All-in-one and one for all
Unmatched ROI

The Leica iCON gps 160 is a unique Smart Antenna for the construction industry. It is the most versatile construction antenna with numerous possible use-cases and broad range of on-site applications. Ideal for pole, base station and on-machine applications, the iCON gps 160 is ready to withstand on-site challenges and harsh conditions! Its integrated colour display and the industry's most intuitive software structure enable quick and easy setup by anyone, without additional equipment. The iCON gps 160 fully integrates into the existing iCON construction portfolio and the iCON site software. Equipped with a global modem, an integrated dual-frequency radio and smart software features, the Leica iCON gps 160 provides everything you need for your daily tasks - in one GNSS receiver!

For easy or complex positioning tasks, the iCON gps 160 smart features allow you to quickly and easily complete as-built, grade, cut and fill checks — or stake-out points and lines.

The perfect base station for your construction site! Make it permanent by attaching the iCON CGA100 and leaving the iCON gps 160 safely in the container.

For quick and efficient checks, install the iCON gps 160 on your vehicle to monitor the grade or quickly create cut and fill maps for your earthmoving machines.

Use the iCON gps 160 for easy, single grade machine-control applications, further increasing the utilisation of both the antenna and earthmoving machine.

iCON
intelligent CONstruction

Leica Geosystems intelligent CONstruction.

Whether you construct buildings, roads, bridges or tunnels, you benefit from intelligent CONstruction. Leica iCON is more than a new product line or software package; it's a complete solution that enables you to enhance your performance and increase your profitability through perfecting your construction workflow.

Understanding construction demands outstanding solutions:

- Custom-built
- Complete
- Straightforward
- High performance

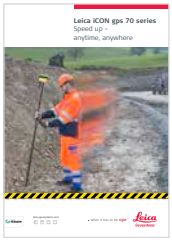
Leica Geosystems – when it has to be right

Revolutionising the world of measurement and survey for more than 200 years, Leica Geosystems, part of Hexagon, creates complete solutions for professionals across the planet. Known for premium products and innovative solution development, professionals in a diverse mix of industries, such as aerospace and defence, safety and security, construction, and manufacturing, trust Leica Geosystems for all their geospatial needs. With precise and accurate instruments, sophisticated software, and trusted services, Leica Geosystems delivers value every day to those shaping the future of our world.

Hexagon is a global leader in digital reality solutions, combining sensor, software, and autonomous technologies. We are putting data to work to boost efficiency, productivity, quality, and safety across industrial, manufacturing, infrastructure, public sector, and mobility applications.

Our technologies are shaping production and people-related ecosystems to become increasingly connected and autonomous – ensuring a scalable, sustainable future.

Hexagon (Nasdaq Stockholm: HEXA B) has approximately 23,000 employees in 50 countries and net sales of approximately 4.3bn EUR. Learn more at hexagon.com and follow us @HexagonAB.



Leica iCON gps 70 Series Brochure

Leica iCON site Brochure

Leica ConX Flyer

Leica Geosystems AG
Heinrich-Wild-Strasse
9435 Heerbrugg, Switzerland
+41 71 727 31 31

- when it has to be **right**

Leica Geosystems

Leica iCON gps 160
All-in-one and one for all

Leica iCON gps 160 - the one for all GNSS antenna

The unique smart features, intuitive workflows and the wide area of applications make the Leica iCON gps 160 the most versatile GNSS Smart Antenna in the construction industry. Maximising productivity and efficiency will result in a fast return on investment, even for our most demanding customers.

Customer Benefits

- Unmatched ROI due to the range of applications.
- Superior GNSS technology for high accuracy and reliability.
- Easily change between 400 MHz and 900 MHz with the integrated dual-frequency radio (US/CA only).
- Large colour display allows setup without additional equipment.
- Smart wizards and intelligent features tailored to construction workflows, allowing fast and easy configuration and use by anyone.
- HxGN SmartNet PPP bridges RTK connection gaps for up to 10 minutes, increasing uptime.
- For even more efficiency, the iCON gps 160 is optionally available with tilt compensation.

Leica iCON gps 160
Smarter than ever

Compact and Robust

IP68 rating – this compact Smart Antenna withstands even the toughest constructions sites – all day long.

HxGN SmartNet PPP

Precise Point Positioning (PPP) and RTK Bridging service optionally available.

Integrated Dual-Frequency Radio*

Radio frequency can be easily changed between 400 & 900 MHz.

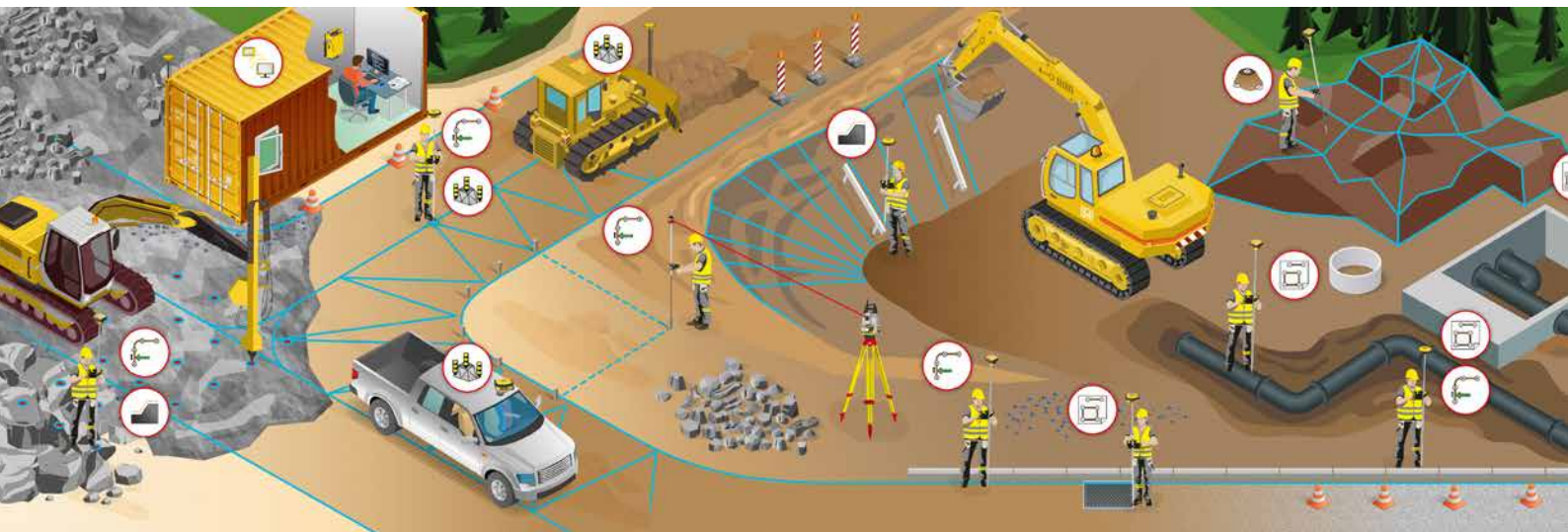
Colour Display

Easy setup and configuration without any additional hardware or software.

Permanent Tilt Compensation

Go a step further – increase your productivity further with tilt functionality that allows you to measure with a tilted pole.

* for US/CA only



Leica iCON gps 160 Smart Antenna

	Leica iCON gps 160 Base	Leica iCON gps 160 Value	Leica iCON gps 160 Performance	Leica iCON gps 160 Ultimate
SUPPORTED GNSS SYSTEMS				
Multifrequency (L2, L5, L-band)	✔	✔	✔	✔
GLONASS	✔	✔	✔	✔
Galileo	•	•	•	✔
BeiDou	•	•	•	✔
QZSS	•	•	•	•
RTK PERFORMANCE				
High-accuracy RTK	•	✔	✔	✔
RTK unlimited	•	✔	✔	✔
Network RTK	•	✔	✔	✔
HxGN SmartNet PPP	•	•	•	•
POSITION UPDATE & DATA RECORDING				
10 Hz positioning	•	✔	•	•
20 Hz positioning	✔	•	✔	✔
Raw data RINEX logging	✔	•	✔	✔
NMEA Output	•	•	•	✔
ADDITIONAL FEATURES				
RTK Reference Station functionality	✔	•	✔	✔
Leica ConX	•	•	•	•
Tilt compensation*	•	•	✔	✔
Interference mitigation	•	•	•	•

*Specific hardware variant required

✔ Standard / • Optional

Leica iCON gps 160 Smart Antenna Technical Data

GNSS TECHNOLOGY	
Self-learning GNSS	Adaptive on-the-fly satellite selection
GNSS technology	Leica-patented SmartTrack+ technology: • Advanced measurement engine • Jamming-resistant measurements • High-precision, pulse-aperture multipath correlator for pseudorange measurements • Minimum acquisition time
Leica SmartCheck	99.99% reliability
Signal tracking	GPS (L1 C/A, L2P, L2C, L5), Glonass (L1 C/A, L2P, L2C, L3), Galileo (E1, E5a, E5b, Alt-BOC, E6), BeiDou (B1I, B1C, B2I, B2a, B3I), QZSS (L1, L2C, L5, L6[1]), L-Band (Terrastar)
Number of channels	555 (more signals, fast acquisition, high sensitivity)
Tilt compensation[2]	Calibration-free Immune to magnetic disturbances
GNSS ANTENNA	
GNSS antenna options	• Fully-integrated GNSS antenna • External GNSS antenna connector (Type TNC)
External GNSS antenna options	CGA100: • GPS (L1 C/A, L2P, L2C, L5) • Glonass (L1 C/A, L2P, L2C, L3) • Galileo (E1, E5a, E5b, Alt-BOC, E6) • BeiDou (B1I, B1C, B2I, B2a, B3I) • QZSS (L1, L2C, L5, L6[1]) • L-Band (Terrastar)
MEASUREMENT PERFORMANCE & ACCURACY [2]	
Time for initialisation	Typically 4 sec
Real-time kinematic (Compliant to ISO17123-8 standard)	Single baseline: Hz 8 mm + 1 ppm / V 15 mm + 1 ppm
	Network RTK: Hz 8 mm + 0.5 ppm / V 15 mm + 0.5 ppm
Real-time kinematic tilt compensated[2)]	Additional Hz pole tip uncertainty typically less than 10 mm + 0.6 mm/° tilt down to 30° tilt
Post processing	Static (phase) with long observations: Hz 3 mm + 0.1 ppm / V 3.5 mm + 0.4 ppm
	Static and rapid static (phase): Hz 3 mm + 0.5 ppm / V 5 mm + 0.5 ppm
RTK bridging	Up to 10 min bridging of RTK outages, Hz 2.5 cm / V 5 cm
PPP	Initial convergence to full accuracy typically 10 min, Re-convergence < 1 min | Hz 2.5 cm / V 5 cm

NETWORK RTK	
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
COMMUNICATIONS INTERFACE	
Communication ports	1 x USB 2.0 1 x RS232 Serial Lemo, PWR in, 12V PWR out 1 x Bluetooth V5.0 Class 2 1 x USB 1 x TNC for external GNSS Antenna
UHF radio	• Optional integrated radio • Dual frequency[3] • SATEL TR489: 403 – 473 MHz; modulation: PacCrest 4FSK, GMSK & FST, Trimtalk 450s T & P, Satel 3AS, 8FSK & 16FSK; 902 – 928 MHz (license-free in North America), 1 W output power
UHF radio antenna	External antenna connector (Type TNC)
4G LTE / 3G HSPA / HSPA+ / WCDMA / UMTS	• Built-in cellular modem as default • User-exchangeable SIM card • 22-Band LTE: Band 1,2, 3, 4, 5, 7, 8, 9, 12, 13, 18, 19, 20, 26, 28, 29, 30, 32, 41, 42, 43, 46, 48, 66 • 9-Band UMTS / HSPA / HSPA+ / WCDMA: Band 1, 2, 4, 5, 6, 8, 9, 19 • Up to 600 Mbps downlink speed
Cellular modem antenna	Integrated LTE antenna
External data links	Support of any suitable serial RS232 UHF radios
Communication protocols	Real-time data formats for data transmission: Leica, Leica 4G, CMR, RTCM 3.1, RTCM 3.2 MSM 3 & 5
	Real-time data formats for data reception: Leica, Leica 4G, CMR, CMR+, RTCM v2.3, RTCM 3.1, RTCM 3.2 MSM x
	Network RTK: VRS, FKP, iMAX, MAX (RTCM SC 104)
Web based protocol	Built-in NTRIP client for network corrections reception and NTRIP Server and Caster to stream local corrections to multiple RTK rovers
INTERFACE	
Display	• High-resolution, 2.4" colour display with auto-adjustable backlight; Provides full receiver status on screen (position, satellite, radio, modem, battery, Bluetooth®, ConX, memory) • Several sub-menus for additional details • Various configurations in sub-menus (e.g. radio channel) • Start base station with 'Smart Get Here' or type in coordinates • Set up rover and coordinate system • Start and configure raw data logging
Web Interface	• Provides full receiver status (position, satellite, radio, modem, battery, Bluetooth®, ConX, memory) • Several sub-menus for additional details • Various configurations in sub-menus (e.g. radio channel) • Set up rover and coordinate system
Buttons	• On/Off button • 6 function buttons (arrow keys – up/down/left/right, enter, esc)
LED status indicator	1 × 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)
Field controller and software	Leica iCON CC170/CC180/CC200 field controller, Leica iCON field software
MEMORY & DATA RECORDING	
Internal Memory	8 GB
Data capacity	8 GB is typically sufficient for about GPS & GLONASS (8+4 satellites) 3'100 h raw data logging at a 1 s rate
Data recording	Leica GNSS raw data and RINEX data at up to 20 Hz
POWER MANAGEMENT	
Internal power supply	Exchangeable Li-Ion battery (3.45 Ah / 10.8 V)
External power supply	Nominal 12 V DC, range 9-35V DC
Operation time[4]	• 6:30 h receiving RTK data with integrated UHF radio • 7:30 h static observations • 7:20 h receiving RTK data via controller modem
WEIGHT & DIMENSIONS	
Weight	1.6 kg (including tilt option, radio and battery)
Dimensions	176 mm x 176 mm x 117 mm
ENVIRONMENTAL	
Temperature Operating	-40 °C to 65 °C
Temperature Storage	-40 °C to 85 °C
Drop	Withstands topple-over from a 2 m survey pole onto hard surfaces
Proof against water, sand and dust	IP66 / IP68 (IEC60529 / MIL STD 810G CHG-1 510.6 I / MIL STD 810G CHG-1 506.6 II / MIL STD 810G CHG-1 512.6 I)
Vibration	Withstands strong vibration (IEC 60068-2-6 / MIL-STD-810G, Fig. 514.6E-1; Category 24)
Humidity	95% (IEC 60068-2-30 / MIL STD 810G CHG-1 507.6 II)
Functional shock	45 g; 6 ms (IEC 60068-2-27)

[1] QZSS L6 will be provided through future firmware upgrade

[2] Measurement precision and accuracy in position, reacquisition and initialisation time, height and heading are dependent upon various factors including number of satellites, tracked signals, obstructions, geometry, observation time, ephemeris accuracy, atmospheric conditions, multipath etc. Figures quoted assume normal to favourable conditions. GPS and GLONASS can increase performance and accuracy by up to 30% relative to GPS only. A full Galileo and GPS L5 constellation will further increase measurement performance and accuracy.

[3] Only valid for USA & Canada

[4] Might vary with temperature, age of battery, transmit power of data link device.

Leica iCON. Understanding construction.