

Headlight Adjuster



ATTENTION

Read the operating instructions and all safety instructions contained therein carefully before using the product. Use the product correctly, with care and only according to the intended purpose. Non-compliance of the safety instructions may lead to damage, personal injury and to termination of the warranty. Keep these instructions in a safe and dry location for future reference. Enclose the operating instructions when handing over the product to third parties.

INTENDED USE

This product is used for adjusting the low beam and high beam head lights.

SAFETY INFORMATIONS

- Keep children and other persons away from the working area.
- Do not allow children to play with this tool or its packaging.
- Do not use the tool if parts are missing or damaged.
- Use the tool for the intended purpose only.
- Be careful when working on running engines. Loose clothing, tools and other objects can be caught by rotating parts and cause serious injury.
- Be careful when working on hot engines because of the risk of burn injuries!
- This manual serves as a brief guide and does not replace a workshop manual. Always refer to the vehicle-specific service literature, particularly the technical data such as torque values and instructions for disassembly/assembly, etc.

ENVIRONMENTAL PROTECTION

Recycle unwanted materials instead of disposing of them as waste. Packaging should be sorted, taken to a recycling centre and disposed of in a manner which is compatible with the environment. Contact your local solid waste authority for recycling information.



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1 GENERAL INTRODUCTION

1.1 PREFACE

The safety test of the vehicle's headlight is an important element for guaranteeing safe driving. Strict requirements for testing headlight of vehicles are conducted by all countries.

The headlight is mainly used for illumination of vehicles during night. The lightness and radiating direction are of great importance for safe driving. The driver should be able to see all transportation obstacles clearly within 100 meters when all the headlight are illuminating during the night. The illuminating beam should radiate to the driving direction, and the main ray axis should slightly be downward.

If the intensity of headlight or deviation is not up to the standards, the situation ahead cannot be seen clearly, or the light makes the driver in the opposite direction dizzy, thus causing trouble to his or her viewing, all these will result in traffic accidents.

In order to reduce traffic accidents and guarantee safe driving, the headlight should be properly adjusted before leaving the factory. The headlight tester for vehicle of our company is manufactured in accordance with the above-mentioned two standards. Test of the headlight is conducted by means of high technology, thus making our vehicle verification go into a standard track.

The advanced design concept not only helps test the headlight in a more accurate way, but also brings more convenience and humane operation feelings to different users.

1.2 INSTALLATION

The installation of the instrument should be conducted by suppliers or the specified professionals.

1.3 SITE REQUIREMENT & INSTALLATION

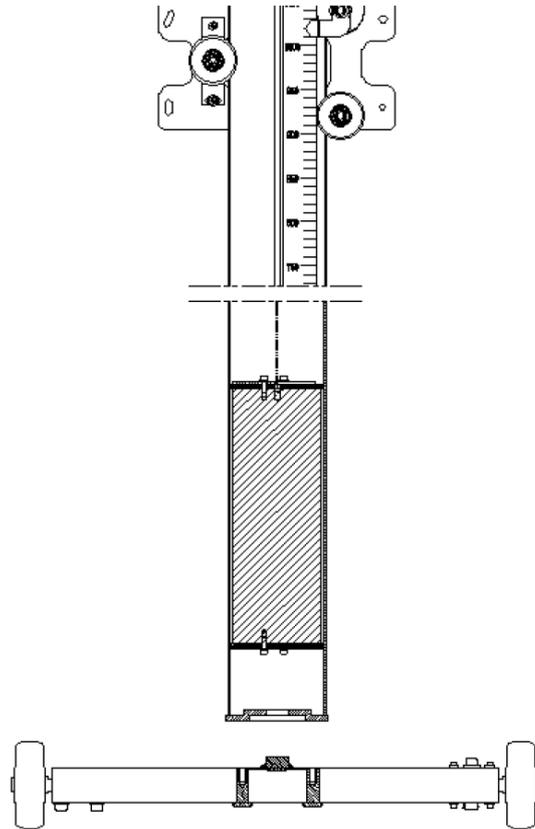
1.3.1 SITE REQUIREMENT

The work site should be leveled. Any hollow, slide or unevenness will lead to an increase of margin error of measuring results.

1.3.2 ASSEMBLY

A. INSTALLING VERTICAL POST

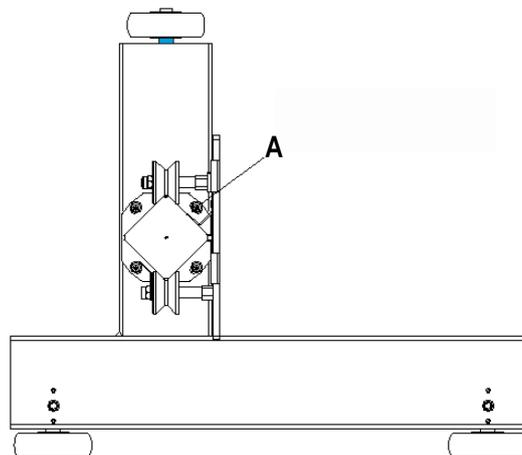
Take vertical post and bottom feet out of packing box, remove packing bubble. Hold the vertical post and insert the bulgy part of the bottom feet into the vertical post. When inserting, two holes in the bulgy part of the bottom feet should be in the same line with the two holes in the bottom of the vertical post.



B. FIX GROUND FEET

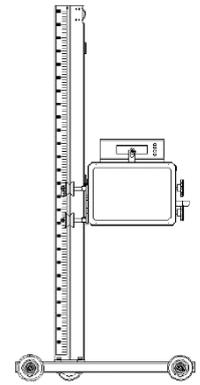
After inserting vertical post, use screwdriver to loose four screws and connect ground feet and the vertical post. Remove the fixing screw of middle box clapboard and Counter weight fixing screws. (when removing Counter weight screws, the fixing board of the middle box should be held to avoid the damage to screws caused by the sudden fall of the weight).

A= Counter weight fixing screws



C. INSTALLATION OF MIDDLE BOX

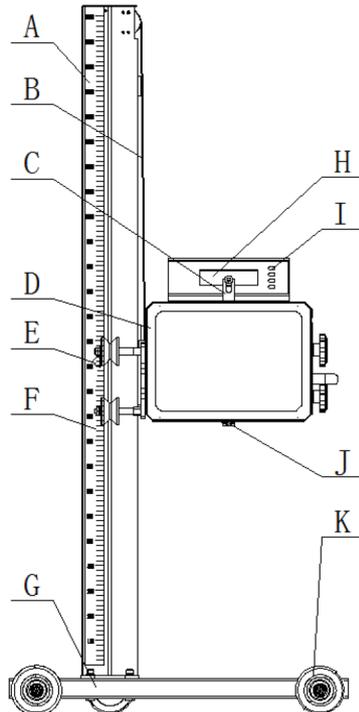
Take out the middle box, remove four screws from the side of middle box. One raises middle box and move close to fixing board of middle box, another fix the screws which are removed before into the other side of the fixing board, screw down and make middle box stable. Then fix the handle into the fixing board. Thus the installation is finished.



1.4 DEVICE INTRODUCTION

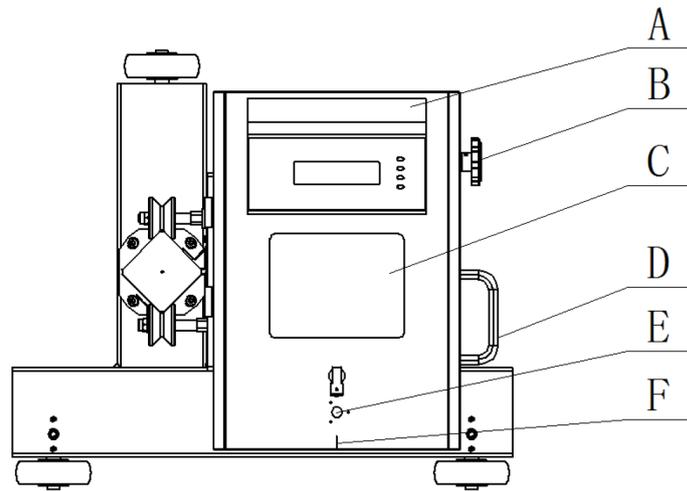
1.4.1 FRONT VIEW

| | | |
|---|------------------------------|--|
| A | Vertical Post | The edge of the vertical post is the precise track for instrument movements, so blows by heavy objects are prohibited. |
| B | Counter weight cables | |
| C | Point Laser Launching Device | A point laser is used to help the Middle box turn on the lights |
| D | The Middle box | |
| E | Height indicator arrow | Used to indicate the height of the box. |
| F | Vertical Pos scale | Used to indicate the height of the box. |
| G | Foot | |
| H | LCD Display | |
| I | Operational Panel | The function of the four buttons are UP, DOWN, ENTER and RETURN. |
| J | Telescopic rod | Used to locate the distance between the light and the middle box |
| K | Wheel | |



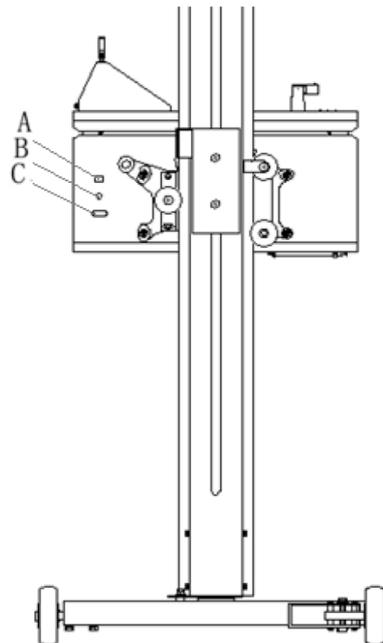
1.4.2 TOP VIEW

| | | |
|---|----------------------------------|--|
| A | Display Box | |
| B | Rotary knobs | |
| C | Observing Window | Use to observe the image on the screen. Remember to cover the board after finishing observation; otherwise, the measuring data will be affected. |
| D | Shift Handle | |
| E | Bubble | |
| F | The front frame is in the middle | |

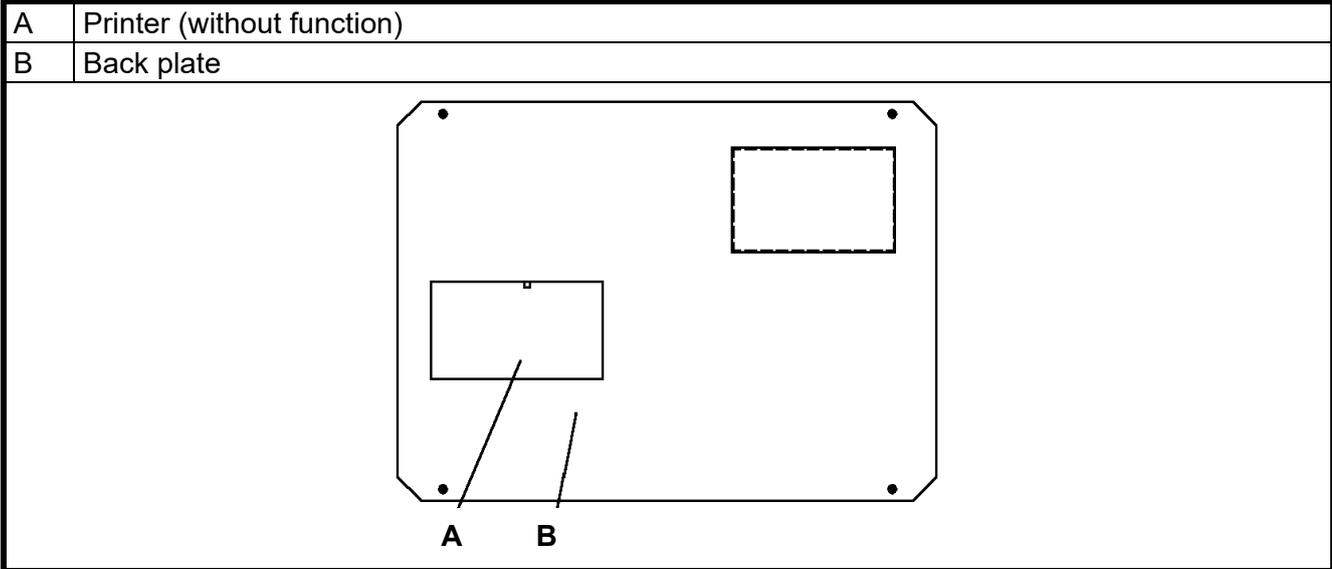


1.4.3 LEFT VIEW

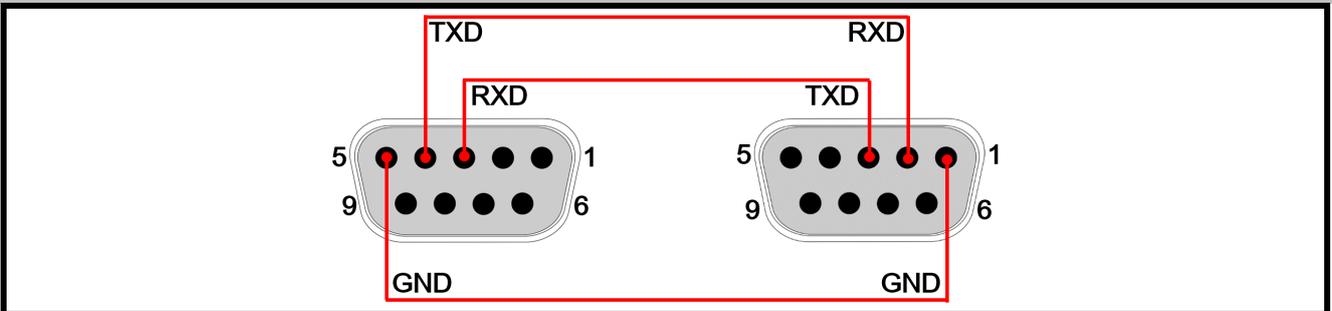
| | | |
|---|----------------|---|
| A | System Switch | By pressing it, the instrument begins to function and the switch indicating light is on; while the flicking light indicates that the instrument goes into the sleep mode. |
| B | DC Power Plugs | 12V DC Power |
| C | RS232 | Standard RS232 Interface |



1.4.4 BACK PLATE VIEW



1.4.5 CABLE DEFINITION



1.5 TECHNICAL INDEX

| Item | Parameter | |
|-----------------------|--------------------------|---|
| Applicable Scope | Headlight of the vehicle | Halide lamp, HID lamp, Incandescent lamp High beam, Low beam, Fog beam (Optional) |
| Positioning ways | Alignment | The vertical direction alignment: The laser at the top of Vertical Post The horizontal direction alignment: The laser on both sides of Optical Block |
| Communication | Serial port | Cable or Bluetooth (Optional) |
| Print | Serial port | Micro Printer(Optional) |
| Measuring range | Vertical deviation | Up 350mm at 10m (2°) Down 525mm at 10m (3°) |
| | Horizontal deviation | Left 525mm at 10m (3°) Right 525mm at 10 m (3°) |
| | Measuring distance | 500mm ±5mm or 1000mm ±5mm |
| | Height | 400 ~ 1300 mm |
| | Intensity | 0 ~ 120000 Candela |
| Indicated value error | Intensity | ±10% |
| | Deviation | ±12' at 500mm ±15' at 1000mm |
| Environment | Temperature | -5°C ~ 40°C |
| | Relative humidity | ≤90% |
| | Power supply | 12V DC |
| Outer size | Length × Width × Height | 680 × 570 × 1400 mm |

2 SAFETY

2.1 INTRODUCTION

Please read carefully all the safety alarms and attentions provided by the instruction manual so as to guarantee your personal safety and help you operate the tester in an appropriate way.

The company shall not take any legal responsibility for the damage incurred if operations are not conducted in accordance with the guidance provided by the instruction manual.



A warning means that instructions that are not complied with or incompletely complied with can endanger persons.



Attention means that instructions that are not complied with or incompletely complied with can lead to equipment damage.



Notes provide additional information.

Safety information is provided to warn about dangerous situations and to help prevent damage to equipment and injury to persons. For people's own safety it is imperative that all safety regulations included in these instructions be carefully observed. Carefully observe all federal and international safety guidelines. Every user is responsible for observing all regulations applied to his workplace and obliged to integrate any new regulations that may be initiated.

2.2 ATTENTIONS

- This headlight tester may only be used and operated for its intended purpose.
- The headlight tester shall be inspected by the metrological department every year.
- The headlight tester shall be operated by professionals only.
- All electric parts shall be moisture-proof.
- The headlight tester shall be installed inside the building with anti-thunder facilities, so as to avoid the danger of being stricken by lightning.
- All after-sale services shall be conducted by the specialists of the company or other authorized professionals.
- Sunshine shall not be direct on the middle box; otherwise it might cause fire.
- Heavy objects shall be prohibited to put on the middle box.
- The glass shall be cleaned by clean flannelette at a regular period.
- If the glass is scratched, please change it promptly; otherwise, the measuring shall be influenced.
- Laser shall be avoided into the eyes directly; otherwise, it might cause blindness.
- If the selected battery power is not sufficient, it will beep for power charging.

2.3 POWER SUPPLY

- In order to avoid being stricken by lightning, please insert the tester and outer power cables into the ground socket in an adequate way. If prolonged cables or power sockets are applied, please make sure that they are well connected to the sockets on the wall, but not to another prolonged cable or socket. The prolonged cable or socket shall be designed specially for the ground socket, and shall be inserted into the ground wall socket.
- If you use the multi-sockets switchboard, please take care when inserting the cable into the switchboard. Some switchboards might allow you to insert the socket in a wrong way; however, inadequate operation of inserting sockets might bring damage to the tester, and might incur electric shock or fire.
- Don't damage, change, drag, over bend or twist the cable, and do not load heavy objects on it. Please put it in a place where nobody will stumble over it.
- If you use the prolonged power cable, please make sure that the total amount of rated electric current of all products connected with it is not over the rated current of the prolonged cable.

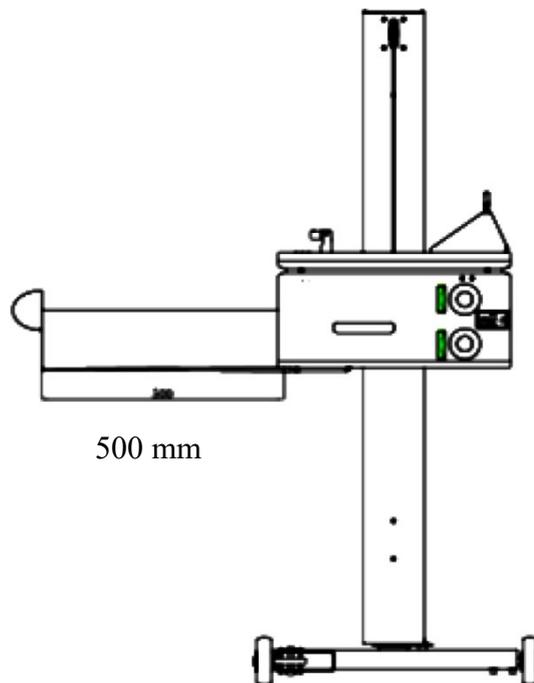
2.4 USES

- Don't insert or pull out the cable of the tester if hands are wet.
- Don't open the cover of any parts of the tester before pulling out the tester cable.
- Please cut off the instrument power immediately in cases of smoke in the middle box or unusual noises, and contact the after-sales service center immediately. Don't open the cover of the middle box by yourself.
- Don't sprinkle any food or liquid on the tester.

3 OPERATION

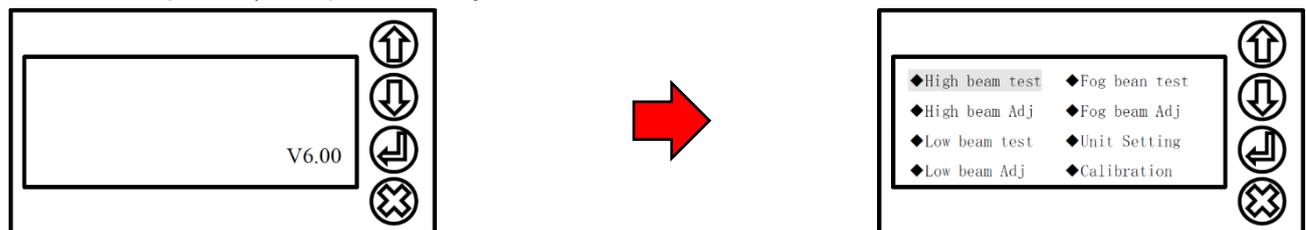
3.1 ADJUSTMENT OF THE INSTRUMENT

1. Pull out the telescopic rod under the middle box completely. The end of the telescopic rod is exactly 0.5m away from the front frame of the middle box. Drive the vehicle to this position.
2. Enter the measuring or calibration interface, the laser Launching Device will open automatic.
3. Move the instrument to the front of the symmetry plane of the vehicle, loosen the adjustment screw of the column, adjust the direction of the column and the middle box, and adjust the up and down directions of the upper point laser (note: do not adjust the left and right directions of the point laser at this time), so that the point laser can illuminate the two reference points on the symmetry plane of the vehicle, and the light irradiation direction is perpendicular to the front frame of the middle box.



3.2 POWER ON / OFF

Press the system switch, and the instrument will give out "Di" sound, and then enter the self-testing. When self-testing is successfully, the system will enter function interface (Fog beam function is optional). Re-press the system switch, and the instrument will be shut off.

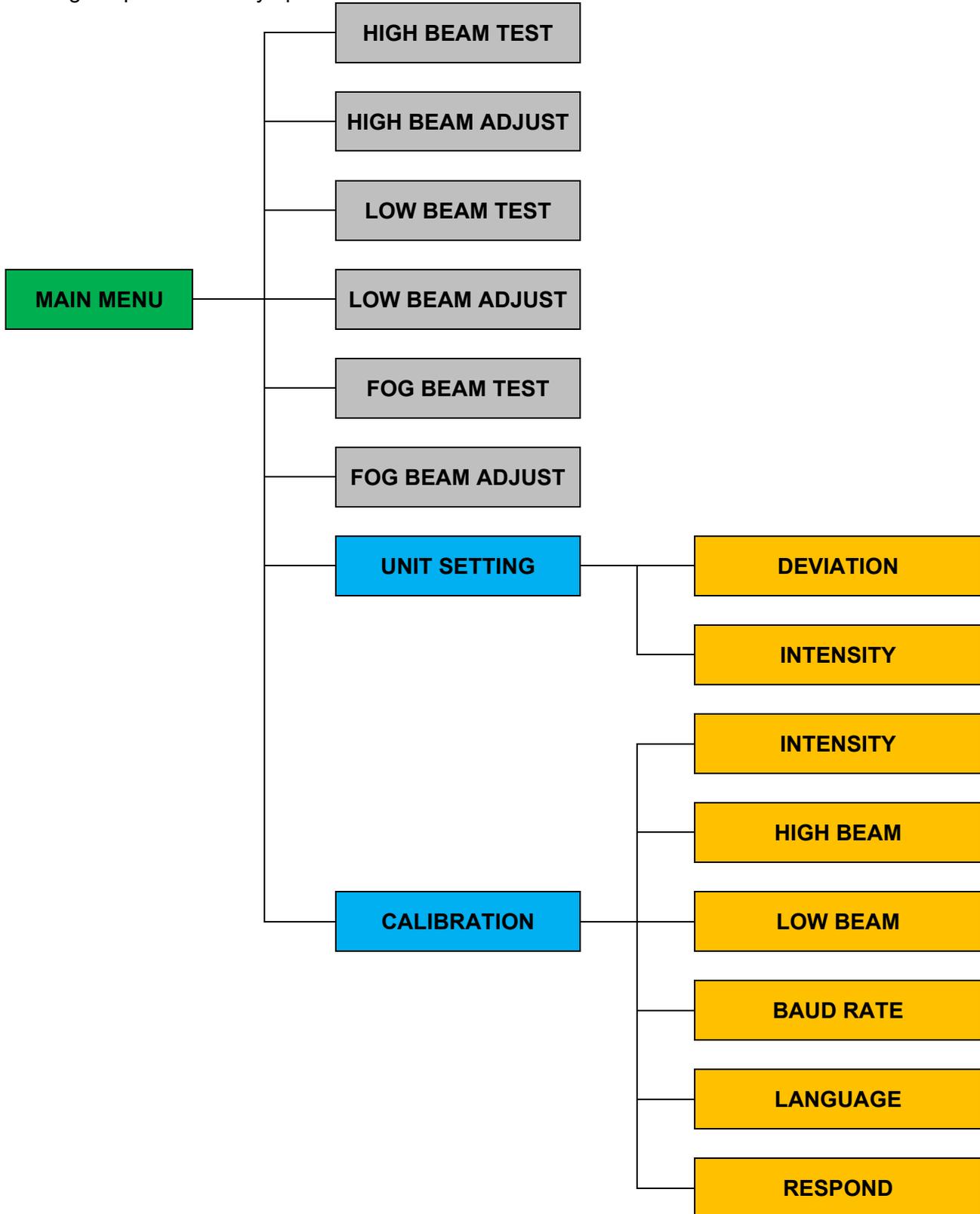


3.3 GENERAL MENU

All menus will be displayed on the LCD. You can make selection with the buttons.

The structure of the menu is shown in the figure.

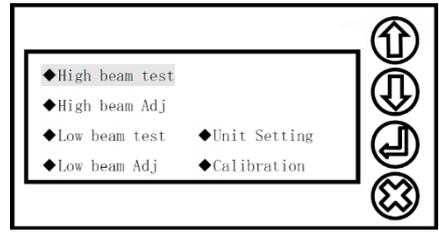
The fog lamp and intensity options are not available on this device.



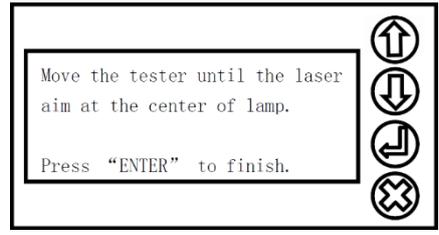
4.0 HIGH BEAM

4.1 HIGH BEAM TEST

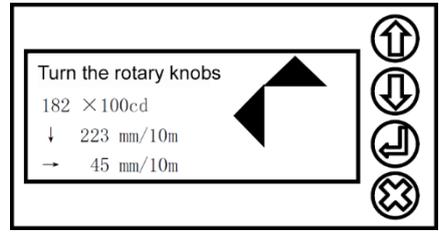
Press $\uparrow\downarrow$ to select the operation.
Press \downarrow to enter.



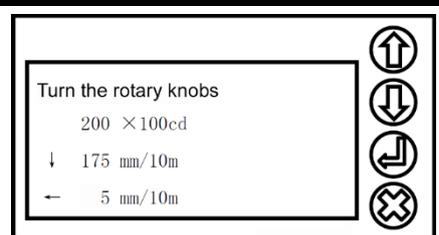
Move the tester until the laser aim at the center of the lamp.
Press "Enter" to finish.
Press \times to exit to previous menu.



Turn rotary knobs according to arrow direction until arrows disappear.

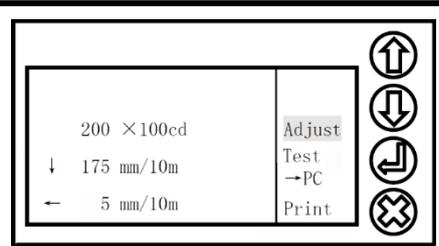


When arrows disappear for a while, it will enter next interface automatically.



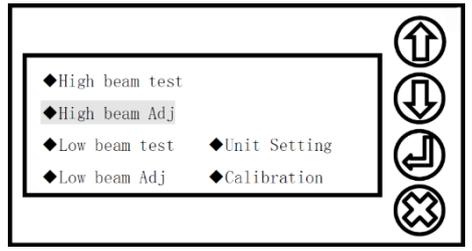
Press $\uparrow\downarrow$ to select operation.
Press \downarrow to begin the selected operation.
Press \times to exit to main menu.

Adjust: Enter to adjust interface
Test: Re-test
→PC: Send result to computer
Print: Without function

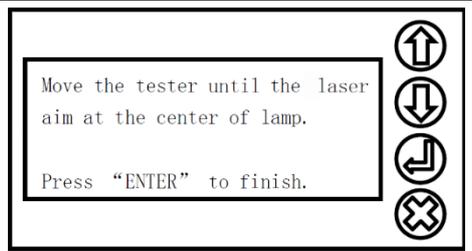


4.2 HIGH BEAM ADJUST

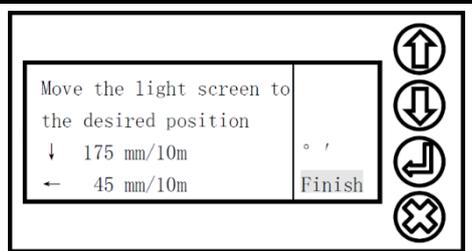
When choose adjust in High beam test result interface, it will enter this interface.



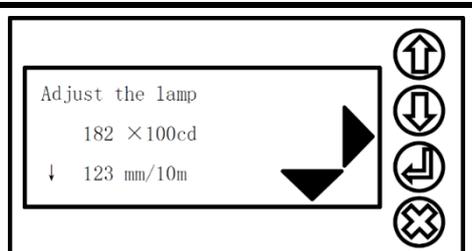
Move the tester until the laser aim at the center of the lamp. Press "Enter" to finish.



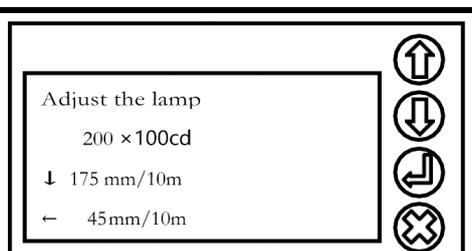
Move the light screen to the desired position.



Adjust the lamp according to arrow direction.

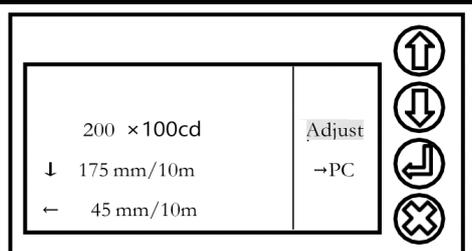


Adjust the lamp until arrows disappear.



Press $\uparrow\downarrow$ to select operation.
Press \leftarrow to begin the selected operation.
Press \times to exit to main menu.

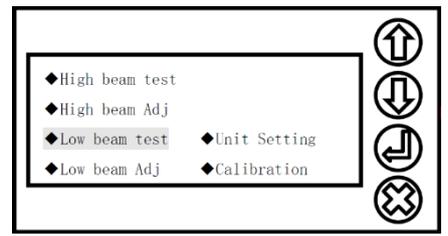
Adjust: Enter to re-adjust
→PC: Send the result to computer
Print: Without function



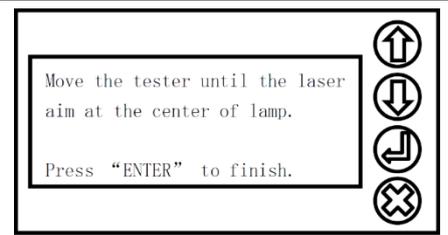
5 LOW BEAM

5.1 LOW BEAM TEST

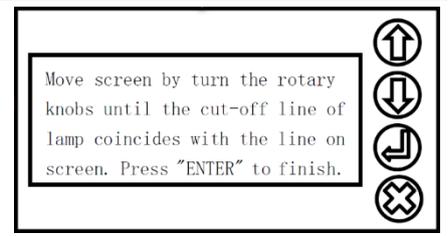
Press $\uparrow\downarrow$ to select the operation "Low beam test".
Press \downarrow to enter.



Move the tester until the laser aim at the center of the lamp.
Press "Enter" to finish.

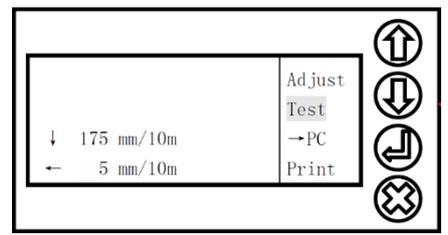


Move screen by turn the rotary knobs in the interface to make cut-off line overlap with the 15° line showed on the screen.
Press "Enter" to finish.



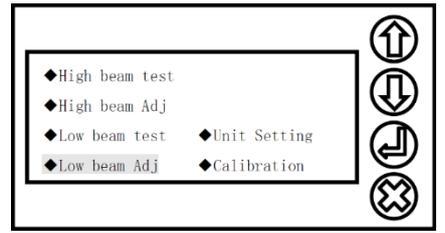
Press $\uparrow\downarrow$ to select operation.
Press \downarrow to begin the selected operation.
Press \times to exit to main menu.

Adjust: Enter to adjust interface.
Test: Re-test
→PC: Send the result to computer
Print: Without function

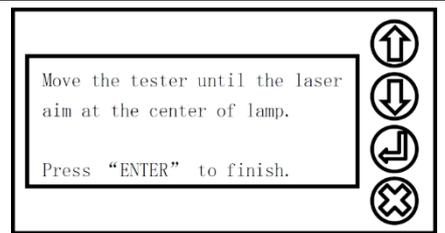


5.2 LOW BEAM ADJUST

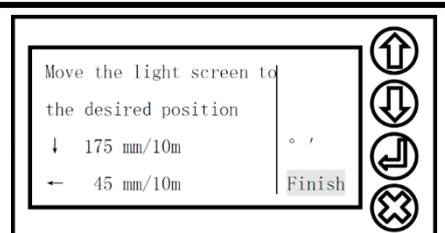
Press $\uparrow\downarrow$ to select the operation "Low beam adjust".
Press \downarrow to enter.



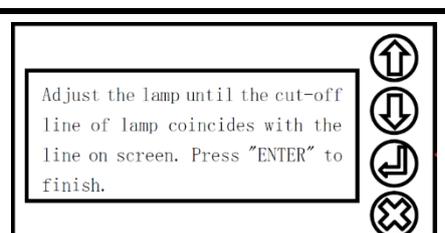
Move the tester until the laser aim at the center of the lamp.
Press "Enter" to finish.



Move the light screen to the desired position.

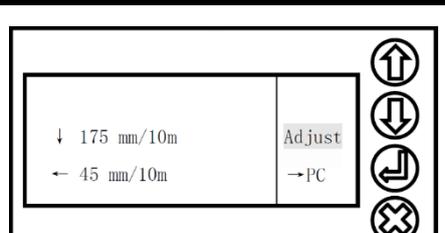


Adjust the lamp until the cut-off line of the lamp coincides with the line of the screen.
Press "Enter" to finish.



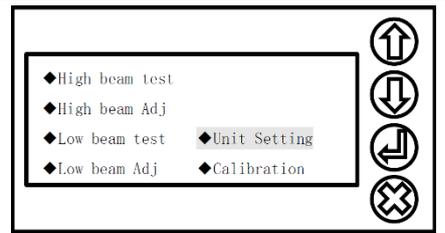
Press $\uparrow\downarrow$ to select operation.
Press \downarrow to begin the selected operation.
Press \times to exit to main menu.

Adjust: Enter to re-adjust
Test: Re-test
→PC: Send the result to computer
Print: Without function

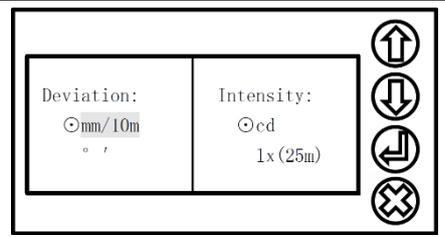


7 UNIT SETTING

Press $\uparrow\downarrow$ to select the operation "Unit setting".
Press \downarrow to enter.

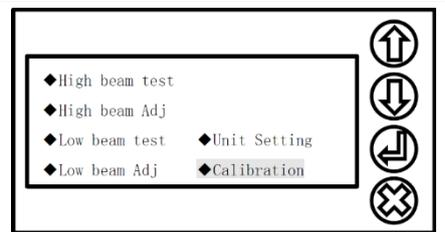


"•" indicates this item is choosed.



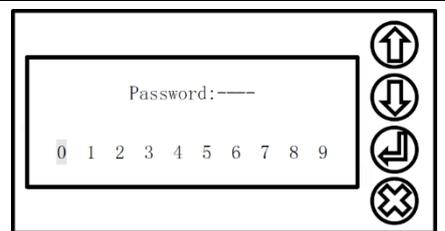
8 CALIBRATION

Press $\uparrow\downarrow$ to operation "Calibration".
Press \downarrow to begin the selected operation.
Press \times to exit to main menu.



Press $\uparrow\downarrow$ to change the selected number.
Press \downarrow to input number.
Press \times to exit to main menu.

Password is 1234. If password was inputted wrong, it would clear automatically, please input again.



8.2 HIGH BEAM CALIBRATION

Before calibration, make sure the beam of regulator incident into optical box vertically and the calibrating distance remain at 0.5 m.

| | |
|-------------|-------------|
| ◆ Intensity | ◆ Baud Rate |
| ◆ High beam | ◆ Language |
| ◆ Low beam | ◆ Respond |

Turn the intensity of the regulator to 200 x 100 cd.

| | | |
|------|------|------|
| U0L0 | U1L0 | U2L0 |
| D1L0 | D2L0 | U0L1 |
| U0L2 | U0R1 | U0R2 |

Turn rotary knobs according to the direction of the arrow until arrows disappear.

Turn rotary knobs

200 × 100cd

↑ 007 mm/10m

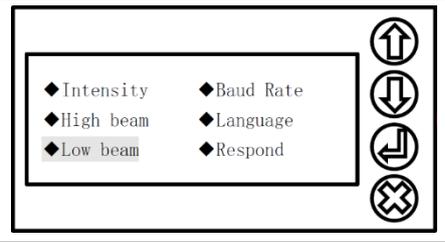
← 005 mm/10m

“•” indicates this item is calibrated successfully.

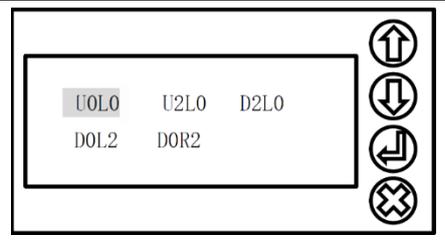
| | | |
|--------|------|------|
| ⊙ U0L0 | U1L0 | U2L0 |
| D1L0 | D2L0 | U0L1 |
| U0L2 | U0R1 | U0R2 |

8.3 LOW BEAM CALIBRATION

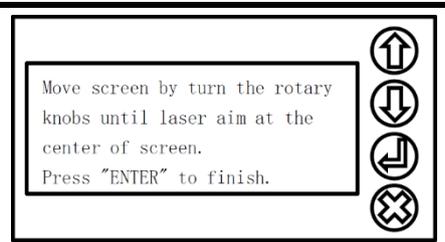
Press $\uparrow\downarrow$ to select operation "Low Beam".
 Press \downarrow to begin the selected operation.
 Press \times to exit to main menu.



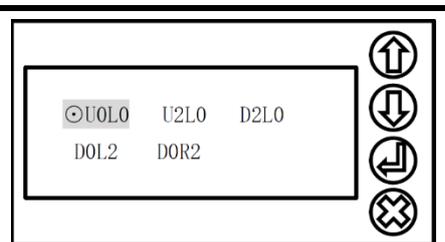
Adjust regulator on this interface, make tester aim at laser regulator and make calibrating distance remain 0.5. Adjust the place of optical box, make the projected laser of regulator incident at the center of optical box vertically.



Move screen by turn the rotary knobs, make laser incident at the center of photocell in the center of screen.
 Press "Enter" to finish.



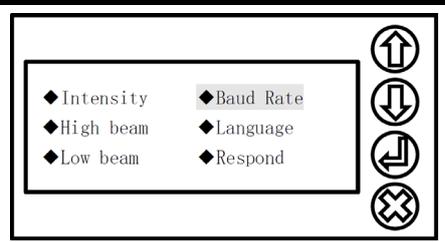
"•" indicates this item is calibrated successfully.



8.4 BAUD RATE / LANGUAGE / RESPOND

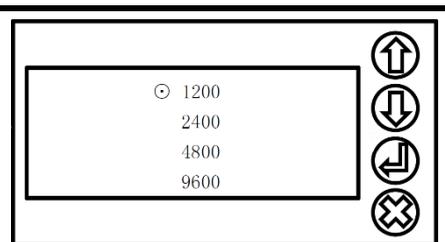
8.4.1 BAUD RATE

Press $\uparrow\downarrow$ to select operation "Baud rate".
 Press \downarrow to begin the selected operation.
 Press \times to exit to main menu.



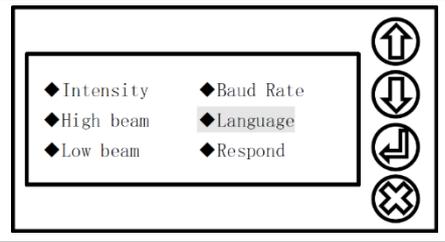
Press $\uparrow\downarrow$ to select "Baud rate".
 Press \downarrow to save your choose.
 Press \times to exit to main menu.

"•" indicates currently setting.



8.4.2 LANGUAGE

Press $\uparrow\downarrow$ to select operation "Language".
 Press \downarrow to begin the selected operation.
 Press \times to exit to main menu.



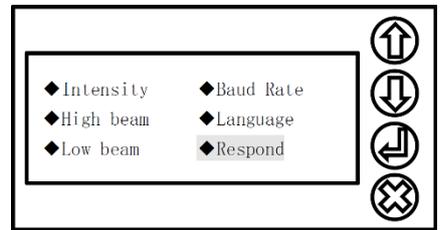
Press $\uparrow\downarrow$ to select "Language".
 Press \downarrow to save your choose.
 Press \times to exit to main menu.

"•" indicates currently setting.
 Never switch to Chinese if you don't understand Chinese.

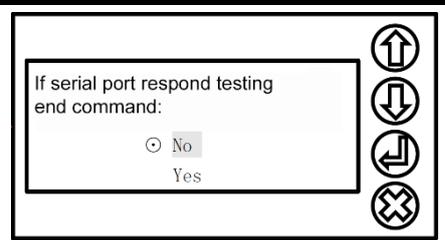


8.4.3 RESPOND

Press $\uparrow\downarrow$ to select operation "Respond".
 Press \downarrow to begin the selected operation.
 Press \times to exit to main menu.



Choose if the tester have to send „finish command“ in chapter 10.3 Tester → PC.
Note: This item should be set by software engineer, other people please don't set it.



9 MAITANANCE

| Period of Maintenance | Parts of Maintenance | Keys to Maintenance | Notes |
|-----------------------|--|--|--|
| Before Use | Display | 5 seconds after the host computer is powered, the LCD screen enters the single test interface. | |
| Half a Year | Fastener | Check whether there is any component loosened. | |
| Eight Months | Wheels, vertical posts and photovoltaic boxes. | Check whether the functions of these parts go smooth (whether there is any curve, distortion or rust). | If they go unsmooth, conduct rust prevention, cleanness or recover lubricating oil. If there is any curve or distortion, inform the supplier to repair it. |
| One Year | Verified by the concerned departments. | | |

The company retains the final explanatory power over this instruction manual, and the power over revision of it!

10 COMMUNICATION PROTOCOL

10.1 SERIAL PORT COMMUNICATION PARAMETERS AND FORMAT

The default baud rate is 1200bps (refer to chapter 8.4 can be set to 2400, 4800, 9600bps).

1 start bit, 8 data bits, and 1 stop bit.

No parity bit.

10.2 STATE DEFINITION

Busy: don't respond command from the serial port.

During the following process:

- When entered test or adjust interface, before finish;
- When entered the other submenus, before exit.

Idle: not busy, can respond command from the serial port.

10.3 COMMUNICATION PROTOCOL

| Direction | Type | Command | Function | Respond | Notes | |
|-------------------|--------------------|------------------------|--|---|--|---|
| PC ↓ Tester | Inquire | 0x05 | Inquire whether tester is busy or idle | 0x5E | Busy | |
| | | | | 0x5F | Idle | |
| | Handshake | 0x06 | Handshake | 0x06 | Judging whether tester is connected to the computer | |
| | Test | 0x23 | Test all lamps | 0x20 | Test high beam | 0x20 |
| | | | | 0x21 | Test low beam | 0x21 |
| | | | | 0x22 | Test fog beam | 0x22 |
| | | | | 0x23 | Test all lamps | 0x23 |
| | Read data | 0x4A | Read all data | 12xxxx±xxx±yyy ±xx x±yyy(±yyy)A | Data mode, refer to chapter 10.4. | |
| | Read data | 0x4B | Read data of high beam | 12xxxx±xxx±yyyA | | |
| | Read data | 0x4C | Read data of low beam | 12±xxx±yyyA | | |
| | Read data | 0x4D | Read data of fog beam | 12±yyyA | | |
| | Print | PA | Print all data | PH | Print measuring result by micro printer. Intensity unit : cd, Deviation unit : mm/10m. | |
| | Print | PH | Print data of high beam | PL | | |
| | Print | PL | Print data of low beam | PF | | |
| Print | PF | Print data of fog beam | PA | | | |
| Tester ↓ PC | Test finished | 0x16 | High beam testing is finished | No respond. Note: In menu "Calibration" → "Respond" can set if the tester have to send these commands (refer to chapter 8.4). | After test process, then press exit, the tester will send these commands. | |
| | | 0x17 | Low beam testing is finished | | | |
| | | 0x18 | Fog beam testing is finished | | | |
| | Adjusting finished | 0x26 | High beam adjusting is finished | | | |
| | | 0x27 | Low beam adjusting is finished | | | |
| | | 0x28 | Fog beam adjusting is finished | | | |
| | Failed | 0x19 | Lamp searching failed | | | During high beam testing or adjusting, there is no beam, or the beam is weak. |

Note: number in the table witch starts with "0x" is hexadecimal, otherwise is ASCII code.

10.4 DATA MODE

Note: up+ down-, left+ right-.

10.4.1 DATA OF HIGH BEAM

12 xxxx±xxx±yyy ±xxx±yyy ±yyy A (no space) ① ② ③ ④ ⑤

| | | | | |
|---|-----------------------------|--------------|----------|---|
| ① | Start | 12 | 2 bytes | ← |
| ② | Data of high beam | xxxx±xxx±yyy | 12 bytes | ← |
| ③ | Data of low beam | ±xxx±yyy | 8 bytes | ← |
| ④ | Data of fog beam (optional) | ±yyy | 4 bytes | ← |
| ⑤ | End | A | 1 bytes | ← |

10.4.2 DATA OF LOW BEAM

12±xxx±yyyA, composed of ① ③ ④ ⑤ item in chapter 10.4.1.

10.4.3 ALL DATA

If function of fog beam was enable:

12 xxxx±xxx±yyy ±xxx±yyy ±yyy A (no space) ① ② ③ ④ ⑤

| | | | | |
|---|-----------------------------|--------------|----------|---|
| ① | Start | 12 | 2 bytes | ← |
| ② | Data of high beam | xxxx±xxx±yyy | 12 bytes | ← |
| ③ | Data of low beam | ±xxx±yyy | 8 bytes | ← |
| ④ | Data of fog beam (optional) | ±yyy | 4 bytes | ← |
| ⑤ | End | A | 1 bytes | ← |

10.5 “→PC” DATA MODE

According to unit settings, there are 2 mode (refer to chapter 7, ° ' or mm/10m 2 mode unit).

| Deviation unit | | Start | Intensity×100cd | Vertical (up+ down-) | Horizontal (left+ right-) | End |
|----------------|-------|--------------|-----------------|------------------------------|------------------------------|------|
| mm/10m | Char→ | 12 | XXXX | ±XXX | ±XXX | A |
| | Hex→ | 0x31 0x32 | X X X X | 0x2B/0x2D X X X | 0x2B/0x2D X X X | 0x41 |
| ° , | Char→ | 12 | XXXX | ±XoXX' | ±XoXX' | A |
| | Hex→ | 0x31 0x32 | X X X X | 0x2B/0x2D X 0x6F X X 0x27 | 0x2B/0x2D X 0x6F X X 0x27 | 0x41 |

ENVIRONMENTAL PROTECTION

Recycle unwanted materials instead of disposing of them as waste. All tools, accessories and packaging should be sorted, taken to a recycling centre and disposed of in a manner which is compatible with the environment.



DISPOSAL

Dispose of this product at the end of its working life in compliance with the EU Directive on Waste Electrical and Electronic Equipment. Contact your local solid waste authority for recycling information or give the product for disposal to BGS technic KG or to an electrical appliances retailer.





**EU-KONFORMITÄTSERKLÄRUNG
EC DECLARATION OF CONFORMITY
DÉCLARATION „CE“ DE CONFORMITE
DECLARATION DE CONFORMIDAD UE**

Wir erklären in alleiniger Verantwortung, dass die Bauart des Produktes:
We declare that the following designated product:
Nous déclarons sous propre responsabilité que ce produit:
Declaramos bajo nuestra sola responsabilidad que este producto:

**Scheinwerfer-Einstellgerät (BGS Art. 74582)
Headlight Adjuster
Appareil de réglage des phares
Nivelador de faros**

folgenden einschlägigen Bestimmungen entspricht:
complies with the requirements of the:
est en conformité avec les réglementations ci-dessous:
esta conforme a las normas:

**EMC Directive 2014/30/EU
LVD Directive 2014/30/EU**

Angewandte Normen:

Identification of regulations/standards:

Norme appliquée:

Normas aplicadas:

EN 61010-1:2010+A1:2019
EN IEC 61326-1:2021

Certificate No.: 0H221027.ZUMCD57 / MQD-3C

EMC Test Report No.: XMT0202200580S

LVD Test Report No.: XMT0202200581S

Wermelskirchen, den 08.07.2024

ppa. 

Frank Schottke, Prokurist

BGS technic KG, Bandwinkerstrasse 3, D-42929 Wermelskirchen