











## Quick guide - LTL2000SQ Retroreflectometer

### Keyboard:

 Turn the instrument ON	 Menu	 Scroll key up	 Print
 Turn the instrument OFF	 Enter	 Home	
 Measurement	 Scroll key down	 Calibration	

### Measurement:

If the instrument is calibrated and Qd and/or RI is enabled then the instrument takes one measurement.

### Menu:

Press to open the menu function, press again to scroll through the menu tree.


From the Menu it is possible to control most of the instrument settings such as measuring mode (Qd, RI or both), Mean calculation, Data Log functions, Real time setup and automatic turn off timer, for details see the Manual.


The sequence of the menu functions changes depending on what mode the instrument is in at the moment, example. When taking measurements with the mean calculation on the first function shown will be the Clear Mean function, if the mean calc function is off the first function will be Qd enable.

### Enter:

Activate function or accept setting.

### Scroll Keys:

In normal mode the  key activates the Clear Top Log function, in menu mode it is used to scroll through the menu functions and to increment shown values.

In normal mode the  key activates the Edit Sequence ID function, in menu mode it is used to scroll through menu functions and to decrement shown values.

### Home:

Press this key to terminate a menu or calibration and display the latest measurement result, if the Mean calculation function is enabled and there is more than 1 measurement in the calculation then the number of measurements is shown first.


### Calibrate:

Periodically during use, you should check the calibration of the instrument. See **Calibration**.

### Print Result:

Press to send result from last calibration or measurement to the printer.

## Getting started


Turn the LTL2000SQ on by pressing and holding the  button until the LCD shows:

Retrometer  
LTL2000SQ v #

Retrometer  
Year-date - time

Calibrate the instrument if necessary, see **Calibration**.

Place the instrument over the road marking.


Press the  key. The measurement will start instantly, duration app. 5 sec. depending on measurement mode.

When finished the measured RI and Qd values, the date/time or ID info and status info is displayed. The RI and Qd values, time and status are automatically transferred to the internal data log for later readout to the serial communication port or printout.

Press the  key to print the measurement result.



## Calibration:

Press the  key to start the calibration.

**Calibration**  
↓ = Qd ↑ = RI (both Qd and RI enabled).

If only one mode is active then only the valid calibration will be selected.

**Qd Calibration:** (Follow the instructions in the display. The display shows:)

**Mount Qd Normal**  
← when Ready


**Calibrating**  
Please Wait

**Qd Normal: 100**  
← = OK ↓↑ to Edit

**Qd Normal: 101**  
← = when OK

**Calibration Done**  
Remove Normal

In step 3, edit the Qd Normal value to the value printed on the calibration unit.

Press the  key to print the Calibration result.

The Qd function is now calibrated to a Qd value of 101, if an error is detected during the calibration procedure then the display will indicate this.

**RI Calibration:** (Follow the instructions in the display. The Light trap side on the calibration normal is the two glossy and black plastic sheets. The RI normal is the side of the calibration normal with the white ceramic on. The display shows:)

**Mount Light Trap**  
← when Ready

**Zeroing**  
Please Wait

**Zero OK**  
Zero: 0.05%

**Mount RI Normal**  
← when ready


**Calibrating**  
Please Wait

**RI Normal 219**  
← = OK ↓↑ = Edit

**RI Normal 220**  
← = when OK

**Calibration Done**  
Remove Normal

In step 6, edit the RI Normal value to the value printed on the calibration unit.


Press the  key to print the Calibration result.

The RI function is now calibrated to a RI value of 220, if an error is detected during the calibration procedure then the display will indicate this.

## Warning and Errors

Warning and Errors are indicated in the last positions in the display:

Status = *	Everything	O.K.
Status = W	Warning	Measurement O.K. but warning condition detected.
Status = L	Warning	Measurement O.K. but high stray light detected.
Status = E	Error	Measurement unreliable.

If the status code is different from \* then press  one or more times to select **Status Display** and then use ↓↑ to scroll through the status list to see the possible cause of the problem, alternatively select the menu **Print Status** to print a complete instrument status.

## Remember:

- Recharge battery when possible. Never leave battery discharged for longer periods of time.
- Keep protection window, light trap and calibration unit clean.
- LTL2000SQ is an optical precision instrument, handle with care.
- Store in clean and dry environment