Time server
QUAZAR-100

Guarantee time synchronization in buildings with high interference.

Reliable

Easy to operate

Compact

Solid

QUAZAR 100
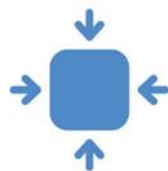
Time Server with TE PTP monitoring functionality for outdoor applications synchronized via GNSS and powered by PoE

- ✓ Integrated 72-channel high-precision GNSS receiver with support for GPS, GLONASS, BeiDou, Galileo
- ✓ GNSS receiver sensitivity (max/min): -167dBm/-159dBm with LNA option
- ✓ GNSS PPS Precision: ±40ns (Clear sky)
- ✓ IEEE 1588-2008v.2 (PTPv2): Precise time synchronization protocol with hardware support; precise time synchronization for real-time applications with support for profiles such as IEEE C37.238-2011 or 2017 Power Profile, IEEE61850-9-3, ITU-T G.8265.1, ITU-T G.8275.1 (L2 multicast), ITU-T G.8275.2 (L3 unicast), Telecom 2008 over Ethernet
- ✓ Passive Slave function enabling basic Time Error PTP monitoring with a GNSS receiver as reference and with data transfer to the QUAZARNET application.
- ✓ OCXO generator with -40 to +70°C stability of ±20 ppb and holdover time of ±3 μs at constant temperature for 0.5 hours.
- ✓ 100/1000Mbit/s UTP interface with M12 connector, IP65 waterproof
- ✓ Synchronous Ethernet (SyncE) support - ITU-T G.8261 and ITU-T G.8264
- ✓ Hardware and software support for SSM for Synchronous Ethernet,
- ✓ Built-in NTP / SNTP server
- ✓ Designed in accordance with the requirements of IEC61850-3, IEEE1613.
- ✓ IP, HTTP, telnet, SSH, SNMP v1/v2c/v3 management,
- ✓ Power: PoE IEEE802.3af PD over STP/UTP cable
- ✓ Optional STP/UTP patchcord up to 100m with M12-RJ45 connectors
- ✓ Integrated ITU-T K-44 surge protection for the transmission path only.
- ✓ Operating temperature -40 to +70°C,

Features of the Quazar-100

Reliable

The Quazar device simultaneously offers network synchronization functionality with IEEE 1588v2 Precision Time Protocol (PTP) and Synchronous Ethernet (SYNCE) or Network Time Protocol (NTP) protocols that use a precision GNSS receiver for synchronization .
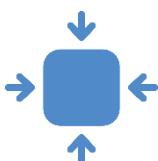
Compact

With its compact design, integrated GNSS receiver antenna module and Ethernet interface with PoE PD power supply, no additional antenna or power cables are required. This allows the Time Server to be mounted far away from possible interference, increasing the precision of the GNSS receiver. The small size of the device allows for easy installation in hard to reach places.

Solid

The Quazar-100 device has been designed to work in harsh conditions. Waterproof IP-65 casing provides protection against external factors, in addition the device is adapted to work in a temperature range from -40°C to +70°C, and humidity (non-condensing) to 95%.

Stable

The Quazar-100 Master Clock comes standard with an OCXO oscillator with ±20 ppb stability over the -40 to +70°C temperature range and a holdover time of ±3 µs at constant temperature for 0.5 hours.

Easy to use

Integrated management functions via HTTP, TELNET / SSH and SNMPv.3 agent allow you to configure device parameters via a standard web browser or command line and continuously monitor alarms from any SNMP-enabled management platform such as BTNET.

Undeterred

When creating our devices we could not forget about their safety. In order to protect the transmission line, we have installed a surge protector ITU-T K.44 - 4kV 10/700us.

Technical specifications

Ethernet interface
- ✓ 1x 10/100M/1000Mbps LAN port, M12 (8-pin),
- ✓ Patchcord M12-RJ45 STP or UTP with indicated length up to 100m.
- ✓ IEEE 802.1Q VLAN
- ✓ IEEE 802.3 10Base-T Ethernet,
- ✓ IEEE 802.3u 100Base-TX
- ✓ IEEE 802.3ab 1000Base-T,
- ✓ IEEE 802.3az Energy Efficient Ethernet

GNSS receiver for clock synchronization
- ✓ A 72-channel GNSS receiver that works with a variety of systems,
- ✓ GNSS receiver sensitivity: -167dBm/-159dBm with LNA option
- ✓ GNSS PPS signal precision: +/-40ns (Clear sky)

Time and frequency accuracy
- ✓ Frequency accuracy: ±20 ppb
- ✓ Time accuracy < ± 100ns under clear sky
- ✓ Holdover: hold time of ±3 μs at constant temperature for 0.5 hours (<3ms per day)

Network synchronization
- ✓ NTP (Network Time Protocol) time server
  - • NTP with stratum 1
  - • Monitoring of connected clients
  - • Support for SNTP protocol
- ✓ IEEE 1588-2008 Standard for a precision clock synchronization protocol
  - • ITU-T **G.8265.1** Default profile
  - • ITU-T **G.8275.1** Full time mode
  - • ITU-T **G.8275.2** Partial time mode
  - • IEEE **C37.238-2017** Power Profile - A standard profile used in the IEEE 1588 Precision Time Protocol for applications in substation systems,
  - • IEC **61850-9-3** Communication networks and systems for power utility automation - Part 9-3: Precision time protocol profile for power utility automation,
- ✓ Standard for a **Synchronous Ethernet**
  - • ITU-T **G.8261** - Timing and synchronization aspects in packet networks
  - • ITU-T **G.8260** - Definitions and terminology for synchronization in packet networks
  - • ITU-T **G.8264** - Distribution of timing information over packet networks

PTP monitoring in the network
- ✓ Passive Slave function enabling basic Time Error PTP monitoring with a GNSS receiver as reference
- ✓ QUAZARNET software – cooperation with a system supporting diagnostics, analysis and visualization of collected measurement data.

Power over Ethernet twisted pair in PD mode
- ✓ IEEE 802.3af standard,
- ✓ Power consumption: 12W per pin 4/5 (+), pin 7/8 (-)
- ✓ Power range: 44 - 56V DC via power injector or PoE PSE

Management
- ✓ IPv4, IPv6
- ✓ HTTP/HTTPS, telnet, SSH, SNMP v1/v2c/v3, SNMP trap

Physical characteristics

- ✓ Dimensions: outer diameter: 90mm; height 135 mm
- ✓ Weight: 0.3 kg
- ✓ Housing: waterproof plastic housing with IP65 protection rating

Environmental conditions
- ✓ Operating temperature: -40 to -70°C
- ✓ Operating humidity (non-condensing): up to 95%

Supported standards, recommendations and directives EMC, safety*

PN-EN 55035:2017-09	Electromagnetic compatibility for multimedia equipment	Resistance requirements
PN-EN IEC 62368-1:2020-11	Audio/visual, information technology and telecommunications equipment	Part 1: Safety requirements
PN-EN 55011:2016	Industrial, scientific and medical equipment	Radio frequency disturbance characteristics - Limits and methods of measurement.
PN-EN 60825-1:2014-11	Laser equipment safety Part 1: Equipment classification and requirements.	
IEC 61000-4-2	Electromagnetic Compatibility (EMC)	Part 4-2: Test methods and measurements - ESD immunity test
IEC 61000-4-3	Electromagnetic Compatibility (EMC)	*Part 4-3: Test and measurement methods - Testing for immunity to radiated radio frequency electromagnetic fields*
IEC 61000-4-4	Electromagnetic Compatibility (EMC)	Part 4-4: Test for immunity to a series of fast electrical transients
IEC 61000-4-5	Electromagnetic Compatibility (EMC)	Part 4-5: Test and measurement methods - Impact test
IEC 61000-4-6	Electromagnetic Compatibility (EMC)	Part 4-6: Test and measurement methods - Immunity test for conducted disturbances induced by radio frequency fields
IEC 61000-4-8	Electromagnetic Compatibility (EMC)	Part 4-8: Testing for immunity to mains frequency magnetic fields
IEC 61000-4-11	Electromagnetic Compatibility (EMC)	Part 4-11: Testing for resistance to voltage dips, interruptions and voltage changes
IEC 61000-4-12	Electromagnetic Compatibility (EMC)	Part 4-12: Test and measurement methods - Immunity test for damped sinusoidal waveforms
IEC 61000-4-29	Electromagnetic Compatibility (EMC)	Part 4-29: Testing for immunity to voltage dips, interruptions and voltage changes at a DC power connection
IEC 61850-3:2014	Communication systems and networks for power system automation - Part 3: General requirements	
IEEE 1613-2009	IEEE standard on environmental and test requirements for network communication equipment installed in substations	

* - The scope and list of supported standards may change as the device evolves

M26x2 internal thread
(G3/4-13UNC)
Thread length approximately 24mm

Labels

QUAZAR-100-X-U

Quazar-100	X	U
Time Server with monitoring function with built-in GNSS receiver with support for IEEE 1588 v2 PTP, SYNCE, OCXO generator and built-in M12 connector without cables.	M12	
Power supply		
44 - 56 VDC via PoE IEEE802.3af		POE-PD

Additional accessories

PATCHCORD-STP10 – STP patch cord, 10 m long, terminated with M-12-RJ45 connectors
PATCHCORD-STP20 – STP patch cord, 20 m long, terminated with M-12-RJ45 connectors
PATCHCORD-STP50 – STP patch cord, 50 m long, terminated with M-12-RJ45 connectors
PATCHCORD-STP90 – STP patch cord, 90 m long, terminated with M-12-RJ45 connectors
PINJ-2UG - Dedicated external power injector device

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