

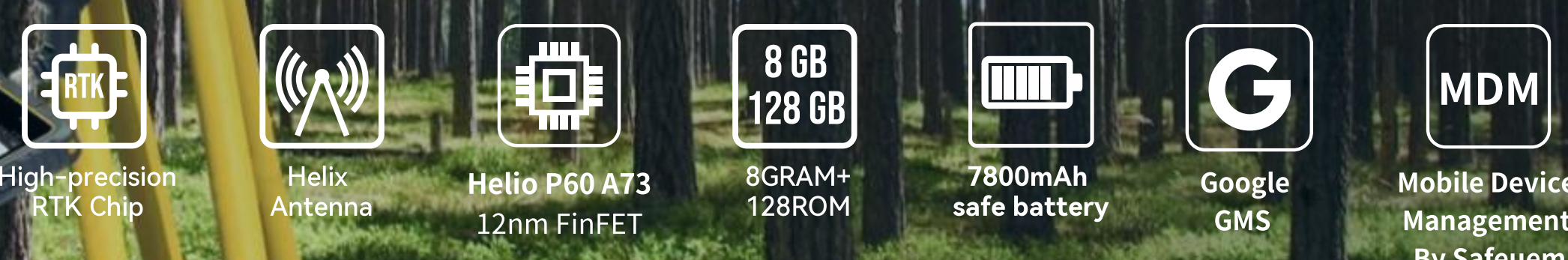
HUGEROCK G60 Version:2023

RUGGED GNSS RTK HANDHELD

5.5 Inch High Precision GNSS /RTK/GIS Mobile Handheld

HUGEROCK G60 is lightweight, compact and easy to carry. The whole series of products use 8-core 2.0GHz A73 processor, 500nit FHD display, 7800mAh large-capacity battery, IP67/MIL810G/IK05 protection level. G60 is equipped with multiple communication methods, 8+128G storage units. And multi-model high-precision GNSS/RTK positioning boards, support BDS, GPS, GALILEO, GLONASS, NavIC*, QZSS* systems and SBAS*, IMU* combined navigation and positioning. The high number of visible satellites enables the receiver to select the best signals. This maximizes the position accuracy, in particular under challenging conditions such as in deep urban canyons. Instantaneous RTK initialization*, support long-baseline RTK solution*, differential data RTCM format adaptive recognition*, can achieve milli-level *solution accuracy, support multi-path suppression technology, widely used in high-precision surveying and mapping, GIS information Acquisition, intelligent driving and drone control systems.

(with * for specific model support)



HUGEROCK - G60
tools for GIS

Shenzhen SOTEN Technology Co., LTD
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APPEARANCE



- 1. Power button
- 5. Hanging hole
- 9. Antenna
- 13. Home button
- 17. Arrow button
- 21. Volume up
- 25. Nameplate
- 29. Fihand strap xing parts
- 2. SOS button
- 6. Front camera
- 10. Light sensor
- 14. Confirm button
- 18. Search button
- 22. Volume down
- 26. Main camera
- 3. Type-C (Sealed Cover)
- 7. Charge lamp
- 11. Delete button
- 15. Menu button
- 19. MIC
- 23. Scan button (Definition)
- 27. Flash light
- 4. Earphone (Sealed Cover)
- 8. Receiver
- 12. Custom button
- 16. Back button
- 20. 2pin Pogo pin
- 24. SIM (Sealed Cover)
- 28. Speaker



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SPECIFICATION

Model: G60

| Hardware | Communications & Networking |
|--|---|
| CPU ARM A73 2.0GHz Octa-core | Phone Call GSM /WCDMA/CDMA 1X/VoLTE |
| GPU ARM Mali-G72 MP3 | 2G GSM/CDMA 1X/EDGE/GPRS/WAP |
| RAM 8G | 2G Band GSM (B2/3/5/8) |
| Internal Memory 128G | 3G WCDMA 3.75G (HSDPA+42.2Mbps, HSUPA+11.5Mbps), EVDO |
| External Memory Micro SD card (T-FLASH card), max 256GB | 3G Band WCDMA(B1/2/5/8), Evdo: BC0/BC1 CDMA: BC0/BC1 |
| Main Camera 13.0MP(AF)with flash led | 4G FDD: 150Mbps down, 50Mbps UP TDD: 150Mbps downlink, 50Mbps uplink |
| Sub Camera 5.0MP | 4G Band TD-LTE(B38/39/40/41); FDD LTE(B1/2/3/4/5/7/8/12/17/20/28) |
| Battery 7800mAh | Wi-Fi Dual-band WIFI(2.4GHz/5GHz)/single stream 802.11 a/b/g/n/ac |
| Display 5.5 inch IPS/AFFS 1080*1920 FHD industrial 500cd/m2 Sunlight Readable | Bluetooth 5.0 Low Energy (LE) |
| Touch Panel Capacitive/frosted tempered film supports glove touch/spray/active capacitive pen | Industrial & Reliability Design |
| IO/Sensor/Navigation | Shake-proof 1-19Hz/1.0mm; 19-200Hz/1.0g |
| SIM Card Nano sim card*2 | Dropproof /IK MIL-STD-810G/Method516.6/Procedure IV & Touch Panel IK05 |
| TF Card Micro SD card (T-FLASH card); max 256GB | Waterproof Class 7 (IEC 60529) |
| Headphone 3.5mm (CTIA) | Dustproof Class 6 (IEC 60529) |
| Charging interface Type-C 2pin pogo pin | Reliability MTBF>5000h; MTTR<0.5h |
| Data interface Type-C 24pin, support OTG | Operating temperature -20°C to 55°C |
| RS232(Optional) RS232X1 | Storage Temperature -40°C to 70°C |
| Gravity sensor support | RH 5% to 95% |
| Motion sensor support | Operating Altitude Max: 4,500 m (15,000 feet) |
| Direction Sensor support | Certification/OS/Software |
| Magnetic Field Sensor support | Certification 3C/FCC/CE/ROHS/IP67(IEC 60529) |
| Gyro sensor support | Language English, Spanish, Portuguese (Brazil), Portuguese (Portugal), Italian, German, Dutch, French, Polish, Romanian, Turkish, Russian, Arabic, Indonesian, Malay, Thai, Vietnamese, Hindi, Hebrew, Simplified, Chinese, Chinese Traditional, etc |
| Rotation Vector support | OS Android 11 |
| Light-sensor support | Package/Warranty terms |
| Acceleration sensor support | Warranty 24 months |
| Charger 5.0V 2A-10W | Package USB cable / Charger 5V 2A / Introduction manual / Screen protector / Aircraft box / Toolkit / SIM Card Ejector x 1 |
| Navigation GPS+BeiDou+Glonass+AGPS+SBAS (EPO 2.5m) | |
| Appearance | |
| Size 195*98*22mm (L*W*H) | |
| Weight 460g | |
| Color & Material Blue(PC+ABS)+black(TPU) | |

**According to the actual model, GNSS receivers receive different types of signals. Please check the performance list of GNSS receivers of the model.



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DIFFERENCES BETWEEN PRODUCT TYPES



TOOL KIT The packing list is different according to the specific model configuration, the actual one shall prevail.



Model: **G60N**
Multi-satellite single frequency meter-level RTD

EXTERNAL HELIX ANTENNA ITEMS

| | |
|------------------------|---|
| Antenna | Multi-satellite single frequency |
| Antenna Frequency Band | BDS B1; GPS L1; GLONASS G1; GALILEO E1 |
| Antenna Size | φ18.5mm*50mm |
| Installation Method | SMA |
| Horizontal Coverage | 360° |
| Impedance Matching | 50 Ω |
| Polarization Mode | Right-handed circular polarization (RHCP) |
| Spindle Ratio | ≤3dB |
| Gain | 30±2dB |
| Maximum Gain | ±1.5dBi |
| Noise Factor | ≤1.5 dB |

FEATURES OF THE POSITIONING RECEIVER

| | |
|-----------------------------------|---|
| Module | High-precision multi-mode GNSS positioning module(meter-level RTD) |
| Signal (tracking Frequency) | BDS: B1I; GPS: L1 C/A; GLONASS: L1 OF; SBAS: E1B/C; QZSS: L1 C/A/S; SBAS L1 C/A; WAAS, EGNOS, MSAS, GAGAN |
| Channel | 92-channel |
| Single-point Positioning Accuracy | 1.5 m CEP (with SBAS); 2.0 m CEP (without SBAS) |
| RTD Accuracy | 1.5 m CEP (with RTD) |
| Nav. Update Rate | 1-25 Hz |
| Cold Start | 24 s |
| Hot Start | 2 s |
| Aided Start | 2 s |
| Cors Data | RTCM 3.3 |
| Data Format | NMEA 4.10, UBX binary, RTCM 3.3 |
| Inertial Navigation | none |



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DIFFERENCES BETWEEN PRODUCT TYPES



Model: **G60F**
Multi-satellite dual frequency centimeter level RTK

| EXTERNAL HELIX ANTENNA ITEMS | |
|--------------------------------------|--|
| Antenna | Multi-satellite dual frequency |
| Antenna Frequency Band | BDS B1/B2/B3; GPS L1/L2; GLONASS G1/G2; GALILEO E1/E5b |
| Antenna Size | φ27.5mm*55.5mm |
| Installation Method | SMA |
| Horizontal Coverage | 360° |
| Impedance Matching | 50 Ω |
| Polarization Mode | Right-handed circular polarization (RHCP) |
| Spindle Ratio | ≤3dB |
| Gain | 30±2dB |
| Maximum Gain | 2.5dBi |
| Noise Factor | ≤1.5 dB |
| FEATURES OF THE POSITIONING RECEIVER | |
| Module | High-precision multi-mode dual-frequency module (centimeter level RTK) |
| Signal (tracking Frequency) | BDS: B1I/B2I; GPS: L1C/A L2C; GLONASS: L1OF L2OF; Galileo: E1B/C E5b; QZSS: L1C/A L1S L2C; SBAS: L1C/A |
| Channel | 184-channel |
| Single-point Positioning Accuracy | 0.8m CEP |
| RTK Accuracy | ≤ 10mm + 1 ppm CEP |
| Nav. Update Rate | 1-20 Hz |
| Cold Start | 24 s |
| Hot Start | 2 s |
| Aided Start | 2 s |
| Cors Data | RTCM v. 3.3, SPARTN v. 2.0 |
| Data Format | NMEA, UBX binary, RTCM v. 3.3, SPARTN v. 2.0 |
| Inertial Navigation | none |



Model: **G60M**
Multi-satellite multi-frequency omnidirectional mm-level RTK

| EXTERNAL HELIX ANTENNA ITEMS | |
|--------------------------------------|---|
| Antenna | Multi-satellite multi-frequency omnidirectional |
| Antenna Frequency Band | BDS B1/B2/B3; GPS L1/L2; GLONASS G1/G2; GALILEO E1/E5b |
| Antenna Size | φ27.5*107.5mm |
| Installation Method | SMA 90 degree omnidirectional |
| Horizontal Coverage | 0°-360° |
| Impedance Matching | 50 Ω |
| Polarization Mode | Right-handed circular polarization (RHCP) |
| Spindle Ratio | ≤3dB |
| Gain | 30±2dB |
| Maximum Gain | 2.5dBi |
| Noise Factor | ≤1.5 dB |
| FEATURES OF THE POSITIONING RECEIVER | |
| Module | High-precision multi-mode full-band module (mm-level RTK) |
| Signal (tracking Frequency) | BDS: B1I/B2I/B3I/B1C/B2a/B2b* GPS L1C/A/L1C/L2P (Y/L) L2C/L5 GLONASS G1/G2/G3* GALILEO E1/E5a/E5b/E6* QZSS L1/L2/L5 |
| Channel | 1408 channels, based on NebulasIV |
| Single-point Positioning Accuracy | P:1.5m E: 2.5m CEP (with SBAS) |
| RTK Accuracy | P:0.8cm + 1 ppm CEP E:1.5cm + 1 ppm CEP |
| Nav. Update Rate | 20 Hz |
| Cold Start | <30s |
| Hot Start | < 20s |
| Aided Start | < 1s |
| Cors Data | RTCM V3.3 |
| Data Format | NMEA-0183, Unicore |
| Inertial Navigation | none |



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GNSS Measurement Antenna (Optional)

Multi-frequency RTK Antenna HG-BA600

Multi-frequency RTK Antenna HG-BA800

Passive antenna characteristics passive

| | |
|--------------------------|---|
| Support satellite signal | BDS: B1, B2, B3 |
| GPS | L1, L2; GLONASS: G1, G2; Galileo: E1, E5b |
| Operating frequency band | 1197MHz~1278MHz; 1559MHz~1605MHz |
| Impedance matching | 50 Ω |
| Polarization mode | Right-handed circular polarization (RHCP) |
| Spindle ratio | ≤3dB |
| Horizontal coverage | 360° |
| Maximum gain | ≥5.5dBi |

Low noise amplifier characteristics

| | |
|----------------------------|------------|
| Low noise amplifier gain | 40±2dB |
| Noise factor | ≤2.0dB |
| Output standing Wave Ratio | <2.0 |
| Intra-band flatness | ±2dB |
| Operating voltage | 3.0-16V DC |
| Operating current | ≤45mA |

Adaptability of machine & structure & environment

| | |
|---------------------------------|------------------------|
| Joint type | TNS negative head |
| Antenna size | φ132mm*45mm |
| Operating temperature | -40°C~+80°C |
| Storage temperature | -45°C~+85°C |
| Storage humidity | 95% no condensation |
| Color | white |
| Installation method | TNS screw installation |
| Weight | ≤320g |
| Phase center error | ±2mm |
| Dual frequency delay difference | ≤5ns |

Passive antenna characteristics

| | |
|--------------------------|---|
| Support satellite signal | BDS: B1, B2, B3; GPS: L1, L2, L5 |
| GLONASS | G1, G2; GALILEO: E1, E2, E5a, E5b, E6, L-Band |
| Operating frequency band | 1164MHz~1300MHz; 1520MHz~1615MHz |
| Impedance matching | 50 Ω |
| Polarization mode | Right-handed circular polarization (RHCP) |
| Spindle ratio | ≤3dB |
| Horizontal coverage | 360° |
| Maximum gain | ≥5.5dBi |

Low noise amplifier characteristics

| | |
|----------------------------|------------|
| Low noise amplifier gain | 40±2dB |
| Noise factor | ≤2.0dB |
| Output standing Wave Ratio | <2.0 |
| Intra-band flatness | ±2dB |
| Operating voltage | 3.0-16V DC |
| Operating current | ≤35mA |

Adaptability of machine & structure & environment

| | |
|---------------------------------|------------------------|
| Joint type | TNS negative head |
| Antenna size | φ132mm*55.14mm |
| Operating temperature | -40°C~+80°C |
| Storage temperature | -45°C~+85°C |
| Storage humidity | 95% no condensation |
| Color | white |
| Installation method | TNS screw installation |
| Weight | ≤350g |
| Phase center error | ±2mm |
| Dual frequency delay difference | ≤5ns |



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