Reason RT Platform

GNSS Precision-Time Clocks

The demand for accurate time synchronization available 24/7 increases with the growth of critical substation applications, such as phasor measurement, merging units, traveling-wave fault location and current differential protection operating over SONET and MPLS systems. In order to yield the best accuracy and granularity from such applications, the use of a common, precision-time reference is essential.

GNSS Clocks

RT430/434 GNSS now tracks GPS and GLONASS satellites simultaneously, and whenever one constellation is lost, or reports bad quality, the clock will continue running in full synchronization based on the healthy source (with zero switchover time). Using GNSS is also a great way to guarantee time availability when the antenna is installed in places close to buildings or mountains, as the clock has more satellites as time reference, offering greater immunity to "shadow" effects.

RT430 and RT434

RT430/RT434 GNSS Grandmaster Clock is a clock referenced to GPS and GLONASS satellites. Offering a complete solution, these clocks are the universal precision time synchronization units, with an extensive number of outputs which supports many timing protocols, including the DST rules frequently used on power systems applications. In accordance with IEEE 1588v2 Precision Time Protocol (PTP), the RT430 and RT434 are capable of providing multiple IEDs synchronization with better than 100 ns time accuracy over Ethernet networks. Despite being likely to never lose time synchronization from satellites, the RT430/RT434 GNSS features a TCXO as its standard internal oscillator ensuring free-running accuracy when clock is not locked. Choose the RT430 in Ethernet applications where IEC 62439 PRP redundant architectures are required, choose the RT434 where three or four electrical network ports are required.

RT431

RT431 Time Code Generator is a compact GPS-based clock designed to be installed on a DIN-rail that supports the IEEE 1588v2 Precision Time Protocol (PTP). When configured as PTP slave, RT431 also works as a transceiver from PTP to IRIG-B, serial or pulse time codes, enabling the use of PTP on IEDs that do not support this protocol.

PTP in PRP Networks

RT430 offers the highly accurate IEEE 1588v2 Precision Time Protocol (PTP) combined with the Parallel Redundancy Protocol IEC 62439-3:2016, ensuring 100 ns accuracy and high-availability in time synchronization over Ethernet networks. In case of failure in one of the redundant networks, the recovery-time for the PTP is zero.

Key Benefits

- Mean time accuracy of 50 ns for IRIG-B/PPS signals
- IEEE 1588v2 PTP protocol, with better than 100 ns accuracy
- PTP Profile for Power Utility Automation, in accordance with IEC 61850-9-3:2016 standard
- PTP Power Profile, in accordance with IEEE C37.238:2011 standard
- NTP/SNTP time server
- PTP and NTP/SNTP simultaneously through each Ethernet port
- Parallel Redundancy Protocol (PRP) with zero-time recovery
- Web Interface available in five different languages
- Robust design for harsh environments

Imagination at work

Reason RT Clocks Comparison

	RT430	RT431	RT434
GNSS (GPS + GLONASS)	•	GPS Only	•
IEEE 1588 PTP and NTP/SNTP protocols	•	•	•
SNMP Monitoring	•	•	•
TCXO Internal Oscillator	•	-	•
Parallel Redundancy Protocol (PRP)	•	-	-
10/100 BASE-T Ethernet ports	2	1	4
TTL (electric) Outputs	4	2	4
Open Collector Outputs	2	1	2
Optical Outputs	2	-	2
IRIG-B 004, PPS, PPM, DCF77 and low frequency pulses	•	•	•
IRIG-B 124 AM output	•	-	•
Time sync through Serial port	•	•	•
LOCKED Dry Contact Relay	•	-	•
Web-browser configuration*	•	•	•
Full range Power Supply	•	•	•
Redundant Power Supply	•	-	•
Power Consumption (Typical)	15 W	10 W	15 W
Mounting	19" rack	DIN Rail	19" rack

* Web-browser configuration is available in English, French, Portuguese, Russian and Spanish.

Accessories

RT411 Time Signal Distributor

- Optical or Electrical input for time reference
- Up to 10 optical outputs
- Up to 10 electrical outputs (Two BNC connector)
- Full range power supply

RT412 Optical Transceiver

- Optical-electrical or electrical-optical converter
- One Optical output
- Two Electrical outputs
- DIN rail mounting
- Full range power supply

Antenna + Cables + Kit Mounting

- GNSS Antenna
- Surge Arrester
- Antenna Cable options from 15 m (50 ft) to 150 m (492 ft)
- Delay compensation for antenna cables in RT43X configuration
- Antenna wall mount kit

For more information please contact
Reason:
Email: comercial@reason.com.br
Phone: +55 48 2108 0300

Grid Solutions:
Worldwide Contact Center

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

GEGridSolutions.com

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