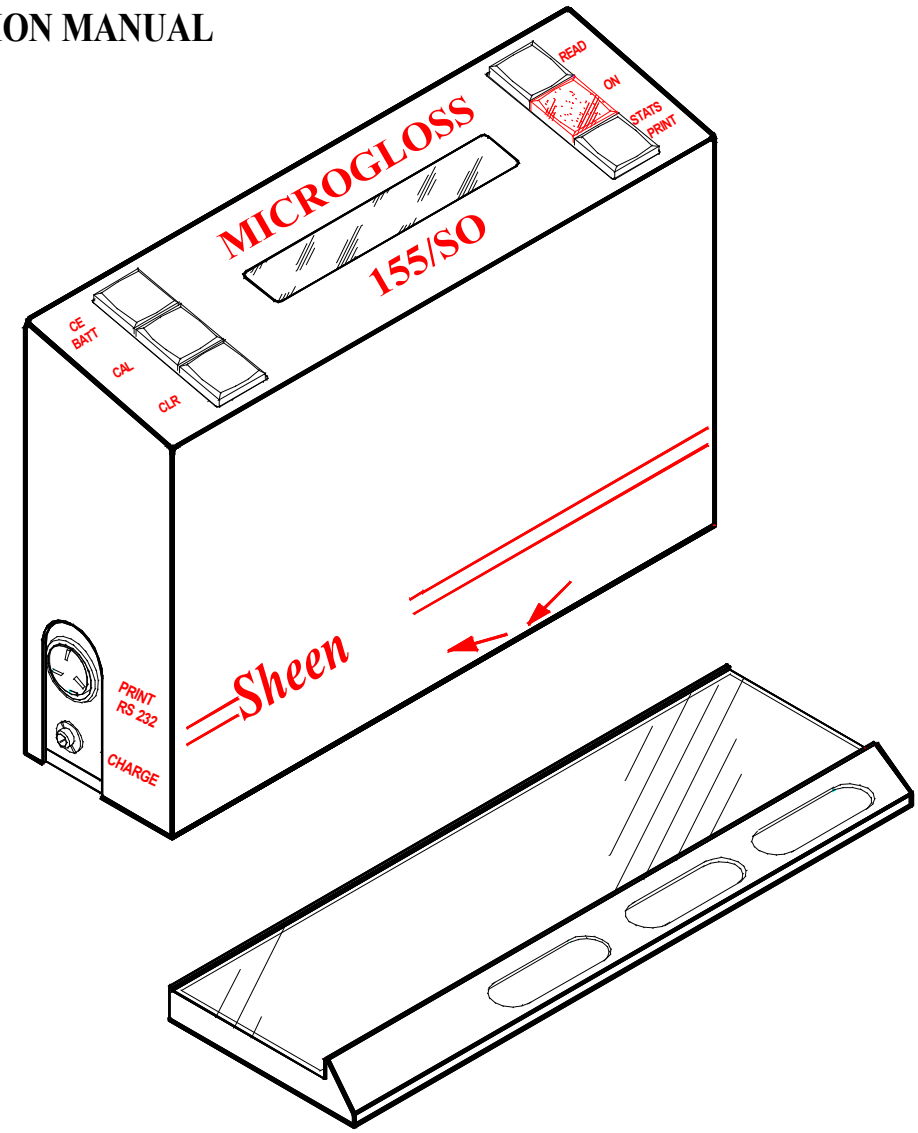
155 MICROGLOSS

155/SO

OPERATION MANUAL



155/SO-A-MAN

ISSUE A

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1. INTRODUCTION

Features of the 155-SO Microgloss.

1.1 Introduction

The 155-SO is a specular Gloss meter incorporating optics for 60 degree angle of incidence, fully portable & battery powered.

Multi-function display of 2 line 24 characters shows the latest reading, maximum, minimum, average, and standard deviation of set readings, battery voltage and calibration instructions.

Extended battery life is maintained by automatic power down after 20 seconds, all data being retained within the memory of the instrument, at restart the previous display is presented.

Calibration data and approximately 4000 readings are retained for extended periods with the memory back up having a life of up to 10 years by means of a internal lithium battery.

Where data is required to be printed or retained for long periods, the facility of an RS232 output is provided for interfacing to computer or printer.

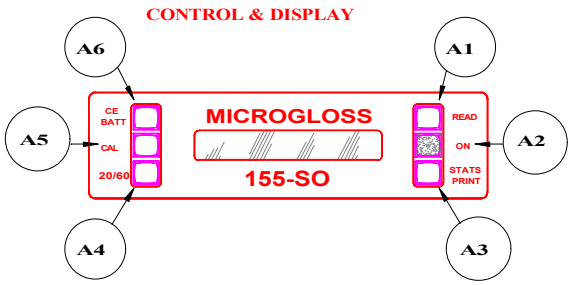
Measurement time of less than a second with the availability of batch selection.

A reference tile and battery charger are also supplied within the lightweight carrying case for the 155-SO aiding the protection and portability of the instrument.

1.2 Control Functions.

The Instruments functions are controlled by six push button switches located on the Control & Display Panel, Three switches either side of the LC Display (Fig 1).

Fig 1.



1. A1 Read
2. A2 On.
3. A3 Stats/Print
4. A4. CLR
5. A5. Cal
6. A6. CE/ Batt

2. SPECIFICATION

PHYSICAL DIMENSIONS	190mmW x130mmH x 50mmD
WEIGHT	1.45 Kg
CHARGER VOLTAGE	20 Volts at 0.66 Amps
BATTERY VOLTAGE	7.2 Volts DC
OPERATING VOLTAGE	5 Volts DC
BATTERY LIFE @ MODE	Continuous Batch Mode
BATTERY LIFE @ MODE	Intermittent *
CHARGED SHELF LIFE	3 Months (Storage)
OPERATION AUTO SHUT DOWN	7 Hours *
CONTINUOUS	3 Hours
DISPLAY TYPE	2 Line 24 Character LCD
DISPLAY FUNCTIONS	Last reading,Max,Min,Average,& Standard Deviation of set readings. Battery Voltage,& Calibration Instructions.
MEMORY BATTERY LIFE	10 Years
ACCURACY	1 Gloss Unit
WORKING ENVIRONMENT	+ 15 to + 35 Degrees C
AMBIENT HUMIDITY	80% RH Non Condensing
OUTPUT	RS 232
TRANSFER RATE	9600 Baud
PROTOCOL	XON / XOFF
REPEATABILITY	+ - 1 Gloss Unit
EMC COMPLIANCE	
OTHER STANDARDS	BS3900.D5, ASTM D523, DIN 67530, ISO2813, & other International Specifications

3. OPERATION

3.1 SWITCHING ON

Press the red button (A2) to switch the instrument on, the instrument will power down 20 seconds after the last key has been pressed. All information stored,being retained.

3.2 TAKING A READING

Place the base of the instrument on the surface to be tested. Align the red arrows on the case (Fig 2) over the area of interest. The base of the instrument must be in good contact with the surface to be tested, press the On button (A2) and the Read button (A1). Brackets will appear round the last reading and the number of readings to indicate that these are about to be updated. Approximately one second later the new reading will be incremented.

3.3 DISPLAY STATISTICS

Press the Stats / Print button (A3). The display will show the maximum, average and standard deviation of the set of readings. To start a new set of statistics press the 20/60 button (A4) once more.

3.4 REJECTING A READING

To reject the most recently displayed reading, press the Batt button (A6) and before the voltage display clears press the button again. This display will then show the previous reading and the total will be reduced by one. The rejected reading will not be incorporated in the statistics stored to data

3.5 PRINTING

All readings and calibrations are stored internally and may be printed out or transferred to a computer for later use. The 3 pin DIN connector is wired to the following :- Pin 1: Earth, Pin 2: RS232 Output from meter, Pin 3: RS 232 Input.

The voltage levels are + - 5 volts which should work with most RS232 devices. To select the print mode wait until the instrument is off. Press and hold the Stats/Print (A3) button then press the 'on' button (A2). Release the buttons in any order. The display will show how many readings have been stored since the store was last emptied. Press the Print button (A3) again to start printing or the Read button (A1) to empty the store.

Fig 2.

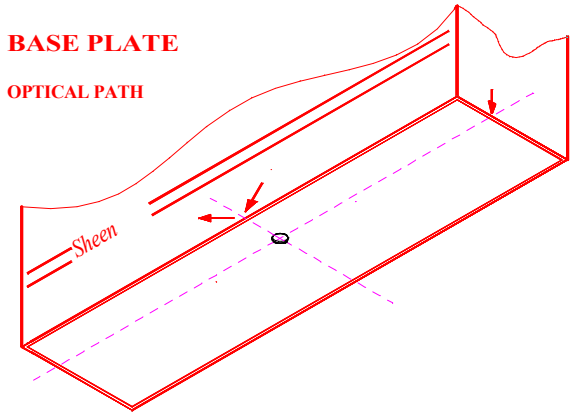
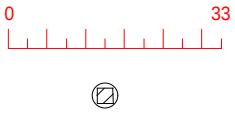


Fig 3.



Solid line = Orifice
Broken line = Illumination

It should be noted that there is a pause between each character and a longer pause after each line to allow slow devices to keep pace. In addition the instrument will recognise the industry standard XON.XOFF handshaking protocol. If it receives a control S character (sometimes called Xoff) it will stop outputting until it receives a control Q (or XON) character. This allows the receiving device to control the rate of transfer.

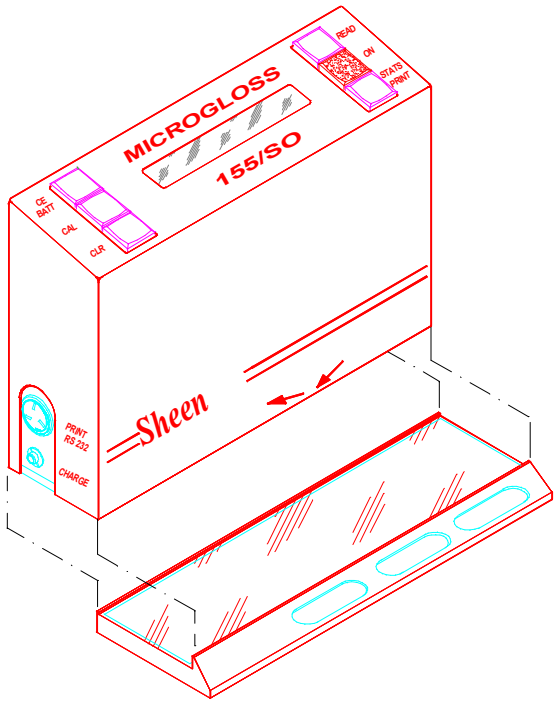
4. CALIBRATION

4.1 Procedure

There is no need to adjust the zero of this instrument. To adjust the scale place it over the supplied reference tile making sure the base is flat and central on the tile, then switch on and press the Cal button (A5).
The instrument will automatically calibrate the 60 degree angle. The calibration takes approximately 2 seconds to complete. Before calibration starts the instrument will display the internally stored reference value for the angle. This should match the value stated on the reference tile, where the value displayed on the instrument and the tile are not matched the values may be trimmed by the following procedure:

Release all buttons and allow the instrument to switch off normally. Press and hold the Cal button (A5) then press the On button (A2) , then release the buttons in any order. The display will show the stored value for 60 degrees. To increase the displayed tile value in increments of 0.1 unit, press the Read button (A1), and to decrease the displayed tile reading press the Stats/Print button (A3). Repeat this as necessary to obtain the required value for the stated tile value . If the Read button (A1) or the Stats button (A3) are held down for more than two seconds the trim up or down function will automatically repeat. Press any other button to leave this mode or allow the instrument to switch off normally. The new value will be stored from now on. To reset the trimmed values (92.0 for 60 degrees) wait until the instrument is off then hold down the Batt, Cal, and CLR buttons (A4,A5,A6) simultaneously then press the On button (A2).

Fig 4.



5. MAINTENANCE

5.1 Batteries

Press the Batt button (A6) to read the battery voltage. When the voltage falls to 6.0 volts then it is recommended that the battery be recharged. Because the battery is a Nickel Cadmium type its voltage will be stable during most of the usage.
The most reliable indication will be obtained by reading the battery immediately after taking several readings. When the voltage falls below approximately 5.5 volts the display will dim and the gloss measurements will become inaccurate. Connect the battery charger to the input Charger socket and recharge the batteries for at least 2/3 hours or until the voltage indicated on the LCD reads at least 8.0 volts.

5.2 General Maintenance

No routine maintenance is required, only to insure that the Instrument is kept clean as a general good house keeping policy, no chemicals should be used to either clean the outer case or the LC Display of contamination.

Where in-house facilities exist or when it is not practical to return the instrument on a regular basis for service it may be necessary to inspect and clean the *optics assembly within the instrument housing, **See Fig 5**. this may be more evident where the instrument is used frequently in dusty conditions. It is recommended that the optics be cleaned using a cotton bud tipped swab in conjunction with an Anti-static foam cleaner for use on plastic, metals, glass and synthetic materials to remove any dust and contamination followed by clean blown air to remove dust and small particles from the optics housing.

*Separate Instructions are available on request which cover this cleaning of the optics assembly with instructions on the dis-assembly of the instrument.
Service Manual Ref: 155SO-OCL refers.

Where electronic or mechanical repairs are required these should be carried out by your dealer, and it is advised that regular calibration is performed on this instrument to ensure that satisfactory operation is maintained.

5.3 Bulb Test

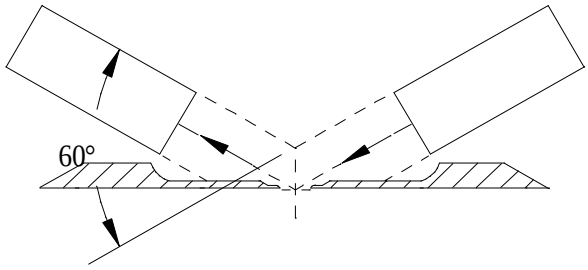
When the instrument is in the off position press both the Batt and CLR buttons (A4,A6), then press the On button (A2). The display will show ' bulb test'. Press the Read button (A1) to switch the bulb on and the Stats button (A3) to turn the bulb off.
Press the Batt button (A6) to select forward reading and the Cal button (A5) to select reverse. Time out in this mode is extended to 40 seconds. The only exit is to allow the instrument to switch off automatically.

6. Reboot

In certain circumstances the memory of the instrument may become full, in this situation it may be found that the instrument will lock out. This situation should be avoided wherever possible and regular downloads should be carried out.
Press buttons Batt, Cal, and CLR (A4,A5,A6) and hold. Press on button (A2), release all buttons and allow to power down. Press Cal button (A5) and hold, press on button (A2) and release both buttons.
Using Read button (A1) to raise the value to the reference tile value, and the Stats/Print button to lower displayed reading to tile value.
Press Cal clears memory (Stored data).

Fig 5.

General View - Optic assembly



ElektroPhysik USA Inc
exclusive USA agents for **Sheen Instruments**
770 W. Algonquin Road
Arlington Heights, IL 60005
USA
www.epkusa.com

Tel: 847-437-6616
Fax: 847-437-0053

082004epkusa