

# MODEL 608

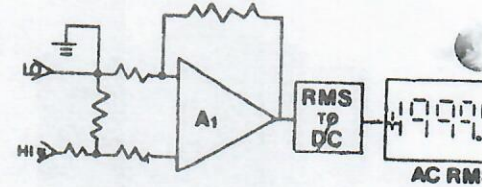
# HI-REL 4 1/2 DIGIT RMS $\mu$ P COMPATIBLE DPM



## FEATURES

- DC to 50 KHz Frequency Response
- DC Coupled or AC Coupled
- Mux or Parallel "3T" BCD
- Run, Hold, Strobe, Busy and Blank Signals
- Flashing Display for Overrange
- 150 Hour Burn-in Plus 3-100% Tests
- MTBF of 50,000 Hours (calculated)
- Field Failure Rate Below 0.3%
- 0-2 Vdc @ 1mA conditioned Output

## BLOCK DIAGRAM



## DESCRIPTION

Accurate measurements of AC Signals are possible by utilizing a computing technique to arrive at the actual RMS Value of the AC Signal; consequently, its accuracy does not depend on input waveforms. Sine waves, triangle, square, pulsed, gaussian and even SCR chopped sine waves with high crest factors are measured with high accuracy over a wide frequency range.

The signal is DC coupled; however, by adding an external capacitor in series with the "Hi" Input, it can measure AC Signals riding on a constant DC Voltage, as in measuring ripple of DC Power Supplies. Frequency response from 45Hz to 50KHz is internally possible.

**Caution:** Low side of AC Line is connected to Digital Common Internally. When internal power supply is used, it will provide isolation from AC Main to 1200Vac. Otherwise the AC Signal must be common to the Meter's Common or the Meter's Power Supply (if external must be floating.)

## TERMINAL DESCRIPTION

**Bottom Row:** 6A Signal Hi; 2A Signal Low; 7A DC Signal Out, connect to 1A (DC Signal Input). This pin is the DC Conditioned Output from the RMS-DC Converter and can supply up to 1mA to drive external instruments such as recorders. This external connection also permits the 608 to be used for AC or DC Measurement with an external switch, but the DC Signal Input at Pin 1A must be referenced to Pin 2A and of 5Vdc maximum amplitude.

4A External Reference (optional) for Ratiometric, 0.1 to 2V Range; 8A Lamp Test; 9A Display Blank, connect to 18B to enable; 11A Strobe, five negative pulses at EOC, one for each D.S. 5 $\mu$ S wide; 12A Busy, High during Conversion, Low during Auto Zero 10mS Wide; 16A D.P. connect to appropriate D.S. to light desired D.P.

**Top Row:** 1B + 5Vdc Input; 2B Reading Hold, Open for normal operation, connect to 18B to hold, a positive pulse over 300mS will command the 608 to make one single conversion; 3B Sign, Low for Negative Reading, High for Positive Reading; 4B Underrange, normally Low goes high when reading is less than 9% of F.S. (1800 counts); 5B Overrange, normally low, goes high when reading exceeds 19999 counts (F.S.); 6-9 B 1, 2, 4, 8 BCD Output Positive Logic 1 LPTTL load max. (400 $\mu$ A Sink); 10-14B Digit selects, DS1 is LSD, DS5 is MSD 1LPTTL Load max. (400 $\mu$ A Sink); 17 and 18B Digital Ground.

## SPECIFICATIONS @25°C

### Input

- Zero ..... Automatic
- Overvoltage ..... 1200V Non-Damaging
- Sample Rate ..... 3/Sec.
- Noise Rejection ..... 60dB (@ 50/60Hz) Typical
- CMRR ..... 90dB Typical
- CMV ..... 1200V RMS (AC Power)
- Power ..... 5Vdc  $\pm$ 5% @ 300mA
- Temp. Coefficient .....  $\pm$ 50 PPM/ $^{\circ}$ C
- Warm-up ..... 1 Minute
- Tristate BCD ..... 5TTL Loads, 10LPTTL

### Outputs

- Display ..... LED, Bright Red, .5" (13mm) High
- Decimal Point ..... Externally Selectable
- Overload ..... Display Flashes
- BCD Data & Control ..... One TTL Load (Inputs & Outputs)

### Temperature

- Operating ..... 0 $^{\circ}$ C to +60 $^{\circ}$ C
- Storage ..... -20 $^{\circ}$ C to +80 $^{\circ}$ C

## Specifications vs. Input Type

Wave Form	Accuracy
Sinewave	$\pm$ 0.2%
Square (Symmetrical)	$\pm$ 0.5%
Triangular	$\pm$ 0.4%
Gaussian Noise	$\pm$ 0.5%
Pulsed (10% Duty Cycle)	$\pm$ 0.9%
Scr'd (90 $^{\circ}$ Firing)	$\pm$ 0.9%

## Specifications vs. Input Range (Sine wave) $\pm$ 1 Digit

Range	2V	20V	200V	1000V
Accuracy	$\pm$ .2%	$\pm$ .2%	$\pm$ .2%	$\pm$ .3%
Common Mode Rejection	90dB	80dB	60dB	40dB
Crest Factor (100% FS)	7	7	7	7
Frequency Response	DC to 50 KHz for all			
Input Bias	50nA	0	0	0
Input Impedance	100M	10M	10M	10M

## ORDERING INFORMATION

MODEL 608 X X X

Range (F.S.)	Z Input	Options
0 ... 2V	100M	0 ... 5Vdc Power Req'd
1 ... 20V	10M	1 ... 115/230AC Power
2 ... 200V	10M	2 ... "3T" BCD & 5V DC
3 ... 1000V	10M	3 ... "3T" BCD & Open Frame
4 ... 200 $\mu$ A	1K	4 ... "3T" BCD & Power Pack
5 ... 2mA	100	
6 ... 20mA	10	
7 ... 200mA	1	0 ... Standard

## AC COUPLING

Input Range	Rc	Cc
2V	100K	0.33 $\mu$ F
20V	None	0.33 $\mu$ F
200V	None	0.33 $\mu$ F
1000V	None	3300PF

