarms
 - Management: Standard web browser, SNMP v2c and v3
 - Redundancy methods: MRP, HIPER Ring, RSTP
 - Security mechanisms: IP and MAC port security, SNMP v3, SSH, SNMP access settings (VLAN/IP), IEEE 802.1x
- Perfectly adapted to Belden® cables and Lumberg Automation™ M12 connectors



Technical Information

Product Description			
Type	OCTOPUS 8M-Train-BP	OCTOPUS 16M-Train-BP	OCTOPUS 24M-Train-BP
Description	Managed IP 67 switch in accordance with IEEE 802.3, Bypass Relay, software layer 2 professional, Ethernet (10 Mbit/s) and Fast-Ethernet (100 Mbit/s)		
Port Type and Quantity	8 x 10/100 BASE-TX two of which are bridged with relay in case of error, M12 D coding, 4-pole, TP cable auto-crossing, auto-negotiation, auto-polarity	16 x 10/100 BASE-TX two of which are bridged with relay in case of error, M12 D coding, 4-pole, TP cable auto-crossing, auto-negotiation, auto-polarity	24 x 10/100 BASE-TX two of which are bridged with relay in case of error, M12 D coding, 4-pole, TP cable auto-crossing, auto-negotiation, auto-polarity
Order No.	942 091-001	942 092-001	942 093-001
More Interfaces			
Supply/Signaling Contact	1 x M12 5-pin connector, A coding		
V.24 Interface	1 x M12 4-pin socket, A coding		
USB Interface	1 x M12 5-pin socket, A coding		
Network Size – Length of Cable			
Twisted Pair (TP)	0 to 100 m, at relay ports in total 0 to 100 m		
Multimode Fiber (MM) 50/125 µm	n/a		
Multimode Fiber (MM) 62,5/125 µm	n/a		
Network Size – Cascadability			
Line-/Star Topology	Any		
Ring Structure (HIPER Ring)	Quantity switches 50 (reconfiguration time <0.3 sec.)		
Power Requirements			
Operating Voltage DC	9.6 to 60 V		
Power Consumption	max. 6.2 W	max. 9.5 W	max. 13.5 W
Current Consumption at 24 V DC	200 mA	380 mA	500 mA
Current Consumption at 36 V DC	150 mA	260 mA	380 mA
Current Consumption at 48 V DC	100 mA	190 mA	250 mA
Software			
Management	Serial interface, Web interface, SNMP V1/V2/V3 (HiVision/Industrial HiVision)		
Diagnostics	LEDs (power 1, power 2, link status, data, redundancy manager, error) cable tester, signalling contact, RMON (statistics, history, alarms, events), SysLog support, port mirroring		
Configuration	Command Line Interface (CLI scripting), auto-configuration adapter (ACA21-M12), TELNET, BootP, DHCP Option 82, HiDiscovery		
Security	Port security (MAC and IP address), SNMPv3, SSH, SNMP access settings (VLAN/IP), IEEE 802.1X authentication		
Redundancy Functions	Bypass Relay, HIPER Ring (ring structure), RSTP (Rapid Spanning Tree Protocol, IEEE 802.1w), redundant network/ring coupling, redundant power supply		
Other Services	4 QoS queues, user priority (IEEE 802.1D/p), VLAN (IEEE 802.1Q), unknown multicast filtering, multicast support (IGMP Snooping/Querier, GMRP), broadcast limiter per port, ingress and egress packet limiter, Flow Control IEEE 802.3x, LLDP (topology discovery IEEE 802.1AB)		
Ambient Conditions			
Operating Temperature	-40°C to +70°C		
Storage/Transport Temperature	-40°C to +85°C		
MTBF	27.6 years MIL-HDBK 217F: Gb 25°C		
Relative Humidity	10% to 100% (also condensing)		
Mechanical Construction			
Dimensions (WxHxD)	184 x 189 x 70 mm	261 x 189 x 70 mm	338 x 189 x 70 mm
Mounting	Wall mounting		
Weight	1310 g	1920 g	2540 g
Protection Class	IP67		
Approvals			
Safety of Industrial Control Equipment	cUL 508		
Shipbuilding	Germanischer Lloyd		
Employment in Vehicles	E1		
Electronic Mechanisms on Rail-mounted Vehicles	DIN 5510-2, NF F 16-101, NF F 16-102		
Scope of Delivery and Accessories			
Scope of Delivery	M12-connector (ELWIKA 5012 PG7) for power connection, description and operating instructions		
Accessories to Order Separately	Auto Configuration Adapter (ACA21-M12), order no. 943 913-001; modem cable (OCTOPUS Terminkabel), order no. 943 902-001; field assembleable M12-connector (EM12S OCTOPUS), order no. 934 445-001; patchcords (EM12S 001Lxxx OCTOPUS)		



The Belden® Competence Center

As the complexity of communication and connectivity solutions has increased, so have the requirements for design, implementation and maintenance of these solutions. For users, acquiring and verifying the latest expert knowledge play a decisive role in this. As a reliable partner for end-to-end solutions, Belden offers expert consulting, design, technical support, as well as technology and product training courses from a single source: Belden Competence Center. In addition, we offer you the right qualification for every area of expertise through the world's first certification program for industrial networks. Up-to-date manufacturer's expertise, an international service network and access to external specialists guarantee you the best possible support for products from Belden®, Hirschmann™ and Lumberg Automation™. Irrespective of the technology you use, you can rely on our full support – from the implementation to the optimization of every aspect of daily operations.

Always Stay Ahead with Belden

In a highly competitive environment, it is crucial to have reliable partners who are able to add value to your business. When it comes to signal transmissions, Belden is the number one solutions provider. We understand your business and want to know your specific challenges and targets to see how effective signal transmission solutions can push you ahead of the competition. By combining the strengths of our three leading brands, Belden®, Hirschmann™; and Lumberg Automation™, we are able to offer the solution you need. Today it may be a single cable, a switch or a connector, thus solving a specific issue; tomorrow it can be a complex range of integrated applications, systems and solutions.

We guarantee the superior performance of your mission-critical systems, even in the most demanding circumstances. If signal transmission is vital to your business, get in touch with the partner that delivers. Be certain. Belden.

Product Overview

