

Phase Meter 10 Hz to 2 MHz

MODEL 350



This general purpose phase meter makes accurate phase measurements from 10 Hz – 2 MHz with 1 mv sensitivity, and provides high input impedance and wide measurement capability.

USES

- Measures electromechanical devices.
- Subaudio, audio, and high frequency electronic circuits for phase of feedback.
- Sonic testing such as sonar and sonic materials testing.

FEATURES

- For accurate measurement: full resolution of 0.1° is available around any phase angle by use of offset switch.
- For versatility in small signal measurement: measure down to 1 millivolt without preamplifiers.
- Save measurement time with automatic value readout of phase.
- 180° switch for greater accuracy in measuring around 180°.

SPECIFICATIONS:

FREQUENCY COVERAGE: 10 Hz to 2 MHz with usable performance both above and below these frequencies.

INPUT LEVELS: 1 mV to 2 volts rms and 200 mV to 400 volts rms, selectable. DC blocking provided up to 400 volts.

INPUT IMPEDANCE: 1 M ohm shunted by 26 pF or 10 M ohm shunted by 8 pF when used with Tektronix oscilloscope probes (Model P6006).

PHASE DETECTOR ACCURACY: Accuracy = $0.05 + (\phi/180 \times 0.25)$ degrees where ϕ is the measured phase angle between 0 and 180°. Note: This accuracy applies after standardization with input levels of 30 mV rms on the low or 6 V rms on the high input range. Frequency and signal level effects are shown on pages 22 and 23, also the effect of waveform distortion.

METER READOUT ACCURACY: Six ranges: $\pm 5^\circ$, $\pm 10^\circ$, $\pm 18^\circ$, $\pm 50^\circ$, $\pm 100^\circ$, $\pm 180^\circ$. Accuracy = $\pm 2\%$ full scale. The offset circuit permits all measurements to be made on the $\pm 5^\circ$ or $\pm 10^\circ$ range. Thus the meter accuracy error need not exceed $\pm 0.2^\circ$ at any phase angle.

METER OFFSET: 0 to $\pm 170^\circ$ in 10° increments. Accuracy = $\pm 0.5\%$ of the offset.

ACCURACY OF 0 – 180° SWITCH: Accuracy = $\pm (0.1 + 0.3F)^\circ$ where F is the test frequency in MHz. Note that waveform distortion can cause an apparent discrepancy in this figure.

ZERO CONTROL: Permits setting an absolute zero to take into account at a fixed frequency little differences in the length of input test leads. Without adjusting the zero control the instrument "zero" will maintain within $\pm 0.5^\circ$ from 100 Hz to 100 kHz.

RANGE OF PHASE MEASUREMENT: $360^\circ - (40F)^\circ$ where F is the test frequency in MHz, e.g., when on the $\pm 180^\circ$ range at 100 kHz the phase measurement range is $\pm 178^\circ$. To measure angles around 180° one would operate the 0 – 180 switch.

ANALOG OF PHASE OUTPUT: Front panel connector provides an output proportional to phase angle with a sensitivity of 10 mV per degree. This is very useful for swept frequency phase measurements with an X-Y recorder, digital voltmeter, etc. The accuracy is that of the phase detector.

RESPONSE TIME OF PHASE OUTPUT:

Low Frequency Limit	1 kHz	100 Hz	30 Hz	10 Hz
Switch position.				
Response time approx. for 180° change to 0.1° of final value.	40 ms	3 sec.	10 sec.	30 sec.

Note: Other WILTRON Phasemeters use active filters and thus have faster response.

POWER REQUIRED: 115/230 volts a.c. $\pm 10\%$. 50 – 400 Hz 30 watts.

ORDERING INFORMATION: Model 350 – shipping weight 30 lbs. Dimensions 5-1/4" high by 17-1/2" wide by 14-1/2" deep. Supplied with tilt stand for bench mounting. Rack mount kit available at no charge if specified with order.

Price: Model 350 \$885.
 Option 1. Rear input connectors in parallel with front connectors (input capacity approx. 80 pf) \$25.
 Option 2. Rear output connector in parallel with front output of analog voltage proportional to phase \$10.