

# User' s Manual

## Bluetooth Digital Test Indicator

Type : SSL-250/SSL-260/(SSL-350)

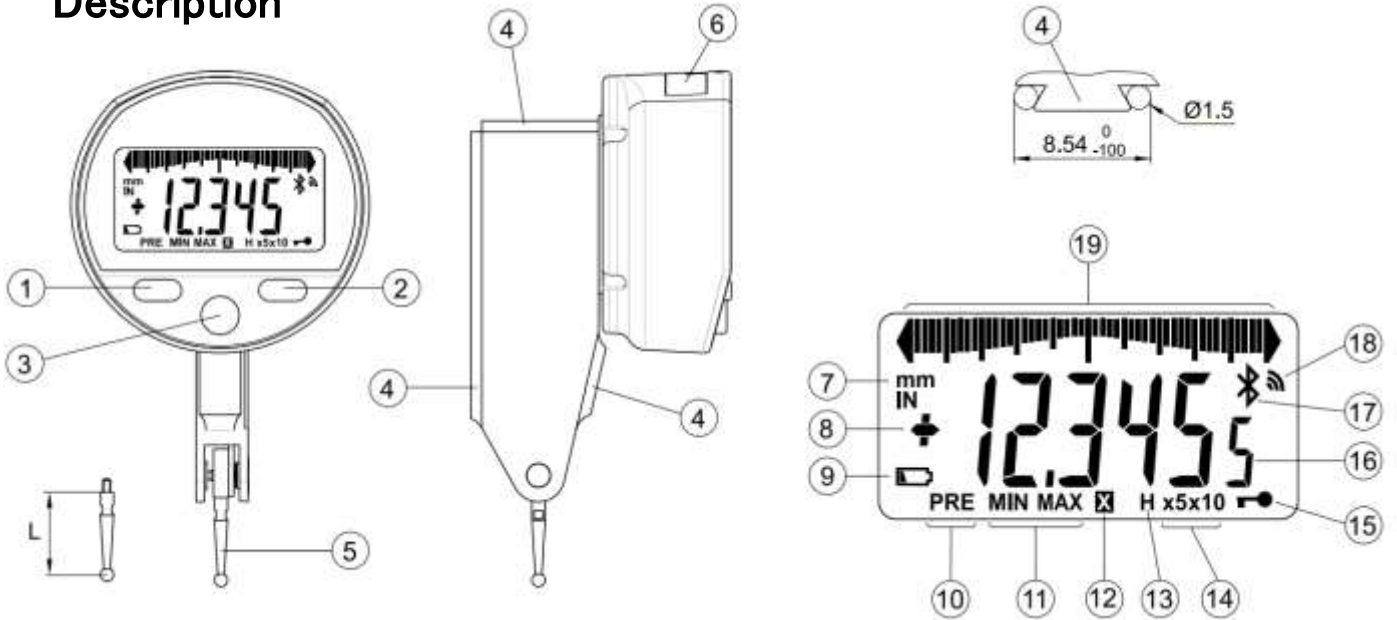
### Features

- Resolution : 0.001 mm
- Measuring range : 0.8 mm/2.0 mm
- Measuring force : 0.15N/0.06N
- IP protection : IP54
- Wireless Communication : Bluetooth



Q-149-1-E Ver1.3

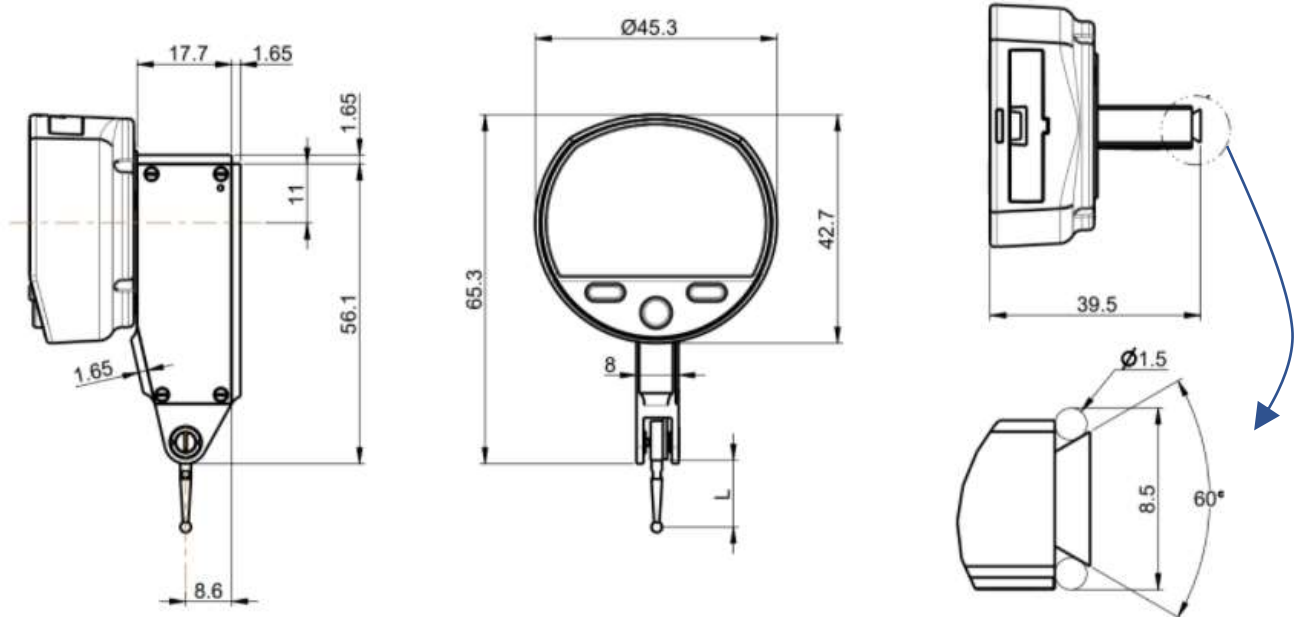
# Description



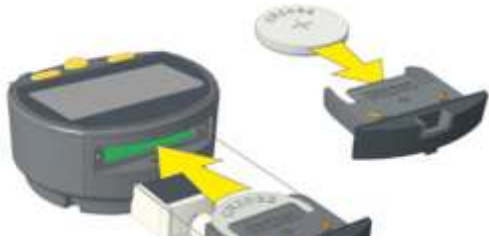
- ①MODE button
- ②SET button
- ③Favorite button
- ④Dovetail mounting
- ⑤Contact point M1.4, interchangeable
- ⑥Slot for battery or Power cable

- ⑦Unit (mm / INCH)
- ⑧ + / - Indicator
- ⑨ Low battery
- ⑩ Preset mode
- ⑪ MIN/MAX/DELTA mode
- ⑫ Multiplication factor
- ⑬ Hold measured value
- ⑭ Analog scale range
- ⑮ Button lock
- ⑯ 6 digits display
- ⑰ Bluetooth active
- ⑱ end data
- ⑲ Analog display

Type	L(mm)
SSL-250	12.5
SSL-260	36.5
SSL-350	12.5/36.5



## ★Replacing the battery

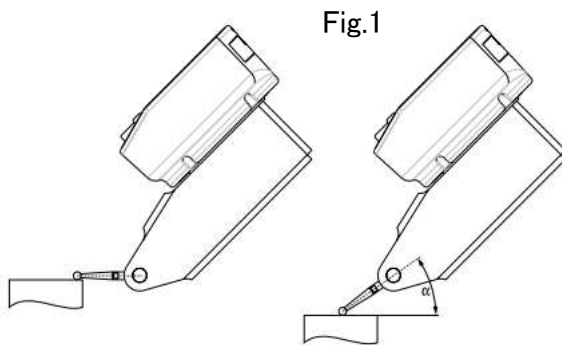


## ★Reference setting



## ★Linearity error

The axis of the measuring insert should be positioned parallel to the surface of the component to minimize the linearity error when measurements are taken (Fig. 1). In case, this requirement cannot be met, the angle  $\alpha$  must be determined and the indicator reading multiplied by the corresponding angle correction factor.



Set angle of the probe,

Press **SET**

$\alpha$ Angle	Correction factor
0°	1,000
10°	0,985
20°	0,940
30°	0,866
40°	0,766
50°	0,643

## 1. Operating features of the instrument

### ① Button **MODE**

The instrument has two operating modes: basic functions (direct access) and advanced functions. In addition to the configuration functions, you can access to MIN, MAX and DELTA (TIR) mode, plus input of multiplication factor other than 1:1 (see chaps. 3 and 4).

### ② Button

The <favorite> key gives direct access to the function used most often (see chap. 6).

### ③ Button **SET**

Sets a Preset value, resets the MIN/MAX mode, verifies a selection, and controls switching off the instrument. By default, SIS mode enables automatic switch-off with no loss of origin (see chap. 7).

### ④ Serial communication (Bluetooth/RS232/USB)



It is possible to activate or de-activate certain functions of the instrument via serial communication (see chap. 9). Data transmission parameters are 4800bps, 7bits, even parity, and 2 stop bits.

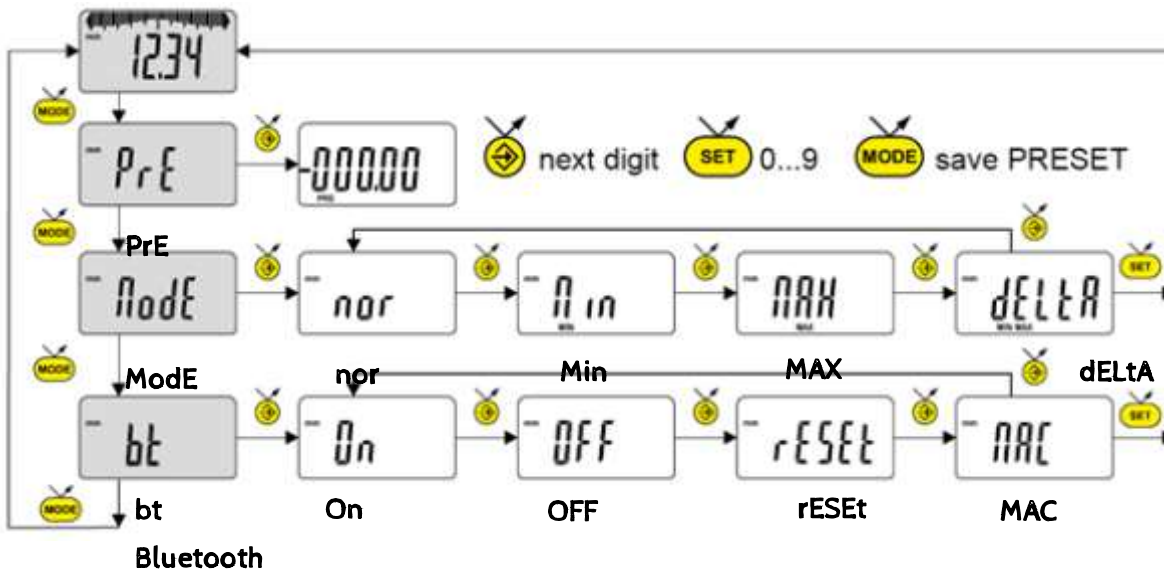
## 2. Start

Press a button. When used for the first time, after a battery change or a complete switch OFF, it is necessary to set the reference (---r{f}---). Simply press (SET) when the touch probe is free in the center position (see page 3). For a Bluetooth® connection (see chap. 5).



### 3. Basic function :

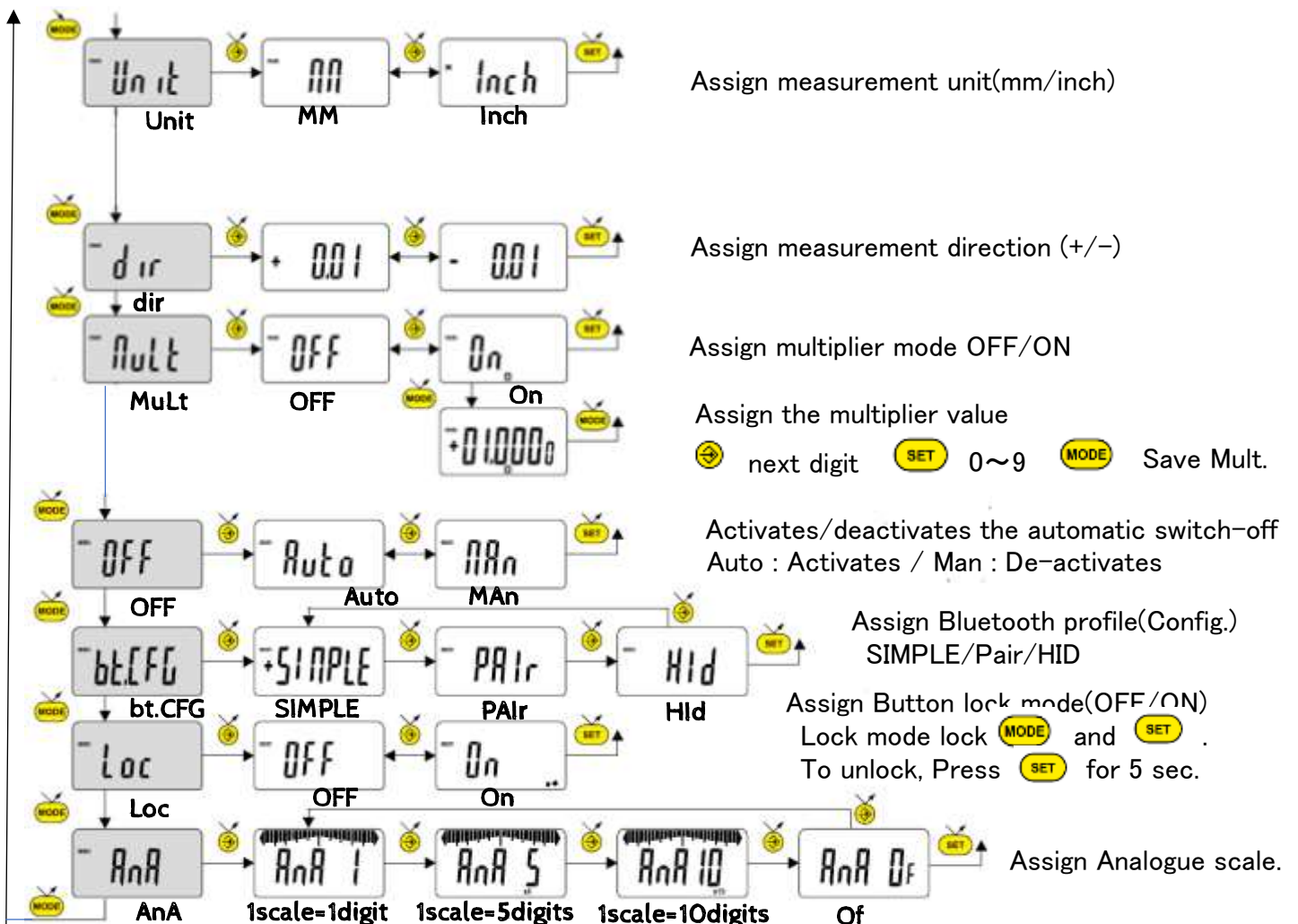
Each short press on  gives direct access to the basic functions.

-  Short press
-  Long press



### 4. Advanced functions

Prolonged pressure (>2s) on  gives access to the advanced functions. Then, each short press on  accesses the required function:



## 5. Operation via Bluetooth




### 5.1. HID mode(External Key board mode)

- ①Set HID mode by Advanced function.
- ②Set BT On mode by Advanced function.
- ③Reset Bluetooth mode by Basic function.
- ④Pairing connection the instrument to the PC.  
(Instrument name : S\_Dial TEST HID)
- ⑤Send the measured data by the **SET** button.

### 5.2. Pair mode

- ①Set Pair mode by Advanced function.
- ②Set BT On mode by Advanced function.
- ③Reset Bluetooth mode by Basic function.
- ④Pairing connection the instrument to the PC.  
(Instrument name : SY308)
- ⑤Send the measured data by the **SET** button.

### 5.3. Bluetooth configuration

Display status	Operating mode
 <b>off</b>	Bluetooth disconnected
 <b>blinking</b>	Bluetooth advertising
 <b>on</b>	Bluetooth connected
<b>rESEt</b>	reset : clear pairing information
<b>MAC</b>	MAC : display the MAC address
<b>SIMPLE</b>	Simple : profile without pairing
<b>PAIR</b>	Pair : paired and secured profile
<b>Hid</b>	HID : virtual keyboard

### 5.4. Bluetooth Connection :

- 1° Activate Bluetooth compatible software and hardware (Master: PC, Display Unit).
- 2° Start the instrument. By default the Bluetooth® module is active and the instrument is available for connection (advertising mode).
- 3° If no connection is established during the advertisement period reactivate the Bluetooth® module using the **bt / On** menu.
- 4° Instrument is ready to communicate (connected mode.)

### 5.5. Only with paired profile:


Pairing with master is automatically done at first connection.

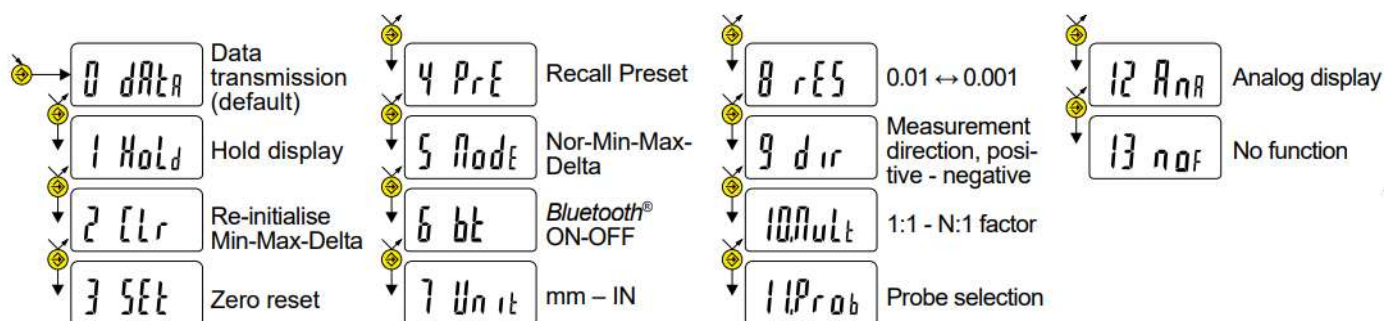
To connect the instrument to a new master (new pairing), pairing information on the instrument must be cleared using the **bt / rESEt** menu.

### 5.6. Bluetooth Specifications:

Items	Specification
Frequency band	2.4GHz
Modulation	GFSK
Max output power	Class3(1mW)
Range	≤15m(open space), 1-5m(industrial environment)
Version	Bluetooth4.*

## 6. Favorite key

The «favorite» key gives direct access to a predefined function, and can be configured according to the needs of the user. In order to assign a function to the «favorite» key, give a prolonged press on , and then select the required function :



**Note :** It is able to set the same mode by serial command.

## 7. Switching off

The dial gauge goes automatically into stand-by if not used for 10 minutes, unless automatic switch-off mode has been turned off (see Chap. 4, advanced functions).

Stand-by mode can be forced by a prolonged press (> 2 sec) on :





In stand-by mode, the value of the origin is retained by the sensor (SIS mode), and the instrument automatically restarts with any movement of the measurement probe, RS command, Bluetooth® request or press on button.

The instrument can be switched off completely for a long period of non-use, but this will necessitate a reference setting on restart (the origin will be lost, see page 3) :



## 8. Re-initializing the instrument

The initial instrument settings can be restored at any time by a prolonged press (>4 sec) simultaneously on  and  until the message rESEt is displayed.

## 9. Connecting the instrument

The instrument can be connected to a peripheral via a Proximity (RS or USB), Power (RS or USB) cable or Bluetooth®. See page 3 for connecting the Power cable.

Measured values can be transmitted and the instrument driven using predefined commands (see chap. 10 for a list of the main commands).



## 10. Serial communication commands

Selection and configuration		Interrogation	
CHA+ / CHA-	Assign measurement direction CHA+:positive sense / CHA-:negative sense	CHA?	Measurement direction? Response : CHA+ / CHA-
FCT0 / FCT1 / ... / FCTA / ... / FCTF	Assign «favourite» function	FCT?	«favourite» function ? Response : FCT0~FCTF
MM / IN	Assign measurement unit MM:mm/IN:inch	UNI?	Measurement unit active? Response : MM/IN
KEY0 / KEY1	Assign Keypad Lock KEY0:Lock/KEY1:Unlock	KEY?	Keypad locked? Response : KEY0/KEY1
MUL +/-xx.xxxx	Assign the multiplier value	MUL?	Multiplier value? Response : +/-xx.xxxx
PRE +/-xxx.xxx	Assign preset value	PRE?	Preset value? Response : +/-xxx.xxx
STO1 / STO0	Assign Hold mode STO1:ON / STO0:OFF	STO?	Status of HOLD function? Response : STO1/STO0
TOL1 / TOL0	Assign Tolerance mode TOL1:ON / TOL0:OFF	TOL?	Status of Tolerance mode? Response : TOL1/TOL0
REF1 / REF2	Change active reference Two tolerance values are REF1 or REF2	REF?	Active Reference ? Response : REF1/REF2
ECO1 / ECO 0	Assign Economic mode ECO1:ON / ECO0:OFF	ECO?	Current economic mode? Response : ECO1/ECO0
INTE1 / INTE0	Assign 2 points measurement mode INTE1:ON / INTE0:OFF	INTE ?	2 points mode ? Response : INTE1/INTE0
LCAL dd.mm.yy	Modify last calibration date	LCAL?	Date of last calibration? Response : dd.mm.yyyy
NCAL dd.mm.yy	Modify next calibration date	NCAL?	Date of next calibration? Response : dd.mm.yyyy
NUM x...x (up to 20 chars)	Modify the instrument number	NUM?	Instrument number? Response : NUM x...x
MIN /MAX /DEL /NOR	Assign MIN, MAX, Delta, Normal mode MIN:Minimum/MAX:Maximum/DEL:Delta=MAX-MIN/ NOR:Normal=Current value	MOD?	Active mode (MIN, MAX, Delta or Normal)? Response : MIN/MAX/DEL/NOR
AOFF1 /AOFF0	Activates/deactivates the automatic switch-off AOFF1:Activate/AOFF0:De-activate	AOFF?	Status of the automatic switch-off Response:AOFF1/AOFF0
CFGBAR NOR / CFGBAR MAX	Assign Bargraph display CFGBAR NOR:Normal bargraph/ CFGBAR MAX:Keep Bargraph on Max value	CFGBAR?	Bargraph configuration? CFGBAR NOR/CFGBAR MAX
FACT1 / FACT2 / FACT5 / FACT10	Assign analogue scale factor FACT1:1scale=1digit/FACT2:1scale=2digits/ FACT5:1scale=5digits/FACT10:1scale=10digits	FACT?	Status of the analogue scale factor? Response : FACT1/FACT2/FACT5/FACT10
RES1 / RES2 / RES3	Change of resolution RES1:0.0001mm/RES2:0.001mm/RES3:0.01mm	RES?	Status of the current resolution? Response : RES1/RES2/RES3
TOL +/-xxx.xxx +/-yyy.yyy	Inputting current tolerance limits x:lower tolerance limit/y:upper tolerance limit	?	Current value (the displayed value)? Response : +/-zzz.zzz ⇒current value in the case of Tol mode ⇒+/-zzz.zzz ⇒current value <+/-xxx.xxx ⇒lower tolerance limit >+/-yyy.yyy ⇒upper tolerance limit
CLE	Reset(Clear) of MIN, MAX or Delta	SET?	Main instrument parameters? Response : CHA+/CHA-,MM/IN,X1/X2/X5, RES1/RES2/RES3,MIN/MAX/DEL/NOR, STO0/STO1,KEY0/KEY1,BAT1/BAT0
UNI1 / UNIO	Activate / de-activate UNIT command(MM/IN) UNI1:ON/UNIO:OFF	ID?	Instrument identification code? Response : SYxxx
OUT1 /OUT0	Activate / de-activate continued data transmission OUT1:ON/OUT0:OFF	BAT?	Status of Battery? Response : BAT1: OK/ BAT0: low battery
PRE ON / PRE OFF	Activate / de-activate Preset function(PRE command)	VER?	Version No. and date of firmware Response : Vx.x DD.MM.YYYY
ANA ON / ANA OFF	Activate / de-activate the analogue scale	MAC?	Bluetooth® MAC address? Response :XXX...XXX(up to 12 chars)
PRE	Recall Preset value		
SET	Zero reset		
SBY xx	xx number of minutes before stand-by		
BT1 / BT0	Activate/de-activate Bluetooth® module BT1:ON/BT0:OFF		
BTRST	Reset Bluetooth pairing information		
OFF	Switch-off (wake up using a button or RS)		
RST	Reset the instrument		
SBY	Put instrument in stand-by mode(SIS)		
FAC RST	Reset (Restores the factory parameters)		
TOL +/--nnn.nnn +/-xxx.xxx +/-yyy.yyy (In the case of SSI-650)	Inputting current tolerance limits n :nominal value / x :lower tolerance limit/y :upper tolerance limit		

## 11. Specifications

Items	SSL-250	SSL-260
Stylus length	L=12.5 mm	L=36.5 mm
Measuring range	0.8 mm	2.0 mm
Resolution	0.001mm	
Indication error in forward direction whole range	3 $\mu$ m	8 $\mu$ m
Repeatability	1 $\mu$ m	1 $\mu$ m
Rivearsibirity	2 $\mu$ m	3 $\mu$ m
Measuring force	0.15N $\pm$ 20%	0.06N $\pm$ 20%
Friction on probe orientation	4N $\pm$ 20%	1.6N $\pm$ 20%
Max. meas. times / sec	Normal mode : 10, MIN/MAX mode : 20	
Max. Preset value (in the case of 1/1000mm)	$\pm$ 99.999mm	
Data output	Bluetooth/USB/RS232	
Data output format	4800 bauds , 7 bits , parity , 2 stop bits	
Battery life	about 6 months(general using)	
Working tempaerature	5 $\sim$ 40 $^{\circ}$ C	
Strage tempaerature	-10 $\sim$ 60 $^{\circ}$ C	
Weight	70 g	
IP Protection	IP54	
EMC	EN 61326-1	
Battery	CR2032	

## 12.Maintenance

Carefully dry all mechanical parts of the instrument after contact with liquids to ensure proper operation and avoid corrosion.

Don't use aggressive products (alcohol, trichloroethylene or others) to clean plastic parts.






Don't expose the instrument to direct sunlight, heat or humidity.



### 13. Description of Bluetooth module:

This module is based on Nordic Semiconductor nRF8001  $\mu$  Blue Bluetooth Low Energy Platform. The nRF8001 is a single chip transceiver with an embedded baseband protocol engine, suitable for ultra-low power wireless applications conforming to the Bluetooth Low Energy Specification contained within v4.0 of the overall Bluetooth specification. The nRF8001, used in the current revision of ISP091201, is a product using a ROM for the baseband protocol engine.

### 14. Certification

contains bluetooth module	ISP091201D
<b>Region</b>	<b>Certification</b>
USA	FCC ID : 2AAQS-ISP091201
Canada	IC : 11306A-ISP091201
Brazil	Anatel : 0516-14-4534
Korea South	 MSIP-CRM-iNs-ISP091201
Mexico	IFT : RCPSYIS14-0655
Japan	  001-A06167
Taiwan	 CCAH18LP2040T6
EU	
India	WPC : ETA-1003/2-17-/RLO(WR)

## CERTIFICATE OF CALIBRATION

We hereby certify that this product has been calibrated and found to be in accordance with the applicable NATIONAL STANDARDS and TECLOCK STANDARDS, Equipment used in this calibration has traceable accuracy to the NATIONAL LENGTH and FORCE STANDARD.



### Notice for use

Be sure to conduct a routine check for this product according to the purpose of use before use. This product is precision instrument, periodically considering frequency of use, environmental conditions and method of use.

It is not guaranteed for the performance of this product, which has been repaired or disassembled by other than TECLOCK.

For appearance and other design improvement, this products  
subject to change without advance notice.

**TECLOCK Corporation**

**TECLOCK SmartSolutions Corporation**

<http://www.teclock.co.jp>

#### HEAD OFFICE

2-10-3 MARUTA-CHO, OKAYA-SHI, NAGANO-KEN 394-0042

PHONE:81-266-22-4912, FACSIMILE:81-266-22-4914

E-mail:teclock@teclock.co.jp