# Leica iCON robot 60
## Product information

**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 enables you to enhance your performance, and increase your profitability through perfecting your construction workflow.
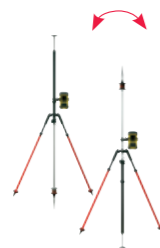
Understanding construction demands outstanding solutions:
- Custom-built
- Complete
- Straightforward
- High performance

**When it has to be right.**

intelligent CONstruction

**Leica MPR122, 360° prism**
Highly accurate target, suitable for machine control.

**CRP pole**
Flip pole to get best prism position.

**Leica iCON CC66**
Rugged, mobile tablet PC with enhanced connectivity and functionality.

**Leica iCON builder 60**
The intuitive user interface paired with the highest quality manual total station perfects any job.

**Leica iCON CC80**
Robust, light-weight tablet with multi touch-screen and versatile communication capabilities.

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

**Leica iCON gps 60**
Versatile SmartAntenna for multi-purpose positioning tasks.

**Leica Geosystems AG**
leica-geosystems.com

**Leica iCON robot 60 perfects one-person construction layout and 3D machine control.**
Its high performance tracking, innovative lock & find mechanisms and software that is tailored per work step, make it the ideal partner on site.
The powerful iCONstruct field software used as remote control optimises the functionality.

- Setup Pilot – world's first fully automatic setup measurement method
- Cube Search – boosts prism search to a maximum
- Target Snap – ignores other prisms, just locks to yours
- ATACK support for PaveSmart 3D

Electronic Guide Light (EGL) steers rod-man to line of sight

Long-range Bluetooth communication >350 m / 1.100 ft

Power Search up to 300 m / 1.000 ft

Automatic Target Recognition (ATR) > 600m / 2.000 ft

PinPoint measurements to any surface up to 1.000m / 3.280 ft

3.5" coloured touch screen with ambient light sensor (ALS)

iCONstruct software onboard

USB memory stick and SD card support

Speaker for sound notification

Button illumination

- when it has to be **right**
- when it has to be **right**

# Leica iCON robot 60
## One instrument for many tasks

**iCON** intelligent **CON**struction

## Applications

- Layout lines for footings or chalk line for formwork on foundation

- Layout points on blinding layer such as pipe insert or cut-outs before pouring concrete

- MEP layout of wall penetrations for pipes, hanger locations for HVAC and duct work, inserts and slits for sheet metal work

- Controlling a wide variety of machines, such as curb & gutter or milling machines, asphalt or concrete pavers, graders or dozers, rock drilling machines or excavators

## Hardware Features

- Cube Search builds a virtual cube around the prism position, dynamically updates its position and searches only within its dimensions when the tracking is interrupted.

- Industry leading coloured touch screen for best visibility
- Target Snap ensures to lock only to your pole or machine prism by excluding any "learned" points during a search routine

- Finish job in two-person mode if controller is unavailable

- PinPoint R1000 laser for highest measurement precision

## Software Features

- Setup Pilot automatically finds and measures all prisms in range, compares their geometry and calculates the total station's position without user interaction

- ATACK supports the automated track alignment procedure of curb & gutter and main line pavers

- Graphical map view for quick navigation and point/ line selection

- No matter if on-board manual total stations, in combination with GPS or on a tablet as remote control of robotic total stations, the same iCONstruct software is now seamlessly integrated across the entire portfolio

**Legend technical specifications:**
1. Standard deviation ISO 17123-3.
2. Overcast, no haze, visibility about 40 km; no heat shimmer.
3. Standard deviation ISO 17123-4.
4. To Round Prism GPR1.
5. Under optimal conditions on Kodak Grey Card (90% reflective). Maximum range varies with atmospheric conditions, target reflectivity and surface structure.
6. Distance >500 m 4 mm + 2 ppm.
7. Single measurement every 30 second at 25° C. Battery time may be shorter if battery is not new.
8. Reflectorless measurement time may vary according to measuring objects, observation situations and environmental conditions.
9. Target perfectly aligned to the instrument.

## Technical Specifications iCON robot 60

| Angle Measurement (Hz, V) | |
|---|---|
| Accuracy [1] | 1'' (0.3 mgon), 2'' (0.6 mgon), 5'' (1.5 mgon) |
| Method | Absolute, continuous, diametrical |
| Display resolution | 1" / 0.1 mgon |
| Compensation | Quadruple Axis compensation |
| Compensator setting accuracy | 0.5'' (0.2 mgon), 1.5'' (0.5 mgon) |

| Distance Measurement (Prism) | |
|---|---|
| **Range** [2] | |
| Round prism (Leica GRP1) | 3.500 m (12.000 ft) |
| 360° prism (MPR122, GRZ4, GRZ122) | 2.000 m (7.000 ft) |
| 360° mini prism (Leica CRZ101) | 1.000 m (3.300 ft) |
| Mini prism (Leica CRP111, GMP101) | 2.000 m (7.000 ft) |
| Reflective tape (60 mm x 60 mm) | 250 m (800 ft) |
| **Accuracy [3][4], Measurement time** | |
| Standard: | 1.0 mm + 1.5 ppm / typ. 2.4 s |
| Tracking: | 3.0 mm + 1.5 ppm / typ. <0.15 s |

| Distance Measurement (Any Surface) [8] | |
|---|---|
| Range [5] PinPoint R1000 | 1000 m (3.280 ft) |
| Accuracy [3][6], Measurement time | 2 mm + 2 ppm / typ. 3 s |
| Laser dot size | At 30 m: approx. 7 x 10 mm |
| | At 50 m: approx. 8 x 20 mm |
| Shortest measurable distance | 1.5 m |

| Data storage / Communication | |
|---|---|
| Internal memory | 1 GB, > 50.000 points |
| USB memory stick | 1 GB |
| SD card | 8 GB |
| Interfaces | – Serial (Baudrate up to 115'200) |
| | – USB Type A and mini B, |
| | – Bluetooth® Wireless, class 1 |
| | – Bluetooth® > 1000 m (with TCPS29-S) |
| Data formats | TXT/CSV (ASCII), DXF, HeXML, TRM, GEO, LIN |

| Guide Light (EGL) | |
|---|---|
| Working range (average atmospheric conditions) | 5 m – 150 m |
| Positioning accuracy | 5 cm at 100 m |

| Telescope | |
|---|---|
| Magnification | 30 x |
| Field of View | 1° 30' (1.66 gon) |
| | 2.7 m at 100 m |
| Focusing range | 1.7 m to infinity |

| Keyboard & Display | |
|---|---|
| Display | High resolution Color & Touch display, 65'000 colors, graphics, Full-VGA, display illumination, 10 brightness levels |
| Keyboard | 22 keys (4 function keys, 12 alphanumeric keys), illumination |

| Operating System & Processor | |
|---|---|
| Operating system | Windows CE 6.0 |
| Processor | Freescale i.MX31 533 MHz ARM Core |

| Laserplummet | |
|---|---|
| Type | Laser point |
| Centering accuracy | 1.5 mm at 1.5 m Instrument height |

| Internal Battery | |
|---|---|
| Type | Lithium-Ion |
| Operating time [7] | approx. 5-7 hours |

| Weight | |
|---|---|
| Total station including battery GEB222 and tribrach | 5.9 kg |
| Height / Width / Length | 345 mm / 226 mm / 203 mm |

| Environmental | |
|---|---|
| Working / Storage temperature range | -20° C to +50° C / -40° C to +70° C |
| Dust / Water (IEC 60529) Humidity | IP55, 95%, non condensing |

### Leica iCONstruct Onboard Software

| Functionality of iCON robot 60 Starter Kit | Data settings, Communication settings, Levelling, Field Calibration |
|---|---|
| Extra functionality | iCON build, iCON site, iCON build plus, iCON site plus, iCON app "Sketch", iCON app "Volumes", iCON app "Stakeout", iCON app "Control Line", iCON app "As-Built", iCON app "Layout Lines", iCON app "Cut & Fill", iCON app "Roading", iCON app "Slopes", iCON app "Checks", iCON app "Machine Control", Power Search Option, Reflectorless Option, Setup Pilot Option, Target Snap Option, Cube Search Option, ATACK Option, iCONstruct MC Kit |

### Leica iCONstruct MC Kit

| Includes | Data Settings, Communication Settings, Levelling, Field Calibration, Instrument Setup, Measure app, Machine Control app, Power Search, Setup Pilot, Target Snap, Cube Search. |
|---|---|

## One-person or Machine Control Mode

| Motorization | Rotation speed | 45° (50 gon) / s | |
|---|---|---|---|

| Automatic Target Aiming (ATR) | Range | ATR Mode | Lock Mode |
|---|---|---|---|
| | Round prism (GPR1) | 1000 m (3300 ft) | 800 m (2600 ft) |
| | 360° prism (MPR122, GRZ4, GRZ122) | 800 m (2600 ft) | 600 m (2000 ft) |
| | 360° mini prism (GRZ101) | 350 m (1150 ft) | 200 m (660 ft) |
| | Mini prism (GMP101) | 500 m (1600 ft) | 400 m (1300 ft) |
| | Reflective tape (60 mm x 60 mm) | 45 m (150 ft) | – |
| | Shortest distance to 360° prism | 1.5 m | 5 m |
| | **Maximum Speed (Lock Mode)** | | |
| | Tangential (standard mode) | 5 m / s at 20 m, 25 m / s at 100 m | |
| | Radial (tracking mode) | 4 m / s | |
| | **Searching** | | |
| | Search time in field of view | Typ. 1.5 s | |
| | Field of View | 1° 30' (1.66 gon) | |

| Power Search (PS) | Range | | |
|---|---|---|---|
| | Round prism (GPR1) | 300 m (1000 ft) | |
| | 360° prism [9] (MPR122, GRZ4, GRZ122) | 300 m (1000 ft) | |
| | Mini prism (CPR111, GMP101) | 100 m (330 ft) | |
| | Shortest distance | 1.5 m | |
| | **Searching** | | |
| | Typical search time | 5 – 10 s | |
| | Default search area | Hz: 360° (400 gon), V: 36° (40 gon) | |
| | Definable default search | Yes: Prediction / Cube Search / Power Search Window / 360° Search or combination | |
| | Dynamic search window | Cube Search | |
| | Definable search windows | Yes | |