

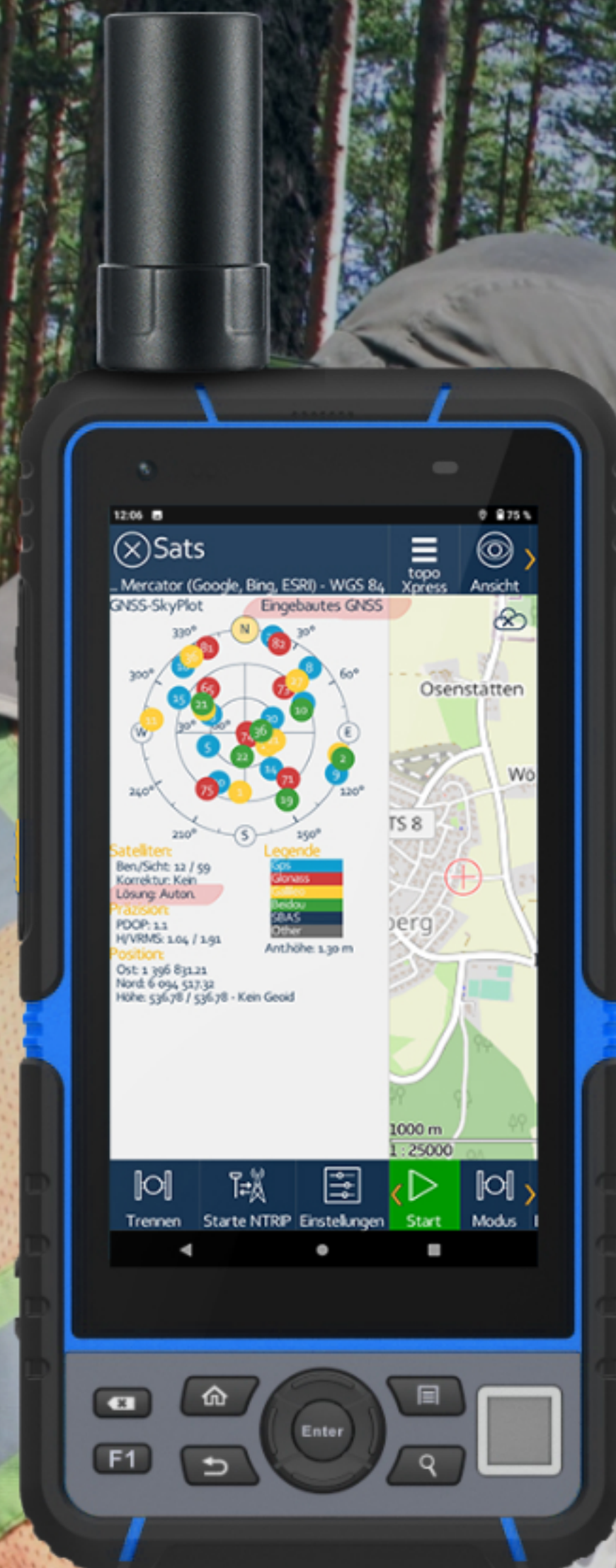
HUGEROCK G60

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, 9000mAh large-capacity battery, IP67/MIL810G/IK05 protection level, G60 is equipped with multiple communication methods, 8GB+128GB 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)



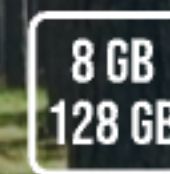
High-precision
RTK Chip



Helix
Antenna



ARM Cortex A73
Octa-core(2.0GHz)



8GB RAM+
128GB ROM



9000mAh
Safe Battery



Google
GMS



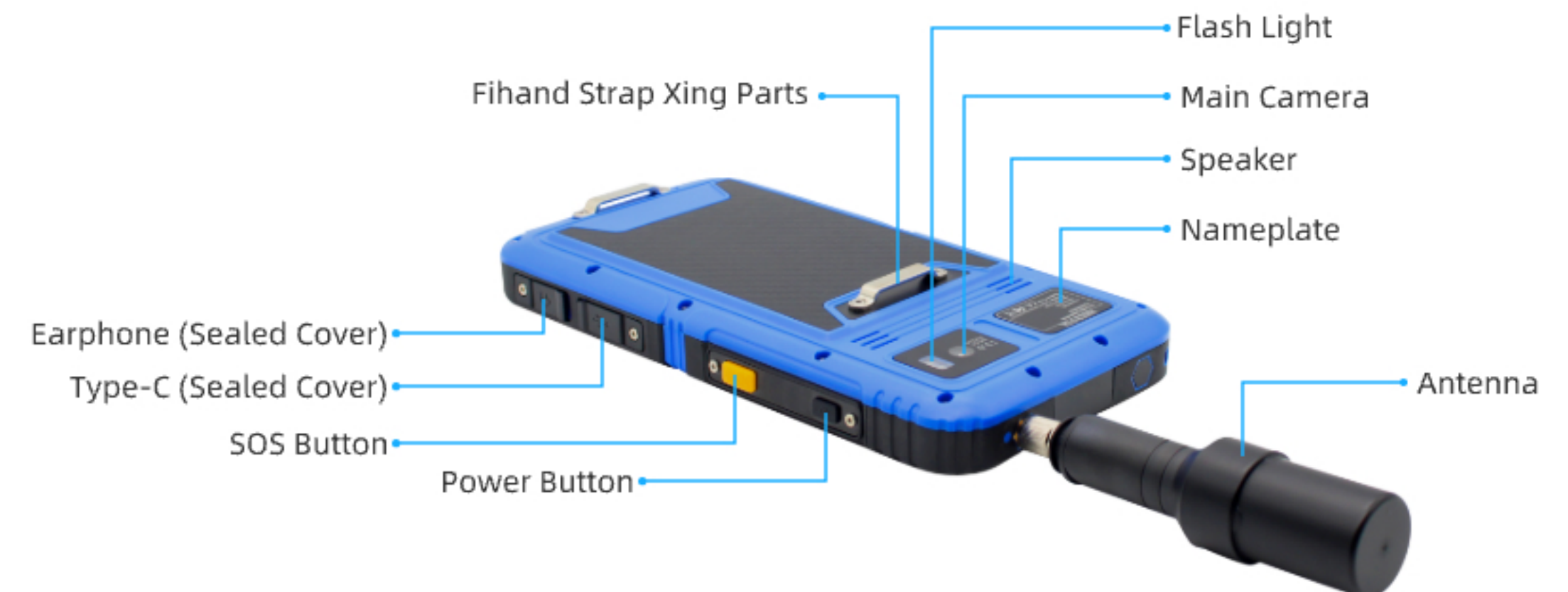
Mobile Device
Management
By Safeuem



APPEARANCE



Antenna



SPECIFICATION

Model: G60

Hardware		Communications & Networking	
CPU	ARM Cortex A73 octa-core (2.0GHz)	Phone Call	GSM /WCDMA/VoLTE
GPU	ARM Mali-G72 MP3	2G	GSM/EDGE/GPRS/WAP
RAM	8GB	2G Band	GSM (B2/3/5/8)
Internal Memory	128GB	3G	WCDMA 3.75G (HSDPA+42.2Mbps, HSUPA+11.5Mbps)
External Memory	Micro SD card (T-FLASH card), Max 2TB	3G Band	WCDMA(B1/2/5/8)
Main Camera	13.0MP(AF)with flash led	4G	FDD: 150Mbps down, 50Mbps UP TDD: 150Mbps , 50Mbps up
Sub Camera	5.0MP	4G Band	TDD-LTE (B38/39/40/41); FDD LTE (B1,B2,B3,B4,B5,B7,B8,B12,B17,B20,B28)
Battery	9000mAh	WI-FI	Dual-band WIFI(2.4GHz/5Ghz)single stream 802.11 a/b/g/n/ac
Display	5.5 inch IPS/AFFS 1080*2160 FHD industrial 1000 nits 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		Shake-proof	1-19Hz/1.0mm; 19-200Hz/1.0g
SIM Card/ TF Card	Nano SIM card * 2, MicroSD card * 1 (Choose any two out of three)	Dropproof /IK	MIL-STD-810G/Method516.6/Procedure IV & Touch Panel IK05
Headphone	3.5mm (CTIA)	Waterproof	Class 7 (IEC 60529)
Charging interface	Type-C & 4pin pogo pin	Dustproof	Class 6 (IEC 60529)
Data interface	USB Type-C (OTG)*1	Reliability	MTBF>5000h ; MTTR<0.5h
Gravity sensor	support	Operating temperature	-20°C to 55°C
Magnetic Field Sensor	support	Storage Temperature	-40°C to 80°C
Motion Sensor	support	RH	5% to 95% (95%RH, non-condensing)
Gyro sensor	support	Operating Altitude	Max: 4,500 m (15,000 feet)
Light-sensor	support	Certification/OS/Software	
Acceleration Sensor	support	Certification	3C/FCC/CE/ROHS/IP67(IEC 60529)
Charger	5.0V 2A-10W	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
Navigation	GPS+Beidou+Glonass+AGPS+SBAS (EPO 2.5m)	OS	Android 9/10/11/13 (Continuous updates) with GMS
Appearance		Package/Warranty terms	
Size	195*98*22mm (L×W×H)	Warranty	24 Months (12-month Battery Warranty)
Weight	490g	Package	USB Cable/Introduction Manual/Screen protector/Packing box/Magnetic Charging Cable/ Precautions Card/ Hand strap/ Lanyard
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.



HUBER®OCK-G60
tools for GIS

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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	≥1.5 dBi
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; Galileo: 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



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)	GPS/QZSS: L1/L5; BeiDou : B1I/B2a; GALILEO: E1/E5a; GLONASS: G1; SBAS: WAAS, EGNOS, GAGAN, MSAS
Channel	184-channel
Single-point Positioning Accuracy	1.5 m CEP
Rtk Accuracy	≤ 8mm + 1ppm CEP
Nav. Update Rate	1-10Hz
Cold Start	27 s
Hot Start	2 s
Aided Start	≤ 10s
Cors Data	RTCM 3.x
Data Format	NMEA 0183
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	33±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)/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.X
Data Format	NMEA-0183, Unicore
Inertial Navigation	none



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	$\leq 3\text{dB}$
Horizontal coverage	360°
Maximum gain	$\geq 5.5\text{dBi}$

Low noise amplifier characteristics

Low noise amplifier gain	40 $\pm$ 2dB
Noise factor	$\leq 2.0\text{dB}$
Output standing Wave Ratio	< 2.0
Intra-band flatness	$\pm 2\text{dB}$
Operating voltage	3.0~16V DC
Operating current	$\leq 45\text{mA}$

Adaptability of machine & structure & environment

Joint type	TNS negative head
Antenna size	$\phi 132\text{mm} \times 45\text{mm}$
Operating temperature	-40°C~+80°C
Storage temperature	-45°C~+85°C
Storage humidity	95% no condensation
Color	white
Installation method	TNS screw screw installation
Weight	$\leq 320\text{g}$
Phase center error	$\pm 2\text{mm}$
Dual frequency delay difference	$\leq 5\text{ns}$

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	$\leq 3\text{dB}$
Horizontal coverage	360°
Maximum gain	$\geq 5.5\text{dBi}$

Low noise amplifier characteristics

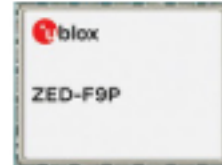
Low noise amplifier gain	40 $\pm$ 2dB
Noise factor	$\leq 2.0\text{dB}$
Output standing Wave Ratio	≤ 2.0
Intra-band flatness	$\pm 2\text{dB}$
Operating voltage	3.0~16V DC
Operating current	$\leq 35\text{mA}$

Adaptability of machine & structure & environment

Joint type	TNS negative head
Antenna size	$\phi 132\text{mm} \times 55.14\text{mm}$
Operating temperature	-40°C~+80°C
Storage temperature	-45°C~+85°C
Storage humidity	95% no condensation
Color	white
Installation method	TNS screw screw installation
Weight	$\leq 350\text{g}$
Phase center error	$\pm 2\text{mm}$
Dual frequency delay difference	$\leq 5\text{ns}$



PRODUCT CONFIGURATION

Order Number	Module						Recommend
	Expansion module 1			Expansion module 2			
							
	Ublox-9N	Ublox-F9P	UM980	TDXL-HA400	TDXL-GGBR7I05	GM006	
05121089	●			●			*
05121091		●			●		*
05121088			●			●	*

