

Hirschmann Industrial Ethernet Product Guide

Designed for manufacturing, transport and utilities, Hirschmann helps deliver the **highest uptime network** with full performance customisation to support **mission-critical** applications.

Plug and Play SPIDER

includes Gigabit and fibre interfaces. A popular choice when additional unmanaged ports are required in a field cabinet, or to provide programming ports.



- Gigabit Managed L2 Switching
- Fibre Rail Mount Compact

In a modular, scalable form,

the **MICE** range includes routing capability for network segregation including RIP, OSPF and VRRP. 'Professional' version includes cable and configuration tester.



- Gigabit Managed L2 Switching
- L3 Routing PoE Hot Swap Modular
- Redundant Power Supply

No ordinary WLAN.

With **802.11i** encryption and authentication, **BAT54** provides the ultimate in wireless security. Featuring twin 2.4/5GHz radios and routing, the topology choices are endless, including access point, wireless bridge & master/slave.



- 100Mbps Managed L2 Switching
- L3 Routing PoE Redundant Power Supply

A high-speed hardware firewall

with up to 16 VPN tunnels, **EAGLE 20** also functions as a 2 Port Router. User-defined filtering for IP, MAC, Ports and Protocols provides a customised defence against hackers and DoS attacks.

NEW MODEL



- 100Mbps Managed Custom Firewall with VPN
- L3 Routing PoE Redundant Power Supply

The Fully Featured Compact

range provides high port density in a compact rail mount form. Featuring VLAN, Ring-Redundancy and QoS, this is our best-selling managed switch.



- Gigabit Managed L2 Switching
- L3 Routing PoE Modular
- Redundant Power Supply

Extreme resilience to EMI/RFI

is provided by the **RSR** (rail mount) and **MACH1000** (rack) which are designed for substations and other high-voltage locations. Equipped with Gigabit uplinks and multiple power supply options.



- Gigabit Managed L2 Switching
- L3 Routing PoE Redundant AC/DC Power Supply

An Enterprise Grade Switch

to extend HiPER-Ring fast recovery redundancy into the corporate LAN, the **MACH100** is fully-featured, including RSTP for multi-vendor compatibility.



- Gigabit Managed L2 Switching
- L3 Routing PoE Modular Redundant Power Supply

With 10Gigabit uplinks

and routing capability, the modular **MACH4000** is a typical selection for network backbones where high bandwidth and high port density are required.



- 10Gigabit Managed L2 Switching Hot Swap Modular
- L3 Routing PoE Redundant AC/DC Power Supply

IP67 OCTOPUS provides

a fully featured managed switch in an encapsulated enclosure. Suits OEMs and machine mount applications with temperature up to 70°C.



- 100Mbps Managed L2 Switching
- L3 Routing PoE Redundant Power Supply

Ethernet - Technical Glossary

00 0011 11 0010 11001 0100100 11001 010

ARP - Address Resolution Protocol - Used by Layer 2 device to map an IP address to a MAC address.

Auto-Crossing - Enables Automatic reversal of Tx and Rx pairs on UTP cable, allowing use of straight or cross-over cable.

Auto-Negotiation - Detects the transmission parameters such as speed, duplex and flow control of connected host and adjusts to suit. Mismatched settings can be a source of errors.

Auto-Polarity - Corrects wiring errors where the cores within a pair are crossed.

Broadcast - A message directed to a group of unspecified receivers. Broadcasts are not passed through routers.

Cut-Through - Switching method where the data frame is sent as soon as the destination address and port have been identified. Results in forwarding of bad frames.

Collision - Media contention from two separate hosts on a half-duplex network which causes both hosts to back off and restart after a random time period. Not a feature of full-duplex networks.

Crossover Cable - Tx and Rx pairs crossed over to connect like-devices. Typically required for uplink connections between switches, but with Auto-Crossing enabled, no longer needed.

DoS - Denial of Service - An attack that seeks to render a network resource unavailable, often through flooding of requests which hinder the ability to respond to legitimate traffic.

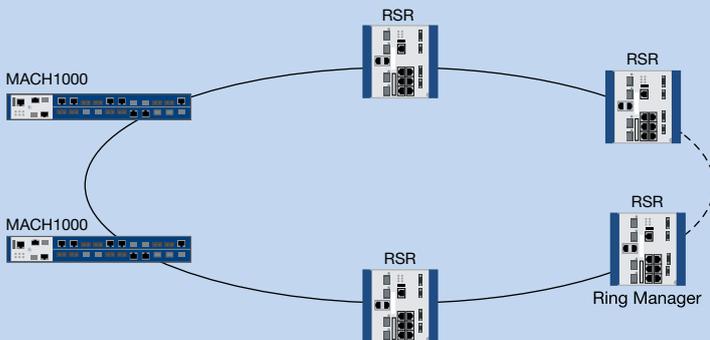
Firewall - Term for protective measures (usually filtering based on address, protocols or ports) that partitions a LAN from another network. Can be hardware or software.

Flow Control - A function that in case of overload at an output port, dumps packets at the input port or signals connected devices to stop transmission. The signal to stop transmission is sent in half duplex operation by simulating a collision or, in full duplex, by sending special 'Pause' packets.

Frame - The correct term for what is commonly called a data packet or datagram. Minimum size is 64 bytes, maximum is 1518 bytes, or 1522 bytes with VLAN tagging.

FTP - File Transfer Protocol - A layer 5 protocol used for the transportation of files.

HIPER-Ring - Hirschmann proprietary fast recovery (<10ms) ring redundancy mechanism where a nominated ring manager can enable a redundant connection.



Host - Generic name for a network device.

Industrial Ethernet - Robust network design and componentry to provide high-uptime performance in a hostile environment.

IGMP - Internet Group Management Protocol - A Layer 3 protocol that communicates the association of participants and routers with multicast groups

to the adjacent routers. Important feature to conserve network bandwidth when multicast data such as VOIP or produce/consume data tags are used.

IGMP Snooping/Query - A function employed by Layer 2 devices to emulate Layer 3 devices to control multicast traffic. Query messages are broadcast to identify host multicast group membership. The IGMP responses are 'snooped' to collate the group membership requests, enabling controlled forwarding of multicast packets to ensure they remain multicast not broadcast.

Jabber - An Ethernet frame with more than 1522 bytes.

Jitter - The variation in latency.

GOOSE - Generic Object Oriented System Event protocol - Part of the IEC 61850 protocol for prioritised peer-to-peer communications. Common in emergency shutdown systems.

Latency - Delay of data retransmission, measured from last received bit to the first transmitted bit.

Octect - 8 Bits / A Byte

OSI Reference Model - A 7 layer model describing protocols that contribute to the data transfer process.

QoS - Quality of Service - A means of prioritisation for different classes of data to ensure time-critical information is not held back by less important data. Time-critical data such as voice can be given precedence over other data to ensure clarity.

RIP - Routing Information Protocol - Used by routers to share knowledge of the path to attached hosts.

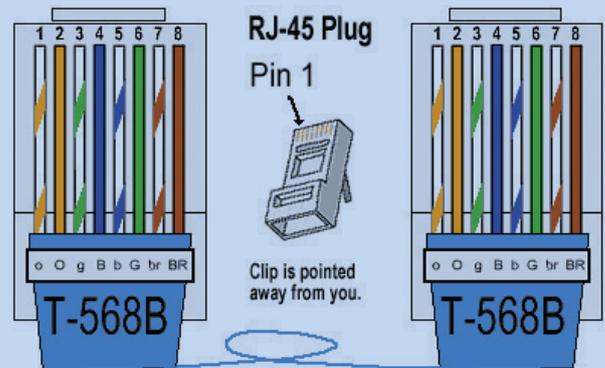
RSTP - Rapid Spanning Tree Protocol - Standardised mesh redundancy protocol with undefined but commonly 2 second recovery time. Considered too slow for real-time control.

SNMP - Simple Network Management Protocol - Accesses device internal status registers to report on and control parameters.

Store & Forward - The whole data frame is received into a buffer before being forwarded. A more frequently used method than Cut-Through.

STP - Shielded Twisted Pair (Cable)

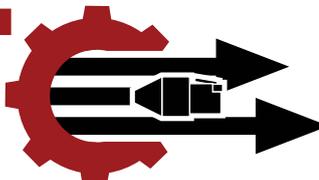
Straight Cable - All pins connected straight through-typically used to connect network hosts to a switch.



VLAN - Virtual LAN - A means to segregate groups of network hosts to constrain broadcasts and limit access.

RRRP - Virtual Router Redundancy Protocol - Enables two or more routers to provide a redundant gateway using a single 'virtual' network address

UTP - Unshielded Twisted Pair (Cable)

DAANET 
CONTROL INFORMATION CONNECTIVITY

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ethernet-glossary](http://www.daanet.com.au/ethernet-glossary)

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