# Leica iCS20/iCS50


User Manual
**Version 1.1**
**English**

- when it has to be **right**

Leica Geosystems

PART OF HEXAGON

# Introduction

This manual contains important safety directions as well as instructions for setting up the product and operating it. Refer to 1 Safety Directions for further information.

Read carefully through the User Manual before you switch on the product.

☞ Keep for future reference!

☞ The content of this document is subject to change without prior notice. Ensure that the product is used in accordance with the latest version of this document.

Updated versions are available for download at the following Internet address:

https://myworld-portal.leica-geosystems.com/ > myDownloads

**Product identification**

The model and serial number of your product are indicated on the type label.

Always refer to this information when contacting your agency or Leica Geosystems authorised service centre.

**Trademarks**

- *Bluetooth*® is a registered trademark of Bluetooth SIG, Inc.
- Windows® is a registered trademark of Microsoft Corporation in the United States and other countries

All other trademarks are the property of their respective owners.

**Available documentation**

| Name | Description/Format | | | |
|---|---|---|---|---|
| | | | PDF | HTML |
| iCS20/iCS50 Quick Start | Provides an overview of the product. Intended as a quick reference guide. | ✓ | ✓ | – |
| iCS20/iCS50 User Manual | All instructions required in order to operate the product to a basic level are contained in the User Manual. Provides an overview of the product together with technical data and safety directions. | – | ✓ | – |
| iCS20/iCS50 Important Safety Instructions | Provides a summary of the most important safety directions. Intended as a quick reference guide. | ✓ | ✓ | – |
| iCON trades HTML5 Help | Overall comprehensive guide to the software functions. Included are detailed descriptions of special software settings and software functions. | – | – | ✓ |

**Refer to the following resources for all iCS20/iCS50 documentation/software:**

- https://myworld-portal.leica-geosystems.com/

## Leica Geosystems address book

On the last page of this manual, you can find the address of Leica Geosystems headquarters. For a list of regional contacts, please visit http://leica-geosystems.com/contact-us/sales_support.

myWorld

https://myworld-portal.leica-geosystems.com/ offers a wide range of services, information and training material.

With direct access to myWorld, you are able to access all relevant services whenever it is convenient for you.

The availability of services depends on the instrument model.

| Service | Description |
|---|---|
| My Products | Register all products that you and your company own and explore your world of Leica Geosystems: View detailed information on your products and update your products with the latest software and keep up-to-date with the latest documentation. |
| My Service | View the current service status and full service history of your products in Leica Geosystems service centres. Access detailed information on the services performed and download your latest calibration certificates and service reports. |
| My Support | Create new support requests for your products that will be answered by your local Leica Geosystems support team. View your complete support history and view detailed information on all your support requests. |
| Knowledge | Enter key words and start searching in our knowledge base. You can find FAQs (Frequently asked questions) as well as Knowledge articles for Leica Geosystems products. |
| Downloads | Downloads of software, manuals, tools, training material and news for Leica Geosystems products. Download the latest documentation and software to keep yourself and your products up-to-date. You can access downloads of software, manuals, tools, and training material. |
| Online Learning | Welcome to the home of Leica Geosystems online learning! There are numerous online courses – available to all customers with products that have valid CCPs (Customer Care Packages). |
| My SmartNet | Add and view your HxGN SmartNet subscriptions and user information. HxGN SmartNet delivers high-precision and high-availability GNSS network correction services in real-time and around the globe. The HxGN SmartNet Global family offers Network RTK with RTK bridging and Precise Point Positioning (PPP) services. These services work exclusively with Leica Geosystems GS smart antennas and receivers, providing the highest accuracy. Combined, they ensure HxGN SmartNet coverage everywhere. |

| Service | Description |
| --- | --- |
| My Trusted Services | Leica Geosystems Trusted Services offer you increased productivity while at the same time providing maximum security. New software services and state-of-the-art IT infrastructure offer a vast potential to optimise your workflow and increase your efficiency and productivity, both now and in the future. |
| My Security | Leica Geosystems Security delivers you total peace-of-mind in knowing that if your instrument is ever stolen, a locking mechanism is available to ensure that the instrument is disabled and can no longer be used. |

# Table of Contents

# 1 Safety Directions

## 1.1 General Introduction

**Description**

The following directions enable the person responsible for the product, and the person who actually uses the equipment, to anticipate and avoid operational hazards.

The person responsible for the product must ensure that all users understand these directions and adhere to them.

**About warning messages**

Warning messages are an essential part of the safety concept of the instrument. They appear wherever hazards or hazardous situations can occur.

**Warning messages...**

- make the user alert about direct and indirect hazards concerning the use of the product.
- contain general rules of behaviour.

For the users' safety, all safety instructions and safety messages shall be strictly observed and followed! Therefore, the manual must always be available to all persons performing any tasks described here.

**DANGER**, **WARNING**, **CAUTION** and **NOTICE** are standardised signal words for identifying levels of hazards and risks related to personal injury and property damage. For your safety, it is important to read and fully understand the following table with the different signal words and their definitions! Supplementary safety information symbols may be placed within a warning message as well as supplementary text.

| Type | Description |
|---|---|
| ⚠ **DANGER** | Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury. |
| ⚠ **WARNING** | Indicates a potentially hazardous situation or an unintended use which, if not avoided, could result in death or serious injury. |
| ⚠ **CAUTION** | Indicates a potentially hazardous situation or an unintended use which, if not avoided, may result in minor or moderate injury. |
| ***NOTICE*** | Indicates a potentially hazardous situation or an unintended use which, if not avoided, may result in appreciable material, financial and environmental damage. |
| ☞ | Important paragraphs which must be adhered to in practice as they enable the product to be used in a technically correct and efficient manner. |

**Additional symbols**

| | |
|---|---|
|  | Warning against flammable substances. |

| | |
|---|---|
|  | Warning against explosive material. |
|  | Product must not be opened or modified or tampered with. |
|  | Indicates the temperature limits at which the product may be stored, transported or used. |

## 1.2 Definition of Use

**Intended use**

- Measuring horizontal and vertical angles
- Measuring distances
- Capturing and recording images
- Recording measurements
- Automatic target search, recognition and tracking
- Remote control of product
- Data communication with external appliances

**Reasonably foreseeable misuse**

- Use of the product without instruction
- Use outside of the intended use and limits
- Disabling of safety systems
- Removal of hazard notices
- Opening the product using tools, for example a screwdriver, unless this is permitted for certain functions
- Modification or conversion of the product
- Use after misappropriation
- Use of products with recognisable damage or defects
- Use with accessories from other manufacturers without the prior explicit approval of Leica Geosystems
- Inadequate safeguards at the working site
- Aiming directly into the sun

## 1.3 Limits of Use

**Environment**

Suitable for use in an atmosphere appropriate for permanent human habitation. Not suitable for use in aggressive or explosive environments.

**⚠WARNING**

**Working in hazardous areas or close to electrical installations or similar situations**

Life Risk.

**Precautions:**

- ▸ Local safety authorities and safety experts must be contacted by the person responsible for the product before working in such conditions.

## 1.4 Responsibilities

**Manufacturer of the product**

Leica Geosystems AG, CH-9435 Heerbrugg, hereinafter referred to as Leica Geosystems, is responsible for supplying the product, including the User Manual and original accessories, in a safe condition.

**Person responsible for the product**

The person responsible for the product has the following duties:

- To understand the safety instructions on the product and the instructions in the User Manual
- To ensure that the product is used in accordance with the instructions
- To be familiar with local regulations relating to safety and accident prevention
- To stop operating the system and inform Leica Geosystems immediately if the product and the application become unsafe
- To ensure that the national laws, regulations and conditions for the operation of the products are respected

## 1.5 Hazards of Use

***NOTICE***

**Dropping, misusing, modifying, storing the product for long periods or transporting the product**

Watch out for erroneous measurement results.

**Precautions:**

- ▸ Periodically carry out test measurements and perform the field adjustments indicated in the User Manual, particularly after the product has been subjected to abnormal use as well as before and after important measurements.

**⚠ DANGER**

**Risk of electrocution**

Because of the risk of electrocution, it is dangerous to use poles, levelling staffs and extensions in the vicinity of electrical installations such as power cables or electrical railways.

**Precautions:**

- ▸ Keep at a safe distance from electrical installations. If it is essential to work in this environment, first contact the safety authorities responsible for the electrical installations and follow their instructions.

***NOTICE***

**Remote control of product**

With the remote control of products, it is possible that extraneous targets will be picked out and measured.

**Precautions:**

- ▸ When measuring in remote control mode, always check your results for plausibility.

**⚠WARNING**

**Lightning strike**

If the product is used with accessories, for example masts, staffs, poles, you may increase the risk of being struck by lightning.

**Precautions:**

- Do not use the product in a thunderstorm.

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**⚠WARNING**

**Distraction/loss of attention**

During dynamic applications, for example stakeout procedures, there is a danger of accidents occurring if the user does not pay attention to the environmental conditions around, for example obstacles, excavations or traffic.

**Precautions:**

- The person responsible for the product must make all users fully aware of the existing dangers.

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**⚠WARNING**

**Inadequate securing of the working site**

This can lead to dangerous situations, for example in traffic, on building sites and at industrial installations.

**Precautions:**

- Always ensure that the working site is adequately secured.
- Adhere to the regulations governing safety, accident prevention and road traffic.

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**⚠CAUTION**

**Pointing product toward the sun**

Be careful when pointing the product toward the sun, because the telescope functions as a magnifying glass and can injure your eyes and/or cause damage inside the product.

**Precautions:**

- Do not point the product directly at the sun.

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**⚠CAUTION**

**Not properly secured accessories**

If the accessories used with the product are not properly secured and the product is subjected to mechanical shock, for example blows or falling, the product may be damaged or people can sustain injury.

**Precautions:**

- When setting up the product, make sure that the accessories are correctly adapted, fitted, secured, and locked in position.
- Avoid subjecting the product to mechanical stress.

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**⚠WARNING**

**Inappropriate mechanical influences to batteries**

During the transport, shipping or disposal of batteries it is possible for inappropriate mechanical influences to constitute a fire hazard.

**Precautions:**

- Before shipping the product or disposing it, discharge the batteries by the product until they are flat.
- When transporting or shipping batteries, the person in charge of the product must ensure that the applicable national and international rules and regulations are observed.
- Before transportation or shipping, contact your local passenger or freight transport company.

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**⚠WARNING**

**Exposure of batteries to high mechanical stress, high ambient temperatures or immersion into fluids**

This can cause leakage, fire or explosion of the batteries.

**Precautions:**

- Protect the batteries from mechanical influences and high ambient temperatures.
- Consider the product's IP class restrictions in chapter 7 Technical Data.
- Do not drop or immerse the product into fluids.

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**⚠WARNING**

**Short circuit of battery terminals**

If battery terminals are short circuited e.g. by coming in contact with jewellery, keys, metallised paper or other metals, the battery can overheat and cause injury or fire, for example by storing or transporting in pockets.

**Precautions:**

- Make sure that the battery terminals do not come into contact with metallic/conductive objects.

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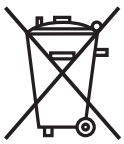
**⚠WARNING**

**Improper disposal**

If the product is improperly disposed of, the following can happen:

- If polymer parts are burnt, poisonous gases are produced which may impair health.
- If batteries are damaged or are heated strongly, they can explode and cause poisoning, burning, corrosion or environmental contamination.
- By disposing of the product irresponsibly you may enable unauthorised persons to use it in contravention of the regulations, exposing themselves and third parties to the risk of severe injury and rendering the environment liable to contamination.

**Precautions:**

▸ 

The product must not be disposed with household waste. Dispose of the product appropriately in accordance with the national regulations in force in your country. Always prevent access to the product by unauthorised personnel.

Product-specific treatment and waste management information can be received from your Leica Geosystems distributor.

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**⚠WARNING**

**Improperly repaired equipment**

Risk of injuries to users and equipment destruction due to lack of repair knowledge.

**Precautions:**

▸ Only authorised Leica Geosystems Service Centres are entitled to repair these products.

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**⚠CAUTION**

**Moving parts at the product during operation**

Risk of squeezing extremities or entanglement of hair and/or clothes.

**Precautions:**

▸ Keep a safe distance to the moving parts.

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☞ If the instrument moves unexpectedly during operation, stop the instrument via user interface (display, key) or alternatively remove the battery or main power source to prevent further movements.

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**⚠CAUTION**

**Components may get hot during operation and stay hot after operation**

Risk of burning injuries.

**Precautions:**

▸ Avoid touching hot components.
▸ Wait until hot components cool down after operation.
▸ Wear gloves if you have to touch possibly hot components.

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**For the AC/DC power supply and the battery charger:**

**⚠WARNING**

**Electric shock due to use under wet and severe conditions**

If unit becomes wet, it may cause you to receive an electric shock.

**Precautions:**

- If the product becomes humid, it must not be used!
- Use the product only in dry environments, for example in buildings or vehicles.

- Protect the product against humidity.

## 1.6 Laser Classification

### 1.6.1 General

**General**

The following chapters provide instructions and training information about laser safety according to international standard IEC 60825-1 (2014-05) and technical report IEC TR 60825-14 (2004-02). The information enables the person responsible for the product and the person who actually uses the equipment, to anticipate and avoid operational hazards.

☞ According to IEC TR 60825-14 (2004-02), products classified as laser class 1, class 2 and class 3R do not require:
- laser safety officer involvement
- protective clothes and eyewear
- special warning signs in the laser working area

if used and operated as defined in this User Manual due to the low eye hazard level.

☞ National laws and local regulations could impose more stringent instructions for the safe use of lasers than IEC 60825-1 (2014-05) and IEC TR 60825-14 (2004-02).

### 1.6.2 Invisible Laser

**General**

The EDM module built into the product produces an invisible laser beam which emerges from the telescope objective.

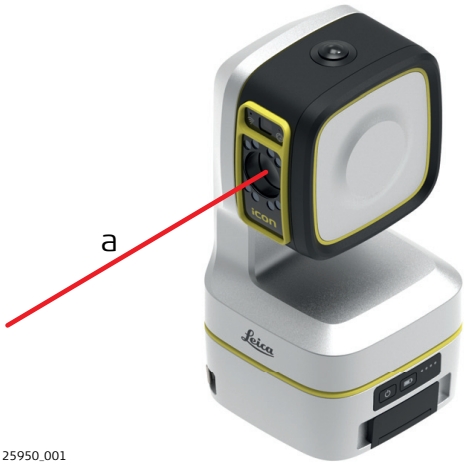
The laser product described in this section is classified as laser class 1 in accordance with:

- IEC 60825-1 (2014-05): "Safety of laser products"

These products are safe under reasonably foreseeable conditions of operation and are not harmful to the eyes provided that the products are used and maintained in accordance with this User Manual.

| Description | Value |
|---|---|
| Maximum average radiant output power | 0.5 mW |
| Wavelength | 785 nm |
| Pulse duration | < 0.8 ns |
| Pulse repetition frequency | 320 MHz |

| Description | Value |
|---|---|
| Beam divergence | < 1.5 mrad |




a Laser beam

## 1.6.3 Red Laser Pointer

**General**

The Leica iCS20/iCS50 produces a visible laser beam which emerges from the front of the instrument.

The laser product described in this section is classified as laser class 2 in accordance with:

- IEC 60825-1 (2014-05): "Safety of laser products"

These products are safe for momentary exposures but can be hazardous for deliberate staring into the beam. The beam may cause dazzle, flash-blindness and after-images, particularly under low ambient light conditions.

| Description | Value |
|---|---|
| Maximum average radiant output power | 0.9 mW |
| Wavelength | 655 nm |
| Pulse duration | 10 µs |
| Pulse repetition frequency | 39 kHz |
| Beam divergence | < 1.5 mrad |

**⚠CAUTION**

**Class 2 laser product**

From a safety perspective, class 2 laser products are not inherently safe for the eyes.

**Precautions:**

- ▸ Avoid staring into the beam or viewing it through optical instruments.
- ▸ Avoid pointing the beam at other people or at animals.

**⚠CAUTION**

**Laser beam**

From a safety perspective, class 2 laser products are not inherently safe for the eyes.

**Precautions:**

- Avoid staring into the beam.
- Avoid pointing the beam at other people or at animals.

**Labelling**


25955_001

## 1.6.4 Automatic Target Aiming (ATR)

**General**

The Automatic Target Aiming built into the product produces a visible light beam emitted from a diode which emerges from the front side of the telescope.

☞ The product described in this section, is excluded from the scope of IEC 60825-1 (2014-05): “Safety of laser products”.

The product described in this section, is classified as exempt group in accordance with IEC 62471 (2006-07) and does not pose any hazard provided that the product is used and maintained in accordance with this User Manual.

## 1.6.5 Spotlight

**General**

The spotlight built into the product produces a visible light beam emitted from a diode which emerges from the front side of the telescope.

☞ The product described in this section, is excluded from the scope of IEC 60825-1 (2014-05): “Safety of laser products”.

The product described in this section, is classified as exempt group in accordance with IEC 62471 (2006-07) and does not pose any hazard provided that the product is used and maintained in accordance with this User Manual.

## 1.7 Electromagnetic Compatibility (EMC)

**Description**

The term Electromagnetic Compatibility is taken to mean the capability of the product to function smoothly in an environment where electromagnetic radiation and electrostatic discharges are present, and without causing electromagnetic disturbances to other equipment.

**⚠CAUTION**

**Electromagnetic radiation**

Electromagnetic radiation can cause disturbances in other equipment.

**Precautions:**

- Although the product meets the strict regulations and standards which are in force in this respect, Leica Geosystems cannot completely exclude the possibility that other equipment may be disturbed.

**⚠CAUTION**

**Use of the product with accessories from other manufacturers. For example, field computers, personal computers or other electronic equipment, non-standard cables or external batteries**

This may cause disturbances in other equipment.

**Precautions:**

- Use only the equipment and accessories recommended by Leica Geosystems.
- When combined with the product, other accessories must meet the strict requirements stipulated by the guidelines and standards.
- When using computers, two-way radios or other electronic equipment, pay attention to the information about electromagnetic compatibility provided by the manufacturer.

**⚠CAUTION**

**Intense electromagnetic radiation. For example, near radio transmitters, transponders, two-way radios or diesel generators**

Although the product meets the strict regulations and standards which are in force in this respect, Leica Geosystems cannot completely exclude the possibility that the function of the product may be disturbed in such an electromagnetic environment.

**Precautions:**

- Check the plausibility of results obtained under these conditions.

**⚠CAUTION**

**Electromagnetic radiation due to improper connection of cables**

If the product is operated with connecting cables, attached at only one of their two ends, the permitted level of electromagnetic radiation may be exceeded and the correct functioning of other products may be impaired. For example, external supply cables or interface cables.

**Precautions:**

- While the product is in use, connecting cables, for example product to external battery or product to computer, must be connected at both ends.

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**⚠WARNING**

**Use of product with radio or digital cellular phone devices**

Electromagnetic fields can cause disturbances in other equipment, installations, medical devices, for example pacemakers or hearing aids, and aircrafts. Electromagnetic fields can also affect humans and animals.

**Precautions:**

- Although the product meets the strict regulations and standards which are in force in this respect, Leica cannot completely exclude the possibility that other equipment can be disturbed or that humans or animals can be affected.
- Do not operate the product with radio or digital cellular phone devices in the vicinity of filling stations or chemical installations, or in other areas where an explosion hazard exists.
- Do not operate the product with radio or digital cellular phone devices near medical equipment.
- Do not operate the product with radio or digital cellular phone devices in aircrafts.
- Do not operate the product with radio or digital cellular phone devices for long periods with the product immediately next to your body.

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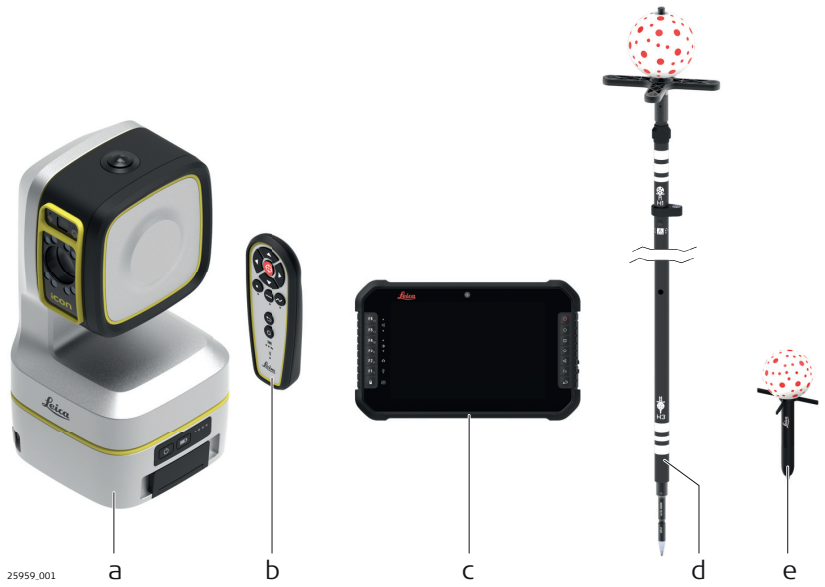
# 2 Description of the System

## 2.1 System Components

### Main components




a iCS20/iCS50
b RC10 Remote Control
c Leica tablet - CSX8
d vPole
e vPen

| Component | Description |
|---|---|
| iCS20/iCS50 | The iCS20/iCS50 is a multi-purpose construction tool suitable for layout, two- and three-dimensional measurement and digital templating work.<br>To operate the iCS20/iCS50, the iCON trades software running on an Android tablet is needed. |
| Leica tablet - CSX8 | A multipurpose field controller allowing the remote control of the iCS20/iCS50 via Wi-Fi. |
| RC10 Remote Control | Remote Control to perform certain functions. |
| vPen | Unique wireless measuring pen which can be used to measure on any surface, including glass.<br>The unique visual-based target tracking ensures that the Leica iCON iCS50 always stays connected to the Leica vPen. |
| vPole | Unique wireless measuring pole which can be used to perform complex layout tasks.<br>The unique visual-based target tracking is very robust and ensures that the Leica iCON iCS50 always stays connected to the Leica vPole. It also automatically compensates for pole tilt and automatically detects the pole height. |

### Terms and abbreviations

The following terms and abbreviations can be found in this manual:

| Term | Description |
|---|---|
| EDM | Electronic Distance Measurement<br>EDM refers to the laser distancer incorporated into the construction tool which enables distance measurement. Two measuring modes are available:<br>• Prism mode. This mode refers to the ability to measure distances to prisms.<br>• Reflectorless mode. This mode refers to the ability to measure distances without prisms. |
| ATR | Automatic Target Aiming is the centring on the target in the Field of View. |
| vSearch | Refers to the imaging based procedure which enables the automatic finding of a vPen and vSphere. |

**Features of iCS20/ iCS50**

- Angle measurement
- Distance measurement to prism
- Distance measurement to any surface (reflectorless)
- Motorised
- Automatic Target Aiming
- USB-C interface
- Wi-Fi
- Tilt compensation
- Li-Ion battery

**Features of remote control**

- Bluetooth
- USB-C interface
- Li-Ion battery

## 2.2 System Concept

### 2.2.1 Software Concept

**Description**

All models use the same software concept.

**Firmware update**

1. To update the firmware, use the tablet to check the latest firmware versions.
2. iCON trades checks automatically for updates for the iCS20/iCS50 when connecting the tablet to the Internet.
   OR
   Check for updates in iCON trades in **Device Manager\Info\Check for updates**.

**Licence activation**

Licences are key codes to enable software functions and applications which run on the construction tool.

You can order new licences by contacting your local Leica Geosystems representative.

1. For licence activation, a tablet PC with Internet connection is needed.
2. Establish a connection between the device and iCON trades.
3. Activation is done via iCON trades in **Device Manager\Licences**.

☞ If the licence activation fails: Contact your local Leica Geosystems representative or create a support request on myWorld.

## 2.2.2 Power Concept

**General**

The construction tool has got a built-in battery in the base. The battery itself cannot be exchanged. The base of the construction tool can be exchanged when damaged. By exchange, a new battery pack is included.

Use chargers and accessories recommended by Leica Geosystems to ensure the correct functionality of the construction tool.

☞ Only Leica Geosystems authorised service workshops are entitled to replace the battery socket.

**iCS20/iCS50 power supply**

**Internal:** By battery pack, with non-removable Li-Ion battery, 11-17 V, 77.76 Wh

**External:** Power supply connected by cable. Voltage 22-24 V, 2.5 A


a Battery pack
b Power supply connector

## 2.2.3 Data Storage Concept

**Description**

Measurements and pictures are stored on the connected tablet (Leica tablet or another supported tablet). Each tablet has its own interfaces such as mini-USB, USB Type-C connector, or similar.

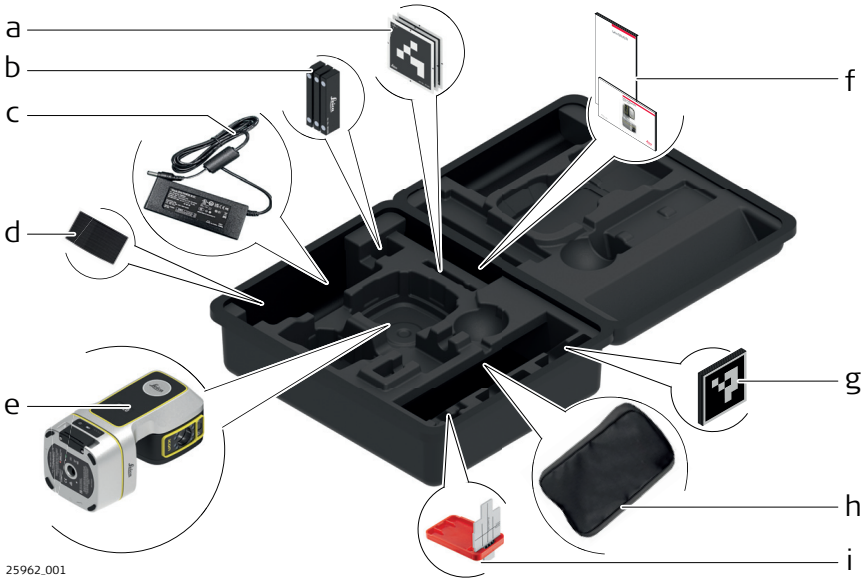
☞ Unplugging connecting cables, removing the data storage device or interrupting the power supply during the measurement can cause loss of data. Only remove the data storage device, unplug connecting cables or interrupt the power supply when the instrument is switched off.

**Transfer data**

Data can be transferred in various ways.

## 2.3 Container Contents

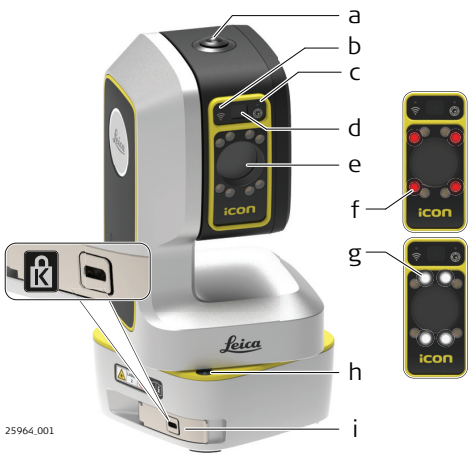
**Container contents**




a CVT3, vTarget plate, three pieces
b CVT4, stand for vTarget plate, three pieces
c CBC51, charger for indoor use
d GVP748, shoulder strap
e iCS20/iCS50 construction tool
f Leica iCS20/iCS50 Quick Start and Important Safety Instructions
g CVT5, vTarget sticker, 20 pieces
h GVP755, pouch for tablet
i GZM3 target plate

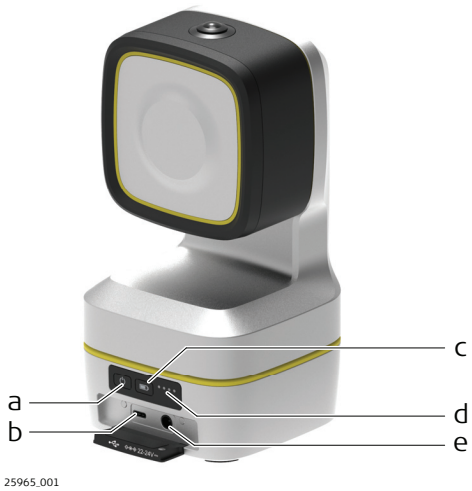
## 2.4 Components

**iCS20/iCS50 components part 1 of 2**



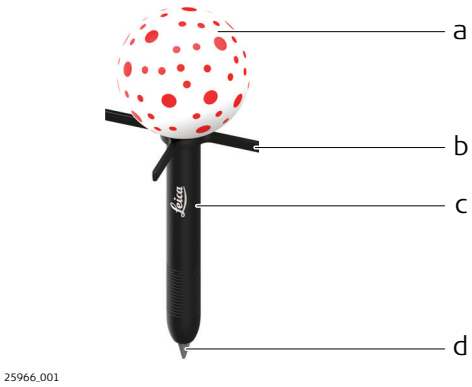

a Fish-eye camera
b Connection status LED
c Level status LED
d Overview camera
e On-axis camera
f ATR LED
g Spotlight LED
h Bubble
i KENSINGTON LOCK: The Kensington Slot is the standard slot that can be paired with a standard security cable lock. Compatible to Kensington type MicroSaver 2.0 Keyed Laptop Lock

## iCS20/iCS50 components part 2 of 2



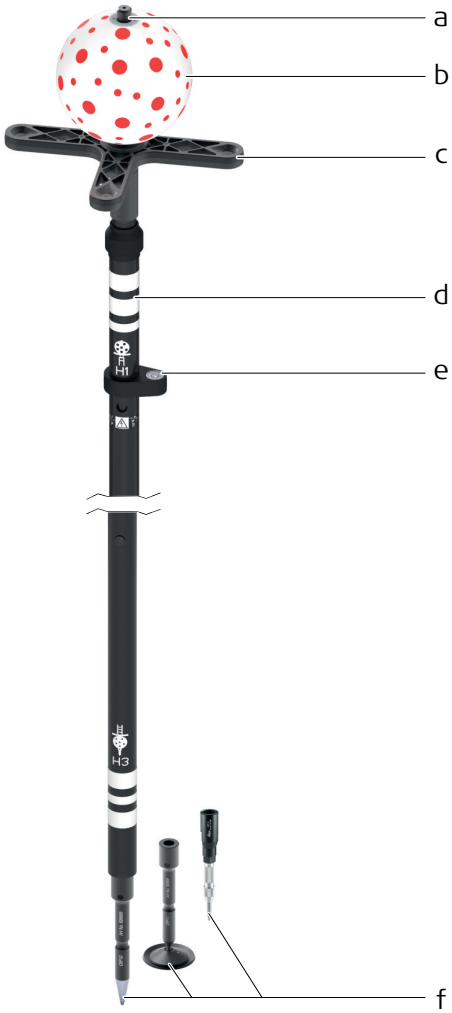

a Power ON/OFF
b USB port
c Check battery level
d Battery status LED
e Power supply connector

## vPen components




a vSphere
b Roll protection
c Pen
d Exchangeable tip

## vPole components




a 5/8″ thread
b vSphere
c Topple over protection
d Pole and printed markings for height detection
e Level bubble
f Exchangeable tips

### Exchangeable tips

| Name | Description |
|---|---|
| CRP10 | Construction pole tip |
| CRP11 | Construction pole plate |
| CRP12 | Center punch tip for CRP poles |

## Remote control components

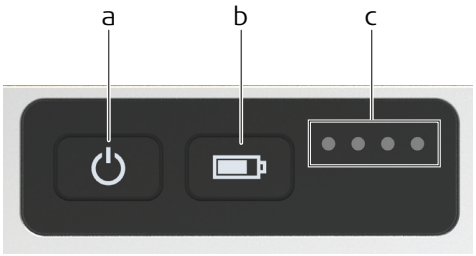

a Keypad
b Battery status LEDs
c Connection status LED
d USB-C port

# 3 User Interface

## 3.1 Keyboard

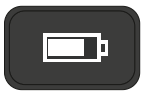
### 3.1.1 iCS20/iCS50

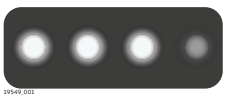
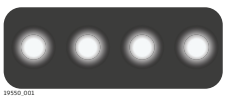
**Keys on the base**



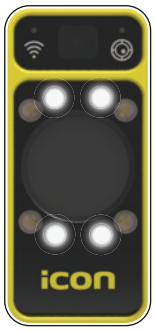

a ON/OFF key
b Check battery level
c Battery status LEDs

**Key functions and LED behaviour**

| Key functions | |
|---|---|
| ON/OFF  | • Press and hold for 0.5 s to turn on the construction tool.<br>• Press and hold for 2 s to turn off the construction tool.<br>• Press and hold for more than 7.5 s to reset the construction tool. |
| Battery status  | • Press the button to check the current battery level.<br>☞ The LEDs are turned off automatically after 2 s. |

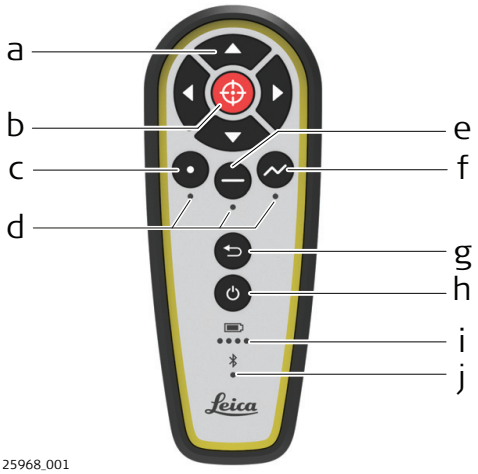
| LED behaviour | |
|---|---|
| Battery | **Construction tool turned ON using power supply from built-in battery.** |
|  | All flashing white:<br>≤10% |
|  | One LED permanently white:<br>10% to 25% |
|  | Two LEDs permanently white:<br>25% to 50% |
|  | Three LEDs permanently white:<br>50% to 75% |
|  | All LEDs permanently white:<br>75% to 100% |

| LED behaviour | | |
|---|---|---|
| | **Construction tool turned ON using power supply from electrical socket.**<br>OR<br>**Construction tool turned OFF using power supply from electrical socket.** | |
| |  | One LED flashing white:<br>Charging battery 0% to 25% |
| |  | One LED permanently white, one flashing:<br>Charging battery 25% to 50% |
| |  | Two LEDs permanently white, one flashing:<br>Charging battery 50% to 75% |
| |  | Three LEDs permanently white, one flashing:<br>Charging battery 75% to 100% |
| |  | All LEDs permanently white:<br>Battery fully charged |
| Connection status LED<br>  |  | Permanently red:<br>Not connected |
| |  | Flashing blue:<br>Establishing Wi-Fi connection |
| |  | Permanently blue:<br>Wi-Fi or USB connected to tablet |
| Level status LED<br>  |  | Flashing green:<br>Levelling process on-going |
| |  | Permanently green:<br>Construction tool levelled |
| |  | Flashing red:<br>Movement detected<br>Levelling not valid anymore |
| |  | Permanently red:<br>Move alert switched off |

| LED behaviour | |
|---|---|
| Spotlight LED<br>  <br> | All LEDs static white:<br>Spotlight on |

## 3.1.2 RC10 Remote Control

**Keys**



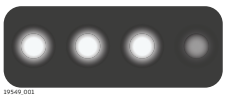
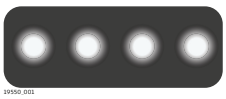

| | |
|---|---|
| a | Navigation arrows |
| b | Measure |
| c | Point selection |
| d | Feature LEDs |
| e | Line selection |
| f | Polyline selection |
| g | Undo |
| h | ON/OFF key |
| i | Battery status LEDs |
| j | Connection status LED |

**Remote control key functions and LED behaviour**

| Key functions | |
|---|---|
| ON/OFF<br>  | • Press and hold for 0.5 s to turn on.<br>• Press and hold for 2 s to turn off.<br>• Press and hold for more than 7.5 s to erase Bluetooth bonding data. |
| UNDO<br>  | • Press to undo an action in the app. |

| Key functions | | |
|---|---|---|
| POINT  | • | Press to select point feature in the app. |
| LINE  | • | Press to select line feature in the app. |
| POLYLINE  | • <br>• | Press to select polyline feature in the app. <br>If polyline is already in use, press again to initiate a new polyline. |
| MEASURE  | • | Press to trigger a measurement on the construction tool. |
| NAVIGATION BUTTONS  | • | Depending on the application program running: <br>• Single press the navigation buttons to select a feature on the map. <br>• Press and hold a navigation button to turn the construction tool to a new location. |

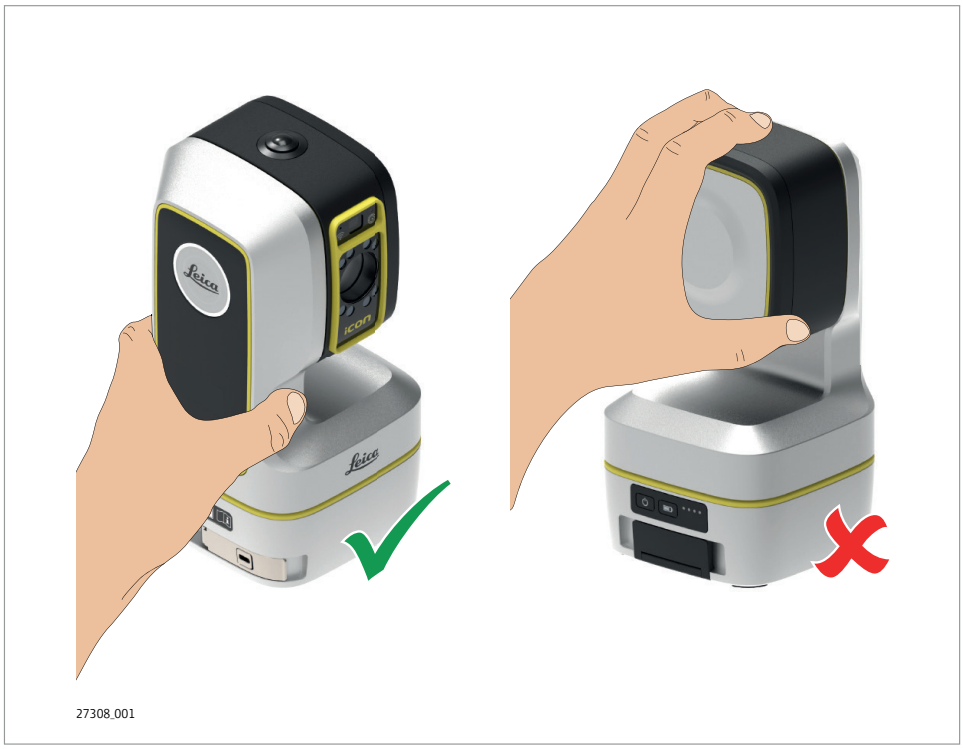
| LED behaviour | | |
|---|---|---|
| 3 LEDs green  26024_001 | | One LED green: <br>The feature is active in the app. |
| Battery |  | All flashing white: <br>≤10% |
| |  | One LED permanently white: <br>≤25% |

| LED behaviour | | |
|---|---|---|
|  26022_001 |  | Two LEDs permanently white:<br>25% to 50% |
| |  | Three LEDs permanently white:<br>50% to 75% |
| |  | All LEDs permanently white:<br>75% to 100% |
| Bluetooth<br>  26023_001 |  | Flashing blue:<br>Trying to connect<br>Always enabled on start-up. |
| |  | Permanently blue:<br>Connected |

# 4 Operation

## 4.1 Setup

**NOTICE**

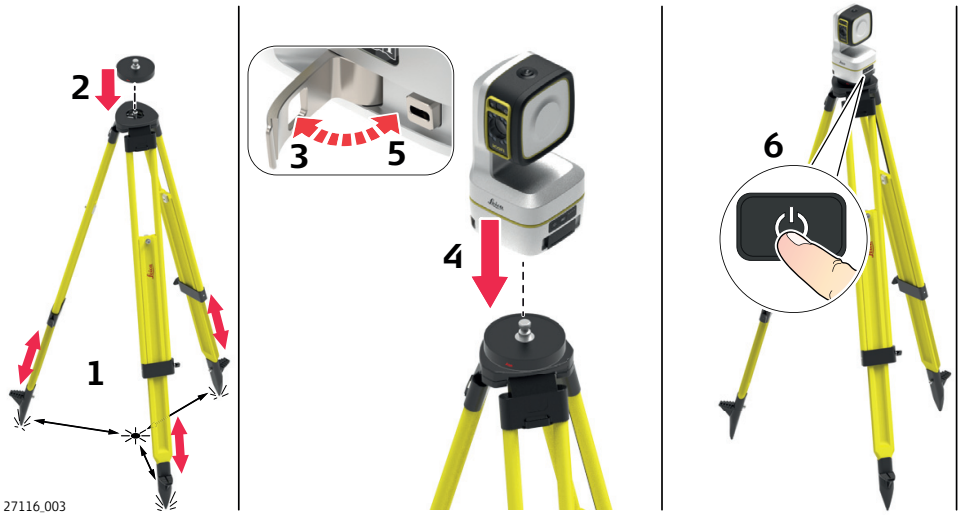



**Setup with carbon tripod step-by-step**


| | |
|---|---|
| 1. | Unfold the legs of the tripod. |
| 2. | Open the legs from the tripod and lock them in position. |
| 3. | Open the latch from the quick mount on the base of the device. |

| | |
|---|---|
| 4. | Place the construction tool on tripod. |
| 5. | Close the latch from the quick mount on the base of the device. |
| 6. | Turn on. |

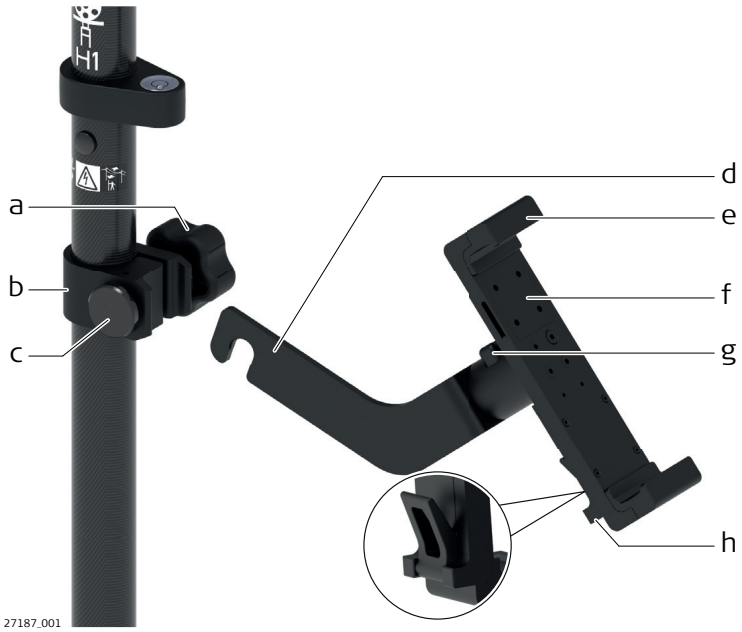
**Setup with wooden tripod step-by-step**




| | |
|---|---|
| 1. | Extend the tripod legs to allow for a comfortable working posture. Ensure that the tripod plate is roughly horizontal. |
| 2. | Fasten the adapter onto the tripod. |
| 3. | Open the latch from the base of the device. |
| 4. | Place the device on top of the adapter. |
| 5. | Close the latch from the base of the device. |
| 6. | Switch ON the device. |

## 4.2 Holder and Clamp for Field Controller

**Holder for tablet**



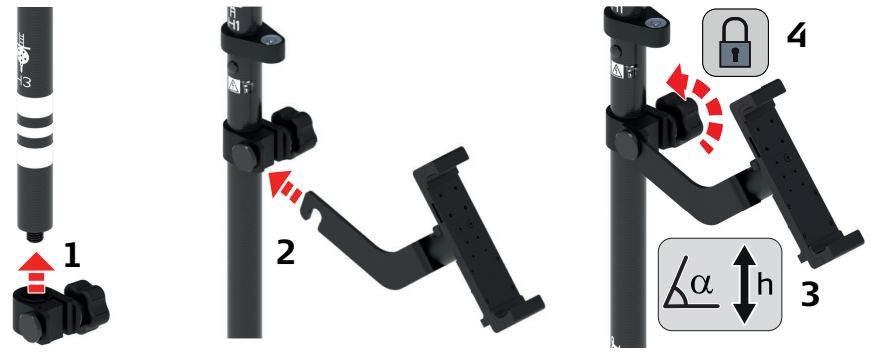
**Clamp**

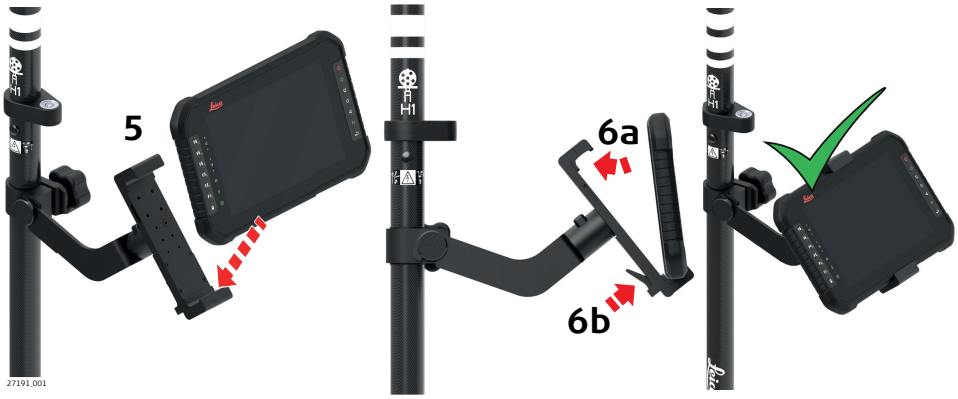
a Tightening screw
b Pole clamp
c Clamping bolt

**Holder**

d Mounting arm
e Rubber
f Mounting plate
g Quick-release button
h Clamping lever

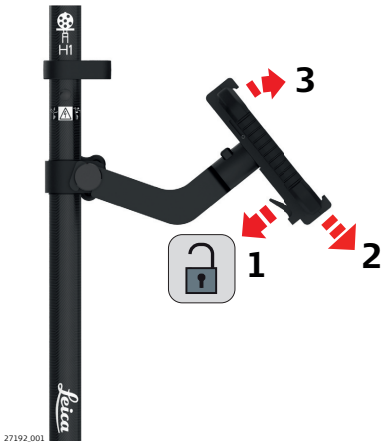
## Fixing the tablet to a pole step-by-step




1. Insert the pole into the clamp hole.
2. Attach the holder to the clamp using the clamp bolt.
3. Adjust the angle and the height of the holder on the pole to a comfortable position.
4. Tighten the clamp.
5. Lower the end of the tablet into the mounting plate and apply slight pressure in a downward direction.
6. a) Lower the top part of the tablet until the unit is clicked into the holder.
   b) Tighten the holder with the clamping lever at the bottom of the unit.

**Detaching the tablet from the holder/pole step-by-step**

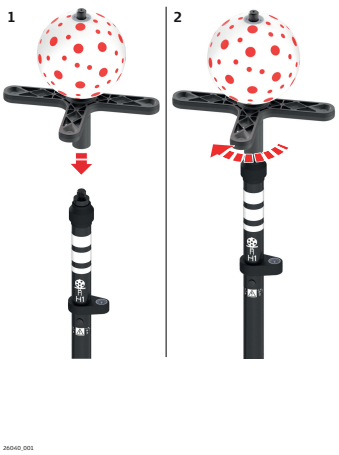


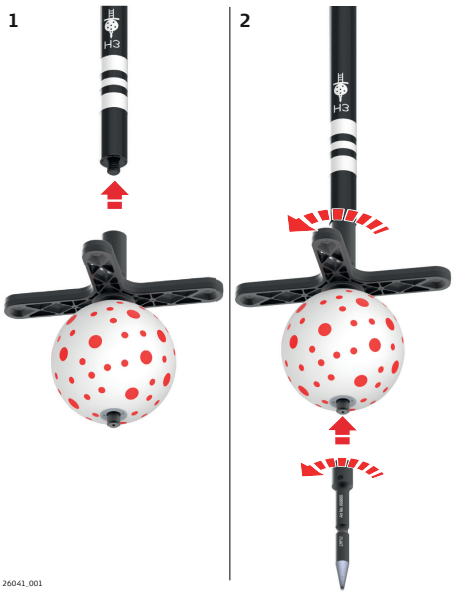

| | |
|---|---|
| 1. | Release the clamping lever. |
| 2. | Place your palm over the bottom of the tablet. |
| 3. | While in this position, lift the bottom of the tablet from the holder. |

## 4.3 Setting Up vPole

**Pole handling**

Use the 5/8" thread to screw the vSphere on the top part of the pole or the bottom part of the pole.



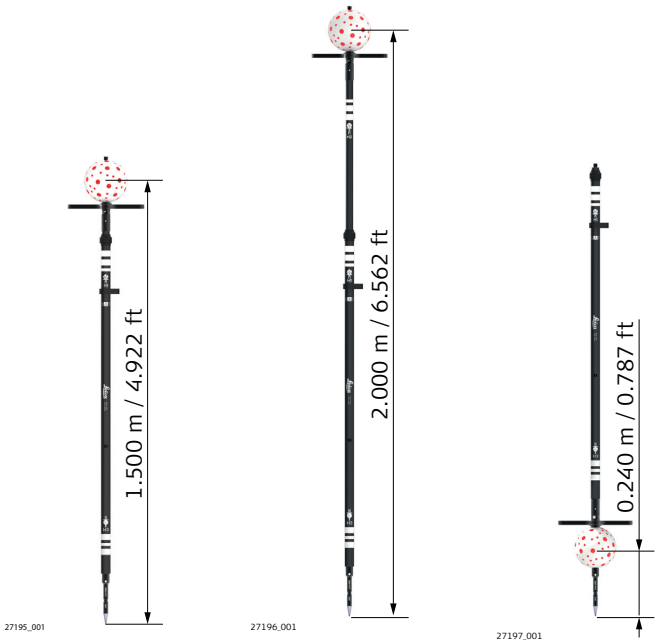
| Standard use | Reversed use |
| --- | --- |
|  27193_001 |  27194_001 |

**Automatic height detection**

The automatic height detection is based on the stripes printed on the pole.
Each pre-defined height consists of three printed stripes. In each position, the stripes are printed with an unique pattern.

| | Height 1 (H1) | | Height 2 (H2) | | Height 3 (H3) | |
| --- | --- | --- | --- | --- | --- | --- |
| | [m] | [ft] | [m] | [ft] | [m] | [ft] |
| Height of sphere center | 1.500 | 4.922 | 2.000 | 6.562 | 0.240 | 0.787 |

| | Height 1 (H1) | | Height 2 (H2) | | Height 3 (H3) | |
|---|---|---|---|---|---|---|
| | [m] | [ft] | [m] | [ft] | [m] | [ft] |




## 4.4 Batteries

### 4.4.1 Operating Principles

**Charging / first-time use**

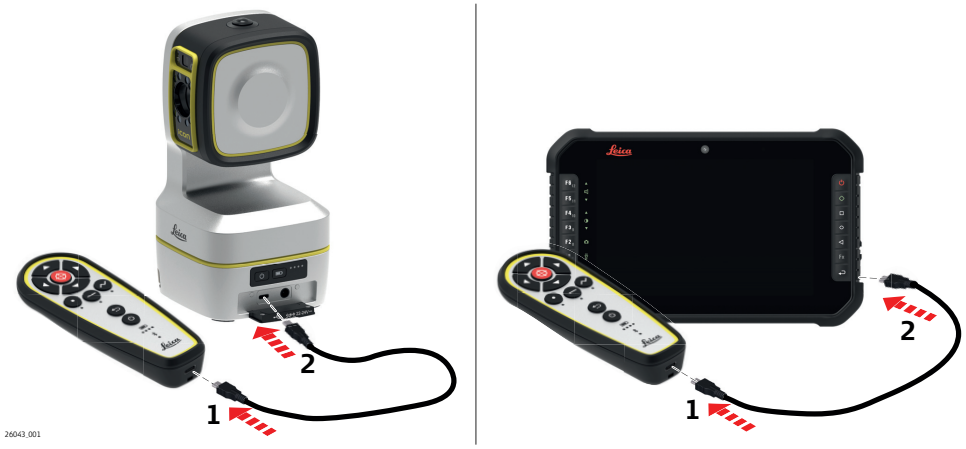
- The battery must be charged prior to using it for the first time because it is delivered with an energy content as low as possible
- The permissible temperature range for charging is from 0 °C to +40 °C/ +32 °F to +104 °F. For optimal charging, we recommend charging the batteries at temperature of +10 °C to +20 °C/+50 °F to +68 °F

### 4.4.2 iCS20/iCS50

**Charge battery step-by-step**

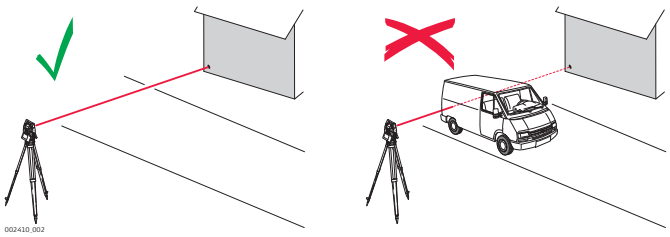
## 4.4.3 RC10 Remote Control

**Charge battery step-by-step**




## 4.5 Guidelines for Correct Results

**Distance measurement**




When measurements are being made using the red laser EDM, the results can be influenced by objects passing between the EDM and the intended target surface. This occurs because reflectorless measurements are made to the first surface returning sufficient energy to allow the measurement to take place. For example, if the intended target surface is the surface of a building, but a vehicle passes between the EDM and the target surface as the measurement is triggered, the measurement may be made to the side of the vehicle. The result is the distance to the vehicle, not to the surface of the building.

☞ Accurate measurements to prisms should be made in prism mode.

☞ When a distance measurement is triggered, the EDM measures to the object which is in the beam path at that moment. If a temporary obstruction, for example a passing vehicle, heavy rain, fog or snow is between the instrument and the point to be measured, the EDM may measure to the obstruction.

☞ Do not measure with two instruments to the same target simultaneously to avoid getting mixed return signals.

**ATR**

Instruments equipped with an ATR feature permit automatic angle and distance measurement to prisms.

The prism is sighted with the optical sight by the user.

After initiating a distance measurement by the user, the instrument will aim to the prism centre automatically.

Vertical and horizontal angle and the distance are measured to the centre of the prism.

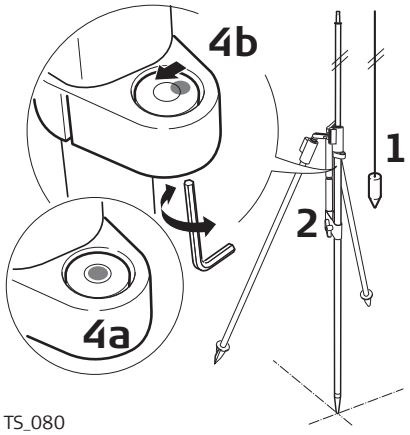
# 5 Check & Adjust

## 5.1 Adjusting the Circular Level of the Pole

**Adjusting the circular level step-by-step**

1. Suspend a plumb line.
2. Use a pole bipod, to align the pole parallel to the plumb line.
3. Check the position of the circular level on the prism pole.
4. a If the circular level is centred, no adjustment is necessary.

   b If the circular level is not centred, use an allen key to centre it with the adjustment screws.



TS_080

☞ After the adjustments, all adjusting screws must have the same tightening tension and no adjusting screw should be loose.

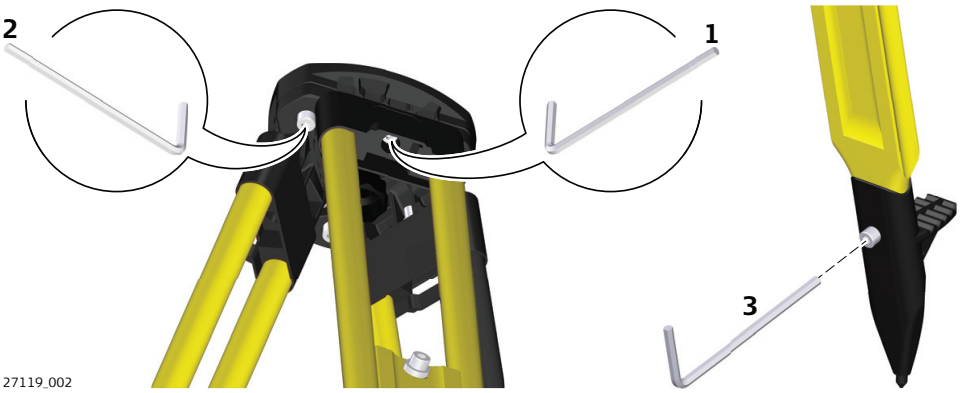
## 5.2 Servicing the Tripod

**Servicing the tripod step-by-step**


27829_001

Tighthen the screws from the legs using an allen key.

## Servicing the tripod step-by-step




The following table explains the most common settings.

☞ The connections between metal and timber components must always be firm and tight.

| | |
|---|---|
| 1. | Tighten the leg cap screws moderately, with the supplied Allen key. |
| 2. | Tighten the articulated joints on the tripod head enough to keep the tripod legs open when lifting the tripod off the ground. |
| 3. | Tighten the Allen screws of the tripod legs. |

# 6 Care and Transport

## 6.1 Transport

**Transport in the field**

When transporting the equipment in the field, always make sure that you

- either carry the product in its original container,
- or carry the tripod with its legs splayed across your shoulder, keeping the attached product upright.

**Transport in a road vehicle**

Never carry the product loose in a road vehicle, as it can be affected by shock and vibration. Always carry the product in its container and secure it.

**Shipping**

When transporting the product by rail, air or sea, always use the complete original Leica Geosystems packaging, container and cardboard box, or its equivalent, to protect against shock and vibration.

**Shipping, transport of batteries**

When transporting or shipping batteries, the person responsible for the product must ensure that the applicable national and international rules and regulations are observed. Before transportation or shipping, contact your local passenger or freight transport company.

**Field adjustment**

Exposing the product to high mechanical forces, for example through frequent transport or rough handling, or storing the product for a long time may cause deviations and a decrease in the measurement accuracy. Periodically carry out test measurements and perform the field adjustments indicated in the User Manual before using the product.

## 6.2 Storage

**Product**

Respect the temperature limits when storing the equipment, particularly in summer if the equipment is inside a vehicle. Refer to 7 Technical Data for information about temperature limits.

**Li-Ion batteries**

- Refer to 7 Technical Data for information about storage temperature range.
- After storage recharge batteries before using.
- Protect batteries from damp and wetness. Wet or damp batteries must be dried before storing or use.
- A storage temperature range of 0 °C to +30 °C / +32 °F to +86 °F in a dry environment is recommended to minimize self-discharging of the battery.
- At the recommended storage temperature range, batteries containing a 40% to 50% charge can be stored for up to one year. After this storage period the batteries must be recharged.

## 6.3 Cleaning and Drying

**Product and accessories**

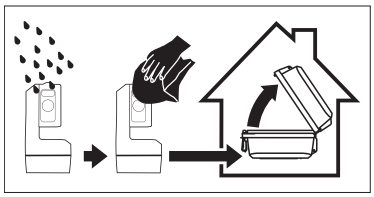
- Blow dust off lenses and prisms.
- Never touch the glass with your fingers.
- Use only a clean, soft, lint-free cloth for cleaning. If necessary, moisten the cloth with water or warm soapy water. Do not use other liquids; these may attack the polymer components.

**Fogging of prisms**

Prisms that are cooler than the ambient temperature tend to fog. It is not enough simply to wipe them. Keep them for some time inside your jacket or in the vehicle to allow them to adjust to the ambient temperature.

**Damp products**

Dry the product, the transport container, the foam inserts and the accessories at a temperature not greater than 40°C /104°F and clean them. Do not repack until everything is completely dry. Always close the transport container when using in the field.



**Cables and plugs**

Keep plugs clean and dry. Blow away any dirt lodged in the plugs of the connecting cables.

## 6.4 Maintenance

☞ An inspection of the instrument must be done in a Leica Geosystems authorised service centre.

# 7 Technical Data

## 7.1 iCS20/iCS50

### 3D point accuracy (without reflectors)

Combination of angle and distance measurement

| Distance | iCS20 | iCS50 |
|---|---|---|
| At 10 m/33 ft | 1.0 mm/0.04 in | 1.0 mm/0.04 in |
| At 50 m/164 ft | 2.5 mm/0.10 in | 2.0 mm/0.08 in |
| At 100 m/328 ft (option)[1] | 4.5 mm/0.18 in | 3.5 mm/0.14 in |
| At 250 m/820 ft (option)[1] | 10.5 mm/0.41 in | 8.0 mm/0.31 in |

1 iCS 250 m/820 ft option required

### Angle accuracy

| | iCS20 | iCS50 |
|---|---|---|
| Standard deviation ISO 17123-3 | 5"/1.54 mgon | 3"/0.93 mgon |

### Working range

| | iCS20 | iCS50 |
|---|---|---|
| Horizontal | 360° | |
| Vertical | 290° | |

### Distance accuracy

**Without reflectors**

| Distance | iCS20 | iCS50 |
|---|---|---|
| At 10 m/33 ft | 1.0 mm/0.04 in | <1.0 mm/<0.04 in |
| At 50 m/164 ft | 1.5 mm/0.06 in | 1.5 mm/0.06 in |
| At 100 m/328 ft (option)[1] | 3.0 mm/0.12 in | 3.0 mm/0.12 in |
| At 250 m/820 ft (option)[1] | 6.0 mm/0.24 in | 6.0 mm/0.24 in |

Standard deviation ISO 17123-4
Object in shade, sky overcast. Beam interruptions, severe heat shimmer and moving objects within the beam path can result in deviations of the specified accuracy.

1 iCS 250 m/820 ft option required

**With standard prism (GPR1)**

| Distance | iCS20 | iCS50 |
|---|---|---|
| At 50 m/164 ft | 1.5 mm/0.06 in | 1.5 mm/0.06 in |
| At 100 m/328 ft (option)[1] | 2.0 mm/0.08 in | 2.0 mm/0.08 in |
| At 250 m/820 ft (option)[1] | 3.5 mm/0.14 in | 3.5 mm/0.14 in |

Standard deviation ISO 17123-4
Object in shade, sky overcast. Beam interruptions, severe heat shimmer and moving objects within the beam path can result in deviations of the specified accuracy.

1 iCS 250 m/820 ft option required

**With reflective tape (GZM31)**

| Distance | iCS20 | iCS50 |
|---|---|---|
| At 50 m/164 ft | 1.5 mm/0.06 in | 1.5 mm/0.06 in |
| At 100 m/328 ft (option)[1] | 2.0 mm/0.08 in | 2.0 mm/0.08 in |
| At 150 m/492 ft (option)[1] | 2.5 mm/0.10 in | 2.5 mm/0.10 in |

Standard deviation ISO 17123-4
Object in shade, sky overcast. Beam interruptions, severe heat shimmer and moving objects within the beam path can result in deviations of the specified accuracy.

1 iCS 250 m/820 ft option required

## Measurement range

| Range | iCS20 | iCS50 |
|---|---|---|
| Reflectorless (Kodak Grey Card - White side, 90% reflective) | 0.3–50.0 m/0.98–164 ft<br>0.3–250.0 m/0.98–820 ft (option)[1] | |
| Reflectorless (Kodak Grey Card - Grey side, 18% reflective) | 0.3–50.0 m/0.98–164 ft<br>0.3–120.0 m/0.98–394 ft (option)[1] | |
| vPen (CVT1) | 0.7–10.0 m/2.30–33 ft[2] | |
| vSphere (CVT2) | 1.5*–50.0 m/4.92–164 ft[2] | |
| vTarget plate/sticker (CVT3, CVT6) | 1.2–40.0 m/3.94–131 ft | |
| Reflective tape (GZM31, 60 mm x 60 mm) | 1.0–50.0 m/3.28–164 ft<br>1.0–150.0 m/3.28–492 ft (option)[1] | |
| Standard prism (GPR1) | 3.0–50.0 m/9.84–164 ft<br>3.0–250.0 m/9.84–820 ft (option)[1] | |

* Minimum distance for automatic height detection is 2.5 m/8.2 ft.

1 iCS 250 m/820 ft option required

2 iCS20 requires iCS Robotic option

## Automatic Target Aiming

| | iCS20 | iCS50 |
|---|---|---|
| vTarget plate/sticker (CVT3, CVT5, CVT6) | 1.2–40.0 m/3.94–131 ft[1] | |

| | iCS20 | iCS50 |
|---|---|---|
| Standard prism (GPR1) | 3.0–250.0 m/9.84–820 ft | |

[1] With rough aiming with the camera. Fully autonomous detection from 2 m/6.56 ft to 25 m/82 ft.

## Laser properties

| Laser distance meter | iCS20 | iCS50 |
|---|---|---|
| Type | Infrared laser | |
| Laser class | I | |

| Laser pointer | iCS20 | iCS50 |
|---|---|---|
| Type | Coaxial visible red laser | |
| Laser class | II | |
| Laser dot size | | |
| At 10 m/33 ft | 3.6 × 6.9 mm/0.14 × 0.27 in | |
| At 50 m/164 ft | 17.3 × 35.8 mm/0.68 × 1.41 in | |

## Tilt sensor properties

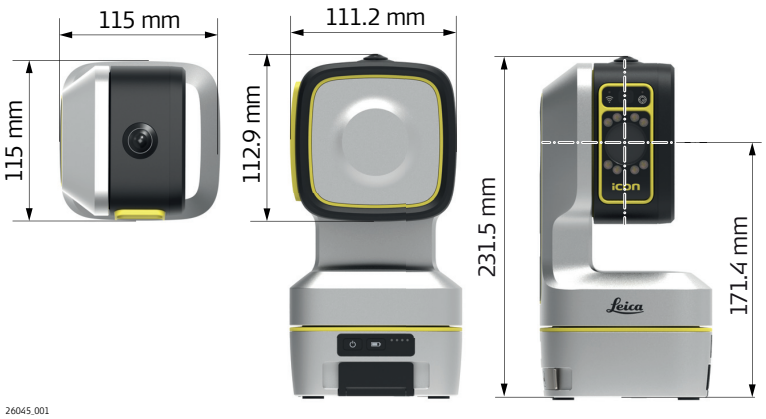
| | iCS20 | iCS50 |
|---|---|---|
| Self-levelling range | ±3° | |

## Cameras

FOV (Field of View)

| | Overview | On-axis | Fish-eye |
|---|---|---|---|
| FOV (Diagonal) | 27.6° | 7.5° | – |
| At 10 m/33 ft | 4.911 m/ 16.113 ft | 1.308 m/ 4.292 ft | – |
| FOV (Horizontal) | 22.2° | 6.0° | – |
| At 10 m/33 ft | 3.929 m/ 12.891 ft | 1.047 m/ 3.435 ft | – |
| FOV (Vertical) | 16.8° | 4.5° | – |
| At 10 m/33 ft | 2.945 m/ 9.663 ft | 0.784 m/ 2.572 ft | – |
| FOV (Circular) | – | – | ~200° |
| Camera resolution | 12.33 MP | 12.33 MP | 13.13 MP |
| Image storage | JPG | | |

**Dimensions**




**Weight**

3.37 kg

**Mounting**

| | |
|---|---|
| Type | 5/8" stub quick release mount |

**Motorisation**

| | |
|---|---|
| Speed | 180°/s |

**Communication**

| | |
|---|---|
| Data transfer<br>Wireless technology | WLAN |
| WLAN | 802.11 b/g/n |
| Range | 50 m/164 ft<br>(depending on the environment) |
| Frequency | 2400 – 2483.5 MHz |
| Radiated power | 459 mW |

**Ports**

| | |
|---|---|
| USB | USB 2.0, Type-C |
| Power supply plug-in | Input current<br>22–24 V, 2.5 A |

**Power**

**Internal**

| | |
|---|---|
| Battery type | Li-Ion battery |
| Capacity | 77.76 Wh |
| Charging time | 2 h (over power supply with 2.5 A) |
| Operating time, typical | > 8 h |

**External**

| | |
|---|---|
| Voltage | 22–24 V, 2.5 A |

**Environmental specifications**

**Temperature**

| Type | iCS20/iCS50 | RC10 Remote Control |
|---|---|---|
| Operating temperature [°C] | –20 to +50 | –20 to +50 |

| Type | iCS20/iCS50 | RC10 Remote Control |
|---|---|---|
| Storage temperature [°C] | –25 to +70 | –20 to +70 |
| Charging temperature [°C] | 0 to +40[1] | 0 to +45 |

1 For temperatures below the charging range, the device can be connected directly to the power supply to allow its operation. Charging the battery cells is not possible outside of the charging range.

**Protection against water, dust and sand**

| Type | Protection |
|---|---|
| iCS20/iCS50 | IP54 (IEC 60529) |
| RC10 Remote Control | IP65 (IEC 60529) |

**Humidity**

| Type | Protection |
|---|---|
| iCS20/iCS50 | Max 85% humidity at 35°C |
| RC10 Remote Control | Max 85% humidity at 35°C |

**Altitude**

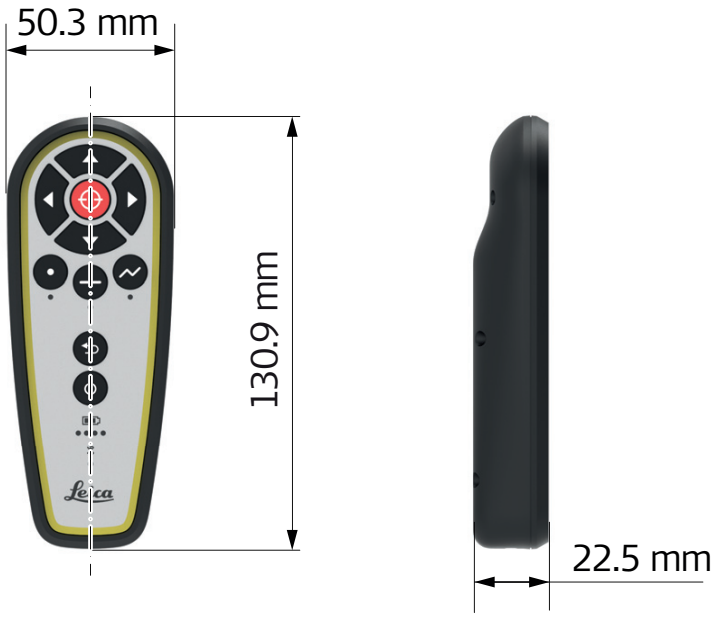
| Type | Range |
|---|---|
| iCS20/iCS50 | 0 to 3000 m / 0 to 9843 ft above sea level |

## 7.2 RC10 Remote Control

**RC10 Remote Control**

| | |
|---|---|
| Battery type | Li-Ion |
| Capacity | 2.7 Wh |
| Charging time | ≤ 1.5 h |
| Operating time | ≥ 70 h |
| Range | 10 m/33 ft |
| Communication | Bluetooth LE 5.0 |
| Radiated Power | 1.175 mW |
| Frequency | 2400 – 2483.5 MHz |
| Ports | USB-C |
| Protection class | IP65 |
| Battery type | Li-Ion |
| Charging time | ≤ 1.5 h |
| Operating time | ≥ 70 h |
| Capacity | 2.7 Wh |
| Operating temperature | -20 °C to 50 °C |
| Storage temperature | -20 °C to 50 °C |
| Weight | 83.5 g |
| Dimensions | 50.3 mm x 130.9 mm x 22.5 mm |

**Dimensions**




## 7.3 vPole

**vSphere accuracy**

**Without vPole option (keeping the pole plumb)**

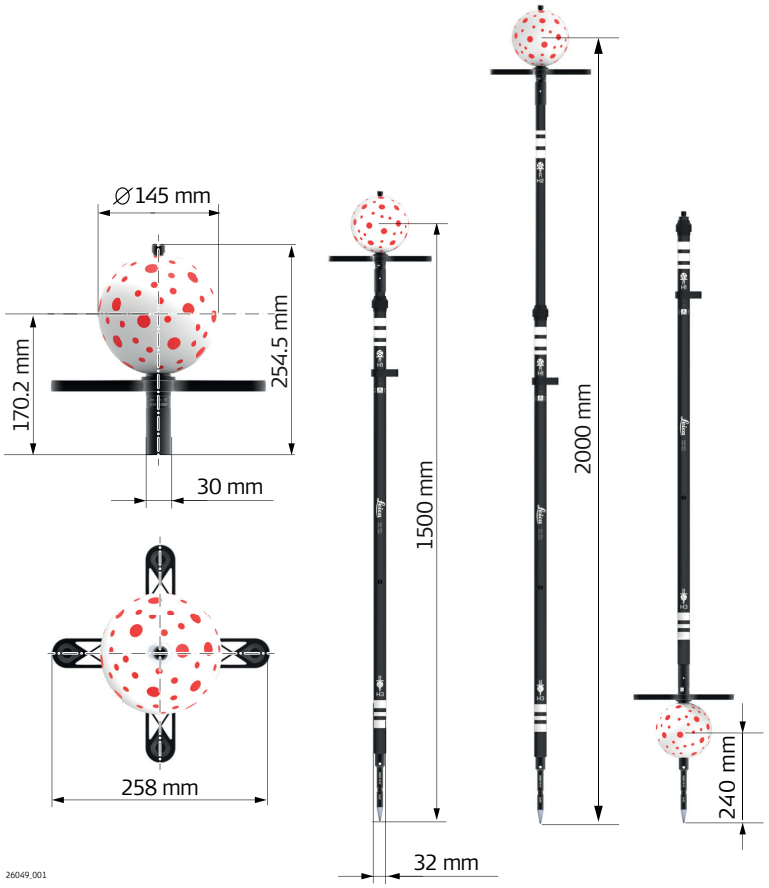
| vSphere accuracy | iCS20[1] | iCS50 |
|---|---|---|
| At 10 m/33 ft | 2.0 mm/0.08 in | 1.5 mm/0.06 in |
| At 30 m/98 ft | 2.5 mm/0.10 in | 2.0 mm/0.08 in |
| At 50 m/164 ft | 3.0 mm/0.12 in | 2.5 mm/0.10 in |

**iCS20[1] and iCS50**
**With vPole option (includes tilt compensation)**

| vSphere accuracy | Pole Height (H1) (1.500 m/ 4.922 ft) | Pole Height (H2) (2.000 m/ 6.562 ft) | Pole Height (H3) (0.240 m/ 0.787 ft) |
|---|---|---|---|
| At 10 m/33 ft | 2.0 mm<br>0.08 in | 4.0 mm<br>0.16 in | 1.0 mm<br>0.04 in |
| At 30 m/98 ft | 5.0 mm<br>0.20 in | 8.0 mm<br>0.31 in | 2.0 mm<br>0.08 in |
| At 50 m/164 ft | 8.0 mm<br>0.31 in | 12.0 mm<br>0.47 in | 3.0 mm<br>0.12 in |

1 iCS20 requires iCS Robotic option

**Dimensions**




| | |
|---|---|
| **Weight** | 1.48 kg |

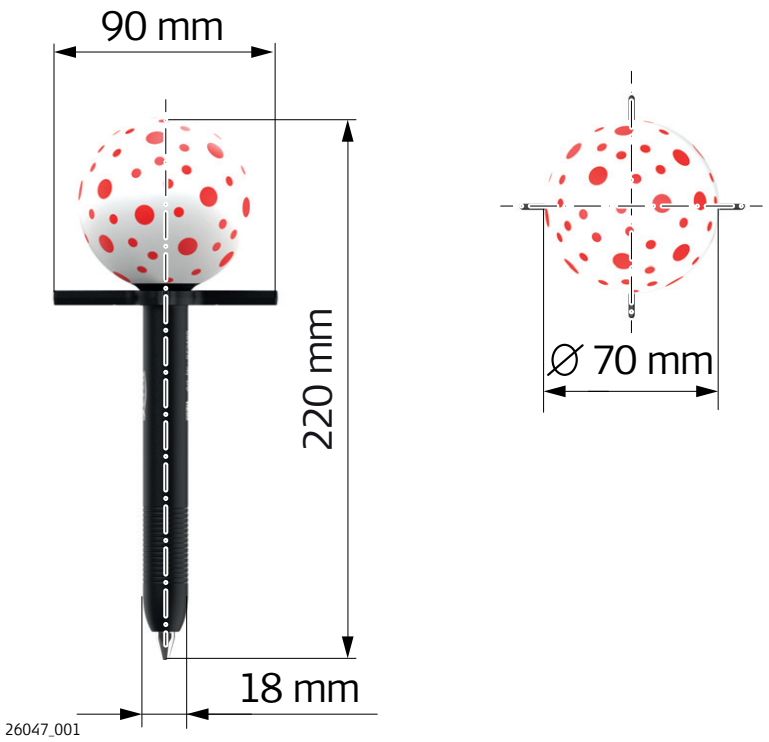
## 7.4 vPen

**vPen accuracy**

| vPen accuracy | iCS20[1] | iCS50 |
|---|---|---|
| At 10 m/33 ft | 1.5 mm/ 0.06 in | 1.0 mm/ 0.04 in |

1 iCS20 requires iCS Robotic option

**Dimensions**




**Weight**

155 g

## 7.5 Conformity to National Regulations

**EU Declaration of Conformity**

CE

**This corresponds to EN ISO/IEC 17050-1.**

We, **Leica Geosystems AG, CH-9435 Heerbrugg (Switzerland)**, declare under our sole responsibility that the product(s) **iCS20 & iCS50 including RC10 Remote Control**, following the provision of Directive(s)

- **2014/53/EU Radio equipment (RED)** (in accordance with annex III)
- **2006/42/EC Machinery (MD)**
- **2011/65/EU Restriction of hazardous substances (RoHS)**

to which this declaration relates, is in compliance with the following standards:

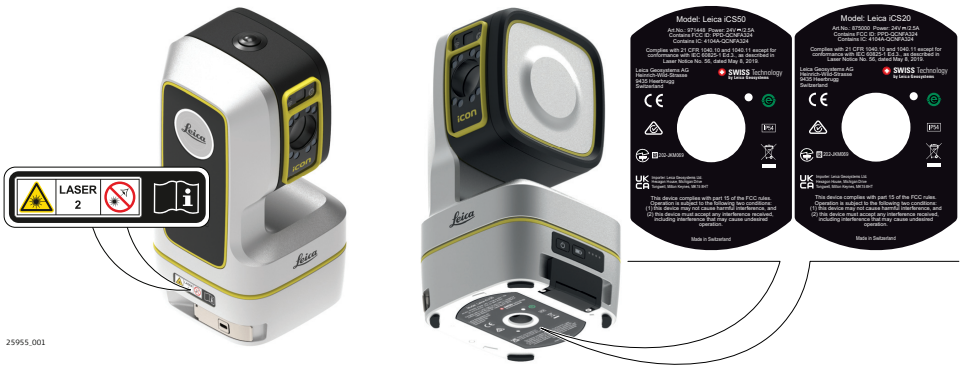
- **EN 62311:2008**
- **EN 61010-1:2010+A1:2019**
- **EN 301 489-17 V3.2.4:2020**
- **EN 301 489-1 V2.2.3:2019**
- **EN 300 328 V2.2.2:2019**

For translations into the official EU languages please refer to:

http://www.leica-geosystems.com/ce

## 7.5.1 iCS20/iCS50

### Labelling




### Labelling


### Labelling

**EU**

Hereby, Leica Geosystems AG declares that the radio equipment type iCS20/iCS50 is in compliance with Directive 2014/53/EU and other applicable European Directives.
The full text of the EU declaration of conformity is available at the following Internet address: http://www.disto.com/ce.

**UKCA**

Hereby, Leica Geosystems AG declares that the radio equipment type iCS20/iCS50 is following the provisions of the applicable relevant statutory requirement S.I. 2017 No. 1206 Radio Equipment Regulations 2017.
The full text of the UK declaration of conformity is available at the following Internet address: http://www.disto.com/ukca.

**USA**

Contains FCC ID: PPD-QCNFA324
Class B

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules.

These limits are designed to provide reasonable protection against harmful interference in a residential installation.

This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, it may cause harmful interference to radio communications.

However, there is no guarantee that interference does not occur in a particular installation.
If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and the receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Changes or modifications not expressly approved by Leica Geosystems for compliance could void the user's authority to operate the equipment.

**Canada**

CAN ICES-003 Class B
IC: 4104A-QCNFA324

**Canada Compliance Statement**
This device contains licence-exempt transmitter(s)/receiver(s) that comply with Innovation, Science and Economic Development Canada's licence-exempt RSS(s). Operation is subject to the following two conditions:

1. This device may not cause interference
2. This device must accept any interference, including interference that may cause undesired operation of the device

**Canada Déclaration de Conformité**

L'émetteur/récepteur exempt de licence contenu dans le présent appareil est conforme aux CNR d'Innovation, Sciences et Développement économique Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes:

1. L'appareil ne doit pas produire de brouillage
2. L'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement du dispositif

**Radio Frequency (RF) Exposure Compliance Statement**

The radiated RF output power of the instrument is below the Health Canada's Safety Code 6 exclusion limit for portable devices (radiated element separation distance between the radiating element and user and/or bystander is below 20 cm).

**Japan**

- This device is granted pursuant to the Japanese Radio Law (電波法).
- This device should not be modified (otherwise the granted designation number will become invalid).

**Others**

The conformity for countries with other national regulations has to be approved prior to use and operation.

## 7.5.2 RC10 Remote Control

**Labelling**


26050_001

**Frequency bands, output power**

| Type | Frequency band [GHz] | Output power[1)] [dBm] | Country restrictions |
|---|---|---|---|
| Bluetooth | 2.36 to 2.50 | –20 to 4.0 | n/a |

**Antennas**

| Type | Antenna | Peak gain [dBi] |
|---|---|---|
| Bluetooth | LTCC Chip Antenna | 0.5 |

[1)] Conducted power for mobile technologies and EIRP for other technologies.

**EU**

Hereby, Leica Geosystems AG declares that the radio equipment type RC10 Remote Control is in compliance with Directive 2014/53/EU and other applicable European Directives.
The full text of the EU declaration of conformity is available at the following Internet address: http://www.disto.com/ce.

**UKCA**

Hereby, Leica Geosystems AG declares that the radio equipment type RC10 Remote Control is following the provisions of the applicable relevant statutory requirement S.I. 2017 No. 1206 Radio Equipment Regulations 2017.
The full text of the UK declaration of conformity is available at the following Internet address: http://www.disto.com/ukca.

**USA**

FCC ID: RFF-RC1BT
Class B

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference, and
2. This device must accept any interference received, including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules.

These limits are designed to provide reasonable protection against harmful interference in a residential installation.

This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, it may cause harmful interference to radio communications.

However, there is no guarantee that interference does not occur in a particular installation.
If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and the receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Changes or modifications not expressly approved by Leica Geosystems for compliance could void the user's authority to operate the equipment.

**Canada**

CAN ICES-003 Class B
IC: 3177A-RC1BT

**Canada Compliance Statement**
This device contains licence-exempt transmitter(s)/receiver(s) that comply with Innovation, Science and Economic Development Canada's licence-exempt RSS(s). Operation is subject to the following two conditions:

1. This device may not cause interference
2. This device must accept any interference, including interference that may cause undesired operation of the device

**Canada Déclaration de Conformité**
L'émetteur/récepteur exempt de licence contenu dans le présent appareil est conforme aux CNR d'Innovation, Sciences et Développement économique Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes:

1. L'appareil ne doit pas produire de brouillage
2. L'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement du dispositif

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- This device is granted pursuant to the Japanese Radio Law (電波法).
- This device should not be modified (otherwise the granted designation number will become invalid).

**Others**

The conformity for countries with other national regulations has to be approved prior to use and operation.

## 7.5.3 Dangerous Goods Regulations

**Dangerous Goods Regulations**

Many products of Leica Geosystems are powered by Lithium batteries.

Lithium batteries can be dangerous under certain conditions and can pose a safety hazard. In certain conditions, Lithium batteries can overheat and ignite.

☞ When carrying or shipping your Leica product with Lithium batteries onboard a commercial aircraft, you must do so in accordance with the **IATA Dangerous Goods Regulations**.

☞ There are guidelines on **How to carry** and **How to ship** products with Lithium batteries. Before any transportation of a Leica product, we ask you to consult the guidelines on the web page (IATA Lithium Batteries) to ensure that you are in accordance with the IATA Dangerous Goods Regulations and that the Leica products can be transported correctly.

☞ Damaged or defective batteries are prohibited from being carried or transported onboard any aircraft. Therefore, ensure that the condition of any battery is safe for transportation.

# 8 Software Licence Agreement/Warranty

**Software Licence Agreement**

This product contains software that is preinstalled on the product, or that is supplied to you on a data carrier medium, or that can be downloaded by you online according to prior authorisation from Leica Geosystems. Such software is protected by copyright and other laws and its use is defined and regulated by the Leica Geosystems Software Licence Agreement, which covers aspects such as, but not limited to, Scope of the Licence, Warranty, Intellectual Property Rights, Limitation of Liability, Exclusion of other Assurances, Governing Law and Place of Jurisdiction. Please make sure, that at any time you fully comply with the terms and conditions of the Leica Geosystems Software Licence Agreement.

Such agreement is provided together with all products and can also be referred to and downloaded at the Leica Geosystems home page at Hexagon – Legal Documents or collected from your Leica Geosystems distributor.

You must not install or use the software unless you have read and accepted the terms and conditions of the Leica Geosystems Software Licence Agreement. Installation or use of the software or any part thereof, is deemed to be an acceptance of all the terms and conditions of such Licence Agreement. If you do not agree to all or some of the terms of such Licence Agreement, you must not download, install or use the software and you must return the unused software together with its accompanying documentation and the purchase receipt to the distributor from whom you purchased the product within ten (10) days of purchase to obtain a full refund of the purchase price.

**Open Source information**

The software on the product may contain copyright-protected software that is licenced under various open source licences.

Copies of the corresponding licences

- are provided together with the product (for example in the About panel of the software)
- can be downloaded on http://opensource.leica-geosystems.com

If foreseen in the corresponding open source licence, you may obtain the corresponding source code and other related data on http://opensource.leica-geosystems.com.

Contact
opensource@leica-geosystems.com in case you need additional information.

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- when it has to be **right**

Leica Geosystems