

MiCOM H series

Secure and Reliable Ethernet switches



The security of the electrical grid depends on the security of the automation network infrastructures. To guarantee no outage in the electrical network, the automation networks need to grant 100% availability in order to continuously transmit critical protection messages across the network.

To guarantee the security and availability of the automation networks, redundancy protocols such as RSTP (or its derivatives) operate. A network fault is recovered by finding an alternative path (called network convergence time). However, the network convergence time of these protocols is not aligned to the critical application constraints and can take over 500 times longer than these standards. Modern automation networks require a network reconfiguration in less than 1ms, this poses a big risk of an unplanned electrical outage if correct systems are not applied.

Schneider Electric has developed cutting edge redundancy protocols that fulfill the automation network requirements. These protocols are available across the entire Ethernet switch portfolio, from standalone switches to embedded switches in bay computers, protections and industrial PCs.



CUSTOMER BENEFITS

- Increased network availability
- Ultra-fast network convergence time
- Reduced cost of ownership
- Easy to install and configure
- Monitoring capabilities

KEY FEATURES

Cutting Edge Redundancy Protocols

The Schneider Electric solution guarantees the security and the high availability rate required (100% even in the case of a failure) by offering two innovative redundancy protocols called “Self Healing Protocol” and “Dual Homing Protocol”. Self healing is applied to double ring architectures and allows a complete network reconfiguration time of less than 1 ms. Dual homing is applied to double star architectures and provides bumpless redundancy (0 ms changeover time).

IED Embedded Switches

Schneider Electric solutions reduce the cost of ownership, as switches may be embedded in the IED, reducing the need for external devices (power supply, maintenance and also number of ports and connections). Furthermore, redundancy is embedded in the IED and increases the communication availability, minimizing the risk of outages in the electrical network.

Flexibility in Connectivity

MiCOM H Series switches are available with various types of ports: Copper or Fibre (Single mode or Multi mode) with ST, SC or LC connectors.

Monitoring Capabilities

MiCOM H Series switches provide the capability to set an alarm using either a watchdog relay (contact) or via communication.

Increased Reliability

Standalone Ethernet switches have redundant power supplies.

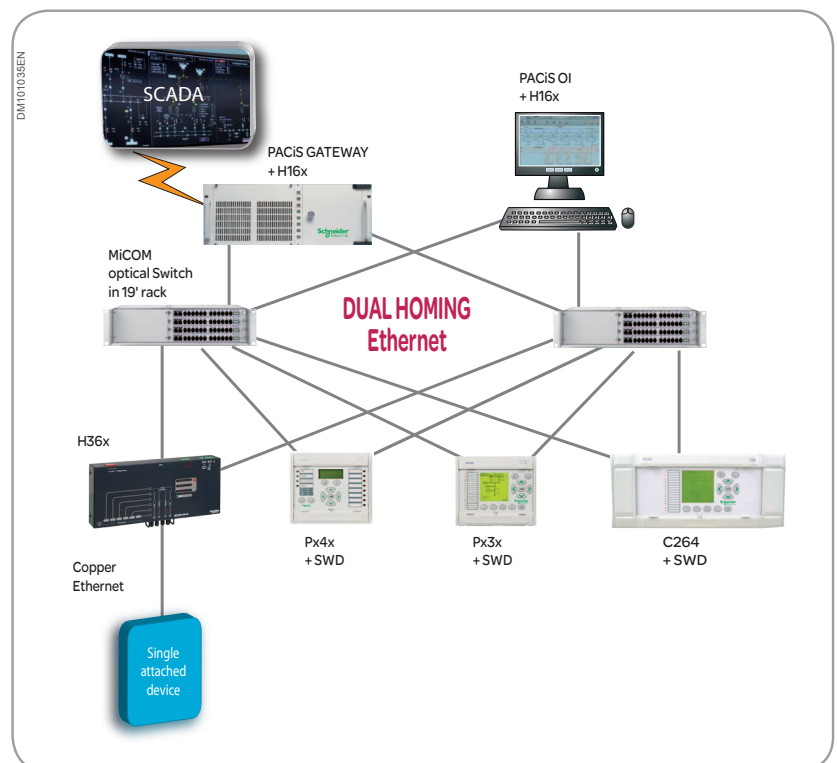
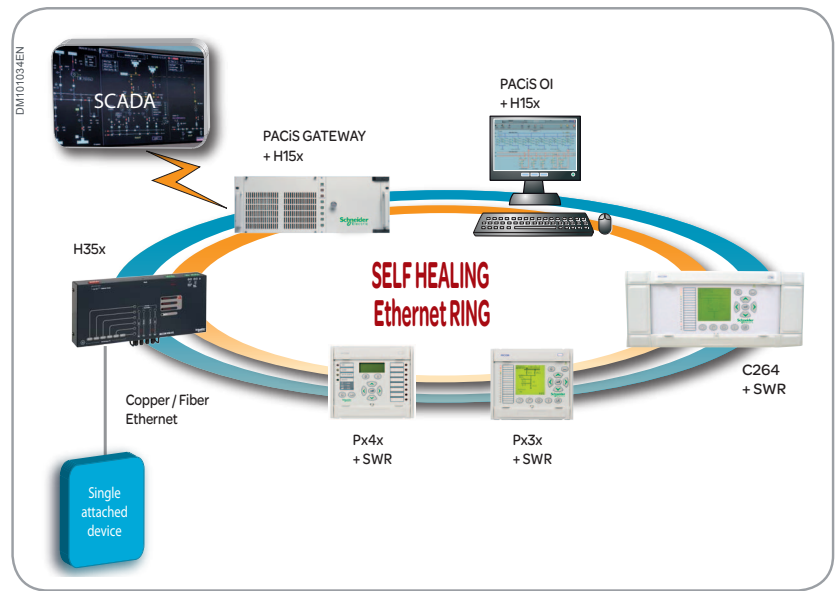
Suitable for Harsh Environment

MiCOM H Series switches are designed to work in harsh environments.

ARCHITECTURE

Schneider Electric covers all automation applications by providing a full portfolio of Ethernet switches, covering standalone to embedded switches in bay computers, protections and industrial PCs.

The architectures pictured show the various devices available in our portfolio.



MiCOM H Series:
A complete offer of Ethernet Switches

DESCRIPTION

MiCOM H series is divided into 4 main ranges:

- H3xx: Standalone switches (Din rail connections)
- H6xx: Standalone switches (19 inch rack)
- H1xx: Embedded switches for industrial PC's (PCI connectors)
- SWx: Embedded switches for IEDs (C264 and Px3x/Px4x)

Each range has 2 redundancy protocols:

- Self healing protocol (Hx5x, SWR)
- Dual homing protocol (Hx6x, SWD)
- For simple star architecture (Hx4x, SWU*)

Optical Interfaces (not applicable to all models)

- Single mode fibre (Hxx4, Hxx8)
- Multi mode fibre (Hxx2, Hxx6)

*Note: SWU is not available on Px3x and Px4x embedded switches

OVERALL PORTFOLIO

Type	Description
MiCOM H15x Embedded PCI Ethernet switch for redundant Ethernet ring, SNMP managed	
H152	Redundant Ethernet Ring: 10/100 Mbps, 4 Tx and 2 FX (ST), multi mode, SNMP managed
H154	Redundant Ethernet Ring: 10/100 Mbps, 4 Tx and 2 FX (ST), single mode, SNMP managed
MiCOM H16x Embedded PCI Ethernet switch for redundant Ethernet star, SNMP managed	
H162	Redundant Ethernet Star - Dual Homing switch: 10/100 Mbps, 4 Tx and 2 FX (ST) multi mode, SNMP managed
H164	Redundant Ethernet Star - Dual Homing switch: 10/100 Mbps, 4 Tx and 2 FX (ST) single mode, SNMP managed
Connection kit for MiCOM H1xx Embedded Ethernet Switch	
H1xx-kit	Ethernet Kit with 3 Tx for H1xx: rear PC plate with 3 RJ45 connectors and 3 short Ethernet cables (internal PC connection)
MiCOM H34x DIN Rail cased Ethernet Switch for simple Ethernet star, SNMP managed	
H342	Simple Ethernet star: 10/100 Mbps, 6 Tx and 2 FX (ST), multi mode, SNMP managed, dual power supply
H344	Simple Ethernet star: 10/100 Mbps, 6 Tx and 2 FX (SC), single mode, SNMP managed, dual power supply
MiCOM H35x DIN Rail cased Ethernet Switch for redundant Ethernet ring, SNMP managed	
H352	Self healing switch for redundant Ethernet ring: DIN rack, multi mode, 10/100 Mbps, with 2 Fx (ST) and 6 Tx, SNMP managed, dual power supply
H354	Self healing switch for redundant Ethernet ring: DIN rack, single mode, 10/100 Mbps, with 2 Fx (SC) and 6 Tx, SNMP managed, dual power supply
H356	Self healing switch for redundant Ethernet ring: DIN rack, multi mode, 10/100 Mbps, with 2 Fx (multi mode LC) and 4 Fx (multi mode LC) and 2 Tx, SNMP managed, dual power supply
H358	Self healing switch for redundant Ethernet ring: DIN rack, multi mode, 10/100 Mbps, with 2 Fx (single mode LC) and 4 Fx (multi mode LC) and 2 Tx, SNMP managed, dual power supply
MiCOM H36x DIN Rail cased Ethernet Switch for redundant Ethernet star, SNMP managed	
H362	Dual homing switch for redundant Ethernet star: DIN rack, multi mode, 10/100 Mbps, with 2Fx (ST) and 6 Tx, SNMP managed, dual power supply
H364	Dual homing switch for redundant Ethernet star: DIN rack, single mode, 10/100 Mbps, with 2Fx (SC) and 6 Tx, SNMP managed, dual power supply
MiCOM SWx embedded switches inside the C264, Px3x or Px4x: Please refer to the products cortec	



ETHERNET SWITCHES TRACK RECORD

- More than 1500 **MiCOM H35x/ H36x** installed in the first semester of 2009.
- More than 1300 **MiCOM H356** delivered since launch in March 2009.

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