

# 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 Vernova'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 Vernova's grid automation product range. Now GE Vernova 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



GE VERNOVA

## 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: 42 VA max  
(220 V<sub>AC</sub>) / 18 W max (125 V<sub>DC</sub>)  
Dual power source  
AC Power input range: 85-230 V<sub>AC</sub>  
DC Power input range: 85-250 V<sub>DC</sub>  
Operative AC range:  
72.3 (85-15%)-253 V<sub>AC</sub> (230+10%)  
Operative DC range: 76.5  
(85-10%) - 280 V<sub>DC</sub> (250+10%)

### 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 %

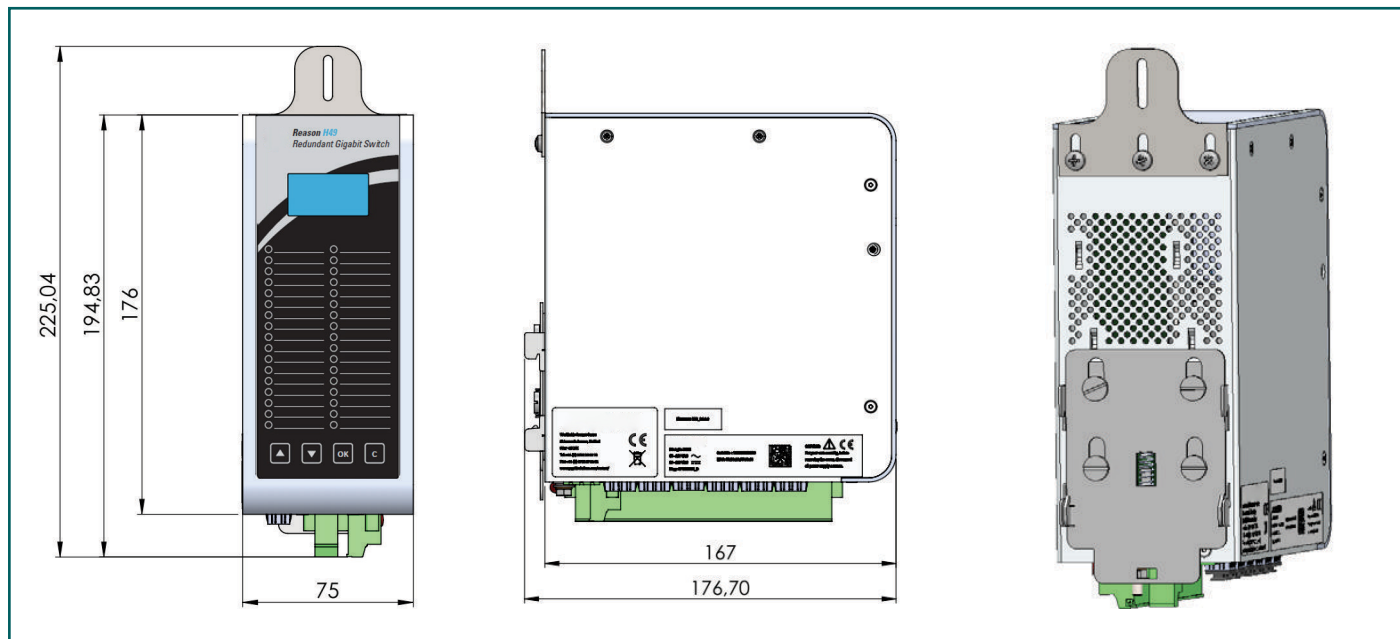
### Approvals

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

## Dimensions and Mounting



For more information, visit  
[gevernova.com/grid-solutions](http://gevernova.com/grid-solutions)

Reason are trademarks of General Electric Company.

GE Vernova 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

© 2025 GE Vernova and/or its affiliates. All rights reserved. GE and the GE Monogram are trademarks of General Electric Company used under trademark license.



GE VERNOVA

GEA-N50056  
English  
251103