



# TAG Heuer

PROFESSIONAL TIMING

## WIRELESS PHOTOCELL HL3-1x

### User Manual

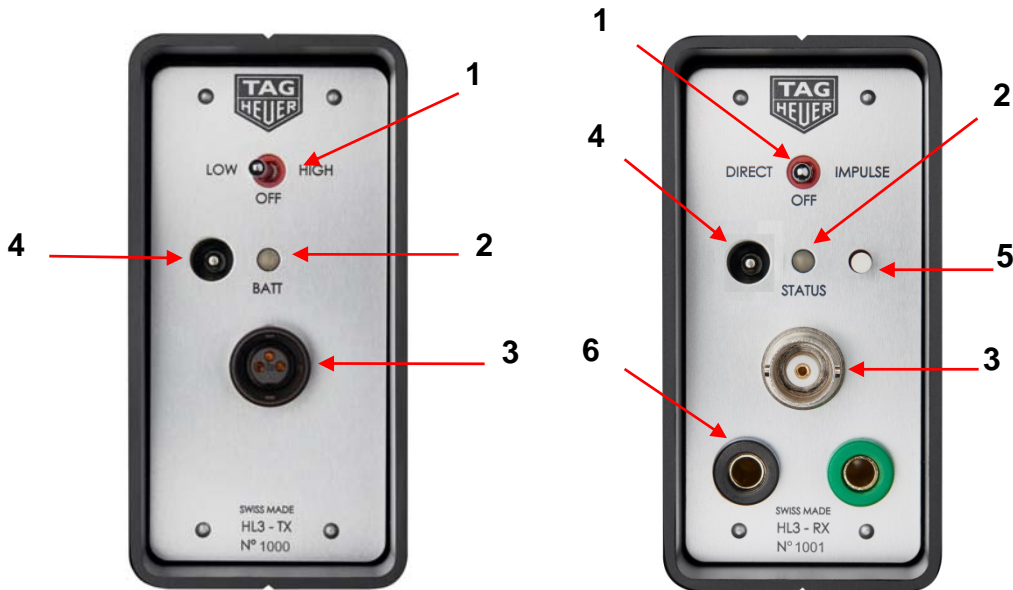
Version 03/2017



# 1. Description

Two modules combine to form the HL3-1x photocell

- **Infra-red transmitter HL 3-000** : with **High / Low** positions to adjust the intensity of the transmitter
- **Wireless Photocell HL 3-100** : with 100mW wireless impulse transmission and two modes.
  - **IMPULSE** mode : calibrated impulse length at each interruption (standard mode)
  - **DIRECT** mode : with timing impulses which correspond to the interruption of the Infra-Red transmitter. This mode enables remote monitoring of the photocell alignment



**HL3-000 – Infra-Red Transmitter**

1. High / OFF / Low Power selector
2. Battery level LED
3. Connector Synchro (HL3-132)
4. Power Supply

**HL3-100 – Wireless Photocell**

1. Direct / OFF / Impulse selector
2. Battery & Config. status LED
3. BNC antenna Connector
4. Power Supply
5. Select Button
6. Banana impulse connector



**NOTE:**

The TAG Heuer HL615-2 Receiver is required when using the HL3-100 wireless photocell. **Please refer:** to the HL615 User manual for information relating to the configuration and set up of the HL615 Receiver.

## 2. Combinations

---

The HL3-1x photocell generation allows multiple combinations to accommodate any sport and requirements.

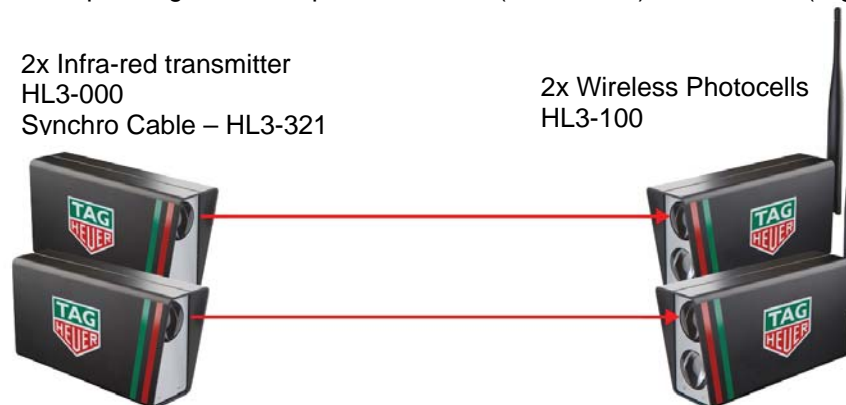
### HL3-131 – Wireless Kit photocell with reflector (HL3-100 + HL2-112)

Normal use & conditions, operating distance up to : 20m (65 ft)



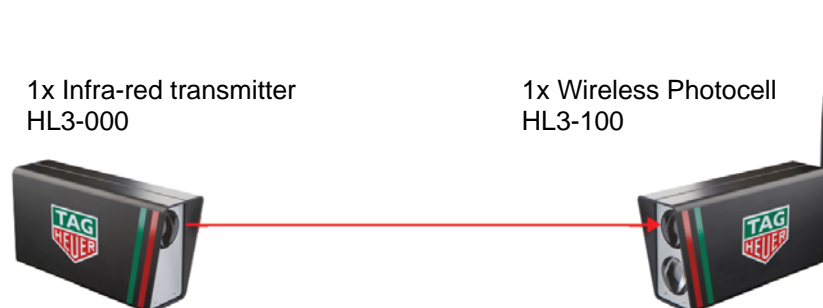
### HL3-132 – Dual Wireless Photocell with Dual Infra-red transmitter (2x HL3-100 + 2x HL3-000)

Normal use & conditions, operating distance upto : 40m/130ft (Low Power) & 80m/260ft (High Power)



### HL3-135 – Single Wireless Photocell with Infra-Red transmitter (1x HL3-100 + 1x HL3-000)

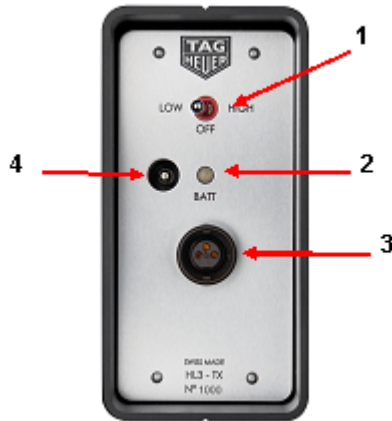
Normal use & conditions, operating distance upto : 40m/130ft (Low Power) & 80m/260ft (High Power)



### 3. Configuration & Operation

---

#### HL3-000 : Infra-Red Transmitter



The **LOW / HIGH** selector modifies the intensity of Infra Red transmission and allows the distance between Transmitter and Wireless photocell to be increased or decreased.

**LOW** position : up to max. 40m (130 ft.)  
**HIGH** position : up to max. 80m (260 ft.)

Switch ON the transmitter by selecting your intensity setting using **LOW / HIGH** – selector (1)

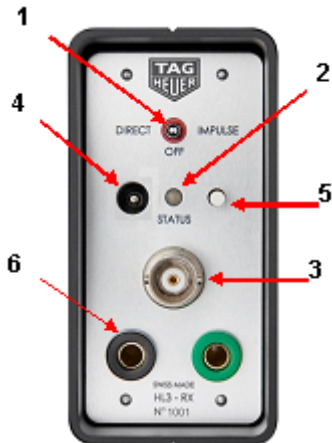
Immediately following switch on the battery charge status is displayed and determined by the number of green flashes from the LED (2)

- 4 green flashes: 80-100 %
- 3 green flashes: 60-80 %
- 2 green flashes: 40-60 %
- 1 green flash: 20-40 %
- 1 red flash: < 20%

#### **WARNING**

The battery autonomy will be significantly reduced in freezing temperatures.  
If the LED flashes red every second, the battery level is beyond the level for reliable operation.  
It is imperative that the photocell is recharged fully prior to further use.

## HL3-100 : Wireless Photocell



Switch ON the transmitter by selecting your intensity setting using the **DIRECT / IMPULSE** - selector (1)

Immediately following switch on, the current Team & Channel status are displayed which can be determined by colour and number of flashes from the LED (2)

### Team Status

4 green flashes: Team D  
 3 green flashes: Team C  
 2 green flashes: Team B  
 1 green flash: Team A  
 1 red flash : wireless disabled

### Channel Status

4 red flashes: Channel 4  
 3 red flashes: Channel 3  
 2 red flashes: Channel 2  
 1 red flashes: Channel 1

Switch ON the transmitter by selecting **DIRECT / IMPULSE** - selector (1)

**Impulse Mode:** The length of the impulse is brief to allow for a subsequent and multiple impulses

**Direct Mode:** The length of the impulse represents the time the infra-red beam is interrupted. Prolonged interruption or an offline photocell will send an offline status to the timer.

### Battery Status:

The battery charge status can be checked at any time when the photocell is on. By pressing briefly the Select Button (5) the status will be displayed and determined by the number of green flashes from the LED (2)

4 green flashes: 80-100 %  
 3 green flashes: 60-80 %  
 2 green flashes: 40-60 %  
 1 green flash: 20-40 %  
 1 red flash: < 20%

### **TEAM Configuration**

- Press and hold the **select** button (5) then switch ON (1) - to **DIRECT** position
- LED (2) will flash red/green, indicating setting mode – now release **select** button (5)
- LED (2) will then flash green to indicate the current **TEAM** number (1 to 4)
- Each additional button (5) press, will increment the **TEAM** number 1 – 2 – 3 - 4 – 0 – 1 etc.
- The LED (2) will flash after each change to indicate the **TEAM** number set
- Switch OFF to quit the setting mode

### **CHANNEL Configuration**

- Press and hold the **select** button (5) then switch ON (1) - to **IMPULSE** position
- LED (2) will flash red/green, indicating setting mode – now release **select** button (5)
- LED (2) will then flash red to indicate the current **CHANNEL** number (1 to 4)
- Each additional button (5) press, will increment the **CHANNEL** number 1 – 2 – 3 - 4– 1 etc.
- The LED (2) will flash after each change to indicate the **CHANNEL** number set
- Switch OFF to quit the setting mode




### **WIRELESS Configuration**

By default the wireless transmission is enabled. If you wish to use only the banana outputs of the photocell then the wireless feature can be disabled as follows.

- Press and hold the **select** button (5) then switch ON (1) - to **DIRECT** position
- LED (2) will flash red/green, indicating setting mode – now release **select** button (5)
- Press **select** button (5) until 1 red flash on LED (2) is seen. Wireless is now disabled
- To enable wireless repeat the steps above in **TEAM Configuration**

## 4. Photocell alignment

- The Infra-Red transmitter and the Wireless Photocell should be suitably fitted to a support HL 4, HL 4-3 or on a tripod HL 5
- On the Wireless Photocell (HL3-100), alignment is confirmed when the LED (2) is Off. When you interrupt the beam between transmitter and photocell, the LED of the photocell switches ON and an impulse is supplied to the output (banana output and radio).
- When aligning the photocells from the HL3-000, a red light indicated on the bottom lens of the HL3-100 will illuminate when the photocell is misaligned or interrupted and extinguish when it is aligned. Also from the HL3-000 LED (2) will be illuminated when the photocell is out of alignment and extinguish when correctly aligned.
- It is recommended to align the photocells along the vertical and horizontal axis to achieve the central point of alignment to give tolerance for windy conditions. Photocells which are not correctly aligned will not function correctly and either miss impulses or output multiple spurious pulses.

<p><b>Infra-red transmitter HL 3-000</b>  <b>Aligned – No LED (2) illuminated</b></p> 	<p><b>Misaligned – LED (2) illuminated</b></p> 
<p><b>Wireless Photocell HL 3-100</b>  <b>Aligned – No LED (2) illuminated</b></p>	<p><b>Misaligned – LED (2) illuminated</b>  <b>Also – red light on bottom lens indicates photocell is not aligned</b></p>
	

## 5. Maintenance

The HL3-1x photocell range are designed for use in harsh conditions but we do recommend that the external cover is removed frequently to check for condensation especially in humid or extreme cold conditions.

## 6. Technical Specification

---

<b>Principal:</b>	High frequency infra-red (32.768kHz) Detection of signal by frequency interruption
<b>Infra-Red Distance possible:</b>	HL3-100 & Reflector (HL3-131) up to 20 meters (65 ft.) HL3-100 & HL3-000 up to 40 meters (130ft.) LOW power HL3-100 & HL3-000 up to 80 meters (260ft.) HIGH power
<b>Output impulse:</b>	Via opto couplers and working contact / open collector
<b>Working temperature:</b>	- 20°C to + 50°C
<b>Battery :</b>	Li-Pol 3.7V 3800mAh (+ power supply 7.5V 650mA HL3-1)
<b>Autonomy - Wireless Photocell:</b>	Approx. 330 hours at 20°C
<b>Autonomy - Infra-Red Transmitter:</b>	LOW position: 210 hours HIGH position: 100 hours
<b>Precision:</b>	Fixed delay 200ms, +/- 0.5/10'000 sec (+/- 0.02 ms)
<b>Output Lock Time:</b>	Wireless ON : 200ms / Wireless OFF : 10ms
<b>Dimensions:</b>	150 x 80 x 40 mm
<b>Weight:</b>	800 gr
<b>Frequency:</b>	ISM Band– 868 MHz
<b>Power :</b>	100 mW
<b>Range:</b>	1 km under optimal conditions, direct line of sight
<b>Memory:</b>	All configurations are retained in memory when the photocell is Off or when the battery is discharged

### **NOTE:**

The Wireless photocell HL3-100 has an infra-red transmitter (for use with kit HL3-131).

When the HL3-100 photocell is switched ON, the infra-red transmitter is automatically enabled.

By pressing and holding down the **select** button **(5) for 5 seconds**, the internal infra-red transmitter is disabled.

To enable the infra-red transmitter, simply hold down the **select** button **(5) for 5 seconds** and the internal infra-red transmitter will be active

The infra-red transmitter is always active by default when switching ON the photocell



# TAG Heuer

PROFESSIONAL TIMING

**TAG Heuer**  
**PROFESSIONAL TIMING**  
6A Louis-Joseph Chevrolet  
2300 la Chaux-de-Fonds  
Switzerland  
Tel : 032 919 8000  
Fax : 032 919 9026

E-mail: [info@tagheuer-timing.com](mailto:info@tagheuer-timing.com)  
<http://www.tagheuer-timing.com>