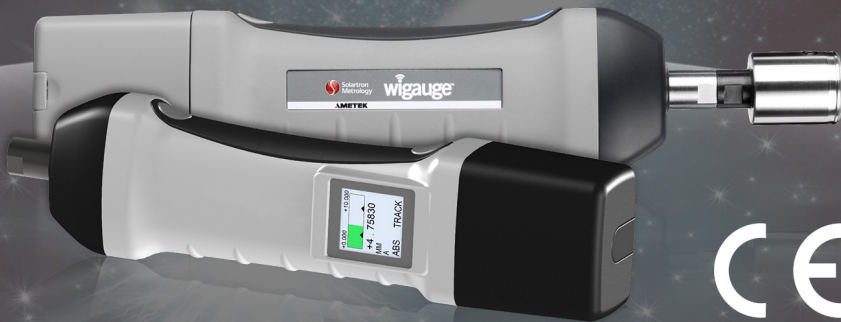




Solartron
Metrology

WIGAUGE™ WHT



user and installation manual

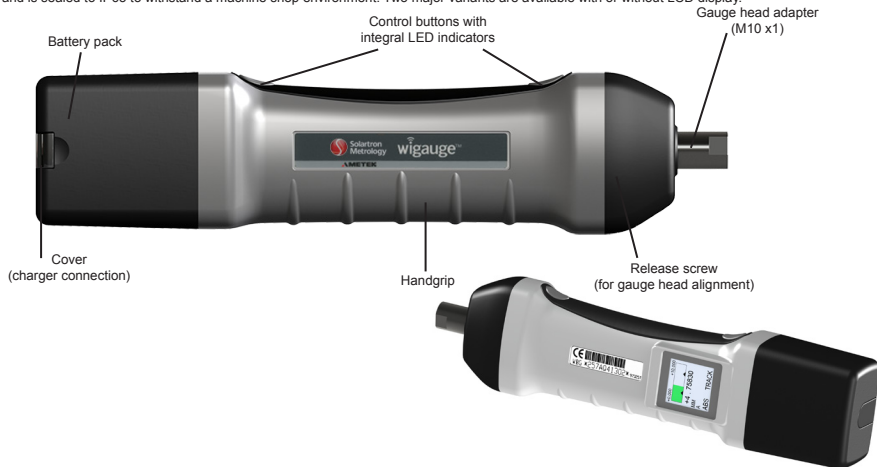
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1.0 Introduction & Safety Information

The Solartron Metrology Wireless Handtool (WHT) is one of a series of Wireless Hand tools 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. Two major variants are available with or without LCD display.



1.0 Introduction & Safety Information

Safety Information:

Equipment refers to all parts of the Wireless hand tool System (including but not limited to, the hand too itself, charges and power supplies.

Terms in this Manual

WARNING statements identify conditions or practices that could result in personal injury or loss of life

CAUTION statements identify conditions or practices that could result in damage to the equipment or other property.

Symbols in this manual



This symbol indicates where applicable cautionary or other information may be found

WARNINGS:

Do not operate any of this equipment in an explosive atmosphere.

Do not place, use or store the equipment where it can fall into or be exposed to liquids

This equipment is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities or lack of experience and knowledge, unless they have been given supervision or instruction concerning the use of the equipment by a person responsible for their safety.

Do not operate where aerosol spray products are being used or where oxygen is being administered

Do not operate if the equipment has been damaged

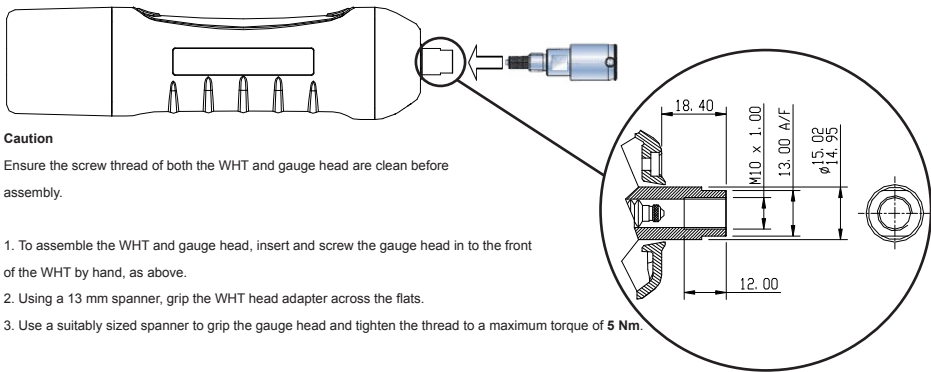
CAUTION: Low Voltage Directive

Most parts of the system including the hand tool operate below the SELV and is therefore outside of the scope of the directive.

Some charger configurations are operated via power packs that connect to the mains supply and suitable precautions must be taken. See separate section on chargers.

2.0 Installing a Gauge Head

The WHT is designed to interface to industry standard gauge heads. The standard Wireless WHT 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 WHT and gauge head are clean before assembly.

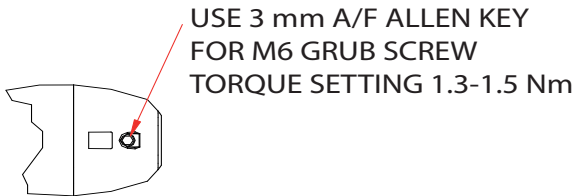
1. To assemble the WHT and gauge head, insert and screw the gauge head in to the front of the WHT by hand, as above.
2. Using a 13 mm spanner, grip the WHT head adapter across the flats.
3. Use a suitably sized spanner to grip the gauge head and tighten the thread to a maximum torque of **5 Nm**.

Caution

It is essential to use a spanner to hold the WHT when tightening the gauge head to avoid damaging the hand tool. Exceeding the maximum torque on the WHT 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 3 mm 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 **1.3-1.5 Nm** 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 WHT.

4.0 Set up and Installation

The WHT uses *Bluetooth*® technology to communicate with a *Bluetooth*® enabled PC running Windows XP, SP3 or later. This requires an initialization process to pair the WHT with the PC. The Bluetooth should be plug and play.

Your WHT should appear in the list of names as WHT_xxxxxxxx (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 WHT is turned on then click 'Refresh'.))

The WHT pairing code/password is 61735

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

Your WHT Connection is now Set up!

Wireless Handtool Manager

A Wireless Handtool Manager for Windows PCs (Windows XP, SP3 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 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 WHT 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 WHT can be set to measure in different modes, these are;

5.2.1 Absolute

The WHT 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 WHT buttons or from the controlling software. To use the WHT 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 WHT buttons or from the controller. To use the WHT 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 WHT 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 WHT 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 WHT 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 WHT 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 WHT 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 WHT measurement mode to be changed using the WHT buttons.

5.4.5 Display

LCD which shows current measurement and limits can be orientated via serial command on WHT manager software.

5.0 Operating Modes

5.5 Advanced Mode

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

To change the WHT 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 WHT 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 WHT Manager Documentation provided with the WHT on the CD.

5.5.2 Indications

The WHT 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

Battery Packs and Charging

The Wigauge system can be supplied with different battery packs and chargers for different applications.

Battery packs

There are two types of battery pack as shown in the table below

Battery Pack	Description	Pack Colour	Capacity
Standard Battery Pack	Used with either a smart charger or trickle charger connected via a jack plug	Mid grey	8 hours continual running
Inductive Charged battery pack	Used with an inductive charger (no connection point for conventional chargers is fitted)	Dark Grey/Black	5 hours continual running

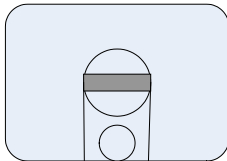
Note: Battery packs are supplied fully charged.

Removal and Replacement of Battery Packs

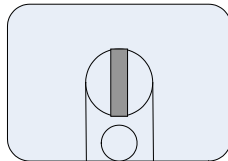
Prior to removal ensure the tool and pack is clean to avoid contamination of internal connectors.

To remove the battery pack for replacement of charging turn the locking screw 90 degrees anticlockwise. Then pull the battery pack from the WHT.

To replace the pack onto the WHT ensure that the locking screw is in the release position (see diagram), replace the pack onto the tool and lock by turning the locking screw 90 degrees clockwise.



Release Position



Locked position

6.0 Battery Pack

Chargers

There are three types of chargers

Charger Type	Battery Pack Type	Charger Description
Standard Smart Charger	Standard Battery Pack	Smart charge with integral led that indicates charge status
Trickle Charger	Standard Battery Pack	Trickle charger (100 mA) continual charge
Inductive Charger/Cradle	Inductive Battery pack	Inductive charger cradle with integrated charging indication

WARNING: Use of the wrong type of charger can cause damage to the equipment, ensure that the correct charging method is used for the application.

CAUTION: Do not charge in ambient temperatures of more than 30 degC. (86 degF.) as this can degrade battery life.

SMART CHARGER

The smart charger operates on three cycles, fast charge (1.5 A approx) until it detect that the batteries are almost at full charge, top up where the batteries are brought to maximum capacity with a pulsed charging current with a lower average current and trickle (30 mA) to sustain charging.

The smart charger is designed to charge battery packs off line. For maximum battery life do not leave the charger connected to the battery pack.

If using the smart charger in an application where it is left connected to the tool/battery for any length of time observe the following.

- Each time the **charger is disconnected from the battery for more than 20 seconds it will reset.** This forces the charger into high charge mode; it takes a minimum of 10 minutes before it switches into top up. **If the charger is continually connected/disconnected this can result in the batteries being exposed to too much fast charge and result in overheating of the batteries.**
- The smart charger also resets after 5 hours if left connected to the tool/battery, this is to prevent the tool flattening the batteries over a period of time as the trickle current is less than the current drawn by the hand tool.

6.0 Battery Pack

TRICKLE CHARGER

The trickle charger provides ac continual charge of 100 mA, this is sufficient to keep batteries charged in applications where the tool is continually being connected/disconnected from the charger and avoid overheating. Continual trickle charging does shorten the battery life.

INDUCTIVE CHARGER

The inductive charger and cradle (used with the inductive battery pack only) charges the batteries when the tool is placed in the cradle. The inductive charger is powered from a power block. One power block can power up to 4 chargers

There are two indication lights: green power connected to cradle, blue charging.

If the tool is not placed correctly into the cradle charging will not take place.

When using the inductive charger ensure the following:

- Only use the chargers for the purpose intended as described in this manual. Do not use with devices that are not approved by Solartron.
- Do not operate if the equipment has been damaged
- Do not use on heated surfaces or in ambient temperatures greater than 30 degC. (86 degF.)
- Do not insert metallic objects inside the cradle of the inductive charger unit.

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*® WHT 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 WHT measuring in the opposite direction to the one expected?

The WHT 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 should be used to change the hand tool's direction of count.

8.0 Declaration of Conformance

Europe

Solartron Metrology Ltd declares that this product complies with the **CE** safety requirements and the electromagnetic compatibility requirements, in compliance with the following directives.

The devices have been designed, assembled and tested in compliance with the standards detailed below

Electrical Interference and Radiation	
Immunity	EN61000-6-: 2005 and EN61326-1:2006
Emissions	EN61000-6-3:2007 and EN61326-1:2006. The WHT will radiate in the 2.4 GHz band as this is the <i>Bluetooth®</i> transmission frequency
<i>Bluetooth®</i> Class 1	The WHT uses a pre qualified <i>Bluetooth®</i> module which is not modified in any way and therefore is <i>Bluetooth®</i> compliant.
Safety	EN 60950-1:2006. The WHT operates at voltages below 20 V and therefore does not provide any electrical hazard to the user.

USA

This device complies with Part 15 of the FCC Rules. This device shall not cause harmful interference or be impacted by received emissions that may cause undesirable operation.

Caution: changes or modifications not approved by the party for compliance could void the user's authority to operate the equipment.

CANADA

This device shall not cause harmful interference or be impacted by received emissions that may cause undesirable operation.

Caution: changes or modifications not approved by the party for compliance could void the user's authority to operate the equipment.

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