



Technologies

Technology Topics to Industrial Networking

Hirschmann is one of the most highly experienced manufacturers of industrial network solutions based on Industrial Ethernet. As an expert in system components, accessories and unified management software with a global presence, we make available our comprehensive expertise to our clients.

Parallel Redundancy Protocol (PRP)



The International Standard IEC 62439-3 describes the Parallel Redundancy Protocol (PRP). PRP uses 2 separate LANs for uninterrupted availability. On the path from the sender to the receiver, PRP sends 2 data packets in parallel via the 2 mutually independent LANs with arbitrary ring, mesh, star, and bus topologies. The receiver processes the first data packet received and discards the second data packet of the pair.

Precision Time Protokoll (PTPv2)



PTP (Precision Time Protocol) is a procedure described in the IEEE 1588-2008 standard that provides hardware supported precise time synchronization across the devices in the network. The procedure offers a synchronization of the clocks to a degree of precision of just a few 100 ns.

High-availability Seamless Redundancy (HSR)



High-availability Seamless Redundancy (HSR) is like PRP described in the IEC 62439-3 Standard providing zero packet loss in case of a link failure. HSR functions primarily as a protocol for creating media redundancy based on a ring topology while PRP creates complete network redundancy.

Power over Ethernet (PoE)



PoE allows you to supply current to a powered device (PD) such as an IP camera via the twisted pair cable that is at the same time used for Ethernet communications. The PoE ports support Power over Ethernet according to IEEE 802.3at delivering in maximum 15.4 Watt per twisted pair port.

Media Redundancy Protocol



The MRP (Media Redundancy Protocol) is a protocol that allows you to set up high-availability, ring-shaped network structures with recovery times of 500 ms, 200 ms, 30 ms or 10 ms. An MRP ring with Hirschmann devices is made up of up to 100 devices that support the MRP protocol according to IEC 62439-2.

Power over Ethernet Plus (PoE+)



PoE+ is the further development of PoE according to the standard IEEE 802.3at supporting up to 30 Watt. While PoE requires two pairs of the twisted pair cables, PoE+ uses all 4 pairs to power end devices which require power above 15.4 Watts.

Device Level Ring



The Device Level Ring was introduced by the ODVA in 2009 providing high available networks in a ring topology. With a maximum of 50 nodes it is possible to achieve a worst case recovery time of 3 ms.

PoE Powered Device (PD)



A Power over Ethernet PD (powered device) is a device which receives the required power for their operation via PoE or PoE+.

Technologies (continued)

Layer 3 – Wire-Speed Routing with standardized Routing Protocols



The Layer-3 routing functionality in Hirschmann switches focusing on maximum performance and lowest latency. Due to the hardware support of the routing functionality wire speed IP communication is provided between different IP networks offering the same delays like switched data packets. Standard Routing protocols, router redundancy mechanism as well as multicast routing protocols are part of the Layer 3 functions.

IPv6



Although the next generation of the Internet Protocol, version 6, is rarely deployed in industrial environments, the latest generation of Hirschmann devices is able to server future customer demands for IPv6 in the same way like it is required today with IPv4.

PROFINET



PROFINET is an industrial communication standard based on Ethernet technology. It is standardized in IEC 61158 and IEC 61784. Devices with this logo are certified by the PROFIBUS & PROFINET International (PI) according to the Conformance Class B (CC-B). Therefor several requirements need to be fulfilled like the implementation of a PROFINET IO Stack.

PROFINET CC-A



PROFINET is an industrial communication standard based on Ethernet technology. It is standardized in IEC 61158 and IEC 61784. The supported functions of PROFINET IO are divided into Conformance Classes (CC). Device of the Conformance Class A (CC-A) provides basic function for PROFINET IO with Real Time (RT) communication.

EtherNet/IP – Conformance tested



EtherNet/IP is an industrial communication protocol standardized by the Open DeviceNet Vendor Association (ODVA) on the basis of Ethernet. It is based on the widely used transport protocols TCP/IP and UDP/IP (standard). EtherNet/IP thus provides a wide basis, supported by leading manufacturers, for effective data communication in the industry sector.

Clear Space Wireless



Clear Space, OpenBAT offers stable wireless LAN connections, because this technology reliably eliminates interfering frequencies. This markedly reduces the noise level and therefore largely prevents packet losses. The integrated ESD protection withstands electrostatic discharges while increasing the lifespan of the hardware.