

Coil & Transformer Testing

H.Tinsley & Co.

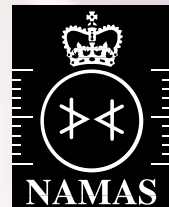
275 King Henry's Drive

New Addington

Croydon CR0 0AE

Tel 01689 800799

Fax 01689 800405



Tinsley
Precision Instruments

H Tinsley and Co offers a comprehensive range of instruments dedicated to the testing of coils and transformers of all types and sizes. From small RF inductors to the largest power distribution transformers, Tinsley offers a range of precision instruments to suit your particular test and measurement requirements.

Foremost in the range is the Tinsley Turns tester type 9600, which is recognised throughout the world as the most accurate electronic turns counter currently available.



Coil Turns Tester Type 9600

The Tinsley Turns Tester Type 9600 has been designed to check the number of turns on a winding immediately after it has been wound.

Quick and easy to operate, the Type 9600 provides an instant readout of turns, and performance is not affected by a normal workshop environment. In operation calibration is made against a standard coil. The coil under test is placed on the appropriate platform and the ends of the coil are connected to a pair of terminals. The number of turns on the test coil is indicated on the digital readout immediately after making the connection.

The Type 9600 Turns Tester, which has no moving parts, may be used in conjunction with any of the plug-in platforms described in this leaflet.

Specification 9600	
Instrument Size	340 x 255 x 115 mm
Instrument Weight	3.5 kg

The 9600-307 Control Software

The 9600-307 Control Software package has been developed to enable the 9600 Turns Tester System to be controlled via an IBM™ or fully compatible PC.

The software also allows re-calibration of the system from data which has been stored in a settings database on a PC. Measurement results are stored in a database which can easily be exported into most spreadsheet programs and subsequently used for projects such as quality analysis, test report writing and similar applications.

System requirement: 486 or above IBM™ or compatible PC with Windows™ 3.1 or above operating system.

Platform Types 9601 and 9602

The platform Types 9601 and 9602 cover the most commonly found sizes of wound bobbins or self supporting coils. Simple to use, the bobbin is placed over the probe and the termination leads, connected to the platform. The number of turns on the bobbin is then instantly displayed on the 9600 readout unit.

Specification 9601	
Probe Diameter	10mm
Accuracy using standard coil supplied	0.5% ± 1 digit
Accuracy using identical sample	0.2% ± 1 digit
<i>Will accommodate coils up to a maximum 140 mm high or 89 mm outside diameter</i>	
Instrument Size	205 x 305 x 270 mm
Instrument Weight	1.2 kg

Specifications 9602	
Probe Diameter	6 mm
Accuracy using standard coil supplied	0.5% ± 1 digit
Accuracy using identical sample	0.2% ± 1 digit
<i>Will accommodate coils up to a maximum 64 mm high or 50 mm outside diameter</i>	
Instrument Size	205 x 305 x 220 mm
Instrument Weight	1.1kg



Platform Types 9603

The platform Type 9603 is most suited to the smaller sizes of bobbins and coils and is available with a choice of probe size. The standard 'flat' probe has a cross-section of 1.5 x 6.0mm. The alternative 'square' probe has a cross-section of 2.5 x 2.5mm. In operation the probe must be lifted to allow the test sample to be placed in the measuring position. The coil lead-outs are connected to the platform and the number of turns is read from the 9600 readout unit.

Specification 9603	
<i>Designed for small coils</i>	
<i>Supplied with a removable vertical probe</i>	
Probe Size	1.5x6 mm
Maximum Coil Size	32 x 25 mm outside diameter
<i>Can be supplied with a probe 2.5 x 2.5 mm for coils with a smaller inside diameter</i>	
Accuracy using standard coil supplied	0.5% ± 1 digit
Accuracy using identical sample	0.2% ± 1 digit
Instrument size	205 x 305 x 220 mm
Instrument weight	1.2k



Platform Types 9604 & 9605

The platform Types 9604 and 9605 are designed for the measurement of larger wound bobbins and self supporting coils. In operation the probe must be lifted to allow the test sample to be positioned in the measurement area. After making electrical connection to the coil-leadouts the number of turns can then be read from the 9600 readout unit.

Specification 9604

Probe size	12.5 x 12.5
Maximum Coil Size	102 x 102 x 102 mm
Instrument Size	232 x 148 x 430 mm
Instrument Weight	3.4 kg
Accuracy using standard coil supplied	0.5% ± 1 digit
Accuracy using identical sample	0.2% ± 1 digit

Specification 9605

Diameter	28 mm
Maximum Coil Size	200 x 200 x 200 mm
Instrument Size	250 x 270 x 730 mm
Instrument Weight	9.2 kg
Accuracy using standard coil supplied	0.5% ± 1 digit
Accuracy using identical sample	0.2% ± 1 digit



Platform Types 9606 & 9607

The platforms Types 9606 and 9607 are specially designed to measure toroidal wound coils. The 9606 is suitable for small cores and the Type 9607 is suitable for the larger varieties.

In operation the probe is pulled forward and the core is placed over it. After returning it to the upright position, the level is set to suit the permeability of the cores being measured. This is done by adjusting a front panel potentiometer. Electrical connection is made between the platform and the coil lead-outs and the number of turns is read from the 9600 readout unit.

Specification 9606

Maximum Coil Size	39mm O.D. & 3mm I.D.
Instrument Size	205 x 305 x 220 mm
Instrument Weight	1.1 kg

Specification 9607

Maximum Coil Size	125mm O.D. & 9mm I.D.
Instrument Size	205 x 305 x 240 mm
Instrument Weight	1.8 kg
Accuracy	0.5% ± 1 digit



Transformer Ratiometer Type 4167C

The Transformer Ratiometer Type 4167C measures the transformation ratio of the transformer when the primary or high voltage winding is energised at a.c. line voltage. The ratio is displayed on six decade dials.

The unwanted quadrature voltage is nulled automatically so that the measurement procedure simply consists of rotating the decade dials until the panel meter indicates zero.

Specification 4167C	
Ratio Range	1:1 to 1111.1:1
Accuracy	Range up to 300:1 0.1% Range up to 300:1 0.2%
Discrimination	Better than 0.1%
Quadrature Null	Automatic
Protection	Primary 100mA Fuse Secondary 100mA Fuse
Power Supply	240 Volts 50Hz 117 Volts 60Hz
Dimensions	500 x 350 x 115 mm
Nett Weight	7.9kg



Transformer Ratiometer Type 4167D

The Transformer Ratiometer Type 4167D measures the transformation ratio of large transformers and also gives an indication of the small phase difference between the primary and secondary windings. The ratio and phase difference or ratio and energising voltage are displayed on two digital LED displays.

In normal use the High Voltage winding of the transformer is energised by the user at a.c. line voltage and connected to the Ratiometer HV terminals. The Low Voltage winding is connected to the LV terminals of the Ratiometer.

The displays of ratio and phase are then entirely automatic with no switching or other operation required by the user.

Specification 4167D	
Ratio Range	1:1 to 1000.1:1
Accuracy	0.1% ± digit up to 300:1 0.25% ± digit up to 600:1 0.5% ± digit up to 1000:1
Resolution	The ratio displayed in one of 3 ranges 1.000 to 9.999, 10.00 to 99.99 and 100.0 to 999.9
Phase difference	± with a resolution of 0.001 (approx 0.05°)
Displays	LED digits (large segments type) Ratio 1.000 to 9998 (9999 = overrange) Phase ± 0.000 to 198 (199 = overrange) HV voltage 90 260 volts
Measurement Voltage	HV input 90 to 260 volts (40 to 70 Hz) LV input 0.01 to 260 volts
Input Protection	Front panel fuses and internal surge absorbers
Interface	IEEE 488.2/488.1 RS232 300 to 9600 baud RS422 or RS485 300 to 9600 baud
Power Supply	AC mains 50 - 60 Hz Universal input of 90 - 260 volts AC
VA Rating	Approximately 20VA
Dimensions	470 x 150 x 280 mm
Nett Weight	Approximately 8 kg

Transformer Core Tester & Platform 5846

The Type 5846 Transformer Core Tester is used to check that a transformer core will perform to specification.

Characteristics of a batch of cores may be rapidly checked by displaying the RMS magnetising force for any chosen flux density and the volts per turn and magnetising current at that point. E & I Stacks, C Cores and Toroids can be measured.

Permeability can be determined by dividing B by H.

Specification 5846	
Digital Display	Magnetising Force : amps per metre or Oersteds. Flux Density ; Telsa or Kilogauss. RMS Magnetising Current : Ampere. Turns : Volts per turn.
Ranges	Magnetising Force ; 0 - 1000 A/M or 0 - 12.5 Oersteds in three ranges. Path Lengths ; 50 to 1000 mm Flux Density ; 0 - 2 Telsa, or 0 - 20 Kilogauss. Area; 0.5 to 100 sq.cm.
Accuracy	Accuracy just before saturation is 5% Absolute accuracy depends on the material being tested.
Repeatability	2%
Oscilloscope Display	An Oscilloscope may be used to display an uncalibrated hysteresis loop to give an indication of the working point on the BH curve.
Core Tester	Size ; 500 x 385 x 210 mm Weight ; 20 kg
Platform	Size : 360 x 195 x 190 mm

Shorted Turns Tester Type 5863

The Type 5863 Shorted Turns Tester has been designed to meet the ever increasing demand for accuracy and reliability in component manufacture. The instrument is easy to use and will detect the presence of one or more shorted turns in a wound coil which can be of any shape, number of turns or windings.

The coil is simply placed over one of the rods mounted on the instrument and the meter reading will give a clear and immediate indication of shorted turns if they are present.

The test coil cannot be damaged as no voltage is applied to the winding. This instrument can be supplied with either 3mm or 6mm probes.

Specification 5863	
Instrument Size	220 x 275 x 260 mm
Instrument Weight	2.3 kg

