

# USER MANUAL

## CAP2600 WORKSHOP™

Expert | Universal headlight beam tester



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## Introduction

Thank you for having purchased the CAP2600 Workshop™ headlamp adjustment system. It has embedded image processing technology developed by CAPELEC. It is a powerful expert system for adjusting and checking lighting.

It is compatible with all headlamp lighting technologies installed on heavy and light road vehicles of the M1, M2 and N1 categories (vehicles with a gross vehicle weight of less than 3.5 tonnes)

Please read this manual carefully before using the CAP2600 WORKSHOP™.

Keep it in a safe place to be able to consult it if necessary.

**Note:** The information in this document is subject to change without notice. CAPELEC cannot be held liable for direct or indirect damage of any type, nor for losses or costs incurred through non compliant use.



**Precautions for use:** the CAP2600 WORKSHOP™ lens must never be exposed to sunlight. The concentration of sunlight can cause heating and a risk of damaging the equipment and/or burns.

## Section 1: COMMISSIONING

### I. Area of use

Unlike other headlamp beam testers, the CAP2600 WORKSHOP™ does not need to define a work zone and qualify it. It features innovating and unique technology: the "ANYWHERE" ground compensation system. The CAP2600 WORKSHOP™ can therefore be used anywhere in your workshop.

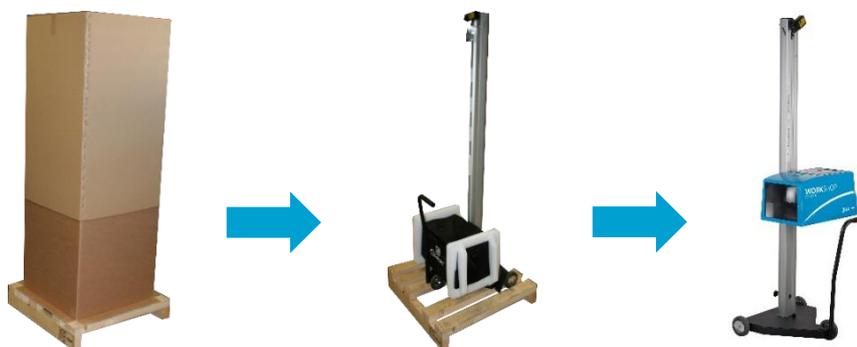


### II. Installation and commissioning

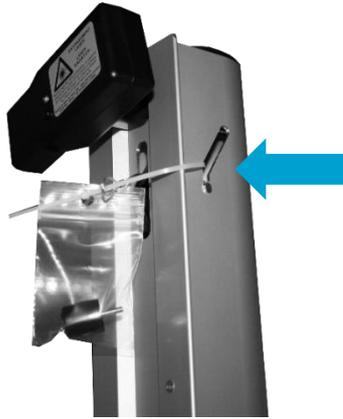
#### 2.1 Assembly instructions

The CAP2600 WORKSHOP™ is delivered assembled and calibrated.

- Unpacking the CAP2600 WORKSHOP™



- Cut the collar and keep the rubber stop.



- Caution: do not allow the metal cable to slip into the column



- Attach the metal cable onto the optical block



- Screw the upper stop to the top of the column



## 2.2 Configuration: first start up

When you first activate the CAP2600 WORKSHOP™, you must select the language, the configuration (France WS by default), and check the basic parameters: date, time and time zone.

**Starting configuration**

Language:

Configuration:

Timezone:

## 2.3 Computer links

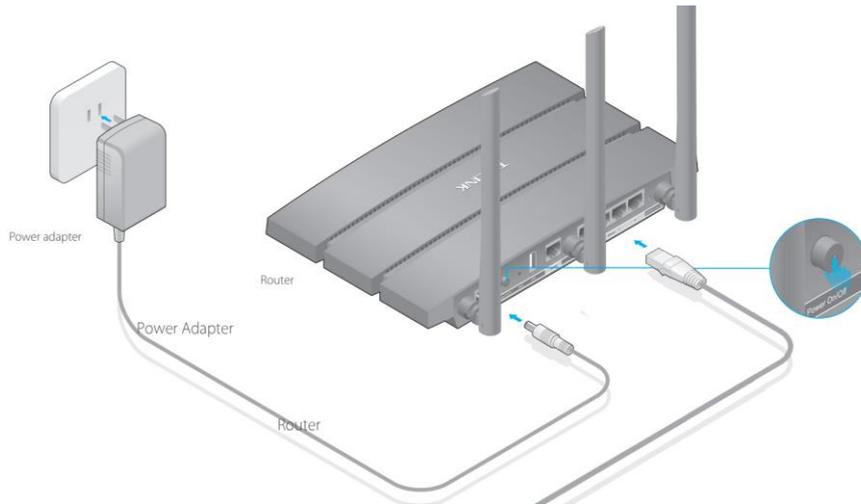
The CAP2600 WORKSHOP™ can be used with or without a computer connection. If you want to connect your device, you can do so via the CAPELEC router or via your own WIFI network.

### Connection to the preconfigured CAPELEC router

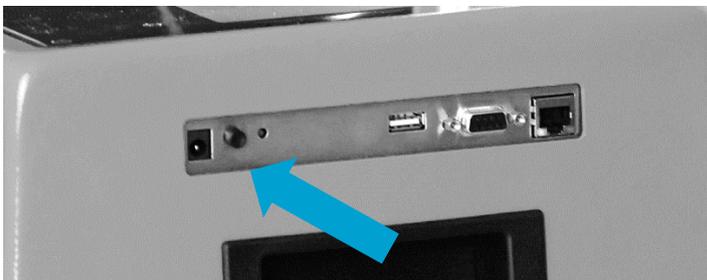
The CAP2600 WORKSHOP™ is delivered with a router configured for automatic WIFI connection as an option. It is used to access the WEB interface and generate the expert report.

- Connect the router to the computer network (1), connect the power supply (2) and then turn on the power (3)

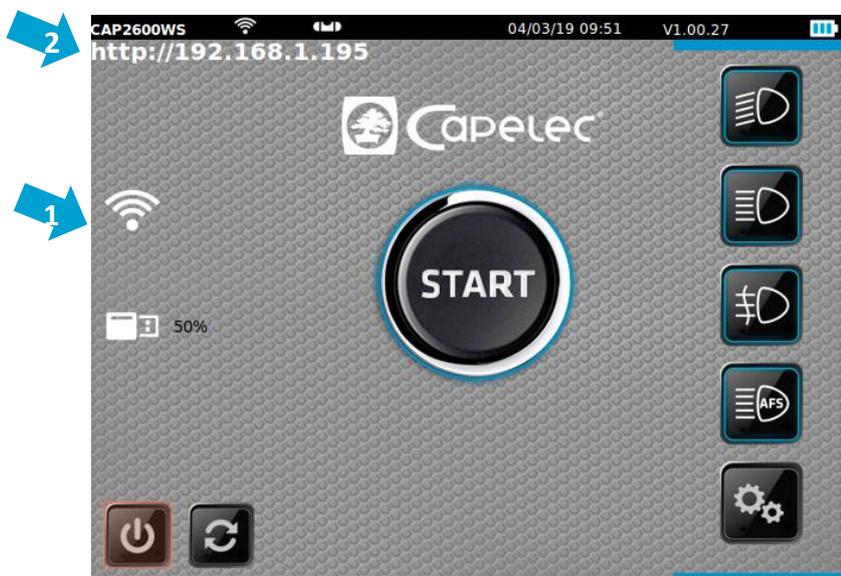




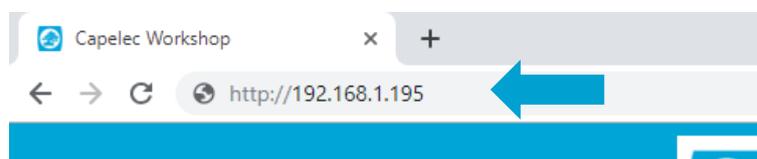
- Start the CAP2600 WORKSHOP™



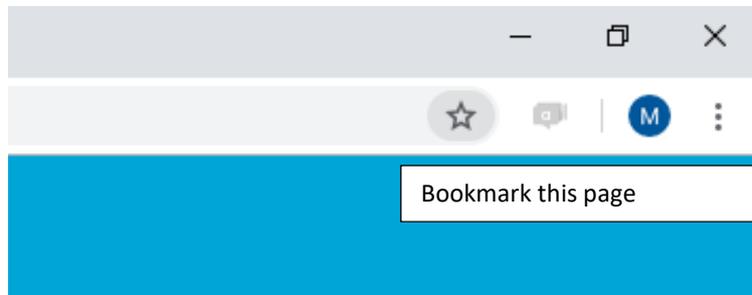
- The WIFI icon (1) and the WEB interface address (2) appear on the home page



- Open a web browser and enter the displayed address



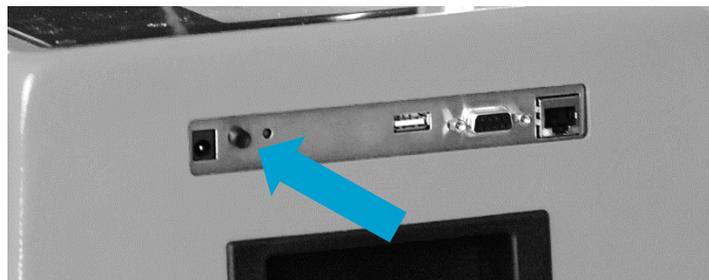
- Add this page to the favourites



### Connection to a WIFI network

The CAP2600 WORKSHOP™ can be connected to your WIFI network. It is used to access the WEB interface and generate the expert report.

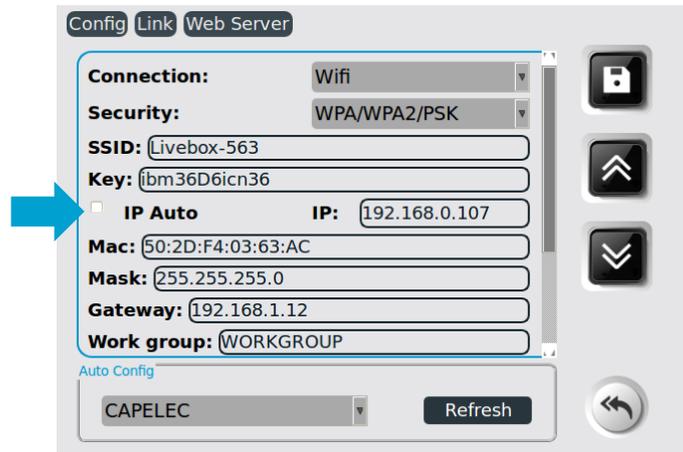
- Start the CAP2600 WORKSHOP™



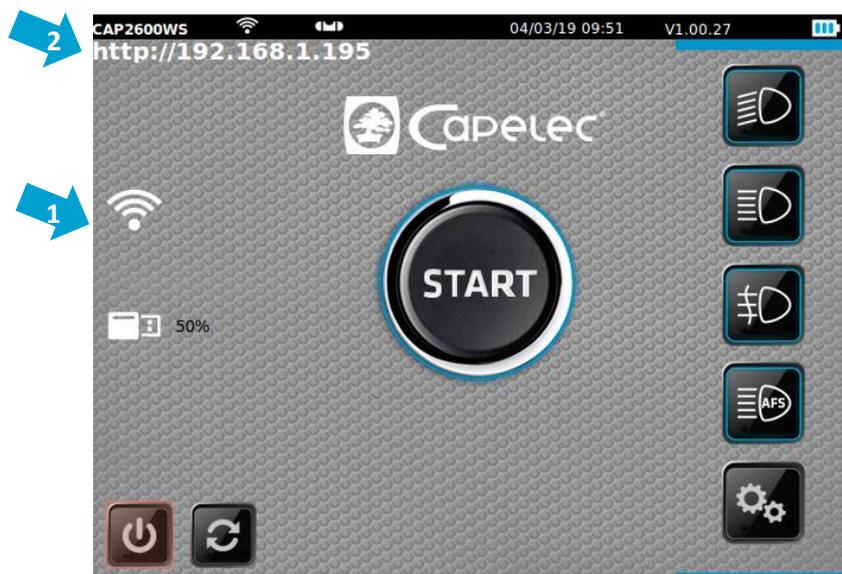
- Go to "Config / Link" and enter the password "2345"
- Go to "Web server" and enter your SSID and key



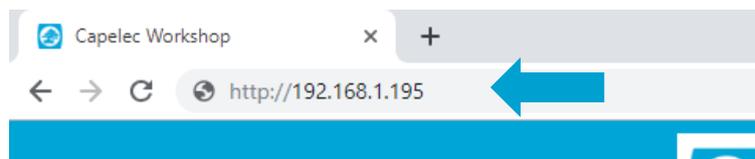
For networks with DHCP, keep the "IP AUTO" configuration, otherwise switch to static IP by unchecking "IP AUTO" and enter an IP address



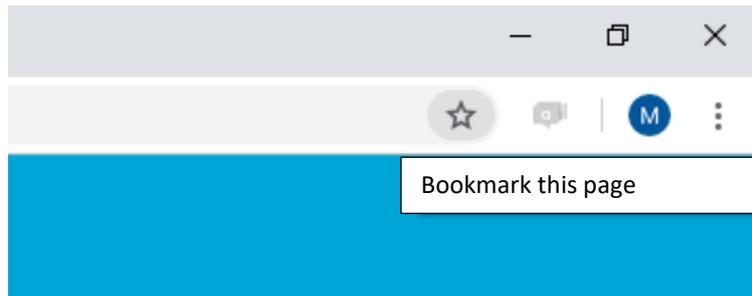
- Restart the CAP2600 WORKSHOP™
- The WIFI icon (1) and the WEB interface address (2) appear on the home page



- Open a web browser and enter the address



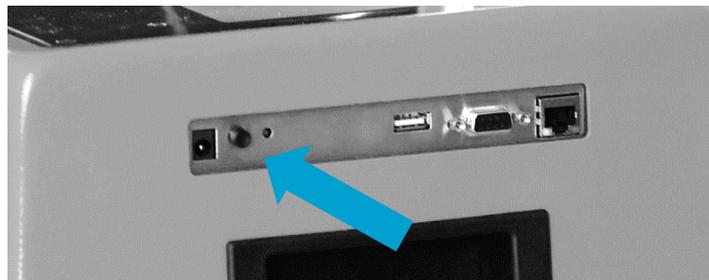
- Add this page to the favourites



## 2.4 Without a connection

The expert CAP2600 WORKSHOP™ headlamp beam tester can be used without a connection. The built-in thermal printer makes it possible to print simplified reports.

- Start the CAP2600 WORKSHOP™



- Go to "Config / Link" and enter the password "2345"
- Select "Printer"



- Restart the CAP2600 WORKSHOP™

## 2.5 Customising and entering the garage header

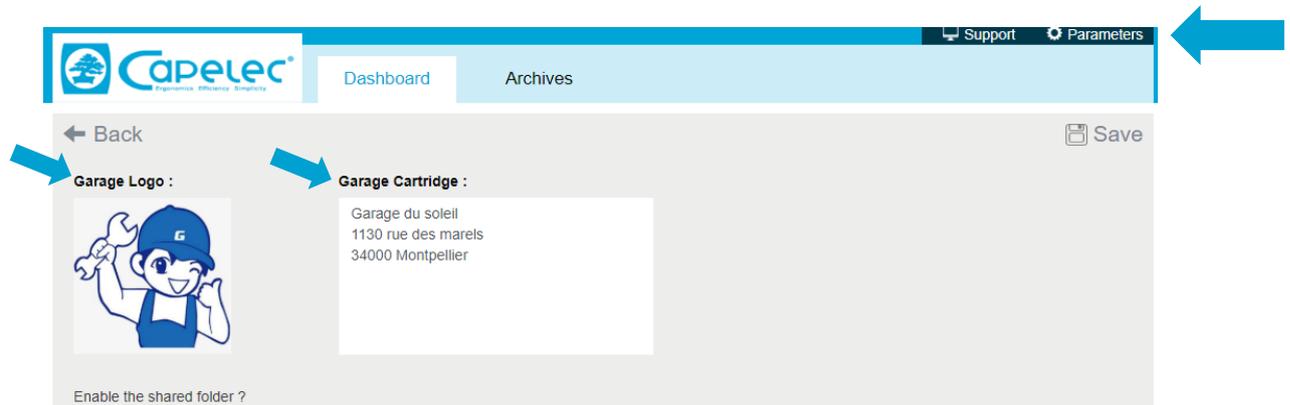
### From the headlamp beam tester

Go to "Config / Company name" and enter your company name



### From the WEB interface

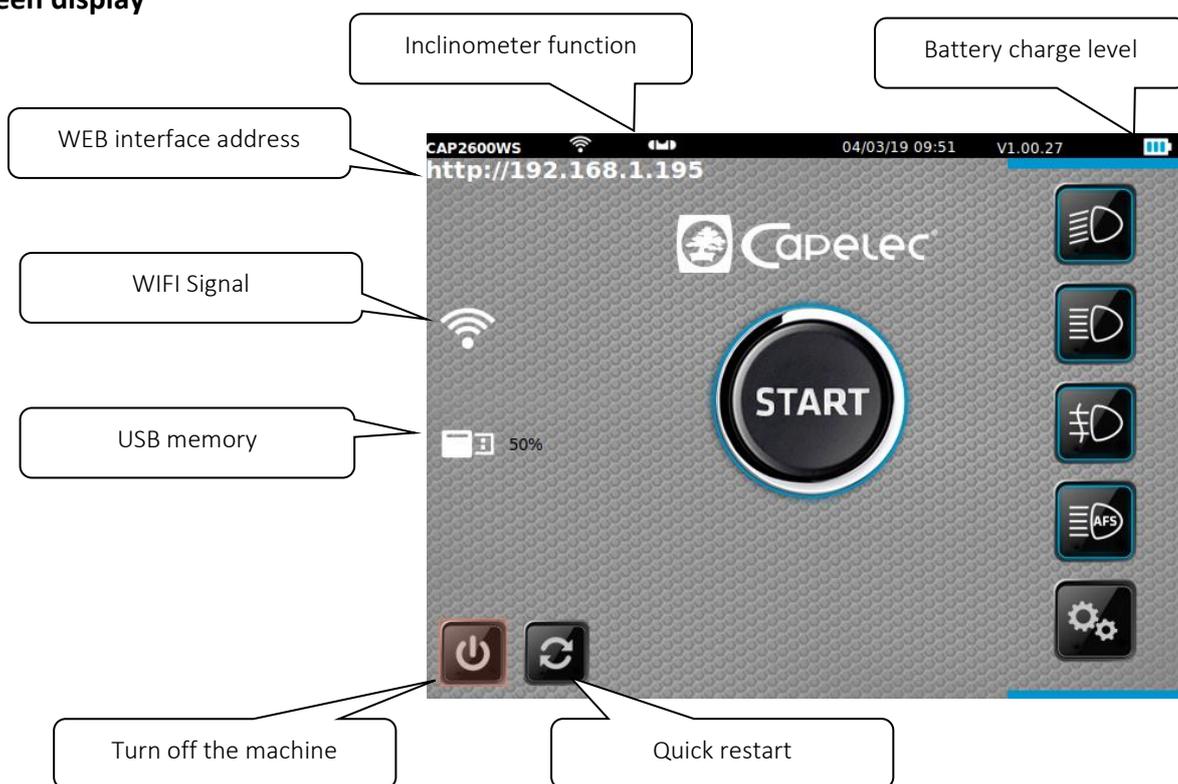
Go to "Settings" and enter the company name in the header and add the logo



## Section 2: USER MANUAL

### I. Overview

#### 1.1 Touch screen display



For optimum use, the use of the stylus is recommended.



## 1.2 The main functions

At start up, you have direct access to the 6 CAP2600 WORKSHOP™ functions:



Start

Used to draw up the dipped-beam headlamp report, to print a result ticket and to access the WEB interface expert report.



Dipped beam

It is used to accurately adjust the dipped-beam headlamps: dip angle, lateral angle and light intensity measurement.



High beam

It is used to adjust the high beam: dip angle, lateral angle and light intensity measurement.



Fog lamps

It is used to adjust the fog lamps: dip angle and light intensity measurement.



AFS calibration

It is used to calibrate the AFS function. A specific diagnosis tool is required to interact with the calculator.



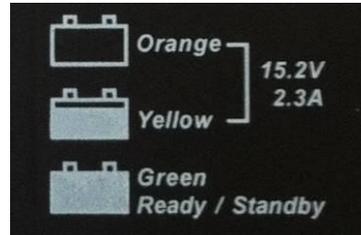
Configuration

This menu gives access to several sub-menus used to configure the different CAP2600 WORKSHOP™ functions, such as the printer mode, the date and time etc.

### 1.3 Power supply

The CAP2600 WORKSHOP™ runs on lithium-iron batteries. In continuous operation the autonomy is estimated at about ten hours.

The charger supplied with the device has a charge indicator.



#### CHARGERS

The charger disconnection device is the adapter block. It must remain accessible.

A charger different from the originally supplied charger must not be used under any circumstances.

#### BATTERIES

The batteries must be replaced using original parts.

Recycle the batteries in compliance with the laws and regulations applicable to your country. Do not dispose of them in the wild or in a dustbin. Depending on regulations, it may be prohibited to incinerate, bury or dispose of them in landfills.

For further information, please contact the competent authorities.

## II. Positioning the CAP2600 Workshop™

### 2.1 Vehicle preparation

The following information is provided as a recommendation. Please refer to applicable regulations.

#### **For light vehicles:**

Preparation:

- Check the tyre pressure
- When the vehicle is fitted with a manual beam adjustment system (in the passenger compartment or on the headlight inserts), select the position intended by the manufacturer depending on the load
- When the vehicle is fitted with an adaptive lighting system (AFS), deactivate it by selecting "dipped beams"
- When the vehicle is fitted with a headlamp cleaning system, check its operation and clean the insert if necessary.

#### **For heavy goods vehicles:**

Vehicle preparation:

Before the inspection,

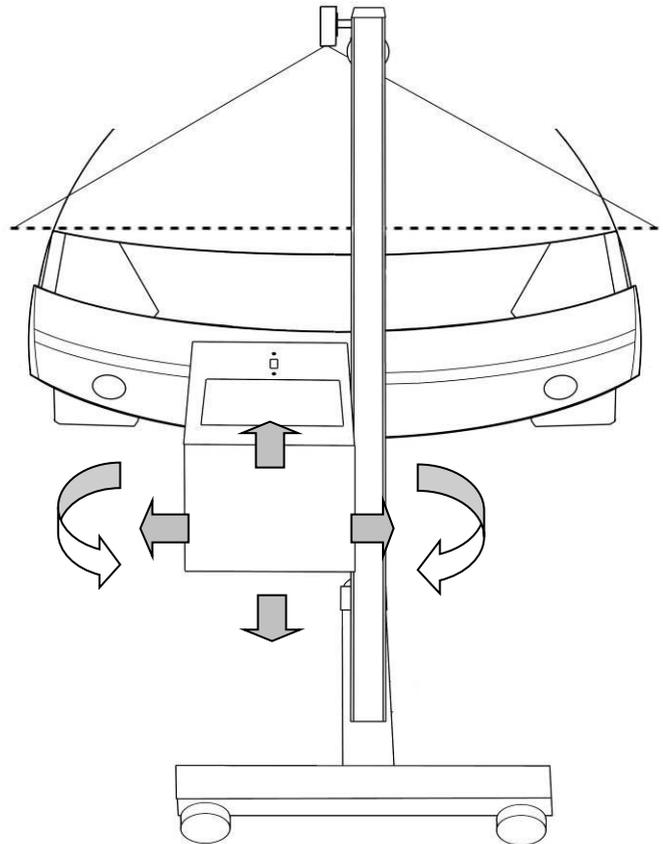
- Set the load compensation system to the appropriate position
- Disable the AFS
- Clean the headlamp inserts

Vehicle and headlamp beam tester position:

- Position the vehicle with the wheels straight without using the parking brake (a wheel chock can be used).
- The engine will be left running if necessary to maintain the air suspension

## 2.2 Positioning in the vehicle length axis

- Position the CAP2600 WORKSHOP™ in front of the centre of the vehicle, so that the lens is located between 20 cm and 80 cm in front of each lamp.
- Identify two fixed points on the vehicle, symmetrically placed in relationship to the central axis (*for example: upper left and right corners of the windscreen, non-deformed bonnet angles, windscreen wiper nozzles if their base is not deformed*).
- Pivot the box to place the laser line on the selected fixed points on the vehicle.
- Start the measurement procedure. During this phase you will move the CAP2600 WORKSHOP™ in front of the headlight while keeping the angle obtained with the laser. It is advisable to check its position in relation to the vehicle between each lamp.



### WARNINGS

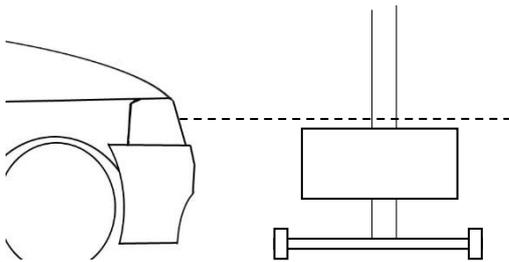
- Laser radiation
- Class 2M laser device
- Do not look directly into the beam nor directly observe using optical instruments.
- The vehicle must be empty of occupants when the laser beam is being adjusted.
- Laser adjustment must be used momentarily.

## 2.3 Positioning the optical block in front of the headlamp

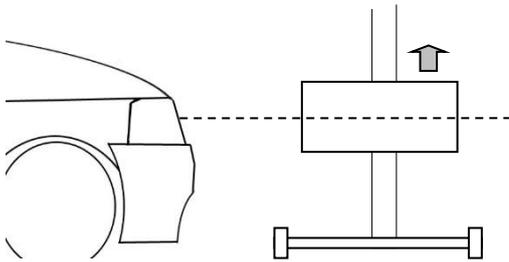
The positioning assistance optimises the optical block alignment in front of the lamp. It is activated automatically before each measurement. The indications displayed on the screen guide the user. When the optimum position is reached, "validated" is displayed. The CAP2600 WORKSHOP™ automatically moves to the next step.

### The work method:

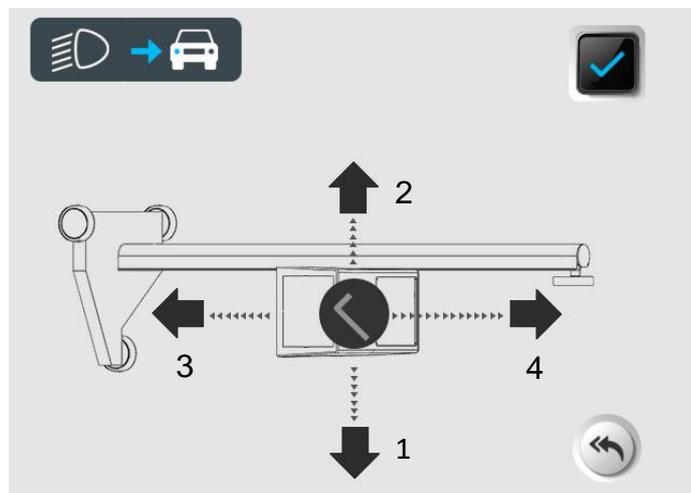
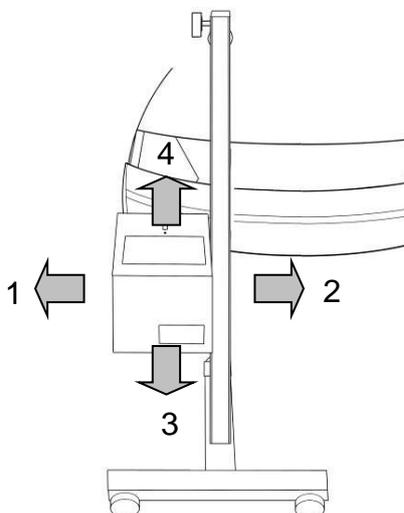
1 - Place the headlamp adjustment system in front of the headlamp below the centre of the lamp.



2 - Follow the instructions on the screen to align the optical block at the correct height.



3 - Place the optical block taking into account the assistance until "validated" is displayed on the screen.



## WARNINGS

During this operation make sure that the CAP2600 WORKSHOP™ lens is not exposed to a parasite external light source (sunlight, spotlight, etc.) which could cause incorrect positioning.

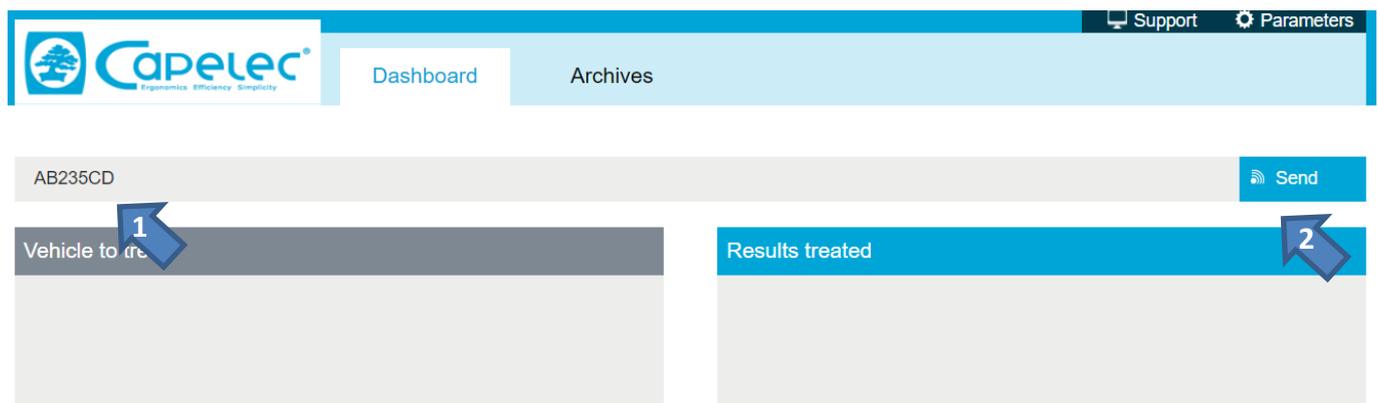
## III. Lamp inspection

### 3.1 Inspection sequence

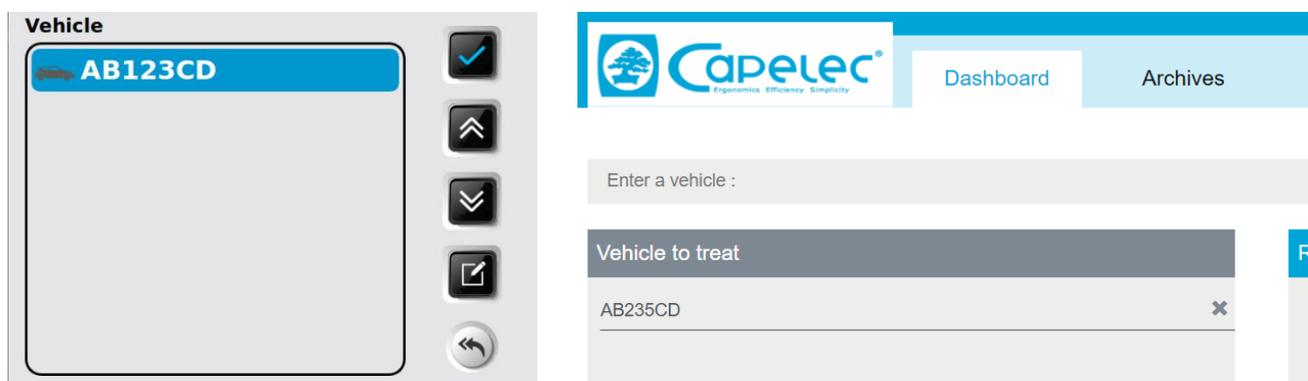
In the start menu , the CAP2600 WORKSHOP™ will guide you through the entire headlamp inspection process. The sequence of steps is described in the following section.

#### Step 1: Enter the vehicle registration plate

From the WEB interface, enter the vehicle registration plate (1) and click "Send" (2).



The plate appears on the headlight beam tester screen and in the "vehicle to be processed" column.



Validate by pressing  to start a complete procedure.

**Note:** You can also manually enter a registration plate directly on the CAP2600 WORKSHOP™ by clicking  .

### Step 2: Vehicle slope measurement using the ANYWHERE module

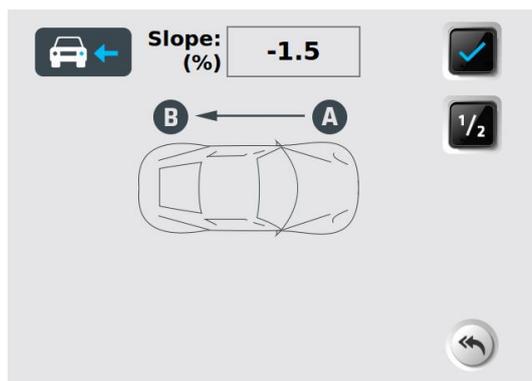
Position the ANYWHERE modules as close as possible to the vehicle wheels on the left side as shown below. Module A (laser) on the front wheel and module B (target) on the rear wheel.



To activate the module A laser, press the switch for 2 seconds. Point it to the module B target line.



Press the switch again to validate. The laser flashes 3 times and sends the measurement. Then it turns off automatically.

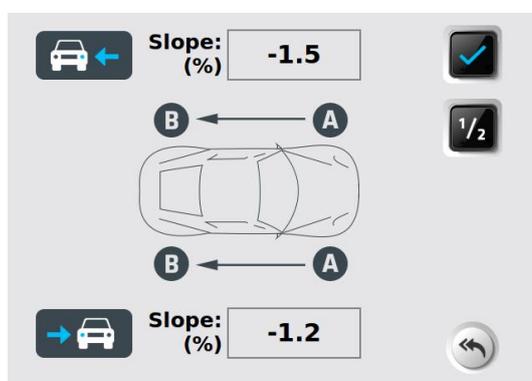


Measured slope on the left side

**Note:** For more accuracy, or if the vehicle area is very uneven, you can make an additional measurement on the right side of the vehicle. Repeat the same operation on the right side by turning the laser around.



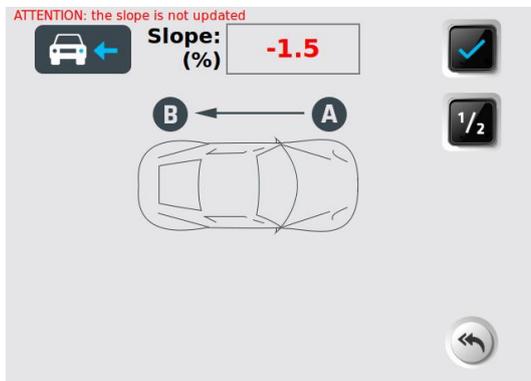
Click  to activate the left/right double measurement.



Measured slope on the right side

Confirm by pressing  .

**Note:** Between two vehicles, the device stores the ANYWHERE module ground slope. It is displayed in red with the "ATTENTION: the slope is not updated" message.

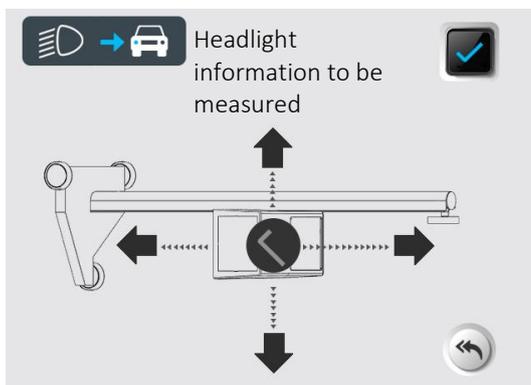


If you wish to reuse the same slope without having to repeat a measurement using the ANYWHERE module, confirm by pressing  .

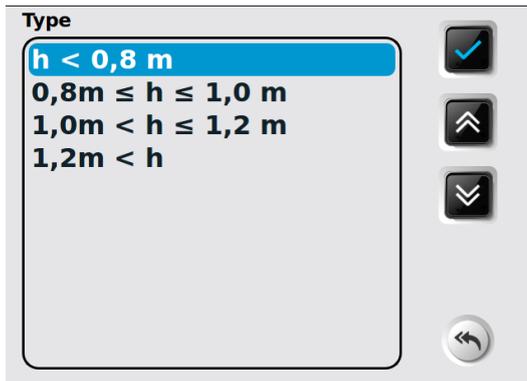
### Step 3: Choice of the headlamp height.

You must select the headlight height.

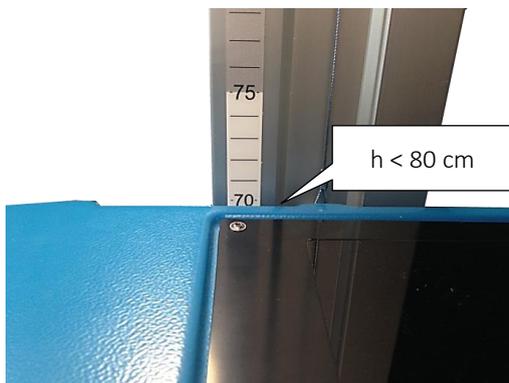
Position the CAP2600 WORKSHOP™ in front of the headlight inserts. (See section II).



The displayed height is expressed in metres. It is obtained by measuring the distance between the ground and the lower edge of the headlight reflector.



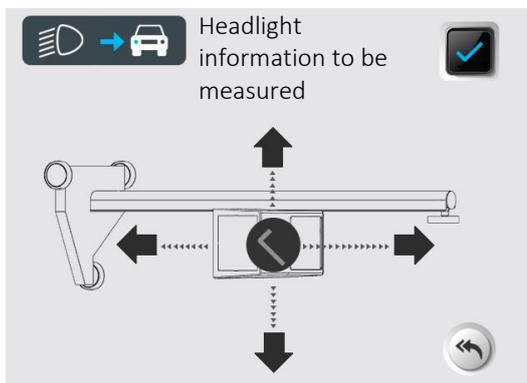
The column graduation makes it possible to estimate the headlight insert to an accuracy of +/- 5cm.

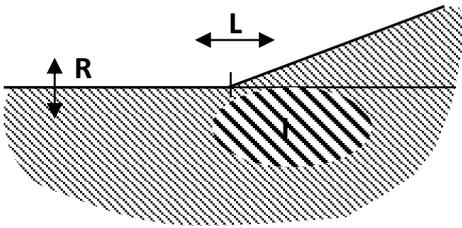


Select the height range and confirm by pressing .

#### Step 4: Checking dipped beam lamps

To inspect the headlights (right and left), align the CAP2600 WORKSHOP™ in front of the headlight inserts. (See section II).





	<input checked="" type="checkbox"/>	Validate the measurement	
<b>Cut-off:</b> (%)	<input type="text" value="-1.6"/>		Display the headlight image
<b>Horizontal:</b> (%)	<input type="text" value="1.9"/>		Screen rotation (adjustment mode)
<b>Intensity:</b> (lx)	<input type="text" value="102"/>		Back to positioning assistance

### Step 5: Inspection report

The CAP2600 WORKSHOP™ displays a summary of the inspection.

		Display of recorded images	
<b>Optical</b>	<input checked="" type="checkbox"/> Left <input checked="" type="checkbox"/> Right		Data sent to the WEB interface
<b>Cut-off:</b> (%)	<input type="text" value="-1.6"/> <input type="text" value="-1.4"/>		Result ticket printed on a thermal printer
<b>Horizontal:</b> (%)	<input type="text" value="1.9"/> <input type="text" value="2.1"/>		
<b>Intensity:</b> (lx)	<input type="text" value="102"/> <input type="text" value="101"/>		
<b>Difference Intensity:</b> (%)	<input type="text" value="1"/>		

To print the report,

You can print a result ticket on the built-in printer by clicking .

You can send the results to the WEB interface by clicking .

You can access the inspection report assessment in the "completed vehicles" column.

[Dashboard](#)
[Archives](#)

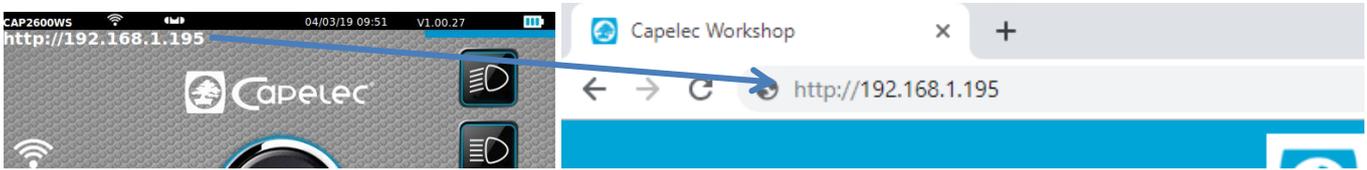
[Support](#)
[Parameters](#)

Enter a vehicle :

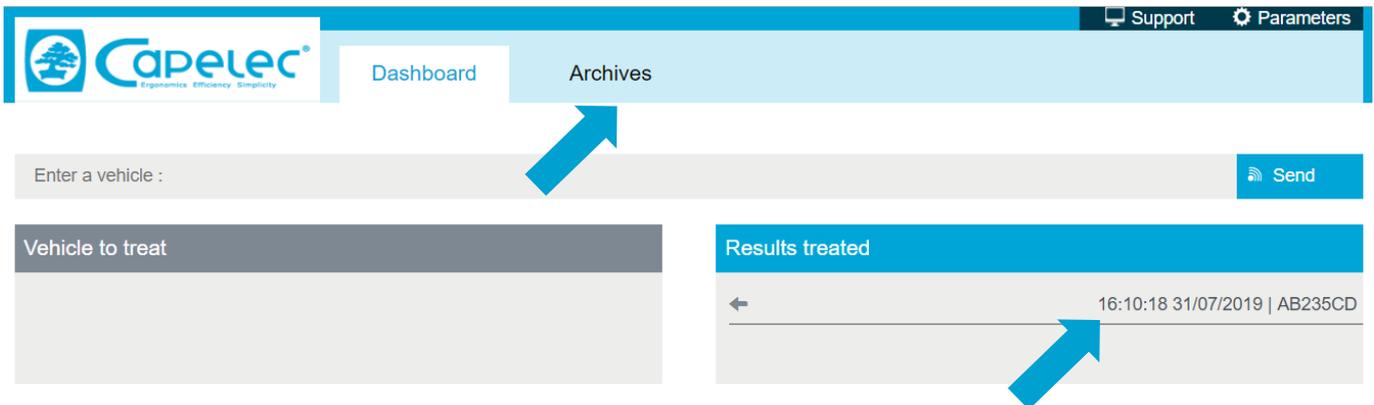
Vehicle to treat	Results treated
	← 16:10:18 31/07/2019   AB235CD

### 3.2 Expert report

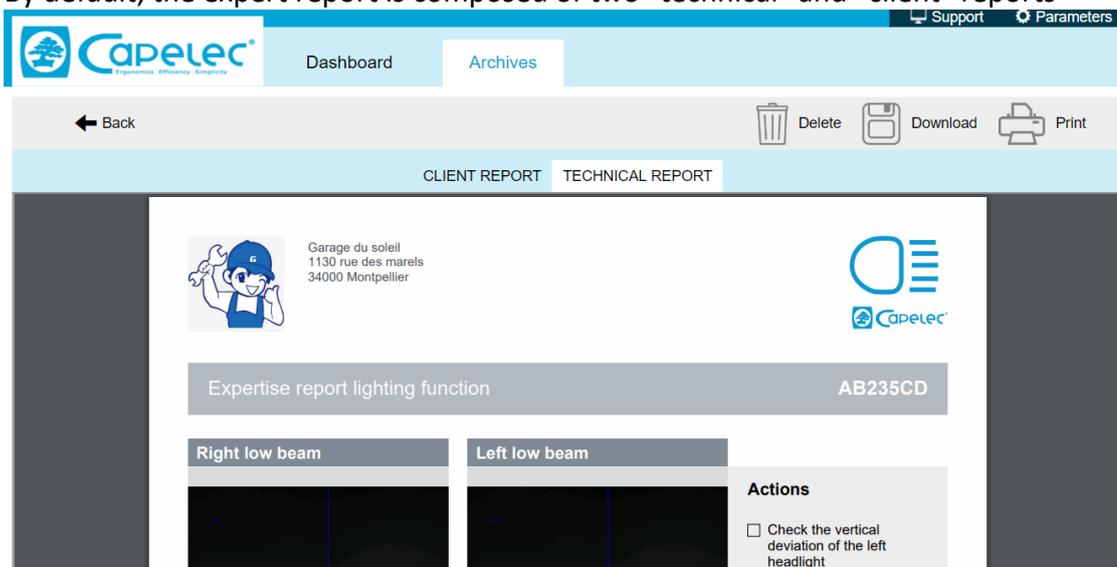
Access to the expert report is via the WEB interface by going to the shortcut created on the browser (see Section 1 Commissioning, Computer Connections). It indicates the CAP2600 WORKSHOP™ home page address.



The vehicles processed during the day are accessible in the "completed vehicles" column. Older vehicle results are grouped together in the "Archives" folder



By default, the expert report is composed of two "technical" and "client" reports



You can download the reports in PDF format by clicking "Archive" or print them by clicking "Print".

## The user technical report,

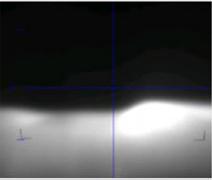
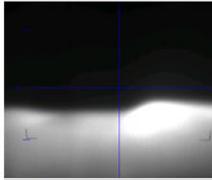
It presents all the information on the lighting function as well as work advice in the "actions" column.



Garage du soleil  
1130 rue des marels  
34000 Montpellier



Expertise report lighting function
AB235CD

Right low beam	Left low beam	
		<p><b>Actions</b></p> <p><input type="checkbox"/> Check the vertical deviation of the left headlight</p> <p><input type="checkbox"/> Check the vertical deviation of the right headlight</p>
<p>VERTICAL DEVIATION</p> <p style="text-align: center; color: red;">-3.3%</p> <p style="text-align: center; color: red;">TOO LOW</p>	<p>VERTICAL DEVIATION</p> <p style="text-align: center; color: red;">-3.4%</p> <p style="text-align: center; color: red;">TOO LOW</p>	
<p>LATERAL DEVIATION</p> <p style="text-align: center;">0.1%</p>	<p>LATERAL DEVIATION</p> <p style="text-align: center;">0.1%</p>	
<p>LIGHT INTENSITY</p> <p style="text-align: center;">33 lux</p>	<p>LIGHT INTENSITY</p> <p style="text-align: center;">33 lux</p>	
<p>COLOR TEMPERATURE</p> <p style="text-align: center;">WHITE</p>	<p>COLOR TEMPERATURE</p> <p style="text-align: center;">WHITE</p>	
<p>HEIGHT HEADLIGHTS</p> <p style="text-align: center;">H &lt; 0,8m</p>		
<p>DIFFERENCE RIGHT/LEFT INTENSITY</p> <p style="text-align: center;">0%</p> <p style="text-align: center;">CONFORM</p>		
<p>DATE AND TIME OF THE TEST</p> <p style="text-align: center;">24/04/2019 15:41:36</p>		

## The customer report

This is a simplified and user-friendly presentation of the lighting inspection result. It is intended for the customer, the driver. The right column shows the lighting on the newly tested vehicle, while the left column shows the optimum lighting.

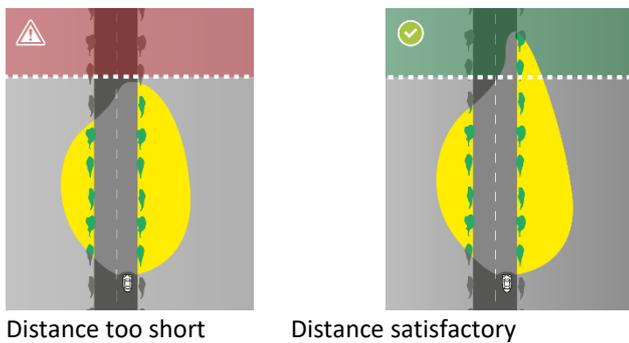
Garage du soleil  
1130 rue des mairies  
34000 Montpellier

CAPELEC

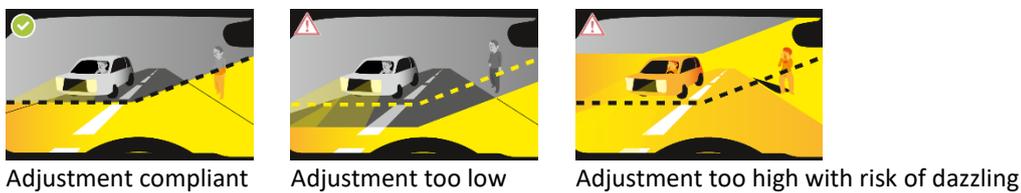
Expertise report lighting function AB235CD

Representation of the lighting distance	<p>Your lighting 24/06/2019 - 15:41:36</p> <p>Optimal lighting</p> <p>Insufficient lighting distance</p>
Adjustment quality	<p>The vehicle lights too low Insufficient</p>
Representation of light intensity and colour temperature	
Inspection and free comments	<p>The lighting distance is insufficient</p>

Lighting distance and safety



Geometry and adjustment quality:



Light intensity and safety



Headlamp out of order



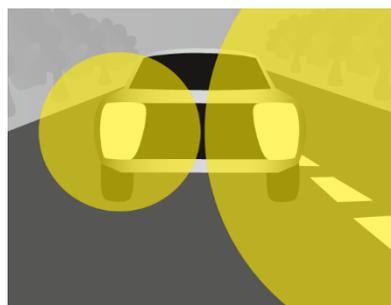
Low intensity



Medium intensity



High intensity



Abnormal right / left intensity difference

### Colour temperature and lamp quality



Warm light



White light

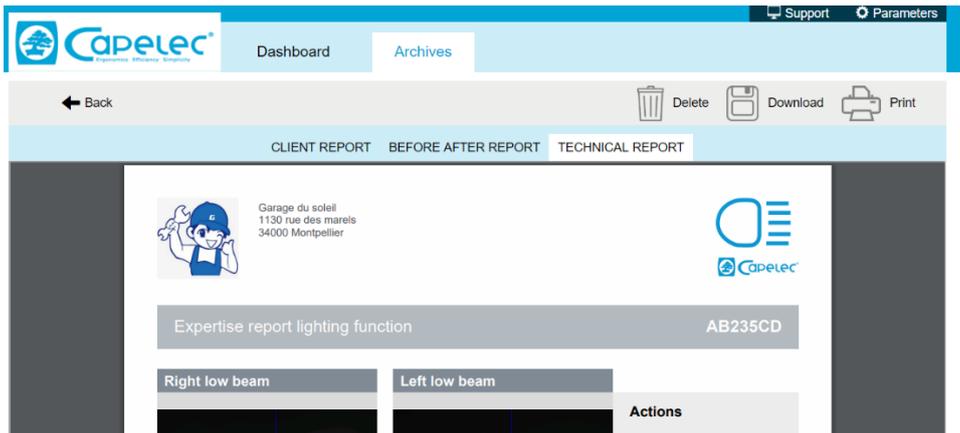


Cold light

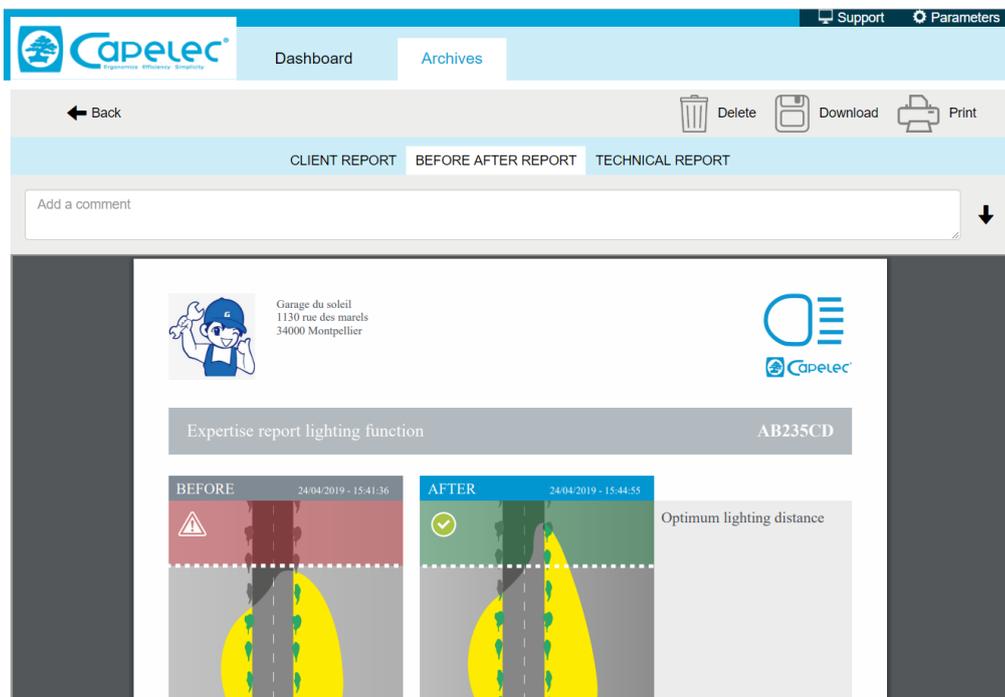
### **Before / after expert report**

When you expertise the same vehicle a second time (following a repair for example), three versions of the BEFORE/ AFTER report can be printed

- **User:** detailed and technical
- **Customer:** simplified and didactic
- **Before after:** didactic and dynamic



The BEFORE/AFTER report is used to compare the state of the lighting you have just completed with the last memorised report.



### 3.3 Advice when using the expert function

We recommend carrying out a first dipped-beam headlamp inspection in order to present the "customer report" to the customer.

If a defect is found, you will be able to argue or justify the work.

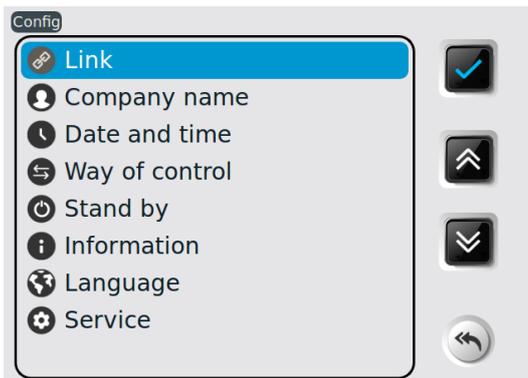
The "technical report" will guide the work.

Following the work (for example adjustment, lamp replacement, etc.), a second inspection linked to the first will make it possible to provide the client with a "complete before and after service report".

**Note:** With the expert report, you can justify, document and save the services.

## IV. Configuration

The configuration menu is used to configure the CAP2600 WORKSHOP™.



### Connection

Used to configure data sending mode, computer connection and printing.

The access is password protected

Connection password: **2345**

### Company name

Used to record the company name, address and other information. This data will then appear on the printed ticket headers.

### Date & time

Access date and time settings.

### Inspection direction

Used to select the order in which the headlamps are tested. Right headlamp first then left (right / left) or the opposite (left / right).

### Standby sub-menu

Used to configure the standby and deactivation times.

### Information sub-menu

Gives access to the following data:

- Appliance model

- Software version
- Appliance serial number
- CPU card serial number
- Approval number
- Battery level
- WIFI signal power

### **Language sub-menu**

Used to choose the display language.

### **Maintenance sub-menu**

Access is password protected. It is exclusively intended for maintenance by approved companies.

## **V. Care and maintenance recommendations**

### **Lens maintenance:**

- Avoid soiling it with splashes or by touching it
- Clean when necessary using soapy water or a window cleaning product and a clean cloth
- If it is altered, cracked or scratched, report it to the maintenance company

### **Battery maintenance:**

- If the autonomy decreases significantly, report it to the maintenance company

### **Mechanical checks:**

- If there is significant deviation of the level bubble, report it to the maintenance company

## VI. Technical specifications

### Specifications

- Weight: 25kg
- LxWxH: 590 x 670 x 1900 m
- Battery autonomy 10h continuous use
- Battery charging 4h with automatic stop

### Operating conditions

- Batteries: Rechargeable Lithium Iron batteries
- Charger power supply: 15.2V 2.3A
- Operating temperature: from 5°C to 40°C
- Storage temperature: from -15°C to +55°C
- Relative humidity: <98% non condensed

### Specifications

- Dip angle measurement (headlamp dipped angle) in %
- Dip angle measurement range: from +6 to -6%
- Accuracy: +/- 0.2%
- Lateral angle measurement range: from +10 to -10%
- Accuracy: +/- 0.2%
- Light intensity in lx
- Intensity measurement range: from 0 to -200lx
- Accuracy: 10%
- Operating distance 20 cm - 80 cm

### Inclinometer

- Dip angle correction (headlamp dipped angle) in %
- Accuracy: +/- 0.2%

### ANYWHERE modules

- Slope measurement in %
- Accuracy: +/- 0.2%



This symbol indicates that, in compliance with the WEEE directive (2002/96/EC) and with your national regulations, this product must not be disposed of with household waste. It must be deposited in a zone specific to this effect, for example an electric and electronic waste official collection centre (EEE), in order to be recycled, or at an approved product exchange point which is accessible when purchasing a new product of the same type as the product being disposed of. Any failures to respect these recommendations on the disposal of this type of waste can have negative effects on the environment and public health because these electric and electronic products generally contain potentially hazardous substances. In parallel, your complete collaboration in the correct disposal of this product will contribute to a better use of natural resources. For more information on equipment collection points for recycling, contact your town hall, the waste collection department, the approved WEEE plan or the household refuse collection service.

**DECLARATION UE DE CONFORMITE / EU DECLARATION OF CONFORMITY**

<b>Equipement :</b> <i>Product:</i>	<b>CAP2600</b>
<b>Fabriquant:</b> <i>Manufacturer:</i>	<b>CAPELEC</b> <b>1130 rue des marels</b> <b>34000 Montpellier</b> <b>FRANCE</b>
<p>La présente déclaration de conformité est établie sous la seule responsabilité du fabricant  <i>This declaration of conformity is issued under the sole responsibility of the manufacturer.</i></p>	
<b>Objet de la déclaration :</b> <i>Declaration object :</i>	<b>CAP2600</b>
<p>L'objet de la déclaration décrit ci-dessus est conforme à la législation d'harmonisation de l'Union applicable  <i>The object of the declaration described above is in conformity with the relevant Union harmonization legislation</i></p>	
<p>DIRECTIVE COMPATIBILITE ELECTROMAGNETIQUE  <i>ELECTROMAGNETIC COMPATIBILITY DIRECTIVE</i>  2014/30/UE (2004/108/EC)</p> <p>DIRECTIVE BASSE TENSION  <i>LOW VOLTAGE DIRECTIVE</i>  2014/35/UE (2006/95/EC)</p> <p>DIRECTIVE RED  2014/53/UE (1999/5/CE)</p>	
<p align="center"><b>Références des normes harmonisées</b>  <i>References to the relevant harmonized standards used</i></p>	
<p align="center">EN61010-1 :2011  EN61326-1 :2013  EN300 328-2 :2015</p>	
<b>Signature du fabriquant :</b> <i>Manufacturer signature:</i>  <b>CAPELEC</b> <b>1130 rue des marels</b> <b>34000 Montpellier</b> <b>FRANCE</b>	<p align="right"><b>MONTPELLIER le 23/05/2016</b></p>  <p align="right"><b>Thierry COTON</b>  <b>Gérant / General Manager</b></p>