

2.1 Features

- * IEEE488 or RS232 (150-9600 baud) remote control
- * Parallel (Centronics) and RS232 printer output
- * Chart Recorder output
- * Non-volatile calibration and setup data
- * 16 Key keyboard
- * 4.5 digit led display
- * 16 led indicators
- * Scaling

2.2 Functions

W	True Power
VA	Apparent Power
PF	Power Factor
VRMS	RMS Voltage
ARMS	RMS Current
VCF	Voltage Crest Factor
ACF	Current Crest Factor
AINST	Peak Inrush Current
FREQ	Frequency
HARM	Harmonic Analysis
THD	Total Harmonic Distortion
VAR	Reactive Power

2.3 Display

The display has a total of sixteen function lamps (two red, four yellow and ten green) "o" located above most of the sixteen keys and a four and a half digit led display. When lit, the "k" and "M" lamps (yellow) indicate that the value displayed is 1000 or 1,000,000 times larger than the value of the function being measured.

2.4 RMS Voltage (Vrms)

Range	2V to 1000V pk (autoranging in 7 ranges: 15V, 31V, 62V, 125V, 250V, 500V and 1000V pk)
Display	4½ digits
Frequency Range	DC and 5Hz to 50kHz
Crest Factor	Up to 19.9 (limit 1000V pk)
Accuracy 23 ± 5°C Sinewave	±0.1% of reading ±0.1% of range ±0.05%/kHz ± 1 digit
Input Impedance	2MΩ and 10pF on all ranges
Peak Input Voltage	Continuous 1000V across input terminals < 1 second 2500V across input terminals

2.9 Power Factor (PF)

Range	+1.000 to -1.000
Display Resolution	4½ digits
Accuracy 23 ± 5°C Sinewave	± 0.001 ± (0.002 ÷ PF)/kHz
Polarity	+ indicates leading PF - indicates lagging PF

2.10 Voltage Crest Factor (Vcf)

Range	1.00 to 19.99
Display	3 digits
Accuracy 23 ± 5°C Sinewave	± 0.1% ± 1 digit

2.11 Current Crest Factor (Acf)

Range	1.00 to 19.99
Display	3 digits
Accuracy 23 ± 5°C Sinewave	± 0.1% ± 1 digit

2.12 Instantaneous Peak Current (Ainst)

Range	0.05A to 175A Pk on specified starting range or autoranging in 7 ranges comprising 0.24A, 0.72A, 2.15A, 6.5A, 19.5A, 58A, 175A.
Display resolution	4½ digits with polarity
Accuracy 23 ± 5°C Sinewave	± 2.0% of range ± 1 digit
Sampling Interval	25us

2.13 AC Signal Frequency (FREQ)

Range	5Hz to 20kHz on selected channel
Display	4½ digits
Accuracy 23 ± 5°C Sinewave	± 0.2% of reading

2.14 Harmonic Analysis (HARM)

RMS Current	20mA to 20A rms (175A _{pk}) in 7 ranges: 0.24A, 0.72A, 2.15A, 6.5A, 19.5A, 58A and 175A pk
RMS Voltage	2 to 660V rms (1000V _{pk}) in 7 ranges: 15V, 31V, 62V, 125V, 250V, 500V and 1000V pk
Frequency Range	DC, 5Hz to 50kHz
Display	4½ digits
Accuracy 23 ± 5°C	Fundamental: ± 0.1% of reading ± 0.1% of range ± 0.05%/kHz ± 1 digit Harmonics: ± (0.1 + 0.05/kHz)% of fundamental ± 1 digit

2.5 RMS Current (Arms)

Range	20mA to 20A rms (175A pk) (autoranging) in 7 ranges: 0.24A, 0.72A, 2.15A, 6.5A, 19.5A, 58A and 175A peak
Display	4½ digits
Frequency Range	DC and 5Hz to 50kHz
Crest Factor	Up to 19.9 (limit 175A Pk)
Accuracy 23 ± 5°C Sinewave	±0.1% of reading ± 0.10% of range ±0.05%/kHz ±1 digit
Input Resistance	0.025Ω max inc. fuse circuit

2.6 Power (W)

Range	40mW to 13kW (autoranging) in 49 ranges corresponding to V and A ranges
Display	4½ digits with polarity according to direction of power flow
Frequency range	DC and 5Hz to 50kHz
Accuracy 23 ± 5°C Sinewave	± [(Vrdg x Aerror) + (Ardg x Verror)] ± (0.25-PF)%/kHz ± 1 digit
Polarity	+ indicates positive power flow - indicates negative power flow

	0°	-90°	-180°	-270°	-360°
W	+	-	-	+	+
PF	-	-	+	-	-
VARs	+	+	-	-	-

The displacement angle is the angle of the current fundamental with reference to the voltage fundamental.

2.7 Apparent Power (VA)

Range	40mVA to 13kVA (autoranging) in 49 ranges corresponding to V and A ranges
Display	4½ digits
Frequency Range	DC and 5Hz to 50kHz
Accuracy 23 ± 5°C	± [(Vrdg x Aerror) + (Ardg x Verror)] ± 1 digit

2.8 Reactive Power (VAR)

Range	40mW to 13kW (autoranging) in 49 ranges corresponding to V and A ranges.
Display	4½ digits and polarity
Frequency Range	DC and 5Hz to 50kHz
Accuracy 23 ± 5°C Sinewave	± [(Vrdg x Aerror) + (Ardg x Verror)] ± (0.25 x PF)%/kHz ± 1 digit
Polarity	+ indicates inductive load - indicates capacitive load

2.15 Total Harmonic Distortion (THD)

Range using prog 5 = 1	0.1 to 199.9%
Range using prog 5 = 0	3.0 to 199.9%
Display	4½ digits
Frequency Range	DC and 5Hz to 50 kHz
Accuracy	± 0.2% ± 0.01%/KHz ± 1 digit

2.16 Integrator

Range:	1mW.hr to 19999MW.hr
Interval:	0.001hr
Elapsed time:	0.001hr to 19999 hr or continuous.

2.17 Environmental conditions

Temp	0°C to +50°C
Storage	-40°C to +70°C
Humidity	10% to 90% RH non-condensating

2.18 Overcurrent Protection

Fuse	HRC 1¼" (32mm) 20AT
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2.19 Dielectric Strength

Inputs - Case	5kV AC 50/60 Hz 1 minute
Inputs - Power Supply	5kV AC 50/60 Hz 1 minute
Power Supply - Case	2kV AC 50/60 Hz 1 minute

2.20 Power Supply

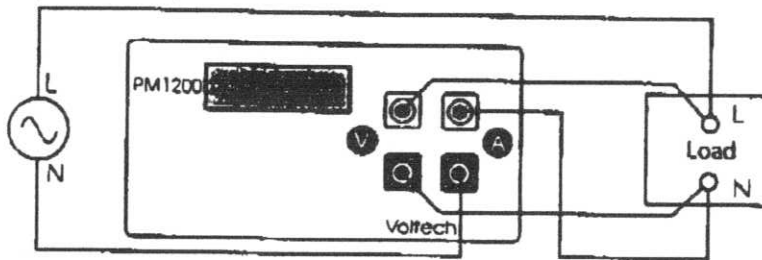
AC Input Voltage	110V ac to 220V ac ± 20%
Frequency	47 to 440 Hz
Protection	Fuse 20mm 1AT
Consumption	16W, 28VA max

2.21 Physical Data

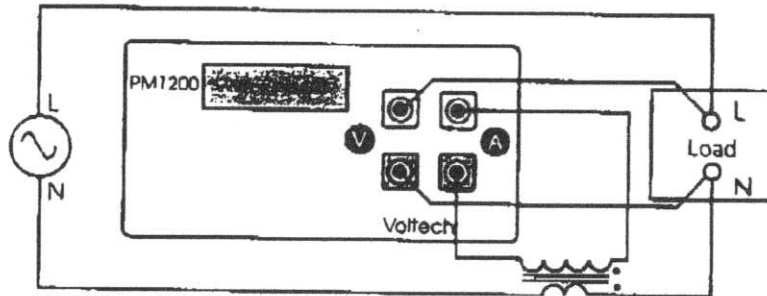
Weight	5Kg
Height	102mm
Width	215mm
Depth	360mm

Single-Phase Measurement Connections

(i) Direct Connection (up to 20A rms)

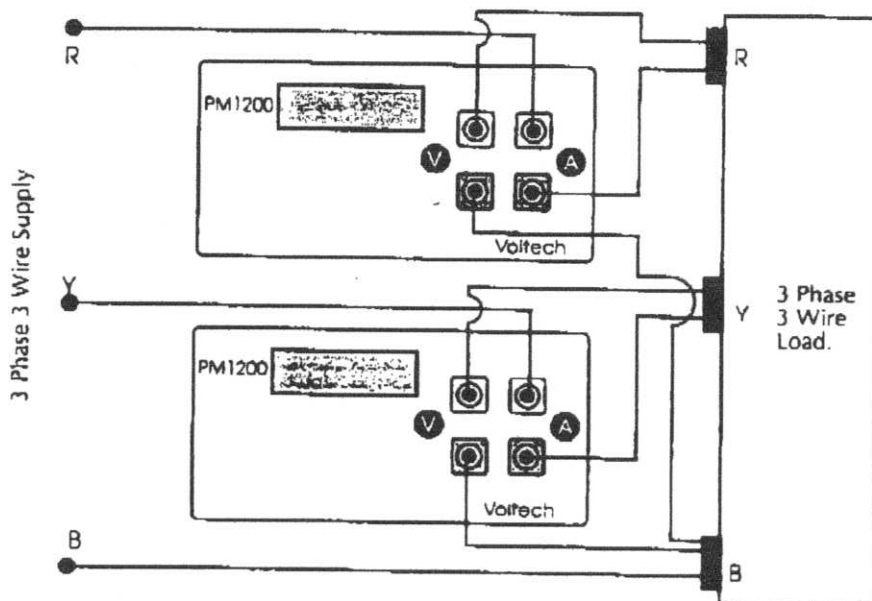


(ii) Current Transformer Connection



Three-Phase Measurement Connections

3 Phase 3 Wire (2 Readings) $P = W1 + W2$
 $VA = (VA1 + VA2) \sqrt{3}$
 $PF = P/VA$



NOTE: For 3 Phase 4 Wire measurements - take three single-phase measurements $P = W1 + W2 + W3$
 $VA = VA1 + VA2 + VA3$
 $PF = P/VA$