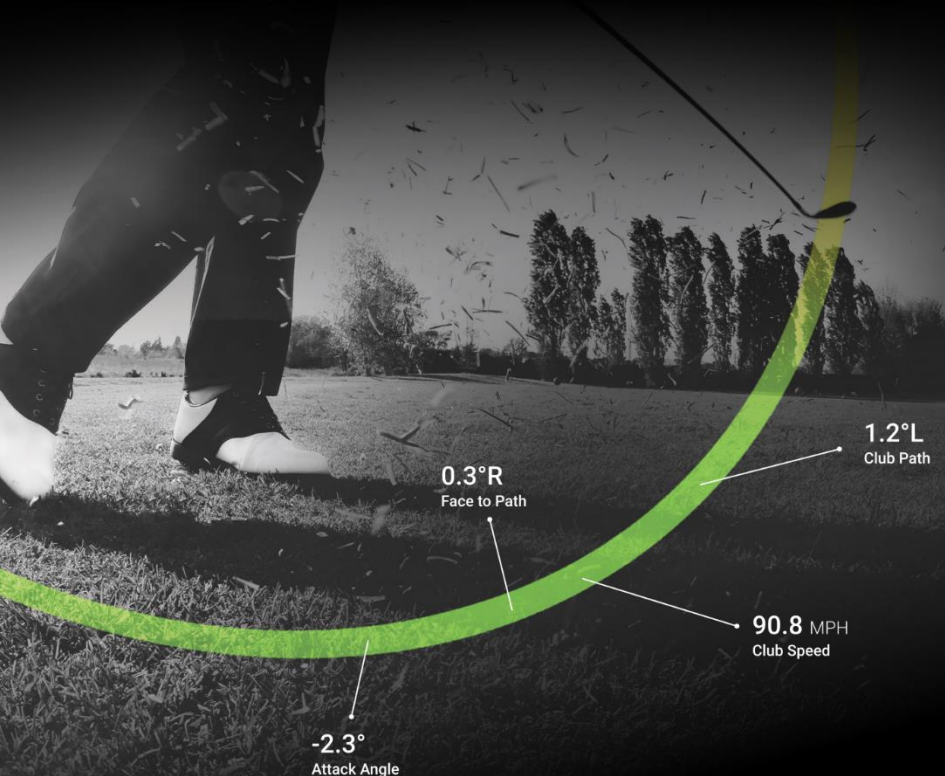


 FlightScope® | X3



with **fusion** tracking

E19-D2154-4

NOTICES

The following notices and general precautions must be observed during the operation, service and repair of this equipment. Failure to comply with these precautions or with warnings elsewhere in the manual violates standards of the design, manufacture and intended use of the equipment. FlightScope accepts no liability for failure to comply with these notices.

Operation of the device in any country may require approval in accordance with local telecommunications and safety regulations.

The equipment has been designed for sheltered or clear weather use.

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FlightScope® is a registered trademark.

Patents and patents pending.

Japanese caution: for Indoors use only.

++++++本機器の使用に係る注意事項++++++ 本機器の使用周波数帯（10.5GHzを越え10.55GHz以下の周波数）では、免許を受けて屋外で利用されている無線局があります。これらとの干渉が懸念される為、本機器の使用は、屋内での使用、即ち住宅、マンション、ビル等の建築物内のみと限定されています。万一、10.5GHz帯の周波数を使用する移動体検知センサーを屋外で使用した場合には、その使用に支障が生じるばかりでなく、電波法令に違反し罰則の適用を受けることとなりますので、十分注意してください。

FCC Statement

Changes or modifications not expressly approved by FlightScope (Pty) Ltd could void the user's authority to operate the equipment.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in an office or residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation.

If this equipment does cause harmful interference to other electronic equipment, which can be determined by turning this equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

Increase the separation between the equipment causing and experiencing the interference. Install a radio frequency shield between the equipment causing and experiencing the interference. Consult your dealer for help.

This device complies with Part 15 of the FCC Rules.

Operation is subject to the following two conditions:

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

IC Statement

This device complies with Industry Canada license-exempt RSS standard(s).

Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

Déclaration IC

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes : (1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

This guide will help you set up and use the **FlightScope X3**

FlightScope X3 is battery operated, and connects by Ethernet or USB cable to your computer device.

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Welcome

Congratulations on purchasing the FlightScope X3, featuring brand new Fusion Tracking technology.

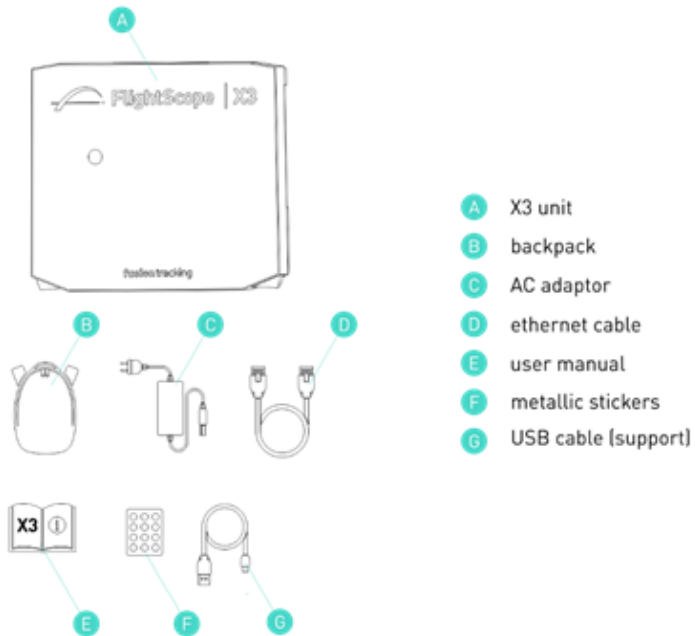
The X3 can be used for equipment or player testing, from tee drives to chipping and putting, and operates indoors and outdoors.

Use it to train, teach, test, fit and choose clubs and balls. Typical applications include:

- Teaching
- Club fitting
- Practice and self-assessment
- Equipment testing
- Equipment retail
- Golf game simulation

FlightScope will fully support you in your use and enjoyment of the system. FlightScope's ongoing R&D commitment also means that new features and levels of performance will be readily available to you when new developments are made. We look forward to being your technology partner as you and your customers Master your Passion[®]

Package Contents



Features Overview



Fusion Tracking technology

Patented technology that combines tracking radar and image processing



Multi-frequency radar

Direct distance measurement for more accurate ball & club tracking



Chipping & putting data

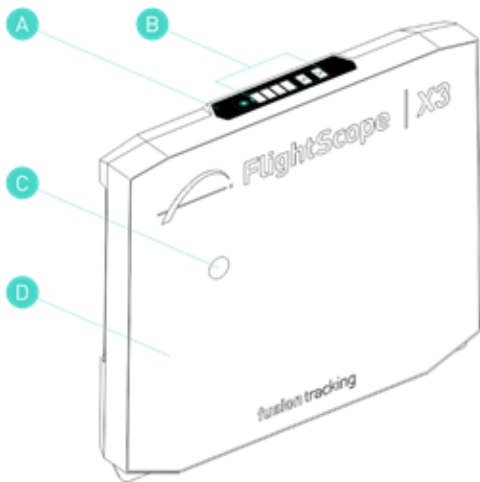
Short game tracking to complete game improvement



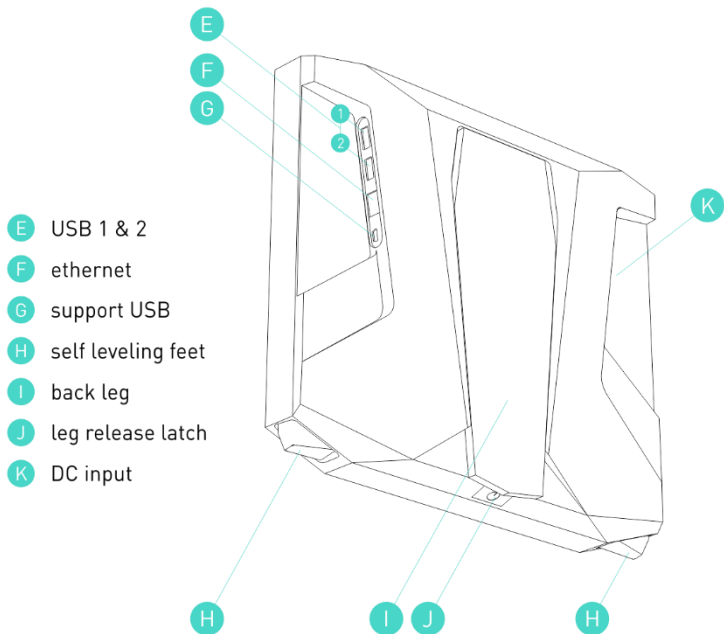
Built-in image processing

Boresight camera for radar and image processing, data fusion

Product Overview






- A user interface
- B LED indicators
- C built-in camera
- D front face




LED Indicators


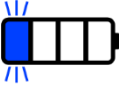
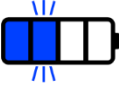
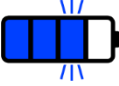
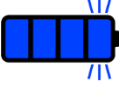

Connection

State		Color
Off	No light	
Ready	Blue solid	
Connected	Green solid	

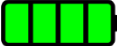
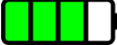


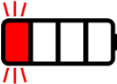

Status

State	Color
System Off	No light 
Power on, switching on	Blue flashing 
Processor start-up 30-60seconds	Flashing blue & green 
Standby mode	Green solid 
Armed, ready to measure	Red solid 
Processor shutdown 15-30 seconds	Flashing blue & yellow 
Error	Flashing yellow 

Battery

State	Color
Off	White/no light 
Charging 0-20%	Blue flashing 
Charging 20-50%	Blue solid second flashing 
Charging 50-80%	Blue solid third flashing 
Charging 80-100%	Blue solid fourth flashing 
Fully charged	Blue solid 

Battery

State	Color	
On battery 80-100%	Green solid	
On battery 50-80%	Green solid	
On battery 20-50%	Yellow solid	
On battery 10-20%	Red solid	
Charge low, under 10%	Red flashing	
Battery fault, dead or overheating	Yellow flashing	

X3 Safety

Lithium Battery

The X3 contains a rechargeable lithium ion battery.

The battery is not user replaceable. If necessary a battery must be replaced only at a FlightScope Repair Center.

The product and its battery must be recycled or disposed of properly.

Air Transport

The X3 battery meets the existing FAA and IATA specifications for the X3 to pass as carry-on or as checked luggage on passenger airlines (below 100 W-h).

Always switch the X3 off before packing for a flight.

Electrical Shock Hazard

Do not expose the AC adapter and main power connections to rain or wet conditions. This may cause a lethal electrical shock.

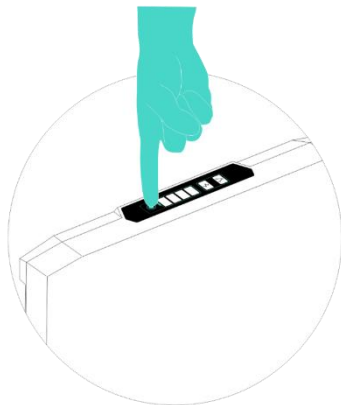
Handling

Keep fingers clear when closing the X3 leg. If closed incorrectly, pinching of fingers or hand may occur. See back leg operation illustrated in Switching Off section of manual.

Battery Check

To check the battery level before use:

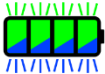
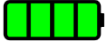




1. With the rear leg in the closed position, briefly press the On button on the top. You will hear a short beep.



2. All battery lights will flash briefly blue, then flash green while battery level is checked.

3. Levels are as shown in the table:

Indicators

State		Color
Checking level	Short blue flash then green flashing	
80-100%	Green solid	
50-80%	Green solid	
20-50%	Green solid	
1-20%, charging recommended	Green solid	
Battery flat, charging required	White/no light	

4. The system returns to the OFF condition after the battery check.

The Battery

The X3 is delivered with some power stored in its internal battery. The battery should however be fully charged for 8-10 hours with the included power adapter before first use.



WARNING

Using damaged mains cords or chargers, or charging when moisture is present, can cause electric shock.

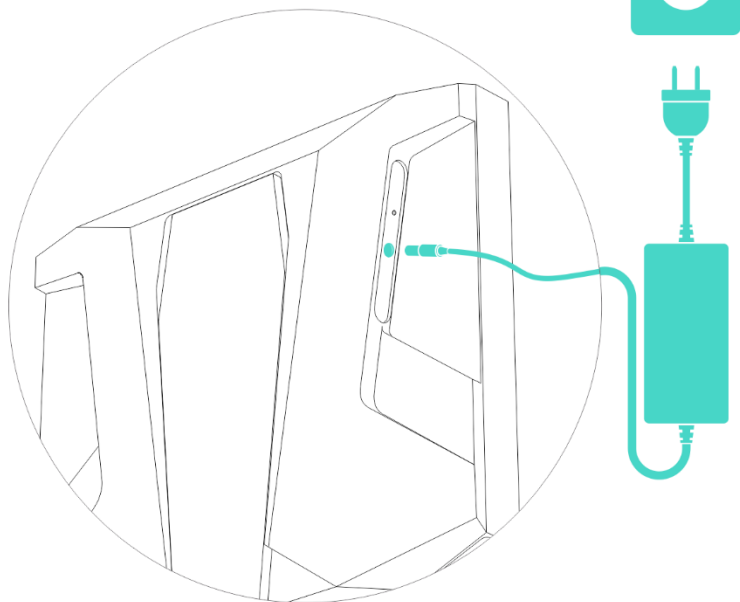
CAUTION

Do not use a power adapter other than the one supplied or specified by FlightScope. If an adapter with incorrect voltage rating is used, the X3 electronics can be damaged. If an adapter with insufficient current rating is used, the adapter may overheat and become damaged.

NOTE

1. The power adapter may become warm during normal use. Always allow adequate ventilation around the power adapters during use.
2. If the X3 is left switched on, the battery will drain and might become completely discharged. If battery is completely discharged, you must charge the battery with the system “OFF” for at least 30 minutes before using.

Battery Charging



Charging the X3 to full capacity takes up to 10 hours using the supplied power adapter.

1. Connect the included power adapter to a wall outlet and plug the power lead into X3 power connector.
2. The battery indicators will show the battery level in BLUE (see LED Indicators – Battery).

NOTE:

Charging time is approximately 8-10 hours

Contact Support at FlightScope if battery needs replacement

Battery Safety and Care

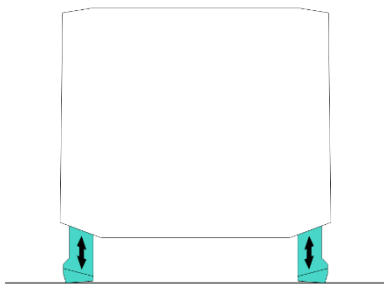
Don't attempt to replace the X3 battery yourself. The X3 battery should be replaced only by an authorized FlightScope Repair Center.

A defective or end of life battery must be recycled or disposed of separately from household waste.

Do not burn the battery.

Self-Leveling Feet

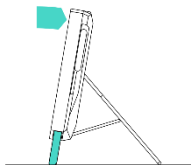
The X3's self-leveling feet automatically adjust tilt and roll angles to compensate for uneven surfaces.



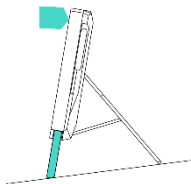
Tilt Angle

The X3's operating tilt angle is optimized by the app for best tracking performance and can vary. The default settings are 7° for Normal golf mode and 2° for Short Game. Ground slope must be less than 5° for self-leveling function.

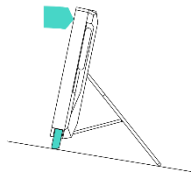
Flat
(Actuators extend mid-way)



Down slope
(Actuators extend less)

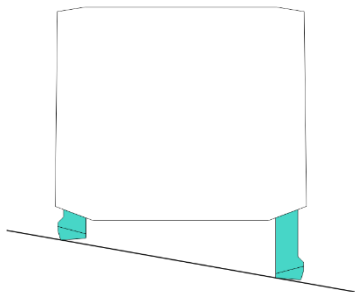


Up slope
(Actuators extend more)

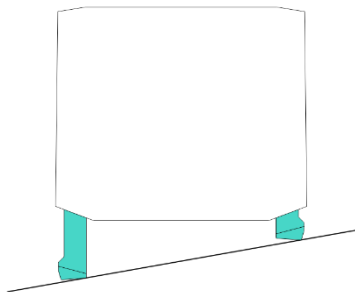


Roll Angle

- Sensor operating roll angle is 0° .
- Ground slope must be $< 3^\circ$ for self-leveling to function.



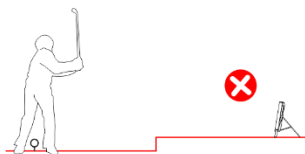
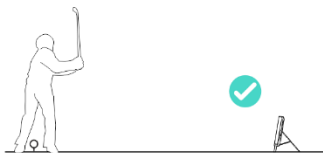
Left slope 3° max



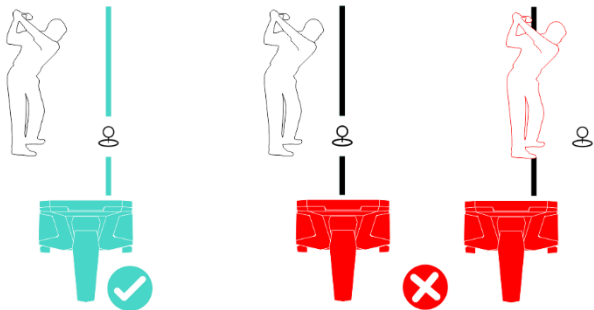
Right slope 3° max

Set Up Tips

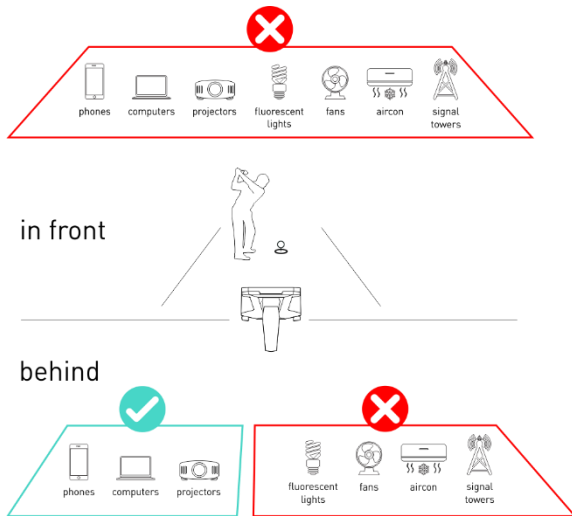
1. Use the X3 on reasonably leveled surfaces. Ensure that there are no obstructions or steps in front of the unit, and it has a clear unobstructed view of the club swing and ball trajectory.



2. Remember to set the correct mode ('Indoor', 'Short Indoor' or 'Outdoor'), align the unit properly and enter the correct distance from the X3 unit to the Tee.



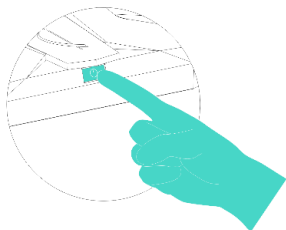
3. Certain items can cause false triggers (ghost shots) depending on their position in relation to the X3. The below illustration shows these items and where they may cause false triggers.



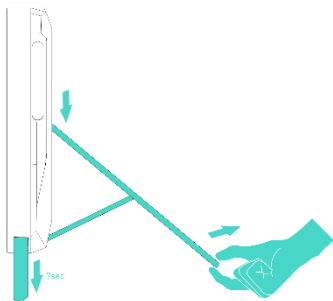
Try to prevent false triggers by switching such lights or machines off, or install a wire mesh screen in the light covers or over the interfering machines.

Switching On

To switch the system ON:

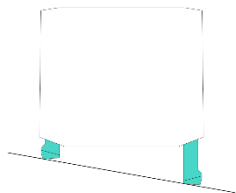
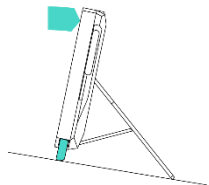
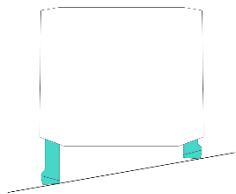
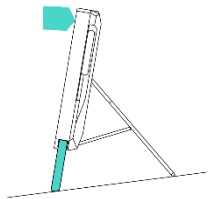
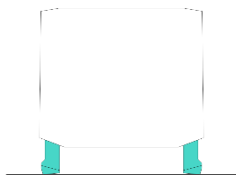
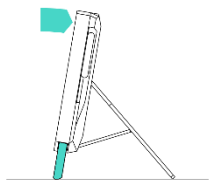


Hold the X3 unit, and press the latch under the unit to release the leg.



Pull the leg down and outwards until fully extended.

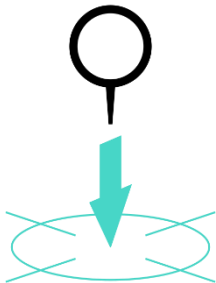
Place on ground or floor in its intended operating position.



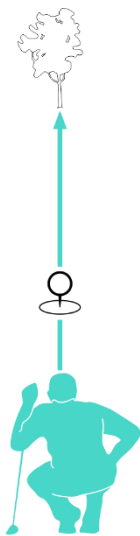
While starting up, the unit will automatically adjust its level according to the slope of the ground or floor.

Position & Alignment

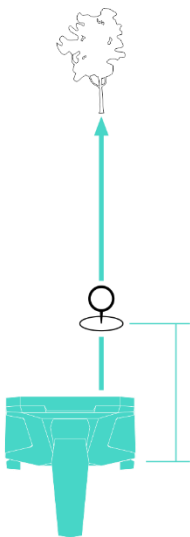
1. Choose your tee position



2. Select a target line from the ball to a target (a tree in the distance, flag, or other marker)



3. Place the X3 behind the tee, with X3's internal camera hole over the target line



Distance behind tee:

Normal golf shots:

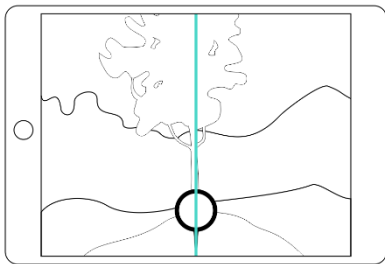
9 ft. to 14 ft. (2.7-4.2 m)

Short Game (putts, chips)

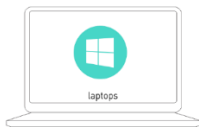
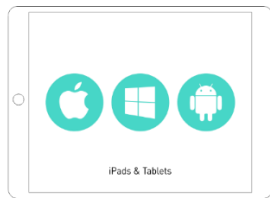
6 ft. to 8 ft. (1.8-2.4 m)

Aim the X3

- On the app, select Alignment and view the image
- Move and rotate the X3 to point the image center line (vertical line visible on your computer screen) along the target line. Make sure the vertical line is in line with both the ball and target.



Using the System Compatible Devices



Go to
flightscope.com/products
for minimum system requirements and compatible devices

Software Applications

Short Game

Providing chipping and putting data for complete lessons, short game data is automatically synced with customizable video recording.

Video Lessons

Featuring a customizable interface, data and video are combined for an all-in-one lesson recording solution.

FlightScope Skills

Play FlightScope Combines or create customizable challenges for player benchmarking.

FlightScope VX

A comprehensive teaching, fitting, and training app with 3D views of ball flight and club data.

Communications



Ethernet Port



USB Ports

The USB Mini port connector is reserved for technical servicing.

Set Operating Mode

Setup must be done every time the unit is used. Setup includes:

- operating mode
- unit position and alignment in relation to the tee
- units of measurement (metric, imperial, etc.)

Normal Play Modes

Mode

When to use

Outdoor

On a driving range or golf course where ball flight is unrestricted.

Indoor

In a golf cage where ball flight is at least 13 ft. (4 meters) but less than 40 yards (33 meters).

Short Indoor

In a golf cage where ball flight is more than 8 ft. (2.4 meters) but less than 13 ft. (4 metres).

Normalized

When ball flight exceeds 40 yards (33 meters) but full ball flight is restricted, e.g. a netted golf range.

Short Game Modes

<u>Mode</u>	<u>When to use</u>
Putting	When practicing putts on a putting green or putting surface (i.e. indoor putting green)
Chipping	When practicing bump and run chips on a green

Set units, distances, height & altitude

Setup opens the Software **Settings** screen.

The software applications that are compatible with the X3 require certain settings to be entered by the user before use.

Units

Select Metric or Imperial units.

Sensor to Tee Distance

Enter the distance between the X3 face to the tee/hitting position in the software.

TIP: Always tee up within 6 inches (15 cm) of the specified position for optimum performance.

Tee Surface Height

Enter the height of the hitting surface above the surface on which the X3 is placed, e.g. 1 in (2.5 cm) if a mat of such thickness is used.

Altitude

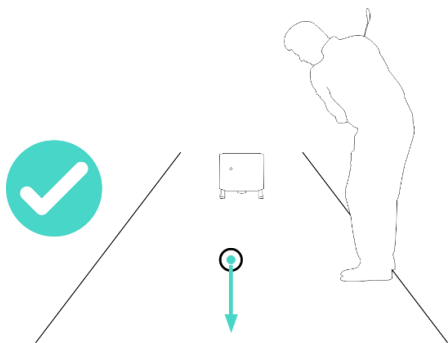
Enter the altitude (height above sea level) of the location.

Save and close to continue. The system is now ready for use.

Marking the Ball for Indoor Measurements

Metallic stickers are included with the X3's accessories. These must be used with **Indoor and Short Indoor** modes as follows:

1. Mark the ball with a single sticker for spin measurement
2. Tee ball up with dot **facing forward** (towards the target/net/screen).

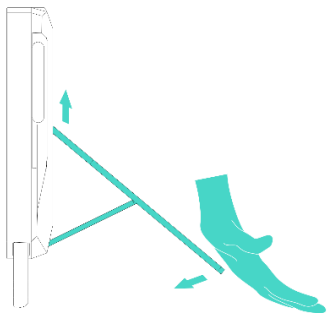


NOTES

1. Spin values and carry distances may be inaccurate if unmarked balls are used in the Indoors and Short Indoors modes.
2. Do not use marked balls with Short Game applications (chipping and putting).

Switching Off

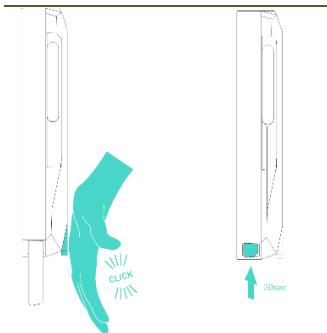
To switch the system OFF:



Lift the X3 unit and push the leg back to its closed position, until the latch clicks.

CAUTION

Keep fingers clear as illustrated.



The unit will proceed to retract its feet and shut down the processor.

NOTE

The shut down time can be up to 30 seconds.

Care and Maintenance

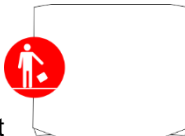
Basic care

The FlightScope X3 sensor is a sensitive and complex electronics unit and should be handled with care. There are fragile components inside the sensor that can be damaged by improper or rough handling and impact.

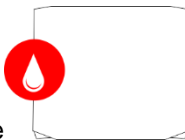
Make sure to store and transport the sensor with suitable protection and care, for example in the padded carry bag or the original shipping packaging.

Damage

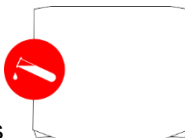
Physical impact

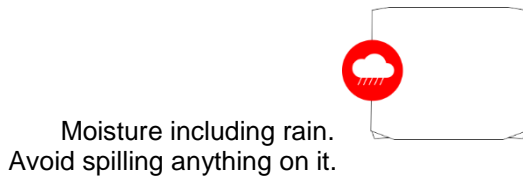
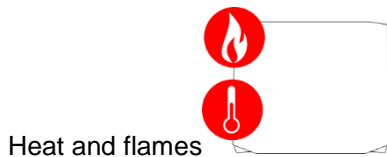


Internal water damage

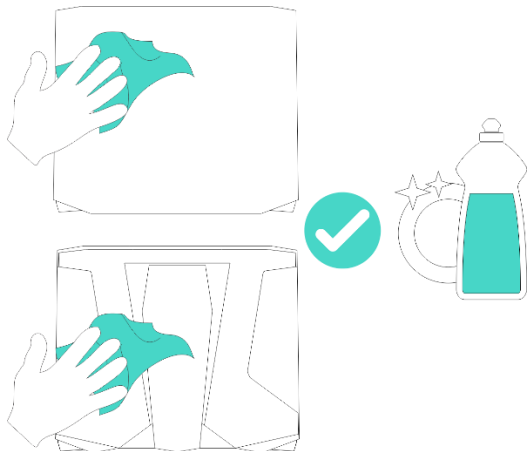


Solvent chemicals





Cleaning



Use a soft cloth to clean the sensor including the feet every time *after use* to remove dirt.

Storage & Transportation

- Store and transport the sensor in its carry bag or other suitable packaging when not in use.
- If the sensor is unused for a long period, remember to fully charge the battery before using again.

Troubleshooting

SYMPTOM

Unit does not switch on

POSSIBLE CAUSE & REMEDY

Make sure that the battery is charged, or otherwise connected to a main power source with the AC adapter.

Make sure the leg is extended.

Low battery run time

Rechargeable batteries lose capacity over time. If your batteries have become too poor to use, contact FlightScope Support for a new battery.

Batteries run down

Make sure to charge batteries for 8-10 hours until full.

When stored for a length of time, batteries will lose charge due to self-discharge. If a unit has not been used for a while, it is recommended to first charge the batteries or run it with the AC power adapter.

SYMPTOM

Shot is not displayed

POSSIBLE CAUSE & REMEDY

Check that the correct mode e.g. 'Indoor' or 'Outdoor', is selected.

Check that the sensor is switched on and positioned correctly behind the tee from which the shot is played.

Ensure that the connection between your PC or Tablet and the sensor is set up and connected.

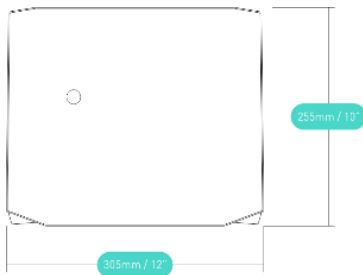
Sensor not connecting/ed

Make sure that the sensor is switched on, and check that the communications indicator is flashing.

Check the cable connection, as applicable.

Use the PC or Tablet's Setup Wizard or Connection tools to connect to the X3, if not connected.

Physical Specifications



Dimensions:	305 x 255 x 48 mm (W x H x D) 12" x 10" x 1 ⁷ / ₈ "
Mass:	3.85kg /8.5 lbs
Operating tilt:	Normal play: 10 degrees Short game: 5 degrees
Tilt/roll adjustment range	+/- 3 degrees
Ambient temperature:	0°C to 40°C (32°F to 104°F) (operating) -10°C to 55°C (-14°F to 130°F) (non-operating)
Ingress protection:	IP53 / NEMA-3

Electrical Specifications

RF Section

Detection method Low power Doppler speed measurement
Operating frequency Fixed frequencies 10.520 / 10.530 GHz
Transmitter power 10 mW (10 dBm) typical
Carrier/Modulation CW/None (Emission designator: N0N)
Antenna gain 17 dBi
Antenna beam 25 degrees (vertical) ; 20 degrees (horizontal)
Maximum permissible exposure (MPE) distance 25 cm

Electromagnetic Compatibility

FCC Class 15, Industry Canada

Communications

USB 2.0

Power Supply

Supply input (AC adapter): 100-240 Vac / 0.2 A / 50/60Hz 1ϕ
Output (AC adapter) 11-13 V dc ; 2A max ; 25W max
Battery: 7.4 V / 13500 mA-h

FlightScope reserves the right to change specifications at any time without notice.

