

## SM300 GNSS Receiver

Integrated GNSS Receiver  
for Monitoring Applications



# SM300

## Integrated GNSS Receiver for Monitoring Applications

The SM300 is a high-performance GNSS receiver designed for precision monitoring and positioning applications. It simultaneously tracks GPS, GLONASS, BEIDOU, GALILEO, QZSS, and SBAS constellations, with PPP support (HAS and B2b PPP), utilizing 800 channels and a sampling rate of up to 20 Hz.

The receiver features 32 GB of internal memory, enabling storage of more than two years of raw data with circular overwrite capability. Storage can be expanded via TF card up to 512 GB for extended data logging capacity. An integrated tri-axial MEMS accelerometer enhances the system's functionality, supporting structural and geotechnical monitoring applications in addition to GNSS positioning.

The SM300 incorporates onboard GNSS raw data processing technology for static position computation in post-processing mode. At the same time, it is capable of real-time positioning by receiving RTK corrections from a single base station or a permanent reference station network.



### INTEGRATED RECEIVER

The SM300 combines GNSS receiver and antenna in a compact, miniaturized design, simplifying installation and reducing setup time.



### MEMS

The integrated tri-axial MEMS accelerometer provides monitoring data on acceleration and tilt, enhancing the system's capabilities for structural and geotechnical applications.



### ONBOARD PROCESSING

The receiver enables onboard computation of the monitored point's coordinates, operating both in real-time RTK mode and post-processing mode.



### ROBUST AND COMPACT

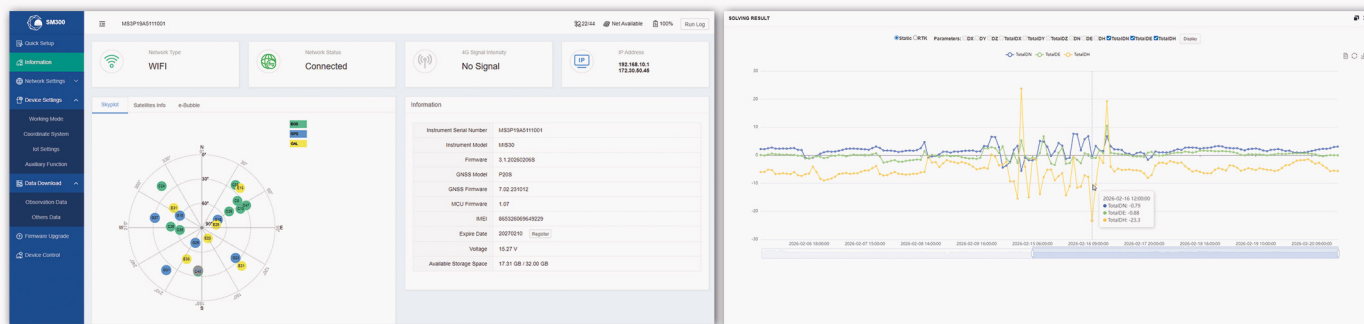
IP68 certified, the SM300 is resistant to shock and vibration and operates in temperatures from -30°C to +65°C. With low power consumption (1.5 W) and compact dimensions (ø 171 mm × 121 mm, 1070 g), it is ideal for permanent installations in harsh environments.





## MONITORING APPLICATIONS

SM300 is a fully integrated GNSS system designed for high-precision continuous monitoring applications. It is suitable for use in areas such as geological hazard monitoring, quarry and mining control, reservoir monitoring, slope and highway infrastructure surveillance, as well as structural monitoring of buildings and bridges, in addition to other specialized applications within the civil and environmental engineering sectors.



## ONBOARD POST-PROCESSING CALCULATION

The receiver can receive RTK corrections from a single base station or a permanent reference station network, providing site analysis with one-second updates. In addition, the system can perform onboard baseline post-processing using raw data from external stations. Results can be visualized graphically and published on a dedicated web page.



# SM300 TECHNICAL FEATURES

## RECEIVER

|                           |                                                                                                                                                       |
|---------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|
| Satellite signals tracked | GPS: L1 C/A, L1C, L1P, L2, L2C, L2P, L5                                                                                                               |
|                           | GLONASS: G1, G2, G3                                                                                                                                   |
|                           | BEIDOU: B1I, B2I, B3I, B1C, B2a, B2b, ACEBOC                                                                                                          |
|                           | GALILEO: E1, E5a, E5b, ALTBOC, E6                                                                                                                     |
|                           | QZSS: L1 C/A, L1C, L2C, L5, LEX                                                                                                                       |
|                           | SBAS                                                                                                                                                  |
| PPP                       | HAS, B2b PPP                                                                                                                                          |
| Channels                  | 800                                                                                                                                                   |
| Position Rate             | 20 Hz                                                                                                                                                 |
| Signal Reacquisition      | < 1 s                                                                                                                                                 |
| Cold Start                | Typically 60 s                                                                                                                                        |
| Hot Start                 | Typically 10 s                                                                                                                                        |
| Integrated GNSS Antenna   | High accuracy multi-constellation antenna, zero phase center, with internal multipath suppressive board                                               |
| Internal Memory           | 32 GB                                                                                                                                                 |
|                           | Enables continuous storage of more than 2 years of raw data                                                                                           |
| External Memory           | Support circular buffer overwrite<br>TF card up to 512 GB                                                                                             |
| MEMS                      | Integrated MEMS accelerometer; outputs multi-parameter triaxial acceleration monitoring data                                                          |
| Remote control            | Supports power-on self-start, remote monitoring and configuration, over-the-air firmware upgrades, integrated self-check and self-diagnosis functions |

## POSITIONING<sup>1</sup>

|                                                          |                    |
|----------------------------------------------------------|--------------------|
| HIGH PRECISION STATIC SURVEYING                          |                    |
| Horizontal                                               | 2.5 mm + 1 ppm RMS |
| Vertical                                                 | 5 mm + 1 ppm RMS   |
| REAL TIME KINEMATIC (< 30 Km) – NETWORK RTK <sup>2</sup> |                    |
| Fixed RTK Horizontal                                     | 8 mm + 1 ppm RMS   |
| Fixed RTK Vertical                                       | 15 mm + 1 ppm RMS  |
| PPP Accuracy                                             | < 20 cm RMS        |
| SBAS Accuracy <sup>3</sup>                               | < 60 cm RMS        |

## INTERNAL MODEM

|      |    |
|------|----|
| Band | 4G |
|------|----|

## COMMUNICATION

|                   |                                                                                                                             |
|-------------------|-----------------------------------------------------------------------------------------------------------------------------|
| I/O Connectors    | Supports RS232 serial communication interfaces                                                                              |
| Bluetooth         | BT5.0, backward compatible / BLE                                                                                            |
| Wi-Fi             | 802.11 b/g/n                                                                                                                |
| Web UI            | To update the software, manage status and settings, download data, etc., via smartphone, tablet, or other electronic device |
| Reference outputs | NMEA 0183, RTCM 3.X                                                                                                         |

## SYSTEM CONFIGURATION

|                     |                                                                    |
|---------------------|--------------------------------------------------------------------|
| Operating System    | Linux                                                              |
| Management Features | Supports scheduled shutdown, scheduled startup, and Web management |

## NETWORK SERVICES

|            |                      |
|------------|----------------------|
| NTRIP      | Caster/Server/Client |
| FTP server | For data download    |

## POWER SUPPLY

|         |                                   |
|---------|-----------------------------------|
| Voltage | DC 9 to 36 V external power input |
| Power   | 1.5W                              |

## PHYSICAL SPECIFICATION

|                       |                                                                          |
|-----------------------|--------------------------------------------------------------------------|
| Dimensions            | Ø 171 mm x 121 mm                                                        |
| Weight                | 1070 g                                                                   |
| Operating Temperature | -30°C to 65°C (-22°F to 149°F)                                           |
| Storage Temperature   | -45°C to 85°C (-49°F to 185°F)                                           |
| Waterproof/Dustproof  | IP68                                                                     |
| Humidity protection   | 100%                                                                     |
| Shock Resistance      | Designed to endure to a 1.2 m pole drop on concrete floor with no damage |
| Vibration             | Vibration resistant                                                      |

1. Accuracy and reliability are generally subject to satellite geometry (DOPs), multipath, atmospheric conditions and obstructions. In static mode they are subject even to occupation times: the longer is the Baseline, the longer must be the occupation time.  
2. Network RTK precision depends on the network performances and are referenced to the closest physical base station.  
3. Depends on SBAS system performance.

Illustrations, descriptions and technical specifications are not binding and may change

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