

# DS Agile H38 PRP Switch

## Technical Specification

The DS Agile H38 is a new range of standalone Ethernet switches compliant with the IEC 62439-3 Clause-4 PRP protocol, providing redundant, inter-operable, data communication. This redundancy box – ‘RedBox’- also supports the Precision Time Protocol (PTP) according to IEEE 1588 v2, to deliver precise local time synchronization to the IRIG-B port. They are designed for working in an electrical substation environment.

### Description

The DS Agile H38 is designed as a metal-enclosed, DIN-rail mounting Ethernet network switch, embedded with the Parallel Redundancy Protocol (PRP) defined by the IEC 62439-3 standard, and compatible with the IEEE 1588 v2 Precision Time Protocol (PTP).



### DS Agile H38 Range

The H38 switch enables Ethernet-communicating devices to be inter-connected via the Parallel Redundancy Protocol (PRP) in accordance with IEC 62439-3 Clause 4. The devices are connected to the PRP switch by means of RJ45 connectors compliant with 10/100Base-Tx. Three ports are provided for this. Each port detects, independently, the speed of the connected device (10Mbps or 100Mbps) and whether the link is half-duplex or full-duplex. It then automatically adjusts the port configuration to suit. Note that Ethernet copper links are limited in distance and subject to interference.

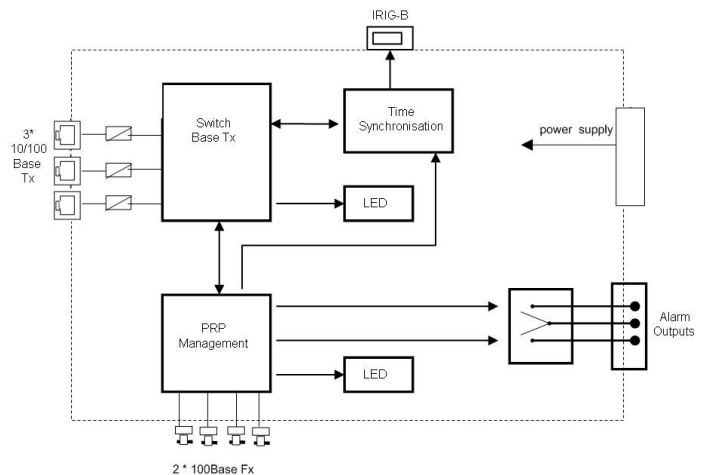
Ports	10/100Base-Tx Copper	100 Base-Fx Multimode (PRP)	100 Base-Fx Single Mode (PRP)
DS Agile H382	3	2 (LC)	-
DS Agile H384	3	-	2 (LC)

### DS Agile H38x functional composition

The Parallel Redundancy Protocol connection uses fiber-optic inter-switch connections. A multi-mode fiber-optic version is available for short distance connections and a single-mode version is available for longer distances. The PRP ports support 100Base-Fx using LC connectors.

### Time synchronization in DS Agile H38x

The DS Agile H38x switches support real-time clock synchronization using either Precision Time Protocol (PTP), in accordance with IEEE1588 v2, or Network Time Protocol (NTP). A one-pulse-per-second (PPS) signal is generated and displayed via a LED labeled as “Heartbeat” on the display. Time synchronization is available as an NTP service or via IRIG-B.



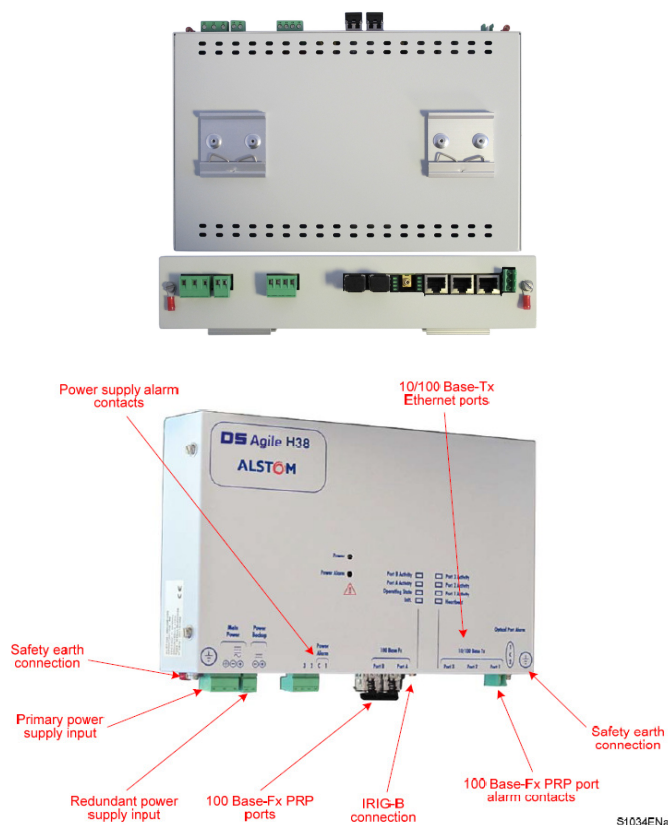
## DS Agile H38x Installation

The DS Agile H38x can be easily mounted on a standard DIN rail. The mounting brackets are shown in the figure.

Dimensions (W x H x D)	270 x 171 x 45 mm
Weight	1.3 kg
Mounting	DIN rail EN50022

This product requires auxiliary power supply connection and safety earth connection. Alarm outputs are provided and these should be connected for system supervision. An IRIG-B port is available for local time synchronisation.

The locations of the various connection points are shown in the diagram.



## DS Agile H38x technical data

### 10/100BaseTx Port

Connector type	Shielded RJ45 jack
Twisted pair cable	Cat 5
Max cable length with Cat 5	100m

### Auxiliary power supply

Required supply voltage	24 to 48 Vdc 110 to 220 Vdc & 110 to 230 Vac
Power consumption	10 W

### 100BaseFx Multi Mode Port (H382)

Fibre port connector	LC
Optimal fiber cable	62.5/125 µm or 50/125 µm
Center wavelength	1310 nm
TX output power	-19 dBm
RX input sensitivity	-31 dBm
Maximum distance	2000 m

### Auxiliary Fault Relay

Connector	1 NC contact potential free
DC voltage	250 Vdc
Continuous current	5 A
Switching current	100 A / 30 ms
Power breaking with time constant	10 W under 48 Vdc with $\tau = 20$ ms

### 100BaseFx Mono Mode Port (H384)

Fibre port connector	SLC
Optimal fiber cable	9/125 or 10/125 µm
Center wavelength	1310 nm
TX output power	-15 dBm
RX input sensitivity	-34 dBm
Maximum distance	15 km *

### Ethernet Management

Standards	IEEE802.3, 802.3u, 802.3x, 802.1p
Forwarding mode	Store and forward
Memory bandwidth	2 Gbps
MAC Address	1K
Address learning	Automatic
Broadcast storm protection	Limits to 5%
Illegal frame	Dropped per 802.3
Late collision	Dropped after 512 bit times
Latency	4 µs measured at 75% load between two ports at 100Mbps