

# Type 4167P Transformer Ratiometer

Precision Instruments



**H. Tinsley & Company**



Model 4167P

The Tinsley Transformer Ratiometer Type 4167P measures the transformation ratio of large transformers and also gives an indication of any small phase difference between the high voltage and low voltage windings (e.g. primary and secondary). The ratio and phase difference or ratio and energising voltage are displayed on two large digital LCD displays with optional back light for use in poor light conditions. In use the High Voltage winding of the transformer under test is connected to the "H.V. Winding" terminals of the instrument and is energised by the internal power oscillator at a nominal 60 Volts AC/50Hz. The low voltage winding (Step down) is connected to the "L.V. Winding" terminals. The display of ratio and phase is then entirely automatic.

#### Measurement technique

The measurement technique is to measure the H.V. and L.V. voltages during several parts of the cycle to obtain inphase and quadrature values from which the ratio and phase difference are calculated. The input circuits are isolated by transformers, therefore the instrument should not be damaged by the very high voltages possible if the connections from the transformer being measured are accidentally reversed. The measurement circuits are further protected by front panel fuses with internal surge absorbers.

#### Power requirement

The 4167P is fitted with rechargeable batteries and has an internal charger. The instrument can be used connected to a mains power supply or will operate from the internal batteries for a period of up to 8 hours from a full charge.

#### Specification

Ratio range	1:1 to 300:1
Accuracy	1:1 to 9.99:1 = 0.1% 10:1 to 99.99:1 = 0.1% 100:1 to 149.9:1 = 0.2% 150:1 to 300:1 = 0.5%
Resolution	The ratio is displayed in one of 4 ranges 1:1 to 9.99:1 = 0.001 10:1 to 99.99:1 = 0.01 100:1 to 300:1 = 0.1%
Phase difference	± with a resolution of 0.01 (approx. 0.5°)
Displays	LCD with optional back light Ratio 1.000 to 9998 (9999=overrange) Phase ± 0.000 to 198 (199=overrange)
Measurement voltage	Nominally 60V at power frequency dependent on load
Input protection	Front panel fuses and internal surge absorbers
Power supply	AC mains 50 – 60 Hz Universal input of 90 – 260 Volts AC
VA rating	Approximately 20VA
Dimensions	470 x 150 x 280mm
Nett Weight	Approximately 8kg

