



**VECTRONIX
SHOOTING
SOLUTIONS.**

USER MANUAL: VECTOR X

Laser rangefinder binoculars



Thank you for purchasing this product from VECTRONIX SHOOTING SOLUTIONS. We hope you enjoy using your new VECTOR X.

Read this user manual before use to ensure that you can take full advantage of all the features of this versatile, high-quality laser rangefinder.

If you have any questions, please do not hesitate to contact your dealer or contact us directly at www.vectronix-shooting-solutions.com.

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1 INTRODUCTION

Your VECTOR X is an innovative laser rangefinder with integrated Applied Ballistics Elite software that was developed for demanding applications and competitions.

Use your VECTOR X for distance measurement, target data acquisition, navigation, and determining ballistic solutions.



NOTICE

Please read the enclosed safety information for the laser rangefinder or the safety chapter in this user manual before using the VECTOR X.

VECTRONIX SHOOTING SOLUTIONS

We produce state-of-the-art optronic observation devices for discerning precision shooters and hunters. Through our products, we help our customers quickly and reliably achieve first-shot accuracy when hunting or competing.

Our products combine unsurpassed performance, exceptional user friendliness, and connectivity with a wide range of devices and apps from specialized third-party providers.

Our products are characterized by uncompromising quality and longevity, and they reflect our company's many years of experience in the defense industry.

2 GENERAL INFORMATION

For simplicity, this manual shows the VECTOR X 8×42 model from the VECTOR X series.

Operations with multiple steps are written in numbered order (1, 2, 3, etc.).

⇒ This symbol indicates the result of an action or additional information regarding operation.

▶ This symbol indicates countermeasures to avoid danger.

▶ This symbol indicates page references.

2.1 Meaning of symbols



General warning symbol to identify safety information involving the risk of injury.



Laser radiation warning to identify related safety information.



Optical radiation warning to identify related safety information.



Battery warning to identify related safety information.



General mandatory action sign for information to avoid damage to property.



Symbol for useful information and notes.



Mandatory action sign to read user documentation and safety information.



Symbol for recycling batteries and used devices.

2.2 User documentation and software

This user manual is part of the VECTOR X user documentation. It is normally only available in electronic form as a PDF download.

Safety information for laser rangefinders	Included in the scope of supply.
Quick Start Guide	Included in the scope of supply and available as a download.
User manual for the Range Enhancers, optional accessory	Supplied with the Range Enhancers and also available as a download.
Information about optional accessories: Anti-Reflection Device (ARD) Lens cover	See the FAQs on the website of Armament Technology Incorporated: www.armament.com
VECSS app	Smartphone app available for download.
VECTOR X operating system	The VECSS app makes it possible to run updates.



NOTICE

Our website has the latest downloads and information related to the VECTOR X:
www.vectronix-shooting-solutions.com

3 SAFETY INFORMATION

The safety information for laser rangefinders, which comes with the VECTOR X, contains all the basic safety information from this chapter.



NOTICE

We recommend keeping the safety information for laser rangefinders together with the VECTOR X.

Safety notices in the user manual are marked with a warning symbol (see "Meaning of symbols" [► 12]) and identified by specific signal words and colors based on the hazard level.

⚠ SAFETY INSTRUCTIONS

Countermeasures to avoid hazards related to general safety information are listed in a section with the banner above.

Hazard levels of safety notices



⚠ DANGER

Danger to life

This safety notice indicates the most severe hazard level. It indicates an immediately dangerous situation. If this situation is not avoided, death or serious injury will result.



⚠ WARNING

Risk of Injury

This safety notice indicates a potentially dangerous situation. If this situation is not avoided, death or serious permanent injury could result.



⚠ CAUTION

Injury

This safety notice indicates a potentially dangerous situation. If this situation is not avoided, minor to moderate temporary or permanent injury could result.

3.1 Personal responsibility

Safety information cannot account for all possible hazardous situations that could occur when using the VECTOR X. Safety information is therefore not exhaustive.

- Become familiar with the VECTOR X before use.
 - You will only be able to use all device functions quickly and correctly if you read the user documentation and try the examples described.
- Using the VECTOR X in any manner not described in the user documentation or for any purpose outside of the intended purpose described is strongly discouraged. Safran Vectronix AG assumes no liability for injuries or damages caused by such use.

3.2 Intended use

The VECTOR X is intended for use as

- A binocular laser rangefinder with digital magnetic compass and inclinometer
- A portable or stationary observation and measuring device

3.2.1 Intended use (detail)

The VECTOR X is also used with other devices or apps to

- Measure distances
- Transmit location data
- Take measurements for ballistic calculations
- Calculate and indicate ballistic solutions
- Determine distances to objects and their dimensions using two-point measurements

Applications of the VECTOR X are in the civil sector in

- Hunting and outdoor sports
- Shooting sports (e.g., competition shooting, long-range precision shooting)

3.2.2 Usage restrictions

Do not use the VECTOR X in the following conditions:

- In explosive environments or underground (mining, cave exploration, etc.)
 - The rubber reinforcement of the housing and the plastic parts can generate electrostatic discharge that can lead to ignition.
- Near sensitive electrical equipment, devices, or implants (hospitals, pacemakers, hearing aids, etc.)
 - The same restrictions apply as for smartphones.
- Near strong electromagnetic fields (transmitters, power lines, thunderstorms, etc.)
 - These can reduce the measurement accuracy.
 - Special requirements apply to the digital magnetic compass – see "Factors influencing azimuth measurement accuracy and compass calibration" [► 127].
- Do not use the VECTOR X as an independent measuring device. The target coordinates found must always be evaluated to make sure they make sense and will not pose a hazard to the user or others.

3.2.3 Foreseeable misuse

Misuse of the VECTOR X can cause serious injury, damage to property, malfunction of equipment, or measurement errors. Safran Vectronix AG assumes no liability for any such occurrences.

Examples of misuse

- Use of the device before reading the user documentation and safety information
- Use of the device as an independent instrument for determining distances or object locations without verifying measurements via other instruments or techniques
- Measurements within close range of mirrors, mirror-like surfaces, or highly reflective objects, which can lead to incorrect measurement results or destruction of the VECTOR X
- Measurements through glass or water, which can lead to incorrect measurement results
- Use outside the specified application limits (see "Technical specifications" [► 46])
- Exposure to extreme environmental influences (physical impact, temperature fluctuations, etc.) – see "Technical specifications" [► 46]
- Unauthorized changes and modifications
- Use of accessories that are not expressly approved by Safran Vectronix AG
- Continued use of a defective device, such as misuse with obvious damage or defects
- Opening of the device (except the battery compartment) and repairs by unauthorized personnel and workshops
- Use of a damaged, leaking battery or an unspecified battery type
- Connection to an external power supply



This list is not exhaustive, and possible misuse is not limited to the examples.

3.3 Eye safety

The VECTOR X has a laser diode and magnifying lenses.

3.3.1 Laser safety instructions

The VECTOR X is categorized as one of two laser classes based on country-specific regulations:



Class 1 laser product

The VECTOR X is categorized as a Class 1 laser product per IEC/EN 60825-1.



Class 1M laser product

The VECTOR X is categorized as a Class 1M laser product per IEC/EN 60825-1.

The laser class is indicated on the underside of the device (see "Device overview" [► 37]).

Note for the US

This product corresponds to the requirements for laser products per 21 CFR 1040.10 and 1040.11, except for the deviations necessary for compliance with IEC 60825-1 Ed. 3.0 – see "Laser Notice No. 56" from May 8, 2019.

Technical specifications of the laser

Laser class per IEC/EN	1 (Europe)	1M
Wavelength, nominal	905 nm	905 nm
Pulse duration	16 ns	16 ns
Maximum average power	2.7 mW (8×42 / 10×42) 2.3 mW (12×42)	2.7 mW
Beam divergence, typical	1.8 × 0.1 mrad (8×42 / 10×42) 1.5 × 0.1 mrad (12×42)	1.8 × 0.1 mrad (8×42 / 10×42) 1.5 × 0.1 mrad (12×42)

Safety Information for Laser Class 1



The VECTOR X is a laser rangefinder that is safe for eye exposure and is rated laser Class 1. No safety precautions are required to protect against the laser radiation emitted by the device during use (see "Intended use" [► 16]).

Safety Information for Laser Class 1M



⚠ WARNING

Risk of eye injury from the invisible laser beam

Due to the use of optical components (e.g., lenses), Class 1M lasers can be dangerous for the eyes.

⚠ SAFETY INSTRUCTIONS

- ▶ Never aim at people.
 - ⇒ This is especially important for people who are currently using an optical instrument (binoculars, scope, telescopic sight, surveying instrument, etc.).
- ▶ Never look into the laser emission lens (see "Device overview" [▶ 37]) while triggering a measurement.
- ▶ Never point the VECTOR X at other people, particularly their faces or eyes, from a short distance while pressing the Measurement button.
- ▶ Never look into the laser beam of the VECTOR X with optical instruments.
- ▶ Never open the device housing. The laser in the device can cause eye injuries.

3.3.2 Risk of temporary blinding



⚠ WARNING

Risk of eye injury and temporary blinding

- ▶ Never look directly into the sun with the VECTOR X.
- ▶ Never look into strong light sources with the VECTOR X.
- ▶ Never look into visible or invisible laser beams (e.g., laser pointers) with the VECTOR X.
- ▶ Never use the VECTOR X where laser beams can be expected.

3.4 Mechanical hazards



⚠ WARNING

Risk of injury from mechanical hazards

- Risk of injury to the eyes and face from the eyepieces
- Risk of strangulation and injury from the neck strap
- Risk of choking and injury by swallowing small parts (e.g., battery)

⚠ SAFETY INSTRUCTIONS

- ▶ Be careful when holding the VECTOR X in front of your face. Avoid injury to the eyes or eye area caused by unexpected movements.
- ▶ Do not use the VECTOR X while walking or moving. This presents a higher risk of falling and getting injured.
- ▶ Do not hang the VECTOR X around your neck during athletic activities (e.g., walking quickly, climbing). The neck strap can become tangled or caught and cause strangulation.
- ▶ Check the neck strap and its attachment points regularly and replace damaged parts.
- ▶ Do not place the VECTOR X on the dashboard or under the rear windshield. There is a risk of injury if the vehicle brakes or accelerates heavily.
- ▶ Do not crush your fingers between the two parts of the housing when adjusting the interpupillary distance.
- ▶ Do not leave the VECTOR X with unsupervised children. Keep the accessories and packaging of the VECTOR X out of the reach of children.

3.5 Battery hazards



⚠ DANGER

Risk of thermal and chemical burns

The rechargeable or non-rechargeable lithium-ion battery in the VECTOR X can overheat if it becomes damaged. This will release toxic fumes and caustic electrolyte and, in extreme cases, cause explosion.

Lithium reacts with water and humidity at high temperatures and releases toxic fumes.

⚠ SAFETY INSTRUCTIONS

- ▶ Only use the battery types permitted – see "Suitable batteries" [▶ 65].
- ▶ Never touch a damaged or leaking battery with your bare hands.
- ▶ Keep batteries away from children and pets. There is a risk of ingestion.
- ▶ The fumes released from a battery that is damaged or burning are harmful and caustic to the respiratory system. In the event of danger, immediately go outdoors. Seek medical care if respiratory problems occur.
- ▶ If a battery is swallowed, do not induce vomiting. Seek medical care immediately.
- ▶ Take the following first aid measures after contact with the contents leaked from a battery:
If the battery was swallowed, rinse the mouth and surrounding skin with large amounts of luke-warm water and remove residue. Seek medical care immediately.

After contact with the eyes, immediately rinse the affected eye with large amounts of water and seek medical care.

After contact with the skin, first remove contaminated clothing. Thoroughly cleanse the affected skin with soap and water. Seek medical care if skin irritation or pain persists.

⇒ Also follow the instructions on the battery manufacturer's safety data sheet as part of first aid.

3.6 Hazards during shooting



⚠ DANGER

Fatal or serious injuries from gunshot wounds

Using the VECTOR X does not mean that important safety guidelines related to handling firearms may be ignored or neglected.



NOTICE

Gunshot damage to property

Misdirected projectiles can damage other people's property.

⚠ SAFETY INSTRUCTIONS

- ▶ Become familiar enough with the VECTOR X that you can effectively manage or avoid stressful situations.
- ▶ Check the field of fire before shooting:
 - ⇒ Is there an adequate safety range behind the target and beside the direction of fire?

⇒ Is there an effective backstop behind the target?

- ▶ Never rely exclusively on the measurement data provided by the VECTOR X. Always ensure when shooting that there is no risk to people or property.
- ▶ Only shoot at a clearly identified target.

3.7 Outdoor hazards



⚠ WARNING

Weather-related hazards

When using the VECTOR X with the VECSS app for navigation

- ▶ Take the current environmental conditions and related risks into account before commencing outdoor activities.
- ▶ Pay attention in particular to dangerous weather events (storms, blocked passages, etc.).
- ▶ Ensure that you have suitable equipment and sufficient supplies before navigating unfamiliar terrain.

3.8 Substance hazards

The VECTOR X contains SVHCs (substances of very high concern) per Article 33 of the EU REACH Regulation (1907/2006).

- Alloys with a lead concentration above 0.1% w/w are present.



There is no risk to the user's health because bare skin will not touch the lead-containing component in question.

3.8.1 Allergens



⚠ CAUTION

Housing components can contain allergens

People with sensitive skin can have an allergic reaction after touching the rubber reinforcement or eyecups of the device.

- Seek medical care immediately if you have an allergic reaction after using the device (rash, itching, swelling).



We recommend that you always wear suitable protective eyewear and gloves to protect yourself.

3.9 Environmental hazards



NOTICE

Avoid environmental hazards

Do not dispose of used batteries in household waste.

At the end of the service life of the VECTOR X or its parts or accessories, do not dispose of these items in household waste.

- ▶ Dispose of used batteries at a suitable collection point in compliance with legal regulations.
- ▶ Observe the disposal instructions for the VECTOR X (see "Disposal" [▶ 159]).

4 PROTECTION AGAINST DAMAGE

Observe the following instructions to ensure that your VECTOR X will remain your reliable and faithful companion for a long time to come.



The device components, setting elements, and operating elements described in this manual are shown in the "Device description" [► 34] chapter.

4.1 Storage and transport instructions

- Clean and dry the VECTOR X if it is wet or dirty (see "Care and cleaning" [► 148]).
- Store and transport the VECTOR X in its case with the eyepiece cap attached and the objective lens caps closed.
- Keep the VECTOR X out of reach of children in a dry, cool, well-ventilated place.
- In high humidity, store the VECTOR X in a sealed container with a desiccant such as silica gel.
- If the VECTOR X will be stored for a long time, remove the batteries and store them in accordance with the battery manufacturer's instructions.
- During transport, do not subject the VECTOR X to extreme temperature fluctuations or strong mechanical vibration. Condensation can form, or the lenses can be damaged.
- Use a case suitable for transport or equivalent shockproof packaging when shipping the device.

4.2 Instructions for use

- Do not adjust the following setting elements of the VECTOR X beyond their end positions: Risk of damage
 - Focus wheel
 - Diopter adjustment ring
 - Display adjustment ring
 - Hinge for adjusting the interpupillary distance
- Screw down the battery compartment cover carefully to prevent damaging the threads.
- Ensure that
 - No dirt enters the battery compartment
 - No grease or oil gets on the control buttons
- When installing the optional Range Enhancers, screw them down lightly (hand-tight). Overtightening can misalign the lenses. Risk of damage

4.3 Extreme environmental conditions

- Protect the VECTOR X from extreme weather as much as possible.
- Rapid temperature fluctuations can misalign and damage the lenses.
 - Before entering or leaving heated or air-conditioned rooms, attach the eyepiece cap and close the objective lens caps. This enables the VECTOR X to gradually adapt to the temperature change and prevents fog formation on the glass.

- When using the device in a very cold environment, make sure that your breath does not condense and freeze on the glass surfaces. If there are long intervals between measurements, keep the VECTOR X near your body so the warmth can prevent an excessive drop in the battery capacity.
- If the surrounding air contains sand, dust, or salt, attach the eyepiece cap and close the objective lens caps whenever possible. Clean the VECTOR X carefully after use (see "Care and cleaning" [► 148]).

4.4 Notes on the lenses



NOTICE

Risk of fire and damage

If strong sunlight shines directly into the objective lenses

- Components in the VECTOR X can overheat and become damaged.
 - Flammable objects close behind the eyepieces can ignite.
 - Therefore, protect the VECTOR X from exposure to strong sunlight.
 - Close the objective lens caps when the device is not in use.
 - Store the VECTOR X in the shade or in the case.
- If possible, use the neck strap. The lenses of the VECTOR X can become misaligned and damaged if the device is accidentally dropped or bumped.
 - Keep the glass surfaces free of dirt, oil, and grease. Do not touch them with your fingers.
 - Scratches, dirt, and fingerprints can affect distance measurements (maximum range).
 - The optical coating can be damaged by residue from sunscreen, insect repellent, lotion, etc.
 - Observe the cleaning instructions for the lenses (see "Care and cleaning" [► 148]).

4.5 Notes on the battery



The terms “battery” and “lithium-ion battery” are used as general terms for all battery sizes and types that are suitable for the VECTOR X.

A primary lithium-ion battery is a non-rechargeable battery. A rechargeable lithium-ion battery can be recharged.



NOTICE

The VECTOR X can be seriously damaged by a defective battery.

A defective battery can overheat, spontaneously combust, or even explode.

⚠ SAFETY INSTRUCTIONS

After being dropped or subjected to impact, the VECTOR X could start making strange noises, or the battery compartment could release an unusual smell or smoke. If this happens

- ▶ Do not inhale smoke or escaping fumes. This presents the risk of chemical burns.
- ▶ Unscrew the battery compartment cover. If the battery compartment cover is hot, grab it through a piece of cloth.
- ▶ Shake the battery out of the battery compartment. Do not touch the battery. It presents a burn hazard.
- ▶ Place the overheated battery on a fireproof surface outdoors, keeping it away from combustible materials.
- ▶ Wait until the battery no longer presents a hazard. Then dispose of the battery residue.



NOTICE

The VECTOR X can be seriously damaged by a leaking battery.

The leaking electrolyte can destroy the electrical contacts in the battery compartment through corrosion.

- ▶ Do not touch escaped electrolyte. This presents the risk of chemical burns.
- ▶ Remove the leaking battery and dispose of it properly (see "Disposal" [▶ 159]).
- ▶ Clean the battery compartment and battery compartment cover with cotton swabs and a damp cloth.



NOTICE

The VECTOR X can be seriously damaged by using the Incorrect battery.

If the VECTOR X has the long 18650 battery compartment cover (see "Replacing the battery compartment cover" [▶ 67]), only the 3.7 V 18650 rechargeable lithium-ion battery may be used.

Never insert two CR123A lithium-ion batteries or other prohibited types of batteries into the battery compartment.

Handling the battery properly

- Prevent the risk of explosion. Never
 - Short-circuit the battery
 - Throw the battery into fire or expose it to temperatures above +70°C/160°F
 - Heat the battery in a microwave or a pressure cooker
 - Puncture, mechanically alter, or disassemble the battery

- Only use name-brand batteries of the specified battery types (see "Suitable batteries" [► 65]).
- Do not use a damaged, deformed, bulging, or leaking battery.
- Do not use expired batteries.
- Never try to charge a non-rechargeable, primary lithium-ion battery in a charger. This presents the risk of explosion.
- Transport and store batteries separately from metal parts. Otherwise, there is a risk of short circuit and fire.
- Keep batteries out of the reach of children in a dry and cool place.
- Do not expose unprotected batteries to direct sunlight or high humidity for prolonged periods.

Notes on rechargeable lithium-ion batteries

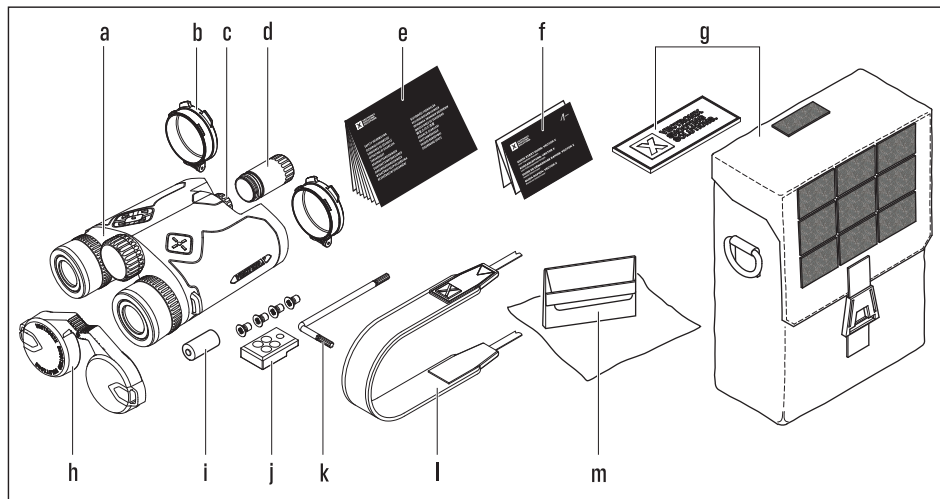
- Only use a rechargeable lithium-ion battery with the following characteristics:
 - Complies with IEC 62133-2
 - Has an integrated protective circuit and deep-discharge protection
- Dispose of a deep-discharged rechargeable lithium-ion battery. Do not attempt to recharge it.
- Only charge the rechargeable lithium-ion battery with a charger intended for this.
- Use the charger as close to a smoke/fire detector as possible and keep it away from flammable materials or objects.
- To detect potential danger quickly
 - Stay near the charger while the battery is charging.
 - Do not charge the rechargeable lithium-ion battery while sleeping.

5 DEVICE DESCRIPTION

The VECTOR X is easy to handle and use. It has the following features:

- Field glasses
 - Powerful binoculars with reticle
 - Water-repelling coating on the outer lenses (objective and ocular lenses)
 - Tough, rubber-reinforced magnesium housing
 - Tripod connection
- Laser rangefinder
 - Laser Class 1 laser (Europe) measures from 2 m/3 yd to 4000 m/4400 yd (depending on type, size, and reflectiveness of target)
 - Laser Class 1M laser measures from 2 m/3 yd to 6400 m/7000 yd (depending on type, size, and reflectiveness of target)
- Digital compass
 - Displays magnetic north or azimuth in degrees (°), mrad, or mil
- Environmental sensors
 - Inclinometer
 - Brightness sensor
 - Temperature sensor
 - Air pressure sensor
 - Humidity sensor
- Integrated ballistic functions
 - Applied Ballistics Elite
- Bluetooth connection capability
 - VECSS app on smartphone
 - External devices from third-party manufacturers such as weather gauges and ballistic calculators
- Available accessories
 - Range Enhancers
 - Anti-Reflection Device (ARD)
 - Lens Cover

5.1 Scope of supply



- a) Complete VECTOR X (see also "Reticle types" [► 40])
 - Objective lens caps (2×)
- b) CR123A battery compartment cover
- c) 18650 battery compartment cover
- d) Safety information for laser rangefinders
- e) VECTOR X Quick Start Guide
- f) Case (Protective Case 42) with
- g) VECSS logo patch
- h) Eyepiece cap
- i) 3 V CR123A primary lithium-ion battery
- j) Tripod mount (with 2 spare screws)
- k) Torx key
- l) Neck strap
- m) Lens cleaning cloth

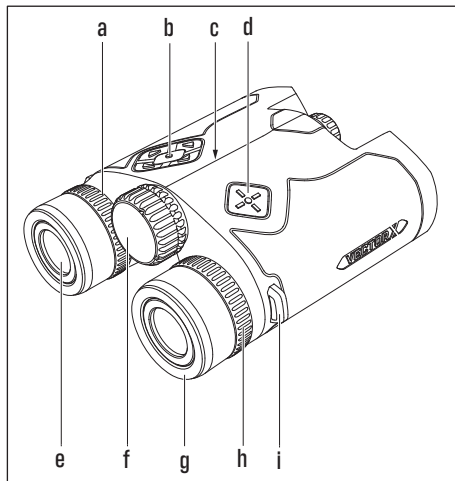
Available for download are

- User manual in multiple languages at www.vectronix-shooting-solutions.com
- VECSS app in the App Store or Google Play Store

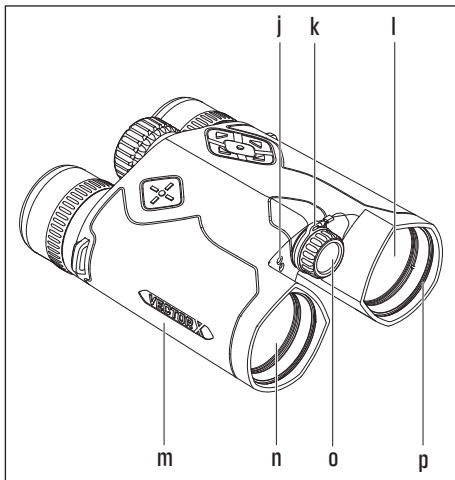


For information on replacement parts, see "Spare parts" [► 157].

5.2 Device overview



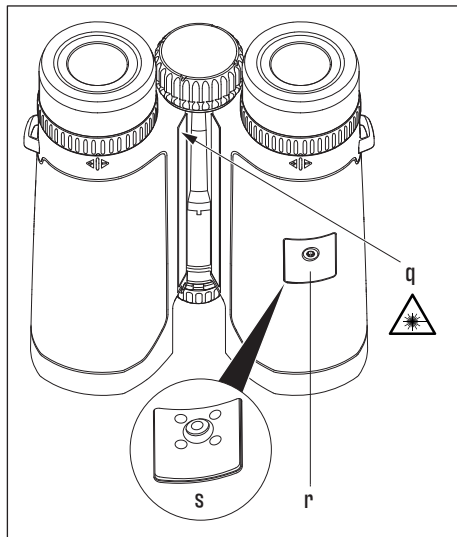
- a) Diopter adjustment ring, left
- b) Multi-selector with arrow keys and Menu button
- c) Hinge
- d) Measurement button
- e) Eyepieces (2×)
- f) Focus wheel with laser-engraved model code (e.g., 10×42) and serial number
- g) Eyecups (2×), adjustable with click latch
- h) Diopter adjustment ring, right (for focusing heads-up display and reticle)
- i) Neck strap attachment point (2×)



- j) Two openings in the housing for brightness, temperature, air pressure, and humidity sensors
- k) Attachment clip with retention strap
- l) Objective lens, laser beam inlet opening
- m) Barrel with integrated reticle and display
- n) Objective lens, laser beam outlet opening
- o) CR123A battery compartment cover (standard)
- p) Objective lens thread (M46×0.75) for attaching accessories*

* The following optional accessories can be screwed onto the objective lens thread:

- Range Enhancers
- Anti-Reflection Devices (ARD)
- Lens Cover



- q) Laser class specification
- r) Cover
- s) Tripod connection

5.2.1 Reticle types

Each VECTOR X has one of the following reticles:

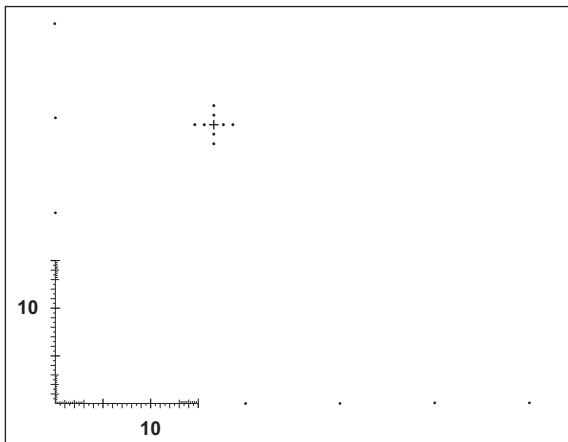
- MSR-SMR reticle (single magnification reticle)
- MSR-DMR reticle (dual magnification reticle)
 - Optimized for using the Range Enhancers

The integrated reticle is designed based on the magnification of the device and cannot be changed later.

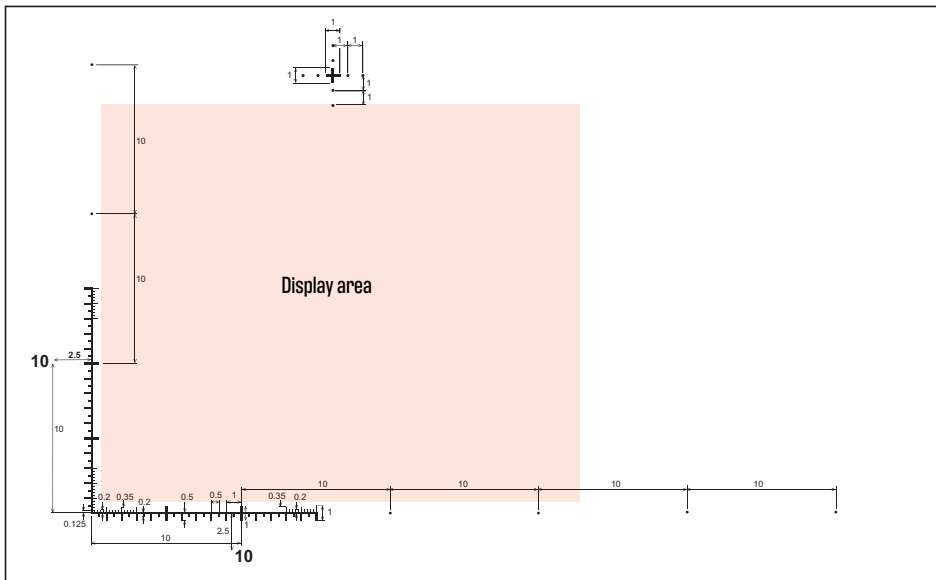


See our website for a detailed view of the reticles with notes for use:
www.vectronix-shooting-solutions.com

MSR-SMR reticle

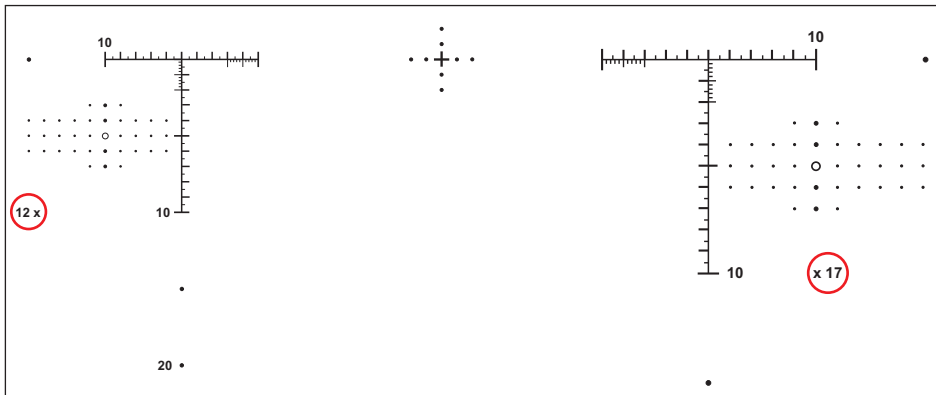


The MSR-SMR milliradian reticle is coordinated to the base magnification of the VECTOR X model it's installed in.

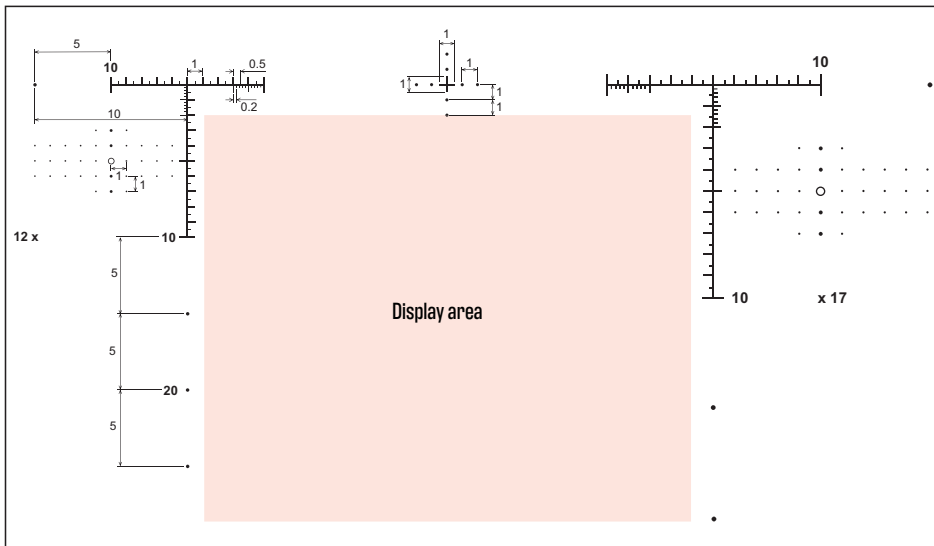


Zoom in on this page in your PDF viewer to see the details.

MSR-DMR reticle



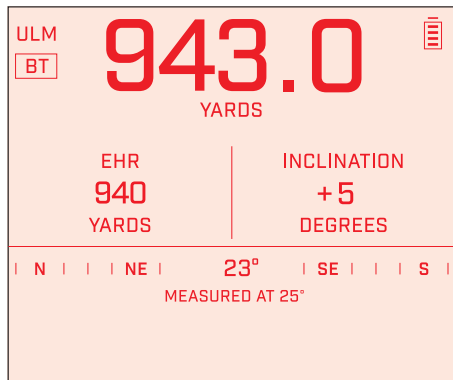
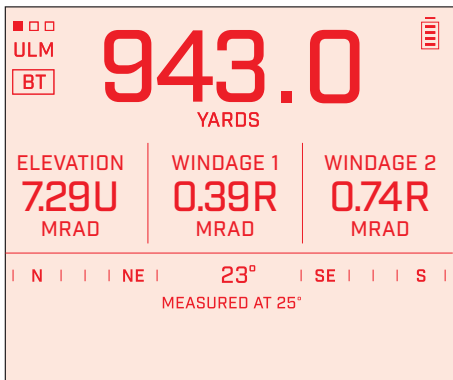
The MSR-DMR milliradian reticle has two parts. The left side of the reticle is coordinated with the base magnification of the VECTOR X. If the Range Enhancers are attached, use the right side of the reticle. The respective magnification values can be seen on both sides below the reticle (circled in red).



Zoom in on this page in your PDF viewer to see the details.

5.2.2 Heads-up display (HUD)

Heads-up display with ballistic data/without ballistic data



One of the two HUD screens appears when the Measurement button is pressed:

- To the right on the MSR-SMR reticle
- In the center of the MSR-DMR reticle



Ballistic data only appears if the “Ballistics” setting is set to “INT/EXT” (see “Settings” [► 105]) and a gun profile was selected (see “Gun Profiles” [► 104]).



The display brightness automatically adjusts to the ambient brightness. It can also be set manually (see “Settings” [► 105]).

For more information about the heads-up display, see “Menu description” [► 91].

5.3 Technical specifications

Optics

Model name	VECTOR X 8×42	VECTOR X 10×42	VECTOR X 12×42
Observation	Optical viewfinder, binocular		
Objective lens diameter	42 mm		
Magnification	8×	10×	12×
Reticle	MSR-SMR, or MSR-DMR for Range Enhancers		
Field of view in m/ft at 1000 m/1000 yd	130 m/387 ft	110 m/330 ft	91 m/272 ft
Field of view in degrees	7.4°	6.3°	5.2°

Model name	VECTOR X 8×42	VECTOR X 10×42	VECTOR X 12×42
Field of view with Range Enhancers in m/ft at 1000 m/1000 yd	92 m/277 ft	79 m/236 ft	65 m/194 ft
Field of view with Range Enhancers in degrees	5.3°	4.5°	3.5°
Exit pupil diameter	5.25 mm	4.2 mm	3.5 mm
Exit pupil distance	18 mm	17 mm	17 mm
Interpupillary distance	58 mm to 78 mm		
Close focus	8 m/9 yd	8 m/9 yd	19 m/20 yd
Diopter adjustment	±4 diopters		
Twilight factor	18.3	20.5	22.45

Laser rangefinder – Laser Class 1

Laser type (Europe)	905 nm, Class 1 per IEC/EN 60825-1
Range information	
Maximum range	From 5 m/6 yd to 4000 m/4400 yd
Tree	From 5 m/6 yd to 2500 m/2740 yd

Deer	From 5 m/6 yd to 1800 m/1970 yd
Specified range	2650 m/2900 yd to target of 2.3 m × 2.3 m Albedo: 0.6; Range: 10 km Capture probability: >90%
Accuracy	±1 m from 9 m to 100 m ±2 m from 100 m to 500 m <0.5% for distances over 500 m
Error rate	<2%
Beam divergence (changes slightly with focus)	
VECTOR X 8×42 / 10×42	1.8 × 0.1 mrad
VECTOR X 12×42	1.5 × 0.1 mrad
Acquisition time	<0.3 s

Laser rangefinder – Laser Class 1M

Laser type	905 nm, Class 1M per IEC/EN 60825-1
Range information	
Maximum range	From 5 m/6 yd to 6400 m/7000 yd
Tree	From 5 m/6 yd to 2800 m/3000 yd

Deer	From 5 m/6 yd to 2200 m/2400 yd
Specified range	2650 m/2900 yd to target of 2.3 m × 2.3 m Field of view: 10 km; albedo: 0.6 Capture probability: >90%
Accuracy	±1 m from 9 m to 100 m ±2 m from 100 m to 500 m <0.5% for distances over 500 m
Error rate	<2%
Beam divergence (changes slightly with focus)	
VECTOR X 8×42 / 10×42	1.8 × 0.1 mrad
VECTOR X 12×42	1.5 × 0.1 mrad
Acquisition time	<0.3 s

Mechanical specifications

Model name	VECTOR X 8×42	VECTOR X 10×42	VECTOR X 12×42
Housing	Magnesium die casting		
Housing coating	Rubber reinforcement, shock absorbing		
Color	TAC gray		

Model name	VECTOR X 8×42	VECTOR X 10×42	VECTOR X 12×42
Tripod connection	1/4" 20 UNC standard tripod adapter, detachable		
Dimensions (L × W × H)	163 mm × 130 mm × 65 mm	156 mm × 130 mm × 65 mm	169 mm × 130 mm × 65 mm
Weight (without battery)	~ 1013 g/~ 35 oz	~ 977 g/~ 34 oz	~ 1015 g/~ 36 oz
Objective lens thread for accessories	M46×0.75		

Data transmission

Wireless	Bluetooth® 5.1 Low Energy
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Additional programs for smartphones (apps)

VECSS app	For Android 11 and newer, iOS 12.5.1 and newer
Supported map services for integrated map navigation	Google Maps, Basemap, onX Hunt

Ballistic functions

Built-in ballistic functions	Applied Ballistics® Elite
Compatible with external ballistic apps	Applied Ballistics Quantum™

Device compatible with		
Kestrel	5700 Elite AB 5700X Elite	5700 Hornady 4DOF®
Garmin smartwatches with tactical functions	Foretrex® 701/901 Tactix® Delta Tactix® 7 Tactix® 8 Instinct® 2x	Descent Mk 2i Marq Commander Carbon D2 Mach 1 Pro Montana 700 GPSMap® 67i, etc.
Calypso Instruments	Calypso Ultrasonic Portable Mini AB	



The list of compatible devices is continually updated on our website:
www.vectronix-shooting-solutions.com

Digital magnetic compass with Inclinator

Units	360°/6283 mrad/6400 mil
Azimuth accuracy (1σ)	±5°
Maximum inclination	±89°/±1553 mrad/±1582 mil
Declination, adjustable	±179°

Environmental sensors

Temperature sensor	-20°C/-4°F to +50°C/122°F
Air pressure sensor	300 hPa to 1100 hPa
Humidity sensor	0% to 100% RH (relative humidity)

Heads-up display

Type	AMOLED microdisplay
Brightness setting	Automatic/manual

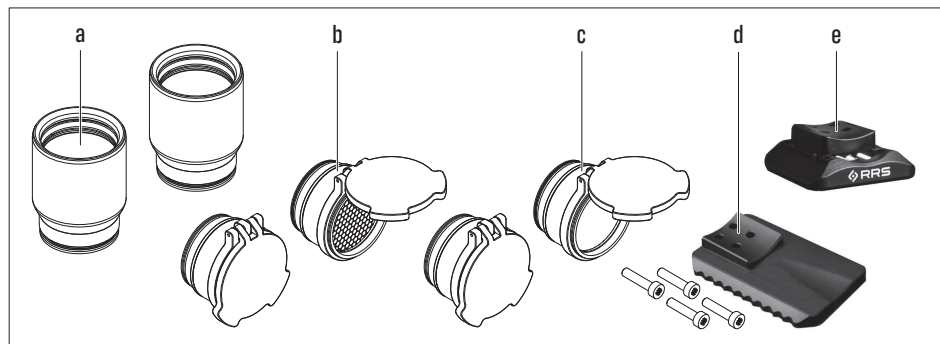
Battery supply

Standard, as supplied	(1) 3 V CR123A primary lithium-ion battery
Battery capacity (CR123A)	>10,000 measurements (at 20°C/68°F)
Optional, rechargeable	(1) 3.7 V 18650 rechargeable lithium-ion battery
Battery capacity (18650)	>18,000 measurements (at 20°C/68°F)

Environmental conditions

Protection class	IP67 (waterproof up to 1 m/3.3 ft for 30 min)
Operating temperature	-20°C/-4°F to +50°C/122°F
Storage temperature	-40°C/-40°F to +70°C/158°F
Impact resistance	60 g/6 ms per ISO 9022-30-7-1
Vibration resistance	2 g from 10 Hz to 150 Hz

5.4 Available accessories



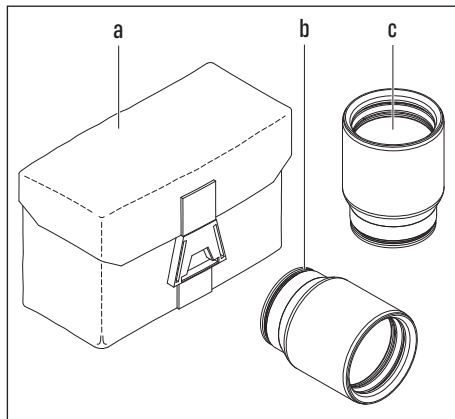
- a) 917 239 Range Enhancers 42
- b) 917 806 Anti-Reflection Devices (ARD) 42
- c) 919583 Lens Cover 42

- d) 919589 Area 419 tripod adapter (with mounting screws)
- e) 919588 RRS tripod adapter



Model-specific accessories have an additional designation (e.g., 42).

5.4.1 Range Enhancers



- a) Storage case
- b) Connection thread (M46×0.75)
- c) Range Enhancers (2×)

The Range Enhancers:

- Increase the magnification of the VECTOR X
- Slightly improve the performance of the laser for distance measurement

Range Enhancers are an original VECSS accessory and are not included in the scope of supply.

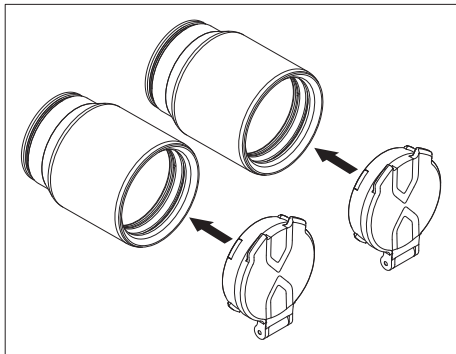
These magnification values can be achieved with the Range Enhancers 42:

Model designation (magnification × objective lens diameter)			New magnification
VECTOR X	8×42	+ Range Enhancers 42 =	11×42
	10×42		14×42
	12×42		17×42

Attachment of the Range Enhancers is described here: "Attaching/removing the Range Enhancers" [► 144].

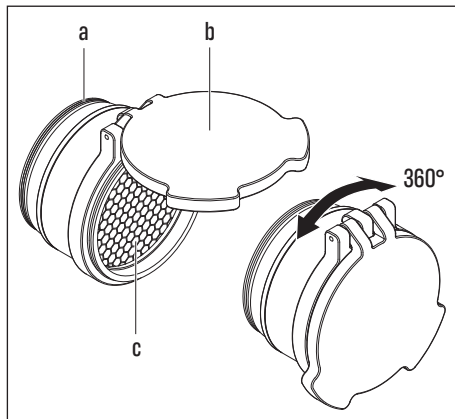


A VECTOR X with the MSR-DMR reticle (see "Reticle types" [► 40]) enables optimal use of the Range Enhancers.



The objective lens caps can also clip onto the Range Enhancers.

5.4.2 Anti-Reflection Devices (ARD)



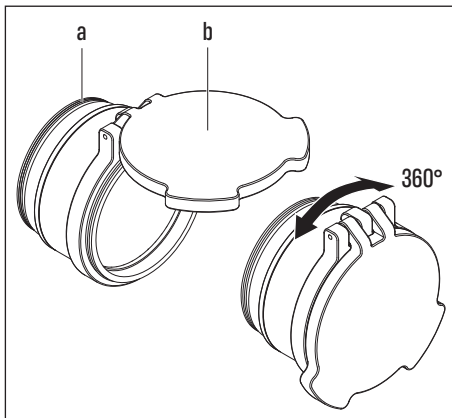
- a) Connection thread (M46×0.75)
- b) Objective lens caps (rotating)
- c) Honeycomb filter

The installed Anti-Reflection Devices

- Reduce incident light
- Prevent sunlight or other light sources from reflecting into the objective lenses of the VECTOR X and revealing its location

Attachment of the Anti-Reflection Devices is described here: "Attaching/removing the Anti-Reflection Devices (ARD) or lens covers" [► 143].

5.4.3 Lens covers



- a) Connection thread (M46×0.75)
- b) Objective lens caps (rotating)

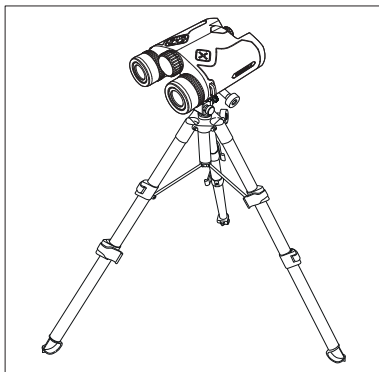
The lens covers protect the objective lenses of the VECTOR X from damage.

Advantages over the included standard objective lens caps:

- Threaded for secure attachment
- Durable aluminum body

Attachment of the lens cover is described here: "Attaching/removing the Anti-Reflection Devices (ARD) or lens covers" [► 143].

5.4.4 Tripod requirements



The VECTOR X has an attachment point for a tripod connection. The included tripod adapter requires a threaded tripod connection with $\frac{1}{4}$ " 20 UNC thread (see "Attaching the tripod adapter" [► 146]).

A tripod adapter for a quick-release system is also available as an alternative option.



NOTICE

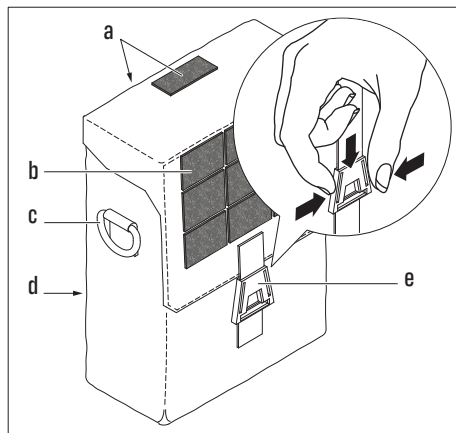
Azimuth measurement error due to tripod

Metal parts on the tripod can affect the magnetic compass of the VECTOR X.

- Only use a tripod made of nonmagnetic/non-magnetizable materials (carbon, aluminum).

6 QUICK START

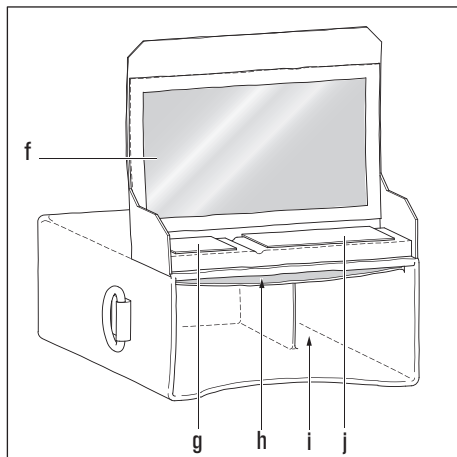
6.1 Using the case effectively



- a) Detachable protective covers for hook-and-loop closures.
- b) Hook-and-loop surface for name patch and VECSS logo patch. Includes MOLLE-compatible system for attaching the storage case for the Range Enhancers (optional – see end of section).
- c) D-rings for neck strap. You can use the included neck strap or a suitable third-party neck strap for binoculars.
- d) MOLLE-compatible attachment loops on the back
- e) Case closure (normally closes with a click)



For silent case closure (see image detail): Push the two sides of the closure clip together, insert the clip into the case closure (e) as far as it will go, and then release.

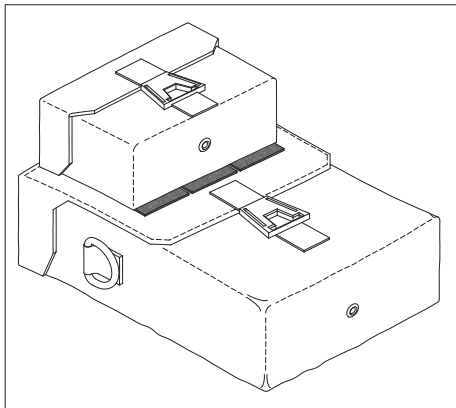


- f) Viewing window for target card or range card
- g) Spare battery pouch for CR123A primary lithium-ion battery, with two retention loops
- h) Pouch for safety information and Quick Start Guide
- i) Side slot for additional device (Kestrel 5700 Elite AB/5700X Elite, 5700 Hornady 4DOF®, etc.)
- j) Spare battery pouch for 18650 rechargeable lithium-ion battery, with five retention loops for additional CR123A primary lithium-ion batteries

After removing the protective covers (a), the hook-and-loop closures hold the case's lid in the open position. This makes it easier to read a target card or range card inserted in the viewing window when shooting prone.



You can create and print a target card or range card with the VECSS app.

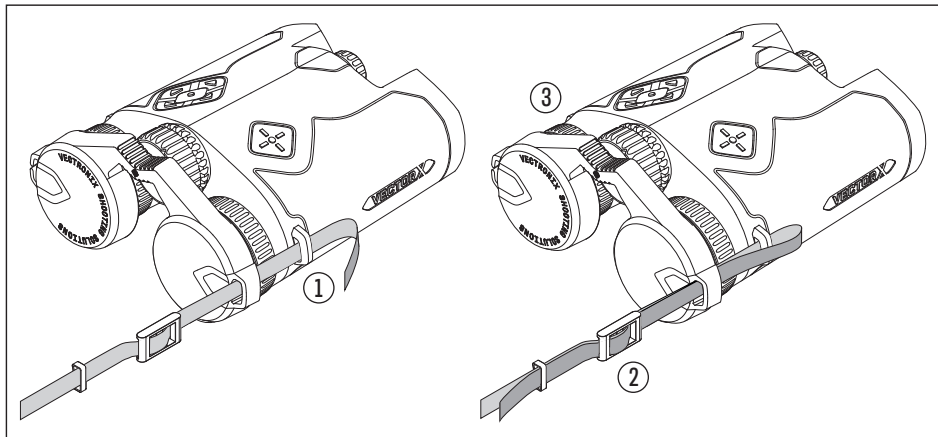


The storage case for the optional Range Enhancers can be attached to the hook-and-loop surface of the case using the MOLLE-compatible attachment loops.

Attaching the storage case

1. Place the storage case in front of the hook-and-loop surface of the case.
2. Undo the snaps of the attachment loops.
3. Alternately thread the attachment loops through the openings in the hook-and-loop surface and the bracket on the back of the storage case.
4. Align the storage case on the hook-and-loop surface.
5. Pull the attachment loops tight and secure them with the snaps.

6.1.1 Fastening the neck strap



1. Guide the end of the neck strap through the brackets on the eyepiece cap and VECTOR X housing.
2. Thread the end of the strap into the adjustment loop as shown.
3. Repeat the previous steps for the other end of the neck strap.
4. Adjust the length of the neck strap.



The neck strap can also be fastened to the case.

6.2 Changing the battery



NOTICE

Changes to setting or units upon battery replacement

The menu settings are reset when the battery is replaced.

- ▶ Re-configure the Settings menu after replacing the battery.



NOTICE

Azimuth measurement error after battery change

The battery affects the magnetic compass of the VECTOR X. Changing the battery changes the magnetic field, especially if the new battery is a different type.

- ▶ Recommendation: To ensure azimuth measurement accuracy, recalibrate the magnetic compass after changing the battery (see "Performing compass calibration (Chicken Dance)" [▶ 138]).

6.2.1 Suitable batteries

- **3 V CR123A primary lithium-ion battery**
 - Dimensions (diameter × L) 17 mm × 34.5 mm
 - Not rechargeable
 - Recommended standard battery – included in the scope of supply
- **3.7 V 18650 rechargeable lithium-ion battery (optional, not included in the scope of supply)**
 - Dimensions (diameter × L) 18 mm × 65 mm
 - Rechargeable
 - Only compatible with the 18650 battery compartment cover
 - Longer VECTOR X operating time (depending on battery capacity)

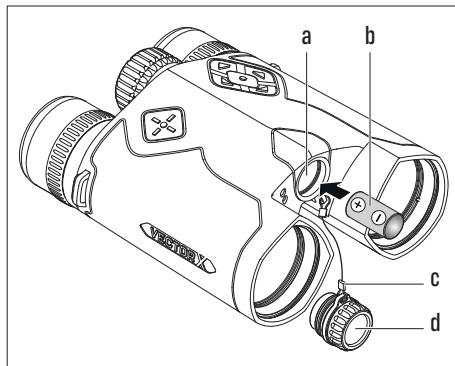


The 18650 rechargeable lithium-ion battery requires a charger specifically designed for this type of battery.



Some models of 18650 rechargeable lithium-ion battery are thicker because of the integrated protective electronics. These might barely fit in the battery compartment or not fit at all.

6.2.2 Inserting/replacing a CR123A primary lithium-ion battery



- a) Battery compartment with battery symbols
- b) 3 V CR123A primary lithium-ion battery
- c) Retention strap
- d) CR123A battery compartment cover

1. Turn the battery compartment cover counter-clockwise by hand and take it off the battery compartment.
2. Remove the used battery from the battery compartment and dispose of it (see "Disposal" [► 159]).
3. Insert a new 3 V CR123A primary lithium-ion battery into the battery compartment with the positive terminal first.
4. Screw the battery compartment cover back on by hand.

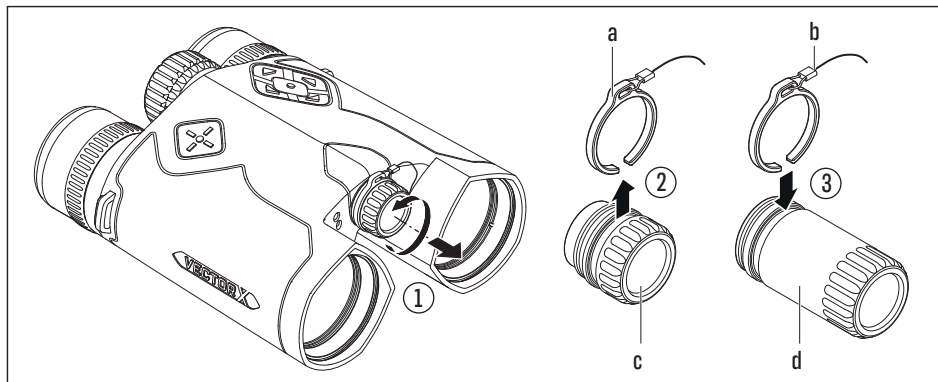


The VECTOR X continuously monitors the battery level and indicates the remaining battery capacity via a symbol on the heads-up display (see "Menu symbols and abbreviations" [► 91]).

6.2.3 Preparing, inserting, and replacing the 18650 rechargeable lithium-ion battery

The VECTOR X comes with a CR123A battery compartment cover. This must first be replaced to enable use of a 18650 rechargeable lithium-ion battery.

6.2.3.1 Replacing the battery compartment cover



- a) Attachment clip
- b) Retention strap

- c) CR123A battery compartment cover
- d) 18650 battery compartment cover



The 18650 battery compartment cover is considerably longer than the standard CR123A battery compartment cover.

1. Turn the CR123A battery compartment cover counterclockwise by hand and take it off the battery compartment.
2. Pull the attachment clip off the CR123A battery compartment cover. Store the CR123A battery compartment cover somewhere it won't be lost.
3. Attach the attachment clip to the 18650 battery compartment cover.



NOTICE

Risk of damage

When using the long 18650 battery compartment cover,

- ▶ never insert two CR123A primary lithium-ion batteries or other prohibited types of batteries into the battery compartment.

6.2.3.2 Inserting/replacing a 18650 rechargeable lithium-ion battery



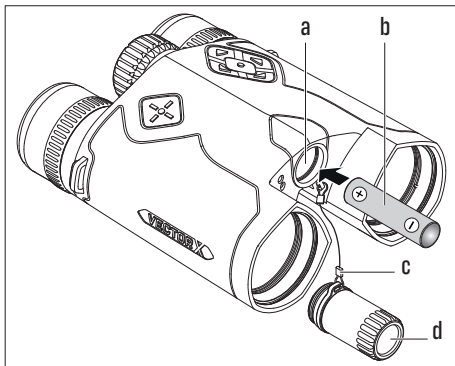
NOTICE

Risk of damage

- ▶ Only use a rechargeable lithium-ion battery that complies with IEC 62133-2 and has an integrated protective circuit (PCB/IC protection) and deep-discharge protection.



The VECTOR X continuously monitors the battery level and indicates the remaining battery capacity via a symbol on the heads-up display (see "Menu symbols and abbreviations" [► 91]).



- a) Battery compartment with battery symbols
- b) 3.7 V 18650 rechargeable lithium-ion battery
- c) Retention strap
- d) 18650 battery compartment cover

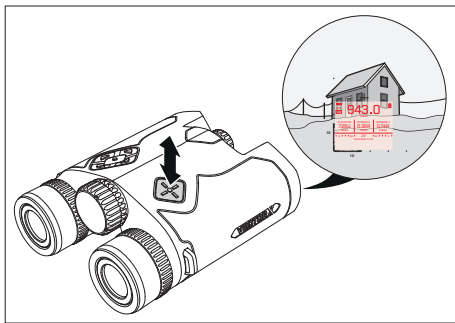
1. Turn the 18650 battery compartment cover counterclockwise by hand and take it off the battery compartment.
2. If applicable, remove the dead rechargeable lithium-ion battery from the battery compartment.
3. Insert a fully charged 3.7 V 18650 rechargeable lithium-ion battery into the battery compartment with the positive terminal first.
4. Screw the 18650 battery compartment cover back on by hand.
5. Manage the setting for the battery type in the Settings menu.



The default setting for the battery type is CR123A – see "Settings" [► 105].

So that the correct battery charge level is displayed on the heads-up display, select the battery type "18650" in the Settings menu under the "Battery" menu option.

6.3 Turning on the device/automatic power-off



1. Sight an object with the reticle.
2. Briefly press the Measurement button.
⇒ The heads-up display lights up.
3. Briefly press the Measurement button again.
⇒ The distance measurement is triggered and the heads-up display shows the current measurement.
⇒ The heads-up display turns off (standby) after a preset time (e.g., 10 s). See "Display time" under "Settings" [► 105].
4. The VECTOR X turns off automatically after a few minutes if no button is pressed in standby mode.
⇒ This deletes the current measurement data and ballistic data.



While the VECTOR X is in standby, the last indication on the heads-up display can be called up by pressing an arrow key or the Menu button.

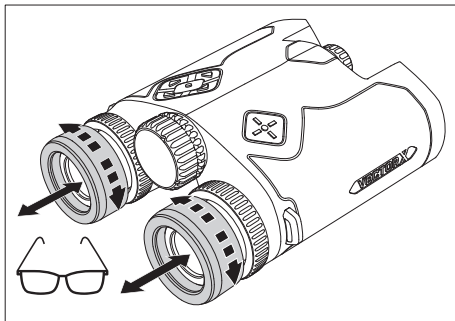
Bluetooth connection to a smartphone or external device is automatically terminated after a few minutes of inactivity.

6.4 Personal settings



After another person has used the VECTOR X or if it is not used for a long period of time, enter or check the personal settings again, especially the diopter setting.

6.4.1 Adjusting the eyecups



The rotating eyecups can be used to adjust the eye relief to the eyepiece.

1. Make the following initial adjustment first:
 - ⇒ For use without glasses or with contact lenses, first rotate the eyecups fully counterclockwise.
 - ⇒ For use with glasses, first rotate the eyecups fully clockwise.
2. Now adjust each eyecup for the optimal eye relief.

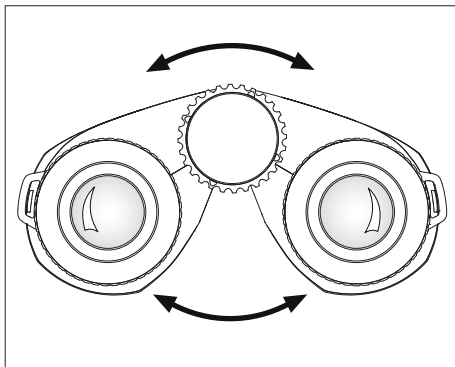


If the eye relief to the eyepiece is too close or too far, you will not be able to see the entire field of view.



To thoroughly clean or replace a damaged eyecup, see "Cleaning/replacing the eyecups" [► 150].

6.4.2 Setting the Interpupillary distance



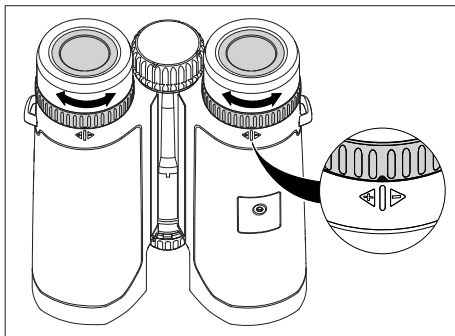
1. Look through the VECTOR X and sight something, such as a feature in the landscape.
2. Slowly pivot both barrels of the binoculars around the center axis (hinge).
3. Adjust the interpupillary distance until the left and right fields of view merge into a circular image without any interfering shadows at the edge.



The interpupillary distance setting can affect the position of the reticle. For example, the reticle appears tilted slightly to the left when the interpupillary distance is set to maximum.

6.4.3 Setting the diopters

Basic setting for equal focus of both eyes



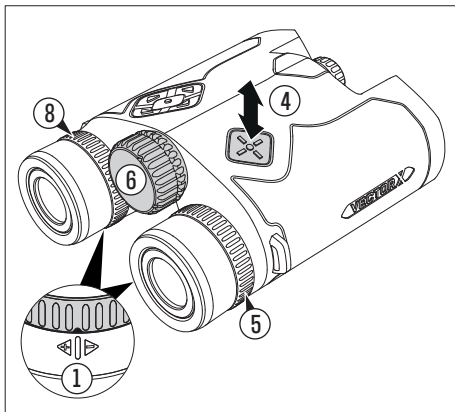
There are adjustment marks on the bottom of the eyepieces (see image detail).

1. Turn the VECTOR X over.
2. Turn both diopter adjustment rings to their zero positions.

Diopter adjustment

Adjust the diopters to

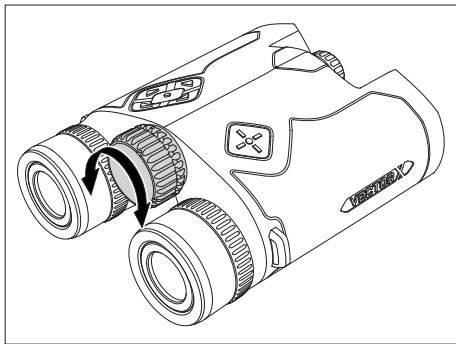
- Compensate for focal differences between the left and right eyes
- Enable use of the VECTOR X without glasses (if you normally wear glasses)
 - You can adjust the diopter by up to ± 4 diopters to compensate for your eyesight.



1. Turn both diopter adjustment rings to their zero positions (see basic setting on previous page).
2. Sight an object farther than 100 m/100 yd.
3. To improve the accuracy of what you see, close your left eye or cover the left objective lens with your hand or with the objective lens cap.
4. Briefly press the Measurement button.
⇒ The heads-up display lights up.
5. Turn the right diopter adjustment ring until the reticle and heads-up display are as sharp as possible.
⇒ If the heads-up display turns off, press the Measurement button again.

6. Focus the image seen through the lens using the focus wheel.
7. Uncover the left objective lens and close your right eye or cover the right objective lens.
8. Focus the image for your left eye using the left diopter adjustment ring.

6.4.4 Adjusting the focus



1. Sight an object with the VECTOR X.
2. Turn the focus wheel until the object looks as sharp as possible.



The focus wheel can focus from 8 m/9 yd to infinity.

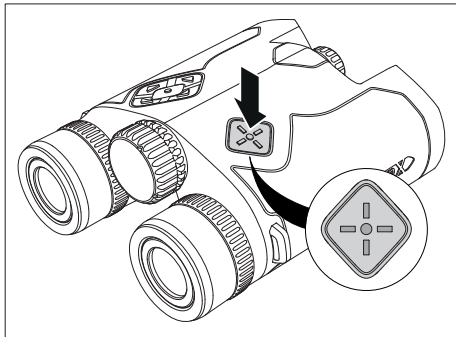
6.5 Using the device

The buttons on the top of the VECTOR X housing can be used to call up all device and menu functions.



Many settings can also be managed easily and conveniently in the VECSS app and sent to the VECTOR X via Bluetooth.

6.5.1 Measurement button



Single measurement

Briefly pressing the Measurement button activates the VECTOR X when it is off and makes the heads-up display light up.

Pressing the Measurement button again triggers a distance measurement.

Scan mode

If the Measurement button is held down for longer than one second, the VECTOR X switches to scan mode. In this mode, the distance is measured and displayed every 0.3 seconds.

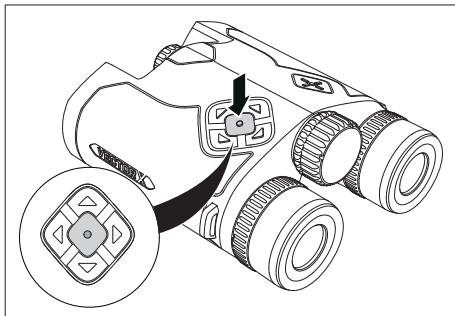


Scan mode is intended for use with moving objects – see "Scan mode" [► 132].

Scan mode consumes more battery power. It automatically turns off after 20 seconds. Scan mode can then be restarted.

6.5.2 Multi-selector

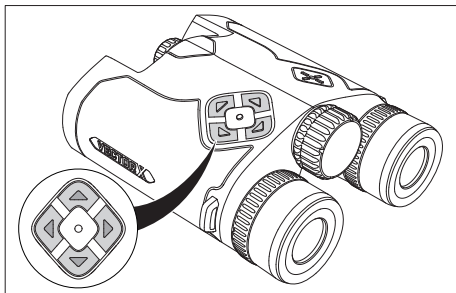
6.5.2.1 Menu button on the multi-selector



Use the center Menu button to

- Display or hide the menu bar in the active main menu
- Confirm entries or menu settings
- Cancel a shortcut

6.5.2.2 Arrow keys on the multi-selector



Use the arrow keys to navigate the menus, adjust settings, and activate shortcuts.

6.6 Using shortcuts

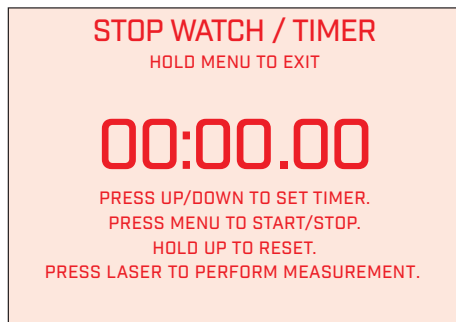
Pressing and holding an arrow key on the multi-selector enables the following functions:

Arrow key	Shortcut	Arrow key	Shortcut
 Up arrow	Stopwatch/timer	 Left arrow	Activating/deactivating Bluetooth
 Down arrow	Changing the laser mode	 Right arrow	Creating a target card



The shortcuts make important functions and menu settings easy to access.

6.6.1 Stopwatch/timer



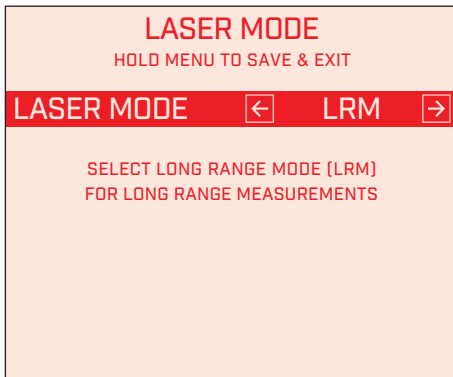
This shortcut is beneficial in time-sensitive situations in competitions.

After exiting the shortcut, the elapsed or remaining time is displayed in the Measurement menu.

Using the stopwatch/timer

1. Press and hold the up arrow key to call up the shortcut.
2. Enter the start time for the timer using the up/down arrow keys.
 - ⇒ The timer then counts down from the specified time to 0 seconds.
 - ⇒ If you don't specify a start time, the shortcut functions as a stopwatch.
3. Briefly press the Menu button to start or stop the clock.
4. Press and hold the up arrow key to reset the time.
5. Press and hold the Menu button to exit the shortcut.

6.6.2 Changing the laser mode



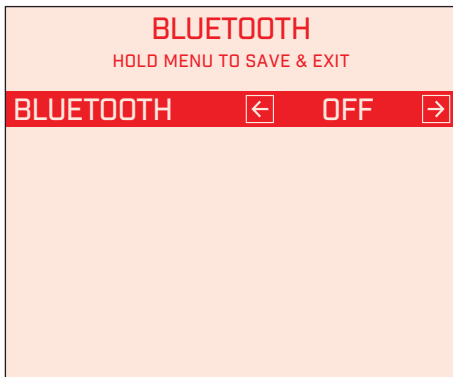
This shortcut enables you to adapt the measurement algorithm to the target distance. This will optimize the results of distance measurement.

After exiting the shortcut, an abbreviation for the selected setting is displayed in the Measurement menu.

Procedure

1. Press and hold the down arrow key to call up the shortcut.
2. Select the desired laser mode with the left/right arrow keys:
 - ULM (universal laser mode) – ideal setting for unobstructed objects with average reflectiveness
 - LRM (long range mode) – for long distances and objects with low reflectiveness
3. Press and hold the Menu button to exit the shortcut.

6.6.3 Activating/deactivating Bluetooth



An active Bluetooth connection is indicated in the Measurement menu via an abbreviation:

- APP: connection to the VECSS app on a smartphone
- BT: connection to an external device – see "Menu symbols and abbreviations" [► 91]

Procedure

1. Press and hold the left arrow key to call up the shortcut.
2. Activate Bluetooth (ON) with the right arrow key.
3. Activate Bluetooth on a compatible device and initiate a device search.
 - ⇒ The device to be paired with must be near the VECTOR X for this process to work.
4. When the search is complete, select the VECTOR X in the device list and initiate pairing.
 - ⇒ The VECTOR X will send a pin code to the VECSS app. This must be entered in the device being paired with upon initial pairing – see "Downloading the VECSS app and linking it to the VECTOR X" [► 84].
5. Deactivate the Bluetooth connection (OFF) with the left arrow key when the connection is no longer needed.
6. Press and hold the Menu button to exit the shortcut.

6.6.4 Creating a target card

TARGET CARD
HOLD MENU TO SAVE & EXIT

TARGET ID ← A →

DELETE SELECTED TARGET

943.0
YARDS

ELEVATION 7.29U MRAD	WINDAGE 1 0.39R MRAD	WINDAGE 2 0.74R MRAD
--	--	--

The measurement and ballistic data for a specific target can be transferred to the target card with this shortcut.

The target card you created can be viewed in the Target Card main menu and in the VECSS app.

- “Target ID”
 - A specific letter or number is assigned to each target. The letter or number for the target ID can be selected in the “Settings” [► 105] menu.
 - The next/previous entry with the associated target data can be displayed with the left/right arrow keys.
- “Delete selected target”
 - Select the deletion command with the red selection field.
 - Briefly press the Menu button to confirm.

Procedure

1. Press and hold the right arrow key to call up the shortcut.
2. Use the left/right arrow keys to select a specific target ID or the next empty target ID.

3. Perform the distance measurement.
⇒ The current target data will appear in the target card under the selected target ID.
4. If desired, select a new target ID and adopt the next distance measurement in the target card.
5. When you are finished with the target card, press and hold the Menu button to exit the shortcut.



You can also enter target data into the target card with the VECSS app by remotely triggering a distance measurement.



Export the target card created with the VECSS app (e.g., to an E-DOPE card from Down Range Systems), save it as a PDF, and print it. Alternatively, download a target card template from www.vectronix-shooting-solutions.com.

Cut the target card printout or template to size and store it in the case for quick reference without a device ("Using the case effectively" [► 60]).



When creating a new target card, first delete all old target entries saved in the device. To do so, use the deletion command "Delete all targets" in the "Target Card" [► 103] main menu.

6.7 Downloading the VECSS app and linking it to the VECTOR X

Procedure

1. Download the free VECSS app onto your smartphone or tablet.

⇒ The app is available in the following app download stores, based on the operating system of your device:

Operating system	App download store
Apple iOS	
Android	

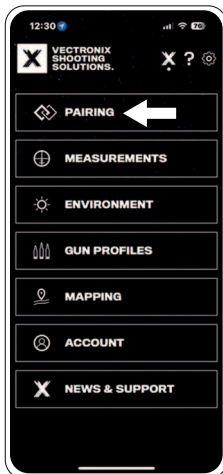


Check your app store for updates regularly to ensure that you can always use the VECSS app to its fullest potential.

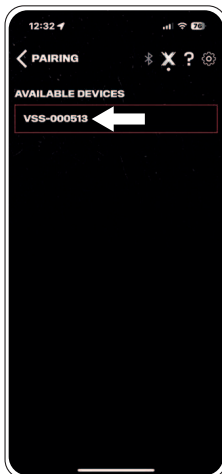
2. Activate Bluetooth on your smartphone or tablet.

3. Activate Bluetooth on the VECTOR X – see "Activating/deactivating Bluetooth" [► 81].

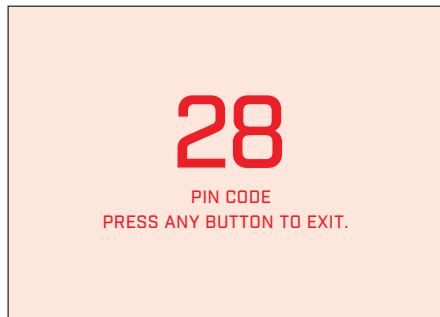
4. Start the VECSS app.



5. Start the pairing process.



6. Select the VECTOR X in the device list.



7. A two-digit pin code will appear on the heads-up display of the VECTOR X.

If the VECTOR X is in standby, briefly press the Measurement button to activate the heads-up display.

In the app, a pop-up will appear with the following text:

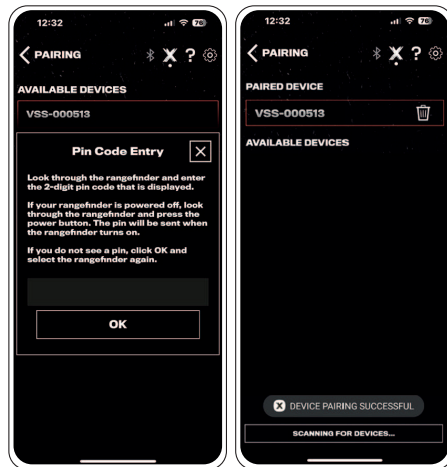
Pin Code Entry

Look through the rangefinder and enter the 2-digit pin code that is displayed.

If your rangefinder is powered off, look through the rangefinder and press the Power button/Measurement button. The pin will be sent when the rangefinder turns on.

If you do not see a pin, click OK and select the rangefinder again.

Use the number pad to enter the pin code.



8. Enter the pin code and confirm by tapping “OK.” The pairing process is complete.



After pairing, synchronization between the smartphone and VECTOR X can take up to 15 seconds. All features of the VECSS app are available only after synchronization.

Troubleshooting connection problems

Please check the following if there are issues establishing a connection:

- Charge the smartphone or tablet before it gets too low, and pay attention to the battery display on the VECTOR X. The energy management program might turn Bluetooth off when the battery level is too low.
- Make sure the smartphone or tablet is close enough to the VECTOR X.
- Ensure there are no devices that could interfere with establishing a connection during this process (e.g., Wi-Fi/WLAN router or microwave-emitting device).

6.8 Ballistic functions (DOPE)

Initial device condition

Internal ballistic calculation is activated in the VECTOR X upon initial setup and upon reset (see "Settings" [► 105]):

- The Measurement menu shows 3 HUD screens with ballistic data.
- All main menus applicable to ballistics are shown:
 - Environmental conditions, target card, gun profiles
- The profile DEMO GUN1 is selected in the Gun Profile main menu for demonstration purposes.
 - Ammunition: .308 Win with a weight of 175 gr.



NOTICE

Misses due to incorrect correction values

If the DEMO GUN1 gun profile is not coordinated with the ammunition of your weapon, do not use the ballistic correction values displayed to set the telescopic sight. Otherwise, misses will result, for which Safran Vectronix AG assumes no liability.

- The user is responsible for proper gun profile configuration and selection.

Setting the ballistic functions

Requirements:

- A gun profile was created for the weapon to be used in the VECSS app and was transferred to the VECTOR X via Bluetooth (see "Downloading the VECSS app and linking it to the VECTOR X" [► 84]).
1. "Ballistics" is set to "INT"/internal or "EXT"/external in the Settings menu (see the information below and "Settings" [► 105]).
 2. In the Gun Profile main menu, select the gun profile for the weapon to be used and mark its check box (see "Gun Profiles" [► 104]).

Internal ballistic calculation (INT)



This ballistic setting is for use of the VECTOR X as an independent instrument.

1. Set the “Ballistics” setting in the Settings menu to “INT” (see “Settings” [► 105]).

⇒ The VECTOR X uses internal sensor data to perform ballistic calculations (DOPE).

Special cases:

- Direct Bluetooth pairing with a Kestrel® 5700 AB weather meter
 - The measurements from the weather meter (temperature, air pressure, humidity, wind strength, and wind direction) are used for DOPE calculation.
- Use of a Calypso Ultrasonic Portable Mini AB wind meter
 - Measurements from the wind meter (wind strength and wind direction) and the internal sensor (temperature, air pressure, and humidity) are used for DOPE calculation.



Pairing with the Calypso Ultrasonic Portable Mini AB wind meter over Bluetooth requires a mobile device with the AB Quantum® app from Applied Ballistics®.
The VECSS app cannot be used at the same time.

External ballistic calculation (EXT)

The VECTOR X transmits the ballistic data (distance, angle, and azimuth) to an external device that performs the DOPE calculation, such as

- Kestrel® 5700 AB, Kestrel with Hornady 4DOF® weather meter
- Mobile device with the AB Quantum® app or another ballistic calculator app
- GARMIN® ballistic watch

The calculated DOPE is sent to and displayed on the VECTOR X.

Deactivating ballistic functions

1. Set the “Ballistics” setting in the Settings menu to “OFF” (see “Settings” [► 105]).

Without ballistic functions

- The Measurement menu shows only one HUD screen with measurement results (see “Measurement parameters” [► 122]).
- All main menus except the Settings menu are hidden.



Deactivating ballistic functions is best when the VECTOR X will only be used for measurement. The limited scope of functionality enables faster and easier operation.

7 MENU DESCRIPTION

7.1 Menu symbols and abbreviations

Menu symbols

■ □ □ Page indicator in Measurement menu (HUD screens 1 through 3)



Lithium-ion battery, full charge



Lithium-ion battery, sufficient charge



Lithium-ion battery, low charge



Lithium-ion battery, very low charge –
only a few more measurements possible



Compass calibration (Chicken Dance) required

Abbreviations for laser settings

ULM = “universal laser mode” – ideal setting for unobstructed objects with average reflectiveness

LRM = “long range mode” – for long distances and objects with low reflectiveness

Abbreviations for Bluetooth connections

BT	Bluetooth is active and ready for connection
BT	Bluetooth connection to external device
APP	Bluetooth connection to the VECSS app on a smartphone
CLPS	Bluetooth connection to external Calypso Instruments device (e.g., Ultrasonic Portable AB Mini wind meter)
GRMN	Bluetooth connection to external Garmin device (e.g., tactix 7 AMOLED)
KSTL	Bluetooth connection to external Kestrel device (e.g., Kestrel 5700X WEZ)

7.2 Measurement menu

The Measurement menu changes based on the ballistic functions (see "Ballistic functions (DOPE)" [► 87]).

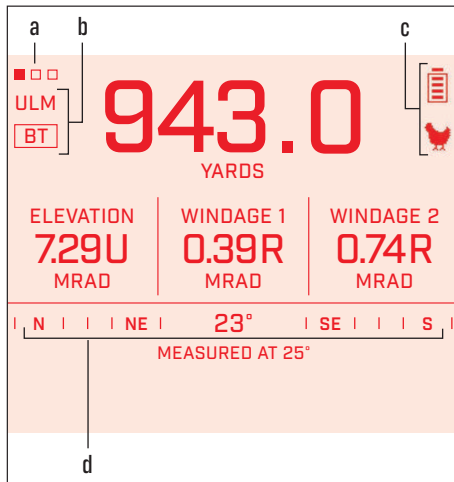
When ballistic functions are activated, pressing and releasing the Measurement button displays HUD screen 1 of the Measurement menu.

Use the left/right arrow keys to switch between HUD screens 1 through 3, which contain additional ballistic data.



When ballistic functions are deactivated, just one HUD screen appears after a measurement (see "Measurement menu/HUD screen 1 without ballistic data" [► 98]).

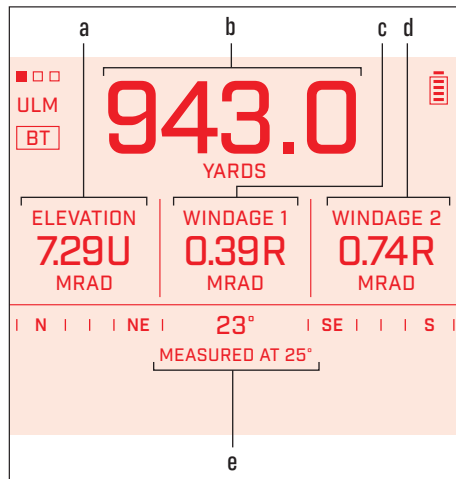
7.2.1 Special features of the Measurement menu



- Page indicator with three squares. The marked square indicates the current HUD screen (1 through 3).
- Abbreviation of the active device function(s) – laser mode and Bluetooth connection (see "Menu symbols and abbreviations" [► 91]).
- Indication area for menu symbols.
 The Chicken Dance icon indicates that compass calibration is necessary (see "Compass calibration (Chicken Dance)" [► 137]).
- Compass indication (only on HUD screen 1).

7.2.2 Measurement menu/HUD screens with ballistic data

Measurement menu – HUD screen 1



- a. "Elevation"/height adjustment value
- b. Target distance
- c. "Windage 1" – lateral correction value 1, applies to wind measurement 1
- d. "Windage 2" – lateral correction value 2, applies to wind measurement 2
- e. Azimuth value at the time of measurement

The lateral correction values 1/2 (Windage 1/2) are calculated and displayed based on the associated wind measurements 1/2.

Wind measurements are taken with an external device (e.g., Kestrel or Calypso Instruments).

Alternatively, the values for wind direction and wind speeds 1/2 can also be entered in the "Environmental Conditions" [► 102] menu.

The unit of the compass indication and azimuth (degrees (°)/mil/mrad) can be set in "Units submenu" [► 109].

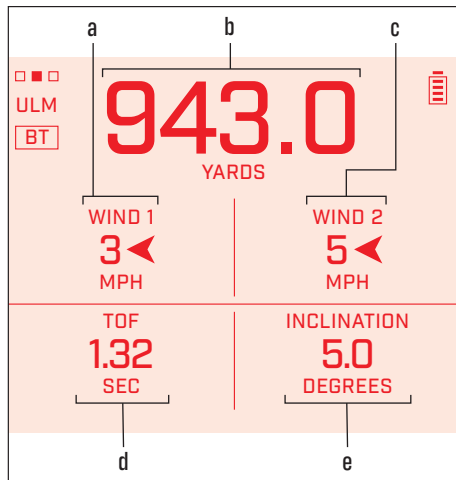


Use the up/down arrow keys to change the brightness of HUD screen 1. This will also change the brightness of HUD screens 2 and 3. For information about the brightness setting, see "Display Options submenu" [► 111].



The glossary has descriptions of the abbreviations and terms used in the HUD screens.

Measurement menu – HUD screen 2



- a. “Wind 1”/wind measurement 1: average wind speed with wind direction arrow

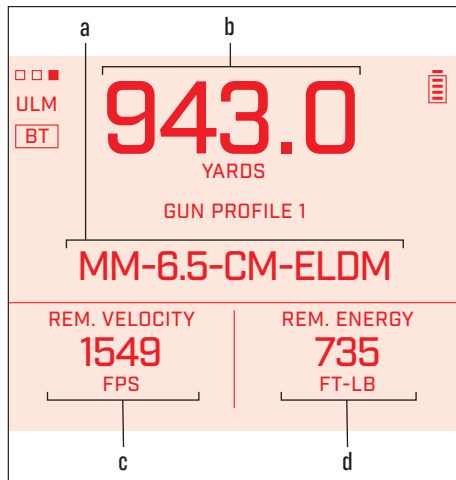


Use the up/down arrow keys to change the wind speed on HUD screen 2.

- b. Target distance
- c. “Wind 2”/wind measurement 2: maximum wind speed with wind direction arrow
- d. “TOF”/flight time for projectile to reach target
- e. “Inclination”/angle of inclination to target

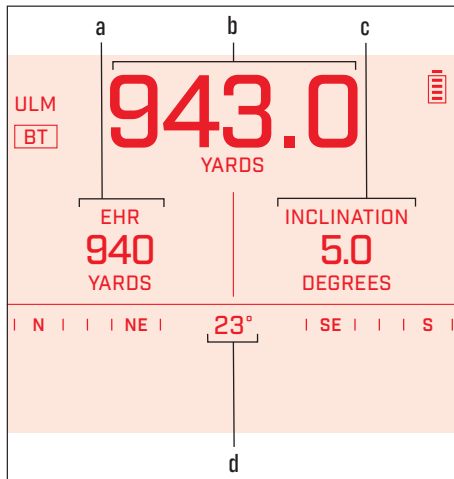
Trigger a new measurement to update an E-DOPE® Card (see "Transferring data from the VECSS app to an E-DOPE Card" [► 136]).

Measurement menu – HUD screen 3



- a. “Gun profile 1”/selected gun profile
- b. Target distance
- c. Display field that can be configured (see "Display Options submenu" [► 111] “Custom HUD3”).
Options:
 - “Density altitude”
 - “Rem. velocity”/remaining projectile velocity at target
 - EHR, “Equivalent horizontal range”
- d. “Rem. energy”/remaining projectile energy at target

7.2.3 Measurement menu/HUD screen 1 without ballistic data



- a. "EHR"/horizontal range
- b. Target distance
- c. "Inclination"/angle of inclination to target
- d. Azimuth

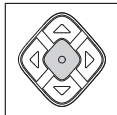
The measurements for the current distance measurement are shown on a single HUD screen.



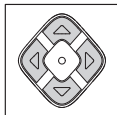
Use the up/down arrow keys to change the brightness of HUD screen 1. For information about the brightness setting, see "Display Options submenu" [► 111].

7.3 Using the main menus

7.3.1 Buttons used with the main menus



Pressing and holding the Menu button brings up the menu bar with the current main menu. Briefly press the Menu button to confirm an entry, setting, or selection.



Use the four arrow keys on the multi-selector to navigate through the menu and adjust settings.

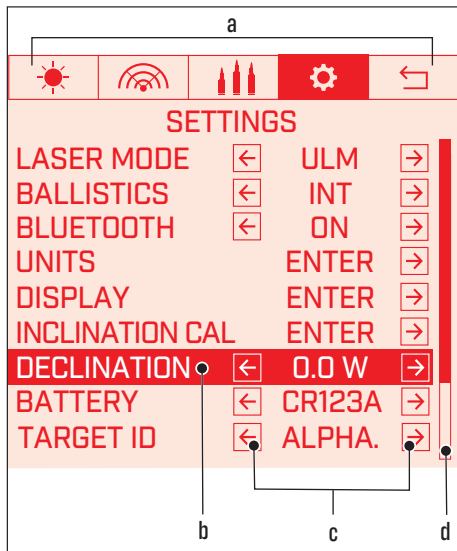


Exit button: Highlight this button in the menu bar and briefly press the Menu button to exit the main menu and display HUD screen 1 of the Measurement menu.

7.3.2 Special features of the main menus



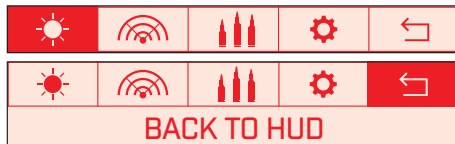
Images of the main menus in this user manual may differ from your actual display.



- a. Menu bar (current main menu is highlighted)
- b. Selection field
- c. Indication of the arrow keys used for selection
- d. Scroll bar if there are more entries (scroll up/down with the arrow keys)

7.3.3 Menu bar

Menu bar with activated ballistic functions



The menu bar contains icons for all available main menus and the Exit button.

The active main menu is highlighted in red in the menu bar.

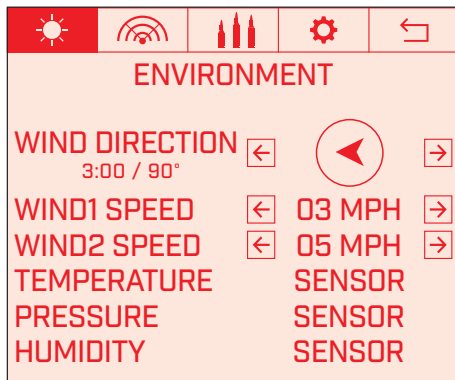
Icon	Main menu	Icon	Main menu/button
	Environmental Conditions		Settings
	Target Card		Exit button (back to HUD screen 1)
	Gun profiles		

Menu bar with deactivated ballistic functions



The menu bar only contains an icon for the Settings menu and the Exit button.

7.4 Environmental Conditions



Environmental data for ballistic calculations are entered in this main menu or transmitted via the VECSS app.

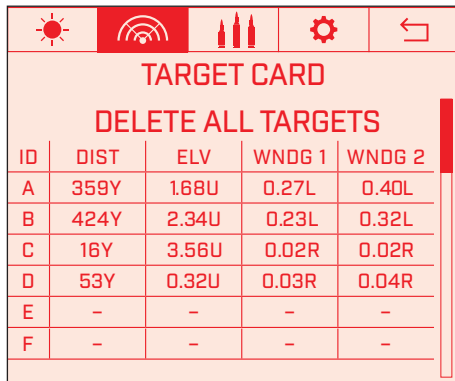
- “Wind direction”
 - The wind direction entered is displayed in the Measurement menu/HUD screen 2 with a direction arrow.

- “Wind1 speed”/wind speed 1
 - Entry of the average wind speed
- “Wind2 speed”/wind speed 2
 - Entry of the maximum wind speed
- “Temperature”
 - Measurement of the air temperature with the internal sensor (*default setting)
- “Pressure”
 - Measurement of the ambient air pressure with the internal sensor (*default setting)
- “Humidity”
 - Measurement of the relative humidity with the internal sensor (*default setting)

*Alternatively, the measurement can be entered manually or can be retrieved from the internet via the VECSS app.

To set the units for the measurements, see "Units submenu" [► 109].

7.5 Target Card



ID	DIST	ELV	WNDG 1	WNDG 2
A	359Y	1.68U	0.27L	0.40L
B	424Y	2.34U	0.23L	0.32L
C	16Y	3.56U	0.02R	0.02R
D	53Y	0.32U	0.03R	0.04R
E	-	-	-	-
F	-	-	-	-

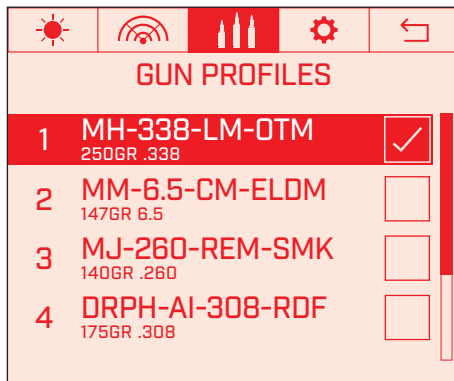
This main menu displays the target card with all distance measurements saved and the associated ballistic data.

- “Delete all targets”
 - Select the deletion command with the red selection field.
 - Briefly press the Menu button to confirm.
- “(Target) ID”
 - A specific letter or number is assigned to each target in the table.
- The scroll bar on the right side of the menu indicates that there are more entries.
 - Scroll up/down with the arrow keys.



For entering target data into the target card, see “Creating a target card” [► 82].

7.6 Gun Profiles



All gun profiles saved in the VECTOR X are listed in this main menu.

- The gun profile most recently used is indicated by a checked box.
 - Use the right arrow key to mark the check box.
- The scroll bar on the right side of the menu indicates that there are more entries.
 - Scroll with the up/down arrow keys.

The gun profiles are compiled from projectile databases and are transferred to the VECTOR X via the VECSS app.



The VECTOR X is pre-loaded with a demo gun profile (Demo Gun1) for demonstration purposes. The ammunition of this profile is set to a caliber of .308 Win with a weight of 175 gr.



NOTICE

Misses due to incorrect correction values

An incorrect gun profile or selecting the wrong gun profile can lead to incorrect ballistic output values and miscalculations, for which Safran Vectronix AG assumes no liability.

- ▶ The user is responsible for the proper gun profile configuration and selection.
- ▶ The pre-loaded demo gun profile (Demo Gun1) likely does not correspond to your weapon.



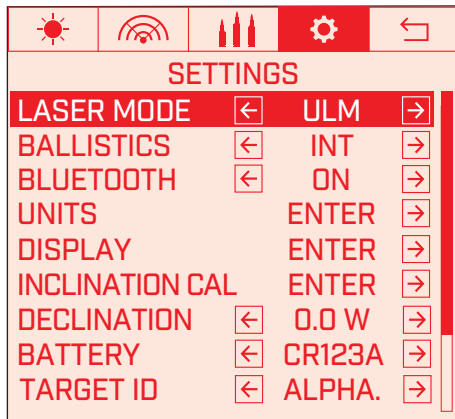
Ballistic functions are unavailable when there is no gun profile selected (see "Ballistic functions (DOPE)" [▶ 87]).

7.7 Settings

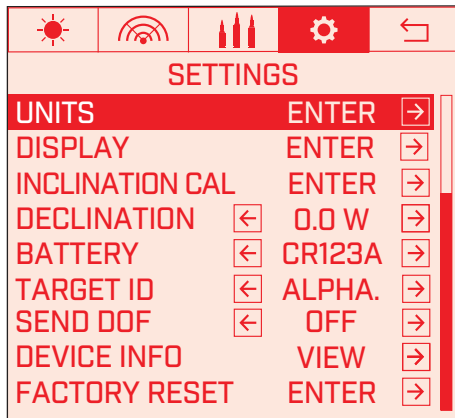


Before using the VECTOR X after it has not been used for a long time, after replacing the battery, or if someone else used the device

- ▷ Check the settings in this menu.
- ▷ Update the local declination or reset it (0.0 W).
- ▷ Check the inclinometer. Check the zero setting, update the setting, or reset the inclinometer using the reset function.
- ▷ Check the units setting – see Units submenu.

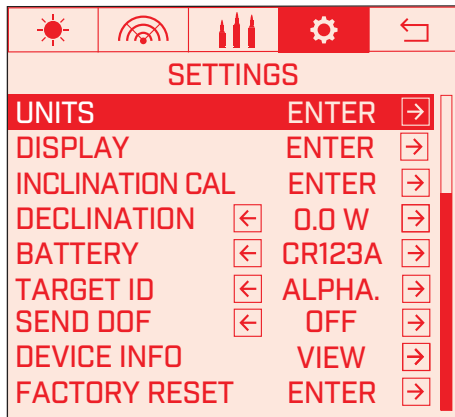


- “Laser mode”: LRM, ULM
 - Indicated in the Measurement menu
 - See the shortcut “Changing the laser mode” [► 80]
- “Ballistics”: INT, EXT, OFF
 - See “Ballistic functions (DOPE)” [► 87]
 - Ballistic functions are deactivated when this setting is “OFF”
- Bluetooth: ON, OFF
 - See the shortcut Activate/deactivate Bluetooth
- “Units”: Enter
 - See Units submenu
- Display: Enter
 - See “Display Options submenu” [► 111]
- “Inclination cal”/calibrate inclinometer: Enter
 - See “Inclination Calibration (calibrate inclinometer) submenu” [► 116]



Scroll down with the arrow keys to see additional settings.

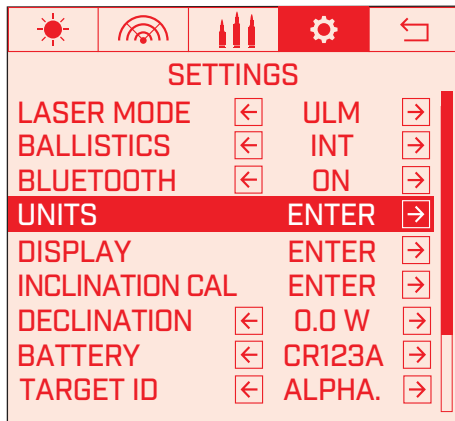
- “Declination” (magnetic declination):
from 30° east (+) to 30° west (-)
 - Zero setting: 0.0 W
 - See "Accounting for local magnetic declination" [► 126]
- “Battery”: CR123A/18650 (battery types)
 - For the correct battery level indication in the Measurement menu
 - Default setting: CR123A
- “Target ID”: Alpha./Numer.
 - Indicate targets on the target card with letters or numbers.
- “Send DOF”/determine direction of fire (DOF): OFF, ON
 - Additional function when using a Kestrel® weather meter with digital compass
 - OFF: internal digital magnetic compass is used to determine DOF
 - ON: compass data from Kestrel® weather meter is used to determine DOF



Scroll down with the arrow keys to see additional settings.

- “Device info”: View
 - Device info such as software version
 - See “Device Info submenu” [► 118]
- “Factory reset”: Enter
 - Resets the VECTOR X to factory settings.
 - See “Factory Reset submenu” [► 120] with confirmation prompt

7.7.1 Units submenu



To call up this submenu

1. Use the up/down arrow keys to place the red selection field on "Units."
 2. Briefly press the right arrow key.
- ⇒ The Units submenu is displayed.

				
SETTINGS				
UNITS		EXIT		
DISTANCE		YARD		
AZIMUTH		DEGREE		
INCLINATION		DEGREE		
TEMPERATURE		°F		
STATION PRESS		INHG		
REM ENERGY		FTLB		
WIND SPEED		MPH		
VELOCITY		FPS		

“Mil” unit definition

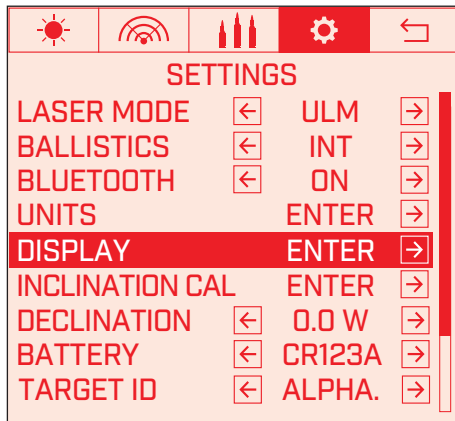
- The unit “mil” corresponds to NATO mils.
 - A full circle has 6400 mils.
- Calculation: $1 \text{ mil} = 0.98 \text{ mrad} = 0.05625^\circ$.

- “Distance”: m/yd
- “Azimuth”: degrees (°)/mil/mrad
- “Inclination”:
degrees (°)/mil/mrad
- “Elv/wnd”/height correction value/lateral correction value: mrad/mil
- “Temperature”: °C/°F
- “Station press.”: bar/inHg
- “Rem. energy”/remaining projectile energy at target: oule/ft-lb
- “Wind speed”:
m/s / kph / mph
- “Velocity”/projectile velocity at target:
m/s / fps

To exit this submenu

3. Use the up/down arrow keys to place the red selection field on “Units.”
 4. Briefly press the left arrow key.
- ⇒ The Settings main menu is displayed.

7.7.2 Display Options submenu



To call up this submenu

1. Use the up/down arrow keys to place the red selection field on "Display."
 2. Briefly press the right arrow key.
- ⇒ The Display Options submenu appears.

DISPLAY OPTIONS			
HUD SIZE	←	FULL	→
CUSTOM HUD3	←	VEL	→
AIM MARK	←	OFF	→
AIM MARK POS		ENTER	→
DISPLAY TIME	←	20s	→
BRIGHTNESS	←	9	→
BACK			

- “HUD size”: Full, reduced
 - “Full”: display is original size
 - “Reduced”: display is 30% smaller
- “Custom HUD3”: DA, VEL, EHR
 - Display options for HUD screen 3 – select from
 - “DA”: density altitude
 - “VEL”: remote velocity (projectile velocity at the target)
 - “EHR”: equivalent horizontal range
- “Aim mark”/electronic aiming mark assist: ON, OFF
 - Turn electronic aiming mark assist on or off

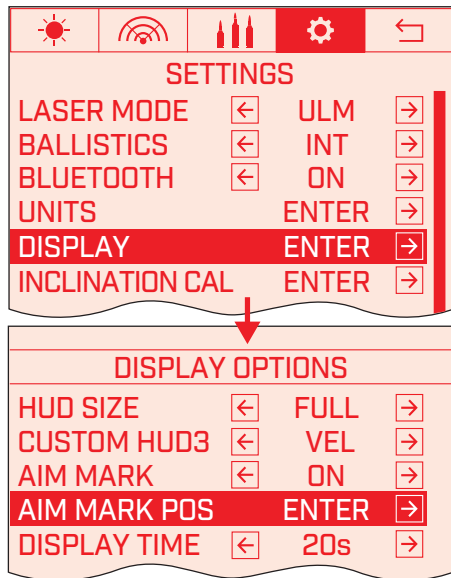


The electronic aiming mark assist cannot be brightened or dimmed – its brightness changes with the setting for the heads-up display.

DISPLAY OPTIONS			
HUD SIZE	←	FULL	→
CUSTOM HUD3	←	VEL	→
AIM MARK	←	OFF	→
AIM MARK POS		ENTER	→
DISPLAY TIME	←	20s	→
BRIGHTNESS	←	9	→
BACK			

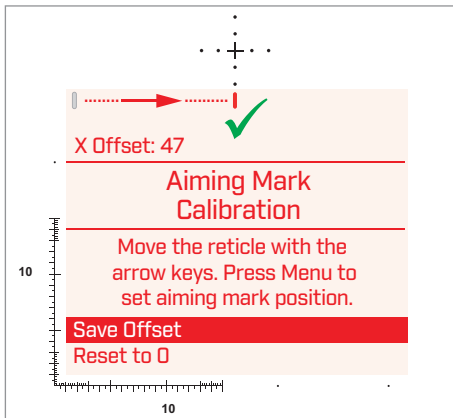
- “Aim mark pos”/calibrate electronic aiming mark assist: Enter
 - See “Aim Mark Pos (calibrate electronic aiming mark assist) submenu” [► 114]
- “Display time”:
 - 5 s, 10 s, 20 s, 30 s, 60 s
 - Display time of the Measurement menu (HUD screens 1 through 3). The VECTOR X switches to standby after this time.
 - Default setting: 20 s.
- “Brightness”: Auto, NV 1, NV 2, 3 – 15
 - Brightness setting for the heads-up display and electronic aiming mark assist
 - “Auto”: automatic based on brightness sensor
 - “Manual”: levels from minimum NV 1 (NV = night vision) to maximum 15
- “Back”
 - Briefly press the menu button to exit the submenu.

7.7.2.1 Aim Mark Pos (calibrate electronic aiming mark assist) submenu



To call up this submenu

1. Use the up/down arrow keys to place the red selection field on "Display."
2. Briefly press the right arrow key.
⇒ The Display Options submenu appears.
3. Use the up/down arrow keys to place the red selection field on "Aim mark pos"/calibrate electronic aiming mark assist.
4. Briefly press the right arrow key.
⇒ The Aim Mark Pos (calibrate electronic aiming mark assist) submenu is displayed.



The electronic aiming mark assist appears at the left edge of the display upon initial setup, after a software update, and after a factory reset.



This initial setting makes it necessary to calibrate the electronic aiming mark assist, preventing the use of an uncalibrated aiming mark assist.

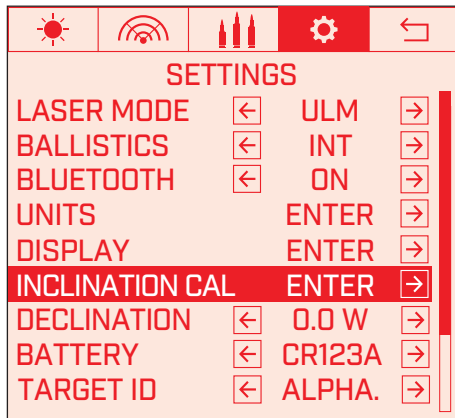
5. Use the left and right arrow keys to center the electronic aiming mark assist to the reticle.



Manufacturing tolerances and changes in temperature affect the position of the electronic aiming mark assist.

- ⇒ The X offset of the new position is shown.
6. Press the Menu button.
- ⇒ A selection menu with the options below appears:
 - “Save offset”/save X offset (highlighted red)
 - “Reset to 0”/reset X offset to zero
7. Press the Menu button again.
- ⇒ The position of the electronic aiming mark assist is saved.
 - ⇒ The Display Options submenu appears.

7.7.3 Inclination Calibration (calibrate inclinometer) submenu

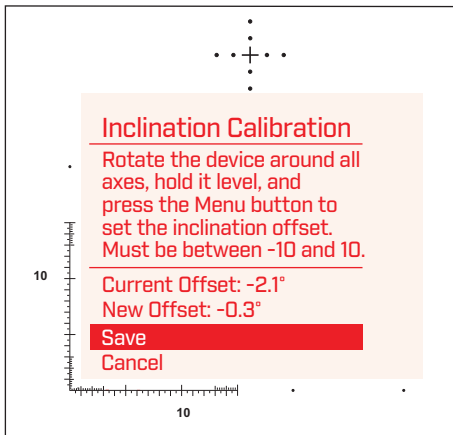


To call up this submenu

1. Use the up/down arrow keys to place the red selection field on "Inclination cal."
 2. Briefly press the right arrow key.
- ⇒ The Inclination Calibration (calibrate inclinometer) submenu is displayed with the current offset.

Requirement

First select a measuring point in the target area or surrounding environment that is at the same height as the VECTOR X.



To exit the submenu without changing the offset

- Use the down arrow key to place the red selection field on “Cancel.”
- Briefly press the Menu button.

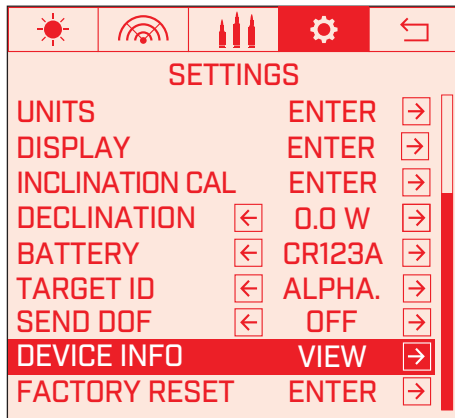
3. First, rotate the VECTOR X around all axes (see “Performing compass calibration (Chicken Dance)” [► 138]).
4. Sight the measurement point selected.
⇒ The new offset is displayed.



“Exceeds max”/range appears if the offset exceeds the permissible range.

5. Press the Menu button.
⇒ The red selection field is already on “Save.”
⇒ The inclinometer is zeroed and the new offset saved. The offset will be accounted for in future azimuth measurements.
⇒ The calibration instructions disappear and the Settings menu is displayed.

7.7.4 Device Info submenu



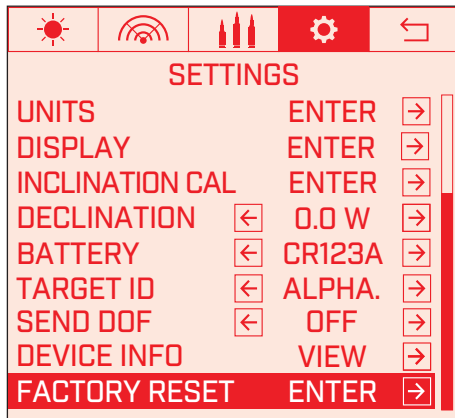
To call up this submenu

1. Use the up/down arrow keys to place the red selection field on "Device info."
 2. Briefly press the right arrow key.
- ⇒ The Device Info submenu is displayed.



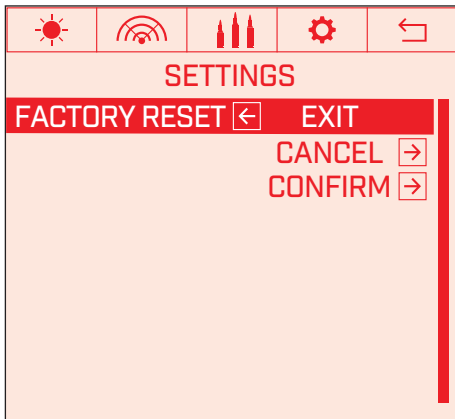
- “Device info”: Exit
 - Exit the submenu and return to the Settings menu by pressing the left arrow key.
- “Device name”
- S/N “Serial number”
- “Firmware version”/software version
- “AB solver version”/Applied Ballistics solver version
- “FPGA” (Field Programmable Gate Array)/programmable integrated circuit

7.7.5 Factory Reset submenu



To call up this submenu

1. Use the up/down arrow keys to place the red selection field on "Factory reset."
 2. Briefly press the right arrow key.
- ⇒ The Factory Reset submenu is displayed.



- “Factory reset”: Exit
 - Press the left arrow key to return to the Settings menu.
- “Cancel”
 - Cancel the process and return to the Settings menu.
- “Confirm”
 - The VECTOR X will be reset to factory settings.
 - The device’s software will be reset to how it was when it was delivered.
 - The DEMO GUN1 gun profile will be used – see “Ballistic functions (DOPE)” [► 87].
 - The target card will be deleted.
 - The Settings menu will be displayed again at the end.

8 MEASUREMENTS



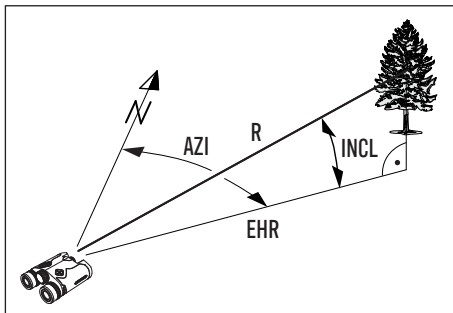
NOTICE

Risk of damage to the laser diode

The laser diode can be overloaded by performing distance measurements close to mirrors, mirror-like surfaces, or highly reflective objects.

► Never aim at reflective surfaces/objects.

8.1 Measurement parameters



AZI	Azimuth
INCL	Inclination
EHR	Equivalent horizontal range
N	North
R	Range/line-of-sight range

8.2 Preparing for measurement

This chapter contains tips and procedures for assessing environmental influences and improving measurement accuracy.

8.2.1 Distance measurement

8.2.1.1 Tips for steady distance measurements

- In a steady position, hold the VECTOR X with both hands and support your elbows against your body.
- Hold the VECTOR X as relaxed as possible, keeping it well balanced in your hands.
- A stable body position reduces shake, which can be achieved by
 - Leaning against a tree, wall, etc.
 - Supporting your arms or setting the VECTOR X down
- Use a tripod for long-term observation.

8.2.1.2 Calibrating the electronic aiming mark assist

The electronic aiming mark assist can be shown if desired in the Measurement menu or in HUD screens 1 – 3 (see "Display Options submenu" [► 111]). This is beneficial

- For quick target acquisition during hunting and when tracking fast-moving objects
- In poor or varying lighting conditions
- During dusk/dawn



NOTICE

Inaccurate target acquisition due to uncalibrated electronic aiming mark assist

Incorrect distance measurement

- ▶ The electronic aiming mark assist appears at the left edge of the display upon initial setup, after a software update, and after a factory reset and must be calibrated (see "Aim Mark Pos (calibrate electronic aiming mark assist) submenu" [▶ 114]).
- ⇒ The reticle must be easily visible to do so.
- ▶ Check and adjust the position of the electronic aiming mark assist when using the device in extreme temperatures or if there are large temperature fluctuations.

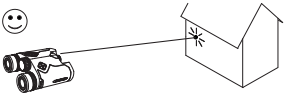
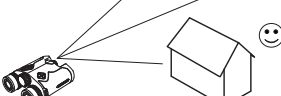
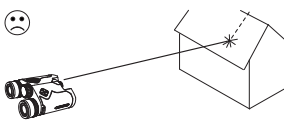
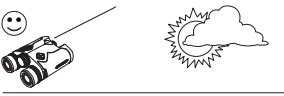
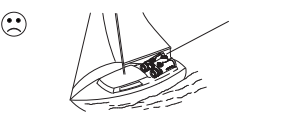
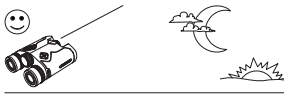
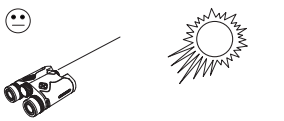


The brightness of the electronic aiming mark assist is based on the brightness of the heads-up display.

The brightness can be changed manually:

- Use the "Brightness" setting in the Settings menu to change the brightness universally.
- Use the up/down arrow keys in HUD screen 1 of the Measurement menu to change the brightness for current conditions.

8.2.1.3 Factors influencing distance measurement

Reflectiveness ☺  ☹ 	Target size ☹  ☹  ☺ 	Sloped surfaces ☹  ☹ 
Weather ☺  ☹ 	Vibration ☺  ☹ 	Lighting ☺  ☹ 

8.2.2 Azimuth measurement

8.2.2.1 Accounting for local magnetic declination

Magnetic declination is the angle between magnetic north and true geographical north.

Magnetic declination changes based on time and location and is caused by variations in Earth's magnetic field.



NOTICE

Azimuth measurement error

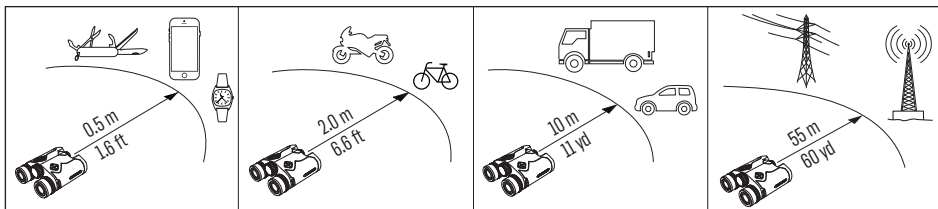
The digital magnetic compass of the VECTOR X indicates magnetic north if no declination value was entered.

Without accounting for the local magnetic declination, compass deviations could cause the VECTOR X to display inaccurate azimuth values and miscalculate ballistic values.

- ▶ Enter the local declination value into the VECTOR X (see "Settings" [▶ 105]) to ensure azimuth measurement accuracy.
- ▶ Always account for local magnetic declination when using the VECTOR X for navigation.

Look up the local magnetic declination in a national geographical data service or using a web-based declination calculator (e.g., NOAA Magnetic Declination Calculator).

8.2.2.2 Factors influencing azimuth measurement accuracy and compass calibration



Note the minimum measurement distances above for azimuth measurement or compass calibration.

The VECTOR X has a digital compass that works like a magnetic compass.

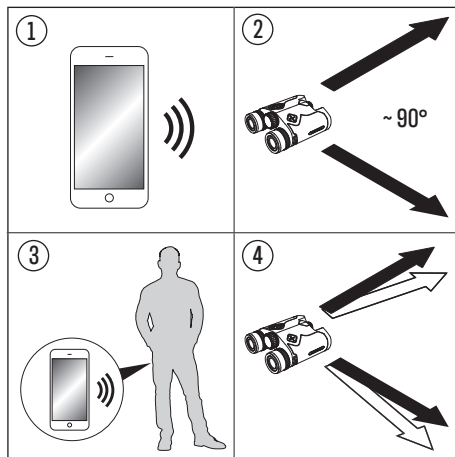
Metal objects, magnetic fields, and electronic devices (e.g., smartwatches, smartphones, tablets) can cause errors during azimuth measurement or compass calibration. Non-magnetic metals and alloys do not affect the compass.



It is a good idea to calibrate the compass before measuring in a new environment (see "Compass calibration (Chicken Dance)" [► 137]). Otherwise, potential compass deviations can cause incorrect azimuth values and incorrectly calculated ballistic values.

8.2.2.3 Magnetic compatibility test

This test is easy to perform and indicates immediately whether a certain object is interfering with the digital magnetic compass of the VECTOR X.



Procedure

1. Place the object to be tested (e.g., weapon, smartphone) far from the VECTOR X.
 2. Measure the azimuth of at least two objects separated by about 90° (e.g., to the north and to the east).
 3. Place the object being tested in its original location (or wear/hold it).
 4. Repeat the azimuth measurement and check the results.
- ⇒ If the azimuth measurement changed by more than $\pm 5^\circ$, the tested object interferes with the digital magnetic compass.

8.2.3 Measuring angle of Inclination

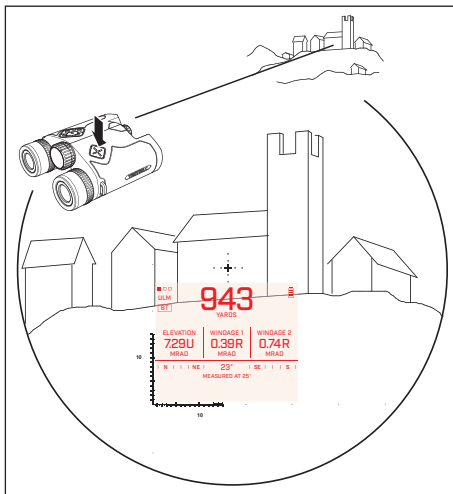
An accurate angle of inclination is critical for a precise ballistic calculation.

The inclinometer of the VECTOR X can be referenced to a horizontal reference plane for greater measurement accuracy – see "Inclination Calibration (calibrate inclinometer) submenu" [► 116].



The VECTOR X can be mounted on a tripod via the tripod adapter for calibration (see "Attaching the tripod adapter" [► 146]).

8.3 Single measurement



Procedure

1. Sight the object with the reticle.
2. Briefly press the Measurement button.
⇒ The heads-up display lights up.
3. Briefly press the Measurement button again.
⇒ The distance measurement is triggered and the heads-up display shows HUD screen 1 with the current measurements.
4. Press the right arrow key to display HUD screens 2 and 3 with additional measurement data and ballistic data – see "Measurement menu" [► 92].
5. The heads-up display turns off (standby) after a preset time (e.g., 20 s). See "Display time" under "Settings" [► 105].
6. The VECTOR X turns off automatically after a few minutes if no button is pressed in standby mode. This deletes the current measurement data and ballistic data.



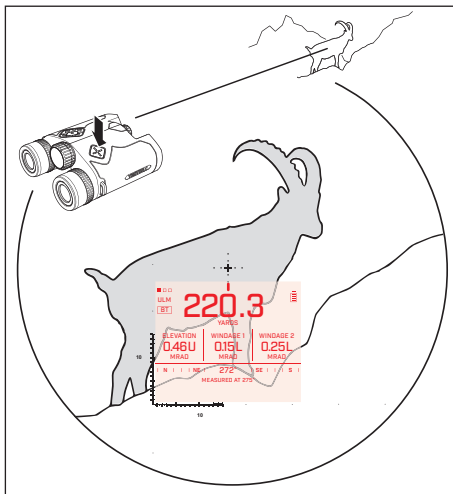
While the VECTOR X is in standby, the last indication on the heads-up display can be called up by pressing an arrow key or the Menu button.

8.3.1 Additional measurement functions

The following additional measurement functions are available with the VECSS app:

- Remote measurement triggering
- Measurement and display of the equivalent horizontal and vertical distance
- Measurement and display of the azimuth and line-of-sight range between two objects
- Indication of measured targets on a map

8.4 Scan mode



Scan mode consumes more battery power.

The distance to a moving object is continually measured in scan mode.

Procedure

1. Briefly press the Measurement button.
⇒ The heads-up display lights up.
2. Press the Measurement button for longer than 1 second and then release it.
⇒ Scan mode is activated.
⇒ The Measurement menu shows the distance measured every 0.3 seconds.
3. Follow the moving object with the electronic aiming mark assist.
⇒ Scan mode automatically turns off after 20 seconds.
4. If needed, restart scan mode via the Measurement button.

9 DATA TRANSMISSION

Data transfer via Bluetooth

The VECTOR X can transmit measurement data by communicating with

- A smartphone or tablet with the VECSS app (for requirements, see "Technical specifications" [► 46])
- Certain models of Kestrel or Garmin devices (see ballistic functions in "Technical specifications" [► 46])



The list of compatible devices is continually updated on our website:
www.vectronix-shooting-solutions.com

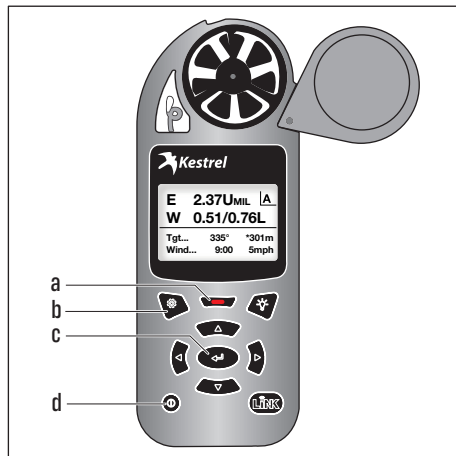
Follow the device manufacturer's instructions for configuration.

All you need to do with the VECTOR X is activate Bluetooth via the shortcut – see "Activating/deactivating Bluetooth" [► 81]. Making the connection then takes place on the device being paired with.



It is only possible to establish one Bluetooth connection, either with the VECSS app or with a single device.

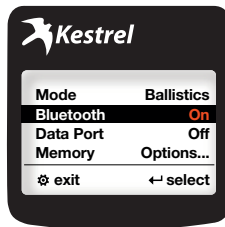
9.1 Establishing a data connection to a Kestrel device



- a) Red button
- b) Options button
- c) Enter button
- d) On/off button

Procedure

1. Activate Bluetooth on the VECTOR X – see "Activating/deactivating Bluetooth" [► 81].
2. Keep the Kestrel device near the VECTOR X for the following steps.
3. Turn on the Kestrel device using the On/off button.
4. Press the Options button.



5. Select "Bluetooth" and activate this using the Enter button.



6. Select “New” under “Device” and confirm using the Enter button.

⇒ The Bluetooth search will start.



7. Select “VECTOR X” in the search results list and confirm with the Enter button.

8. Press the Options button to exit the menu.

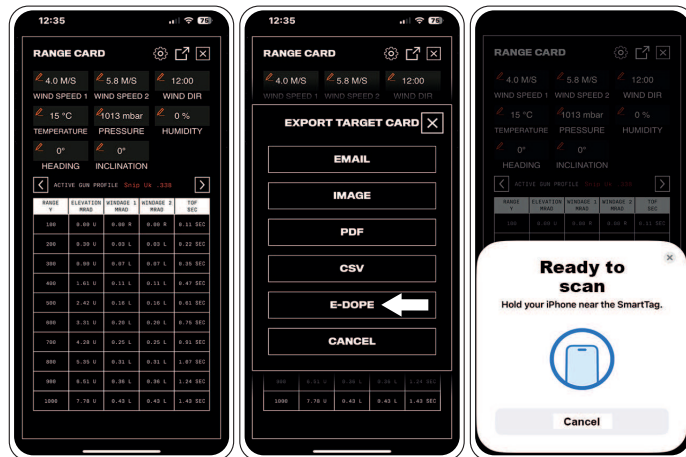


9. Select “Lock” and set it to “On.”
 10. Press the Options button twice to exit the menu.
- ⇒ The Bluetooth symbol will appear on the Kestrel device’s display.

After the VECTOR X is turned on, it tries to reestablish the most recent Bluetooth connection.

It can take up to 10 seconds to establish the connection. Connection is indicated by the abbreviation “KSTL” in the Measurement menu.

9.2 Transferring data from the VECSS app to an E-DOPE Card



1. Create a target card or range card.
2. Tap the “share” symbol.
3. Tap “E-DOPE” in the menu.
4. Hold the smartphone over the E-DOPE® Card.

Important

The Android or iOS smart-phone or device must be NFC enabled.

10 COMPASS CALIBRATION (CHICKEN DANCE)

Perform compass calibration



- After replacing the battery (recommended)
- After changing the type of battery (required – see "Suitable batteries" [► 65])
- After attaching or removing a tripod adapter (recommended)
- When the Chicken Dance icon appears in the Measurement menu
- If the azimuth value is outside the specified accuracy of $\pm 5^\circ$ upon test measurement (see also "Magnetic compatibility test" [► 128])
- If the device status is unknown (borrowed device) (recommended)

10.1 Notes on compass calibration

Suitable locations for compass calibration

Compass calibration must be performed in an open outdoor area far away enough from buildings and metal objects – see "Factors influencing azimuth measurement accuracy and compass calibration" [► 127].



Pastures, fields, and woods are particularly suitable for this.
Avoid locations with varying magnetic fields.

Recognizing and avoiding magnetic interference

- Check whether you are carrying or wearing objects that could interfere with compass calibration (see also "Magnetic compatibility test" [► 128]).
 - Examples: glasses with metal frames, rings, wristwatches, smartphones, belt buckles, helmets, etc.
- Place all objects that could interfere with magnetic waves elsewhere before compass calibration.

10.2 Performing compass calibration (Chicken Dance)



The Chicken Dance icon appears in the Measurement menu/HUD screen 1 to prompt compass calibration. Compass calibration should be performed at the next opportunity. This process occurs in two stages:

- Various rotating motions will need to be performed with the VECTOR X (see Fig. 1).
- The VECTOR X will then need to be placed on a horizontal surface in various positions (see Fig. 2).



There is a YouTube video showing how to perform compass calibration (Tutorial: Vectronix Chicken Dance).

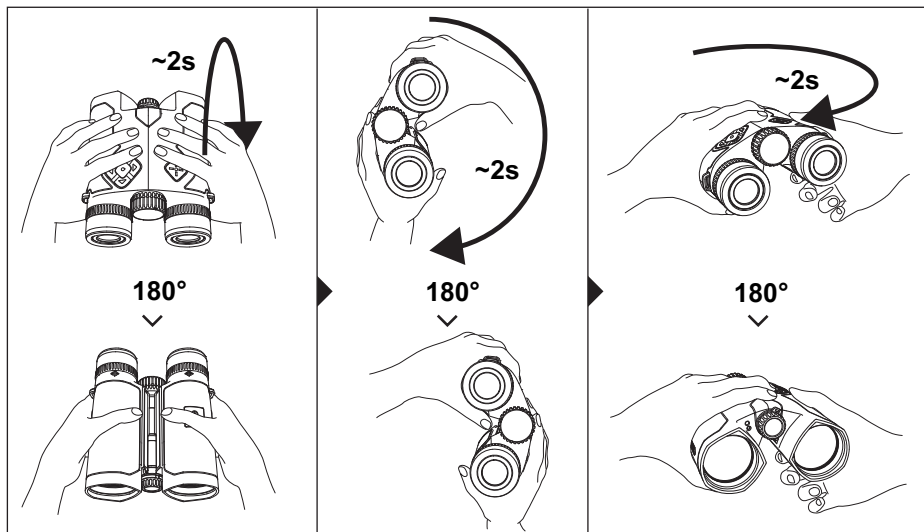


Fig. 1: Compass calibration – first stage

Procedure

1. Find a suitable location.
2. If necessary, turn the VECTOR X back on by briefly pressing the Measurement button once.
3. Hold the VECTOR X in front of your body, horizontally and in the neutral position.
4. Rotate the VECTOR X in each of the directions shown, one after the next (see Fig. 1).
5. Perform each rotating motion continuously for about two seconds.
6. Bring the VECTOR X back to the neutral position before performing the next rotating motion.
7. Proceed with the second stage of compass calibration after completing the rotating motions.



Do not rotate the VECTOR X more than 90° to 180° per second during calibration.

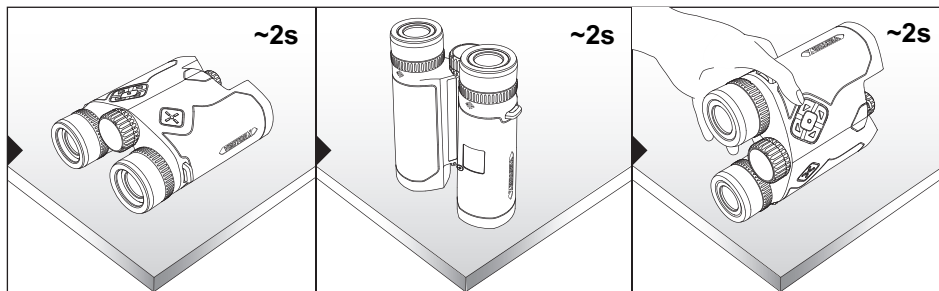
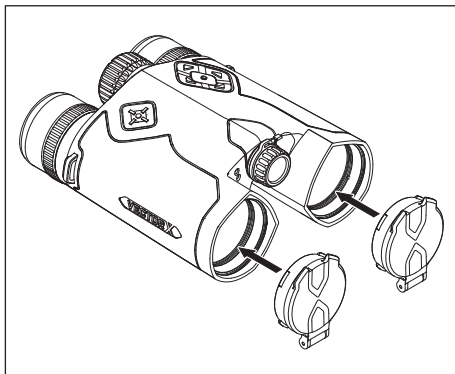


Fig. 2: Compass calibration – second stage

8. Find a horizontal surface or a suitable place on the ground.
9. Perform each of the following with the VECTOR X for about 2 seconds each:
 - ⇒ Lay it flat.
 - ⇒ Stand it up on the objective lenses.
 - ⇒ Set it on its side, supporting it with your hand.
 Compass calibration is complete.
10. After compass calibration, briefly press the Measurement button to turn on the heads-up display.
 - ⇒ If the Chicken Dance icon disappeared, compass calibration was successful.
11. Perform a test measurement with a known target and check the azimuth measurement.

11 USING THE ACCESSORIES

11.1 Attaching/removing the objective lens caps



Attachment Information

1. Clip an objective lens cap onto each objective lens of the VECTOR X or the optional Range Enhancers.
2. Rotate the objective lens caps so that the flip caps will open in the direction desired (e.g., downward).
3. When using the device, open the two objective lens caps fully and fold them against the housing of the VECTOR X.

Removal Information

- Remove the objective lens caps carefully.
- Check them for dirt and clean them if necessary.
- Store them in the case.



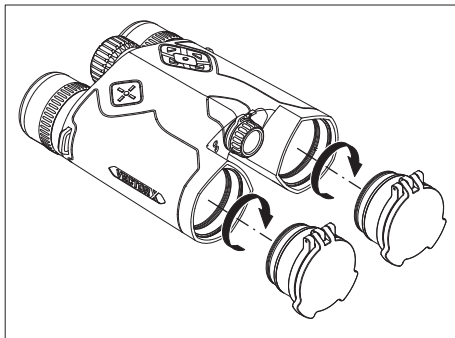
NOTICE

Risk of damage

Protect the open objective lens caps against physical impact.

- Close the objective lens caps when the VECTOR X is not in use or during long intervals between measurements.

11.2 Attaching/removing the Anti-Reflection Devices (ARD) or lens covers



Attachment Information

1. Screw one Anti-Reflection Device or one lens cover onto each objective lens of the VECTOR X.
2. Rotate the flip caps so they open in the direction desired.
3. When using the device, open the two flip caps fully and fold them against the housing of the VECTOR X.



NOTICE

Risk of damage

Protect the sensitive Anti-Reflection Devices (ARD) against physical impact and dust.

- Close the flip caps when the VECTOR X is not in use or during long intervals between measurements.



The Anti-Reflection Devices reduce the maximum possible range for distance measurement.

Removal Information

1. Close the flip caps on the Anti-Reflection Devices/lens covers.
2. Carefully unscrew one Anti-Reflection Device/lens cover and then the other.
3. Check the Anti-Reflection Devices/lens covers for dirt and clean them if necessary.
4. Store the Anti-Reflection Devices/lens covers in the case.

11.3 Attaching/removing the Range Enhancers

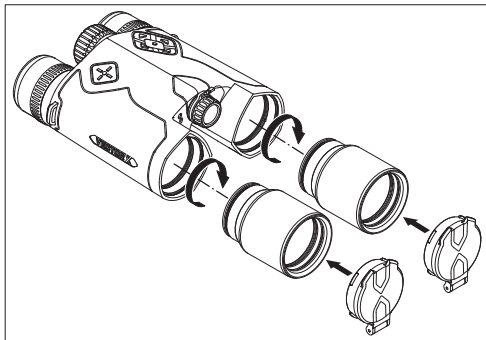


NOTICE

Risk of damage

Damaged or misaligned optics of the VECTOR X and Range Enhancers.

- Only tighten the Range Enhancers lightly (hand tight) when screwing them onto the objective lenses of the VECTOR X.



Attachment Information

1. Screw one Range Enhancer to each objective lens of the VECTOR X.
2. Install the objective lens caps to protect the Range Enhancers (see "Attaching/removing the objective lens caps" [► 142]).
3. When using the device, open both objective lens caps fully and fold them against the Range Enhancers.



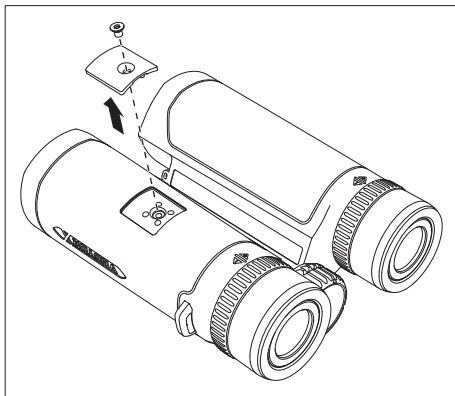
The Range Enhancers make the VECTOR X heavier and shift its center of gravity forward.

Removal Information

1. Close the objective lens caps.
2. Carefully unscrew one Range Enhancer and then the other.
3. The objective lens caps can be removed and attached to the VECTOR X if desired.
4. Check the Range Enhancers for dirt and clean them if necessary.
5. Store the Range Enhancers in the storage case.

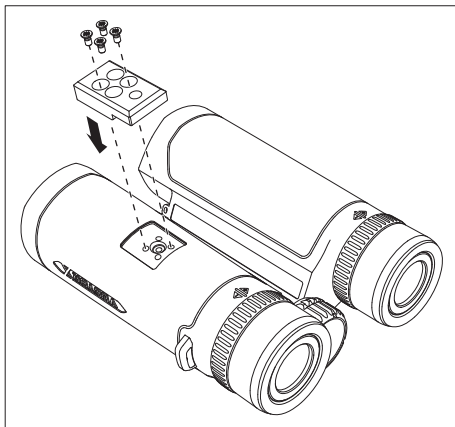
11.4 Attaching the tripod adapter

To use the VECTOR X with a tripod, a tripod adapter with a $\frac{1}{4}$ " 20 UNC tripod mount (included in the scope of supply) must be installed on the underside of the device.



Attachment Information

1. Unscrew the cover on the underside of the VECTOR X using the Torx key supplied. Store the cover somewhere it won't be lost.
⇒ The tripod connection can now be used.



2. Attach the tripod adapter to the tripod connection with four screws.

⇒ Use the supplied Torx key to do so.

i Two spare screws are included in the scope of supply.

3. Place the VECTOR X with the tripod adapter on the tripod head and screw it down.



Perform compass calibration after attaching or removing the tripod adapter (see "Performing compass calibration (Chicken Dance)" [► 138]).



A tripod adapter with a mounting plate for a quick-release system is available as an option (see "Available accessories" [► 54]).

12 MAINTENANCE

12.1 Care and cleaning



NOTICE

Risk of damage to the lens surfaces

Do not use cleaning fluids or solvents other than water.

Never use chemically treated cleaning cloths such as those used for eyeglasses.

The supplied cleaning cloth

- ▶ May only be used for cleaning the glass lenses
- ▶ Must be kept clean and stored in the case
- ▶ Must be immediately washed and dried or replaced with a new microfiber cloth if soiled



The VECTOR X does not require any special cleaning agents. However, a soft lens cleaning brush is a useful accessory.

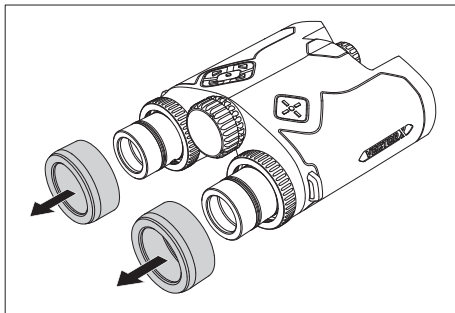
12.1.1 Cleaning the lenses

1. First, blow off all loose dirt from the lens surfaces.
2. Remove the remaining dirt with a lens cleaning brush (if available).
⇒ When using the brush, sweep over the lenses with light, quick movements. Tap the brush out frequently.
3. Finally, gently wipe the lens surfaces with the lens cleaning cloth.

More information about cleaning

- Wipe heavily soiled lenses with a damp lens cleaning cloth using light pressure.
- Rinse off salt water residue with fresh water if possible.
- Wipe off fingerprints by first using a circular motion with a damp part of the lens cleaning cloth. Then remove the fingerprints completely with the dry part.

12.1.2 Cleaning/replacing the eyecups



Cleaning Information

- Wipe the eyecups with a soft, lint-free cloth.
- If the eyecups are heavily soiled, first remove them and clean them thoroughly under running water.
- Replace damaged, porous, or torn eyecups.

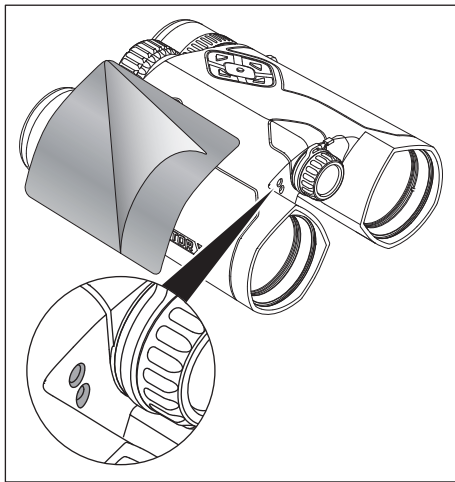
Removal Information

1. Unscrew the eyecups completely.
2. Lift up the rear edge of the eyecups with your pointer finger.
3. Carefully pull the eyecups off the eyepieces.

Attachment Information

The rear edges of the eyecups must lie against the eyepieces evenly.

12.1.3 Cleaning the housing/rubber reinforcement



- Wipe the housing with a damp cloth.
 - Take particular care to clean dirt or grease on and near the control buttons.
- Remove heavily soiled eyecups and clean them separately.
- Carefully clean both sensor ports in the housing (see detail).
- Allow the VECTOR X to dry completely before putting it away.



If the housing is heavily soiled, first rinse it under running water.

12.2 Troubleshooting



There are no parts in the device that can be serviced by the user.

Repair and service work may only be performed by customer service or directly by Safran Vectronix AG.

Problem	Potential cause	Solution
The field of view through the eye-pieces isn't perfectly circular	The eyecups aren't properly set for use with or without glasses	See "Adjusting the eyecups" [► 71].
The heads-up display doesn't work	Brightness setting is set to NV1 or NV2 (night vision).	Cover the sensor ports in the housing with your hand. Use the up arrow key to increase the brightness.
	The lithium-ion battery is missing or dead	See "Changing the battery" [► 64].
	The battery contacts are corroded	Clean the battery contacts – see "Notes on the battery" [► 31]
	A low outdoor temperature is reducing the battery capacity	Hold the VECTOR X against your body
The heads-up display is blurry	The diopter isn't set properly	See "Setting the diopters" [► 73].

Problem	Potential cause	Solution
The heads-up display is difficult to read	The manual brightness setting is too low	Set the desired brightness – see "Settings" [► 105]
	The brightness sensor is covered	When the brightness level is set to automatic mode, clean the sensor ports in the housing – see "Device overview" [► 37], item (j)
The heads-up display is too bright	The manual brightness setting is too high	Set the desired brightness – see "Settings" [► 105]
The reticle is difficult to see	The diopter isn't set properly	See "Setting the diopters" [► 73].
	Dawn/dusk or heavily fluctuating lighting conditions	Use the electronic aiming mark assist – see "Display Options sub-menu" [► 111]
After a distance measurement, " - - " appears on the heads-up display (HUD screens 1 through 3)	The distance is below the minimum limit or above the maximum limit of the measurement range	Take the range information into account – see "Technical specifications" [► 46]
	The reflectiveness of the target object is too low	See "Factors influencing distance measurement" [► 125].
	Problems with target acquisition.	See "Changing the laser mode" [► 80].

Problem	Potential cause	Solution
The Chicken Dance icon appears on the heads-up display: 	The digital compass must be calibrated	See "Performing compass calibration (Chicken Dance)" [► 138].
The multi-selector or Measurement button doesn't work	There is a problem with the electronics or software.	Contact the dealer or customer service
The azimuth measurement is inaccurate.	There was magnetic interference during compass calibration.	Repeat the compass calibration process in a new, interference-free location – see "Factors influencing azimuth measurement accuracy and compass calibration" [► 127]
	The magnetic state of the VECTOR X changed, such as after replacing the battery or attaching a tripod adapter	Recalibrate the digital compass – see "Performing compass calibration (Chicken Dance)" [► 138].
	There was magnetic interference during measurement.	Change the measurement location – see "Notes on compass calibration" [► 137].

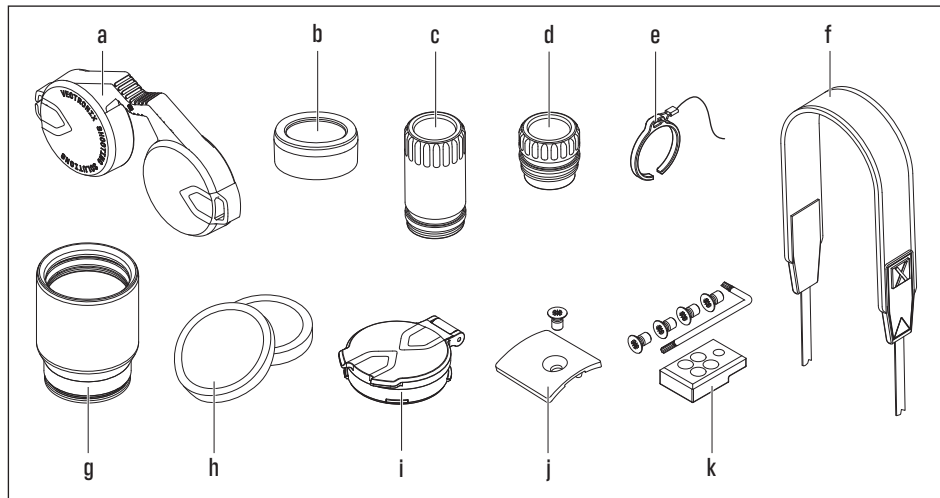
Problem	Potential cause	Solution
The inclination is inaccurate.	Inclinometer not calibrated.	Calibrate the inclinometer to the measuring location – see "Inclination Calibration (calibrate inclinometer) submenu" [► 116]
Ballistic data (DOPE) does not match that of the Kestrel device	Mismatch in gun profile	Check gun profile
	Different wind setting	Enter the correct wind direction and wind speed
Ballistic data (DOPE) not displayed after distance measurement	VECTOR X is set to external ballistic calculation (see "Settings" [► 105] "Ballistics"/EXT) but not paired with a device	Set ballistic calculation to internal, "Ballistics"/INT
		Pair the VECTOR X with a Kestrel or Garmin device for external ballistic calculation
Functionality issues and limited distance measurement in extremely low temperatures	Reduction in battery capacity due to cold when using a CR123A lithium-ion battery	Use a 18650 rechargeable lithium-ion battery for increased battery capacity

Problem	Potential cause	Solution
Data transfer via Bluetooth doesn't work	The device to be paired with is off, or its Bluetooth is off	Turn on the device to be paired with and activate its Bluetooth
	The device to be paired with isn't paired with the VECTOR X	Establish a Bluetooth connection to the device to be paired with – see "Data transmission" [► 133]
The Bluetooth connection was broken	The lithium-ion battery in the VECTOR X is dead	Replace the lithium-ion battery, or replace or recharge the rechargeable lithium-ion battery
	The battery in the device to be paired with is dead	Charge or replace the battery in the device to be paired with
	The device to be paired with is too far from the VECTOR X, or the connection was unstable	Place the device to be paired with closer to the VECTOR X



For other issues, please visit our website at www.vectronix-shooting-solutions.com/support/ or contact customer service, which you can do through the VECSS app.

12.3 Spare parts



- | | |
|--|---|
| a) 919 004 Eyepiece cap | f) 917 231 Neck strap |
| b) 919 007 Eyecups for 8×42 | g) 918 795 Range Enhancers 42 (1.4×) |
| 919 008 Eyecups for 10×42/12×42 | h) 919 011 Objective lens set for Range Enhancers 42 |
| c) 919 052 18650 battery compartment cover | i) 917 232 Objective lens caps 42 |
| d) 919 003 CR123A battery compartment cover | j) 919 050 Cover for tripod connection on VECTOR X |
| e) 919 009 Attachment clip with retention strap
for battery compartment cover
(attached by customer service) | k) 917 802 Tripod connection with mounting screws
and Torx key |

12.4 Customer service

For spare parts orders or repairs, please contact the dealer you purchased the device from. The dealer will contact our country representative and take the necessary steps.

Our customer service is otherwise always happy to help:

Safran Vectronix AG
Max-Schmidheiny-Strasse 202
9435 Heerbrugg, Switzerland

Email: info@vectronix-shooting-solutions.com

Website: www.vectronix-shooting-solutions.com

13 DISPOSAL



The following information applies per the Waste from Electrical and Electronic Equipment (WEEE) Directive within the EU and for other European countries with waste sorting systems.

- The VECTOR X contains electrical and/or electronic components and may therefore not be disposed of in normal household waste.
It must be disposed of at a recycling collection point designated by the responsible local authority. This is usually free of charge.
- If there is still a battery in the device, the battery must first be removed and disposed of at a battery disposal point in accordance with regulations.



For further information on this topic, contact your local municipal office, the local waste disposal contractor, or the store where you purchased the VECTOR X.

14 LEGAL INFORMATION

14.1 Disclaimer

The user documentation has been carefully compiled taking the applicable standards and regulations into account. However, it is not possible to exclude all errors.

Safran Vectronix AG therefore reserves the right to periodically revise the user documentation and to modify the content without prior notification.

In the interest of our customers, we reserve the right to make software modifications to incorporate technical developments.

Safran Vectronix AG therefore provides

- Software updates for the VECTOR X
- VECSS app updates in app stores

14.2 Copyright

Copyright

All rights reserved

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9435 Heerbrugg, Switzerland

The user documentation for the VECTOR X – safety information, Quick Start Guide, and this user manual in electronic form – is protected by copyright.

The device software and the VECSS app are protected by copyright.

14.3 Protected trademarks

	Apple® and the Apple logo are trademarks of Apple Inc., registered in the US and other countries. App Store® is a service trademark of Apple Inc., registered in the US and other countries.
	Applied Ballistics® is a trademark of Applied Ballistics Inc. AB Quantum® is ballistic calculator app produced by Applied Ballistics Inc.
	Bluetooth® is a trademark of Bluetooth SIG Inc.
	Calypso Instruments Ultrasonic Portable Mini AB wind meter, certified by Applied Ballistics Inc.
	E-Dope® is a trademark of Down Range Systems LLC.

	The design of the MSR reticle is the property of Finnaccuracy Oy.
	Garmin® is a trademark of Garmin Ltd.
	Google Play® and the Google Play logo are trademarks of Google LLC.
	Kestrel® is a trademark of Nielsen-Kellerman Co.
	onX Hunt® is a trademark of onX Maps, Inc.
	Tenebræx® is a trademark of Armament Technology Incorporated.
	VECTOR X is a brand of Safran Vectronix AG.

14.4 Declaration of conformity

	Safran Vectronix AG hereby declares that VECTOR X of the types A002a and A002b comply with EU directives.
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Our website contains the complete EU declaration of conformity: www.vectronix-shooting-solutions.com

EU authorized representatives per product regulations	Safran Electronics & Defense Germany GmbH Gottlieb-Daimler-Straße 60 71711 Murr, Germany ar.vectronix@safrangroup.com
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14.5 FCC/ISED regulations

The VECTOR X transmits radio frequency signals (e.g., via Bluetooth) and is therefore subject to the following regulations.

14.5.1 FCC regulations in the US

This device was tested per Part 15 of the FCC Rules and found to comply with the limits for a Class B digital device. These limits are designed to provide reasonable protection against harmful interference in residential areas.

This device generates, uses, and can emit radio frequency energy. If it is not used as described in the user documentation, it may interfere with radio communications. It cannot be guaranteed, however, that interference will not occur with a particular system.

Should this device cause harmful interference to radio or television reception, which can be determined by turning the device off and on, the user must try to correct the interference by one or more of the following measures:

- Move or realign the receiving antenna.
- Increase the distance between the device and receiver.
- Contact the dealer or an experienced radio and television technician if assistance is required.

FCC warning

To ensure continued compliance with provisions, see the "Usage restrictions" [► 17] chapter. If any changes or modifications are made to the device that are not expressly approved by the party responsible for compliance with provisions, this could result in revocation of the user's permit to use the device.

Trade name	VECTOR X	
Type numbers	A002a Laser Class 1M	A002b Laser Class 1
Responsible company, support contact	EuroOptic Ltd. 1203 Lycoming Mall Circle Muncy, PA 17756 USA Phone: +1 (570) 368-3920	

This device complies with Part 15 of the FCC Rules.

	Type numbers: A002a Laser Class 1M A002b Laser Class 1 Tested for compliance with FCC standards.
	For home or office use.*

* This equipment classification includes outdoor use.

Use of the device is subject to the following two restrictions:

- This device may not cause harmful interference.
- This device must tolerate any interference received, including interference that could cause unwanted operating conditions.

FCC ID T7V1740 for the Internal Bluetooth module

Installing or operating this transmitter with any other antenna or transmitters is prohibited.

This device complies with FCC radio frequency radiation exposure limits specified for an uncontrolled environment and meets FCC radio frequency radiation exposure limits. The amount of radio frequency energy in this device is very low and is regarded as compliant even without testing the specific absorption rate (SAR).

14.5.2 ISED regulations for Canada

CAN ICES-3 (B)/NMB-3 (B)

This device complies with the RSS-210 standard of the IC regulations.

Use of the device is subject to the following two restrictions:

- This device may not cause harmful interference.
- This device must tolerate interference received, including interference that may cause functional disturbances to the device.

This device complies with IC radiation exposure limits specified for an uncontrolled environment and meets the requirements of standard RSS-102 of the IC radio frequency exposure limits.

The amount of radio frequency energy in this device is very low and is regarded as compliant even without testing the specific absorption rate (SAR).

14.6 Warranty conditions

The scope and duration of the warranty depend on the legal regulations of the country where the device was purchased.

In general, an extended warranty that is valid beyond the period of the statutory standard warranty is granted upon device registration. The duration of the extended warranty depends on the applicable regulations of the country where the device was purchased.

Device accessories as well as wear parts such as eyecups and rubber reinforcement are excluded from the warranty.

Warranty claims are rendered invalid in the event of proven misuse (see "Foreseeable misuse" [► 17]) or if the serial number has been made unrecognizable.

15 GLOSSARY

Term	Definition	Description
Azimuth	Azimuth direction angle [°/mrad/mil]	The angle between magnetic north and the target, measured clockwise
DA	Density altitude	The altitude at which the density of the air corresponds to the current atmospheric conditions based on temperature, pressure, and humidity. A higher density altitude indicates thinner air and thus lower drag and a flatter projectile trajectory.
DOF	Direction of fire	Direction of fire
DOPE	Data on previous engagements	Ballistic calculation and log of shooting data for precise long-range shooting
EHR	Equivalent horizontal range [m/yd]	Angle-corrected horizontal distance
Elevation	Height correction [mrad/MOA]	Height correction to hit the target at the specified distance
FOV	Field of view	Observable width of terrain at a distance of 1000 m/1000 yd

Term	Definition	Description
FPGA	Field-programmable gate array (programmable integrated circuit)	Appears in Device Info submenu
Inclination	Inclination angle [$^{\circ}$ /mrad/mil]	Angle of inclination between horizontal and the target
LRM	Laser mode for long ranges	Setting for long distances and objects with low reflectiveness
NFC	Near-field communication (transfer protocol for close-range communication)	For data transfer between the VECSS app and an E-DOPE Card
PMR	Precision milliradian reticle	Reticle designation
Range	Distance [m/yd]	Distance to target
Rem. energy	Remaining energy [Joule]	Projectile energy at the target
Rem. velocity	Remaining velocity [m/s / fps]	Projectile velocity at the target
TOF	Time of flight [s]	Flight time for the projectile to reach the target
ULM	Universal laser mode	Setting for unobstructed objects with average reflectiveness
Wind 1	Wind (average), [km/h / mph]	Average wind strength

Term	Definition	Description
Wind 2	Wind (max.), [km/h / mph]	Peak value of wind strength (gusts)
Windage 1	Lateral correction value for Wind 1 [mrad/MOA]	Lateral correction value for the average wind speed to hit the target at the specified distance
Windage 2	Lateral correction value for Wind 2 [mrad/MOA]	Lateral correction value for the peak wind speed to hit the target at the specified distance
VECSS	VECTRONIX SHOOTING SOLUTIONS	Business unit, website, and app name

vectronix-shooting-solutions.com

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