

## LS117 Optical Density Meter

### User's Manual V5.1

LS117 Optical Density Meter is used to measure the transmittance and optical density of the materials, which mainly include the following three:

- the transmittance of various diffuse transmission materials such as milky, fogged, abrasive, matte materials
- Absolute optical density of materials like X ray film, aluminum film.
- All graphic arts film, measuring absolute optical density and relative density and dot area

### I: LS117 Parameter

1. Transmittance measurement accuracy:  $\pm 1\%$  (0% --- 50%)  
 $\pm 2\%$  (50% --- 100%)
2. Optical density measurement range: 0.00 OD  
--- 6.00 OD
3. Dot area measurement range: 0 --- 100%
4. Optical density resolution: 0.01 OD
5. Measurement accuracy:  $\pm 0.02$  (0 --- 2.00 OD)  
 $\pm 2\%$  (2.00 --- 6.00 OD)
6. Transmittance resolution: 0.0005%
7. Aperture: 2mm
8. Light source: CIE function of photopic vision
9. Instrument weight: about 1250 g
10. Power supply: 4\*AAA alkaline dry battery
11. Instrument size: 70mm \* 130mm \* 28mm(L\*W\*H)



### II: Operations

#### 1. Instrument setting:


In the state of powering off, long press “” to enter into setting mode

Select the measuring mode (Test Mode: Fast/Slow) : short press “”


Select Fast, the measurement time is 1Second each time. If the optical density is less than OD5, the Fast mode is recommended.

Select Slow, the measurement time is 3Second each time. If the optical density is larger than OD5, the Slow mode is recommended.





Short press “” to confirm.

AUTO OFF : ( YES/NO) short press “” to select

If ON, the instrument will automatically power off if there is no operation within 5 minutes.


If OFF, the instrument must be powered off by manual, not automatically power off.  
short press “” to confirm the setting. The instrument will enter into measuring mode.


## 2. Operations of the button “”

- In the state of powering off, short press “” to power the instrument on  
At powering on, the receiving probe must be tightly aligned with the light source probe. No tested sample can be put between the receiving probe and the light source probe. After the instrument warm-up, if the instrument works normally, “T” (transmittance) is displayed as “100%” and “OD” (optical density) is “0”.
- In POWER ON state, long press “” to power the instrument off.
- In POWER ON state, short press “” to calibrate the instrument. When the receiving probe is tightly aligned with the light source probe and there is no tested sample, if the transmittance value is unable to be recovered as 100% (the OD value is not zero), short press “” to calibrate the instrument.



## 3. “” button


### 1) ABS mode

In ABS mode, press “” to hold the measuring data on LCD. The bottom of LCD displays the icon of "HOLD".




In the state of " Hold ", press “” to exit the "Hold" state and enter into the measuring state. The icon " HOLD " disappears.

### (2) COM mode

In the COM mode, firstly press “” to lock the OD1 data and enter into measurement of OD2 data. Then press “” again to lock all measuring data on the LCD and automatically obtain COM data (Relative optical density). The LCD lower left corner exhibits the icon " HOLD ".

In the state of "Hold", press “” to exit the "Hold" state and enter into the measuring state. The icon " HOLD " disappears.

### 3) DOT mode

In the DOT mode, firstly press “” to lock the OD1 data and enter into measurement of OD2 data. Then press “” again to lock the OD2 data and enter into measurement of OD3 data. Press “” again to lock all measuring data on the

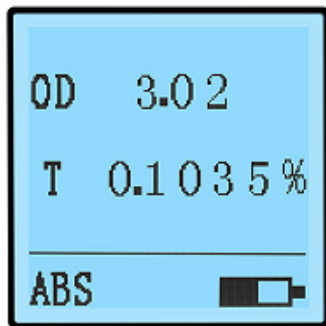
LCD and automatically obtain DOT Area. The LCD lower left corner exhibits the icon " HOLD ".

In the state of "Hold", press "M" to exit the "Hold" state and enter into the measuring state. The icon " HOLD " disappears.

#### 4. "▲" button

Short press "▲" to shift among three different measuring modes, among which the COM mode and the DOT mode are mainly used in testing for films. In different modes, the lower left corner of LCD will display ABS/COM/DOT respectively.

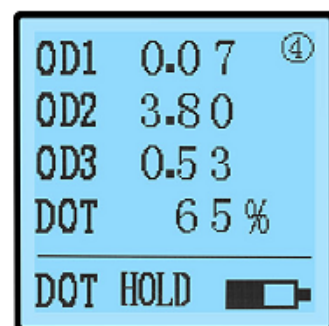
- ABS mode (Measuring mode for transmittance and absolute optical density).
- COM mode (Measuring mode for relative optical density).
- DOT mode (Measuring mode for dot area).



ABS



COM



DOT

### III: Transmittance for diffuse transmission material

As for transmittance of various milky, fogged, abrasive and matte materials, such as milky and abrasive glasses, ceiling lamps, diffusers, zirconium oxide and so on, two testing methods are adopted subject to size of the tested samples:

#### 1. Testing of small samples

Short press "▲" to enter into ABS (Absolute optical density ) testing interface. Pull up the receiving probe and putting into the testing sample, then tightly attach the receiving probe to the light source probe again. The current "T" value is the transmittance value of the test sample.

#### 2. Testing of large samples

In the case that it's impossible for the tested sample (like large lamp chimney) to be put the test sample into test stand and it's necessary to remove the light source probe and



the receiving probe from the test stand, the Probe-in-hands method is used to measure the sample, with the testing process as shown in the followings:

- Align and keep those two Probes in tighter before powering the instrument on. After the instrument warm-up, the instrument enters into ABS testing interface, with T displayed as 100.00%.
- Separate two probes and clamp the tested sample. The current T value is the transmittance value of the tested material(it's necessary to match two test probes together and make convex surface of the object face to the receiving probe) .




## IV: Film measurement

Corresponding measuring modes are selected respectively to measure the absolute optical density, relative optical density and dot area of the films.


In the case that there is no sample and the light source probe is tightly attached to the receiving probe, when OD in the interface is displayed as 0.00 and T(transmittance) is displayed as 100.00%,the instrument warm up finished.

### 1. Testing of absolute optical density

Short press “


Pull up the receiving probe and putting into the testing sample, then tightly attach the receiving probe to the light source probe again. The current OD value is the optical density value of the tested film.

### 2. Testing of relative optical density

Short press “

1st step:

The icon “OD1” flashes, which indicates the instrument is measuring “OD1” data. Put into the standard film and the icon “OD1” will dynamically display the optical density value of the standard film. After the value is in a steady state, short press

“

2nd step:

The icon “OD2” flashes, which indicates the instrument is measuring “OD2” data. Put into the tested film and the icon “OD2” will dynamically display the optical density value of the tested film. After the value is in a steady state, short press

“(M)” to record the optical density value of the tested film into “OD2” and enter into the 3rd step.

3rd step:

The data is in the state of "Hold". The final testing results displayed.

The “OD1” data shows the optical density values of the standard film

The “OD2” data shows the optical density values of the tested film

“COM” is the value difference between the tested film and the standard film (namely the relative optical density)

### 3. Testing of dot area

Short press “▲” and select to enter the DOT (dot area) testing interface.

1st step:

The icon “OD1” flashes, which indicates the instrument is measuring “OD1” data.

Put into the blank film and the icon “OD1” will dynamically display the optical

density value of the blank film. After the value is in a steady state, short press “(M)”

to record the optical density value of the blank film into “OD1” and enter into the 2nd step.

2nd step:

The icon “OD2” flashes, which indicates the instrument is measuring “OD2” data.

Put into the solid film and the icon “OD2” will dynamically display the optical

density value of the solid film. After the value is in a steady state, short press “(M)”

to record the optical density value of the solid film into “OD2” and enter into the 3rd step.

3rd step:

The icon “OD3” flashes, which indicates the instrument is measuring “OD3” data.

Put into the tested film and the icon “OD3” will dynamically display the optical density value of the tested film. After the value is in a steady state, short press

“(M)” to record the optical density value of the tested film into “OD3” and enter into the 4th step.

4th step:

The data is in the state of "Hold". The final testing results displayed.

The “OD1” data shows the optical density values of the blank film.

The “OD2” data shows the optical density values of the solid film.

The “OD3” data shows the optical density values of the tested film.


The “DOT” is dot area of the tested film .

## V: Instrument characteristic

1. Transmittance measurement for diffuse transmission material.
2. Simple to operate and easy to use.
3. Able to measure densities up to 6.0 OD.

4. Ideal for all graphic arts film applications, from quality control to calibration.
5. Directly measures absolute optical density, relative optical density and dot area.
6. Completely self-contained operation. No independent power supply or light source required.

## VI: Notes

1. When there is no tested object and the displayed data cannot be recovered as 100%, short press “

## VII: Standard packing list

No.	Description	Quantity	Unit
1	LS117 Optical Density Meter	1	pcs
2	AAA battery	4	pcs
3	User Manual	1	pcs
4	Certificate / warranty card	1	pcs
5	Aluminum box	1	pcs

## VIII: Service

1. The meter has one-year warranty. If the meter works abnormally, please send the whole meter to the company for maintenance
2. Provide users with spare parts and lifelong maintenance services
3. Provide the users with the meter inspection service for free
4. Free technical support for long term

Manufacturer: Shenzhen Linshang Technology Co.,Ltd.

Website: [www.linshangtech.com](http://www.linshangtech.com)

Service hotline: 086-755-86263411

Email: [sales21@linshangtech.com](mailto:sales21@linshangtech.com)