High-Precision Positioning GNSS Receiver
AQLOC

Towards a new dimension in mobile solutions.

**Main specifications**

**Receiving signal**

- Item
  - 2. Positioning augmentation signal: QZSS L6

**Position precision**

1. Horizontal position accuracy: 12cm or less (95%)
2. Vertical position accuracy: 24cm or less (95%)

**Output data**

1. ASCII: GGA, RMC, GSV, GSA (conforms to NMEA 0183)
2. BINARY: Observation data, ephemeris, almanac, sensor data, positioning augmentation information*2

**PPS pulse**

**Input/Output interface**

1. Serial port #1: RS-232C (4.8 - 115.2kbps)
2. Serial port #2: RS-232C (4.8 - 921.6kbps)
3. LAN port: Ethernet (10BASE-T/100BASE-TX)

**Built-in sensor**

- IMU, barometer

**Accessories**

- External dimensions
  - 1. Terminal: 139 × 94 × 19mm (W × D × H, without heat sink) 139 × 94 × 39mm (W × D × H, with heat sink)
  - 2. Antenna: 59 × 59 × 33mm (W × D × H), Cable length: 3m

**Weight**

1. Terminal: 1000g or less (with heat sink)
2. Antenna: 290g or less

**Power**

- DC12V

**Power consumption**

- 15W or less

**Specifications are subject to change without notice.**
High-precision centimeter level positioning receiver for mobile applications

By receiving stable high-precision centimeter level positioning augmentation information from the “Quasi-Zenith Satellite Michibiki” or mobile phone network along with positioning information from GNSS satellites, these receiver users can enjoy high-precision positioning in various field such as automated driving, automated agricultural machines and railways. Being applied widely for mobile solution verification, we’re helping to bring about innovation in society.

Achieving high-precision positioning at centimeter level

This receiver corresponds to centimeter level augmentation service (CLAS*) from Quasi-Zenith satellite Michibiki. In case of Japan, We have achieved centimeter level high-precision positioning by receiving positioning augmentation information generated based on data from approximately 1,300 electronic reference points.

*Centimeter Level Augmentation Service

Autonomous positioning possible even when satellite signals are interrupted

Hybrid positioning achieved through the application of speed pulses, gyroscopes and INS deciphering of priority algorithms enables stable autonomous positioning even in tunnels and underpasses where satellite signals cannot be received.

Support for mobile phone network distribution positioning augmentation information

Also supports PPP-RTK network-style positioning augmentation information (PAS system). This enables comparative verification with CLAS positioning results.

(1) High-Precision Positioning GNSS Receiver
(2) Receiving antenna
Examples of mobile-side positioning results

Positioning using GNSS + Quasi-Zenith Satellites

INS composite positioning results

CLAS measurement results

Inertial Navigation System (INS) composite positioning: Enables positioning even in environments where satellite signals cannot be received through the combined use of speed pulses and gyroscopes.

INS composite positioning enables autonomous positioning in environments where satellite signals cannot be received such as underpasses.

Achievement of centimeter-level positioning precision as compared to Flächen Korrektur Parameter (FKP) measurement results.
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**Output signal**
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**Positioning system**
PPP-RTK/PPP-RTK-INS composite\(^5\)

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**System device configuration example**

Computer not included and must be prepared separately.

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**Notes:**
1. Assumes good satellite visualization conditions and propagation path, such as calm conditions in ionosphere and troposphere.
2. Positioning augmentation information demodulated from the L6 signals output as log data.
3. Assumes good satellite visualization conditions.
4. Ethernet is a registered trademark of Fuji Xerox Co., Ltd.
5. Can be switched over based on positioning software settings in accordance with the situation in which it is used.
7. Attached to terminals when used in high-temperature environments where ambient temperature is 40°C or more.

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