

SECTION 1

GENERAL DESCRIPTION

1.1 INTRODUCTION

The Krohn-Hite Model 6500 Phasemeter measures the phase angle between two waveforms of coincident frequency, over a range of 3 Hz to 5 MHz, and provides a typical accuracy of 0.02° , with 0.01° resolution. A 5 digit planar gas discharge display provides direct readout of the phase angle from 000.00° to 360.00° . The 6500 accepts input voltages from 0.01 volts RMS to 120 volts RMS. The fluctuations or inconsistencies normally encountered in phase angle readings near zero and 360° (sometimes referred to as ambiguity) are eliminated by a unique network in the 6500 that permits readings as small as 0.01° to be observed, without the need of changing ranges or 180° shifting. In addition, the circuitry of the 6500 significantly reduces the effects of distortion and noise on phase accuracy. An analog output on the rear panel provides a DC voltage equal to -10 mv/degree phase, for use with an external meter or recorder. An optional BCD output is also available. A read/hold switch also provides continuous display of the phase angle reading, or holding of the reading for an indefinite period.

An optional rack-mounting kit (Part No. RK-319) is available from Krohn-Hite, for installing the Model 6500 in a standard 19" rack-spacing.

The phasemeter is carefully inspected, aged, and adjusted before shipment, and should be ready for operation when it is unpacked. If it appears to have been damaged in shipment, make a claim with the carrier, and notify Krohn-Hite immediately.

1.2 SPECIFICATIONS

Frequency Range

3 Hz to 5 MHz

Accuracy

(For typical performance, refer to Figure 4)

Square Wave: $\pm 0.05^\circ$ from 10Hz to 5kHz; $\pm 0.1^\circ$ to 20kHz, rising to $\pm 0.7^\circ$ at 100kHz; for any amplitude within the selected voltage range. Above 100kHz, $\pm 0.7^\circ$ per 100kHz, with equal amplitude and the same voltage range on each input.

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Model 6500 Phasemeter

Input Signal Amplitude

0.01 volts RMS to 120 volts RMS in three ranges: 0.1-1.2, 1-12 and 10-120. For higher input voltages, the use of matched attenuator probes, such as Tektronix types P6006, P6007, P6013A, P6049A, or P6060 is recommended.

(For input levels between 0.01 volts and 0.1 volts RMS, the 0.1-1.2 volt range is used; refer to Figure 4 for typical performance).

Input Waveforms

Sine, triangle, square and positive pulse waveforms.

(The phasemeter is triggered on the negative-going transition of the input waveform in both sine and square wave positions of the WAVEFORM switch.)

Input Impedance

1 Megohm in parallel with 50 pf.

Maximum DC Component

± 200 volts (for higher voltages, the use of matched, attenuator probes, such as Tektronix types P6006, P6007, P6013A, P6049A, or P6060 is recommended).

Response

Time constant: Less than 500 msec.

Settling Time: To within specified accuracy, within one to eight seconds, dependent upon input signal amplitude.

Display

0.55 inch, 7-segment, planar gas discharge

Display Range

Continuous, 000.00° to 360.00°

Resolution

0.01°

Repeatability

Better than ± 1 digit

Drift

None

VS TIME (30 days without CAL reset):

Sine Wave: $\pm 0.025^\circ$ from 20 Hz to 100 kHz; $\pm 0.1^\circ$ at 10 Hz; $\pm 0.35^\circ$ per 100 kHz above 100 kHz.

Square Wave: $\pm 0.025^\circ$ from 10 Hz to 5 kHz; $\pm 0.05^\circ$ to 100 kHz; $\pm 0.35^\circ$ per 100 kHz above 100 kHz.

Analog Output: ± 0.1 mv ($\pm 0.01^\circ$)

VS TEMPERATURE (without CAL reset):

$\pm 0.01^\circ/\text{C}$, 10 Hz to 100 kHz; $\pm 0.05^\circ/\text{C}$ to 1 MHz; $\pm 0.05^\circ/\text{C}$ per MHz about 1 MHz.

Ambient Temperature Range

0°C to 45°C

Analog Output

(For use with an external meter or recorder): 0 to -3.6 volts DC, -10 mv DC/degree phase, impedance 250 ohms.

BCD Output (Optional)

Provides 18 lines of phase angle equivalent BCD output, plus polarity, data ready, read/hold and read rate control lines. Compatible with DTL, TTL logic.

Programming connector AMP type 200277-2 rear panel mounted; mating connector (AMP type 200276-2), is provided.

Panel Controls and Adjustments

Front Panel: 3 decade push-button RMS VOLTS RANGE control (each channel), plus push-button READ/HOLD, WAVEFORM, POWER, 0° CAL and 360° CAL.

Rear Panel: 115/230V LINE, CHASSIS/FLOATING.

Terminals

Front Panel: BNC for A input, B input.

Rear Panel: BNC for A input, B input, analog output, AMP type 200277-2 for BCD output (optional).

Power Requirements

105-125 volts, or 210-250 volts, single phase, 50-60 Hz, 40 watts.

Dimensions and Weights

Model 6500: 16-1/2" wide, 3-1/2" high, 16" deep, 15 lbs/6.8 Kgs net, 18 lbs/8 Kgs shipping.

Optional Rack Mounting Kit

Part No. RK-319, permits installation of the 6500 into a standard 19" rack spacing.

