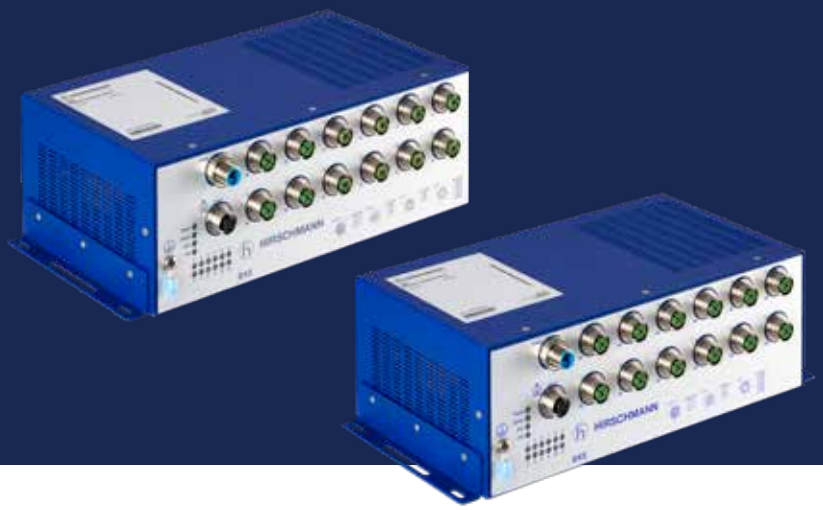
HIRSCHMANN
A BELDEN BRAND

BXS Switches

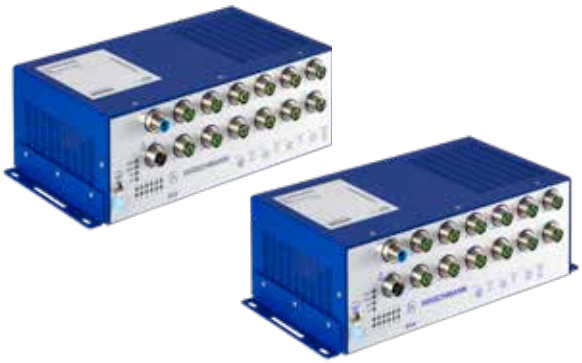
Cost-Effective Gigabit Ethernet Switches for Rolling Stock



PRODUCT BULLETIN

Built to comply with international train standards, the Gigabit BXS switches offer industrial engineers and train builders reliable networking and connectivity capabilities onboard road and rail vehicles.

- **High data rates** enable fast data transfer for a wide range of applications, including passenger information systems, advertising opportunities, IP cameras and more
- **Easy to install and maintain** with a compact design, cabinet-less mounting and Power over Ethernet (PoE+) port options that eliminate the need for separate cabling to power end devices
- **Withstands harsh conditions** of transportation and rail markets, including high temperatures, high vibration and electrostatic discharge



Key Features

- 60 W PoE power supply and optional PoE+ enables terminal equipment to be powered without additional cables
- Vibration-proof M12 connectors for uninterrupted communication
- EMC and fire prevention compliant
- Real-time TSN Ethernet support for precise data transmission
- Advanced security features, including wire-speed access control lists (ACL) and automatic denial-of-service (DoS) prevention
- Extended temperature range of -40°C to +70°C
- Compact, IP40 metal enclosure
- Built-in Layer 2 protocols and wholistic diagnostics
- Supports HiOS software

Built specifically with the transportation sector in mind, Hirschmann's Gigabit BXS switches are a powerful, secure and cost-effective path to road and rail connectivity.

Your Benefits

The Hirschmann Gigabit BXS switches were uniquely designed for transportation markets. Not only can the switches withstand the high vibration and wide temperature ranges found in road and rail applications, but they meet all electromagnetic compatibility (EMC) and fire prevention requirements for rail vehicles.

With PoE and optional PoE+ port capabilities, users save costs by eliminating the need for separate cabling to power end devices, such as IP cameras. Additionally, TSN technology on all ports enables precise data transmission and guarantees bandwidth for dedicated network services.

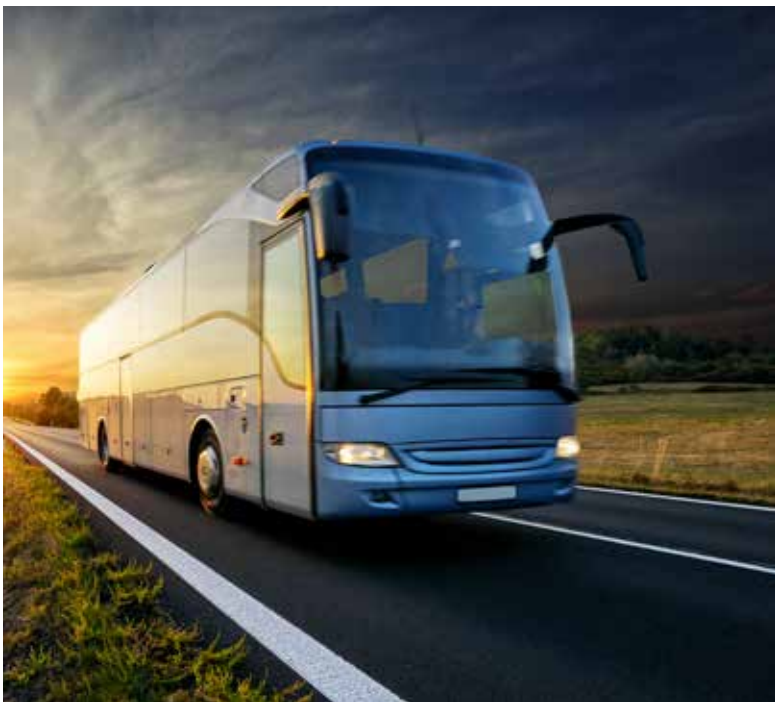
Applications

Hirschmann's Gigabit BXS switches are an ideal solution for industrial engineers and train builders looking for:

- **Fast data transfer** for a wide range of infotainment applications, including passenger information systems, advertising opportunities and wireless internet access, to enhance the passenger experience.
- **Simple, cost-effective connectivity** to terminal equipment for IP cameras, VoIP telephones and WLAN access points, via PoE.

Markets

With full rail approvals, the BXS switches were designed to meet the needs of transportation markets, particularly rolling stock. Built to withstand vibration and extreme temperatures, its robust hardware ensures uninterrupted communication even in the harshest rolling stock environments.



Technical Information

Product Description

Type	BXS30	BXS32	BXS40	BXS42
Description	Managed IP40 switch with optional PoE (+); 12 ports, 4 Gigabit-Ethernet and 8 Fast-Ethernet or 12 Gigabit-Ethernet M12-ports			
Port Type and Quantity	4 Gigabit-Ethernet M12-ports X-coded and 8 Fast-Ethernet M12-ports D-coded	4 Gigabit-Ethernet M12-ports X-coded and 8 Fast-Ethernet M12-ports D-coded	12 Gigabit-Ethernet M12-ports X-coded	12 Gigabit-Ethernet M12-ports X-coded
Additional Interfaces				
Local Management and Device Replacement	M12 (USB-C)			
LEDs	Port, Power, ACA, PoE			
Power over Ethernet				
Port Type and Quantity*	4 Gigabit-Ethernet, thereof 3 PoE* and 8 Fast-Ethernet, thereof 8 PoE or 12 Gigabit-Ethernet thereof 11 PoE*			
Power Requirements				
Operating Voltage*	24 V DC or 72-110 V DC; 24-48 V DC or 72-110 V DC for PoE variants			
Power Consumption	10 -13 W Switch, 46 - 50 W at 30 W PoE output, 83 - 86 W at 60 W PoE output			
Mechanical Construction				
Dimensions (W x H x D) mm	282 mm x 143.6 mm x 91 mm			
Housing	Metal			
Mounting	Wall mountable with bottom side			
Weight*	2.15 - 2.63 kg			
Protection Class	IP40			
Software				
Supported HiOS Software Levels	Layer 2 Advanced (L2A)			
Software Layer 2				
Management	Dual Software Image Support, TFTP, SFTP, SCP, LLDP (802.1AB), LLDP-MED, SSHv2, HTTP, HTTPS, Traps, SNMP v1/v2/v3, Telnet, IPv6 Management			
Diagnostics	Management Address Conflict Detection, MAC Notification, Signal Contact, Device Status Indication, TCPDump, LEDs, Syslog, Persistent Logging on ACA, Port Monitoring with Auto-Disable, Link Flap Detection, Overload Detection, Duplex Mismatch Detection, Link Speed and Duplex Monitoring, RMON (1,2,3,9), Port Mirroring 1:1, Port Mirroring 8:1, Port Mirroring N:1, Port Mirroring N:2, System Information, Self-Tests on Cold Start, Copper Cable Test, SFP Management, Configuration Check Dialog, Switch Dump			
Configuration	Automatic Configuration Undo (roll-back), Configuration Fingerprint, Text-based Configuration File (XML), Backup config on a remote server when saving, Clear config but keep IP settings, BOOTP/ DHCP Client with Auto-Configuration, DHCP Server: per Port, DHCP Server: Pools per VLAN, AutoConfiguration Adapter ACA21/22 (USB), HiDiscovery, USB-C Management support, Command Line Interface (CLI), CLI Scripting, CLI script handling over ENVM at boot, Full-featured MIB Support, Context-sensitive Help, HTML5 based Management			
Security	MAC-based Port Security, Port-based Access Control with 802.1X, Guest/unauthenticated VLAN, Integrated Authentication Server (IAS), RADIUS VLAN Assignment, Denial-of-Service Prevention, DoS Prevention Drop Counter, VLAN-based ACL, Ingress VLAN-based ACL, Basic ACL, Access to Management restricted by VLAN, Device Security Indication, Audit Trail, CLI Logging, HTTPS Certificate Management, Restricted Management Access, Appropriate Use Banner, Configurable Password Policy, Configurable Number of Login Attempts, SNMP Logging, Multiple Privilege Levels, Local User Management, Remote Authentication via RADIUS, User Account Locking, Password change on first login			
Redundancy Functions	HIPER-Ring (Ring Switch), Link Aggregation with LACP, Link Backup, Media Redundancy Protocol (MRP) (IEC62439-2), Redundant Network Coupling, RSTP 802.1D-2004 (IEC62439-1), RSTP Guards			
Switching	Independent VLAN Learning, Fast Aging, Static Unicast/Multicast Address Entries, QoS / Port Prioritization (802.1D/p), TOS/DSCP Prioritization, Interface Trust Mode, CoS Queue Management, Queue-Shaping / Max. Queue Bandwidth, Flow Control (802.3X), Egress Interface Shaping, Ingress Storm Protection, Jumbo Frames, VLAN (802.1Q), GARP VLAN Registration Protocol (GVRP), Voice VLAN, GARP Multicast Registration Protocol (GMRP), IGMP Snooping/Querier per VLAN (v1/v2/v3), Unknown Multicast Filtering, Multiple VLAN Registration Protocol (MVRP), Multiple MAC Registration Protocol (MMRP), Multiple Registration Protocol (MRP)			

Standardized Real-Time Ethernet	TSN, Time Sensitive Network
Time Synchronization	PTPv2 Transparent Clock two-step, PTPv2 Boundary Clock, BC with Up to 8 Sync / s , 802.1AS, Buffered Real Time Clock, SNTP Client, SNTP Server
Industrial Profiles	EtherNet/IP Protocol**, IEC61850 Protocol (MMS Server, Switch Model), Modbus TCP, PROFINET Protocol**
Miscellaneous	Manual Cable Crossing, Port Power Down PoE (802.3af), PoE+ (802.3at), PoE+ Manual Power Management, PoE Fast Startup
Information	Please note that the feature set available at product launch can be different.
Ambient Conditions	
Operating Temperature	-40 °C to +70 °C, attention to derating rules
Relative Humidity (non-condensing)	10% to 95%, non condensing
Air pressure	Operating hight max. 3000 m
Approvals Configurable	
Safety of Industrial Control Equipment*	EN 62368-1, UL 61010-2-201 & CSA C22.2 NO. 61010-2-201:18*
Mechanical Standards	EN 60068-2-6
EMC Interference Emission*	EN 61131-2, EN 50155, EMV 06, EN 50121-4, FCC 47CFR, EN 61000-6-4, EN 55032
EMC Interference Immunity*	EN 61131-2, EN 50155, EN 50121-4, FCC 47CFR, EN 61000-6-2, EN 61000-3-2, EN 61000-3-3
Transportation*	EN 50155, EN 45545 HL3, EN 50121-4, NEMA TS2,E1, ECE R118
Accessories	
Device Replacement and Logging	ACA22-M12-C (EEC)

* Depending on the selected variant
** Pending

NOTE: These are the prominent technical specifications. For complete technical specifications visit: www.belden.com