

## SWAROVSKI OPTIK EL RANGE TRAINING



Models: 8x42 and 10x42  
Range: 30 meters to 1375 meters / 33 yards to 1500 yards  
Weight: 8x42 – 32.1 oz; 10x42 – 31.6 oz

Based on the EL (non-SWAROVISION) platform with improved optical properties over the previous EL models. Therefore, the EL Range does not have HD objective lenses, nor does it have Field Flatteners Lens Technology found in EL SWAROVISION series.

### Two Key Sales Features - Light Transmission and SWARO-AIM technology

#### Light Transmission:

**91% in each barrel! This is a considerable improvement over the competition and a major selling feature!** It was a great challenge and tremendous achievement for SWAROVSKI OPTIK engineers to be able to obtain 91% light transmission with the aiming dot and distance readings in the optical system.

Continuous development and adjustment of SWARODUR, SWAROTOP, and SWAROBRIGHT coatings to specific glass qualities have contributed to this unprecedented brightness level in a rangefinding binocular.

To reduce glare in “low sun on horizon”, Dawn-Dusk conditions, strategically placed ribbing/grooves along with special interior housing finishes were utilized.

By comparison:

A Zeiss Victory RF (8/10x45) yields light transmissions of 85% on the left barrel and 74% on the right barrel.

A Leica Geovid (8/10x42) yields light transmissions of 77% on the left barrel and 79% on the right barrel.

#### SWARO-AIM

The EL Range features an **Inclinometer**. The **SWARO-AIM inclinometer** determines the angle to a target and will give a compensated (shorter) ballistic trajectory compensated distance. Example: the actual distance to a target could be 405 yards at a 30° angle, up or down. If the angle to the target was at this relatively steep 30° angle, up or down, at 405 yards, the “ballistic trajectory compensated” distance would be about 350 yards. This means that because the 405 yard shot is at “30°”, the shooter should use this 350 yard compensated distance (for his BT, BRH, etc.) because the effect of gravity on the bullet is really over the shorter 350 yard distance. The EL Range can determine this trajectory compensated distance by simply pushing the measuring button.

#### Simple to use:

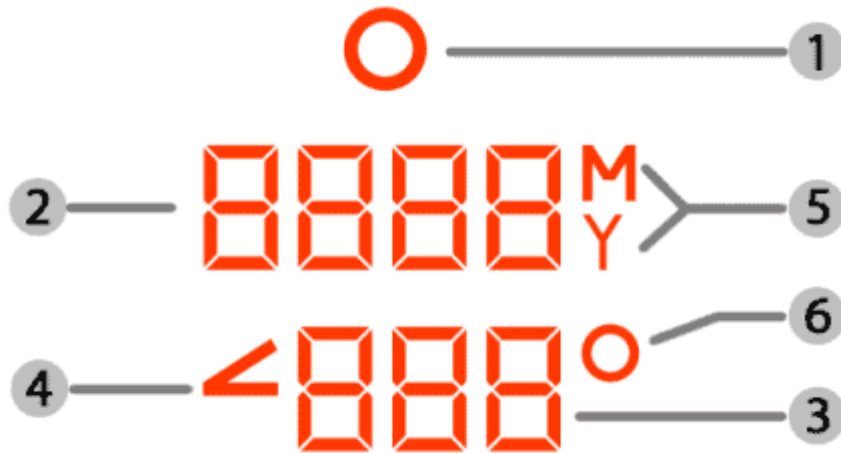
To range any game animal or object, push the measuring button so that the aiming dot will appear in the right barrel. Place the aiming dot on the game/object you wish to range and simply release the button for the distance in yards/meters that will appear in the left barrel. The measuring button is located in on the ocular end bridge on the left side. You will normally be using your left index finger on this button.



**Displays:**

The aiming dot (mark) is located in the **Right** Barrel. #1

The distance display(s) are located in the **Left** Barrel. #2-#6



1. Aiming Mark
2. Display of the measured range in yards or meters (4 digit)
3. Measured angle in degrees or corrected shooting distance
4. Angle symbol
5. Display in yards (y) or meters (m)
6. Degree symbol ( $^{\circ}$ )

In order to see both Aiming Dot and Distance Readings together, it is important that you set your eyecup height and interpupillary distance first. As you are doing this, hit the measurement button to make sure you can see the Aiming Dot and Distance readings simultaneously.

The (small diameter) aiming dot and digital readouts are in a RED color LCD Display and are easily visible under all light conditions.



### Field of View:

Wide Field of Views were difficult to obtain for a RF binocular:

EL Range 8x42 – **411 ft @ 1000 yds**

EL Range 10x42 – **330 ft @ 1000 yds**

Eye Cups can be set in 4 positions. Offers full FOV for eyeglass wearers.

Leica Geovid 8x42 FOV – 368 ft @ 1000 yds

Leica Geovid 10x42 FOV – 331 ft @ 1000 yds

Zeiss Victory RF 8x45 FOV – 375 ft @ 1000 yds

Zeiss Victory RF 10x45 FOV – 330 ft @ 1000 yds

### Eye Relief:

The eye relief on the new EL Range is greater than on the previous EL's

EL Range 8x42 – **19.2 mm** (old EL 8.5x42 was 18 mm)

EL Range 10x42 – **17.3 mm** (old EL 10x42 was 15 mm)

Leica Geovid 10x42 – 15.6 mm

Leica Geovid 8x42 – 18 mm

Zeiss Victory RF 10x45 – 15.5 mm

Zeiss Victory RF 8x45 – 16 mm

### Focusing:

Because of the design of the EL Range, individual eye focusing is different than other SWAROVSKI OPTIK binocular designs.

The EL Range has a central focus wheel, as well as 2 separate dioptic adjustment rings around the ocular end of each barrel.

To make Dioptic Focusing adjustments you must first pull up on the diopter "ring", towards the eyecup, to release it from its locked position. After the correct focus is made, you must push the "ring" back down to lock your focus into place.



### Focusing with the Diopters

To obtain the best focus, first place the objective covers on the binoculars, or simply place the binoculars on a table to get a dark background. **Make sure that you have the eyecups set where you like them and the correct interpupillary distance is set for your eyes so that you can see both targeting dot in the right barrel and the display in the left barrel are visible at the same time.**

Pull up on both diopter rings to unlock them. Push the measurement button to bring up the aiming circle in the right barrel. Turn right diopter ring until the aiming dot is clear. Now hit the measurement button twice to bring up a display in the left barrel. Turn the left diopter ring until the display becomes clear.

Once the readouts on both sides are focused, push the diopter rings back down to lock them in place. You can now return to the central focus wheel for normal distance focusing. (From this point, slight adjustment of the diopters may be necessary to get a perfect focus of distant objects while keeping the aiming dot and distance readouts in focus).

**From a sales perspective, because of the slightly more complicated nature of focusing the EL Range, it may be best to simply leave the Diopter Adjustment Rings at their 0 or neutral position for initial demonstration purposes.**

**Electronics:**

The electronics of the EL range are housed in the bottom of the binocular and are called “Fins”. One of the better ways to get maximum stability of the EL Range in your hands is to position the fins in the palm/ball of your hands.



The laser is sent out in very rapid, invisible pulses via a “Single Channel Technology”. This technology is designed to yield very accurate measurements.

This same technology renders some complications with very short range measurements. Thus the minimum range for using the EL range will be 33 yds / 30 m.

There is a scan mode for moving game that can be utilized by pressing and holding the measuring button. The maximum distance in scan mode is 999 m / yds.

**Laser Distance Capability**

SWAROVSKI OPTIK EL Range 8/10x42: **33 yds – 1500 yds / 30 m – 1375 m**

For comparison purposes:

Leica Geovid HD 8/10x42: 11 yds – 1420 yds / 10 m – 1300 m

Zeiss Victory RF 8/10x45: 10 yds – 1300 yds / 10 m – 1200 m

**For demonstration/sales purposes, please note, the laser of the EL Range can not go through windows. The laser will simply be deflected back. (Many of you may have gotten used to the fact that the LG 8x30’s laser can be used through windows). If your dealer has a small store, it would be best to demonstrate the EL Range outside, or through an open window or door. Please make your dealers/consumers aware of this fact.**

### Beam Divergence:

The beam divergence (or beam size/width) of the EL Range is a roughly rectangular shaped beam that gets increasingly larger, in a linear manner, the further away the beam gets. The size of the beam is **1.5 mrad high X 0.5 mrad wide**. A MRAD is usually described as 1 yard @ 1000 yards. In simpler terms - 54 inches x 18 inches @ 1000 yards; or @ 500 yards – 27 in. x 9 in.; or @ 100 yards – 5.4 in. x 3.6 in.

Essentially, what is inside the aiming circle is what distance the laser will measure.

By comparison:

#### EL Range – 1.5 mrad x 0.5 mrad

The Leica Geovid's beam divergence is 2.5 mrad x 0.5 mrad

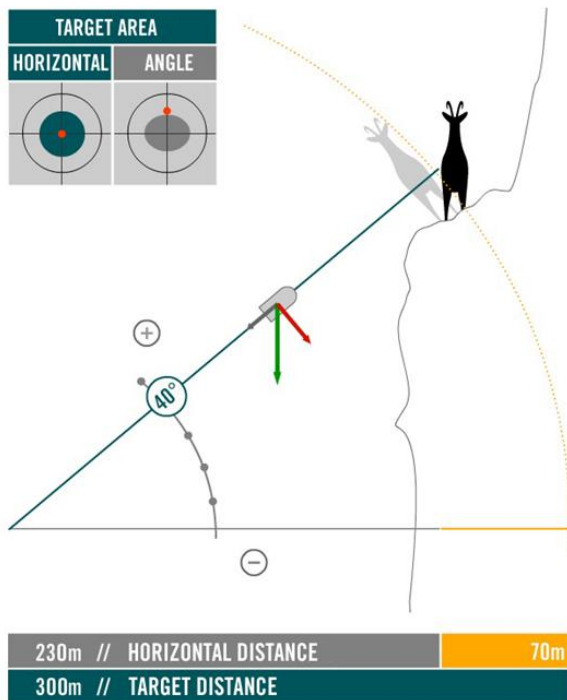
The Zeiss Victory RF's beam divergence is 1.6 mrad x 0.5 mrad

### SWARO-AIM Angle Measurement / Corrects for “trajectory” distance to target due to angled shot:

The EL Range is equipped with the SWAROAIM inclinometer system.

An inclinometer measures an uphill, or downhill angle to an object. This is an important measuring feature that can often mean the difference between a hit or miss, at a steep angled, long range shot.

Ballistic trajectories are normally determined over a horizontal plane. Trajectory solutions with a long range reticle or by using elevation click adjustments are also traditionally determined over a horizontal plane. When an angled shot presents itself at “X” distance, the trajectory curve has to be recalculated for the gravitational forces on the bullet over the shorter angled distance.



With the EL range SWARO-AIM system, there are 3 ways you can set the display. For areas where you know where there is a good chance you could be taking a fairly steep angled shot, you can use the Mode button to set the range display in the left barrel to look like this:



In this display mode, the actual distance to the target is 298 yards, but at this particular angle, the **corrected** ballistic trajectory distance is 250 yards. In this case you would set your BT for a 250 yard shot or use the appropriate Bar/Dot of your BRH/BRX reticle for a 250 yard shot.

If you know you will be in relatively flat terrain, you will have the ability to turn off the system so that the yardage readout will appear as a single reading:



Or if you want to know the actual angle to the target, the EL Range will provide that also. (The angle will appear between the angle and degree symbols in actual use)



## The Mode Button:



There is a Mode Button on the EL Range, on the bottom of the left (ocular side) bridge, directly opposite the Measurement Button on top of the bridge.

The Mode Button allows you to change various characteristics of the EL Range. There are 4 sections. Every time you wish to change a mode, you must press and hold the mode button for 2 seconds.

1. The 1<sup>st</sup> mode is for **manually** setting the brightness of the display. You are able to choose between 5 different brightness levels here. This is what you will see if the brightness level is set to brightness level 4:



To manually change to one of the other brightness levels from here you will hit the measurement button on top.



2. The 2<sup>nd</sup> Mode is to change settings in the SWARO-AIM angled shot program. When you hit the mode button while in Mode 1, this 2<sup>nd</sup> display will appear like this:

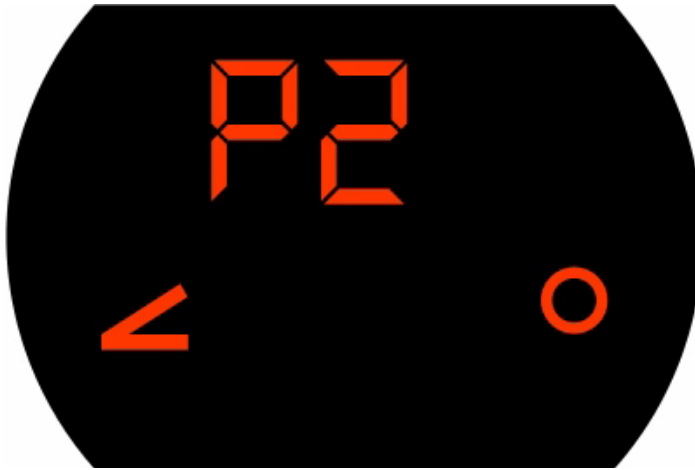


The "CAL" here stands for Calibrate (NOT caliber). If the mode is left here it will always give you 2 yardage readings; the actual distance (the top readout), as well as angle compensated distance to the target (the bottom readout), like this:



Note: While using the EL Range with both distance displays (as shown above), at relatively shallow angles (10° or less), it will be common to see readouts something like "400/393". This 7 yard distance will have virtually no effect on trajectory. The steeper or more severe the angle, and long distances will dictate the necessity of using the lower compensated trajectory distance.

In this 2<sup>nd</sup> mode you also have the option of setting the display to see only the angle in degrees to a target. To get to this display from the calibration display, simply hit the measurement button. The actual degree will appear between the angle and degree symbols when in use:



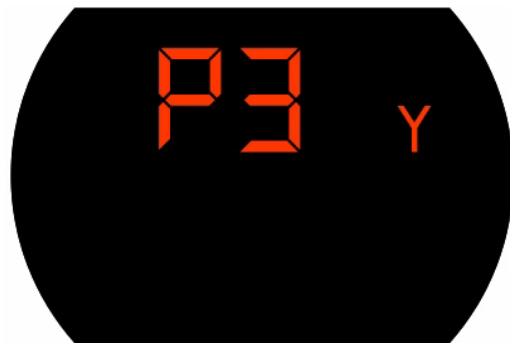
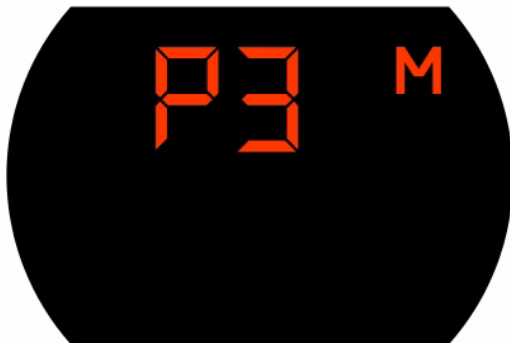
While still in this 2<sup>nd</sup> Mode, you can turn the angle shot system off, so that you will get the conventional reading of a single distance measurement readout if desired, again by simply pressing the measurement button:



This is an example of a single distance reading in the OFF position in Mode 2.



- By pressing the mode button again to get into the 3<sup>rd</sup> mode, the user will be able to change the distance readout to English Yards or Metric meters. Simply press the measurement button to change:



- Pressing the Mode button again will put you into the 4<sup>th</sup> and last Mode. This 4<sup>th</sup> mode controls the "Automatic Brightness Level Adjustment". It simply turns it on or off.



When the Automatic Brightness Level Adjustment is "On", it will automatically brighten and dim the displays, **according to one of the 5 Brightness levels that were chosen in Mode 1.**

#### **Brightness Levels:**

When the Automatic Brightness Level is on, the brightness levels of the Display, will increase or decrease depending on surrounding ambient light. Brightness will also be heavily affected by the proportion of infrared light, meaning the automatic brightness levels will work better where there is more infrared light.

#### **Sales Tip:**

Since there is much more infrared light outdoors than inside a building or closed room, the Automatic Brightness Control Feature will not work as well inside. Another reason to keep in mind, where at all possible, demonstrate the EL Range outside. Again remember that the minimum distance for the laser to work is 33 yards. The EL will close focus down to approximately 16 feet, but the laser needs a minimum of 33 yards to work.

## Technical Data

### Technische Daten / Technical data / Données techniques / Dati tecnici / Datos técnicos

stickstoffgefüllt · filled with nitrogen · remplissage d'azote · riempimento d'azoto · con relleno de nitrógeno

DE Modell	EN Model	FR Modèle	IT Modello	ES Modelo	EL Range 8x42	EL Range 10x42
Vergrößerung	Magnification	Grossissement	Ingrandimento	Aumentos	8x	10x
Wirksamer Objektiv-Ø	Objective lens Ø	Diamètre effectif de l'objectif	Diametro utile dell'obiettivo	Diámetro del objetivo efectivo	42 mm	42 mm
Austrittspupillen-Ø	Exit pupil Ø	Diamètre de la pupille de sortie	Diametro della pupilla d'uscita	Diámetro de la pupila de salida	5.3 mm	4.2 mm
Austrittspupillen-Abstand	Exit pupil distance	Distance de la pupille de sortie	Distanza della pupilla d'uscita	Distancia de la pupila de salida	19.2 mm	17.3 mm
Sehfeld in m/1000 m	Field of view at m/1000 m / ft/1000 yds	Champ de vision à m/1000 m	Campo visivo a m/1000 m	Campo de visión en m/1000 m	137 m / 411 ft	110 m / 330 ft
Sehfeld (Grad)	Field of view (degrees)	Champ de vision (degrés)	Campo visivo (gradi)	Campo de visión (grados)	7.8°	6.3°
Sehfeld für Brillenträger (Grad)	Field of view with eye glasses (degrees)	Champ visuel pour porteur de lunettes (degrés)	Campo visivo per portatore d'occhiali (gradi)	Campo de visión para usuarios de gafas (grados)	7.8° (100 %)	6.3° (100 %)
Augenseitiges Sehfeld (Grad)	Subjective field of view, apparent (degrees)	Champ de vision apparent (degrés)	Campo visivo soggettivo (gradi)	Campo de visión lateral (grados)	61°	61°
Kürzeste Einstellentfernung	Shortest focusing distance	Distance min. de mise au point	Distanza minima per la messa a fuoco	Distancia mínima de enfoque	5 m / 16.4 ft	5 m / 16.4 ft
Dioptrieausgleich links/rechts	Dioptric compensation left/right	Réglage de la dioptrie gauche/droit	Compensazione diottrica sinistra/destra	Compensación de dioptrías	- 7 / + 5 dpt	± 5 dpt
Lichttransmission	Light transmission	Transmission de lumière	Trasmissione della luce	Transmisión de luz	91 %	91 %
Pupillendistanz	Interpupillary distance	Distance interpupillaire	Distanza interpupillare	Distancia interpupilar	56 - 74 mm 2.2 - 2.9 in	56 - 74 mm 2.2 - 2.9 in
Dämmerungszahl nach DIN 58388	Twilight factor acc. to DIN 58388	Facteur crépusculaire selon DIN 58388	Valore crepuscolare secondo DIN 58388	Factor crepuscular según DIN 58388	18.3	20.5
Funktionstemperatur	Operating temperature	Température de fonctionnement	Temperatura di funzionamento	Temperatura de funcionamiento	-10°/+55° C +14°/+131° F	-10°/+55° C +14°/+131° F
Lagertemperatur	Storage temperature	Température de stockage	Temperatura di stoccaggio	Temperatura de almacenaje	-30°/+70° C -22°/+158° F	-30°/+70° C -22°/+158° F
Druckwasserdichtheit	Submersion tightness	Etanchéité	Impermeabilità sott'acqua	Estanqueidad	4 m / 13 ft	4 m / 13 ft
Länge ca.*	Length approx.*	Longueur approx.*	Lunghezza appross.*	Longitud aprox.*	166 mm / 6.5 in	160 mm / 6.3 in
Breite ca.**	Width approx.**	Largeur approx.**	Larghezza appross.**	Anchura aprox.**	117 mm / 4.6 in	117 mm / 4.6 in
Höhe ca.**	Height approx.**	Hauteur approx.**	Altezza appross.**	Altura aprox.**	81 mm / 3.2 in	81 mm / 3.2 in
Gewicht ca. (ohne Batterie)	Weight approx.	Poids approx.	Peso appross.	Peso aprox.	910 g / 32.1 oz	895 g / 31.6 oz
Display	Display	Ecran	Display	Pantalla	LCD	LCD
Messbereich	Measurement range	Plage de mesure	Ambito di misurazione	Área de medición	30 - 1375 m 33 - 1500 yds	30 - 1375 m 33 - 1500 yds
Messgenauigkeit	Range-finding accuracy	Précision de la mesure	Accuratezza delle misurazioni	Precisión de medición	± 1 m / ± 1 yds	± 1 m / ± 1 yds
Messdauer	Measurement duration	Durée de la mesure	Tempo di misura	Duración de medición	≤ 1 s	≤ 1 s
Winkelmessung	Measured angle	Mesure d'angle	Misurazione angolo	Medición angular	+/- 90°	+/- 90°
Korrigierte Schussentfernung (Ballistikprogramm)	Corrected shooting distance (ballistic program)	Distance de tir corrigée (programme balistique)	Distanza di tiro corretta (programma balistico)	Distancia de tiro corregida (programa balístico)	max. 999 m/yds	max. 999 m/yds
Laser	Laser	Laser	Laser	Láser	Klasse 1 EN/FDA	Klasse 1 EN/FDA
Umschaltung y/m	y/m changeover	Commutation y/m	Conversione y/m	Conmutación y/m	✓	✓
Batterie	Battery	Piles	Batteria	Batería	CR2	CR2
Betriebsdauer	Operating hours	Durée de service	Durata di funzionamento	Duración	1000x	1000x