

wigauge™ WBG
Wireless Bore Gauge

solartron
metrology



user and installation manual



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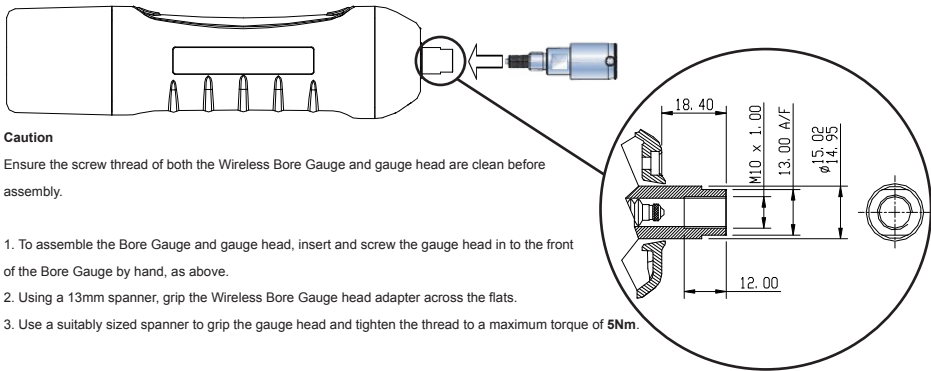
1.0 Introduction

The Solartron Metrology Wireless Bore Gauge (WBG) is one of a series of Wireless Hand tools (WHT) which will form a group of products under the generic name Wigauge™, providing users with the means of hand gauging without the inconvenience of cables. The WHT is manufactured from hard plastic for robustness and is sealed to IP65 to withstand a machine shop environment.



2.0 Installing a Gauge Head

The Bore Gauge is designed to interface to industry standard gauge heads. The standard Wireless Bore Gauge unit will interface directly to an M10 x1 threaded gauge head; M6 x0.75 and threaded gauge heads of other sizes require the use of an adapter.



Caution

Ensure the screw thread of both the Wireless Bore Gauge and gauge head are clean before assembly.

1. To assemble the Bore Gauge and gauge head, insert and screw the gauge head in to the front of the Bore Gauge by hand, as above.
2. Using a 13mm spanner, grip the Wireless Bore Gauge head adapter across the flats.
3. Use a suitably sized spanner to grip the gauge head and tighten the thread to a maximum torque of **5Nm**.

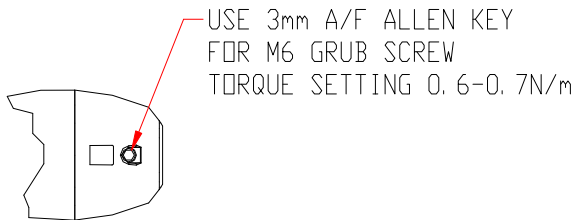
Caution

It is essential to use a spanner to hold the Wireless Bore Gauge when tightening the gauge head to avoid damaging the hand tool.

Exceeding the maximum torque on the Bore Gauge and gauge head assembly can cause damage to both components.

3.0 Mechanical Adjustments

Once the gauge head has been installed its rotational position can be adjusted by approximately 180° about the mounting axis.



1. Using a 3mm A/F Hex key, undo the M6 grub screw pictured above.
2. Rotate the gauge head to the desired position.
3. Tighten the M6 grub screw to a recommended **0.6-0.7Nm** torque.

Note

Large gauge heads may require a higher torque setting on the grub screw to prevent rotation through use.

Caution

Care must be exercised when using a large gauge head to avoid damaging the grub screw or Wireless Bore Gauge hand tool.

4.0 Set up and Installation

The Wireless Bore Gauge uses *Bluetooth*® technology to communicate with a *Bluetooth*® enabled PC. This requires an initialization process to pair the Bore Gauge with the PC.

Solartron Metrology recommends the use of a USB *Bluetooth*® stick which should be installed in the PC.

4.1 Connecting The Wireless Bore Gauge *Bluetooth*® Device

Don't Plug the *Bluetooth*® USB stick in straight away, first install the *Bluetooth*® drivers on the CD-ROM provided. If the CD doesn't auto run, run the file "index.hta".

Caution

Use of different *Bluetooth*® drivers other than the supplied may result in different screens and a different installation process than the one described below. If the Windows *Bluetooth*® Manager is used to connect the device it will almost certainly allocate two COM ports, one as OUT and the other as IN. The OUT COM port is most likely to work with the hand tool.

Connect the *Bluetooth*® USB stick into the USB port when prompted. If the install asks if you want to search for devices select "No".

Once the installation of *Bluetooth*® drivers has completed:

Right Click on the *Bluetooth*® "B" button in the system tray (in the bottom right-hand corner of the screen):

Left Click 'add new *Bluetooth*® connection'



4.0 Set up and Installation

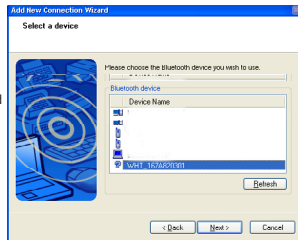
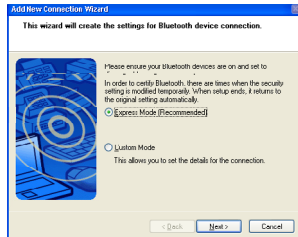
Ensure your Wireless Bore Gauge is turned ON.

Left Click 'Next' button

The wizard will now say it is searching for *Bluetooth®* devices. After a short while it should bring up a list of *Bluetooth®* devices found, they may well appear as numbers in a form similar to '2a:12:ba:12:dd' while windows interrogates them for their names, after a short while their names should appear.

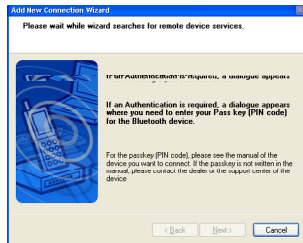
Your Wireless Bore Gauge should appear in the list of names as WHT_xxxxxxxxx (the x's will be replaced by a string of characters to form a name similar to: WHT_167A820301 (if it doesn't appear after a while check the Wireless Bore Gauge is turned on then click 'Refresh'.))

Left Click the Wireless Bore Gauge name then *Left Click* 'Next'



4.0 Set up and Installation

The wizard should now tell you it is connecting to the device.

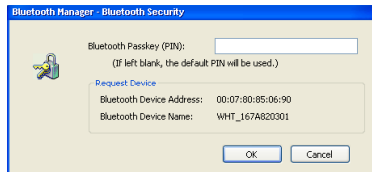


It will then ask you for an authorisation key (this is to ensure people don't mistakenly try to connect devices to the Wireless Bore Gauge unintentionally, for example to stop people connecting their phones to it).

Please Enter the key: 61735

Left Click 'OK'

Now the wizard selects a Com Port to use,



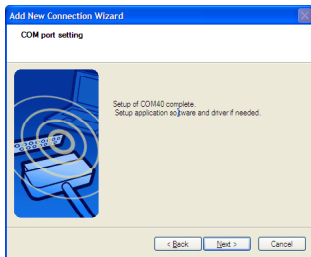
4.0 Set up and Installation

Left click 'Next'

It will now show the final screen containing the list of *Bluetooth*® connections which can now be closed.

Your Wireless Bore Gauge Connection is now Set up!

(See the Wireless Bore Gauge Test Program for getting readings quickly and easily.)



4.2 Wireless Handtool Manager

A Wireless Handtool Manager for Windows PCs (Windows XP onwards) is provided. This enables users to quickly get up and running and provides access to the full range of commands and provides data logging capability.

The Wireless Handtool Manager's .NET library is available on the supplied CD for linking into user applications (requiring at least microsoft .NET framework 3.5), shortcuts are created to the application and manuals on install.

The Handtool can also be controlled directly by a user application using a virtual Com port, The associated RS232 command list manual is available as a shortcut on install.

Note.

Before running the Wireless Handtool Manager, make sure that you have paired your Handtools (using the connection procedure described) and have them switched ON (Steady Blue light at the Gauge end of the Handtool).

5.0 Operating Modes

5.1 Data Transmission

5.1.1 Streaming

In this mode the WBG continually sends data to the controller. The stream rate can be adjusted. If a button is pressed in this mode the measurement being taken at the time the button is pressed is tagged. This tagged data can be captured by the controller.

5.1.2 Single Shot

Tagged data is sent each time the button is pressed

Note the button must be set to the correct state to ensure tagged readings are sent, this is the normal or default mode, but it is possible to set the buttons to other modes – see section 5.4 below on Button allocation.

5.2 Measurement Types

The WBG can be set to measure in different modes, these are;

5.2.1 Absolute

The WBG transmits the absolute value of the measurement.

5.2.2 Zero

The current measurement is forced to zero and all subsequent measurements are taken from this zero. Zero can be applied either from the WBG buttons or from the controlling software. To use the WBG button the button state must be first set up – see section below on Button allocation. Zero can only be cleared from the controller.

5.0 Operating Modes

5.2.3 Preset

The current measurement is forced to a preset value and all subsequent measurements are taken from this preset value. Preset can be applied either from the WBG buttons or from the controller. To use the WBG button the button state must be first set up – see section 5.4 below on Button allocation. Preset can only be cleared from the controller.

5.2.4 Scaling

The measurement from the WBG may be scaled by a multiplication factor. The scaling can only be set or cleared from the controller software

5.2.5 Max (Peak+)

The WBG can be set up so that the most positive measurement is displayed. This can be set up only from the controller. The MAX (PEAK+) can only be reset from the controller.

5.2.6 Min (Peak-)

The WBG can be set up so that the most negative measurement is displayed. This can be set up only from the controller. The MIN (PEAK-) can only be reset from the controller

5.2.7 Diff

The WBG can be set up so that the difference between MAX and MIN is transmitted. This can be set up only from the controller. The DIFF can only be reset from the controller

All of the above modes are either continuous transmission or on a button press.

5.0 Operating Modes

5.3 Limits

Limits can be set to indicate within limit, a warning limit or out of limit. Red/Green limit Led's and Audible Buzzer only active when button is pressed to tag measurement

5.3.1 Upper and Lower Limits

Red out of limit, Green within limit.

5.3.1 Upper and Lower Warning Limits

Flashes Red/Green when enabled. The warning limits can only be enabled by the controller.

5.3.3 Audible Limit

Single beep or 3 slow beeps can be selected for either in or out of 1 limit.

The WBG can be set up so that the limit led's are as below:

	IN LIMIT	OUT OF LIMIT	WARNING If ENABLED
Off	No Indication	No Indication	No Indication
In Limit	Green	No Indication	Red/Green
Out of Limit	No Indication	Red	Red/Green
In and Out of Limit	Green	Red	Red/Green

5.0 Operating Modes

5.4 Button Allocation

Either button can be programmed to operate when pressed to perform the functions below.

5.4.1 Transmit a Tagged Reading

Send the current measurement each time the button is pressed or tag the current measurement if in streaming mode.

5.4.2 Zero

Force the current measurement to Zero.

5.4.3 Preset

Force the current measurement to a Preset value.

5.4.4 Advanced

Allows the WBG measurement mode to be changed using the WBG buttons.

5.0 Operating Modes

5.5 Advanced Mode

In this mode the function of the WBG may be changed using the WBG buttons. This mode should be used carefully.

To change the WBG MEASUREMENT MODE, without using the controller, hold one button down and press the other in succession as below. Note the button allocation must be set to advanced by the controller to allow this.

Button 1	Button 2 – Number of presses	Function
ON	1	Zero
	2	Preset
	3	Normal
	4	Max
	5	Min
	6	Difference
	7	Normal tagged
	8	Max tagged
	9	Min tagged
	10	Difference tagged

5.0 Operating Modes

5.5.1 Wireless Hand Tool Manager Operating Modes

The WBG Manager provides the user with a simple way to set up tools, log data, save their settings and observe the readings as they come in. For further details see the WBG Manager Documentation provided with the WBG on the CD.

5.5.2 Indications

The WBG can provide both visual and audible indications to the operator. Some of these indications can be switched On or Off using the Controller Software. The table below summarizes the indications.

LED	Colour	Indication	Programmable	Function
LED 1 (nearest battery)	Green	In Limits	ON or OFF	Green for 3 seconds when button pushed and measurement in limit
LED 2	Red	Out of Limits	ON or OFF	Red for 3 seconds when button pushed and measurement in limit
LED 3	Red	Battery Status	Not Programmable	OFF - Battery OK Slow Flash - Battery Low Warning Fast Flash - Battery requires charging (measurements disabled)
LED 4	Blue	Power and Bluetooth Status	Not Programmable	OFF - No Power ON - Power ON FLASHING - Bluetooth Connection

6.0 Battery Pack

Caution

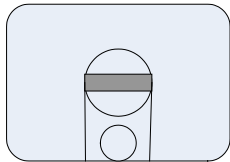
Before changing the battery pack clean the Bore Gauge to avoid contamination of the contacts.

6.1 Removal of battery pack

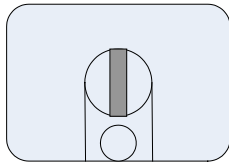
To remove the battery pack for replacement, or charging, remove the plastic cover from the top and turn the locking screw 90 degrees anticlockwise to release the battery pack (release position displayed in the diagram below). Then pull the battery pack from the Bore Gauge.

6.2 Fitting a battery pack

Push the battery pack onto the Bore Gauge body, ensure that the locking screw is orientated as shown in the diagram (release position slot in line with charging connector); turn the locking screw through 90 degrees in a clockwise direction to latch the battery pack (locked position). Replace the plastic cover.



Release Position



Locked position

6.0 Battery Pack

6.3 Charging the Bore Gauge or battery pack

The battery pack may be charged either removed from the Bore Gauge or in situ. Plug the charger unit into the connector at the top of the battery pack.

Remove the cover if necessary.

Switch on the charger, initially an orange indication is shown, which will turn to yellow once the charger begins an initialization process. After a few seconds this will then change back to orange once charging starts.

After the main charge cycle has finished the indicator will be green with intermittent yellow flashes. Do not disconnect the batteries at this point as they are not fully charged. When the indicator is green charging is complete and the charger will be in trickle mode.

Caution

Do not leave battery pack or complete Bore Gauge connected to the charger in trickle mode for greater than 24 hours to avoid damage to the batteries.

Do not leave the charger connected to the battery pack with mains disconnected.

Use of chargers other than those recommended by Solartron may invalidate product warranty and may damage the battery pack and Bore Gauge.

Recommended Charger Types:

Mascot Type 2115 with modified 2.5mm plug

7.0 Troubleshooting FAQ

This section contains Troubleshooting solutions in an FAQ format.

I cannot get my COM port to work properly?

If you have difficulty connecting the *Bluetooth*® Bore Gauge to your application software it may be because the default COM port is being held by Windows. In this case use the custom setup and select a port manually.

Why is the *Bluetooth*® setup procedure on my PC different to that in this manual?

Please check that the bundled *Bluetooth*® drivers on the CD-ROM were installed before connecting the hand tool. If you have completed the setup using default Windows (or other) *Bluetooth*® drivers, please disable & delete the installation before installing the bundled *Bluetooth*® drivers and following the setup procedure in this manual.

Why is the Bore Gauge measuring in the opposite direction to the one expected?

The Wireless Bore Gauge is factory configured to be functionally compatible with industry standard Internal Diameter gauge heads. This means that the probe inside the hand tool will read a decreasing count as it's tip is pushed inwards. If using a gauge head that measures an External Diameter or dimension, the SET DIRECTION command (section 7.3) should be used to change the hand tool's direction of count.

8.0 Declaration of Conformance

Solartron Metrology Ltd. declares that this product complies with the CE safety requirement and EMC requirements. This device has been tested to the following standards:

Electrical Interference and Radiation	
Immunity	EN61000-6-2:2001 Radiated Only
Emissions	EN61000-6-3:2001 Radiated Only The Bore Gauge will radiate in the 2.4GHz band (<i>Bluetooth</i> ®)
<i>Bluetooth</i> ®	The Bore Gauge uses a pre qualified <i>Bluetooth</i> ® module which is not modified in any way and therefore is <i>Bluetooth</i> ® compliant.

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