

# Leica iCON gps 60

## Smart positioning on any construction site



**icon**  
intelligent CONstruction

### Leica iCON gps 60 is a versatile SmartAntenna for all construction positioning tasks.

Featuring superior GNSS technology and various integrated communication options, it meets all your requirements for reliable and accurate measurements. Its intuitive display shows full status information of the instrument, simplifying operation and configuration. Leica iCON gps 60 also offers exceptional network capabilities allowing you to use RTK network services (Leica SmartNet and other networks) for highly reliable, improved GPS positions.

- Superior GNSS Technology for maximum accuracy and reliability. Features Leica SmartTrack+ and SmartCheck+.
- Future-proof satellite tracking. Works with all existing and future satellite systems.
- Multi-purpose GPS solution. Can be used as construction site GNSS Base, Rover or NetRover, in supervisor vehicle on site and entry level machine control mounted inside a machine.
- Unique communication flexibility, featuring integrated radio, modem and Bluetooth®.
- HSPA modem provides excellent network performance.
- Integrated NTRIP Server and Caster for Internet based Reference Station.
- No controller required for base station set-up means you need less hardware.
- Unique flexible software licencing and feature upgrade concept. You can order packages or individual licences when you need them, investing when you need to.



- when it has to be **right**

**Leica**  
Geosystems

## Leica iCON gps 60

One instrument for many tasks



Perform many positioning tasks yourself, easily and quickly. Check grade or cut & fill, stake-out points and lines and as built checks.



Leica iCON gps 60 is the perfect mobile base station for your construction site. You don't need a controller for base station set-up. Stream corrections over the Internet without Radio.



Save time and increase your productivity monitoring the grade from your supervisor vehicle on site.



Use Leica iCON gps 60 for easy, single grade machine control applications, further increasing the value of the product and your investment.

## Technical Specifications

		Leica iCG60 GNSS SmartAntenna					
		Leica iCG60 Demo	Leica iCG60 Vehicle	Leica iCG60 Base	Leica iCG60 Network	Leica iCG60 Performance	Leica iCG60 Advanced
<b>Supported GNSS Systems</b>	GPS L2	•	✓	✓	✓	✓	✓
	GLONASS	•	•	•	•	✓	✓
	GPS L5	•	•	•	•	•	✓
	Galileo	•	•	•	•	•	✓
	Beidou	•	•	•	•	•	✓
<b>RTK Performance</b>	Low accuracy RTK (50/2)	•	✓	•	•	•	•
	High accuracy RTK	•	•	•	✓	✓	✓
	RTK up to 2.5 km	•	✓	•	✓	✓	✓
	RTK unlimited	•	✓	•	✓	✓	✓
	Network RTK	•	✓	•	✓	✓	✓
<b>Positioning Update &amp; Data Recording</b>	2 Hz positioning	•	•	•	✓	✓	✓
	10 Hz positioning	•	✓	•	•	✓	✓
	20 Hz positioning	•	•	•	•	•	✓
	Raw Data RINEX Logging	•	•	✓	•	✓	✓
<b>Additional Features</b>	RTK Reference Station functionality	•	•	✓	•	✓	✓

✓ Standard / • optional

<b>GNSS Performance</b>	GNSS technology	Leica patented SmartTrack+ technology: <ul style="list-style-type: none"> <li>• Advanced measurement engine</li> <li>• Jamming resistant measurements</li> <li>• High precision pulse aperture multipath correlator for pseudorange measurements</li> <li>• Minimum acquisition time</li> </ul>
	No. of channels	120 channels
	Max. simultaneous tracked satellites	up to 60 Satellites simultaneously on two frequencies
	Satellite signals tracking	<ul style="list-style-type: none"> <li>• GPS: L1, L2, L2C, L5</li> <li>• GLONASS: L1, L2</li> <li>• Galileo (Test): GIOVE-A, GIOVE-B</li> <li>• Galileo: E1, E5a, E5b, Alt-BOC</li> <li>• Beidou</li> </ul>
	GNSS measurements	Fully independent code and phase measurements of all frequencies <ul style="list-style-type: none"> <li>• GPS: carrier phase full wave length, Code (C/A, P, C Code)</li> <li>• GLONASS: carrier phase full wave length, Code (C/A, P narrow Code)</li> <li>• Galileo: carrier phase full wave length, Code</li> <li>• Beidou: carrier phase full wave length, Code</li> </ul>
	Reacquisition time	< 1 sec
<b>GNSS Antenna</b>	GNSS antenna options	<ul style="list-style-type: none"> <li>• Fully integrated GNSS antenna</li> <li>• External GNSS antenna connector (Type TNC)</li> </ul>
	External GNSS Antenna options	CGA60: GPS L1/L2/L5, GLONASS L1/L2, Galileo E1, E5a, E5b, Alt-BOC, BeiDou B1, B2

<b>Measurement Performance &amp; Accuracy</b>	<b>Accuracy (rms) with real-time (RTK) <sup>1)</sup></b>	
	Dynamic RTK Positioning Accuracy, after initialisation	Horizontal: 10 mm + 1 ppm (rms) Vertical: 20 mm + 1 ppm (rms)
	<b>Accuracy (rms) with post processing <sup>1)</sup></b>	
	Static (phase) with long observations	Horizontal: 3 mm + 0.5 ppm (rms) Vertical: 6 mm + 0.5 ppm (rms)
	Kinematic (phase)	Horizontal: 10 mm + 1 ppm (rms) Vertical: 20 mm + 1 ppm (rms)
	<b>On-the-fly (OTF) initialisation</b>	
	RTK technology	Leica SmartCheck+ technology
	Reliability of OTF initialisation	Better than 99,99%
	Time for initialisation	Typically 4 sec <sup>2)</sup>
	OTF range	up to 70 km <sup>2)</sup>
	<b>Network RTK</b>	
	Network technology	Leica SmartRTK technology
	Supported RTK network solutions	iMAX, VRS, FKP
	Supported RTK network standards	MAC (Master Auxiliary Concept) approved by RTCM SC 104
<b>Hardware</b>	<b>Weight &amp; Dimensions</b>	
	Weight (iCG60)	1450 g (3,19 lb)
	Weight	3215g (7,16 lb) Standard RTK Network Rover, incl. iCG60, CC50 Controller with Bracket, Pole, Battery
	Dimensions	197 mm x 197 mm x 130 mm (7,76 in x 7,76 in x 5,12 in)
	<b>Environmental specifications</b>	
	Operating temperature	-40°C to +60°C (-40 F to +140 F)
	Storage temperature	-40°C to +85°C (-40 F to +185 F)
	Humidity	100%, compliance with ISO9022-12-04 and MIL STD 810F - 507.4-I
	Proof against: water, sand and dust	IP67 according IEC60529 and MIL STD 810F - 506.4-I, MIL STD 810F - 510.4-I and MIL STD 810F - 512.4-I, Protected against blowing rain and dust, Protected against temporary submersion into water (max. depth 1 m)
	Vibration	MIL-STD-810F, Figure 514.5C-3
	Shock	40g - 6msec; compliance ISO 9022-31-06, No loss of lock to satellite signal when used on a pole set-up and submitted to pole bumps up to 150 mm
	Drops	Withstands 1.2 m drop onto hard surfaces
	Topple over	Withstands topple over from a 2m pole onto hard surfaces
	<b>Power &amp; Electrical</b>	
	Supply voltage	Nominal 12 V DC, Range 9.0 - 28 V DC
	Power consumption	Typically 6W
	Internal power supply	1x recharge & removable Li-Ion battery, 2.6 Ah, 4.4 Ah or 6.0 Ah / 7.4 V, fit into receiver
	Internal power supply, operation time	<ul style="list-style-type: none"> <li>• 5:20 h receiving RTK data with standard radio <sup>3)</sup></li> <li>• 4:40 h transmitting RTK data with standard radio <sup>3)</sup></li> <li>• 5:00 h RTK via built-in HSPA connection <sup>3)</sup></li> </ul>
External power supply	Rechargeable external NiMH battery 9 Ah / 12 V; with voltage peak protection, Fullfils EN13309	
Certifications	Compliance to: FCC/IC Class B, CE, EN13309, C-Tick, ARIB STD-T66, RoHS, WEEE, ACPEIP	
<b>Memory &amp; Data Recording</b>	<b>Memory</b>	
	Internal memory	Built-in memory, 466 MB
	Data capacity	466 MB is typically sufficient for about GPS & GLONASS (8+4 satellites) 3'100 h raw data logging at 15 s rate
	<b>Data recording</b>	
	Type of data	Onboard recording of RINEX data
Recording rate	Up to 20 Hz	
<b>Interface</b>	Buttons	<ul style="list-style-type: none"> <li>• ON / OFF button</li> <li>• 6 function buttons (arrow keys - up/down/left/right, Enter, Esc)</li> </ul>
	Display	<ul style="list-style-type: none"> <li>• High resolution, 1.8" gray scale display with adjustable backlight</li> <li>• Provides full receiver status on main screen (position, satellite, radio, modem, battery, Bluetooth®, telematics, memory)</li> <li>• Several sub-menus for additional details</li> <li>• Various configurations in sub-menus, e.g. radio channel</li> <li>• Start Base Station with "Here" or type in coordinate</li> <li>• Start and configure raw data logging</li> </ul>
	LED status indicator	1x LED for detailed power status
	Additional functionality	BasePilot functionality (stores up to different 100 base station locations and configurations for quick daily start up without user interaction)

<b>Communication</b>	Communication ports	1x serial RS232 Lemo, PWR in, 12V PWR out 1x USB Host 1x UART serial & USB (for removable internal RTK devices) 1x TNC for external GNSS Antenna 1x Bluetooth® port, Bluetooth® v2.00+ EDR, class 2
	No. of simultaneous data links	Up to 3 real-time output interfaces via independent ports, providing identical or different RTK/ RTCM formats
	<b>Built In data links</b>	
	Radio modems	<ul style="list-style-type: none"> <li>• Optional additional fully integrated, fully sealed receive / transmit radios</li> <li>• User exchangeable device</li> <li>• SATEL M3 TR1: 403 – 470 MHz; up to 1.0 W output power; 4FSK and GMSK modulation</li> <li>• Intuicom; 902-928 MHz (licence free in North America); up to 1.0 W output power</li> </ul>
	Radio modem antenna	External antenna connector (Type QN)
	3G GSM / UMTS / HSPA phone modem	<ul style="list-style-type: none"> <li>• Built-in phone modem as default</li> <li>• User exchangeable SIM card</li> <li>• Quad-Band UMTS / HSPA: 850 / 900 / 1900 / 2100 MHz</li> <li>• Quad-Band GSM / GPRS: 850 / 900 / 1800 / 1900 MHz</li> <li>• Up to 7.2mbps downlink speed</li> </ul>
	3G GSM / UMTS / HSPA phone modem antenna	Integrated GSM / UMTS / HSPA antenna
	<b>External data links</b>	
	Radio modems	Support of any suitable serial RS232 UHF / VHF radios
	<b>Communication protocols</b>	
	Real-time data formats for data transmission	Leica, Leica 4G, CMR, RTCM 3.1, RTCM 3.2 MSM
	Real-time data formats for data reception	Leica, Leica 4G, Leica Lite, CMR, CMR+, RTCM v2.3, RTCM 3.1, RTCM 3.2 MSM
Web based protocol	NTRIP: receiving network corrections; built-in NTRIP Server and Caster to stream local corrections to multiple RTK rovers	

- <sup>1)</sup> Measurement precision and accuracy in position and accuracy in height are dependent upon various factors including number of satellites, geometry, observation time, ephemeris accuracy, ionospheric conditions, multipath etc. Figures quoted assume normal to favourable conditions. Times required are dependent upon various factors including number of satellites, geometry, ionospheric conditions, multipath etc. GPS and GLONASS can increase performance and accuracy by up to 30% relative to GPS only. A full Galileo, Beidou and GPS L5 constellation will further increase measurement performance and accuracy.
- <sup>2)</sup> Might vary due to atmospheric conditions, signal multipath, obstructions, signal geometry and number of tracked signals.
- <sup>3)</sup> Might vary with temperatures, age of battery, transmit power of data link device.

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**Leica iCON CC60/61**  
Rugged, mobile tablet PC with enhanced connectivity and functionality.



**Leica iCON CC50**  
Lightweight, handy PDA for easy and efficient field work.



**Leica iCON robot 60 CC50**  
High-end robotic total station with superior technology and iCON onboard.



**Leica Builder**  
Intuitive, powerful and scalable manual total station series for routine construction tasks on site.