



External power injector with PoE

GPS Synchronized and PoE powered Grand Master Clock for Outdoor Applications

- Integrated high precision GNSS 52 channel receiver with support of GPS/QZSS, GLONASS, BeiDou, Galileo
- IEEE 1588-2008v.2 (PTPv2): precise time protocol synchronization, hardware timestamping; precise time synchronization for real-time applications with support of profiles like 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, and Ethernet default.
- A stable OCXO high precision oscillator depending on the module version (standard stability +/-10ppb, +/-1,5us@2h holdover)
- Possible more precise **OCXO** on demand
- Support for **Synchronous Ethernet (ITU-T G.8261)**
- Hardware and software SSM support for Synchronous Ethernet,
- Built-in NTP server
- **IEC61850-3, IEEE1613** design compliance for power substation,
- Management IP, HTTP, telnet, SSH, SNMP v1/v2c/v3,
- Power supply: PoE IEEE802.3af PD on water proof IP67 on M12 connector
- UTP 100/1000Mbit/s interface with M12 IP67 on water proof connector
- Customized length STP, UTP pigtail instead of M12 connector
- Integrated ITU-T K-44 surge protection and integrated lightning arrester.
- -40 to +70°C operating temperature,

Description of the device

The **QUAZAR-100** outdoor PTP Grand Master Clock offers the simultaneous functionality of IEEE 1588v2 Precision Time Protocol (PTP), Synchronous Ethernet and Network Time Protocol (NTP). The integrated design of the module together with the function of power supply via the twisted pair using the PoE standard (IEEE802.3af) eliminates the need for additional power supplies and allows the antenna to be raised outside areas with high interference up to 100m. **QUAZAR-100** supports PTPv.2 with application-specific profiles and NTP as a time server. Embedded the HTTP server, TELNET / SSH server and SNMPv.3 agent allows configuration of the device parameters through a standard web browser and constant monitoring of damages from any management platform equipped with SNMP protocol such as BNET. PTP time synchronization can be available for L2 and L3 protocols. The device also supports IEEE 802.1Q VLAN transmission.

Installation of the device does not require environmentally protected locations thanks to the compact housing resistant to weather conditions, and the Ethernet interface with power supply from PoE does not require the use of additional RF antenna cables and enables long distance between Grand Master Clock and synchronized devices.



Fig.1 Block diagram of the QUAZAR-100

Technical specifications

General features

- A stable OCXO high precision oscillator depending on the module version (standard stability +/-10ppb, +/-1,5us@2h holdover).
- 52 channel receiver cooperating with GPS, GLONASS, BeiDou, Galileo systems
- Very high sensitivity of the GPS receiver: -165dBm / -160dBm with LNA and “warm start” option.
- Support IEEE 1588-2008 Standard, IEEE/IEC 37.238:2017 and 2011 Power Profiles, IEEE61850-9-3, ITU-T G.8265.1, ITU-T G.8275.1 (L2 multicast), ITU-T G.8275.2 (L3 unicast)
- Support for **Synchronous Ethernet** (SyncE) - ITU-T **G.8261** and ITU-T **G.8264**

Ethernet interfaces

- 1x 10/100M/1000Mbps, M12 (8-pin), STP or UTP pigtail with customized 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

Time and frequency accuracy

- Frequency accuracy: $0,2 \times 10^{-9}$
- Time precision: $< \pm 50 \text{ ns}$
- Holdover: $1,5 \mu\text{s}@2\text{h}$ for $\pm 10 \text{ ppb OCXO}$

Network synchronization

- 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** Standard Profile for Use of IEEE 1588 Precision Time Protocol in Power System Applications,
 - * IEC **61850-9-3** Communication networks and systems for power utility automation - Part 9-3: Precision time protocol 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 through packet networks

Ethernet:

- 1x ports LAN UTP 10/100/1000 Mbps

Power supply over Ethernet in PD mode

- IEEE 802.3af,
- Power: 12W per pin 4/5 (+), pin 7/8 (-)
- Power Supply: 22- 60V DC

Management

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

Physical Features:

- Dimensions: outer diameter: 90 mm; height 135 mm
- Weight: 0.3 kg
- Housing: waterproof plastic housing with IP67 protection,

Environment

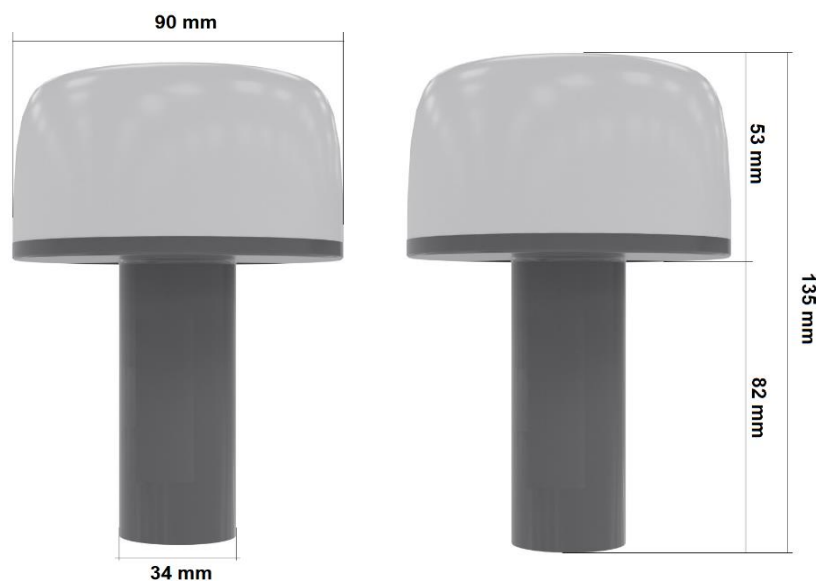
- Operating temperature: -40 to 70°C ,
- Operating humidity (noncondensing): up to 95%.

Supported standards, recommendations and directives EMC Security* for all elements

- EN 55011:2012
- EN 55024:2011/A1:2015-08
- EN 60950-1:2007/A2:2014-05
- EN 60825-1:2014-11
- IEC 61000-4-2 Electromagnetic compatibility (EMC)- Part 4-2: Testing and measurement techniques – Electrostatic discharge immunity test
- IEC 61000-4-3 Electromagnetic compatibility (EMC)- Part 4-3: Testing and measurement techniques – Radiated, radio-frequency, electromagnetic field immunity test
- IEC 61000-4-4 Electromagnetic compatibility (EMC) – Part 4-4: Testing and measurement techniques – Electrical fast transient/burst immunity test
- IEC 61000-4-5 Electromagnetic compatibility (EMC) – Part 4-5: Testing and measurement techniques – Surge immunity test
- IEC 61000-4-6 Electromagnetic compatibility (EMC) – Part 4-6: Testing and measurement techniques – Immunity to conducted disturbances, induced by radio-frequency fields
- IEC 61000-4-8 Electromagnetic compatibility (EMC) – Part 4-8: Testing and measurement techniques – Power frequency magnetic field immunity test
- IEC 61000-4-11 Electromagnetic compatibility (EMC) – Part 4-11: Testing and measurement techniques – Voltage dips, short interruptions and voltage variations immunity tests
- IEC 61000-4-12 Electromagnetic compatibility (EMC) – Part 4-12: Testing and measurement techniques – Ring wave immunity test
- IEC 61000-4-29 Electromagnetic compatibility (EMC) – Part 4-29: Testing and measurement techniques – Voltage dips, short interruptions and voltage variations on d.c. input power port immunity tests,
- IEC 61850-3:2014 Communication networks and systems for power utility automation
- IEEE 1613-2009 - IEEE Standard Environmental and Testing Requirements for Communications Networking Devices Installed in Electric Power Substations

* - list of supported standards may vary with the development of the device

Mechanical drawing



view - front

Code

QUAZAR-100-X-Y-Z

Device type:**M12** - GPS Master Clock with support IEEE 1588 v2 PTP, SYNCE, OCXO free run oscillator and M12 connector**PGT** - GPS Master Clock with support IEEE 1588 v2 PTP, SYNCE, OCXO free run oscillator, pigtailed version**Pigtail specification:****STP(LL*)** - where LL is a length of outdoor STP twisted pair cable**UTP(LL*)** - where LL- is a length of outdoor UTP twisted pair cable

* Maximum length is up to 100m

Power supply system:**PINJ-2UG** - power injector - external device with 2x RJ45 and 1 PoE PSE (up to 15W) to power the QUAZAR-100**Additional accessories****Power injector**

The QUAZAR-100 device can be delivered with an external Power Injector with PoE supply system with the following parameters:

1x port RJ45 (10/100/1000Mbps speed support)

1x port RJ45 with PoE PSE mode, IEEE 802.3af, (up to 15W)

1x input for power supply the range 20-56V DC, screw terminal block

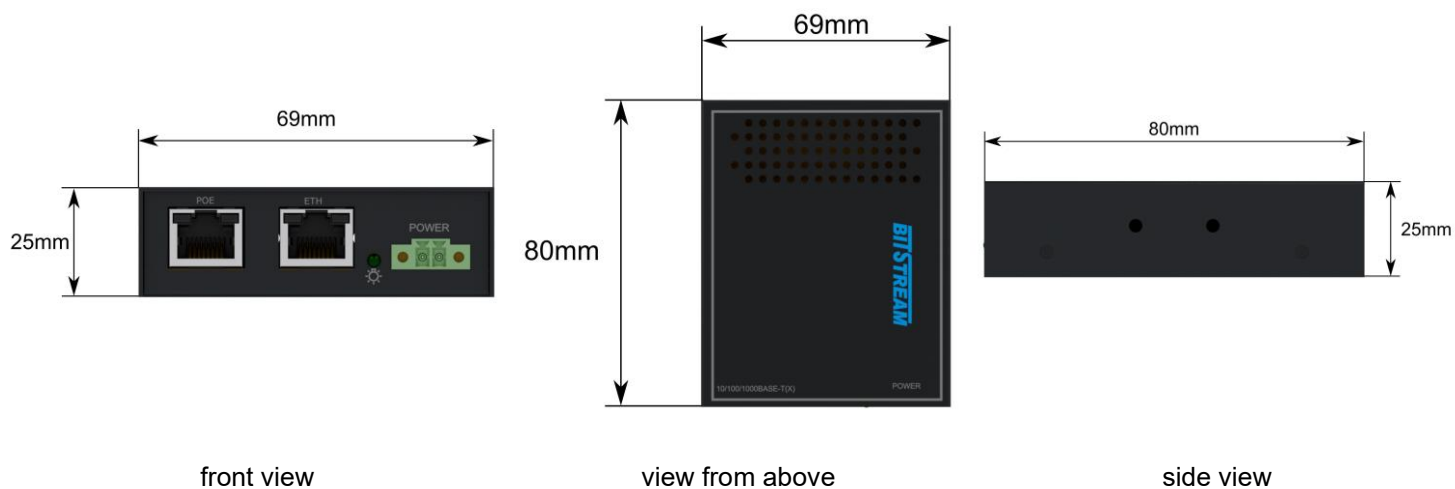
Operating temperature: -40 to 70°C

Housing: DIN rail mounting, metal housing IP-30,

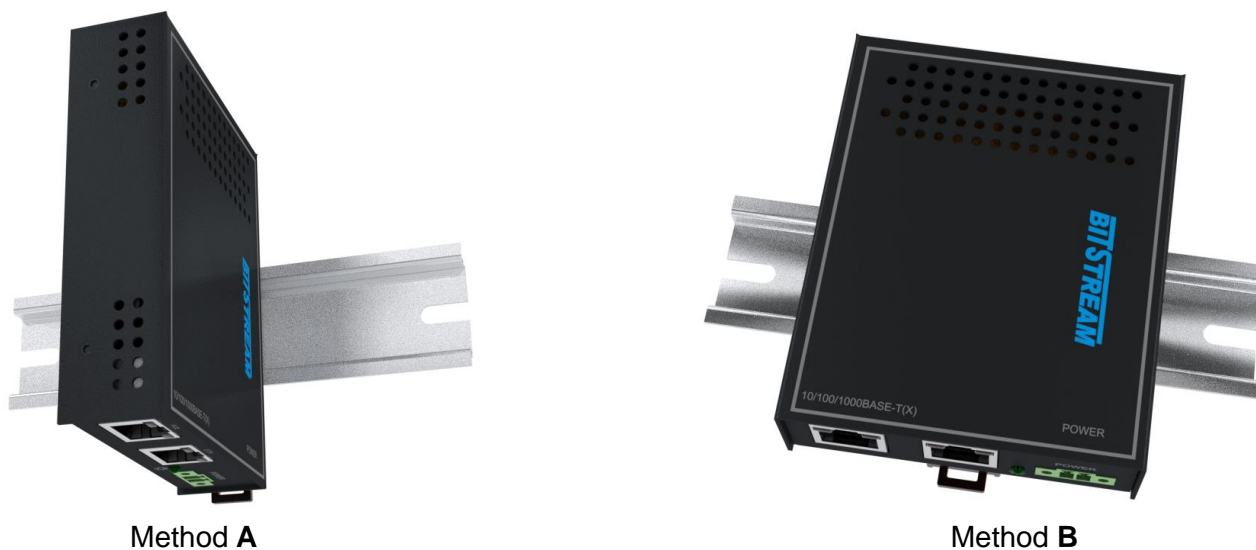
NOTE:

To buy Quazar-100 in the set with the described power supply, in the code please enter "PINJ-2UG"

Mechanical drawing



The device mounting method



NOTE:

The handle can be mounted on the side or back panel.

The thickness of the handle is 10.5 mm, which should be added to the power injector dimension