

**MODEL 633 PHASOR METER****APPLICATION**

This instrument is designed to demonstrate the properties of phasors and real/imaginary number notation for electrical engineering students.

With this Phasor Meter voltages are applied to complex circuits, then both voltages and currents can be monitored in the circuits. The Model 633 gives the phase displacement and magnitude of the parameters under investigation. Fig. 1 shows how this is achieved.

Hence with this simple instrument a student can rapidly check that the phasors derived from testing an actual circuit agree with theory.

The Model 633 is complementary to our Model 632A Watt and Phase Angle Meter.

Note that the Model 633 has filters to eliminate harmonic distortion affecting phase angle measurements.

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## OPERATING FEATURES:

1. The phase angle display gives a reading 0 - 180.0° with LAG/LEAD LED indicators.
2. The V/I display gives the magnitude in true R.M.S. of either the voltage or current in the circuit. A scale factor is used according to which range is in use.
3. A READOUT SELECTOR switch is used to select which vectors are displayed; reference to Fig.1 will show how this is done.
4. Two 4mm terminals on the rear of the Model 633 are for connecting the reference input VA. VA is normally the mains supply (e.g. 240V, 50Hz), but these 2 separate terminals allow other voltages and frequencies to be used. As the frequency decreases from 50Hz remember that the P.T. and C.T. in the instrument and wound components in the test circuit can saturate. The instrument P.T. and C.T. will saturate at 600V and 150AT at 50Hz. The C.T. is wound for 100AT at specified rating.
5. A common problem with phase angle meters is that input signals must be maintained between upper and lower limits for satisfactory operation. There are individual VA, VB and IB LEDs to indicate overloading of inputs, marked "I/P HI". In addition there is an LED marked "I/P LO" which is activated if the input selected by the switch for display is too low. These LEDs flash at about 0.5Hz when active to attract the attention of the operator.

## SPECIFICATIONS

1. Mains supply 210V - 270V, 50Hz, 10VA via mains cord and plug.
2. Input ranges: VA: Is normally mains supply, otherwise 500V.  
VB: 50V and 500V.

IB: 1A and 10A.

A decade scale factor is used for V/I display as appropriate.

3. Phase angle accuracy: With inputs between 10% and 100% of range accuracy is 0.5° at 50Hz, 1deg at 30Hz - 60Hz. As the input falls below 10% the accuracy degrades to typically 2° error at 2%.

4. Voltage/current readout accuracy: This meter uses the industry standard AD536 true R.M.S. converter. Error is +0.3% F.S. at 50Hz with up to 20% distortion.

5. Frequency range: To preserve good phase angle accuracy in the presence of harmonic distortion, low pass filters are fitted. This limits the range of input nominally from 30Hz to 60Hz. Error due to harmonic distortion:

0.1° for 30% 2nd. Harmonic.

0.3° for 30% 3rd. harmonic.

6. Overloads:

VA Max. continuous voltage: 500  
VB Max. continuous voltage: 600V  
(500V range).

VB Max. continuous voltage: 100V  
(50V range).

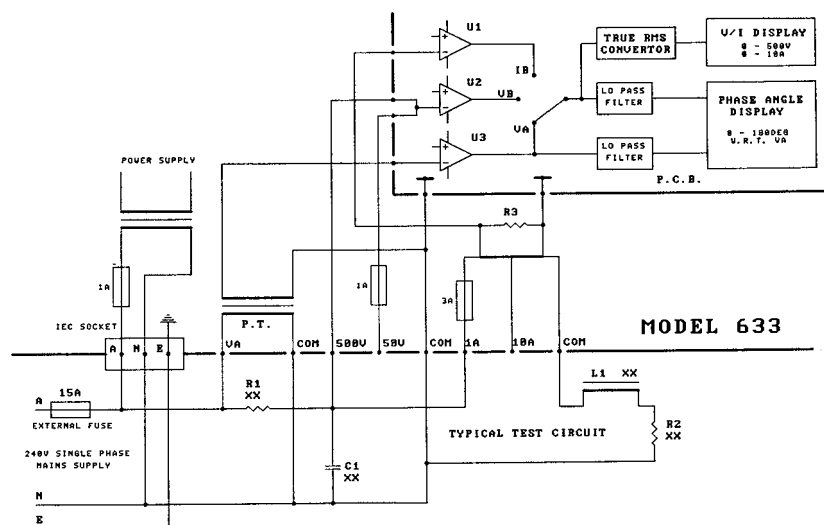
IB Max. continuous current: 15A  
(10A range, 100A for 2 sec).

IB Max. continuous current: 3A  
(1A range, 10A for 2 sec.)

7. Temperature range: 0° C to 40° C.

8. Dimensions and Weight:

210(w) x 140(h) x 16(d)mm.  
4 kg.



Every care has been taken to ensure that the above data is correct at the time of printing. Always refer to the latest data sheet when purchasing. RED PHASE INSTRUMENTS reserves the right to alter specifications without notice.