



Reason H49

All in one HSR/PRP Gigabit Redundancy Solution

Substation Ethernet network redundancy is key to achieve protection and automation system availability in case of a single failure. In the past, network redundancy was achieved with the RSTP protocol, which recovery time in case of failure can be as high as 5 ms per participating switch, leading to potential loss of traffic.

In the early 2000's, GE's H35 and H36 innovative redundant switch range brought 0 ms recovery time protocols to the market and later the IEC 62439-3 Parallel Redundancy Protocol (PRP) and High-availability Seamless Redundancy (HSR) protocols were introduced across GE's grid automation product range. Now GE is proud to introduce the Reason H49, our next generation PRP/HSR gigabit redundancy box.

Key Benefits

- All-in-one PRP and HSR redbox, HSR quadbox and PRP-HSR coupling
- IEC 62439-3:2016 PRP and HSR certification ensures interoperability
- Up to 4 SAN ports to connect PRP/HSR non-compliant devices to the redundant network, reducing the number of redboxes
- 3 available SAN ports when used as a PRP/HSR coupling box
- Any combination of fibre LC/copper RJ45 and 100/1000 Mbps transceivers accommodates all types of connections
- IEEE 1588 v2 boundary clock and transparent clock capable to distribute precision time across the substation network and PRP/HSR boundaries, saving the cost of cabling used to deliver IRIG-B signals
- First DNV/GL fully certified PRP/HSR/IEEE1588/IEC 61850-3 device

Applications

- The Reason H49 is especially designed for the digital substation, for use on the substation bus and process bus, in a mix of PRP dual star and HSR rings.
- The 1000 Mbps HSR ring allows to transport multiple sampled value streams on the same ring, simplifying network topology
- IEEE 1588 v2 and Power Profile compliance allow for high precision timing application such as synchrophasor application or sampled value timestamping.
- The Reason H49 cyber security is suitable for substations with the highest cyber security requirements.

Redundancy

- HSR/PRP redbox with 4 SAN ports
- HSR/PRP coupling box with 3 SAN ports
- HSR Quadbox

Industrially Hardened

- IEC 61850-3 and IEEE1613 approval for operation in electric substation environments
- Dual source power supply for increased reliability
- Harsh chemical environment ensures product function and viability

Security by design

- Hardened operating system to reduce attack surface
- Secure management via TLS
- Multi-users, Role-Based Access Control
- Security event logging for forensic and regulatory auditing and reporting
- Achilles ACC Level 1 Certified
- Designed for NERC CIP compliance

Managed Networks

- IEEE 1588 v2 including the C37.238 Power Profile timing support
- Supports SNMP v3 with full backwards compatibility for v1 and v2
- Traffic segregation and prioritization control via IEEE 802.1p and IEEE 802.1Q
- Hardware alarm contacts for detection of loss of power
- Simple but powerful web management interface for all configuration functions



Technical Specifications

Network Standards and Compliance

Ethernet V1.0/V2.0 IEEE 802.3: 10Base-T
IEEE 802.3u: 100Base-TX, 100Base-FX
IEEE 802.3z: 1000Base-X Ethernet (Auto-negotiation)
IEEE 802.3ab: 1000Base-X Ethernet
IEEE 802.1p: Priority protocol
IEEE 802.1q: VLAN tagging
IEEE 1588v2 Timing compliance
IEC62439-3-4:2016 PRP
IEC62439-4-5:2016 HSR

Power Supply

Power consumption: 16.5 W
Dual power source
AC Power input range: 85-230 VAC
DC Power input range: 85-220 VDC

Dimensions and Mounting

Physical Specifications

Height: 195 mm
Width: 75 mm
Depth: 177 mm
Weight: 1.7 kg
Mounting: DIN rail EN50022

Environmental Specifications

Operating temperature: -25 °C/+55 °C
Storage temperature: -40 °C/+70 °C
Humidity: 95 %

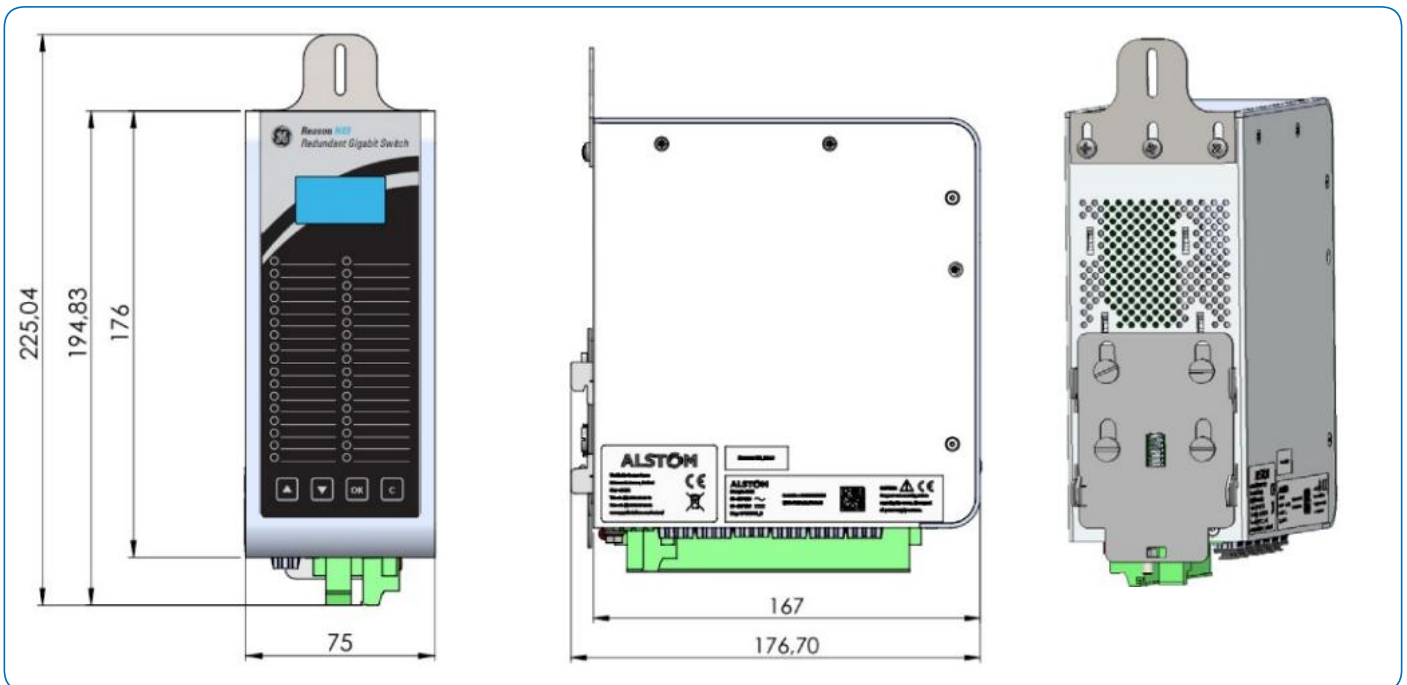
Approvals

CE MARKING

2014/35/EU: Low Voltage Directive
2014/30/EU : EMC Directive

EMI & OPERATING CONDITIONS FOR SUBSTATIONS

IEC 60255-26:2013
IEC60255-27:2013
IEC 61850-3:2013
IEEE 1613 series



For more information please contact:

GE Power
Grid Solutions

Worldwide Contact Centre

Web: www.GEGridSolutions.com/contact
Phone: +44 (0) 1785 250 070

GEGridSolutions.com

GE, the GE monogram, and Reason are trademarks of General Electric Company.

GE reserves the right to make changes to specifications of products described at any time without notice and without obligation to notify any person of such changes

Grid-GA-L3-Reason_H49-1608-2017_08-EN. Copyright 2017, General Electric Company.
All rights reserved.



Imagination at work