

Leica BLK ARC



User Manual
Version 1.0
English-US

- when it has to be **right**

Leica
Geosystems

PART OF
HEXAGON

Introduction

Purchase

Congratulations on the purchase of the Leica BLK ARC.



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 turn on the product.

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.

Product identification

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

Always refer to this information when you need to contact your agency or Leica Geosystems authorized service center.



Trademarks

Trademarks are the property of their respective owners.

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.

Available documentation

Name	Description/Format		
Leica BLK ARC Quick Guide	Provides an overview of the instrument together with technical data and safety directions. Intended as a quick reference guide	✓	✓
Leica BLK ARC User Manual	Provides all required instructions to operate the instrument to a basic level. Provides an overview of the instrument together with technical data and safety directions.	-	✓
Leica BLK ARC Tutorial videos	Tutorial videos explaining the basic workflow and including assembly instructions.	-	-

QR Code

Scan the following QR code to watch the BLK ARC instruction video.



Refer to the following resources for all BLK ARC documentation/software:

- the Leica USB documentation card
 - <https://myworld.leica-geosystems.com>
-

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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 behavior.

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 standardized 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.

1.2

Definition of Use

Intended use

- Scanning objects
 - Measuring horizontal and vertical angles
 - Measuring distances
 - Capturing and recording images
 - Recording measurements
 - Computing with software
 - Remote control of product
 - Data communication with external appliances
 - Data transfer with Bluetooth®/WLAN
 - Installation on autonomous carrier systems
-

Reasonably foreseeable misuse

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

WARNING

Unauthorized modification of automatic machines and robots by mounting or installing the product

This may alter the function and safety of the machine.

Precautions:

- ▶ Follow the instructions of the machine/robot manufacturer.
 - ▶ If no appropriate instruction is available, ask machine/robot manufacturer for instructions before mounting or installing the product.
-

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.
-

Environment

Suitable for use in dry environments only and not under adverse 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 it 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 product are respected

WARNING

Unqualified installation on automatic machines and robots

This may result in personal and material damage.

Precautions:

- ▶ This product may be installed on automatic machines and robots only by an appropriately trained and qualified specialist.

1.5

Hazards of Use

WARNING

Distraction or loss of attention

During dynamic applications 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.

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 work site is adequately secured.
- ▶ Adhere to the regulations governing safety, accident prevention and road traffic.

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, particularly after the product has been subjected to abnormal use and before and after important measurements.

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.

NOTICE

Improper shutdown of the system

This could lead to a loss of essential system information.

Precautions:

- ▶ Always ensure proper shutdown of the system. Do not force shutdown of the system.

CAUTION

Before any cleaning procedure, ensure that the instrument is switched off.

CAUTION

Unused connectors must be protected using the attached dust cap.

CAUTION

Improperly 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.

CAUTION

Dropping the product

When being dropped, the product can cause personal injury and/or mechanical damage.

Precautions:

- ▶ Secure the product when operating it.

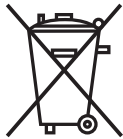
WARNING

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.
- By disposing of the product irresponsibly, you may enable unauthorized 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.
- The product does include parts of Beryllium inside. Any modification of some internal parts can release Beryllium dust or fragments, creating a health hazard.

Precautions:

- ▶  The product must not be disposed of 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 unauthorized personnel.

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

WARNING

Improperly repaired equipment

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

Precautions:

- ▶ Only Leica Geosystems authorized service centers are entitled to repair these products.

CAUTION

Salty Environment

Every damage caused due to water or other liquids void the warranty. Extended exposure of the system on salty environment causes damage on every electrical component.

Precautions:

- ▶ Prevent daily use of the BLK ARC in a salty environment.

CAUTION

Wet Environment

The BLK ARC is not waterproof. Every damage caused by rain or other liquids void the warranty.

Extended exposure of the system on wet environment causes damage on every electrical component.

Precautions:

- ▶ Prevent use of the BLK ARC in wet environment.
-

CAUTION

Erroneous measurement results

If the product has been dropped or has been misused, modified, stored for a long period or transported, watch out for erroneous measurement results.

Precautions:

- ▶ Periodically carry out test measurements, particularly if the product was subject to abnormal use or before important projects.
-

CAUTION

No original or authorized accessories

The correct functioning of the system is not guaranteed.

Precautions:

- ▶ Use only original and authorized accessories for the BLK ARC system.
-

CAUTION

Disregard the temperature specifications

The correct functioning of the system is not guaranteed.

Precautions:

- ▶ Do not use the system during rain, snowfall, fog or extensive sunshine.
 - ▶ Be careful to attend to the operational temperature. Refer to [chapter 7 Technical Data](#).
-

CAUTION

Modified cables/cable length

Improper function and/or damage to the BLK ARC system.

Precautions:

- ▶ Do not modify the cables.
 - ▶ Do not extend the cable lengths.
 - ▶ When removing connectors, take care to avoid pulling on the cable.
 - ▶ Damage to the connector or its mate may result when twisting the connector shell.
-

NOTICE

Too much strain on the cable when bending it for a prolonged time

This may damage the cable.

Precautions:

- ▶ Ensure the cables on the underside of the BLK ARC are bent using the corresponding guides.

For the AC/DC power supply:

WARNING

Unauthorized opening of the product

Either of the following actions may cause you to receive an electric shock:

- Touching live components
- Using the product after incorrect attempts were made to carry out repairs.

Precautions:

- ▶ Do not open the product!
- ▶ Only Leica Geosystems authorized service centers are entitled to repair these products.

For the AC/DC power supply:

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

Scanning Laser

General

The laser incorporated in the product produces an invisible beam which emerges from the rotating mirror.

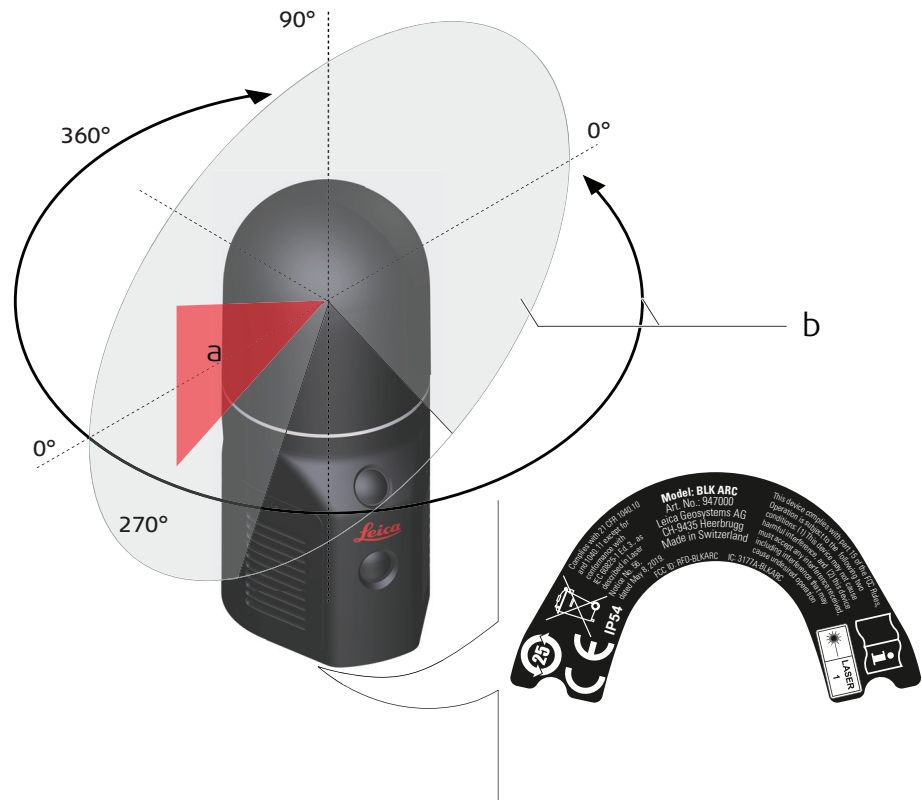
The laser product described in this section is classified as laser class 1 in accordance with:

- 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
Wavelength	830 nm
Maximum pulse energy	9 nJ
Pulse duration	3 ns
Pulse repetition frequency (PRF)	1.68 MHz
Beam divergence (FWHM, full angle)	>0.35 mrad
Mirror rotation	100 Hz
Base rotation	2.5 Hz

Labeling



23090.001

- a Location of laser beam
- b Sphere of scanning laser beam

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.

⚠ WARNING

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.

 **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 Geosystems 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 fuel 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.
-

2

Description of the System

2.1

System Components

System components



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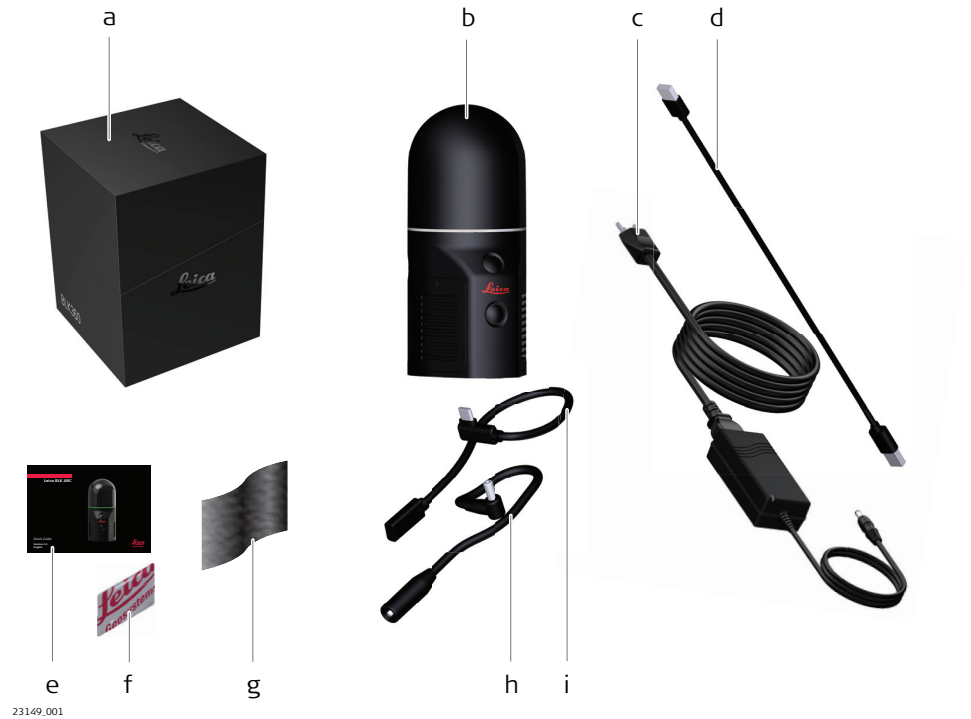
- a BLK ARC Laser scanner
- b GEV290 USB-C extension cable for BLK ARC
- c GEV291 Power extension cable for BLK ARC

- d GEV278 USB-C cable (50 cm)
- e GEV276 Power supply unit with DC power cord (country specific)

2.2

Container Contents

Container contents



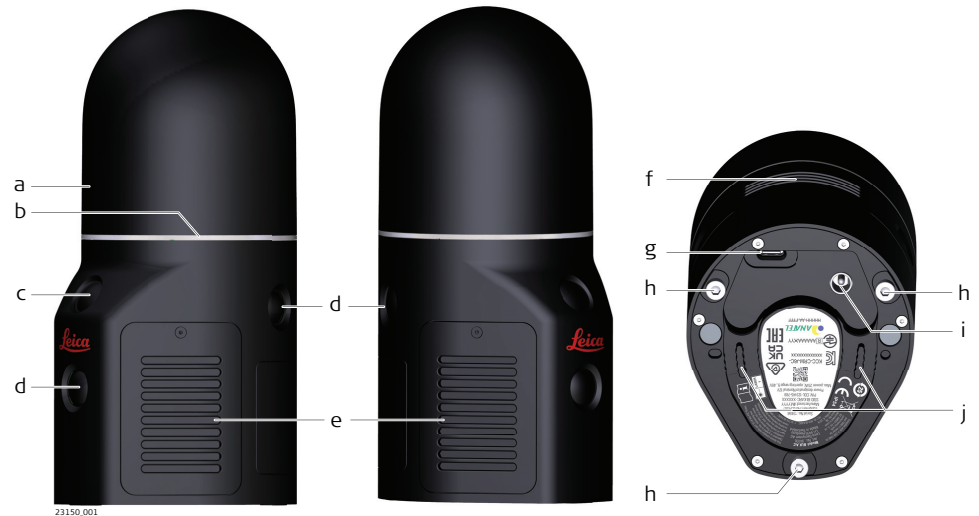
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- | | | | |
|---|---|---|--|
| a | BLK ARC box | f | Leica USB documentation card |
| b | BLK ARC Laser scanner | g | BLK Cleaning cloth |
| c | GEV276 Power supply unit and DC power cords (US, EU, UK, AUS or CH) | h | GEV291 Power extension cable for BLK ARC |
| d | GEV278 USB-C data cable | i | GEV290 USB-C extension cable for BLK ARC |
| e | BLK ARC Quick Guide | | |

2.3

Instrument Components

Instrument components



- a Dome
- b Ring-shaped LED
- c Detail camera
- d Panoramic camera
- e Air inlet 2x

- f Air outlet
- g USB plug
- h Mounting location
- i Power plug
- j Cable fixations

3

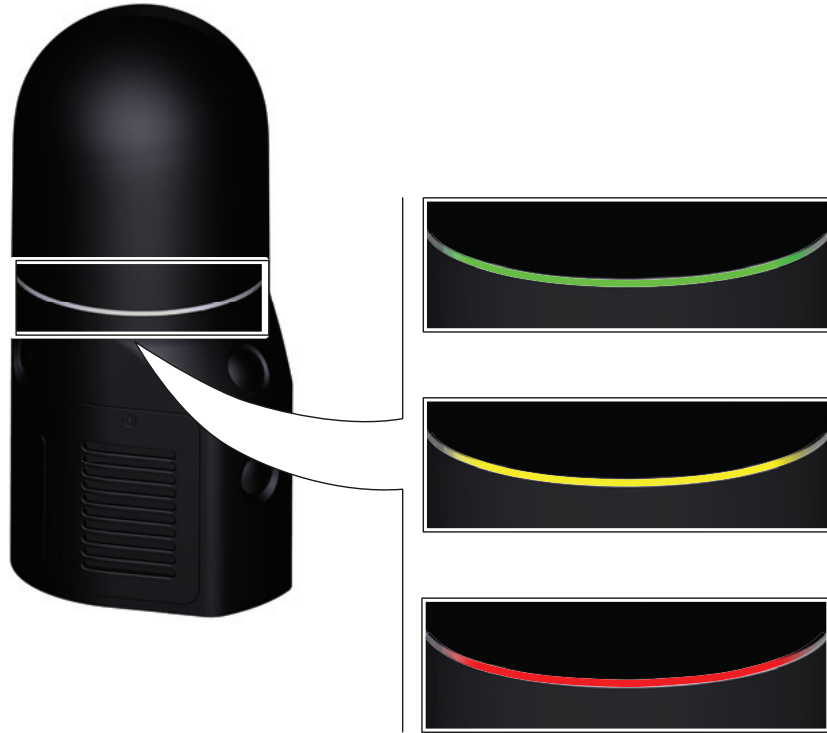
User Interface

3.1

Instrument Status

Instrument status



The ring-shaped LED lights up in different colors and lighting intervals to show the operation states of the BLK ARC.










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Description	Details
Colors	<ul style="list-style-type: none">• Green• Yellow• Red
Lighting intervals	<ul style="list-style-type: none">• Continuous• Blinking• Pulsating• 1 blink

Operation mode

LED color	Lighting interval	Instrument status
	none	The BLK ARC is off.
	continuous	The BLK ARC is ready.

LED color	Lighting interval	Instrument status
	pulsating	The BLK ARC is in recording state.
	1 blink	Picture from the detail camera successfully taken.
	blinking	The BLK ARC is in recording state of a static scan.
	blinking	The BLK ARC is starting, initializing or switching off.
	pulsating	The BLK ARC is in recording state and something is notified or a problem occurred.
	1 blink	An error occurred and the picture from the detail camera was not taken.
	continuous	Critical problem or major failure. Contact a Leica Geosystems authorized service center for further investigation.

Firmware update mode

LED color	Lighting interval	Instrument status
	blinking	The BLK ARC is running a firmware update.
	continuous	The firmware update was successful. The BLK ARC is in idle state.
	continuous	The firmware update failed. Press and hold the button for < 2 sec to bring the BLK ARC to the idle state.

Power supply



19541_001

ⓔⓤ 230 V~

ⓤⓢ 120 V~

ⓐⓃ 220 V~

ⓤⓀ 230 V~

ⓐⓤⓢ 230 V~

Input voltage: 100-240 V AC

NOTICE**Electromagnetic immunity**

The product may be disturbed by other equipment during operation with the power supply.

Precautions:

- ▶ Operate the product with the AC/DC power supply only in a domestic environment.

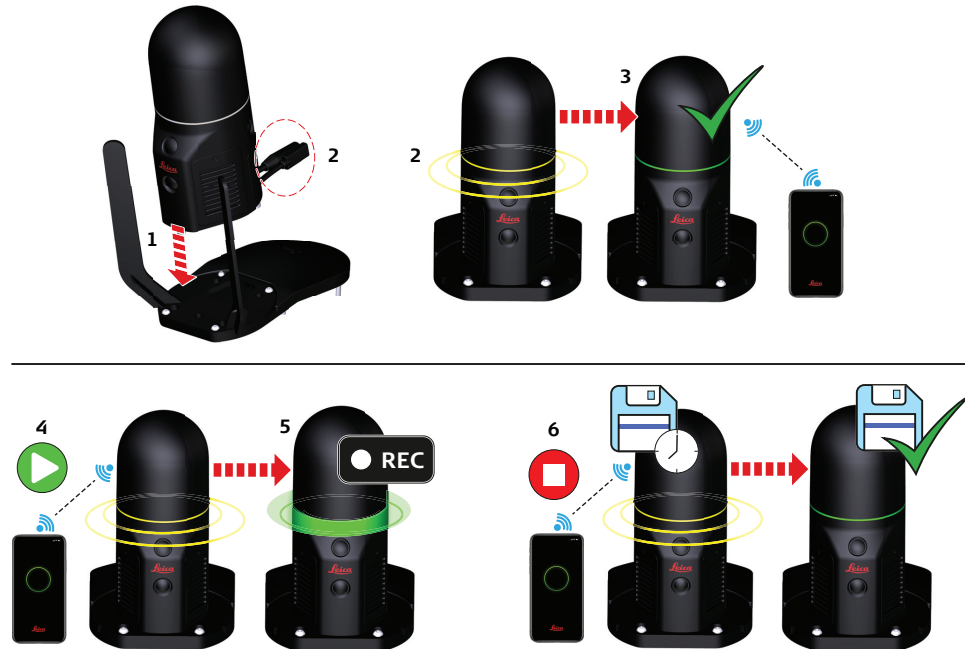
5

Operation

5.1

Operation - Getting Started

Operation,
step-by-step



23152_001

1. Mount the BLK ARC on a carrier.
2. Plug in the power cable and the USB cable.
The ring-shaped LED is blinking yellow to indicate that the BLK ARC is booting up.
3. When the ring-shaped LED is continuous green, the BLK ARC is ready to start operation with a connected device.
4. Start the scan from the connected device.
The ring-shaped LED is blinking yellow and the BLK ARC is initializing.
5. *When the ring-shaped LED starts pulsating green, the BLK ARC is initialized and is recording data.*
The carrier can start moving and the BLK ARC is collecting the data.
6. Stop the scan from the connected device.
The ring-shaped LED is blinking yellow while data are being saved.
Once data have been saved, the ring-shaped LED is continuous green.

5.2

Imaging

Description

The BLK ARC can collect two different types of images:

- A panoramic image using 3 calibrated panoramic cameras. The panoramic images are automatically taken when the device is in operation.
- A high resolution image using the detail camera. The high resolution images can be triggered from a connected device.

Camera position



- a Detail camera
- b Panoramic camera

5.3

Scanning

5.3.1

Ambient Conditions

Unfavorable surfaces for scanning

- Highly reflective (polished metal, gloss paint)
- Highly absorbent (black)
- Translucent (clear glass)



Color, powder or tape these surfaces before scanning if necessary.

Unfavorable weather conditions for scanning

- Rain, snow or fog may adversely affect measurement quality. Always use care when scanning in these conditions.
- Surfaces that are directly illuminated by the sun cause an increased range noise and therefore a larger measurement uncertainty.
- If some objects are scanned against the sunlight or a bright spotlight, the optical receiver of the instrument can be dazzled so heavily that in this area no measured data is recorded.

Temperature changes during scanning

If the instrument is brought from a cold environment, for example from storage, into a warm and humid environment, the mirror or in extreme cases even the interior optics can condense. This may cause measurement errors.



Precaution: Avoid rapid temperature changes and give the instrument time to acclimatize.

Dirt on the dome

Due to the encapsulated mirror design, the mirror is protected against direct contact. But dirt on the dome such as a layer of dust, condensation or fingerprints may cause considerable measuring errors.


5.3.2

Troubleshooting

Basic troubleshooting

Problem	Possible cause	Suggested remedies
Missing points in scan.	Dust, debris or fingerprints on the dome.	Use a glass cleaning tissue to clean the specific areas.

Troubleshooting in operation mode

LED color	Lighting interval	Instrument status
	continuous	A system error occurred. If status does not change or the problem occurs again, contact the Leica support.

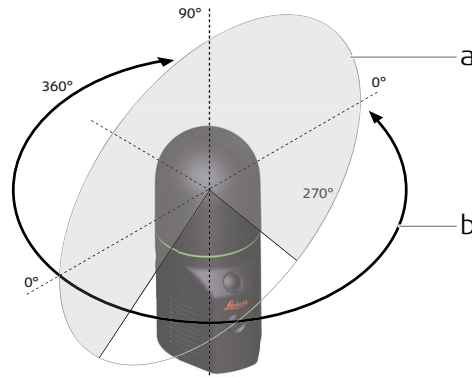
Troubleshooting - support contacts

If you experience problems with your instrument, check the BLK ARC web page at <https://www.blkarc.com/> for support information and contacts.

5.3.3

Field of View (FoV)

Scanning laser - field of view



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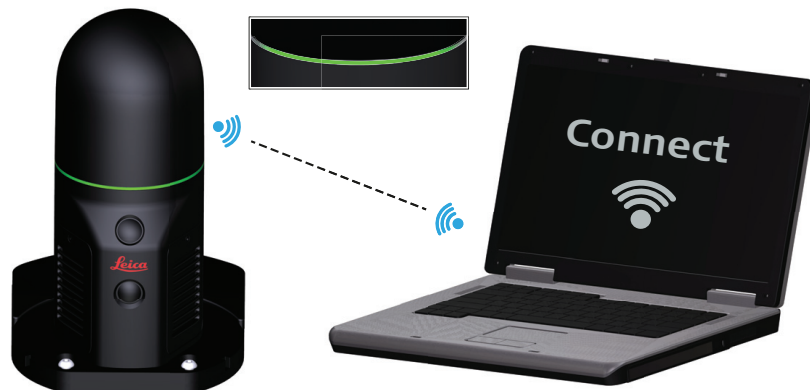
- a Vertical field of view: 270°
- b Horizontal field of view: 360°

5.4

Data Transfer

Description

Raw data can be transferred from the BLK ARC to a computing device using a USB cable data transfer or a wireless connection.



23155_001

5.5

Cooling System

Description


The BLK ARC has an air cooling system. It draws in and circulates air to maintain the temperature of the system components.


The air inlet and the filter cartridge protect from dust particles entering the housing and components.

The filter cartridge is removable.

 Replace the filter cartridge by a new filter periodically.

To remove the filter, refer to [Filter Changing Procedure](#) and follow the instructions.

 The exchanging period depends on the environment where the BLK ARC is mostly used. The more dusty the environment is, the more frequently the filter has to be exchanged.

 The BLK ARC is not supposed to work in a dusty environment, since the laser measurements suffer a lot from dust refraction. Refer to [Ambient Conditions](#).

6 Care and Transport

6.1 Maintenance



For units that are exposed to high mechanical forces, for example through frequent transport or rough handling, it is recommended to carry out test measurements periodically.



Inspect the cables regularly. In case the insulation is damaged, replace the cables immediately.

CAUTION

Unapproved supply or cables

Connecting the supply improperly may cause serious damage to the device. Any damage caused by misuse is not covered by the warranty. Unapproved supply or cables can damage the device.

Precautions:

- ▶ Use only Leica-approved supply and cables.

6.2 Transport

Transport in the field

When transporting the equipment in the field, always make sure that you carry the product in its original container.

Transport in a road vehicle

Never carry the product loose in a road vehicle, as it can be affected by shocks and vibrations. Always carry the product in its container and secure it. For products for which no container is available use the original packaging or its equivalent.

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.

6.3 Storage

BLK ARC

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.

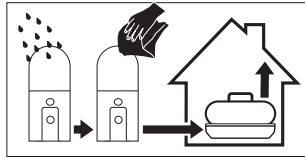
AC/DC power supply

- Keep AC/DC power supply away from excessive dirt, dust and contaminants
- After unpacking the product visually inspect the supply for possible damage
- Unplug the product from the outlet before attempting any maintenance or cleaning

6.4 Cleaning and Drying

Damp products

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



Housing parts of product and accessories

- Never touch the dome with your fingers.
- Only use a clean, soft, lint-free cloth for cleaning. If necessary, moisten the cloth with water or pure alcohol. Do not use other liquids; other liquids may attack the polymer components.

AC/DC power supply

Use only a clean, soft, lint-free cloth for cleaning.

Cables and plugs

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

6.5

Dome Cleaning Procedure

General cleaning information

The dome must be kept clean. The instructions must be followed as described in this chapter to clean the dome.

Dust and debris on the dome

Using a compressed gas duster or canned air, remove dust and debris from surface of the dome.



Never rub off dust or debris as this will scratch the glass and so possibly cause permanent damage to the special optical coatings.

Cleaning of the camera lenses

Soiling of the glass pane can cause extreme measurement errors and therefore useless data!



All soiling that is visible on the glass pane has to be removed, except for single small dust particles that adhere inevitably.

For the glass cleaning procedure, the wet and dry lens cleaner Green Clean LC-7010 is recommended (www.green-clean.at/en.html).

Clean the glass pane regularly with the recommended cleaning tissue:

- It is recommended to leave the BLK ARC on a carrier mounted for stability. Avoid handling the BLK ARC in your hands.
 - Turn off the BLK ARC if you are holding the instrument in your hands.
 - If the BLK ARC is mounted on the carrier, it is not necessary to switch it off.
- Do not turn the instrument 180 degrees.
- Washing hands is necessary in order to avoid grease on the cleaning tissue.
- Better, use gloves to avoid finger oil on the glass.
- Then use the wet lens cleaning tissue (Green Clean LC-7010) until there is only a thin film of detergent visible.
- After that use the dry lens cleaning tissue (Green Clean LC-7010) to remove any remaining detergent.
- If any smears from cleaning are visible against back light, repeat the procedure.
- Do not use air from the pneumatic power system as this is always slightly oily!

6.6

General cleaning information

Filter Changing Procedure

Follow the instructions as described in this chapter to:

- Clean the air outlet.
- Replace the filter element.

The ring-shaped LED indicates reaching high temperature of the BLK ARC. If this indication occurs after a few minutes of operation in standard working conditions, it can be necessary to exchange the filters.

NOTICE

Running the device without filters

If the device is used without filters, dust is drawn inside and irretrievably damages inner components.

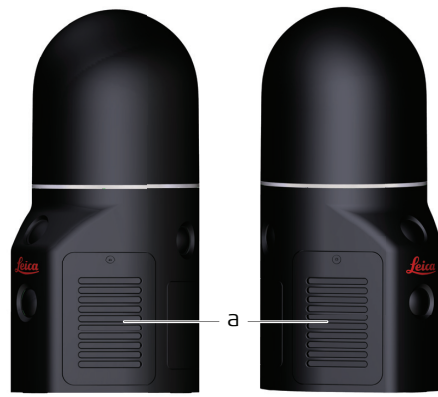
Precautions:

- ▶ Do not run the device without the filters. Ensure that both filters are inserted correctly.
-

⚠ CAUTION

Before any cleaning procedure, ensure that the instrument is switched off.

Position of air inlet and air outlet



23662.001

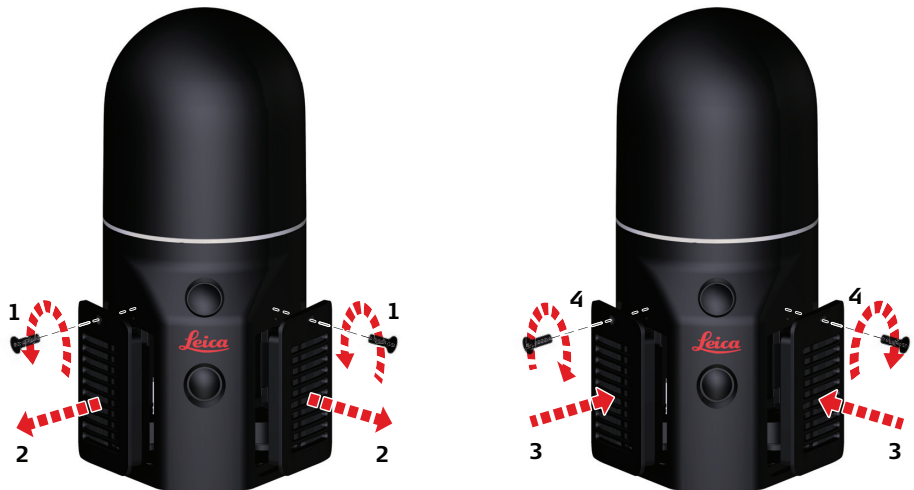
a Air inlet with filter





23663.001

a Air outlet

Changing the filter of the air inlet step-by-step

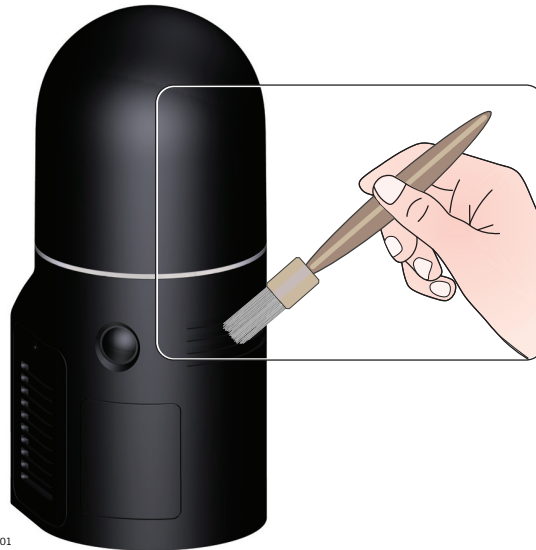


23156.001

1. Loosen the screw.
2. Remove the filter cover with the used filter.
 The filter cannot be removed from the filter cover as it is one part and has to be exchanged together.
3. Insert a new filter cover with filter in both air inlets.
 Ensure that both filter covers are inserted correctly.
4. Fasten the screw.

Cleaning the air outlet

The air outlet must be cleaned infrequently. Use a small brush to carefully remove dust laying down in the aluminum ribs.



23672.001



Cleaning the air outlet can be done only from the outside.



Do not use compressed air to clean the air outlet.



If some particles of dust are clearly stuck inside the mesh, do not try to remove the particles. It may force the particles to move further in and damage the mesh.

7 Technical Data

7.1 General Technical Data of the Product

Storage and communication	Function	Value
	Internal storage	6 hours of scanning (uncompressed data) 24 hours of scanning (compressed data)
	Communication	Integrated 802.11 b/g/n/ac WLAN with MIMO.

Detail camera	Camera data	Value
	Type	Color sensor, fixed focal length
	Single image	3040 × 4056 pixels
	Field of view	90° × 120°
	White balancing	Automatic
	Minimum range	55 cm
	Shutter	Rolling

Panoramic cameras	Camera data	Value
	Type	Color sensor, fixed focal length
	Single image	1080 × 1440 pixels
	Field of view	100° × 135°
	White balancing	Automatic
	Minimum range	30 cm
	Shutter	Global

7.2 System Performance

System performance and accuracy



All ± accuracy specifications are one sigma (1σ) under Leica Geosystems standard test conditions unless otherwise noted.

Accuracy of single measurement at 78% albedo	Value
Angle (horizontal/vertical)	30"/30"
3D point accuracy	±3 mm @ 10 m

7.3 Laser System Performance

Laser scanning system data

The scanning system is a high speed time-of-flight unit, enhanced by Waveform Digitizing (WFD) technology with a maximum scan rate of 420.000 points/second.

7.4 Electrical Data

BLK ARC power supply	Description	Value
	Voltage nominal	12 V DC
	Operation range	9–48 V DC

Description	Value
Max. power	25 W

7.5

Environmental specifications

Environmental Specifications

Type	Operating temperature [°C]	Storage temperature [°C]
Instrument	0 to +40	-25 to +70
AC/DC power supply	0 to +40	-40 to +70

Type	Protection against water, dust and sand
Instrument	IP54 (IEC 60529) Dust protected Betamesh BM90 – filtration level 69 µm Betamesh BM20 – filtration level 20 µm Protection against splashing water from any direction.
AC/DC power supply	IPX0 (IEC 60529) Only operate in dry environments, for example in buildings and vehicles.

Type	Humidity
Instrument	max. 95% non-condensing
AC/DC power supply	max. 80% non-condensing

Type	Limits of use
Instrument	Indoor and outdoor use. Working altitude: unlimited
AC/DC power supply	Indoor use only. Working altitude: ≤ 2000 m

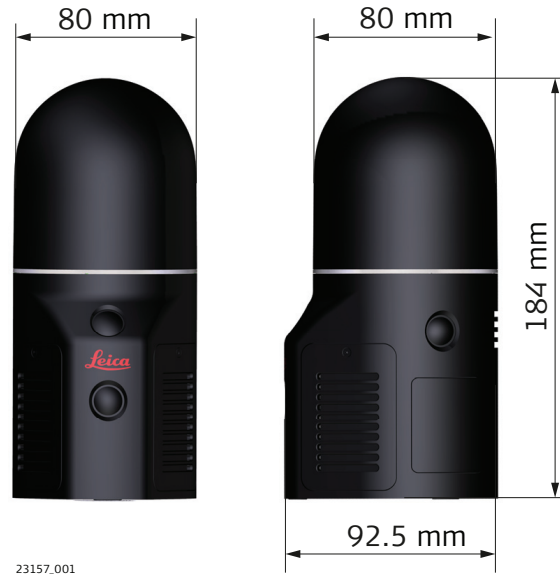
Type	Lighting
Instrument	Fully operational from bright sunlight to complete darkness.

7.6

Dimensions

Dimensions

BLK ARC



Accessories	Dimensions [mm] (D x W x H)
AC power supply	105 x 45 x 30

7.7

Weight

Weight

Instrument	Weight [kg]	Weight [lbs]
Leica BLK ARC	0.690	1.52

7.8

Accessories

Scope of delivery

Included standard accessories:

- BLK ARC box
- BLK ARC Laser scanner
- GEV290 USB-C extension cable for BLK ARC
- GEV291 Power extension cable for BLK ARC
- GEV278 USB-C data cable
- GEV276 Power supply unit and DC power cord (country specific)
- BLK ARC Quick Guide
- Leica USB documentation card
- BLK Cleaning cloth

7.9

Conformity to National Regulations

Labeling



Frequency band

Type	Frequency band [MHz]
WLAN	2412-2462
Client mode	5180-5240, 5260-5320, 5500-5700

Output power

Type	Output power [mW]
WLAN	100 max.

Antenna

Type	Antenna	Gain [dBi]
WLAN	Dual dipole antenna MIMO system	3

EU



Hereby, Leica Geosystems AG declares that the radio equipment type BLK ARC 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.leica-geosystems.com/ce>.

USA

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. 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.

 **CAUTION**

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

Canada

This Class (B) digital apparatus complies with Canadian ICES-003.
Cet appareil numérique de la classe (B) est conforme à la norme NMB-003 du Canada.

Canada Compliance Statement

This device contains license-exempt transmitter(s)/receiver(s) that comply with Innovation, Science and Economic Development Canada's license-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.

Others

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

Software license 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 authorization from Leica Geosystems. Such software is protected by copyright and other laws and its use is defined and regulated by the Leica Geosystems Software License Agreement, which covers aspects such as, but not limited to, Scope of the License, 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 License Agreement.

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Open source information

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

Copies of the corresponding licenses:

- is provided together with the product (for example in the About panel of the software).
- can be downloaded on <http://opensource.leica-geosystems.com/blk2go>.

If foreseen in the corresponding open source license, you may obtain the corresponding source code and other related data on <http://opensource.leica-geosystems.com/blk2go>. Contact opensource@leica-geosystems.com in case you need additional information.



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